



*Promoting Cooperative Solutions for Space Sustainability*

# Cyber as a Counterspace Capability

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“Cyber Security in Outer Space: The Next Frontier for Safe Space Activities”

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# Importance to Space Stability

- Increasing number of and diversity in new actors, concurrent with increasing importance of space in daily activities globally
- Stability rests upon reliable and predictable access to space
- Lack of clarity of the cause when satellite capabilities disappear

# Cyber as a Counterspace Option

- Space capabilities become an attractive target for counterspace efforts
  - Kinetic attacks less likely option
  - Electronic warfare/cyber attack seen as more usable
- Destabilizing because laws of armed conflict for space are unclear
  - International law and military rules of engagement still being worked out
  - Manual on International Law Applicable to Military Uses of Space (MILAMOS) and Woomera Manual being developed

- SWF's Global Counterspace Capabilities: An Open Source Assessment
  - <https://swfound.org/counterspace>
- Many countries likely have cyber capabilities that could target space systems
  - US, Russia, China, North Korea, Iran have all demonstrated ability, interest in offensive cyber attacks against non-space targets
- Growing number of non-state actors interested
- Cyber attacks against space systems similar to those against non-space systems
- Integration and blending of counterspace capabilities, including blending electronic warfare and cyberattack, likely to occur
- State of cybersecurity for satellite infrastructure is dismal

# Categories of Cyber Attacks on Space Systems

- Global supply chain vulnerable
- Links between satellites and ground control stations could be targeted
- Terrestrial C2 or data relay stations could be attacked
  - Sub-category of cyber attacks against ground systems that process space data
- Cyber attacks against the user segment of a space system

# Potential Military Utility

- Advantages:
  - Flexibility and nature of effects
  - Access
  - Difficulty of attribution
  - Can be faster, cheaper, easier to get
- Disadvantages:
  - Lack of ability to do strategic signaling
  - Challenges in doing battle damage assessment

- Space Policy Directive (SPD)-5, *Cybersecurity Principles for Space Systems*, released Sept. 4, 2020
- Intended to provide a whole-of-government framework to safeguard space assets
- Builds off of National Security Strategy (Dec. 2017) and National Cyber Strategy (Sept. 2018)
- Points out special circumstances for space systems and thus “integrating cybersecurity into all phases of development and ensuring full life-cycle cybersecurity are critical for space systems”
- Section 4 lists the principles, including “Implementation of these principles, through rules, regulations, and guidance, should enhance space system cybersecurity, including through the consideration and adoption, where appropriate, of cybersecurity best practices and norms of behavior”



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# Questions?

## Thanks.

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