

# Issues Shaping Space Security and Stability

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NIAS – CISAC Dialogue on India-US Cooperation on Global Security Strategic Security Threats of the 21<sup>st</sup> Century

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# About Secure World Foundation

- **SWF** is a private operating foundation that promotes cooperative solutions for space sustainability
- **Our vision:** The secure, sustainable, and peaceful uses of outer space that contribute to global stability on Earth
- **Our mission:** 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



# Human-Generated Space Objects

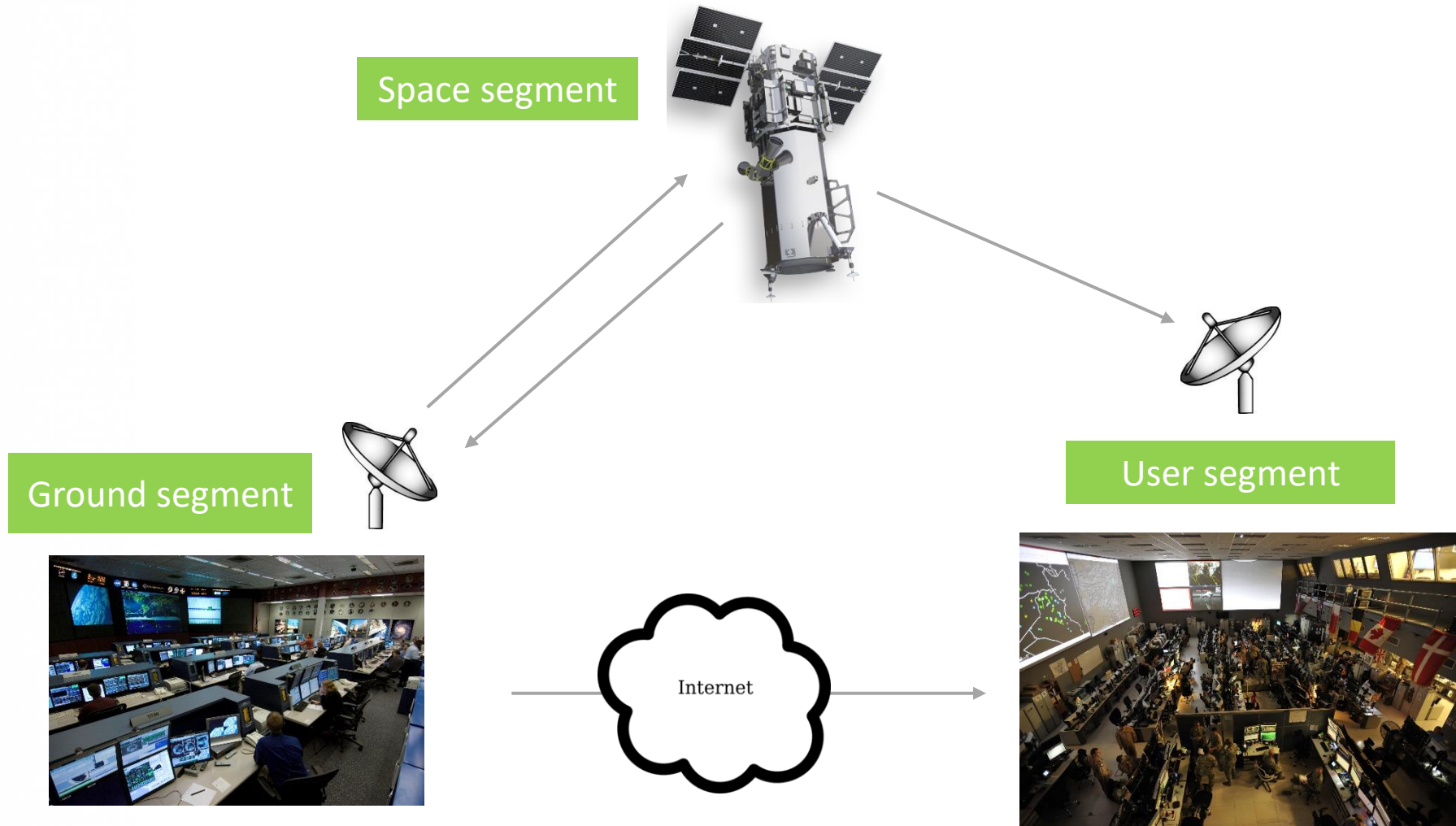
- Active satellites as of Nov. 12, 2024:
  - Total: 10,667
    - United States: 7586
      - Of which, SpaceX' Starlink: 6560
    - Russia: 274
    - China: 906
    - India: 66

## Orbital Debris

Larger than 10 cm	~40,500	Sources of new debris
Between 1 and 10 cm	~1,100,000	Can cause major damage
Smaller than 1 cm	130 million	Can cause minor damage



# A space system is more than just a satellite





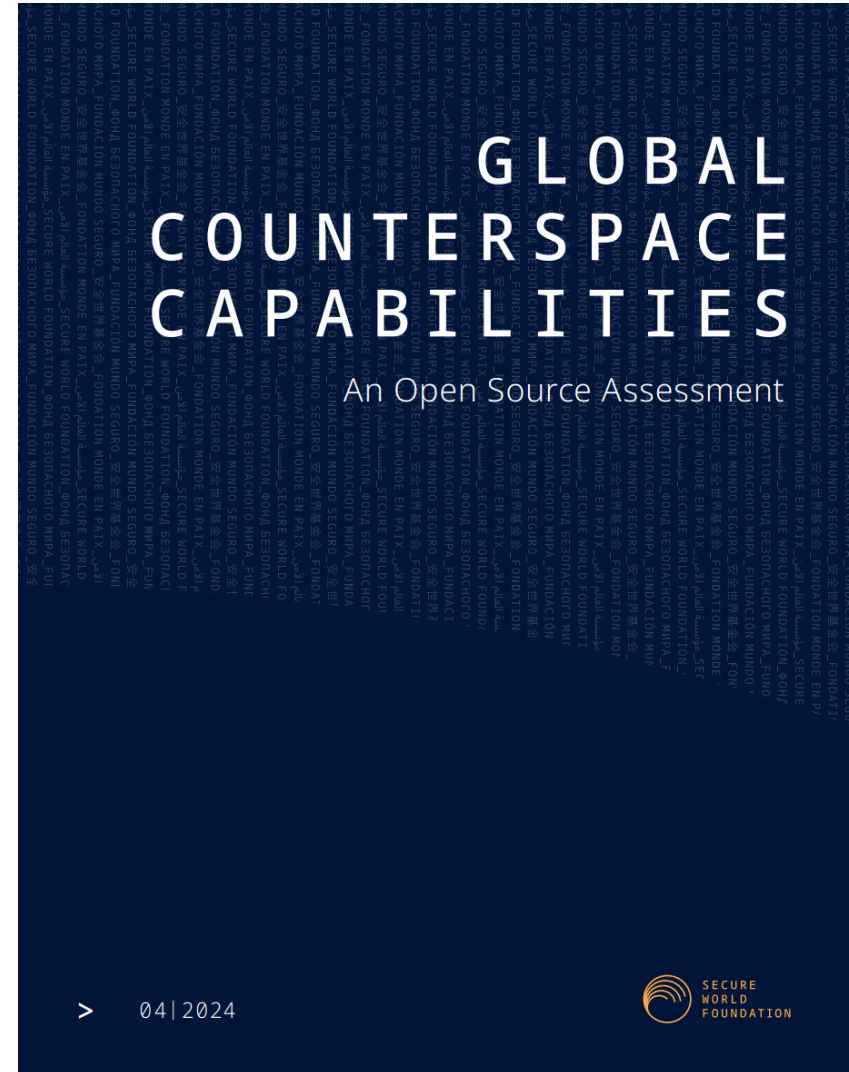


# Close Approaches and Effects on Space Stability

- Uncoordinated close approaches: potential for (inadvertent) escalation
- Not as easy to make hard and fast requirements about
- Different risk assessments by different actors in space
- Very few hard “rules” about what is and isn’t allowed
  - Intent is key – how do you demonstrate intent?
  - How do you determine right of way? Is there a way to quickly communicate amongst actors?
  - Space situational awareness is good but has limitations



- Existence of counterspace capabilities is not new, but the circumstances surrounding them are
- Significant R&D/testing of a wide range of destructive and non-destructive counterspace capabilities by multiple countries
- ***Only non-destructive capabilities are actively being used in current military operations***



<https://swfound.org/counterspace>



# 2024 Global Assessment

	US	Russia	China	India	Aus.	France	Iran	Israel	Japan	North Korea	South Korea	UK
LEO Co-Orbital	■	▲	■	●	●	●	●	●	●	●	●	●
MEO/GEO Co-Orbital	■	■	■	●	●	●	●	●	●	●	●	●
LEO Direct Ascent	■	■	▲	■	●	●	●	●	●	●	●	●
MEO/GEO Direct Ascent	■	■	■	●	●	●	●	●	●	●	●	●
Directed Energy	■	■	■	●	●	■	●	●	●	●	●	●
Electronic Warfare	▲	▲	▲	■	■	■	■	▲	■	■	●	●
Space Situational Awareness	▲	▲	▲	■	■	■	■	■	■	■	■	■

Legend: none ● some ■ significant ▲







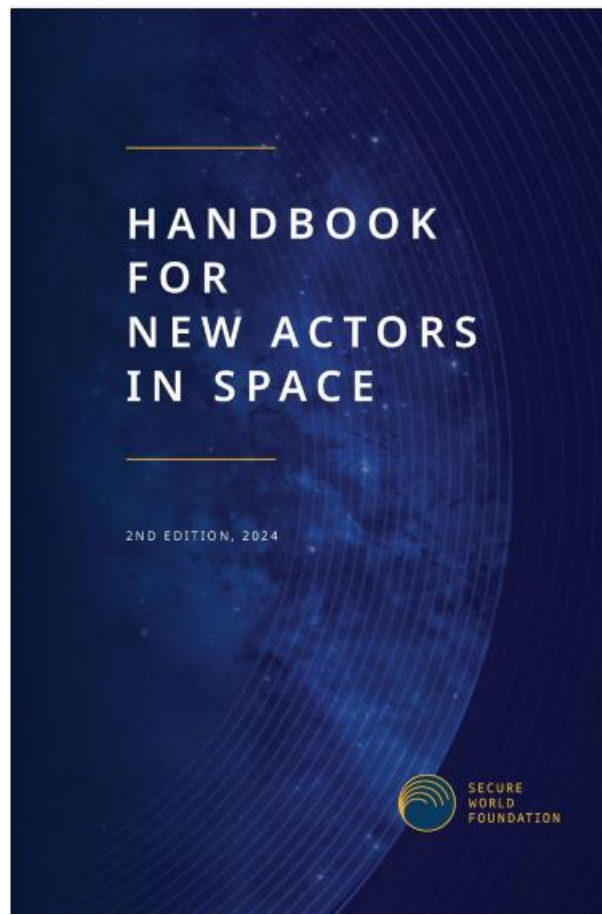
# Space deterrence: goals and impacts

- What role is there for deterrence in providing for the protection of satellites and space capabilities? What can and should deterrence achieve in space? What is the role that it might play in a broader security strategy?
  - How do you message intent and undertake strategic communication?
  - Where might reprisals take place and how do you determine if they are effective?
  - Can denial deterrence (i.e., removing the benefits of hostile action) serve as a useful deterrent?
- Four possible elements of space deterrence
  - Norms of behavior are needed for dealing with an increasingly congested, contested, and competitive space environment
  - Establish international partnerships and interdependence
  - Denial of benefit takes away the advantage an adversary may get from attacking space assets, partly achieved by interdependence but also by architecture of space capabilities
  - Imposition of cost?



# 2nd Edition of the Handbook for New Actors in Space

- Goal is to provide a broad overview of the fundamental principles, laws, norms, and best practices for peaceful, safe, and responsible activities in space
- 2<sup>nd</sup> Edition is updated to account for new activities, trends, and data, and is a more online-friendly format
- Available on the SWF website: <https://swfound.org/handbook>



Questions?

Thanks.

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