The Current State of Global Counterspace Capabilities

Preparatory Workshop for the OEWG on PAROS in All Its Aspects

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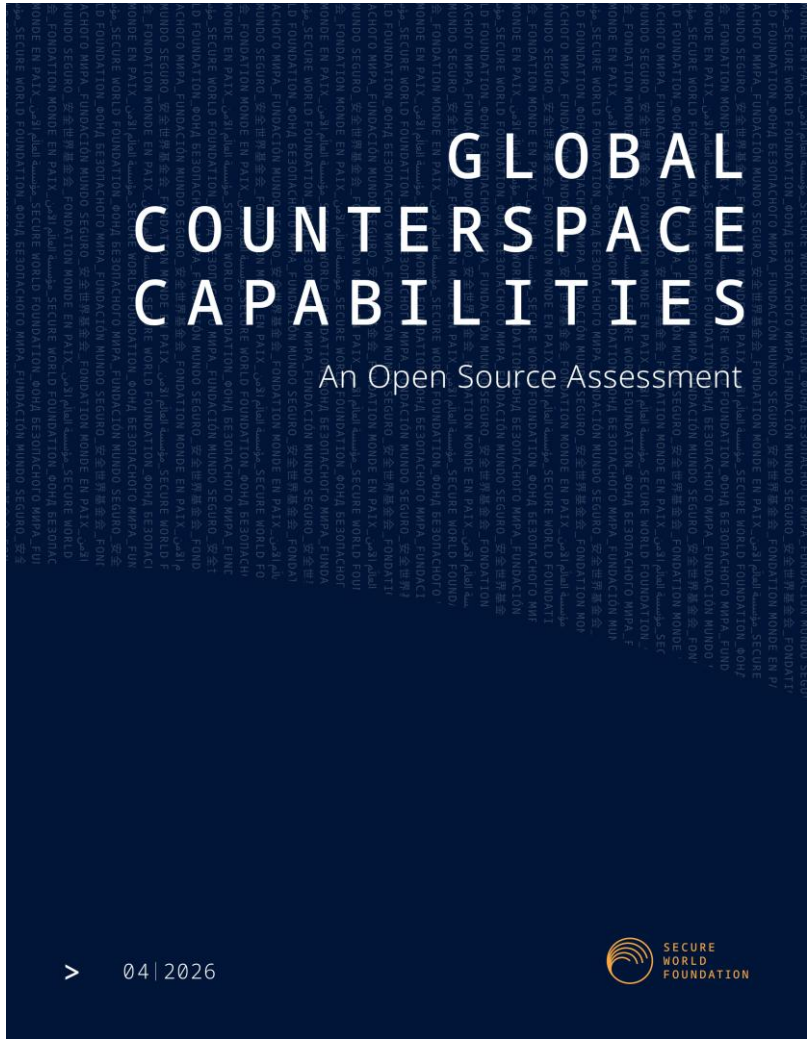
- Existence of counterspace capabilities is not new, but the circumstances surrounding them are

- Significant R&D/testing of a wide range of destructive & non-destructive counterspace capabilities by multiple countries
  - SWF report now covers 13 countries (with Germany added this year)

- ***Only non-destructive capabilities are actively being used in current military operations***



https://swfound.org/counterspace

Counterspace Capabilities

Co-orbital: systems that are placed into orbit and then maneuver to approach the target to attack it by various means, including destructive and non-destructive

Direct-Ascent: systems that use ground, air-, or sea-launched missiles with interceptors that are used to kinetically destroy satellites through force of impact, but are not placed into orbit themselves

Directed Energy: systems that use focused energy, such as laser, particle, or microwave beams to interfere or destroy space systems

Electronic Warfare: systems that use radiofrequency energy to interfere with or jam the communications to or from satellites

Cyber: systems that use software and network techniques to compromise, control, interfere, or destroy computer systems

Space Situational Awareness: knowledge about the space environment and human space activities that enables both offensive and defense counterspace operations

2026 Global Assessment

	US	Russia	China	India	Aus.	France	Germany	Iran	Israel	Japan	N. Korea	S. 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 ▲ Uncertain ?

2026 Themes

- Everyone wants a spaceplane…and bodyguard satellites
- A lot of unknowns regarding Golden Dome
- Starlink continues to play a role in conflict zones
- RPOs continue to get more complicated, with new actors completing them as well
- Jamming increases its presence, in and out of conflicts
- Six countries released new or updated military space-related policies
- Cyberattacks continue to be an active part of current on-going wars

ASAT tests by Year (2026)

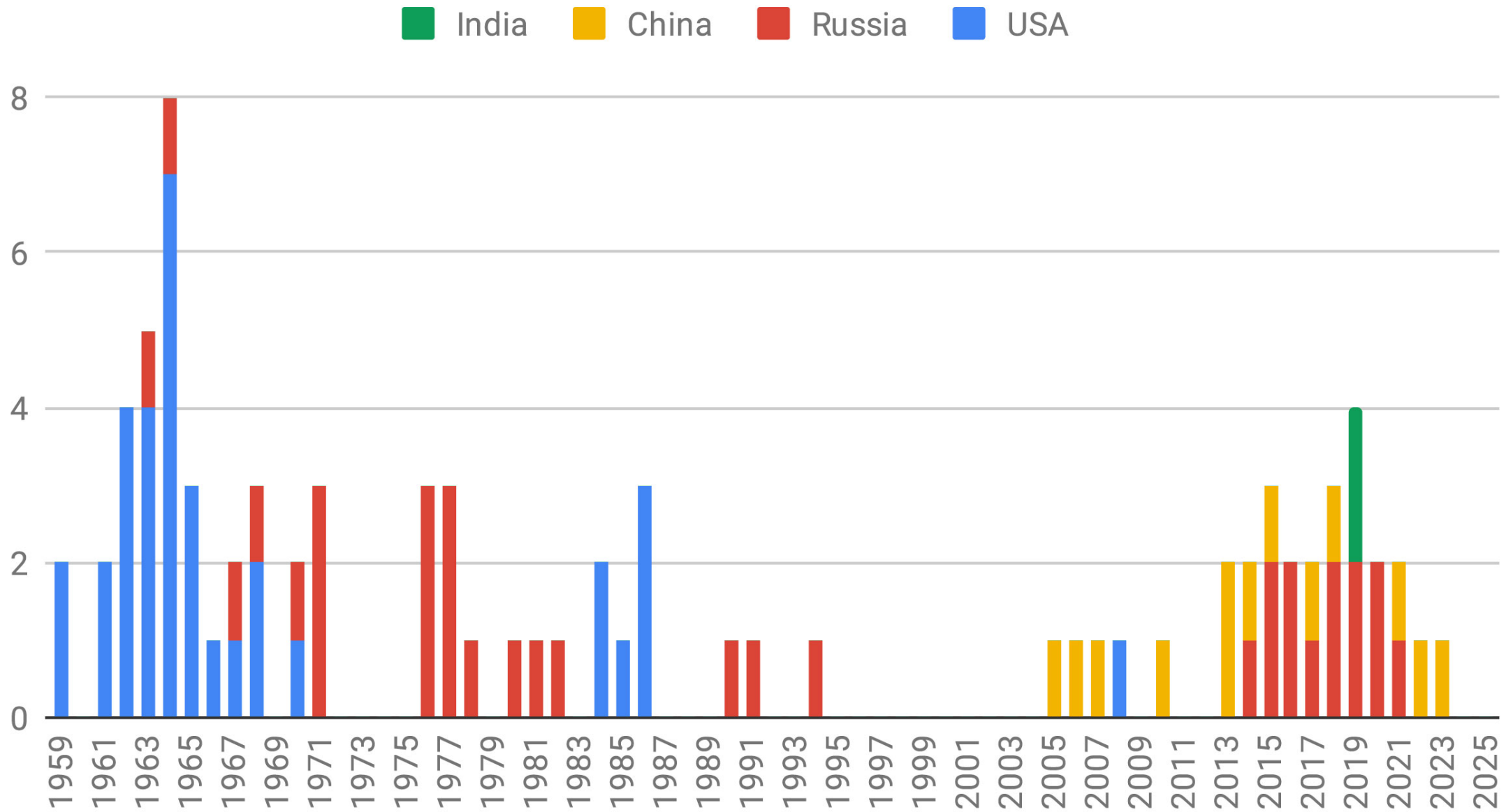


TABLE 5-1 – ORBITAL DEBRIS CREATED BY ASAT TESTS IN SPACE

DATE	COUNTRY	INTERCEPTOR	INTERCEPTOR TYPE	TARGET	INTERCEPT ALTITUDE	TRACKED DEBRIS	DEBRIS STILL ON ORBIT	TOTAL DEBRIS LIFESPAN
Oct. 20, 1968	Russia	Cosmos 249, Cosmos 252 (IS)	Co-orbital	Cosmos 248	–	252	71	57.4 years
Oct. 23, 1970	Russia	Cosmos 374, Cosmos 375 (IS)	Co-orbital	Cosmos 373	–	147	33	55.4 years
Feb. 25, 1971	Russia	Cosmos 397 (IS)	Co-orbital	Cosmos 394	–	117	43	55 years
Dec. 3, 1971	Russia	Cosmos 462 (IS)	Co-orbital	Cosmos 459	–	28	0	3.3 years
Dec. 17, 1976	Russia	Cosmos 886 (IS)	Co-orbital	Cosmos 880	–	127	54	49.2 years
Dec. 21, 1977	Russia	Cosmos 970 (IS)	Co-orbital	Cosmos 967	–	121	115	48.2 years
Apr. 18, 1980	Russia	Cosmos 1174 (IS-M)	Co-orbital	Cosmos 1171	–	47	4	45.9 years
Jun. 18, 1982	Russia	Cosmos 1379 (IS-M)	Co-orbital	Cosmos 1375	–	62	59	43.7 years
Sep. 13, 1985	US	ASM-135	Direct Ascent	Solwind	530 km	285	0	18.7 years
Sep. 5, 1986	US	Delta 180 PAS	Co-orbital	Delta 2 R/B	–	18	0	< 1 year
Dec. 26, 1994	Russia	Naryad-V	Co-orbital	Unknown	–	26	22	31.2 years
Jan. 11, 2007	China	SC-19	Direct Ascent	FY-1C	880 km	3532	2351	19.1 years
Feb. 20, 2008	US	SM-3	Direct Ascent	USA 193	220 km	175	0	1.7 years
Mar. 27, 2019	India	PDV-MK II	Direct Ascent	Microsat-R	300 km	130	0	3.2 years
Aug. – Dec. 2019	Russia	Cosmos 2535	Co-orbital	Cosmos 2536	–	30	16	6.5 years
Nov. 15, 2021	Russia	Nudol	Direct Ascent	Cosmos 1408	470 km	1807	5	4.3 years
					Total	**6904**	**2773**	

Fallacy: Every satellite has the potential to be a co-orbital kinetic weapon

- An ordinary satellite ***cannot*** be maneuvered to collide with another one
  - Orbit measurements and propagation are too inaccurate and uncertain
  - The propulsion system on a satellite (if any) cannot deliver the △V to the required precision for a collision
  - The attitude control systems of satellites are not accurate enough to control the precise orientation that would be required for the △V
  - Satellites do not have terminal guidance sensors that enable last second corrections to a target (unlike ASAT or BMD KKVs)

- However, satellites designed for servicing (refueling, inspection, towing, removal) ***might*** be able to be used as a weapon

Case Study: Nuclear Warhead as an ASAT

- No shockwave (no air to transmit)
- Blind any optical sensors point in its direction
- Thermal pulse can overload & fry satellites
- Electromagnetic pulse (EMP) can damage satellites and terrestrial electronics and power grids
- Radiation gets trapped by Van Allen Belts for weeks/months and can degrade/destroy LEO satellites
- Violation of the Outer Space Treaty's article 4



Image of Starfish Prime nuclear test.
(Credit: Nuclearweaponarchive)



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