

Better Engagement With Allies

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I. Introduction

In recent years, space has become an increasingly contested domain with the rapid development of satellite technology and more nations placing an emphasis on astronomical programs. Since the inception of space exploration in the 1960s, significant milestones in space policies and international cooperation have shaped the outer space domain. Key international treaties, such as the Outer Space Treaty (1967), the Rescue Agreement (1968), the Liability Convention (1972), and the Registration Convention (1976), have established foundational principles for space activities, including the peaceful use of space and the responsibility of states for national space operations (*Space Foundation Editorial Team, 2023*). These treaties remain the primary legal framework governing space activities to this day. As the United States seeks to maintain its strategic advantage in space, effective collaboration with allies is paramount. However, current methods for information sharing, threat assessment, and capacity building in space could benefit from the support of thoughtful policy and established practices. This white paper aims to explore strategies for enhancing engagement with allies to strengthen the US Space Force's operational effectiveness and strategic position in the increasingly complex and contested space domain.

The creation of the US Space Force, US Space Command (USSPACECOM), and the Combined Space Operations Center (CSPOC) in 2019 marked a significant shift in the United States' focus on national security in the space domain. This strategic development has emphasized the importance of operational coordination and capability expansion between USSPACECOM and allied nations. Key partners in this collaborative effort include Canada, Australia, the United Kingdom, Germany, France, and New Zealand (*USSPACECOM Public Affairs, 2019*). These partnerships aim to enhance collective defense and response capabilities, ensuring a unified approach to addressing emerging threats and maintaining strategic advantages in space.

The current strategic objectives for the US Space Force as listed in the Department of Air Force's *Report to Congressional Committees* include organizing, training and equipping the Space Force, providing the needed support to Combatant Commands to deter threats to U.S [Fig. 1]. space capacities and interests, as well as promoting responsible behaviors in space. To meet these objectives, the USSF will utilize three LOEs (lines of efforts): Field Combat-Ready Forces, Amplify the Guardian Spirit, and Partner to Win (*Department of Air Force, 2023*). The

corresponding Funding Plan for the USSF estimates a budget of just over 30 billion USD over the next 5 years. The areas which require the most extensive funding are Missile Warning/Tracking, Assured Access to Space, Ops and Sustainment, SATCOM, PPIT and Space Development Agency.

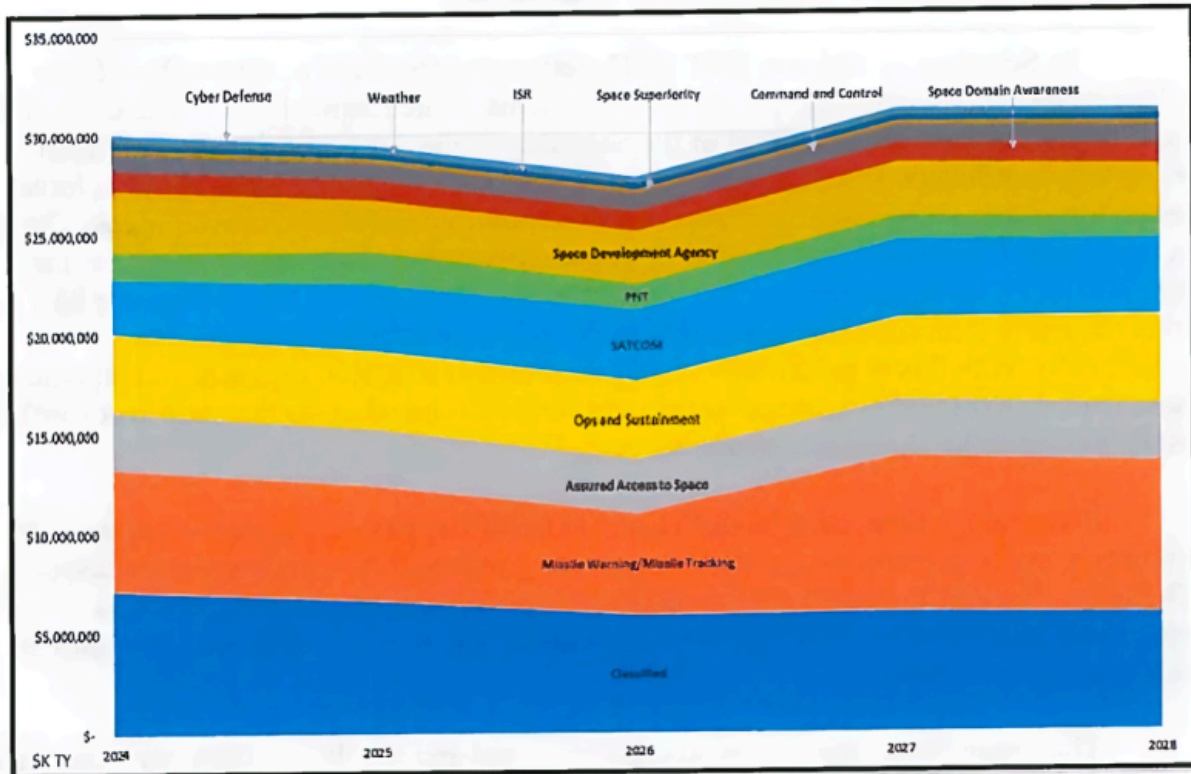


Fig. 1: Comprehensive Funding Strategy for The Space Force (Department of Air Force, 2023).

II. Information Sharing

Among the most crucial avenues of information sharing with allies is the exchange of satellite and space operation data, as maintaining situational awareness and ensuring effective operational coordination are essential for space exploration missions of all nations. This was addressed at NATO's first Space Symposium in May 2024. Formal data-sharing agreements are essential, as they provide clear guidelines and expectations for the exchange of information between nations. Establishing joint intelligence centers, where representatives from allied nations can collaboratively analyze and interpret shared data, can significantly enhance collective situational awareness (*U.S. Space Command, 2024*). Lessons from successful information-sharing frameworks in other domains, such as counter-terrorism and cybersecurity, can be adapted for space operations to improve efficiency. However, current challenges, including classification issues, data interoperability, and trust, need to be addressed. The fragmented nature of the current information-sharing landscape, with different protocols and systems in use across various nations, leads to inefficiencies and potential data silos. Although the US Space Command benefits from a high capacity of international partnership with its allies, selectively compartmentalizing certain critical information helps retain its competitive advantage over other nations.

High classification levels on crucial data often restrict the extent to which information can be shared with allies, impeding collaborative efforts. Trust and security concerns about the potential misuse of shared information can also create reluctance among nations to fully cooperate. Darren Whiteley, USSPACECOM Strategy, Policy and Plans deputy director, commented at the NATO Space Symposium, "There is more of an awareness to remove unnecessary classification barriers to open conversations with allies and partners. And there are some allies bringing niche policies and military options that we haven't seen before, which is important to bringing synergy to operations." (*U.S. Space Command, 2024*). To address these issues, developing secure and reliable communication channels is recommended to facilitate real-time data sharing without compromising security. Proposals for international standardization initiatives aim to harmonize data formats and protocols, ensuring smoother interoperability between allied systems. By focusing on these aspects, the US Space Force can enhance its information-sharing capabilities, build trust among allies, and improve the overall effectiveness of joint space operations.

III. Threat Assessment

Emerging threats in space, including anti-satellite weapons, cyberattacks on space infrastructure, and space debris, pose significant risks to global security and operational capabilities. Joint threat assessment initiatives are crucial for developing a comprehensive understanding of these potential risks and creating a unified response. Strategies for enhancing shared situational awareness and threat detection capabilities through collaborative efforts are essential. However, the lack of coordinated efforts among nations to analyze and mitigate common space-related threats results in fragmented and less effective responses (*Rajagopalan, R. P, 2021*). Additionally, understanding the interconnections between space threats and other domains, such as cyber and terrestrial security, is vital for developing integrated assessment strategies that address the multifaceted nature of these risks.

To effectively address space threats, the Council of Councils (CoC) recommends unified threat response frameworks and protocols, enabling coordinated responses and information sharing across different countries.* Leveraging the strengths and resources of individual nations can help create a comprehensive and robust threat assessment system. Establishing joint real-time threat monitoring systems ensures timely detection and response to potential space threats. Sharing and implementing best practices in threat assessment and mitigation from leading space-faring nations can significantly enhance collective security. Regular joint simulations and drills are vital for enhancing readiness and coordination among allies in responding to space threats (*Rajagopalan, R. P, 2021*). Additionally, utilizing advanced technologies such as artificial intelligence and machine learning for predictive threat analysis and early warning systems can offer innovative solutions for proactive threat management.

**The Council of Councils (CoC), is an initiative of the Council on Foreign Relations, aims to improve international cooperation by addressing long-standing or emerging global problems. The Council on Foreign Relations takes no institutional positions on policy issues and has no affiliation with the U.S. Government.*

IV. Capacity Building

Strengthening the space capabilities of allied nations is essential for enhancing collective defense and response efforts. This can be achieved through joint training programs, technology transfer, and resource sharing, which are training objectives proposed by CSPOC (*Department of Air Force, 2023*). Supporting the development of space infrastructure, such as ground stations and launch facilities, in allied nations will significantly improve their operational capabilities. Building resilience in space systems and operations through cooperative development of best practices and standards is also crucial (*MAURER, T., & NELSON, A, 2020*). Addressing the disparities in space capabilities among allied nations is imperative, as these differences pose challenges to unified defense and response efforts, potentially undermining the effectiveness of joint operations.

Leveraging the diverse expertise and technological advancements of allies is key to bolstering collective space operations. Strategies to equalize access to advanced space technologies and resources are needed to ensure that all allies can effectively contribute to joint missions (*Cancian, M. F., 2021*). Establishing joint training programs focused on the latest space technologies, operational tactics, and strategic planning will enhance the proficiency of allied space forces. Developing safe and effective technology transfer mechanisms between allied nations will address security and intellectual property concerns. Promoting collaborative research and development initiatives will drive innovation and create cutting-edge solutions for space operations. Encouraging the pooling of resources, including financial investments, technical expertise, and human capital, will enable the undertaking of large-scale space projects that might be beyond the reach of individual nations. Organizing regular capacity-building conferences will facilitate knowledge sharing, discussion of challenges, and the development of joint strategies (*MAURER, T., & NELSON, A, 2020*). Ensuring that space systems and technologies used by allied nations are interoperable will allow for seamless joint operations and coordinated responses to threats.

V. Potential Policy Implications

The evolution of space as a contested domain necessitates the development of robust policy frameworks that facilitate better engagement with allies. Current policies governing space collaboration often fall short in addressing the complexities of modern space operations.* Enhancements are needed to streamline processes, improve interoperability, and foster more effective collaboration, as legal and regulatory frameworks play a pivotal role in international space cooperation. However, many existing laws are outdated and do not adequately address the rapid advancements in space technology (*Christopher D. & Johnson J., 2023*). Optimizing these frameworks is essential for fostering an environment conducive to collaboration. This includes revisiting international treaties and national regulations to ensure that they encapsulate new developments while maintaining rigorous standards of safety and security. By aligning legal structures with contemporary needs, USSF can facilitate smoother cooperation and enhance mutual trust among space-faring nations.

The establishment of international norms and standards is critical for guiding the behavior of nations in space. These norms promote the responsible and peaceful use of space, mitigating the risk of conflicts and encouraging sustainable practices. Developing comprehensive guidelines that are universally accepted will help harmonize the activities of different nations, ensuring that all space operations are conducted in a manner that benefits the global community. This involves collaboration through international bodies like the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) to develop and enforce these standards (*United Nations Office for Outer Space Affairs, n.d.*). Bilateral and multilateral agreements are instrumental in formalizing cooperation between nations. These agreements provide clear frameworks for joint activities, outlining the roles and responsibilities of each party. Encouraging the creation of new agreements will strengthen the foundation of international collaboration, enabling more effective coordination and resource sharing. Such agreements can also address specific areas of mutual interest, such as joint missions, shared research initiatives, and collaborative threat assessments. Strategic partnerships with key allies are essential for long-term collaboration and mutual benefits in space operations.

*Refer to “Further Discussions” for more detail.

These partnerships should be built on a foundation of shared goals and mutual trust, ensuring that all parties are committed to the success of joint initiatives. Proposals for forging stronger strategic partnerships should focus on areas where collaboration can yield significant benefits, such as technology development, threat assessment, and operational coordination.

Addressing cybersecurity concerns in outer space operations has become one of the primary objectives of space programs across the globe. Robust cybersecurity policies are crucial to protect shared space assets and information systems from cyber threats. Establishing comprehensive cybersecurity measures will ensure the integrity and security of data and infrastructure, safeguarding against potential attacks that could disrupt space operations. These policies should include protocols for detecting, responding to, and mitigating cyber threats in a coordinated manner. Crisis response protocols are vital for managing incidents in space effectively. Creating clear and coordinated response protocols ensures rapid and effective joint actions during crises. These protocols should be developed collaboratively with allies to ensure compatibility and readiness for various contingencies, including collisions, satellite malfunctions, and hostile actions (*Fidler, D. P., 2018*). Transparency and confidence-building measures enhance trust among allies, reducing the risks of misunderstandings and conflicts in space. Implementing policies that promote transparency, such as regular information exchanges and joint exercises, can build confidence and foster a cooperative environment. These measures are essential for maintaining stability and preventing escalation in the space domain.

Finally, environmental considerations are increasingly important in the management of space activities. Developing policies to manage space debris and promote sustainable practices is critical for ensuring long-term access to space. These policies should address debris mitigation, end-of-life disposal of satellites, and the responsible use of space resources. By prioritizing environmental sustainability, we can preserve the space environment for future generations and maintain the viability of space operations.

VI. Further Discussions

Existing International Laws & Norms

The key international treaties that govern activities in outer space form the bedrock of space law. These include the Outer Space Treaty (1967), the Rescue Agreement (1968), the Liability Convention (1972), the Registration Convention (1976), and the Moon Agreement (1984). Collectively, these treaties establish the fundamental principles of space law, such as the prohibition of national appropriation of outer space, the use of space for peaceful purposes, and the responsibility of states for national space activities (*DANILENKO, G. M., 1989*). These principles are essential for maintaining the peaceful exploration and utilization of outer space. The Outer Space Treaty is widely regarded as the cornerstone of international space law. It provides the basic legal framework for outer space activities, including key provisions such as the prohibition of placing nuclear weapons in space, the declaration that space is the province of all humankind, and the principles of freedom of exploration and use by all countries (*Christopher D. & Johnson J., 2023*). The treaty's emphasis on non-appropriation and the peaceful use of outer space is crucial for preventing conflicts and ensuring that space remains a shared domain accessible to all nations.

Customary international law plays a significant role in regulating space activities, complementing formal treaties through state practice and *opinio juris*. Principles such as the non-appropriation of outer space, the obligation to avoid harmful contamination, and the concept of due regard for the interests of other states have evolved as customary norms (*FINCH, E. R., & MOORE, A. L., 1974*). These principles help fill gaps in treaty law and provide a flexible framework that can adapt to new developments in space exploration and utilization.

Future Development

The future of international space law will likely involve the development of new treaties and the evolution of existing frameworks to address emerging challenges. Potential areas for new legal instruments include space resource utilization, space tourism, and the protection of space environments. The increasing involvement of emerging space-faring nations will also shape the future landscape of space governance, requiring updated legal frameworks that reflect the changing dynamics of space activities. In addition to formal treaties, emerging norms and soft

law instruments, such as guidelines, codes of conduct, and best practices, play a crucial role in shaping state behavior in space. Examples include the Space Debris Mitigation Guidelines and the proposed Code of Conduct for Outer Space Activities (*Space Foundation Editorial Team, 2023*). While not legally binding, these instruments influence international space governance by promoting responsible practices and fostering a culture of cooperation and safety in space operations.

Enforcing international space law presents significant challenges, including issues related to jurisdiction, verification of compliance, and dispute resolution. Monitoring activities in the vast expanse of space is inherently difficult, and the mechanisms for accountability are limited. Addressing these challenges requires innovative solutions and enhanced international cooperation to ensure that space activities are conducted in accordance with established legal frameworks and that violations are appropriately addressed (*Kopal, V., 2023*). By understanding and addressing these multifaceted issues, the international community can work towards a more coordinated and effective approach to space governance, ensuring the long-term sustainability and peaceful use of outer space.

VII. Conclusion

Space has become a competitive domain with the proliferation of satellite technology and the emergence of new space-faring nations. To maintain strategic advantages, enhanced collaboration among allies is essential. Effective collaboration with allies is crucial for the United States Space Force (USSF) to ensure robust information sharing, comprehensive threat assessment, and strengthened capacity building.

Addressing the fragmented nature of current information-sharing mechanisms, overcoming classification restrictions, and enhancing data interoperability are vital for improved collaboration. Enhanced data exchange and joint intelligence centers can significantly improve situational awareness and operational coordination. Developing unified frameworks and protocols for joint threat assessment and response can mitigate the risks posed by emerging space threats, such as anti-satellite weapons and cyberattacks. Collaborative efforts in threat analysis and real-time monitoring are necessary to ensure timely detection and response to potential dangers. Mending disparities in space capabilities among allies through joint training, technology transfer, and shared research initiatives will enhance collective defense and response efforts. These main focal points will help strengthen the infrastructure and operational capabilities of allied nations to build resilience in space systems and operations.

In terms of policy implications, thoughtful policy and legal frameworks are necessary to support international cooperation, ensure data security, and promote transparency and confidence-building measures among allies. These policies should include data classification reforms, cybersecurity measures, and strategies for equitable resource allocation. Adherence to existing international treaties, customary international law, and emerging norms will help establish a stable and predictable environment for space activities. The role of the United Nations and the development of international standards are critical for maintaining the peaceful use of space and preventing conflicts.

Ongoing international dialogue, cooperation, and potential new treaties are essential to address future challenges in space governance, including resource utilization and environmental protection. Emerging norms and soft law instruments can also play a significant role in shaping responsible behavior in space. By addressing these areas, the United States Space Force can enhance its strategic position and ensure a collaborative, secure, and sustainable future in space. This holistic approach to international engagement and cooperation will be pivotal in navigating

the complexities of the contested space domain and maintaining global stability and security in the space environment.

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