

Allied by Design

Defining a Path to Thoughtful Allied Space Power

BRUCE MCCLINTOCK, ANDREW RADIN, CORTNEY WEINBAUM, STEPHANIE ANNE PILLION, BONNIE L. TRIEZENBERG, JONATHAN CHAM, DANIEL ELINOFF, MAGGIE HABIB, MARK HVIZDA, KOTRYNA JUKNEVICIUTE, ADI RAO, BRYAN ROONEY

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ISSUE

Recent U.S. strategy documents, such as the 2022 National Defense Strategy, clearly state that close cooperation with allies is central to U.S. policy, especially in space. However, allies have grown increasingly vocal about a “say-do gap” between U.S. high-level policy statements versus tangible U.S. cooperation on defense-related space activities. Some allies perceive that cooperation is an afterthought for the United States rather than a consciously planned activity undertaken “by design.” In this study, sponsored by the U.S. Space Force’s (USSF’s) Space Operations Command, we investigate how U.S. policy can more effectively achieve improved integration of allied space capabilities.



APPROACH

We assessed the goals, organization, and activities of the U.S. Department of Defense (DoD) space enterprise. We also evaluated six allied nations—Australia, Canada, France, Germany, Japan, and the United Kingdom—to determine their interest in, potential for, and perspectives on cooperation with the United States on defense-related space activities. We also sought insights from cooperation with allies on nuclear weapons, combined operations, and intelligence. Our research included reviews of policy documents, articles, reports, and public statements by senior leaders, as well as over 144 interviews with more than 150 DoD and allied officials and staff through virtual meetings and a dozen site visits. Our analyses revealed opportunities for a more effective approach to allied space power.



KEY FINDINGS

- DoD lacks a consistent vision and desired end state for partnering with allies. Leadership in the USSF, U.S. Air Force, U.S. Space Command (USSPACECOM), and the Office of the Secretary of Defense for Policy pursue different goals for allied cooperation and often fail to connect general aspirations to specific end states.
- DoD space enterprise roles and responsibilities remain ambiguous and disputed. Existing documents have specified some roles, but ambiguities and overlaps remain. The USSF, Secretary of the Air Force International Affairs, and USSPACECOM each develop separate allied cooperation approaches, and each have separate engagement activities. Recent efforts to improve coordination show promise, but it is too early to tell whether these efforts will shift the current paradigm or whether more coordination is needed.

continued

- In their current state, DoD regulations, processes, and infrastructure limit the feasibility of integration. DoD-level disclosure policies make sharing classified information inefficient, allied exchange officers (EOs) often lack the infrastructure and access necessary to do their jobs, and the USSF force design process prioritizes U.S. needs. These problems hinder greater cooperation, and even if DoD elects to implement some of the improvements specified below, actual U.S.-allied “integration” is unlikely in the next two to five years.
- The United States and its allies lack adequate, interoperable communications standards and infrastructure across all levels of classification. New proposed systems, such as Torch, SABRE, and the Mission Partner Environment, may help alleviate these gaps, but they are still far off.
- Absent change, continued U.S. inefficiencies and a “say-do gap” risk weakening the allied space coalition. Ineffective cooperation could lead to inefficiencies in allied efforts that make the United States individually and allies collectively less prepared to meet the growing challenges in the space domain.
- There are some examples of efforts to articulate a vision for cooperation and try to improve overall coordination across the DoD space enterprise, but they are nascent and, so far, insufficient. Recent efforts to articulate roles, responsibilities, and end states are a start, but there is more work needed to create a common vision and strategy.



RECOMMENDATIONS

- The United States should be consistent across the DoD space enterprise and clear with allies when and where cooperation and information-sharing are possible.
- DoD should build on early efforts to create a DoD-wide approach to space-related activities, including allied space cooperation, that fully develops stakeholder roles and responsibilities and articulates realistic desired end states with each ally. We propose a high-level working group chaired by the Deputy Secretary of Defense to coordinate with the intelligence community and among various DoD organizations.
- DoD should conduct operational analyses of relevant functional areas with a focus on collaboration and identify the desired elements and levels of relationships with each ally. Topics should include personnel interchanges, training and exercises, force design, space domain awareness and space operations command and control, interoperable information technology systems, and facilities.
- The United States should consider a range of options to address regulatory and practical constraints on sharing classified information with allies. Such options include
 - considering a Space Mutual Defense Agreement with select allies
 - lowering the classification of some space information
 - revising DoD and Department of the Air Force (DAF) disclosure policies
 - expanding information-sharing under Operation Olympic Defender
 - revising DoD and DAF regulations on EOs
 - reviewing security classification guides
 - updating annual security training to clarify collaboration-related policies
 - increasing the number of foreign disclosure officers.



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About This Report

Recent U.S. strategy documents, such as the 2022 National Defense Strategy, clearly state that close cooperation with allies is central to U.S. policy, especially in space. However, allies have grown increasingly vocal about a “say-do gap” between U.S. high-level policy statements versus tangible U.S. cooperation on defense-related space activities. Some allies perceive that cooperation as an afterthought rather than as a consciously planned activity undertaken “by design.” This report presents recommendations on how U.S. policy can more effectively achieve improved integration of allied space capabilities.

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Summary

Issue

Recent U.S. strategy documents, such as the 2022 National Defense Strategy, clearly state that close cooperation with allies is central to U.S. policy, especially in space. However, allies have grown increasingly vocal about a “say-do gap” between U.S. high-level policy statements versus tangible U.S. cooperation on defense-related space activities. Some allies perceive that cooperation is an afterthought for the United States rather than a consciously planned activity undertaken “by design.” In this study, sponsored by the U.S. Space Force’s (USSF’s) Space Operations Command, we investigate how U.S. policy can more effectively achieve improved integration of allied space capabilities.

Approach

We assessed the goals, organization, and activities of the U.S. Department of Defense (DoD) space enterprise. We also evaluated six allied nations—Australia, Canada, France, Germany, Japan, and the United Kingdom—to determine their interest in, potential for, and perspectives on cooperation with the United States on defense-related space activities. We also sought insights from cooperation with allies on nuclear weapons, combined operations, and intelligence. Our research included reviews of policy documents, articles, reports, and public statements by senior leaders, as well as over 144 interviews with more than 150 DoD and allied officials and staff through virtual meetings and a dozen site visits. Our analyses revealed opportunities for a more effective approach to allied space power.

Key Findings

- **DoD lacks a consistent vision and desired end state for partnering with allies.** Leadership in the USSF, U.S. Air Force, U.S. Space Command (USSPACECOM), and the Office of the Secretary of Defense for Policy pursue different goals for allied cooperation and often fail to connect general aspirations to specific end states.
- **DoD space enterprise roles and responsibilities remain ambiguous and disputed.** Existing documents have specified some roles, but ambiguities and overlaps remain. The USSF, Secretary of the Air Force International Affairs, and USSPACECOM each develop separate allied cooperation approaches, and each have separate engagement activities. Recent efforts to improve coordination show promise, but it is too early to tell whether these efforts will shift the current paradigm or whether more coordination is needed.
- **In their current state, DoD regulations, processes, and infrastructure limit the feasibility of integration.** DoD-level disclosure policies make sharing classified

information inefficient, allied exchange officers (EOs) often lack the infrastructure and access necessary to do their jobs, and the USSF force design process prioritizes U.S. needs. These problems hinder greater cooperation, and even if DoD elects to implement some of the improvements specified below, actual U.S.-allied “integration” is unlikely in the next two to five years.

- **The United States and its allies lack adequate, interoperable communications standards and infrastructure across all levels of classification.** New proposed systems, such as Torch, SABRE, and the Mission Partner Environment, may help alleviate these gaps, but they are still far off.
- **Absent change, continued U.S. inefficiencies and a “say-do gap” risk weakening the allied space coalition.** Ineffective cooperation could lead to inefficiencies in allied efforts that make the United States individually and allies collectively less prepared to meet the growing challenges in the space domain.
- **There are some examples of efforts to articulate a vision for cooperation and try to improve overall coordination across the DoD space enterprise, but they are nascent and, so far, insufficient.** Recent efforts to articulate roles, responsibilities, and end states are a start, but there is more work needed to create a common vision and strategy.
- **Historical examples of U.S.-allied cooperation in mission areas other than space suggest opportunities for addressing current challenges in the space domain.**

Recommendations

- **The United States should be consistent across the DoD space enterprise and clear with allies when and where cooperation and information-sharing are possible.**
- **DoD should build on early efforts to create a DoD-wide approach to space-related activities, including allied space cooperation, that fully develops stakeholder roles and responsibilities and articulates realistic desired end states with each ally.** We propose a high-level working group chaired by the Deputy Secretary of Defense to coordinate with the intelligence community and among various DoD organizations.
- **DoD should conduct operational analyses of relevant functional areas with a focus on collaboration and identify the desired elements and levels of relationships with each ally.** Topics should include personnel interchanges, training and exercises, force design, space domain awareness and space operations command and control, interoperable information technology systems, and facilities.
- **The United States should consider a range of options to address regulatory and practical constraints on sharing classified information with allies.** Such options include
 - considering a Space Mutual Defense Agreement with select allies
 - lowering the classification of some space information
 - revising DoD and Department of the Air Force (DAF) disclosure policies
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 - increasing the number of foreign disclosure officers.

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Chapter 1. Introduction

Recent U.S. strategy documents provide a clear and consistent assertion that close cooperation with allies is central to U.S. strategy, especially in space. A fact sheet on the 2022 National Defense Strategy (NDS) states that the U.S. Department of Defense (DoD) “will incorporate ally and partner perspectives, competencies, and advantages at every stage of defense planning.”¹ The 2020 *Defense Space Strategy* (DSS) identifies cooperation with allies (and commercial and other government agencies) as one of four lines of effort (LOEs), and it identifies the objective of “[integrating] allies and partners into plans, operations, exercises, engagements, and intelligence activities.”² Overall, these U.S. documents demonstrate a belief that collaboration with allies is important to leverage allied capabilities, increase burden-sharing, resilience, and the adversary costs associated with aggression. Allies also share the view that close cooperation with the United States is essential to meeting their military objectives related to space.³

Despite these statements about the importance of cooperation and integration, allies have grown increasingly vocal about a “say-do gap” between what the United States says in high-level policy statements versus U.S. actions toward actual, tangible efforts for cooperation.⁴ They note that allies are often brought in only at the end of a decisionmaking process or face limits in receiving necessary information to enable cooperation.

In this study, sponsored by the U.S. Space Force’s (USSF’s) Space Operations Command (SpOC), we identified options for bringing about the goal of improved integration with other countries stated in U.S. strategy documents. This report summarizes our overall assessment of the state of current efforts toward cooperation at the time of our research (October 2021 through September 2022) and provides identified factors that allow or impede greater cooperation and recommendations for how to make U.S.-allied space policy, organization, activities (including training, education, and wargames), investments, and operations more well-coordinated over the next two to five years. These recommendations describe how the United States could develop an

¹ DoD, “Fact Sheet: 2022 National Defense Strategy,” March 2022.

² DoD, *Defense Space Strategy Summary*, June 2020, p. 9. This DSS summary also highlights that “DoD will promote burden-sharing with our allies and partners, developing and leveraging cooperative opportunities in policy, strategy, capabilities, and operational realms,” and “[e]xpand cooperative research, development, and acquisition (RD&A) with allies and partners” (DoD, 2020, p. 9). See Chapter 2 of this report for a more thorough review of key space policy documents.

³ See Chapter 3 for details.

⁴ Allied views are detailed in Chapter 3. While defined differently by various stakeholders, we define the *say-do gap* as the divide between U.S. policy statements that promote deeper integration with allies on space issues and the practical realities of U.S. procedures and practices.

approach to cooperating with allies that is *allied by design*, meaning that it reflects U.S. and allied interests and capabilities, incorporates allies from the start, and considers allies at all stages.⁵

First, this chapter provides background on the origin and context of this study, a description of the terms and definitions that we used during this study, an overview of our approach, and a set of frameworks that have been used and could be used to describe *integration* across national programs.

Background

Throughout the history of U.S. military and intelligence space operations, the United States has engaged in some level of coordination and cooperation with allies. Most early allied space cooperation evolved from relationships previously established through the Five Eyes (FVEY) alliance.⁶ For example, space cooperation between the United States and Australia began in the early 1960s.⁷ Early U.S. cooperative efforts tended to focus on access to locations needed for satellite tracking, telemetry, and control rather than truly collaborative work on actual satellites or coordination of operations.

In recent years, space capabilities have been more available to countries around the world, including both adversaries and allies. Chinese and Russian space capabilities have become a greater threat and challenge to U.S. defense: Both countries' combined space fleets have increased 70 percent between 2019 and 2021, according to the Defense Intelligence Agency. More of that increase has been in China than in Russia, but both countries' technological capabilities have increased, including modernizations and improvements to satellite communications (SATCOM), remote sensing, space-based navigation systems, and other technological advancements.⁸

Meanwhile, U.S. allies have an increasing interest *and potential* to develop their own *military* space capabilities, partially in response to Chinese and Russian threats and partially because of the ease of availability of such advancements. For example, France announced a policy of active

⁵ We define this term in more detail in a subsequent section.

⁶ "The Five Eyes network is the world's oldest formalized intelligence network and has its origins in the significant expansion of Allied intelligence cooperation and exchange during World War II. The network was founded with the conclusion of the top-secret UK-USA Agreement of 1947 that formally codified the division of spheres of responsibility for signals intelligence (SIGINT) collection between the 'First Party' (the United States) and the 'Second Parties' (Australia, Britain, Canada and New Zealand)" (Andrew O'Neil, "Five Eyes and the Perils of an Asymmetric Alliance," Australian Institute of International Affairs, July 27, 2017).

⁷ In the 1960s, Australia agreed to host U.S. facilities critical to the space domain, including the Joint Defence Space Research Facility and Joint Defence Space Communication Station (William T. Tow, "ANZUS and American Security," *Survival*, Vol. 23, No. 6, 1981).

⁸ Defense Intelligence Agency, *2022 Challenges to Security in Space: Space Resilience in an Era of Competition and Expansion*, 2022, p. iii.

defense, operating its own SATCOM, intelligence, surveillance, and reconnaissance (ISR), and space domain awareness (SDA) capabilities. The United Kingdom established a Space Command and space directorate, and it plans to invest an additional 1.4 billion pounds (\$1.7 billion U.S. dollars [USD]) beyond SATCOM and missile warning capabilities to obtain new ISR, SDA, and protect-and-defend capabilities. And Japan, which has historically kept all its space capabilities in its civilian space agency, established its first two Space Operations Squadrons focused on space situational awareness (SSA) and space control.⁹ We address allies' actions and goals in detail in Chapter 3.

Recognizing both growing threats and allied capabilities, the United States has more prominently discussed the importance of cooperating with allies on national security space. With the reconstitution of the U.S. Space Command (USSPACECOM) and the founding of the USSF in 2019, the U.S. government signaled to other nations its commitment to space as a warfighting domain. This change, along with an increased recognition of the contested, congested, and competitive nature of space, brought new attention to the question of how the United States plans to collaborate with allies to address these challenges.

Scope of This Study

U.S. government cooperation with allies in the space domain includes a wide range of activities by various U.S. departments and agencies, including, but not exclusive to, DoD. We focused on cooperation between the DoD space enterprise and six countries with an extensive history of working with the United States on defense-related space activities and therefore the greatest potential for full integration with U.S. strategy.¹⁰ These six countries are Australia, Canada, France, Germany, Japan, and the United Kingdom.¹¹ All of these countries, except Japan, are already members of the Combined Space Operations (CSpO) Initiative.¹² Japan was added because it is an emerging partner with extensive space capabilities and because of the potential for close integration with the United States given its close ties with the United States,

⁹ In addition to the more detailed discussion in Chapter 3, see “France to Develop Anti-Satellite Laser Weapons: Minister,” France 24, July 25, 2019; and UK Ministry of Defence, *Defence Space Strategy: Operationalising the Space Domain*, February 2022.

¹⁰ Broadly, this potential is defined by factors such as allied space capabilities/potential, strength of ties with the United States, involvement in wargames and exercises, or planned cooperation on space infrastructure. Chapter 3 provides more-specific details.

¹¹ We use the language of *allies* rather than the more common formulation of *allies and partners* because each of these countries are treaty allies with the United States.

¹² New Zealand is also a member of the CSpO Initiative even though it possesses less ambition and capability in space (Governments of the United States, Australia, Canada, France, Germany, New Zealand, and the United Kingdom, “Combined Space Operations Vision 2031,” February 22, 2022).

current involvement in the Schriever wargame series, and planned cooperation on forthcoming satellite systems.¹³

DoD Space Enterprise

Our research sought to offer recommendations for achieving the DoD's stated goal of improved cooperation and integration with allies on U.S. strategy. With this goal in mind, we focused on the *DoD space enterprise*, which we define as those DoD elements with a significant space role, excluding organizations that are also part of the intelligence community (IC).¹⁴

The members of the DoD space enterprise have changed significantly over the past three years and now include the Office of the Secretary of Defense (OSD) and its key subordinate organizations engaged in space activities; the Joint Staff; USSPACECOM; the Office of the Secretary of the Air Force (SAF), including, most significantly, the staff within the Office of the Deputy Under Secretary of the Air Force, International Affairs (SAF/IA) and the Office of the Assistant Secretary of the Air Force for Space Acquisition and Integration (SAF/SQ); the USSF; and key subordinate elements in each of these organizations. In Chapter 2, we examine each of these organizations and their relationships in greater detail.

We omit intelligence organizations—including defense intelligence organizations—from our conception of the DoD space enterprise to focus on DoD organizations and to avoid the different and sometimes-difficult issue associated with U.S. legal authorities for intelligence activities. We acknowledge that organizations such as the National Reconnaissance Office (NRO), the National Security Agency (NSA), the National Geospatial-Intelligence Agency (NGA), and others have a significant role in space, and they warrant further study along the lines explored here.¹⁵ We note the benefits these organizations offer for cooperation with allies in Chapter 3 and also include them in an overarching recommendation for closer cooperation between DoD and the IC in Chapter 5.

¹³ The United States and Japan have been discussing cooperation on the Japan Quasi-Zenith Satellite System since at least 2011, and Japan is scheduled to launch satellites with U.S. payloads in 2023. See Japanese Ministry of Foreign Affairs, "Joint Announcement on United States-Japan GPS Cooperation," January 13, 2011; and Brian Everstine, "U.S., Partner Space Launches on Track as Importance of International Collaboration Grows," *Air & Space Forces Magazine*, May 12, 2021.

¹⁴ DoD webpages also refer to a "DoD Space Enterprise," including the USSF, USSPACECOM, and the Space Development Agency. However, we include additional organizations with roles on space issues (DoD, "DoD Space Strategy," webpage, undated-b).

¹⁵ See NRO, *Develop, Acquire, Launch, Operate*, company brochure, 2022; and Office of the Director of National Intelligence, "Members of the IC," webpage, undated.

Defining “Allied by Design”

The title of our report, *Allied by Design*, references a phrase that has been repeatedly used by U.S. leaders, including the Commander of U.S. Space Command General Dickinson.¹⁶ Although this phrase has been used by several space leaders, to our knowledge it has not yet been fully defined.

We interpret *allied by design* as encompassing several objectives. First, U.S. cooperation with partners should reflect U.S. and partners’ interests and capabilities. The overall level of integration measured by the integration spectrum that we describe below should reflect the desire and ability of allies to cooperate and that underlying cooperative activities by different DoD organizations reflect the interests at stake. Second, following a concept originally proposed by Brig Gen Kevin Whale, allies should be brought into the U.S. space cooperation spectrum thoughtfully and from the start, rather than at the end, as an afterthought.¹⁷ This observation reflects the inherent challenge of incorporating allies into U.S. programs that may have been developed without involving them. Third, allied cooperation should be considered as part of all relevant organizations’ activities, not only those responsible for international cooperation. In this sense, allied considerations are so central that they should be incorporated into the design of all U.S. space organizations.

Using an Organize, Train, Equip, and Operate Typology to Study U.S. and Allied Willingness, Potential, and Challenges

Because there is no perfect rubric for reviewing a wide range of activities, we focus on the willingness, potential, and challenges for the United States and six allies to work with each other. In assessing U.S. and allied activities, we divide activities based on the following typology, which extends the terms organize, train, equip, and operate to include the practical activities of the relevant organizations:¹⁸

¹⁶ As quoted in a 2022 article, General Dickinson explained, “Our collective ability to deter a conflict from beginning or extending into space relies on our cooperation with allies and partners to develop best practices, standards and norms of behavior for responsible space operations[.] . . . That’s why we . . . work so hard to implement our joint, combined and partnered approach to our mission operations in space. That is why we must be ‘allied by design’” (Sean Carberry, “Over-Classification, Lack of Standards Stymies Allied Space Forces (Updated),” *National Defense*, June 24, 2022). See also a briefing by Deanna Ryals who leads the Partnership office in Space Systems Command (Deanna Ryals, “Allied by Design,” AFCEA luncheon presentation, AFCEA-Los Angeles, August 19, 2021).

¹⁷ Brig Gen Kevin Whale, interview with the authors, October 2021. See also Jamie Morin, “Episode 78: Allies and Partners by Design with General Kevin Whale,” *Space Policy Show*, Aerospace Center for Space Policy and Strategy, December 2, 2021.

¹⁸ Our approach draws on and extends the definitions of these concepts. See Department of Defense Directive (DoDD) 5100.01, *Functions of the Department of Defense and Its Major Components*, U.S. Department of Defense, December 21, 2010, incorporating change 1, September 17, 2020.

- *Organize/policy.* This area refers both to the overall organizational structure and division of responsibility, as well as policy-setting activities within headquarters organizations. The organize/policy role is not limited to policy-focused organizations but also may be carried out by planning or international affairs offices within field commands. We also include formal consultation between allies on a bilateral or multilateral basis (such as in the case of CSpO) within this area.
- *Train/personnel.* This area refers to activities related to training, education, experimentation, and personnel exchange.
- *Equip/acquisition.* This area includes activities related to procuring or acquiring new systems. It also includes foreign military sales, international armaments cooperation, or other international activities related to research, development, prototyping, procurement, and acquisition.
- *Operate.* This area includes all space operations, including Operation Olympic Defender (OOD), the exchange between operations centers, the involvement of allied personnel in U.S. operations centers, shared capabilities, and joint planning.

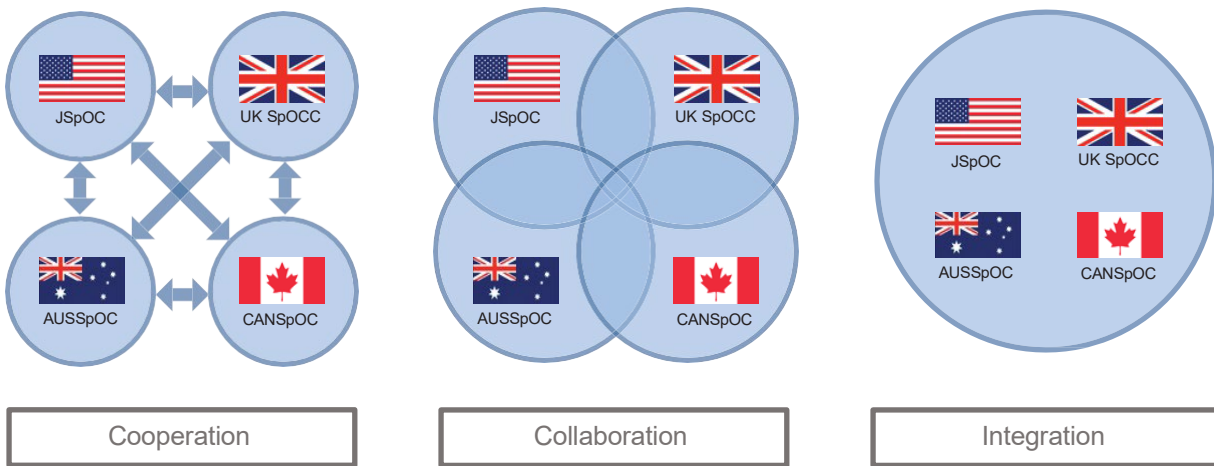
The inclusion of operations is typically considered the purview of the combatant commands (CCMDs) but involves a very close working relationship between the CCMDs and the supporting services. While there is merit to focusing on narrower organizational roles, considering activities within the organize, train, equip, and operate areas is useful to understand challenges facing the entire DoD space enterprise. This approach also avoids the significant disparity in size and capability between U.S. and allied space organizations, which we discuss in detail in Chapter 3.

An Allied Relationship Spectrum

One challenge in achieving greater cooperation with allies is there no consistently used set of terms and definitions that can guide a rigorous discussion about what the United States and allies want to do in term of space cooperation. We reviewed a variety of approaches and descriptions of how the United States works with allies going back ten years from multiple sources. U.S. military doctrine; U.S. Strategic Command (when it was responsible for space operations prior to the reconstitution of USSPACECOM); USSPACECOM; other U.S. space organizations, including SAF/IA, the USSF, and even early CSpO concepts present variations on how to depict relationships or levels of cooperation with allies.¹⁹ Figure 1.1 shows an example from a 2012 CSpO concept paper that includes extensive definitions for each category.

¹⁹ The concept of a spectrum of interoperability or integration has been developed recently in various documents. See, for examples, Army Regulation 34-1, *Interoperability*, Headquarters, Department of the Army, April 9, 2020; and Bryan W. Hallmark, Christopher G. Pernin, Andrea M. Abler, Ryan Haberman, Sale Lilly, Samantha McBirney, Angela O'Mahony, and Erik E. Mueller, *An Analysis of Alternative Approaches to Measuring Multinational Interoperability: Early Development of the Army Interoperability Measurement System (AIMS)*, RAND Corporation, RR-A617-1, 2021.

Figure 1.1. 2012 Conceptual Depiction of Evolution from Cooperation to Integration with Select Allies



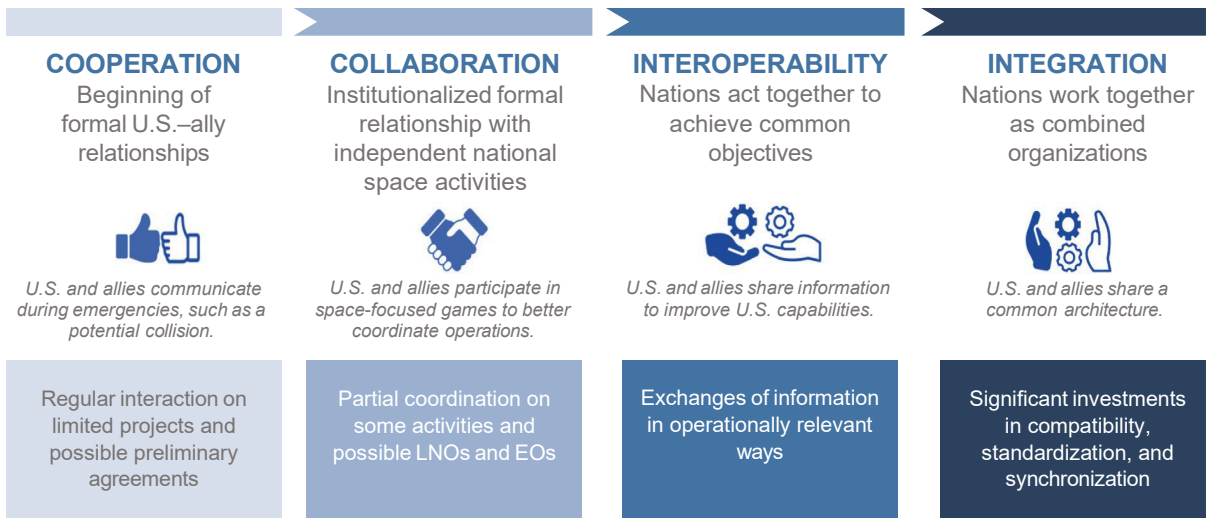
SOURCE: Reproduced from Governments of Australia, Canada, the United Kingdom, and the United States, "Combined Space Operations Concept," version 11, unclassified draft, December 7, 2012, p. 4.

NOTE: AUS = Australia; CAN = Canada; J = Japan; SpOCC = Space Operations Coordination Center; UK = United Kingdom.

To create a common reference, we combined aspects from the various typologies to create an allied relationship spectrum. We conceptualize the level of the relationship between the United States and allies along a spectrum, from limited interactions (e.g., only occasional policy dialogues) to integration between nations (e.g., nations participate in a combined—meaning multinational—military operation or work together on joint acquisitions, or both). Defining this spectrum and the activities associated with particular levels of cooperation helps to clarify what activities the United States may pursue with allies to meet the goals specified in U.S. strategy documents. The concepts depicted in Figure 1.1—cooperation, collaboration, and integration—and articulated in the 2012 document are not wholly different from the viewpoints that we heard during our interviews and discussions, although progress in the past ten years has taught government officials—in all countries—that some goals are more achievable than others. We build on this and other similar analysis to develop our own spectrum of the United States' current and aspirational relationship with allies.²⁰ Figure 1.2 provides an overview of this allied relationship spectrum.

²⁰ One challenge that we encountered in our review is that policy documents, analysis, and public statements use these words both to articulate in generic terms the activities between the United States and allies, while also using them to describe different levels of relationships. For example, the term *cooperate* can be used in a generic sense as any interaction for mutual benefit, but it has also been cited in policy documents as the lowest level of a relationship. The use of these terms to identify categories in the spectrum does not mean that words such as cooperation, collaboration, or integration always carry the same meaning denoted by this spectrum; indeed, these words are often used generically, so we italicize the relationship level that we assessed along this spectrum.

Figure 1.2. Allied Relationship Spectrum for Space Operations



Using previous conceptualizations such as that shown in Figure 1.1 and in other DoD documents, doctrine, and analysis, as well as those mentioned in interviews and discussions conducted during this study, we identified the following four levels of relationships with allies along the allied relationship spectrum:

- *Cooperation.* This is the beginning of formal relationships between the United States and an ally. In cooperation, two countries have had introductory interactions, and they have regular interactions and work together on limited, select space projects or topics. The countries may have some preliminary agreements, such as information- and data-sharing arrangements.
- *Collaboration.* Two nations have an institutionalized, formal relationship, but their national space activities are independent of each other and possibly only partially coordinated. Nations at this level in the space domain are invited to various activities, including select experiments, and activities that are further described in Chapter 2. Nations may also begin to have liaison officers (LNOs) and possibly exchange officers (EOs).²¹
- *Interoperability.* Interoperability is the ability of different organizations to act together to achieve common objectives.²² Interoperability itself can be described on a spectrum—it is

²¹ LNOs represent their home nation's interests while EO's represent the host nation's interests. For more on both, see Chapter 2.

²² Joint doctrine defines interoperability as "the ability to act together coherently, effectively, and efficiently to achieve tactical, operational, and strategic objectives" (Chairman of the Joint Chiefs of Staff Instruction 2700.01G, *Rationalization, Standardization, and Interoperability (RSI) Activities*, Joint Chiefs of Staff, February 11, 2019). The North Atlantic Treaty Organization (NATO) similarly defines *interoperability* as "the ability for Allies to act together coherently, effectively and efficiently to achieve tactical, operational and strategic objectives. Specifically, interoperability enables forces, units and/or systems to operate together, allowing them to communicate and to share common doctrine and procedures, along with each other's infrastructure and bases" (NATO, "Interoperability: Connecting Forces," webpage, February 22, 2022).

not simply a binary state—describing to what extent organizations can work together.²³ In the space domain, we characterize cooperation as reaching the level of interoperability when nations can exchange information in a way that is operationally relevant.²⁴ Interoperability requires information technology (IT) systems that have technical interoperability, as well as the policy, training, and organization to understand how to usefully exchange information.

- *Integration*. Integration is the most advanced level of allied cooperation and signifies that those nations are working together as combined organizations.²⁵ Integration was defined as early as 2012 for the CSpO Initiative as a level that may include “significant investment in manpower, compatible IT infrastructure, standardized training programs, and synchronized capability development. Collaborative processes such as programming, planning and analysis should be part of the regular cycle of interaction and operations.”²⁶ In discussions, some experts described integration as combined command and control (C2) between nations; this level of activity, with the exception of missile warning, has not yet been achieved in allied space operations.²⁷

In conceptualizing integration, various planning and policy documents over the past decade have used a variety of key terms to describe U.S.-allied interactions on space operations, activities, and investments, such as cooperation, collaboration, interoperability, and integration,

²³ Tolks, Diallo, and Turnitsa (2007) describes levels of interoperability in the context of information systems from technical to syntactic, semantic, pragmatic, dynamic, and conceptual interoperability (Andreas Tolks, Saikou Y. Diallo, and Charles D. Turnitsa, “Applying the Levels of Conceptual Interoperability Model in Support of Integrability, Interoperability, and Composability for System-of-Systems Engineering,” *Journal of Systems, Cybernetics, and Informatics*, Vol. 5, No. 5, 2007. Army Regulation 34-1 (2020, pp. 66–67) also specifies four levels of interoperability, the top three of which align with the categories that we identify on our allied relationship spectrum: (1) not interoperate (I-0), (2) deconflicted (I-1), (3) compatible (I-2), and (4) integrated (I-3). *Integrated* is defined as “U.S. Army and [unified action partners] are able to integrate upon arrival in theater. Interoperability is network-enabled to provide the full [range of military operations] capability. [Unified action partners] are able to routinely establish networks and operate effectively with or as part of U.S. Army formations.” The term *integrate* is not directly defined in this regulation. See also Hallmark et al., 2021.

²⁴ This approach is captured in the CSpO Vision 2031 document: “CSpO Participants seek to enable combined space operations by sharing information across multiple classification levels—from the strategic to the operational and tactical levels, and at a pace that is operationally relevant—through real-time synchronized networked operations centers operated by a workforce with common training” (Governments of the United States, Australia, Canada, France, Germany, New Zealand, and the United Kingdom, 2022).

²⁵ In U.S. doctrine, *integration* refers to the “arrangement of military forces and their actions to create a force that operates by engaging as a whole” (Joint Publication [JP] 1, *Doctrine for the Armed Forces of the United States*, Joint Chiefs of Staff, March 25, 2013, incorporating change 1, July 12, 2017, p. GL-8). JP 1 uses “integrate” in several contexts generally within the context of combining different organizations or functions together to work in concert, including different partner nations and other government departments, elements of national power, and joint capabilities (JP 1, 2017, pp. I-14-20, II-1).

²⁶ Combined Force Space Component Command (CFSCC), “Commercial Integration Cell Fact Sheet,” Vandenberg Space Force Base, 2021.

²⁷ U.S. and allied officials, interviews with the authors, September 2021, March 2022, April 2022; U.S. official, email exchange with the authors, January 2023.

but they have often failed to define those terms or use them in a consistent way.²⁸ This use of these terms overlaps inconsistently with the terminology of *security cooperation*, which is formally defined to include all activities with foreign partners.²⁹ However, security cooperation activities traditionally focus on programs to build partners' capacity and often only indirectly contribute to integration when those activities are focused on states with less capability and willingness to work in a collaborative fashion with the DoD space enterprise.³⁰

In defining these terms within the allied relationship spectrum, we do not mean to imply that every use of these terms necessarily conveys the levels of relationship defined here: *Cooperation* and *collaboration* are often used generically by the United States and allies to describe the interaction between two countries, and at times, we use those terms in that generic manner as well. Where we use these terms to convey the actual relationship level, as we do in Chapter 3, we italicize these terms or otherwise highlight such use of the allied relationship spectrum.

Our analysis in this study revealed that the highest level of *integration* is not necessarily desirable by either the United States or other countries. The risks associated with integration are addressed and examined throughout this report, and they include risks associated with the increased sharing of information, capabilities, and facilities. However, a country's location on the allied relationship spectrum offers a helpful vocabulary to understanding a partner's degree of shared activities with the United States and allows officials to have a common language when assessing their high-level goals for the desired relationship with that ally. This framework offers a tool for officials in all countries, and we examine its implications throughout this report.

Considerations For and Against the Allied by Design Objective

U.S. policy documents, including the NDS and the DSS, describe a need for greater allied cooperation to meet U.S. policy objectives.³¹ The purpose of this study was to examine opportunities and hurdles for achieving this goal, not to examine the foundation of whether allied

²⁸ The more recent CSPO Vision 2031 document mission is to “[g]enerate and improve **cooperation, coordination, and interoperability** opportunities to sustain freedom of action in space, optimise resources, enhance mission assurance and resilience, and prevent conflict” (emphasis added; Governments of the United States, Australia, Canada, France, Germany, New Zealand, and the United Kingdom, 2022).

²⁹ DoD defines security cooperation as follows: “Security cooperation (SC) encompasses all Department of Defense (DOD) interactions, programs, and activities with foreign security forces (FSF) and their institutions to build relationships that help promote US interests; enable partner nations (PNs) to provide the US access to territory, infrastructure, information, and resources; and/or to build and apply their capacity and capabilities consistent with US defense objectives. It includes, but is not limited to, military engagements with foreign defense and security establishments (including those governmental organizations that primarily perform disaster or emergency response functions), DOD-administered security assistance (SA) programs, combined exercises, international armaments cooperation, and information sharing and collaboration” (JP 3-20, *Security Cooperation*, Joint Chiefs of Staff, May 23, 2017).

³⁰ See Office of the Secretary of Defense, *Fiscal Year (FY) 2022 President's Budget: Justification for Security Cooperation Program and Activity Funding*, U.S. Department of Defense, May 2021.

³¹ DoD, 2022; DoD, 2020.

cooperation, partnership, or so-called integration is desirable for U.S. interests. Some officials raised concerns that some types of cooperation with some allies in the space domain may be contrary to U.S. defense and security interests because the risks might exceed the benefits. Some question openly or imply that the United States really needs allied capabilities to meet the current challenge and that hinderances to closer cooperation between the United States and allies were “features rather than bugs,” because of the inherent risks posed by closer interdependence.³² Indeed, actual dependence on allied systems could undermine U.S. freedom of action because allies have different interests and sovereign decisionmaking that may not always align with U.S. interests, even for the closest allies. Some argue that greater sharing of U.S. classified information, which greater cooperation implies, could risk compromising sensitive U.S. information and undermine the United States’ competitive advantage, including the strength of the U.S. industrial base.

Although the primary purpose of our research was not to assess the rationale for greater cooperation between the United States and allies, it did reinforce four rationales for greater cooperation. Overall, these are compelling arguments that the benefits to greater cooperation exceed the costs and risks, although case-by-case decisions are necessary for specific allies and levels of cooperation. First, if allies can work in concert with the United States, the United States and allies can collectively generate greater capabilities to meet threats. Closer cooperation also avoids unnecessary duplication. Rather than separately pursuing capabilities, the United States and allies can more efficiently coordinate on capabilities that collectively meet the threat.³³ Second, greater cooperation with allies at various levels increases resilience. For example, capable allies may have independent constellations and ground stations that operate when U.S. systems are degraded or destroyed. Although total dependence on allied systems is likely not appropriate, a converse total rejection of the benefits of taking advantage of these systems through greater cooperation and interoperability also seems unwise. Third, the interconnection between U.S. and allied space capabilities can strengthen deterrence because adversaries would need to also attack allied systems if they attack those of the United States.³⁴ Finally, our interviews with allied officials highlighted the immense value that different perspectives can bring to strategic thinking.³⁵ Engaging with officials from the most-capable space partners, such as those of France and the United Kingdom, force U.S. consideration of different options that enriches the U.S. discourse and avoids group think.

³² U.S. officials, discussion with the authors, March 2022.

³³ For example, the 2017 International Space Cooperation Strategy (ISCS) notes how allied and partner capabilities can “complement and augment U.S. capabilities and contribute to coalition space operations” (DoD, *Department of Defense International Space Cooperation Strategy*, January 2017, p. 2).

³⁴ For example, the 2017 ISCS identifies the goal of “[enabling] the United States and its allies and partners to deter attacks on sovereign and shared space capabilities by demonstrating a combined approach to space security” (DoD, 2017, pp. 1–2).

³⁵ French and UK officials, discussions with the authors, Paris and London, March 2022.

So long as there are hurdles and limits on the ability of the DoD space enterprise to cooperate, collaborate, or integrate with allies, these expected benefits cannot be fully realized. As we explore in subsequent chapters, the “say-do gap” between U.S. statements and the reality of cooperation frustrates allies and undermines the efficiency of cooperation. This is not to say that all forms of cooperation or integration are beneficial and desirable; U.S. organizations should always assess the relative risks and benefits of any agreement or decision. But given the importance of allied partnerships to U.S. policy and the benefits that these partnerships can provide for achieving U.S. objectives, it seems clear that some level of cooperation with select allies is in the U.S. interest. We therefore sought to identify ways to improve cooperation with select allies in the space domain.

Methodology

Our research relied on a variety of sources and methods. First, we reviewed official documents available to the study team. Publicly released policy documents, public statements by senior leaders, and official DoD and service regulations were particularly useful, in part because we wished to produce an unclassified report, which would maximize its dissemination within the DoD space enterprise and with allies. Second, we also reviewed relevant articles and reports by media and analytic organizations. Third, we conducted over 144 interviews with more than 150 DoD and allied officials and select analysts, both through virtual meetings and through a dozen site visits. Site visits included Petersen, Vandenberg, and Schriever Space Force Bases (SFBs), meetings with senior leaders at the Pentagon, and visits to ministries of defense and space organizations in Canada, France, Germany, and the United Kingdom. All our interviews were conducted on a not-for-attribution basis in keeping with human subjects protection standards. In some cases, we identify interviews with senior officials (meaning general officers or their civilian equivalents) who were particularly informative of allied policies. Where possible, we also provide publicly available sources that corroborate content from interviews. Our goal was to identify recommendations for the DoD space enterprise, while considering the goals and existing procedure for allied cooperation from several perspectives. Our ultimate recommendations synthesized the findings presented in various chapters.

In the next chapter, Chapter 2, we assess U.S. goals, organizations, and policies focused on cooperation and integration with allies. DoD has undergone significant organizational reform since the formation of the USSF and reconstitution of USSPACECOM in 2019. Providing a baseline of current policy and structure is important to understanding the reasons for challenges in cooperating with allies.

We also gathered the perspectives of the six allies identified earlier, which we present in Chapter 3. The perspectives of allied personnel are particularly useful for understanding what capabilities allies could bring to the table and the extent to which they are willing to cooperate

with the United States. Allies also offer context on the challenges they perceive in working with the United States, although U.S. policy should not necessarily be driven by allied opinions alone.

Chapter 4 presents lessons about cooperation from domains other than space. In consultation with the sponsor, we sought to identify experiences that would help to address challenges currently facing the DoD space enterprise for closer cooperation with allies and transferable best practices from cooperation in other areas. The development of U.S. nuclear cooperation with the United Kingdom and the North Atlantic Treaty Organization (NATO) in the 1950s highlights the challenges and possible best practices for sharing classified, strategically important military information with close allies. The experience of U.S. Special Operations Command (USSOCOM) in establishing the J3-International (J3-I), the largest group of international special operations forces (SOF) outside NATO,³⁶ shows the possibilities, and challenges, of establishing a multinational operational command inside of a U.S. headquarters. We also explore how the IC has closely collaborated with allies in the past and note how DoD partnership with the IC can leverage differing authorities and practices of the two organizations.

Chapter 5 summarizes key findings and recommendations from the previous chapters. It provides seven overarching findings from our analysis.

³⁶ Barry Loo, “USSOCOM’s J3-International: A Model Strengthening Relationships Among Global SOF Partner Nations,” U.S. Special Operations Command, November 15, 2017.

Chapter 2. DoD Space Enterprise Approach to Integrating Allies

In this chapter, we review the DoD space enterprise, with an aim to understand U.S. goals, organizations, and policies focused on cooperation and integration with allies. We seek to identify challenges that might impinge on allied integration. One such challenge is that multiple U.S. organizations have been created within the past few years and are still in the process of developing procedures for their activities and coordination, especially with regard to acquisition policy. The result is that DoD engagement with key allies is often incoherent because different organizations pursue different priorities.

The chapter is organized into four sections: organization and policy; personnel and training; research, development, and acquisition; and operations. These issues draw on our review of unclassified U.S. policy statements and other guiding documents, interviews with officials from various DoD organizations, attendance and active participation in two USSPACECOM-hosted space cooperation planning workshops, site visits, previous RAND Corporation research, and other existing analysis.

DoD Space Enterprise Organization and Space Ally Coordination Policy

Organizational Structure and Associated Policy Documents

The organizational structure of the DoD space enterprise provides important context for the policies and activities of the different organizations because, in many cases, detailed roles and responsibilities are still being formalized.³⁷ The material in this section reflects the organizational structure in place at the time this research was completed in 2022. However, on December 6, 2023, the USSF established U.S. Space Forces–Space (S4S) as the service component to USSPACECOM (shown in Figure 2.1).³⁸ Recognizing that the creation of multiple organizations with responsibilities for space has created questions about roles and responsibilities, we devote this section to describing the formal chain of command from the Secretary of Defense downward, drawing on available military directives and regulations to

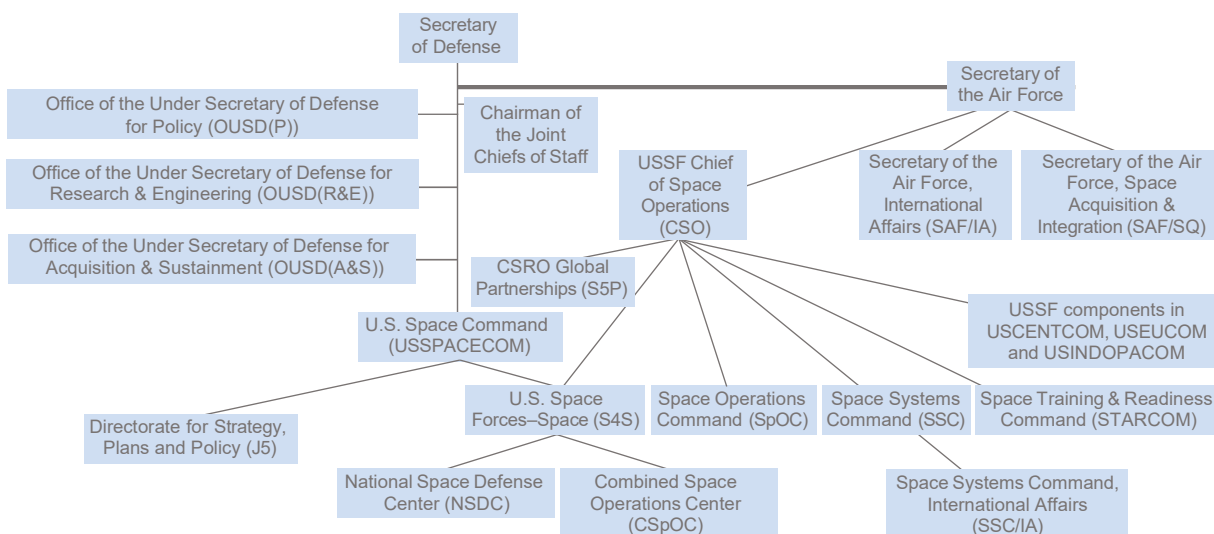
³⁷ At the highest level of national security decisionmaking, the National Space Council (NSpC) and the National Security Council (NSC) synchronize the activities of federal departments and agencies and advise the President in setting U.S. policy for space. The NSpC and NSC include representatives from the major relevant departments and agencies, including the Departments of Defense and State. DoDD 5100.01 states, “All functions in the Department of Defense are performed under the authority, direction, and control of the Secretary of Defense” (DoDD 5100.01, 2020, p. 2).

³⁸ This change resulted in other organizational changes, including the deactivation of the Combined Force Space Component Command (CFSCC) and the Joint Task Force Space Defense (JTF-SD) (Vandenberg SFB, “Space Forces–Space,” fact sheet, December 12, 2023).

clarify roles and responsibilities where possible. Although some of this information may be familiar to government audiences, we attempt to systematically document it to better understand and address the challenge stemming from different organizations often having varying priorities.

While reviewing the organizational structure, we also trace these organizations’ policy statements on space with several purposes in mind. First, we seek to document the language used by DoD in articulating the desire for cooperation with allies to show how there may be a gap between this aspiration and the reality of cooperation with allies. Second, we explore the alignment, duplication, or gaps between relevant DoD organizations. Part of the challenge of coherence comes from multiple organizations expressing unclear or different analyses of the desired activities, roles, and responsibilities of U.S. organizations. While each of these strategies includes statements that cooperation and even integration with allies is a priority, they have slight differences in prioritization or approach. To better illustrate how strategy articulation is linked to organizations’ roles, we describe different organizations’ policy documents after describing their role—or, for some organizations for which available unclassified statements are scarce, we include discussion of policy as part of our description of their roles and responsibilities.

Figure 2.1. Simplified Organizational Chart of the DoD Space Enterprise



NOTE: This is a simplified chart: Not all organizations or command relationships are shown. CSRO = Chief Strategy and Resourcing Officer; USCENTCOM = U.S. Central Command; USEUCOM = U.S. European Command; USINDOPACOM = U.S. Indo-Pacific Command.

Secretary of Defense, Office of the Secretary of Defense, and the Chairman of the Joint Chiefs of Staff

Within DoD, the Secretary of Defense exercises ultimate authority and direction of all subordinate organizations.³⁹ The Secretary of Defense is supported by the OSD, which includes several organizations with responsibilities on working with allies on space issues. The Office of the Under Secretary of Defense for Policy (OUSD(P)) is formally responsible for “[i]ntegrating and overseeing defense plans and programs undertaken with foreign governments, their military establishments, and international organizations.”⁴⁰ These matters are typically handled by the Assistant Secretary of Defense (ASD) for Space Policy the “senior official responsible for the overall supervision of DoD policy for space warfighting” and “international engagement on space policy and strategy.”⁴¹ DoD created the ASD for Space position on October 29, 2020, after it was mandated by the National Defense Authorization Act (NDAA) of 2019. Previously, there was only a Deputy Assistant Secretary for Space Policy position, and as of the time of writing, the ASD for Space Policy is also responsible for cyber and nuclear policy.⁴² The staffing within the Deputy Assistant Secretary of Defense (DASD)-level office for space policy is modest but has grown slightly in recent years. For example, the unit within the DASD office for space policy focused on allied engagement had only two personnel in 2017 and has since grown to six personnel.⁴³ Other key offices within OSD involved in cooperation with allies on space issues include the Office of the Under Secretary of Defense for Acquisition and Sustainment, as well as the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)).⁴⁴

Policy Statements from the National Security Council and DoD

At least five relevant strategy documents have been issued at the DoD level, all of which reference the concept of integrating activities with allies to address shared threats:

³⁹ The Secretary of Defense’s principal military advisor is the Chairman of the Joint Chiefs of Staff, who, among other roles, transmits orders to the CCMDs and leads the Joint Staff (DoDD 5100.01, 2020).

⁴⁰ DoDD 3100.10, *Space Policy*, U.S. Department of Defense, August 30, 2022, p. 9.

⁴¹ DoD, “Assistant Secretary of Defense for Space Policy,” webpage, undated-a.

⁴² DoD, undated-a; Under Secretary of Defense for Policy, “Deputy Assistant Secretary of Defense for Space Policy,” webpage, undated.

⁴³ Five years ago, the OSD Space Policy personnel consisted of two people: one of whom was dedicated to the office only part-time (U.S. official, interview with the authors, January 2022).

⁴⁴ OUSD(R&E), for example, is responsible for international collaboration on issues such as prototyping and experimentation, including armaments cooperation, where the United States and allies collectively develop capabilities or technology for their mutual benefit (DoDD 5137.02, *Under Secretary of Defense for Research and Engineering (USD(R&E))*, U.S. Department of Defense, July 15, 2020; U.S. officials, virtual interview with the authors, January 2022). See also DoDD 5135.02, *Under Secretary of Defense for Acquisition and Sustainment (USD(A&S))*, U.S. Department of Defense, July 15, 2020.

- *U.S. Space Priorities Framework*. This most recent space policy statement from the White House was published in December 2021. It states the goal that “[s]pace activities broaden and deepen our international partnerships.”⁴⁵
- *NDS*. The 2022 NDS is classified as of this writing, but a March 2022 public fact sheet provides some insight. The NDS identifies overarching concepts for how DoD will pursue its mission, which apply to all areas, including space. Collaboration with allies is at the center of this document, which emphasizes “incorporat[ing] ally and partner perspectives, competencies, and advantages at every stage of defense planning” and an approach of “integrated deterrence,” which involves “working seamlessly across . . . our unmatched network of Alliances and partnerships.”⁴⁶
- *DSS*. The DSS, published in June 2020, provides ten-year guidance for DoD.⁴⁷ The strategy highlights threats from China and Russia, identifies the opportunities and risks of increases in commercial and international space activities, and emphasizes that allies and partners “present novel opportunities to increase defense collaboration and cooperation.” Several LOEs and specific efforts focus on allied integration.⁴⁸
- *DoD Directive (DoDD) 3100.01, Space Policy*. In August 2022, DoD released a new Space Policy directive approved by Deputy Secretary of Defense Kathleen Hicks.⁴⁹ The policy in the directive on integrating with allies echoes language and priorities in the DSS, including “[i]ntegrating . . . allies and partners into plans, operations, training, exercises, engagements, and intelligence activities” and “[e]xpanding space-related cooperative research, development, and acquisition.”⁵⁰ It also recognizes the need to update “security classification and foreign disclosure policies,” and “integrating, as appropriate, allies and partners of the United States that are actively engaging in space security for defense and intelligence activities into DoD space-related activities.”⁵¹ The directive further specifies roles for key organizations, specifying that OUSD(P) is responsible for “formulating DoD policy and guidance on . . . space cooperation with foreign defense departments, ministries, and governments.”⁵²
- *International Space Cooperation Strategy (ISCS)*. The ISCS, released in 2017, “establishes the DoD’s approach for invigorating cooperation and collaboration with

⁴⁵ White House, *United States Space Priorities Framework*, December 2021, p. 4.

⁴⁶ DoD, 2022, p. 2.

⁴⁷ DoD, 2020, p. 2.

⁴⁸ In particular, LOE 2 is to “[i]ntegrate military spacepower into national, joint, and combined operations,” and includes the objective to “[i]ntegrate allies and partners into plans, operations, exercises, engagements, and intelligence activities.” LOE 3 is to “[s]hape the strategic environment,” and includes the objectives to “[c]oordinate space messaging” and “[p]romote space behavior standards and norms favorable to U.S. interests.” LOE 4 is to “[c]ooperate with allies, partners, industry, and other U.S. government departments and agencies,” and includes the objectives to “[a]lign space policy with allies and partners” and “[e]xpand cooperative research, development, and acquisitions with allies and partners” (DoD, 2020, pp. 3–9).

⁴⁹ DoDD 3100.10 (2022) updates and supersedes a previous version from 2012.

⁵⁰ DoDD 3100.10, 2022, p. 4.

⁵¹ DoDD 3100.10, 2022, p. 6.

⁵² DoDD 3100.10, 2022, p. 10.

trusted allies and partners.”⁵³ Even five years after its publication, the document highlights many current priorities, especially the goals of integration with allies referenced in Chapter 1. It articulates the desirability of working with allies and, provided a combined approach deters attacks, that allies’ capabilities will complement U.S. capabilities to help assure space missions and that interoperability and aligned policy will help deterrence, deescalation, and victory if deterrence fails.⁵⁴ Specified “strategic goals” include improving or expanding cooperation on coalition space operations, scientific and technical cooperation, space mission assurance, partners’ access to information and technology, training and education, wargaming, and “personnel interchange—including liaison, exchange, and combined manning.”⁵⁵

U.S. Space Command

Operational control of U.S. forces and capabilities are given to the CCMDs; USSPACECOM, reconstituted in August 2019, has responsibility for “the area surrounding the Earth at altitudes equal to, or greater than, 100 kilometers (54 nautical miles) above mean sea level.”⁵⁶ This means that the USSPACECOM area of responsibility (AOR) sits above the AORs of every other geographic combatant command (GCC).⁵⁷ The reconstitution of a CCMD dedicated to space is significant because it has dramatically increased the resources available for planning and operating space capabilities and engaging with allies. Within USSPACECOM headquarters, the responsibilities for coordination with allies on policy, strategy, and planning falls under the J5 Directorate for Strategy, Plans, and Policy. The J5 Directorate includes staff of more than 40 personnel divided between two divisions: a strategic engagement division and a multinational space collaboration division.⁵⁸ Moreover, any space-related security cooperation

⁵³ For example, the ISCS states, “Cooperation cannot be left as an afterthought in planning U.S. national security space activities, but must instead be integrated from the beginning into every aspect of space planning. Each scenario must be assessed on its own merits and not assumed to be ‘U.S. only’; allied and partner capabilities must be considered and integrated where and when feasible and beneficial” (DoD, 2017, pp. 1, 3).

⁵⁴ In particular, the ISCS presents how its implementation will (1) “[e]nable the United States and its allies and partners to deter attacks on sovereign and shared space capabilities by demonstrating a combined approach to space security”; (2) “[a]ssist allies and partners in developing, acquiring, and employing their own space capabilities that complement and augment U.S. capabilities and contribute to coalition space operations, thus ensuring national security-related space missions in partnership with U.S. forces”; and (3) “[e]nable the United States and its allies and partners to enhance interoperability and develop a common policy, strategy, and operational framework for the use of space in dissuading and deterring adversaries, to de-escalate crises, and to ensure coalition success should deterrence fail” (DoD, 2017, pp. 1–2).

⁵⁵ The ISCS instructs organizations to “integrate allies and partners into plans as appropriate,” as well as expand exercises, training, and C2. The document also discusses building partner and ally capabilities and interoperability through acquisitions, development, and technology transfers (DoD, 2017, pp. 4–5).

⁵⁶ JP 3-14, *Space Operations*, Joint Chiefs of Staff, April 10, 2018, incorporating change 1, October 26, 2020, p. vii.

⁵⁷ In this report, we will refer to the GCCs located below 100 kilometers as the *terrestrial* CCMDs. Although USSPACECOM has command of all systems in space, the terrestrial CCMDs have equities in space because they are the recipients of the weather, ISR, communications, navigation, timing, and missile warning services provided by space-based systems.

⁵⁸ USSPACECOM personnel, interviews with the authors, various dates between December 2021 and June 2022.

activities require coordination with the terrestrial CCMD responsible for the relevant partner nation relationship, and USSPACECOM has personnel embedded in various GCCs' joint integrated space teams.⁵⁹

At the time of the research for this report, there were two operational commands to protect and defend the mission within USSPACECOM. With the standup of S4S in December 2023, both of these commands were deactivated, and S4S took over the operations centers that formerly reported to these deactivated commands.⁶⁰ The first operational command was the Combined Forces Space Component Command (CFSCC), headquartered at Vandenberg SFB, California, which had the mission to “plan, integrate, conduct, and assess global space operations in order to deliver combat relevant space capabilities to Combatant Commanders, Coalition partners, the Joint Force, and the Nation.”⁶¹ CFSCC directed one of two operational centers under USSPACECOM, the Combined Space Operations Center (CSpOC), which now reports to S4S. The CSpOC is responsible for “coordinating, planning, integrating, synchronizing, and executing” around-the-clock space operations in support of the terrestrial CCMDs, as well as close coordination and integration with the allied space operational centers of Australia, Canada, Germany, New Zealand, and the United Kingdom.⁶²

The second deactivated component, the Joint Task Force-Space Defense (JTF-SD) was headquartered at Schriever SFB, Colorado. Its mission was, “in unified action with mission partners, to deter aggression, defend capabilities and defeat adversaries throughout the continuum of conflict in order to maintain space superiority in the U.S. Space Command area of responsibility.”⁶³ JTF-SD oversaw the second operational center, the National Space Defense Center (NSDC), which has accountability for the around-the-clock protect-and-defend mission. The NSDC operates in partnership with the NRO and focuses on integration with the IC and coordination with civil and commercial partners.⁶⁴

⁵⁹ USSPACECOM personnel, interviews with the authors, various dates between December 2021 and June 2022; DoDD 5132.03, *DoD Policy and Responsibilities Relating to Security Cooperation*, U.S. Department of Defense, December 29, 2016.

⁶⁰ USSPACECOM also has three operational centers for the Missile Warning and Missile Defense mission and an operations planning center focused on providing navigation warfare services to the terrestrial CCMDs (CFSCC, “Missile Warning Center Fact Sheet,” Vandenberg Space Force Base, August 4, 2020c; Missile Defense Agency, “Supporting Efforts: Missile Defense Integration & Operations Center,” webpage, undated; CFSCC, “Joint Overhead Persistent-Infrared Center (JOPC) Fact Sheet,” Vandenberg Space Force Base, August 2020b).

⁶¹ Vandenberg SFB, “Combined Force Space Component Command,” fact sheet, October 14, 2021.

⁶² CFSCC, “Combined Space Operations Center/Space Delta 5 Fact Sheet,” Vandenberg Space Force Base, July 2020a. The CSpOC also hosts a commercial integration cell representative, which provides cooperation opportunities with commercial partners (CFSCC, 2021).

⁶³ JTF-SD, “Joint Task Force-Space Defense,” fact sheet, May 13, 2022a.

⁶⁴ JTF-SD, “National Space Defense Center,” fact sheet, June 22, 2022b.

USSPACECOM Policy Statements

USSPACECOM has not issued a public strategy, but unclassified statements from its official documents reiterate the priority of improving cooperation with allies. The USSPACECOM Campaign Plan 7000-20 echo statements in the ISCS about the value of allied contributions for “improving space mission assurance” and how partnerships “complicate adversary decision making and deter them from conducting hostile activities in space.”⁶⁵ The plan also states that “space partnering will remain a central theme in USSPACECOM operations, plans, policy, and strategy” and presents a “partnership continuum,” the “pinnacle” of which is joining OOD.⁶⁶ In recent plans, USSPACECOM continues to emphasize working with allies. In a planning document related to a new USSPACECOM campaign plan, USSPACECOM has designated “strengthen and expand collective spacepower with allies and partners” as campaign objective 1.⁶⁷ USSPACECOM planning workshops in December 2021 and June 2022 focused on security cooperation similarly emphasized developing security cooperation activities to meet existing objectives.⁶⁸

Department of the Air Force

Military departments report to the Secretary of Defense and are responsible for organizing, training, and equipping forces for combatant commanders.⁶⁹ The most noteworthy department for space activities is the Department of the Air Force (DAF), which oversees the USSF, described below, and the U.S. Air Force (USAF).

Under the Office of the SAF, the DAF has maintained responsibility for aspects of international engagement through the SAF office for International Affairs (SAF/IA). SAF/IA is led by a Deputy Under Secretary of the Air Force and its current mission is to “[a]dvance US national security by cultivating deep, enduring relationships through security cooperation with our Allies and Partners in support of US Air Force and US Space Force global operations.”⁷⁰ The office has had responsibility for both air and space allied activities since before the creation of the USSF and continues to manage international agreements and EOs for both the USSF and the USAF.

⁶⁵ Unclassified excerpts from Headquarters, U.S. Space Command, *United States Space Command Campaign Plan 7000-20*, 2020, Not available to the general public.

⁶⁶ Unclassified excerpts from Headquarters, U.S. Space Command, 2020.

⁶⁷ Referenced content is unclassified. Strategic Partnerships Division, “Security Cooperation Resource Board: Welcome Brief,” U.S. Space Command, June 13, 2022, Not available to the general public.

⁶⁸ Strategic Partnerships Division, “Security Cooperation: Path to Full Operational Capacity,” briefing, Global Space Security Cooperation Forum, U.S. Space Command, December 3, 2021, Not available to the general public; USSPACECOM, Security Cooperation Resourcing Board briefings, June 13–16, 2022c, Not available to the general public.

⁶⁹ DoDD 5100.01, 2020, p. 30.

⁷⁰ SAF/IA, “About Us,” webpage, undated-a.

SAF/IA includes a space division (SAF/IARS), led by a colonel, within its regional affairs directorate, although there is no separate air division.⁷¹ A SAF/IARS mission briefing claims that it is the “Integrator and Synchronizer for Space Security Cooperation across DAF (and often DoD/IC)” and that “IARS is the only organization developing and negotiating space International Armaments Cooperation agreements for the DAF/USSF.”⁷² Despite having such an expansive mission, which also requires coordination with a wide range of other organizations, SAF/IARS had only ten personnel as of December 2021 and was forecast to have just 17 by the end of fiscal year (FY) 2022.⁷³

The Space Acquisition and Integration (SAF/SQ) office plays an important role in managing space acquisitions, as discussed later. SAF/SQ leads space acquisitions programs across the USAF and DoD, and it leads efforts to synchronize acquisition efforts across joint, interagency, civil, and commercial space capabilities. When SAF/SQ was created in late 2021, responsibilities related to international affairs were shifted to SAF/IA.⁷⁴

Office of the Secretary of the Air Force Space Policy Statements

Since at least February 2021, SAF/IA’s has publicly identified space security cooperation as one of its strategic LOEs.⁷⁵ Prior to the establishment of the USSF in 2019 (discussed below), it is not clear how much of a priority cooperation with allies on space was for SAF/IA. SAF/IA does not have a public strategy for space, and its official policy statement on cooperation priorities appear to be primarily within the *International Engagement Plan*, which is “the centerpiece of the DAF’s Security Cooperation (SC) strategy.”⁷⁶ The *International Engagement Plan* states that the DAF will “deliberately engage allies and partners to increase defense collaboration and cooperation, thereby positioning [the DAF] to achieve a secure, stable, and accessible space domain. [The DAF] will work to develop a suite of capabilities that can deter and help assure the security and support of our allies and partners.”⁷⁷

⁷¹ “The Space Division creates, advocates for, and facilitates Department of the Air Force and US Space Force space security cooperation policies and programs that advance US national security objectives through [political-military] affairs, cooperative research and development, acquisition, and foreign military sales. It enables access to information, systems, and education and training that delivers enhanced operational capabilities to allies, partners, and coalition warfighters” (SAF/IA, “Regional Affairs,” webpage, undated-b).

⁷² SAF/IARS, “International Affairs Space Division,” briefing provided to the authors, December 1, 2021.

⁷³ SAF/IARS, 2021.

⁷⁴ SAF/SQ, “Welcome to SAF/SQ: The Office of the Assistant Secretary of the Air Force for Space Acquisition and Integration,” webpage, undated; Greg Hadley, “Space Force Shakes Up Acquisition Again in Effort to Achieve Efficiencies,” *Air & Space Forces Magazine*, November 5, 2021; Sandra Erwin, “Space Force Looking for ‘Unity’ in Acquisitions Despite a Medley of Agencies,” *Space News*, September 21, 2021c.

⁷⁵ SAF/IA, “SAF/IA Strategic Lines of Effort,” February 2021.

⁷⁶ Unclassified excerpt from SAF/IA, *International Engagement Plan*, 3rd ed., Department of the Air Force, May 2022, Not available to the general public.

⁷⁷ Unclassified excerpt from SAF/IA, 2022.

USSF

Subordinate to the DAF is the USSF—the most important of the services for space in the current DoD service structure. Congress established the USSF within the DAF in December 2019 with the enactment of the FY 2020 NDAA. The FY 2020 NDAA assigned the USSF with the following duties: “(1) protect the interests of the United States in space; (2) deter aggression in, from, and to space; and (3) conduct space operations . . . this includes both combat and space-focused combat support functions intended to enable the United States to promptly conduct offensive and defensive space operations to protect U.S. and allied interests in all warfighting domains.”⁷⁸ The 2020 NDAA effectively transferred the Air Force Space Command, which was part of the USAF, to the new service and established additional guidance on which units to transfer from the other services. The USSF began with 9,979 personnel (both military and civilian) in FY 2021 and will have an estimated end strength of 16,000 military and civilian personnel by FY 2025, making it the smallest of the independent services.⁷⁹ The USSF relies on the USAF for approximately 75 percent of its enabling functions, including “logistics, base operating support, civilian personnel management, IT support, and financial management.”⁸⁰

While small compared with other U.S. military services, the creation of a separate space force has elevated the stature of space activities within the United States. Both the USSF headquarters-level staff and the field commands focus on space issues, and given the importance of international contributions to space activities, they have international offices focused on allies and partners. For example, the USSF has a staff element dedicated to allied engagement called the Global Partnerships—referred to as S5P—directed by an O-6 (colonel) that has a planned strength of approximately 20 personnel, although many of the billets are currently vacant.⁸¹

The first field command is the SpOC, which was created in October 2020 when the SAF redesignated the former Air Force Space Command staff organization as the Headquarters, SpOC. This redesignation aligned the field command responsibility for organizing, training, equipping, and presenting USSF forces to the staff and commander responsible for executing this mission.⁸² SpOC has an international affairs office, and the command’s sponsorship of this study highlights its interest in effective international engagement with key allies.

A second field command, Space Systems Command (SSC), headquartered at Los Angeles Air Force Base (AFB), California, oversees the development, acquisition, launch, and logistics for USSF space assets. SSC/IA executes the SSC’s “allied by design” strategy, which aims to

⁷⁸ Kelley M. Saylor, *Defense Primer: The United States Space Force*, Congressional Research Service, IF11495, November 16, 2022.

⁷⁹ Saylor, 2022.

⁸⁰ Saylor, 2022.

⁸¹ U.S. officials, interviews with the authors, December–April 2022.

⁸² SpOC, “About Space Operations Command,” fact sheet, undated.

integrate allied space assets with the U.S. space enterprise.⁸³ SSC, International Affairs (SSC/IA) has a staff of approximately 55 personnel, including contractors and two UK LNOs.⁸⁴ For space acquisitions, in addition to SSC, the USSF has a Space Rapid Capabilities Office, and the U.S. Space Development Agency is slated to move to the USSF in FY 2023.⁸⁵

Despite the SSC's role in overseeing space acquisitions for the USSF, the command, by law, cannot approve funding. Instead, as is the case across the DAF, funding decisions are ultimately made by the service acquisition executive and a series of civilian-led program executive offices (PEOs) within SAF/SQ.⁸⁶ The SSC commander acts as an advisor to the Assistant Secretary of the Air Force for Space Acquisition and Integration, who leads SAF/SQ, who then, in turn, has sole authority to approve spending plans for USSF programs. Between the dual roles of SSC commander and space system-of-systems integrator, the USSF Space Systems Integration Office (SSIO) develops the five-year program objective memorandum, syncing the USSF budget planning with program funding through SAF/SQ. The SSIO also acts as the secretariat for the Program Integration Council (PIC), also chaired by the SSC commander and filled out by representatives from across the DoD space enterprise, including SSC/IA. The PIC coordinates space acquisition efforts between DoD space stakeholders and provides recommendations to the Space Acquisitions Council, a congressionally mandated board chaired by the Assistant Secretary of the Air Force for Space Acquisition and Integration and mandated to "oversee, direct, and manage acquisitions and integration" of space systems and programs across the national security space enterprise.⁸⁷ This council then provides guidance to the PEOs, who execute the acquisition programs.⁸⁸

The third USSF field command, STARCOM, headquartered at Peterson SFB, Colorado and activated in August 2021, oversees the preparation of "combat-ready USSF forces to fight and win in a contested, degraded, and operationally limited environment."⁸⁹ To accomplish this mission, STARCOM is split into five subordinate deltas, each focused on a different aspect of the training mission, including doctrine, test and evaluation, and education. Each delta also

⁸³ SSC, "International Affairs (SSC/IA) Strength Through Partnerships: Allied by Design," fact sheet, undated. The use of the phrase "allied by design" in this publication was one inspiration for the title of this report.

⁸⁴ U.S. government official, email exchange with the authors, August 10, 2022.

⁸⁵ This research did not specifically investigate the Space Rapid Capabilities Office or the U.S. Space Development Agency.

⁸⁶ SAF/SQ, undated.

⁸⁷ U.S. Code, Title 10, Section 9021, Space Acquisition Council. See also Michael Guetlein, "SSC Realignment," briefing, Space Systems Command, December 8, 2021, Not available to the public; Claire Leon, "SSC Space Systems Integration Office," briefing, Space Systems Command, October 3, 2022; Theresa Hitchens, "Rocket Science: How Space Force Acquisition Works, with Many Players and Dual Hats," *Breaking Defense*, July 27, 2022d.

⁸⁸ Hitchens, 2022d.

⁸⁹ STARCOM, "Who We Are," webpage, undated-b.

works with designated partners to increase capabilities.⁹⁰ Additionally, STARCOM oversees the National Security Space Institute (NSSI), also based at Peterson SFB, which, as discussed in the training section below, provides 15 professional education and space warfare courses to military and civilian space professionals across the armed forces, as well as to international allies in 49 countries.⁹¹

In late 2022, the USSF also began to stand up service component commands, including in U.S. Indo-Pacific Command (USINDOPACOM) and in U.S. Central Command (USCENTCOM).⁹² U.S. Space Forces Europe and Africa was activated on December 8, 2023.⁹³ A USSF press release explained that the establishment of these commands aligns USSF-presented forces more closely with how other services, such as the U.S. Army and the USAF, provide forces to GCCs.⁹⁴ While these organizations were still nascent at the time of writing, it is likely that they will provide an important venue for allied cooperation, especially because USINDOPACOM, USCENTCOM, and the U.S. European Command (USEUCOM) have extensive authorities for security cooperation with their respective AORs.⁹⁵ As stated previously, in December 2023, S4S was established.

Although the USSF has responsibility for most space capabilities, it does not have exclusive responsibility. The Army, Navy and Marine Corps maintain operational commands that interface with (or in some cases have operational accountability for) space missions, although in some cases these activities are being shifted to the USSF.⁹⁶

USSF Policy Statements

In November 2020, the Chief of Space Operations (CSO) published planning guidance that included a discussion of multinational cooperation. It noted, in part, that USSF “efforts to deter and promote stability are enhanced by a multi-national effort. [The USSF] will leverage ally and coalition partner capabilities in operations and acquisitions to identify and close gaps in [its] space enterprise. [The USSF] will take measures to strengthen [its] allies’ space capabilities.

⁹⁰ STARCOM, “How We Do it,” webpage, undated-a.

⁹¹ National Security Space Institute, homepage, undated.

⁹² Greg Hadley, “Space Force to Establish Components for INDOPACOM, CENTCOM, Korea by End of 2022,” *Air & Space Forces Magazine*, November 2, 2022.

⁹³ Sandra Erwin, “U.S. Space Force Activates New Unit to Support Operations in Europe and Africa,” *Space News*, December 8, 2023.

⁹⁴ Secretary of the Air Force Public Affairs, “Space Force Presents Forces to U.S. Indo-Pacific Command,” U.S. Indo-Pacific Command, November 23, 2022.

⁹⁵ DoDD 5132.03, 2016.

⁹⁶ In June 2022, the USSF received the Naval Satellite Operations Center, and in August 2022, the Army transferred some of its satellite operations and associated personnel to the USSF (Thomas Novelty, “Space Force Takes Over All Military Satellite Communications,” *Military.com*, August 15, 2022).

This includes cooperative capability development, professional education and training, and operational coordination and liaison.”⁹⁷

The USSF campaign support plan (CSP), published in August 2021, translates DoD and DAF space and security cooperation policies into guidance for the USSF’s engagement with allies. The extensive CSP outlines both the objectives that the USSF will strive to accomplish, and the security cooperation tools that it will use to do so. The CSP approach is split into three LOEs:⁹⁸

- EXPAND the network of allied and partner relationships by using appropriate [security cooperation] tools in order to be the most reliable and trustworthy “partner of choice” in the space domain for *those countries who may not project power globally or unilaterally, provide niche capabilities/access, or may deliberately disrupt a strategic competitor’s strategy* [original emphasis].
- STRENGTHEN relationships with *those countries who have the ability and will to project power against shared competitors, may not project power globally or unilaterally, or provide niche capabilities/access* [original emphasis]. The goal is to increase cooperation, collaboration, and interoperability in the space domain to yield a more resilient network and deliver decisive effects.
- LEVERAGE allied, partner, civil, and commercial relationships with *those who provide capabilities and capacity to help deter or defeat peer or near-peer adversaries, and/or have the have the ability and will to project global power against shared adversaries* [original emphasis]. The goal is to reduce cost, increase resilience, and accelerate capability modernization.

It is not clear how much progress the USSF has made in each of these areas as of the time of this writing. In at least one area, USSF representatives who spoke with us expressed frustration with higher headquarters’ reluctance to allow the USSF to implement its plans, specifically in the case of a USSF Regional Space Advisor program, which could mirror the foreign area officers in other services.⁹⁹

DoD Disclosure Policy

Status Quo

Separate from the various space policy documents described above but significant to overall U.S. policy and procedures for cooperation with allies are DoD policies and procedures on when and how to disclose classified military information to allies. DoD policies on disclosure originally stem from the 1971 National Security Decision Memorandum (NSDM) 119, which

⁹⁷ John W. Raymond, *Chief of Space Operations’ Planning Guidance*, U.S. Space Force, November 2020.

⁹⁸ Office of the Chief of Space Operations, Chief Strategy & Resourcing Officer (S5/8), *United States Space Force Campaign Support Plan: Expanding, Strengthening, and Leveraging Global Partnerships*, Headquarters, U.S. Space Force, May 2021, pp. 10–13.

⁹⁹ USSF official, interview with the authors, June 2022.

states a policy that classified military information is to be treated “as a national security asset which must be conserved and protected and which may be disclosed to foreign governments and international organizations only where there is a clearly defined advantage to the United States.”¹⁰⁰ An interagency body, the National Disclosure Policy Committee (NDPC) is responsible for executing this policy, and it issues the National Disclosure Policy-1 (NDP-1), to implement the NSDM.¹⁰¹ NDP-1 “promulgates national policy and procedures in the form of specific disclosure criteria and limitations, definitions of terms, release arrangements, and other guidance required by US departments and agencies having occasion to release classified US military information to foreign governments and international organizations.”¹⁰² Although NDP-1 governs classified military information, DoD is not the only stakeholder—in addition to DoD leaders, the members of the NDPC include the Secretary of State and the director of the Central Intelligence Agency (CIA).¹⁰³

DoDD 5230.11 implements the NDP within DoD.¹⁰⁴ In particular, following guidelines in NDP-1, DoDD 5230.11 grants disclosure authority if (1) the “official represents the DoD Component that originated the information,” (2) the level of classified information does not exceed the permitted discourse under NDP-1, and (3) several conditions ensuring the disclosure meets U.S. objectives, ensuring protection of the information, and that disclosure “will result in benefits to the United States at least equivalent to the value of the information disclosed.”¹⁰⁵ Joint information, or information originating from another agency, cannot be disclosed without receiving permission from the relevant organization(s).¹⁰⁶ Each military service implement its

¹⁰⁰ In addition, “[d]isclosures will be contingent upon a determination that the recipient of the information will afford it substantially the same degree of security protection given to it by the United States.” The memorandum also notes that there may be exceptions granted to these requirements by the Secretaries of State and Defense, or their representatives (NSC, “National Security Decision Memorandum (NSDM) 119,” July 20, 1971, declassified on March 9, 1977).

¹⁰¹ Defense Technology Security Administration, “Secretariats for the National Disclosure Policy Committee (NDPC) and the Arms Transfer and Technology Release Senior Steering Group (ATTR SSG),” webpage, undated-b.

¹⁰² Defense Security Cooperation Agency, *Security Cooperation Management*, Defense Security Cooperation University, FY 2022, pp. 7-10-7-11.

¹⁰³ See Office of Inspector General, *Evaluation of U.S. Intelligence and Information Sharing with Coalition Partners in Support of Operation Inherent Resolve*, declassified version, U.S. Department of Defense, DODIG-2016-81, April 25, 2016, p. 39.

¹⁰⁴ DoDD 5230.11, *Disclosure of Classified Military Information to Foreign Governments and International Organizations*, U.S. Department of Defense, June 16, 1992.

¹⁰⁵ See DoDD 5230.11, 1992, enclosure 3, pp. 18–20. These specified conditions include that “[d]isclosure is consistent with U.S. foreign policy and national security objectives[; . . . d]isclosure is consistent with U.S. military and security objectives[; . . . t]he foreign recipient will afford it substantially the same degree of protection as the United States[; . . . d]isclosures will result in benefits to the United States at least equivalent to the value of the information disclosed[; . . . t]he disclosure is limited to information necessary to the purpose for which disclosure is made” (DoDD 5230.11, 1992, pp. 2, 18–21).

¹⁰⁶ DoDD 5230.11 (1992, p. 3) also mandates that each disclosure decision must be tracked in the Foreign Disclosure and Technical Information System.

own foreign disclosure rules and procedures based on the guidance in DoDD 5230.11, including appointing foreign disclosure officers (FDOs), who are delegated disclosure authority by a DoD component. In particular, Air Force Instruction (AFI) 16-201 specifies that USAF personnel must submit requests to “their servicing FDO” if they seek to disclose classified and controlled unclassified military information through “oral, visual or documentary” methods to foreign personnel.¹⁰⁷ AFI 16-201 specifies a general timeliness evaluation criterion for FDOs of making decisions or referring requests within ten working days of receipt.¹⁰⁸

DoD regulations do provide some exceptions for greater release. One important example is that “under conditions of actual or imminent hostilities,” commanders are permitted to release information to “actively participating allied force when support of combined combat operations requires the disclosure of that information.”¹⁰⁹ As discussed in more detail in the special operations case study in Chapter 3, this policy enabled a greater level of sharing in operations abroad. However, the language of “actual or imminent hostilities” does not appear to apply to space activities. DoD policies also identify procedures for getting approval from the NDPC for exceptions to NDP-1, although this is likely a time-intensive process.¹¹⁰

Assessment

We found a fundamental inconsistency between the space policy documents and their objectives for allied cooperation and the restrictive policies and procedures codified and imposed by DoD and DAF disclosure policies. Notably, the DoD’s approach also appears unique among other departments and agencies in establishing the requirement to have FDOs distributed throughout the organization. As we explain in Chapter 4, the IC has somewhat different procedures. In particular, Intelligence Community Directive (ICD) 403 permits IC components to disclose information originating in other IC elements so long as there are no markings to limit disclosure and there is a positive decision to disclose by an authorized official *or* the information is already marked as releasable.¹¹¹

¹⁰⁷ Air Force Instruction (AFI) 16-201, *Air Force Foreign Disclosure and Technology Transfer Program*, Department of the Air Force, December 1, 2004, incorporating change 1, August 11, 2009, p. 18.

¹⁰⁸ AFI 16-201, 2009, p. 57.

¹⁰⁹ DoDD 5230.11, 1992, p. 3.

¹¹⁰ DoDD 5230.11, 1992, p. 11.

¹¹¹ In particular, ICD 403 specifies that “[i]ntelligence information originating in one IC element may be disclosed or released to a foreign entity by an authorized recipient without seeking originator approval, when the intelligence information meets one of the following conditions:

- a. “The information bears no specific dissemination control marking to preclude such disclosure or release and there has been an affirmative decision by a SFDRA [Senior Foreign Disclosure and Release Authority] or FDRO [Foreign Disclosure and Release Officer] . . .
- b. “The information is marked in such a manner that allows the information to be disclosed or released to foreign entities consistent with ICD 710 and the Controlled Access Program Coordination Office

A first practical challenge is for DoD components to share information owned by other organizations. The main relevant DoD organizations within the space enterprise—including each defense agency—are formally separate DoD components, including the DAF, USSPACECOM, OSD, the Joint Staff, NRO, the Defense Advanced Research Projects Agency, the Missile Defense Agency, NGA, NSA, and the Space Development Agency (until it is transferred to the USSF).¹¹² According to the policies discussed above, each of these components has authority to share only their own information, and each must coordinate with one another before disclosing to foreign organizations. Thus, the coherence challenge noted earlier may also create a challenge with disclosing relevant information to foreign partners.

A second challenge is the time-intensive case-by-case assessment by FDO personnel. In essence, the DSS and related documents make the argument that space is inherently international: It is in the United States' interest to collaborate with allies on space-based activities and, therefore, necessary to share information accordingly. Every time that U.S. officers are required to gain explicit approval from an FDO or hesitate about sharing information because of that requirement, integration is hindered. In many cases, day-to-day disclosure decisions may be streamlined based on past approvals, but any case in which there is a need for a case-by-case evaluation by FDOs obstructs the potential for close collaboration between U.S. officers and officials and allied EOs, policy offices, and operations centers. There is good reason to think that case-by-case assessments of the value of sharing particular pieces of information may also be counterproductive. The DSS and other U.S. strategy documents already state that sharing information on space with allies is valuable and in line with U.S. policy. But the requirement for separate review by an FDO for each individual disclosure of information reopens an evaluation of the relative costs and benefits of interactions with an ally.¹¹³

A third issue concerns EOs. The requirements of the foreign disclosure policy also apply to allied EOs serving in U.S. organizations.¹¹⁴ DoD regulations limit disclosures to foreign EOs, permitting them to access only “information that does not exceed the level authorized under [NDP-1].” Indeed, disclosures to foreign exchange personnel are treated as disclosures to a

(CAPCO) Register and Manual (e.g., REL TO).” ICD 403, *Foreign Disclosure and Release of Classified National Intelligence*, unclassified version, Office of the Director of National Intelligence, March 13, 2013, p. 3

¹¹² See DoDD 5100.01, 2020, pp. 1, 42.

¹¹³ See also Andrew Radin, “How Should the U.S. Military Share Secrets,” *Lawfare* blog, October 30, 2022.

¹¹⁴ DoD Directive 5230.20 specifies that foreign nationals “shall have access only to information that does not exceed the level authorized under National Disclosure Policy (NDP)-1 . . . for release to their governments” and that exceptions “shall not be granted to accommodate the assignment of FLOs [foreign liaison officers], DPEP [Defense Personnel Exchange Program], CPP [Cooperative Program Personnel], or foreign personnel arrangements” (DoDD 5230.20, 1992, p. 3). See also AFI 16-107, *Military Personnel Exchange Program*, Department of the Air Force, August 29, 2018.

foreign government.¹¹⁵ This regulation appears contrary to the goal described to us that these officers would act as U.S. officers for the length of their assignment and limits the effectiveness of allied EOs in many billets.¹¹⁶ Despite many calls for a default stance of information-sharing within DoD over the years and within the DAF as recently as July 2022, a true change would be a significant shift to current DoD policy and practice.¹¹⁷ Uncaveated classified material, even if not marked as Not Releasable to Foreign Nationals (NOFORN), is still not releasable to allies, but it can be cleared for release by an FDO. Material that has been previously marked as NOFORN, however, requires a much more extensive review to remove the marking, after which an FDO can adjudicate its release to selected allies.

There is a challenging balance between the necessary protection of U.S. information and greater sharing to achieve U.S. policy goals. There are some U.S. space policy personnel who would advocate for more openness in information-sharing with select allies; however, this is not a consensus position. Some senior space policy personnel even asked whether the restrictions imposed by the NDP-1 system should be considered a “feature rather than a bug.”¹¹⁸ We did not evaluate the risks of greater information-sharing in detail, but we did identify a significant inconsistency between what the United States tells its allies about cooperating in space and the limited actual cooperation that results because of disclosure policy restrictions. Figure 2.2 summarizes how different policies impede the United States from reaching its goal of timely information-sharing with allies regarding space capabilities, resources, and operations.

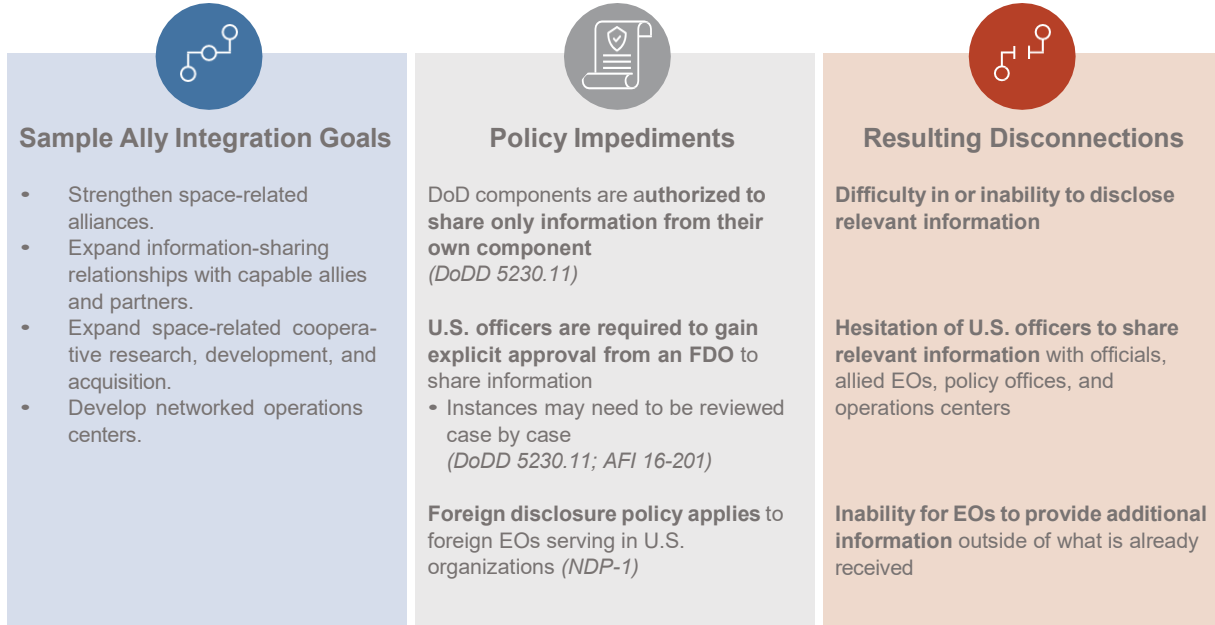
¹¹⁵ The standard form that allied EOs sign explains that “[a]ll information to which [that officer] may have access during [their] assignment should be treated as information provided to [their] government in confidence” (AFI 16-107, 2018, p. 35).

¹¹⁶ Allied EOs, interviews with the authors, February–April 2022.

¹¹⁷ Secretary of the Air Force, Chief of Space Operations, and Chief of Staff of the Air Force, “Expanding Information Sharing with Allies and Partners, Amplifying Guidance for Use of ‘Not Releasable to Foreign Nationals’ Dissemination Control Marking,” memorandum, July 18, 2022.

¹¹⁸ U.S. official, interview with the authors, April 2022.

Figure 2.2. Sample Policy Impediments to U.S. Integration with Allies and Their Impacts



Bilateral and Multilateral Engagement

Status Quo

The different DoD organizations engage with one or more allies through a variety of different forums. Although a full review of such interactions is not feasible and beyond the scope of this research, we discuss some of the major forums in this section.

The United States engages with allies in a variety of bilateral forums. OUSD(P) organizes space cooperation forums regularly with different allies.¹¹⁹ OUSD(P) has overall responsibility for managing relationships with foreign governments, and prior to the creation of space-focused organizations such as the USSF and USSPACECOM, OUSD(P) led a larger proportion of such engagements, although U.S. Strategic Command also had bilateral engagements on space issues.¹²⁰ DAF and USSF leadership also meet regularly with allied personnel on space issues

¹¹⁹ Joseph D. Rouge and Dennis L. Danielson, “Coalition Space Operations: Lessons Learned from Schriever V Wargame,” *High Frontier*, Vol. 5, No. 4, August 2009; François Malo, “Schriever V: Lessons Learned—A Canadian Perspective,” *High Frontier*, Vol. 5, No. 4, August 2009.

¹²⁰ DoDD 5111.01, *Under Secretary of Defense for Policy (USD(P))*, U.S. Department of Defense, June 23, 2020, p. 4; U.S. officials from multiple DoD organizations, interviews with the authors, October 2021–June 2022.

and, according to the UK Space Command, also have a formal bilateral framework agreement.¹²¹ USSPACECOM conducts its own engagements as the CCMD for security cooperation.¹²²

There are also multilateral forums, including the CSpO Initiative and the exercise and wargaming forums described below. The CSpO Initiative began a decade ago as a concept for the Australia, Canada, Great Britain, United States (ACGU) “to understand how to collectively engage in space operations with a vision to sustain and enhance the strategic advantages attained through synchronized operational activities.”¹²³ These countries went on to sign a CSpO memorandum of understanding (MOU) in 2014; New Zealand joined in 2015, Germany joined in 2019, and France followed in early 2020.¹²⁴ The CSpO Initiative includes several meetings at different levels and frequencies: a principals board, a steering board, and working groups such as the Policy and Legal Working Group and the Capabilities and Architectures Working Group.¹²⁵

In 2022 the United States, Australia, Canada, France, Germany, New Zealand, and the United Kingdom signed a new MOU and jointly released a CSpO Vision 2031 document. The document offers top line objectives for space cooperation that include such topics as preventing conflicts, unity of effort, space mission assurance, and defense and protection.¹²⁶ For example, unity of effort, as described in the document, highlights the allies’ commitment to allied integration: “CSpO Participants seek to enable combined space operations by sharing information across multiple classification levels—from the strategic to the operational and tactical levels, and at a pace that is operationally relevant—through real-time synchronized networked operations centers operated by a workforce with common training.”¹²⁷ The vision

¹²¹ UK Space Command, “Collaboration Between UK Space Command & @SpaceForceDoD was formalised through the signing of a Bilateral Framework last week. This arrangement will inform our integrated approach to protecting & defending our interests in space, as well as those of our allies and partners,” Twitter post, April 16, 2022.

¹²² USSPACECOM leadership regularly visit allied countries. See, for example, USSPACECOM, “U.S. Space Command Commander Travels to the United Kingdom to Strengthen Space Cooperation,” May 10, 2022b.

¹²³ CFSCC, 2012.

¹²⁴ Cheryl Pellerin, “Stratcom, DoD Sign Space Operations Agreement with Allies,” U.S. Department of Defense, September 23, 2014; U.S. Space Command Public Affairs, “Combined Space Operations Initiative Welcomes France and Germany,” news release, U.S. Space Command, February 13, 2020.

¹²⁵ For example, a member of our study team attended a meeting of the Capabilities and Architectures Working Group. See SSC, “This week #SSC’s International Affairs Office hosted a 3-day workshop with the Combined Space Operations (CSpO) Capabilities Architecture Working Group (CAWG),” Facebook post, April 1, 2022. For other sources on CSpO meetings, see Governments of the United States, Australia, Canada, France, Germany, New Zealand, and the United Kingdom, 2022; Pellerin, 2014; DoD, “DoD Hosts Combined Space Operations Initiative Principals Board,” news release, December 15, 2021.

¹²⁶ Governments of the United States, Australia, Canada, France, Germany, New Zealand, and the United Kingdom, 2022, pp. 2–3.

¹²⁷ Governments of the United States, Australia, Canada, France, Germany, New Zealand, and the United Kingdom, 2022, p. 2.

statement uses similar language to describe the space mission assurance objective and proposes a “robust, responsive, and interoperable space infrastructure” for allies.¹²⁸

Assessment

Our analysis and interviews with various U.S. officials and DoD stakeholders highlight two challenges with existing bilateral and multilateral formats. On bilateral formats, several of our interlocutors stated that additional work needs to be done to coordinate between relevant U.S. organizations and ensure consistent staffing practices across them. Regarding the CSpO Initiative, U.S. officials have mixed views: Some argue that the meetings provide an opportunity for sharing perspectives and building unity.¹²⁹ The various working groups within CSpO, such as the Capabilities and Architectures Working Group, are developing detailed work plans and identifying actions that each country can take to improve overall interoperability. On the other hand, various U.S. officials noted that the CSpO Initiative lacks any actual authority to advance cooperation on its own, and it is not a U.S. entity that can levy requirements or direct U.S. resources. Some went so far as to say that it is nothing more than a “talk shop.”¹³⁰ When asked to identify any tangible outcomes from the CSpO Initiative (beyond information-sharing through discussions or enhanced awareness of positions), U.S. officials could only offer the CSpO Vision 2031 document.¹³¹ It is also worth noting that early ACGU documents for CSpO included discussions of “integration,” while the CSpO Vision 2031 document no longer includes integration as a goal but rather includes interoperability instead. Chapter 3 will provide additional allied perspectives on the CSpO Initiative.

Overall Assessment of DoD Space Enterprise Organization and Policy on Cooperating with Allies on Space Activities

The reestablishment of USSPACECOM, the creation of a new USSF, the shifting of some other service units to the USSF, and the reorganization of the DAF-level organizations may ultimately have long-term benefits. In the near term, however, these actions have resulted in additional confusion and, in some cases, competition between the various U.S. organizations. For example, there are at least some indicators of friction between SAF/IA and the USSF on

¹²⁸ Governments of the United States, Australia, Canada, France, Germany, New Zealand, and the United Kingdom, 2022, p. 2.

¹²⁹ U.S. officials, interviews with the authors, October 2021–April 2022.

¹³⁰ U.S. officials, interviews with the authors, October 2021–April 2022; U.S. official, email exchange with the authors, May 10, 2022.

¹³¹ U.S. official, interview with the authors, June 2022.

priorities for working with allies and what programs should be managed at the DAF level and which can be conducted at the service level.¹³²

Part of the challenge is that even before this reorganization there has been internal DoD inconsistency regarding overall space activities. For example, Table 2.1 shows that a sampling of DoD organizations that have space equities often do not share similar identified mission areas. The identified mission areas are often similar for areas such as SSA; positioning, navigation, and timing (PNT); and SATCOM, but across the DoD space enterprise, such mission areas as space control, nuclear detonation detection, space electronic warfare, orbital warfare, and others (bolded in the table) are inconsistently identified. This internal inconsistency makes it harder for allies to understand U.S. mission areas. More importantly, the United States currently lacks a consistent approach to prioritizing allies and areas that the United States would like each ally to prioritize. Various U.S. organizations prioritize allied cooperation and missions for engagement based on their equities.

Table 2.1. Identified Mission Areas, by Organization

Source	Term for Overall Mission	Organization	Date	Identified Mission Areas
Field Manual 3-14, <i>Army Space Operations</i>	Space Capabilities	U.S. Army	10/30/19	SSA, PNT, space control , SATCOM, satellite operations, missile warning, environmental monitoring, space-based surveillance and reconnaissance
JP 3-14, <i>Space Operations</i>	Space Capabilities	Joint Chiefs of Staff	10/26/20	SSA, space control, PNT, ISR, SATCOM, environmental monitoring, missile warning, nuclear detonation detection , spacelift, satellite operations
SpOC, "About Space Operations Command"	Space Capabilities	SpOC	undated	SDA, space electronic warfare , missile warning, C2, cyber operations, ISR, PNT, orbital warfare
Air Force Doctrine Publication 3-14, <i>Counterspace Operations</i>	Space Support to Operations Capabilities	USAF	1/25/21	ISR, launch detection, missile tracking , environmental monitoring, SATCOM, PNT
Strategic Partnerships Division, "Security Cooperation: Path to Full Operational Capacity"	Functional Areas	USSPACECOM	12/3/21	C2, SDA, PNT, ISR/EO, SATCOM, space operations, institutional capacity building
Space Doctrine Note 3-0, <i>Operations: Doctrine for Space Forces</i>	Military Spacepower Core Competencies	USSF	1/1/22	Space security, combat power projection , space mobility and logistics, information mobility, SDA

NOTE: Across the DoD space enterprise, mission areas shown in bold are inconsistently identified.

¹³² For example, key leader engagements for the CSO are coordinated by SAF/IA rather than the USSF headquarters staff. At least some within the CCMDs and the USSF consider this to be an inappropriate approach to key leader engagements because other DoD organizations (such as the Marine Corps under the Department of the Navy) manage their own key leader engagements. For their part, current and former SAF officials note that the USSF has very limited resources for activities common to other services and should leverage the available resources of the SAF staff (U.S. officials, interviews with the authors, June 2022).

In our interviews, officials in the DoD space enterprise recognized that there are ongoing challenges. We heard one assessment from U.S. officials in December 2021 that space cooperation was “chaotic,” “random,” and “inefficient.”¹³³ One observed challenge was the evolving enterprise created challenges for OSD to effectively establish policy and set roles and responsibilities. For example, in 2017, OSD published the ISCS that did set some goals and laid out responsibilities for the organizations that existed at the time (before the creation of USSPACECOM and the USSF). More concerning, representatives from many subordinate organizations that we interviewed were either not aware of the 2017 ISCS or were uncertain if it was even still in force.¹³⁴ Echoing long-standing discussions about the roles of OSD compared with those of the CCMDs, CCMD representatives expressed frustration with OSD-level involvement in what they considered to be field activities.¹³⁵ More recently, the August 2022 revision to DoDD 3100.10, the space policy directive, demonstrates a significant effort on the part of the DoD space enterprise to better codify the vision and approach for working with allies. As of late 2022, OSD initiated an effort to engage with key stakeholders to investigate the DoD approach to allied space cooperation, but as of the date of this writing, that effort is expected to extend into 2023.¹³⁶ Thus, we were unable to draw any conclusions about how effective the new space policy directive and the OSD-led effort would be in the near term.

What appears to be lacking, however, is a formal framework and more detailed guidance that establish the specific roles and responsibilities of each of the key DoD space enterprise stakeholders. The 2017 ISCS includes some specific tasks for select organizations, but it predates the creation of USSPACECOM and the USSF, and it does not account for the resources available within each DoD space organization. There is some DoD-level guidance, but it focuses solely on USSPACECOM. In more general guidance, such as that found in DoDD 5132.03, USSPACECOM maintains responsibility for “all security cooperation matters in their assigned areas of responsibility (AOR).”¹³⁷ This responsibility must be shared with the terrestrial CCMDs in whose AOR the allied territory resides. For instance, when the United States and Australia collaborated on the placement and operation of a space telescope on Australian territory in support of the SDA mission, this activity needed to be coordinated through the international affairs offices of both USSPACECOM and USINDOPACOM. The creation of the USSF

¹³³ Strategic Partnerships Division, 2021.

¹³⁴ U.S. government officials, interviews with the authors, July–September 2022.

¹³⁵ U.S. officials in three CCMDs, interviews with the authors, December 2021–June 2022. See also Andrew Radin and Thomas Szayna, “Another ‘Crisis’ in Civil-Military Relations?” *War on the Rocks*, July 8, 2021.

¹³⁶ U.S. government officials, interviews with the authors, August–December 2022.

¹³⁷ DoDD 5132.03, 2016, p. 12.

component commands may help to facilitate future activities, but it raises further questions about roles and responsibilities.¹³⁸

Similar disconnects appear to exist between the USSF and USSPACECOM. Various interviewees indicated that the USSF and USSPACECOM were still establishing their roles, at times resulting in duplicative or even divergent efforts. For example, although there is an existing agreement for staff talks between the United States and the United Kingdom at the OSD level called the space cooperation forum, in April 2022, both USSPACECOM and the USSF signed separate MOUs with this key ally to establish their own staff talks.¹³⁹ When asked whether the United States needed three levels of staff talks with the United Kingdom, select U.S. officials said yes because each organization had its own priorities.¹⁴⁰ There is some room for optimism, however. Since our earlier interviews, three U.S. stakeholders (OSD, USSPACECOM and the USSF) have held discussions to coordinate the three staff talks and work out a plan to link the bilateral discussions.¹⁴¹ USSPACECOM has also done a noteworthy job of trying to coordinate the overall DoD space enterprise approach to working with allies through their internal plans and a series of inclusive workshops and planning events. USSPACECOM hosted the first-ever Global Space Security Cooperation Forum in December 2021 and a subsequent first-ever Security Cooperation Resourcing Board in June 2022.¹⁴² These events have had a significant positive influence in getting all stakeholders within the DoD space enterprise talking with each other and, ideally, in coordinating their efforts.¹⁴³

Allied Space Personnel Liaisons, Exchanges, Training, Exercises, and Wargames

Training and engagement is an important part of coordination and collaboration with allies and takes various forms. Training includes formal courses offered online and in person, wargames, exercises, and various activities often referred to as experiments. Engagement in this context focuses on multilateral approaches to communications with key allies. This section will

¹³⁸ Amanda Miller, “Space Force Stands Up Its First Geographic Component Command, Prioritizing the Pacific,” *Air & Space Force Magazine*, November 22, 2022.

¹³⁹ USSPACECOM, “USSPACECOM and UKSpaceCom Sign Enhanced Space Cooperation MOU,” April 6, 2022a.

¹⁴⁰ Senior U.S. official, interview with the authors, March 2022.

¹⁴¹ USSPACECOM official, interview with the authors, July 2022.

¹⁴² U.S. Space Command Public Affairs Office, “USSPACECOM Hosts Global Space Security Cooperation Forum,” news release, U.S. Space Command, December 9, 2021; USSPACECOM, “U.S. Space Command Hosts First Global Space Security Cooperation Board,” news release, June 24, 2022d.

¹⁴³ Other DoD organizations have shown some resistance to the USSPACECOM approach (U.S. officials, interviews with the authors, August–December 2022).

briefly highlight some of the key examples of training activities to provide an overall sense of how the DoD space enterprise approaches allied space training.

Personnel Exchanges

Both USSPACECOM and the USSF provide opportunities for hosting LNOs and EOs in their organizations. LNOs are allied military officers who remain assigned to their national military but operate from U.S. facilities to improve communications between the two militaries. EOs are foreign officers that are assigned to the U.S. military, are considered part of the U.S. personnel system, and are approved to fulfill duties that could be held by a U.S. service member.

Current and projected imbalances exist between U.S. EOs in allied countries and allied EOs assigned to the DoD space enterprise. Tables 2.2 and 2.3 present only USSF data, but they are representative of two trends. First, most of the allies have a large number of EOs assigned to the U.S. military, and they intend to increase those numbers in the coming years. The rationale for this is discussed in greater detail in Chapter 3 but essentially amounts to valuing the placement of EOs in the DoD space enterprise. The second apparent trend is that the U.S. ability (or possibly willingness) to reciprocate placement of U.S. space officers in allied countries is lagging. For the USSF, the ratio of U.S. EOs to allied EOs is decreasing from 3:13 in 2022 to 1:10 by 2024. While the DoD space enterprise is larger than that of allies, U.S. officials expressed a desire to increase the opportunities for U.S. officers to serve abroad, although, as discussed in Chapter 3, opportunities for equivalent rank exchanges may be limited because of the size of allied space organizations.

Table 2.2. U.S. and Allied Exchange Officers, as of 2022 (for Selected Countries)

Country	U.S. EOs	Allied EOs
United Kingdom	2	10
Australia	2	6
Canada	2	8
Italy	0	1
Rotational position shared between Canada, the United Kingdom, and Australia	0	1
Total	6	26

SOURCE: Features information from USSF, Military Personnel Exchange Program (MPEP) master roster provided by a USSF official to the authors, April 2022.

NOTE: Only includes personnel under MPEP authorities. Numbers include all reciprocal, nonreciprocal, and positions currently filled by allied military officers in a USSF unit. The latter category is being transferred to the MPEP program for legal authority reasons.

Table 2.3. Projected U.S. and Allied Exchange Officers in 2024 (for Selected Countries)

Country	Projected U.S. EOs in 2024	Projected Allied EOs in 2024
United Kingdom	2	43
Australia	3	13
Canada	0	15
Japan	1	1
Brazil	1	1
Total	7	73

SOURCE: Features information from USSF, 2022.

NOTE: Only includes personnel under MPEP authorities. Numbers include all reciprocal, nonreciprocal, and positions currently filled by allied military officers in a USSF unit. The latter category is being transferred to the MPEP program for legal authority reasons.

Because EOs are allied military officers assigned to positions in U.S. military organizations to perform the duties of those positions, there should be little difference in the conduct of their duties by either. However, the ability to make effective use of these EOs is severely hampered by their inability to access information because of limits on information-sharing with EOs (as described in a previous section on foreign disclosure policy). Disclosure officials noted many examples where they worked to overcome challenges and ensure that allied personnel could have necessary access and suggested that sometimes host organizations do not request the necessary support.¹⁴⁴ Although the effort to work within existing procedures can help, the underlying DoD and DAF rules create a significant procedural burden for EOs to access U.S. classified information. Another notable issue is that even material marked as controlled unclassified information (CUI) often cannot be shared with EOs. Although the classification guidance for CUI does not make a default assumption of NOFORN, we found that most CUI distribution statements are interpreted as restricting foreign access.¹⁴⁵ Moreover, program classification security guides assume that classified information is not releasable to foreign entities unless specifically marked otherwise.

Beyond the staffing levels and disclosure restrictions, there are indications of limitations on how both EOs and LNOs perform their duties because of system access issues or lack of interoperability. For example, interviews with various EOs and LNOs indicated that they are often unable to fulfill their liaison role because U.S. and allied systems lack interoperability. This lack of interoperability is particularly acute for EOs who need access to communication systems capable of transmitting operational information. For these systems, the lack of interoperability is present at every level of classification, from CUI to TOP SECRET and Special Access Program information, although for selected allies it becomes easier at higher classification levels. While

¹⁴⁴ U.S. government officials, interviews with the authors, October–December 2022.

¹⁴⁵ See Office of the Under Secretary of Defense for Information & Security, Directors for Defense Intelligence (Counterintelligence, Law Enforcement & Security), “Controlled Unclassified Information Markings,” presentation, updated March 17, 2022.

we heard of specific initiatives to overcome these deficiencies, implementation is far from assured.¹⁴⁶

Formal Training

STARCOM, in partnership with the U.S. Defense Acquisition University, improves partner nation capacity in the space domain by providing education and training to partner nations. The NSSI is responsible for conducting space courses, which go from basic space education (100 level) to higher end analytical training (200/300 level), all the way up to warfighting-focused courses.¹⁴⁷ As with exercises, higher levels of trust are needed to access higher levels of education and training.¹⁴⁸

As we discuss in greater detail in Chapter 3, allies such as Canada, France, Germany, and Japan seek to participate in various space education courses offered by the U.S. Defense Acquisition University. From October 2021 to July 2022, 307 individuals from various allied and partner countries participated in NSSI courses.¹⁴⁹ One-third of those participants resided in one of the six countries that we evaluated in our study. For a detailed breakdown of non-U.S. participants in NSSI courses, see Table 2.4.¹⁵⁰

Table 2.4. Non-U.S. Participants in NSSI Courses, by Country (as of 2022)

Country	Number of Participants
Australia	30
United Kingdom	26
Germany	22
France	16
Canada	10
Japan	9
Total	113

SOURCE: Features information from NSSI official, email correspondence with the authors, August 7, 2022.

Some of the largest challenges in giving allies access to space courses is that they are often classified, and course topics can be technical, which can limit their utility for some allies. For allies that are not FVEY members (and thus do not have the necessary clearance levels), courses can be adapted for their participation, but NSSI officials assess that they would need funding to

¹⁴⁶ Allied officials, interviews and site visits with the authors, March–April 2022.

¹⁴⁷ For a more complete description of available courses and their classification levels see NSSI, undated.

¹⁴⁸ In 2020, NSSI tried to expand their international partnerships, but these efforts were complicated with the onset of the coronavirus disease 2019 (COVID-19) pandemic (U.S. official, discussion with the authors, September 27, 2022).

¹⁴⁹ U.S. government official, email exchange with the authors, August 7, 2022.

¹⁵⁰ U.S. official, interview with the authors, September 2021; NSSI official, email correspondence with the authors, August 7, 2022.

design a modified course. Moreover, NSSI needs subject-matter experts to explain the materials, and often topics are “lost in translation” because of language barriers. Without the right translator in the room with the technical expertise to translate the course material, the information loses its impact. Another challenge that NSSI has experienced is that U.S. priorities for which allies should receive training shifts repeatedly. One official explained that “NSSI needs less reactive guidance” and that “one quarter, Poland is a priority; the next quarter it’s Brazil.”¹⁵¹ This is another example of the lack of consistency within the DoD space enterprise on roles, responsibilities, and priorities by ally and mission area.

Wargames and Exercises

Wargames are often used to educate and inform allies about various capabilities. The largest annual space-focused “collaboration event” is Global Sentinel, an SSA and SDA activity. Global Sentinel was launched by the U.S. Strategic Command in 2016 and is now overseen by USSPACECOM. For the 2022 Global Sentinel’s capstone event in July 2022, space operators from 25 allied nations were scheduled to attend, including Australia, Canada, Germany, Spain, France, Finland, Italy, Japan, Korea, Brazil, the Netherlands, Norway, Poland, Romania, Thailand, and the United Kingdom, among others. The game allows for such a wide array of allied participants because the portion that includes them is conducted at an unclassified level.¹⁵²

The Schriever wargame is a space-focused wargame begun in 2001 under the Air Force Space Command that was initially a United States-only effort. The first game recognized the need to include allies in future space wargaming, and subsequent games included FVEY partners.¹⁵³ As recently as 2020, the Schriever wargame included participants from Australia, Canada, France, Germany, Japan, New Zealand, the United Kingdom, and the United States.¹⁵⁴ In the interim 20 years, Schriever wargames identified, among other things, the need for multilevel security to coordinate space operations with allies; the need to develop closer cooperation with allies; communications, assessment, and planning between allies impeded by the lack of coalition-wide SDA; and the need for increased intelligence- and information-sharing agreements and combined space C2 centers.¹⁵⁵ Despite these observations, the game is sometimes considered to be less effective when it includes more allies, which limits its classification level. Although not a universal perspective, at least some U.S. officials considered lower classification levels an acceptable trade-off because the inclusion of allies in the game

¹⁵¹ U.S. official, virtual interview with the authors, September 2021.

¹⁵² USSPACECOM, “Global Sentinel 22 Kicks Off,” news release, July 28, 2022e. See also USSPACECOM, “Global Sentinel 2022,” video, August 25, 2021.

¹⁵³ This observation is based on the personal experience of this report’s primary author.

¹⁵⁴ Tyler Whiting, “Schriever Wargame: Critical Space Event Concludes,” news release, Space Operations Command, November 4, 2020b.

¹⁵⁵ “Schriever Wargame History and Insights,” briefing, May 3, 2022, Not available to the general public.

provides a mechanism for introducing allies to the reality that space is a warfighting domain because potential adversaries treat it like a warfighting domain.¹⁵⁶

There has also been an increased emphasis on including allies in other wargames and exercises, both space-focused and multidomain activities. For example, Australia, Canada, the United Kingdom, and the United States participated in a Space Flag exercise for the first time in 2019.¹⁵⁷ Space Flag, started in 2017, is a tactical-level simulation exercise designed to “hone warfighter’s skills at operations, problem solving, and potential conflict in space.”¹⁵⁸

Yet another method of coordination that is distinct from wargames and exercises are experiments. The Sprint Advanced Concept Training (SACT) experiments at Schriever SFB span the full spectrum of trust and integration by covering three different groups at each event with increasingly adversarial scenarios, based on the participant’s particular capabilities and relationship with the DoD space enterprise.

Assessment of Personnel, Training, Exercises, and Wargames

The DoD space enterprise is becoming increasingly aware of the value of having allies participate in space-related activities, primarily because it introduces allies to the growing threat in space and motivates allies to partner with the United States. There are trade-offs, however. U.S. participants regularly comment on the diluted level of discussion associated with an ever-growing pool of allies in various events. As the United States starts to expand participation in space activities beyond the FVEY group, less information exchange results because of the lower access level of new allies. This same pattern will be noticed later in actual operations. Various wargames and events tend to be an early indicator of the lack of adequate infrastructure for conducting classified activities with allies. For example, for training events it is much easier to gather in one place allies that are cleared. However the real-world requirement for distributed operations highlights the limitations on secure communications with allies, and some of the workarounds used in training events would not be reasonable in an operational environment.¹⁵⁹

Coordination and Cooperation on Research, Development, and Acquisition

Integrating allies into capability development and acquisition is a central part of U.S. policy statements. As noted above, the DSS calls upon the DoD space enterprise to “expand cooperative

¹⁵⁶ U.S. government officials, interviews with the authors, May 27, 2022, and July 22, 2022.

¹⁵⁷ Lauren Hill, “Space Flag Holds First Exercise with Coalition Partners,” Air Force Space Command (archived), August 25, 2019.

¹⁵⁸ Phillip Swarts, “Air Force Launches ‘Space Flag’ Exercise Inspired by IMAX-Worthy Red Flag War Games,” *Space News*, May 3, 2017.

¹⁵⁹ One example is the use of delays between wargame and exercise moves to ensure there is time to transmit information over limited available IT systems to reach all participants.

research, development, and acquisition with allies and partners.”¹⁶⁰ Allied considerations may be important to U.S. space acquisition for several reasons. First, coordination throughout the acquisition process—from identifying requirements to executing programs—can help ensure that allied acquisition decisions contribute to U.S. or collectively identified needs. This coordination is essential to address several identified reasons for closer cooperation with allies: helping meet shared capability gaps, improving resilience, and increasing the overall efficiency of U.S. and allied acquisition efforts. Second, by coordinating on requirements, ally-produced systems may be more competitive for some U.S. programs than U.S.-produced systems for some requirements, or U.S.-produced systems may be attractive to allies. National defense industrial policies typically encourage countries to buy from their own producers, but in some cases, it may be feasible and desirable for the United States or allies to look to foreign producers. Facilitating allied integration in acquisition processes may thereby improve the overall efficiency of domestic procurement.

However, despite the prioritization of allied integration in strategy documents and the potential benefits of working with allies on force development, allied considerations are not central to U.S. requirements or acquisition decisions. While cooperation with allies on acquisition may be inappropriate for some systems, there are also many missed opportunities.

To explore these issues, we first briefly examine to what extent allied considerations factor into USSF force design and program execution, as well as the formal process by which the service identifies requirements and executes programs. We then identify particular opportunities for allied cooperation by mission area. A final section presents our overall analyses of these observations.

Limited Role of Allied Inputs in USSF Force Design and Program Execution

The USSF force design process is the formal, albeit evolving, process for identifying needs and requirements for the future space architecture.¹⁶¹ To achieve the goal of allied integration, in principle both force design and the eventual execution of desired programs should consider allied contributions and needs. As USSF CSO Gen Raymond explained in a March 2021 article, “What I’ve told our team is to build that force design with coalition partners in mind from the beginning. Once we get that force design built, where there’s areas to partner . . . we would welcome that opportunity.”¹⁶² Our assessment indicates that not all the organizations that

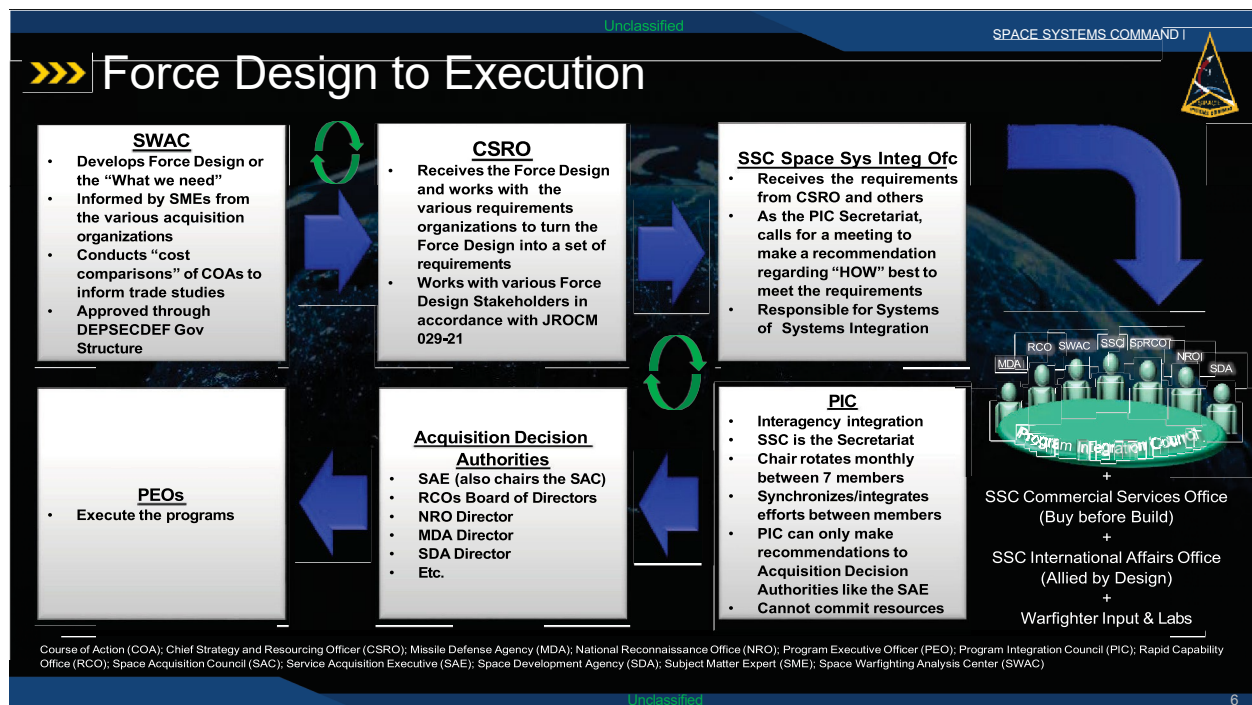
¹⁶⁰ DoD, 2020, p. 9. Note that the DSS only directs DoD activities, not those of the IC, and much of current allied cooperation is conducted under the auspices of IC agreements (although the DSS can direct DoD cooperation with the IC). Furthermore, as we will later discuss, many allied cooperative engagements in space include commercial and civil endeavors. Overall U.S. space policies are currently set by the White House National Space Council, which has so far been largely silent on the need to integrate allies.

¹⁶¹ Sandra Erwin, “Raymond: Space Force in 2022 to Focus on the Design of a Resilient Architecture,” *Space News*, January 18, 2022.

¹⁶² Rachel S. Cohen, “Building the New Space Coalition,” *Air & Space Forces Magazine*, March 26, 2021.

participate in force design and the eventual execution of acquisition programs take into account allied considerations and, indeed, allied considerations appear relatively marginal in the current force design process. According to a SSC depiction of the process from 2022 intended to define the roles of various stakeholders, allied considerations were introduced in later phases (see Figure 2.3).¹⁶³ An important caveat is that space acquisition policy and practice is rapidly shifting, given new appointments, reorganizations, and legislative changes.¹⁶⁴

Figure 2.3. USSF Force Design to Execution



SOURCE: Leon, 2022, slide 6.

The first key organization is the Space Warfighting Analysis Center (SWAC), which has the role of identifying the "what we need."¹⁶⁵ SWAC is a relatively small organization with 61

¹⁶³ Leon, 2022.

¹⁶⁴ U.S. officials, interviews with the authors, October 2021–January 2022; Theresa Hitchens, "DoD Space Acquisition Agencies 'De-Conflicted' 2024 Budget Requests, a First," *Breaking Defense*, May 19, 2022b; Theresa Hitchens, "New Space Force Acquisition Exec Eschews More Reorganization," *Breaking Defense*, June 29, 2022c. For further analysis on acquisition, see also Bonnie L. Triezenberg, William Shelton, Megan McKernan, Sarah W. Denton, James Dimarogonas, Brian Dolan, Shane Manuel, Gwen Mazzotta, Sydne J. Newberry, Laurinda L. Rohn, Karen Schwindt, Yuliya Shokh, and Jordan Willcox, *Improving Integration and Synchronization of Space Acquisition and Fielding*, RAND Corporation, RR-A1735-1, 2023.

¹⁶⁵ As an unclassified slide from a SWAC presentation states, "SWAC is responsible for producing the USSF force design to support [USSF] development activities" (SWAC, "SWAC—Shaping the Force Design of US Space Force," briefing, December 17, 2021, Not available to the general public).

military and civilian positions. It models alternative options for space architectures based on identified assumptions and produces a validated force design for different mission areas in succession.¹⁶⁶ Although allied officials have visited SWAC and SWAC does have personnel whose responsibility is external engagement, SWAC's discussion of its activities does not highlight allied or partner considerations, and based on our interviews with SWAC personnel, it has yet to factor allied capabilities or allied needs into its models.¹⁶⁷

Once SWAC develops a force design, the Chief Strategy and Resourcing Officer (CSRO or USSF S5/8) is responsible for turning the force design into a set of requirements. International considerations may play a role in the CSRO's decisions, especially because the CSRO's office includes S5P (Global Partnerships), and the CSRO is intended to consult with other key stakeholders, including USSPACECOM (see Figure 2.3). However, the degree of flexibility for rethinking the requirements once a force design has already been established by SWAC is questionable.

The next key organizations is SSC, the system-of-systems integrator. SSIO contributes advice on "how best to meet the requirement." International considerations are integrated based on contributions from SSC/IA. At the same time, SSC is supposed to consider available commercial services and input from warfighters and laboratories.¹⁶⁸ The PIC, which includes seven members of relevant organizations to ensure coordination and synchronization of U.S. space acquisition decisions, is intended mainly to provide unity of effort and can only make a recommendation on an acquisition decision. Anecdotally, the PIC is mainly focused on U.S. rather than allied investments and often reaffirms recommendations from SWAC.¹⁶⁹

The next key organizations are the service acquisition executive (within SAF/SQ) and subordinate PEOs who have formal authority to commit resources and execute programs.¹⁷⁰ There are five PEOs that focus on different mission areas and have dual chains of authority through SSC and SAF/SQ.¹⁷¹ The decision of PEOs is critically important for allied integration

¹⁶⁶ See Theresa Hitchens, "Exclusive: Space Warfighting Analysis Center Chief on Creating 'Something Out of Nothing,'" *Breaking Defense*, January 19, 2022a; and SWAC, 2021.

¹⁶⁷ U.S. officials, virtual interviews with the authors, February 2022. Note that several media articles publicizing SWAC's activities do not mention international or allied capabilities. See Hitchens, 2022a; and Courtney Albon, "New Space Modeling and Sim Environment to Boost Cooperation Between Scientists and Force Designers," C4ISRNET, February 10, 2022.

¹⁶⁸ The Warfighter Integration Office at SSC includes representatives from the CCMDs (Hitchens, 2022b).

¹⁶⁹ U.S. officials, in-person interviews with the authors, December 2021–January 2022.

¹⁷⁰ There are also two supervisory councils, the Space Executive Committee and the Space Force Acquisition Council, which oversee the PIC and the acquisition executives, respectively. SAF/SQ head Frank Calvelli observed in a June 2022 article that he saw no need for further reorganization and instead intended to use the acquisition council to oversee the process: "'Congress gave me this neat little tool called the Space Acquisition Council,' he said. 'And so my intentions are to kind of use that as the integrating function across all things space for the DoD'" (as quoted in Hitchens, 2022c). See also Guetlein, 2021.

¹⁷¹ The PEOs include Assured Access; Communications and PNT; Space Sensing; Space Domain Awareness and Combat Support; and Battle Management Command, Control, and Communications (Leon, 2022).

because PEOs (or the program managers who work under them) have the decisional authority to decide if and how to integrate allied systems with U.S. systems.¹⁷² The directives that govern PEO responsibilities, however, do not incentivize the inclusion of allied equipment per se, nor do they incentivize the achievement of interoperability, resilience, or other architectural attributes that might drive a PEO or program manager to incorporate allied systems. Instead, PEO performance is centered on how well it controls cost and schedule while delivering capability.¹⁷³

This account offers some examples of the limited ways in which allied considerations play into USSF force design and program execution. While reality may differ from that shown in Figure 2.3, such a framework implies that allied requirements and capabilities are primarily factored in only after a force design is developed—when PEOs have limited incentive to factor in allied considerations. Although DoD leaders’ rhetoric may emphasize allied integration, the USSF force design and program execution process is not yet allied by design in the sense that each key organization incorporates allied considerations into their decisionmaking.

Some Mission Areas Are Fruitful for Cooperation

Many U.S. allies are consumers of U.S.-operated space services, such as navigation and timing services from GPS and SSA data from Space-Track.org. There are significantly fewer examples of U.S. military commanders consuming services from allied space systems. While there are notable exceptions, such as weather services, those exceptions are largely outside DoD.¹⁷⁴ Two mission areas—SDA and space operations C2—are often perceived to be fundamental for other space activities because they are necessary for knowing where other satellites are and for being able to communicate with one’s own satellites to accomplish other missions. These areas also highlight where greater cooperation with allies could be most promising, as well as offering examples of the limits on greater cooperation with allies.

¹⁷² According to the SSC reorganization of December 2021, SSC/IA also is intended to work with the PEOs to engage international partners (unclassified excerpt of Guetlein, 2021).

¹⁷³ Roles and responsibilities of PEO and program managers are described in AFI 63-101/20-101, *Integrated Life Cycle Management*, Department of the Air Force, June 30, 2020, incorporating change 1, November 23, 2021.

¹⁷⁴ Weather-sensing space capabilities for the United States are largely provided by the National Oceanic and Atmospheric Agency (NOAA). NOAA participates in and orchestrates a worldwide federated system of partner nations to provide a Global Forecast System (GFS). NOAA’s organizational data-sharing policies for the GFS allows unrestricted access to forecasts and regulated access to weather-prediction models and, in some cases, raw data. Interoperability is fostered by adoption of global standards. In addition, NOAA operates its own weather satellites and the remaining satellites of the Defense Meteorological Satellite Program for the USSF. This federated system of partner nations could serve as a blueprint for the USSF in setting up partnerships for other predominantly civilian space capabilities, such as SSA, and perhaps one day even tactical SATCOM or nonmilitary-coded PNT. Links to standards and implementation guidance (including GIT repositories) can be found online (Environmental Modeling Center, “Global Forecast System,” webpage, undated).

Space Domain Awareness

SSA and SDA are closely related activities covering a range of efforts, from surveillance and tracking of objects in space to threat assessments.¹⁷⁵ While some SDA activities are intertwined with sensitive U.S. military and intelligence activities, basic observation and recording of space-based objects are much less-sensitive activities. Any nation, commercial space surveillance provider, or even amateur astronomer can contribute to the space surveillance mission; surveillance provides a very low entry point for multinational collaboration and integration. Overall SSA, by contrast, is possessed by relatively few countries. In the United States, this role is handled by USSPACECOM and the USSF's 18th Space Defense Squadron (18th SPDS) and requires the ability to analyze data and to predict and synthesize facts and evidence into an assessment of possible threats and probable future outcomes.¹⁷⁶

Recognizing the ability of many countries to contribute to space surveillance, the United States has signed SSA sharing agreements with at least 26 countries,¹⁷⁷ which give those nations access to U.S.-gathered data through Space-Track.org.¹⁷⁸ Additionally, events like Global Sentinel and SACT support U.S. allies in their ability to contribute to SDA by improving their understanding and capacity to conduct SDA operations. Although there are few examples of combined acquisition in SDA, there are examples where allied capabilities contribute to U.S. SDA and to standards in place for data-sharing.¹⁷⁹ These standards are not currently recognized as international or NATO standards, which would be recommended for interoperability, but they may form a basis for such standards.¹⁸⁰

¹⁷⁵ In November 2019, Air Force Space Command mandated a shift from the use of SSA to SDA, explaining, "The implication of space as a warfighting domain demands we shift our focus beyond the Space Situational Awareness mindset of a benign environment to achieve a more effective and comprehensive SDA, much the way the Navy works to achieve maritime domain awareness in support of naval operations and the Air Force strives for maximum air domain awareness to achieve air superiority" (Sandra Erwin, "Air Force: SSA Is No More; It's 'Space Domain Awareness,'" *Space News*, November 14, 2019).

¹⁷⁶ U.S. officials, in-person interviews with the authors, March 2022; the 18th SPDS (@18thSDS) regularly posts to Twitter.

¹⁷⁷ Sandra Erwin, "U.S. Space Command Signs Data-Sharing Agreement with Libre Space Foundation," *Space News*, July 3, 2021a.

¹⁷⁸ Space-Track.org provides simple *two line element sets* (i.e., highly simplified projections of the object's orbit) for most objects in space to promote space flight safety (Space-Track.org, homepage, undated). Although there have been discussions for several years about transitioning this task to a civilian agency (akin to NOAA's role in the weather mission), this has not yet happened (U.S. officials, in-person interviews with the authors, March 2022).

¹⁷⁹ Government of Canada, "Space Situational Awareness and the Sapphire Satellite," archived webpage, January 30, 2014.

¹⁸⁰ For example, a NATO standard for ground-moving target indicator data has had significant beneficial effects in enabling the rapid advancement of machine learning or other algorithms for discovering evidence of improvised explosive devices. A similar standard for space-moving target indicator data could have similar beneficial effects. For more information on the benefits of interoperability standards on military operations, see Jon Schmid, Bonnie L. Triezenberg, James Dimarogonas, and Samuel Absher, *The Role of Standards in Fostering Capability Evolution: Does Design Matter? Insights from Interoperability Standards*, RAND Corporation, RR-A1576-1, 2022.

Space Operations Command and Control

Although “defining resilient space order of battle and architectures” is a top operational imperative of the SAF,¹⁸¹ limited progress has been made in evolving existing USSF systems to a coordinated space battle management system that can be shared with various allies.

Part of the challenge is that several U.S. efforts to upgrade its own space battle management system—which would need to track and catalog the millions of objects in space today among other tasks—have not achieved their aspirations. A 2019 U.S. Government Accountability Office report cites three notable attempts: (1) the Cheyenne Mountain Upgrade (1981–1998, 11 years late, \$1 billion over budget, with key capabilities undelivered); (2) the Combatant Commander’s Integrated C2 System (2000–2006, three years late, \$0.25 billion over budget when terminated with key capabilities undelivered); and (3) the Joint Space Operations Center Mission System (2009–2018, three years late, \$0.20 billion over budget when terminated with key capabilities undelivered).¹⁸²

Given the challenges of a space C2 system, developing widely releasable systems that facilitate integration with allies will be a particular challenge. A new infrastructure (or backbone) for SDA called the Advanced Tracking and Launch Analysis System (ATLAS) is in development. However, at the time of our interviews, a REL version faced various hurdles to reaching completion, including a lack of a firm requirement.¹⁸³ Although there are aspirations to ensure compatibility for select allies, establishing a C2 system that seamlessly communicates among allies could prove challenging. As noted in Chapter 3, allies may seek to develop their own C2 systems to ensure their own sovereign capabilities. But the difficulties in developing a releasable C2 system, which can be understood as a minimum for any further cooperation, show the limits in bringing about effective integration with allies on acquisition issues.

Assessment

DoD policy documents and statements from U.S. leaders have emphasized the need for improving cooperation with allies on research, development, and acquisition. However, at least for the USSF, rhetoric has not been matched by an effort to ensure that formal acquisition processes incorporate allied requirements and capabilities by design—meaning from the beginning and as part of the considerations of each organization.

¹⁸¹ Charles Pope, “Kendall Details ‘Seven Operational Imperatives’ & How They Forge the Future Force,” U.S. Air Force, March 3, 2022.

¹⁸² U.S. Government Accountability Office, *Space Command and Control: Comprehensive Planning and Oversight Could Help DoD Acquire Critical Capabilities and Address Challenges*, GAO-20-146, October 2019.

¹⁸³ John Bennion, “Modernizing Space Domain Awareness with ATLAS: Advanced Tracking and Launch Analysis System,” Space Systems Command, January 25, 2022; Kobayashi Maru, “On 20 December 2021, ATLAS (Advanced Tracking and Launch Analysis System) successfully passed both Category A and B tests,” Twitter post, January 7, 2022; observations of RAND study team member in attendance at SSC event in April 2022; U.S. official, email correspondence with the authors, May 11, 2022.

The USSF acquisition efforts seem understandably focused on developing U.S. capabilities based on U.S. requirements, and it may be the case that many of these requirements and programs are not sharable with allies. To avoid allied frustration, the USSF will need to increase the degree to which allied considerations play into each stage of the force design and program execution process or shift its rhetoric to deemphasize the ambition for close cooperation with allies on acquisition.

The fact that the United States and allies are part of the multinational operation OOD, which we discuss in detail in the next section, highlights the need for a coordinated multinational acquisition approach, but DoD procedures make this difficult. Under U.S. acquisition procedures, a combined (i.e., U.S. and allied) commander cannot set formal requirements to be realized by a combined architecture and acquisitions process.¹⁸⁴ Instead, current DoD policy gives the CCMDs the authority to set capability requirements, which are negotiated through a joint (U.S. only) requirements oversight council (JROC).¹⁸⁵

Our analysis also explored two key mission areas—SDA and space operations C2. Although some U.S. organizations have focused on developing greater cooperation with allies in these areas, technical challenges remain. Developing releasable systems that can be acquired by other allies can be helpful, but U.S. organizations would do better to focus on building widely shared technical standards and interoperable systems. As discussed further in Chapter 3, this could enable allies to better integrate their own systems with those of the United States and could limit the need to pursue complex multinational acquisition efforts.

Integrating Allies in Combined Space Operations

Status Quo

Currently, the primary mechanisms under which allies join with the United States to undertake *combined* (meaning with more than one country) operations is OOD.¹⁸⁶ Allies also have EOs and LNOs within the CSpOC and exchange data with the CSpOC and other operations centers.

OOD is a named operation of the U.S. military commanded by the Commander of USSPACECOM. Media accounts describe the mission as the “formal, overarching international effort to deter hostile actions in space,” and “a multinational effort led by U.S. Space Command

¹⁸⁴ U.S. official, email correspondence with the authors, April 11, 2022.

¹⁸⁵ The template for a capability description document (CDD), the output of the JROC process, contains a section for joint interoperability but not for combined interoperability. However, international interoperability *standards*, should they exist, could be included as requirements in a CDD.

¹⁸⁶ It should be noted, however, that the JTF-SD is a collaboration between the USSF and the NRO. The NRO in turn is part of the IC, which has an intelligence alliance with Australia, Canada, New Zealand, and the United Kingdom known as FVEY. Although this is not a combined operation, per se, it is a form of allied integration in space operations.

to enhance the resilience of space systems, deter hostile acts in space and reduce the spread of orbital debris.”¹⁸⁷ Currently reported participants include Australia, Canada, and the United Kingdom.¹⁸⁸

CSpOC is the primary organization tasked with managing U.S. CSpO; it falls under the CFSCC and receives forces from Space Delta 5.¹⁸⁹ The CSpOC hosts EOs and LNOs from allied nations, including Australia, Canada, and the United Kingdom. Maj Gen Deanna Burt explained in a recent article that the United States maintains the operations floor “at the U.S. top secret, Five Eyes level,” which facilitates the efforts of allied EOs.¹⁹⁰ In addition, the CSpOC exchanges data with space operations centers operated by several major U.S. allies, including Australia, Canada, France, Korea, and the United Kingdom, as well as NATO’s Space Center.¹⁹¹ Also important to note, cooperation with allies happens through the functional U.S. space operations centers.¹⁹²

Assessment

We observed two broad challenges to greater operational integration with allies. The first is the limited ability of USSPACECOM and the USSF to share classified information with allies, including both in U.S. operations centers and with allied operations centers, which hinders allied integration into operations in several ways.¹⁹³ As noted in the section on DoD disclosure policy, DoD components are permitted to disclose only information for which they are the originator. Given the number of organizations creating relevant information in the space domain, this policy creates hurdles for real-time information-sharing for USSPACECOM. Limitations on information release can seriously hinder the effectiveness of EOs in U.S. operations centers, as well as interoperability with allied operations centers. Disclosure limitations were also amplified by insufficient numbers of FDOs. As of March 2022, for example, CFSCC was in the process of

¹⁸⁷ A USSPACECOM news release states, “Operation OLYMPIC DEFENDER is a key multinational effort intended to optimize space operations, improve mission assurance, enhance resilience, and synchronize U.S. efforts with its allies” (Tyler Whiting, “Coalition Partners, US, UK, Agree to Share Technical Foundation for Space Operations,” news release, U.S. Space Command, August 14, 2020a).

¹⁸⁸ Cohen, 2021.

¹⁸⁹ CFSCC, July 2020. CSpOC contains four divisions and three squadrons: Combat Operations Division, Strategy & Plans Division, Intelligence, Surveillance and Reconnaissance Division (ISR), SATCOM Integrated Operations Division (SIOD), 614th Combat Training Squadron, 614th Air and Space Communications Squadron, and 9th Combat Operations Squadron.

¹⁹⁰ Cohen, 2021.

¹⁹¹ As Maj Gen Burt explained, “information about our constellations is passed back and forth to each other . . . because we’re operating together as a coalition on the [operations] floor” (as quoted in Cohen, 2021).

¹⁹² The Joint Overhead Persistent-Infrared Center fact sheet notes that it “provides tailored support to each of the Combatant Commands (COCOMs) and partner Coalition operations centers including the Australian Space Operations Center (AUSSpOC), Canadian Space Operations Center (CANSpOC), and United Kingdom Space Operations Center (UKSpOC)” (CFSCC, 2020b).

¹⁹³ Allies have similar constraints and those are covered in Chapter 3.

hiring an FDO and prior to that it needed to rely on USSPACECOM for disclosure decisions.¹⁹⁴ Another issue is the feasibility of sharing information with non-FVEY allies. For example, as noted above, the CSpOC operations floor operates at a FVEY level of classification. Integrating allies who are not members of the FVEY alliance will become increasingly difficult for countries who lack existing intelligence or information-sharing arrangements with the United States.

A second, related challenge that we observed is the lack of availability of interoperable communications among allies at a range of classification levels. When two organizations lack an ability to communicate at a given level of classification, they cannot achieve higher levels of integration. In this sense, the level of communications interoperability will dictate the level of integration. DoD has recognized the importance of developing interoperable networks with allies and is pursuing various novel systems to facilitate better communications with allies. The Mission Partner Environment–Information System (MPE-IS) is a program to enable improved communications between the United States and allies, which has already been deployed to several CCMDs. MPE-IS is intended to be scalable and customizable, to enable allies to connect to U.S. systems through their own networks, and permit data flow between the SECRET Internet Protocol Router Network (SIPRNET) and specific mission enclaves. To date, MPE-IS has been established in GCCs (including USCENTCOM, USEUCOM, and U.S. Africa Command).¹⁹⁵ A specific application of MPE-IS or even a standard for space command, control, and communications for the DoD space enterprise was considered an “urgent need” by some but, at the time of this writing, there was no formal requirement for such a system.¹⁹⁶

Conclusions and Findings

In this chapter, we have explored the DoD space enterprise’s approach to cooperation with allies. While multiple DoD organizations articulate that integration with allies is central to the USSF mission, the organization, policy, regulations, and practices of these organizations are often inconsistent with this goal. Below, we highlight several selected findings discussed in the “Integrating Allies in Combined Space Operations” section. These point to recommendations that are developed further in Chapter 5, which also draw on additional findings in this chapter:

- *Incoherence in the roles and responsibilities of DoD organizations for setting policy and engaging with allies creates inevitable incoherence in identifying priorities and approach.* At least four separate organizations—OUSD(P), SAF/IA, USSPACECOM, and the USSF—appear to be seeking to take the lead in setting priorities for engagement with allies and undertaking this engagement. Available roles and responsibilities

¹⁹⁴ U.S. officials, in-person interviews with the authors, March 2022.

¹⁹⁵ Department of Defense Chief Information Officer, “DoD’s Mission Partner Environment–Information System (MPE-IS),” webpage, undated; C. Todd Lopez, “Mission Partner Environment Cuts Decision Making, Kill Chain,” U.S. Department of Defense, November 29, 2021.

¹⁹⁶ U.S. personnel, interviews and email correspondence with the authors, April 2022.

specified by rules and policy statements do not clearly differentiate between their respective activities. Although this challenge may be particularly acute for issues of allied cooperation, it also likely applies in other areas. Perhaps the best way to address this issue is by developing DoD guidance at the appropriate level that clarifies the roles and responsibilities of each DoD organization.

- *DoD disclosure policy inhibits efficient or necessary sharing of information with allies at the level implied by DoD policy statements.* DoD components, including the USSF and USSPACECOM, require case-by-case disclosure decisions by FDOs and data owners to share relevant information with allies. EOs are not able to fulfill their functions as U.S. officers given the existing rules. These issues are not limited to space; however, the classification issues may be especially limiting to space given the desire for greater allied integration and the need to share highly classified information. There are three possible ways to address this issue: change DoD disclosure procedures, achieve a broad exception for space information in DoD disclosure policy, or explain to allies that greater cooperation and integration is not feasible.
- *Force design is not allied by design.* The formal USSF process for identifying programs of record incorporates allied capabilities and needs in a limited way, at only one stage of the process. Ensuring that allied needs, resources, and capabilities factor into each stage of the force design process—from SWAC to the PEOs—will be necessary to achieve the goal of ensuring that allied considerations are considered at the beginning rather than at the end of acquisitions efforts.
- *Lack of standards and interoperable systems contribute to technical interoperability between U.S. and allied systems.* U.S. and allied systems have some ability to exchange information, but their level of interconnectivity is disappointing. This issue presents two key opportunities: improve general networks for communicating with allies using voice, email, etc., and build operational networks and systems that can interconnect especially for exchanging operational information, such as ATLAS or SSA systems.
- *Progress in recognizing and addressing challenges associated with cooperation with allies is being made among multiple DoD organizations but may be insufficient to address them fully.* For examples, DoD policy statements, including the August 2022 space policy directive (DoDD 3100.10), set goals, address challenges, and improve the assignment of responsibilities. DoD training and exercise activities have increasingly included allies, including the Schriever wargame and other wargames, exercises, and training programs. Current programs for interoperable IT systems—such as MPE-IS—are underway. The progress created by these activities is substantive, yet it is unlikely to meet the extent of challenges identified in this chapter.

Chapter 3. Perspectives of Select Allies

This chapter presents the perspectives of the six allies that we selected based on the length and depth of their existing relationships with the United States. As previously discussed in Chapter 1, we included existing CSpO Initiative participants—Australia, Canada, France, Germany, Japan, and the United Kingdom—and Japan in our analysis. We included Japan because of its previous participation in the Schriever wargame and forthcoming space cooperation activities, such as the Quasi-Zenith Satellite System. In Chapter 2, we discussed how U.S. policy seeks to leverage allies’ capabilities to address challenges and ensure resilience in space. The willingness and ability of these allies to develop space capabilities and to make these capabilities integrated or interoperable are essential for U.S. goals to succeed. As partners of the DoD space enterprise, these allies also have important perspectives about what issues within U.S. organizations hinder the United States’ ability to improve cooperation with allies and meet its policy objectives.

Allied perspectives are critical to understanding the limitations of current cooperation, but it is also important to recognize that allies do not necessarily share the same specific interests as the United States. Not every allied concern should be addressed by the United States, and indeed, some limits on cooperation with some or all allies may be necessary and desirable. In other cases, current cooperation practices may not meet U.S. policy goals, and it may be feasible to address such problems. Some allies may not be willing or able to deepen cooperation with the United States due to their own internal policies and practices. Allied perspectives are essential to understanding how to rectify the gap between U.S. intentions and practice.

The perspectives presented in this chapter are based on a wide variety of not-for-attribution conversations with allied officials. The study team conducted field visits to defense ministries and military space facilities in Canada, France, Germany, and the United Kingdom, supplemented with additional conversations with nongovernment analysts. The team also conducted in-person and virtual meetings with officials from Australia and Japan. Overall, this chapter represents our analysis of 71 interviews with 84 officials and subject-matter experts. In some cases, there may be relevant differences in policy or emphasis among different elements of the allies’ governments. Because the scope of our study focuses on defense space cooperation, we sought to understand the range of opinion from discussions with defense officials in different defense organizations and outside analysts. There may be additional variation in policy or emphasis among other organizations in these countries, which could be an area for further study.

We first present a short summary of each country’s willingness and ability to contribute to defense space cooperation based on our interviews and survey of key allied documents. This assessment highlights that allies had significant capabilities to contribute, especially on SDA and SATCOM, and increasingly in other mission areas as well. We also describe the overall

relationship of each ally and the United States according to the allied relationship spectrum outlined in Chapter 1. In the second section, we identify some major themes that emerged from conversations with multiple allies that are relevant to improving U.S. integration and interoperability with the most capable allies. In the final section, we explore a key finding from the interviews: In addition to addressing any issues hindering cooperation, it is critical for the United States to more clearly communicate its intent to allies to avoid unmet expectations.

Summary of Allies' Key Policies, Capabilities, and Concerns

United Kingdom

The United Kingdom is one of the United States' closest and most capable allies in general and in the space domain. Recent UK strategy documents outline a new emphasis on space.¹⁹⁷ Changes include the standup of the UK Space Command and the Ministry of Defense's (MOD's) space directorate, as well as plans for 1.4 billion pounds (\$1.7 billion USD) of additional investment, expanding beyond SATCOM and missile warning capabilities to new ISR, SDA, and protect-and-defend capabilities. Recognizing that it lacks the resources to meet its full range of needs and that space capabilities enable an independent foreign policy, the United Kingdom seeks a mix of sovereign and shared capabilities through an "own, collaborate, access" framework.¹⁹⁸

On our allied relationship spectrum, the United Kingdom's overall level of space activity with the United States is best described as *collaboration*, and it is perhaps the closest to *integration* of the allies studied here. There is regular contact between policy officials thanks, in part, to the 22 UK EOs and LNOs spread throughout the DoD space enterprise.¹⁹⁹ The United Kingdom and the United States also have extensive formal agreements, such as UK participation in OOD, the CSpO Initiative, and most recently a new MOU between the U.S. and UK space commands, as well as a separate bilateral agreement between the USSF and UK Space Command.²⁰⁰ Yet UK officers note important challenges. Information-sharing is restricted by formal rules and common practices, including those for UK EOs who lack access to classified information that they see as necessary to fulfill their job duties.²⁰¹ Finally, various UK officials

¹⁹⁷ Government of the United Kingdom, *Global Britain in a Competitive Age: The Integrated Review of Security, Defence, Development and Foreign Policy*, CP 403, March 2021, p. 21; UK Ministry of Defence, 2022.

¹⁹⁸ UK Ministry of Defence, 2022; UK officials, interviews with the authors, Washington, D.C., and the United Kingdom, January–March 2022.

¹⁹⁹ UK officials, interviews with the authors, Washington, D.C., and the United Kingdom, January–March 2022.

²⁰⁰ UK officials, interviews with the authors, Washington, D.C., Vandenberg SFB, and the United Kingdom, January–March 2022. See also USSPACECOM, 2022a. For information on the USSF-UK bilateral agreement, see UK Space Command, 2022.

²⁰¹ UK officials, interviews with the authors, Washington, D.C., Vandenberg SFB, and the United Kingdom, January–March 2022.

provided examples of receiving inconsistent or insufficient information about U.S. priorities for UK investments, which could lead to missed opportunities for the United States to guide a coherent allied investment strategy.²⁰²

Canada

Canada is a space cooperation ally with potential for a stronger and greater role. Canada's most recent (2017) defense strategy, *Strong Secure Engaged*, lists space as an important emerging domain that allows the Canadian defense enterprise to anticipate threats and functions as a joint enabler across operational domains.²⁰³ Canada plans a significant expansion of its defense space enterprise, setting up the Canadian space division and listing several space priorities as part of its planned increase in defense spending from \$18.9 billion Canadian dollars (CAD; \$14.7 billion USD) in 2016–2017 to \$32.7 billion CAD (\$25.4 billion USD) by 2026–2027.²⁰⁴ Canada already possesses significant space capabilities for ISR, SATCOM, and SSA—its three major defense space priorities—all of which are integrated in some form with U.S. capabilities.²⁰⁵ Despite having these capabilities, Canadian officials perceive a general lack of space knowledge within the Canadian government. Across the range of officers interviewed, their greatest concern is not that the United States is not being a good partner but rather that Canada is not being a good-enough partner to ensure continued U.S. cooperation.²⁰⁶ Canadian officials recognize that because of domestic constraints on defense spending, Canada must rely on the United States to provide both the majority of capabilities and leadership in the space domain.²⁰⁷

Canada's cooperation with the United States achieves a level of integration that we characterize as *collaboration*. Canada participates in both the CSpO Initiative and OOD, and for some years, it has exchanged defense space officers with the United States, participated in multilateral space exercises, and attended U.S.-led space training courses.²⁰⁸ Canadian defense space officials also assert that the communications interface between Canada and the United States, while still facing technical and capacity-based hurdles, is the best among all U.S. allies.²⁰⁹ The system is not fully integrated, however, and Canadian officials have expressed significant

²⁰² UK officials, interviews with the authors in the United Kingdom, March 2022.

²⁰³ Canadian Department of National Defence, *Strong Secure Engaged: Canada's Defence Policy*, 2017.

²⁰⁴ Canadian Department of National Defence, 2017, p. 13.

²⁰⁵ Canadian officials, in-person interviews with the authors, April 2022.

²⁰⁶ Canadian officials, in-person interviews with the authors, April 2022.

²⁰⁷ Canadian officials, in-person interviews with the authors, April 2022.

²⁰⁸ Canadian officials, in-person interviews with the authors, April 2022.

²⁰⁹ Canadian officials, in-person interviews with the authors, April 2022.

concerns that the United States frequently gives “no articulation . . . about where [the United States needs] allies to contribute,” inhibiting true combined acquisition efforts.²¹⁰

Australia

In the past, Australia has relied heavily on U.S. space services, but it is now increasingly prioritizing sovereign capabilities.²¹¹ Previous levels of cooperation with the United States have been high for certain missions, such as the Wideband Global Satellite constellation.²¹² Recent strategic documents, including the *2020 Defense Strategic Update*, identify the goals of stability, security, and sovereignty in the immediate region around Australia.²¹³

Even as Australian officials emphasize sovereign capabilities, they also express a desire to maintain interoperability with the United States beyond their current integration level, which we characterize as *collaboration*.²¹⁴ One official explained that Australia does not expect “to have sovereign capabilities that are not integrated into the U.S. system. . . . [Australia doesn’t] have the capacity to do it alone.”²¹⁵ Australia also hopes to add resiliency to and bolster U.S. and Australian systems: Interviewees have noted, for example, that the Australian space industry sector is now booming and that the island itself is an excellent launch site. However, despite Australia’s willingness to maintain interoperability with the United States, there are cooperation challenges. First, Australian officials describe acquisition as “stove-piped” by nation, that is, Australian (sovereign) space capabilities are developed with Australian space suppliers and USSF space capabilities are developed with U.S. suppliers. They believe an integrated market would induce better interoperability.²¹⁶ Second, Australian officials identified bureaucratic impediments to interoperability, including NOFORN information, Missile Technology Control Regime restrictions, and lack of information transfer.²¹⁷

²¹⁰ Canadian officials, in-person interviews with the authors, April 2022.

²¹¹ Australian Department of Defence, *Australia’s Defence Space Strategy*, 2022, p. 12.

²¹² Australian Defence Space Command, *Space Power eManual: Light-Speed Edition*, Department of Defence, 2022, p. 23.

²¹³ Priority capabilities for investment include PNT, SATCOM, ISR, and SDA (Australian Department of Defence, *2020 Defence Strategic Update*, 2020, p. 25; Australian Department of Defence, 2022, p. 19).

²¹⁴ Examples include Australia’s EOs in the United States, participation in the Schriever wargame and other exercises, and policy coordination with U.S. officials (Australian Defence Space Command, 2022; Australian officials, virtual interviews with the authors, May 2022).

²¹⁵ Australian official, virtual interview with the authors, May 2022.

²¹⁶ Australian official, virtual interview with the authors, May 2022.

²¹⁷ Australian official, virtual interview with the authors, May 2022.

France

Space is an important component of France's history of strategic independence, and France values its autonomy in space. However, Paris recognizes that it does not have unlimited capabilities and capacity, and therefore, it has become more amenable to working with other countries to enhance its own resiliency in select areas.²¹⁸

We assess France's level of integration with the United States as *collaboration*. Of the allies studied here, France has perhaps the broadest range of capabilities aside from the United States: France possesses its own SATCOM, ISR, and SDA capabilities. And among U.S. allies, France has spoken most publicly about developing capabilities for the protect-and-defend mission.²¹⁹ While France is interested in greater cooperation in several areas, including the protect-and-defend mission and SSA, its pursuit of autonomy and rejection of integration limit its willingness to rely on the United States.²²⁰ France has two LNOs at USSPACECOM—one at Vandenberg SFB and one at Peterson SFB—but does not currently have EO positions in the United States.²²¹ The United States and France cooperate through the CSpO Initiative and exercises such as Global Sentinel, SACT, and the French Space Command-led exercise AsterX.²²² French officials highlight the value of these exercises to deepen political and legal conversations and acknowledge the role of the Schriever wargame and the CSpO Initiative in facilitating the development of the recent French Space Defense Strategy.²²³

Germany

Traditionally, Berlin has prioritized investing in space for civil purposes.²²⁴ As Germany has gradually transitioned to view space as a security domain over the past decade, Berlin has

²¹⁸ French Ministry for the Armed Forces, *Space Defence Strategy: Report of the "Space" Working Group*, 2019; French officials, in-person and virtual interviews with the authors, December 2021 and March 2022.

²¹⁹ In July 2019, French Defense Minister Florence Parly gave a public speech articulating the need for "active defense" following Russian aggressive actions ("France to Develop Anti-Satellite Laser Weapons: Minister," 2019). On the Yoda system, see also Julien Lausson, "La France construit Yoda, un patrouilleur spatial pour protéger ses satellites" ["France Builds Yoda, a Space Patrol System to Protect Its Satellites"], Numerama, November 13, 2020; French officials, in-person interviews with the authors, March 2022.

²²⁰ French officials, in-person interviews with the authors in France, March 2022.

²²¹ French officials, virtual interview with the authors in France, March 2022; French officials, email correspondence with the authors, January 2023.

²²² Commandement de l'Espace [French Space Command], "French Space Command," Armée de l'Air et de l'Espace [French Air and Space Force], 2022, p. 2; French officials, virtual interviews with the authors, March 2022.

²²³ For example, the French Space Command was created a few days after USSPACECOM, in what was described as "twin strategies" (French analysts and officials, virtual interviews with the authors, December 2021 and March 2022).

²²⁴ Federal Ministry of Economics and Technology, *Making Germany's Space Sector Fit for the Future: The Space Strategy of the German Federal Government*, November 2010, p. 19.

focused on building dual-use space capabilities.²²⁵ German bureaucratic and cultural preferences have led Germany to adopt a more measured approach to space as a military domain.²²⁶ Germany prefers to work in alliances—such as NATO or the European Union—to approach emerging military problem sets.²²⁷

Overall, we assess Germany’s integration with the United States as being at the level of *collaboration*. Germany is a member of the CSpO Initiative (Germany and the United States co-chair the Capabilities Architecture Working Group), participates regularly in the Schriever wargame, and prioritizes, in particular, working with the 18th SPDS on SSA.²²⁸ German officials acknowledge the value of U.S.-led efforts, such as the CSpO Initiative and the Schriever wargame, for enabling Germany to develop its norms of behavior in space and a space C2 cycle.²²⁹

Japan

Japan is a key U.S. ally with mature capabilities in launch, PNT, ISR, and SATCOM, as well as developing capabilities in SSA and space control. However, due to legal, political, and social constraints, Japan’s space capabilities have generally remained within civilian organizations like JAXA, Japan’s National Aeronautics and Space Administration—equivalent.²³⁰ For this reason, Japan’s 2020 Basic Plan on Space Policy and the standup of its Space Operations Group represent an important shift by the government of Japan toward engaging in space operations. The 2020 Basic Plan recognized space as a new operational domain and space security as Japan’s top national interest goal for space policy.²³¹ In 2020 and 2022, Japan’s Ministry of Defense (MOD) stood up its first two space operations squadrons focused on SSA and space control respectively, both priority areas identified in the 2020 Basic Plan.²³² Commensurate with changing requirements, Japan’s MOD has increased its budget allocated to space from 50.6 billion yen (\$474 million USD) in FY 2020 to 79.0 billion yen (\$632 million USD) in FY

²²⁵ Federal Ministry of Economics and Technology, 2010, p. 19.

²²⁶ German official, virtual interview with the authors, February 2022.

²²⁷ German official, virtual interview with the authors, February 2022.

²²⁸ Germany also has stationed LNOs in the United States, including at NGA, USSPACECOM, and SSC (German officials, in-person interview with the authors in Germany, March 2022).

²²⁹ German official, in-person interview with the authors in Germany, March 2022).

²³⁰ Takuya Wakimoto, “A Guide to Japan’s Space Policy Formulation,” *Pacific Forum*, Vol. 19, Working Paper 3, April 2019. See also Paul Kallender, *Japan’s New Dual-Use Space Policy the Long Road to the 21st Century*, Center for Asian Studies, IFRI Note No. 88, November 2016; Yasuhito Fukushima, “Briefing Memo: Japan’s Use of Space for Defense Purposes,” National Institute for Defense Studies, March 2017.

²³¹ Japanese National Space Policy Secretariat, *Outline of the Basic Plan on Space Policy (Provisional Translation)*, June 30, 2020.

²³² “ASDF Space Operations Unit Established to Monitor Space Debris and Satellites,” *Japan News*, March 20, 2022.

2022.²³³ Still, this is only a fraction of Japan’s larger space-related budget, the bulk of which goes to JAXA and its parent Cabinet Secretariat to maintain programs related to ISR, SSA, PNT, and launch.²³⁴

Despite Japan’s major strides in developing its defensive space capabilities, Japan’s integration with U.S. activities remains limited—by our metric, at the level of *cooperation*. Japan does not participate in the CSpO Initiative or OOD, and it lacks a formal mechanism for joint operations with the United States. While Japan has stood up a Space Operations Group, it still lacks a space operations command to integrate with multinational partners.²³⁵ However, the United States remains supportive in Japan’s development of space capabilities, and Japanese officials would be interested in further cooperation in SDA, missile warning, space control, and SATCOM mission areas.²³⁶ Japan has maintained a successful liaison program with USSPACECOM and procures technical assistance in functional areas, such as SSA, through the U.S. foreign military sales process.²³⁷

Selected Themes on Allied Willingness and Ability to Integrate

In this section, we highlight themes that emerged across our conversations with key allies that affect the potential for wider and closer integration with the United States.

Allies Understand Their Dependence on U.S. Capabilities in Some Areas and Seek to Contribute to Collective Capabilities

All six allies included in this study acknowledged that the scale of U.S. space capabilities is dramatically greater than their own. They recognize growing threats in the space domain and the importance of cooperation with the United States and other partners.²³⁸ The United States is also one of the largest bilateral partners on space issues for each of these countries, as noted above. Yet U.S. capabilities do not fulfill all their security concerns, and in some cases, sovereign capabilities are necessary and more desirable. While each country we examined prioritizes its

²³³ The Japanese MOD’s space-related budgets do not include allocations related to ballistic missile defense (Japanese Ministry of Defense, *Defense Programs and Budget of Japan: Overview of JFY2020 Budget*, August 2019; Japanese Ministry of Defense, *Defense Programs and Budget of Japan: Overview of FY2021 Budget*, December 2020; Japanese Ministry of Defense, *Defense Programs and Budget of Japan [Defense-Strengthening Acceleration Package]: Overview of FY2022 Budget [Including FY2021 Supplementary Budget]*, December 2021).

²³⁴ Park Si-soo, “Japan Budgets a Record \$4.14 Billion for Space Activities,” *Space News*, March 9, 2021.

²³⁵ Japanese officials, virtual interviews with the authors, April 2022. Japan’s MOD expects to stand up a SpOC in FY 2023.

²³⁶ Japanese analysts, virtual interviews with the authors, February and August 2022.

²³⁷ Japanese officials, in-person interview with the authors, May 2022. See also, Shinichi Akiyama, “Japan, US to Collaborate on Space Surveillance,” *The Mainichi*, March 30, 2019; and Emma Chanlett-Avery and Caitlin Campbell, *The US-Japan Alliance*, Congressional Research Service, RL33740, June 13, 2019.

²³⁸ See, for example, Morin, 2021.

cooperation with the United States and seeks to contribute to shared capabilities, they all have nuanced positions regarding the desired level of cooperation with the United States.

Some countries, especially Australia, Canada, and the United Kingdom, explicitly stated that U.S. space capabilities are necessary for their security goals. Interviewees discussed the “indispensability” of the United States, and multiple Canadian officials observed that “space is a team sport and the United States is the captain.”²³⁹ UK Air Vice-Marshal Paul Godfrey, commander of UK Space Command, was similarly quoted in a 2022 article noting that the United States “is definitely the lead in the allied collective, global coalition for space,” and he went on to explain that “there is an onus on allies to ensure that the space capabilities or technologies they develop integrate into the ‘big U.S. machine’ and make the U.S. space enterprise more efficient.”²⁴⁰

While allies recognize the United States’ lead position, their dependence on U.S. capabilities varies by mission area. Allies have perhaps the most potential to contribute on SDA, although they also emphasized that they are dependent on the U.S. catalog of space objects.²⁴¹ FVEY allies observed that through the FVEY intelligence-sharing partnership, they have benefited from U.S. sensing capabilities.²⁴² As allied space strategies recognize a growing threat to their countries’ space systems, they increasingly perceive the United States as having superior protect-and-defend capabilities among all allies.²⁴³

Allies are not willing to remain dependent on the United States for all capabilities, however. Allied officials, reflecting the policies outlined above, explained that they need certain capabilities for their own national purposes. For example, for the United Kingdom and France, this includes enabling their nuclear forces and communication with overseas territories.²⁴⁴ Allies also highlighted that they had decided to procure sovereign capabilities because, in some instances, the United States was unwilling to share capabilities. In multiple interviews, for example, French officials and analysts explained the origins of the French defense space program with an anecdote from the Gulf War: The refusal of U.S. officials to share satellite imagery led France to develop its own satellites.²⁴⁵ Similarly, Australian analysts cited the example of delays in the United States sharing of SATCOM bandwidth to explain Australia’s pursuit of new

²³⁹ UK and Canadian officials, in-person interviews with the authors, April 2022.

²⁴⁰ Carberry, 2022.

²⁴¹ One official explained “no one will try to make a space catalog on their own . . . that would be crazy” (Allied official, interview with the authors, March 2022).

²⁴² Allied officials, interviews with the authors, January–March 2022. See also Anthony R. Wells, *Between Five Eyes: 50 Years of Intelligence Sharing*, Casemate, 2020.

²⁴³ Allied officials, interviews with the authors, January–March 2022.

²⁴⁴ UK and French officials, interviews with the authors, March 2022. See UK Ministry of Defence, 2022.

²⁴⁵ French analysts and official, in-person and virtual interviews with the authors, January–March 2022.

SATCOM capabilities.²⁴⁶ Officials from one close ally explained that possessing at least some capabilities enabled them to independently control the release of information in support of their foreign policy rather than asking for the potentially slow release of U.S.-owned information.²⁴⁷ A final, but critical, reason for focusing on sovereign capabilities is their defense industry. France, for example, has perhaps the most developed space launch capability, and it sees maintaining space defense industrial capacity as necessary for sustaining the viability of its nuclear strategic forces, which are produced by the same suppliers.²⁴⁸ Other countries may have fewer capabilities, but the imperative for using their own procurement resources is no less pressing.

In addition to needing sovereign capabilities for their own interests, interviewees—especially from Canada and the United Kingdom but also from Germany—explained that they wanted to acquire additional capabilities to make up for the relative disparity in contributions between themselves and the United States.²⁴⁹ One official explained that their credibility with the United States had to be earned—“you have to bring something to the table”—and therefore, they needed to develop capabilities to contribute.²⁵⁰ Allies’ instinct for burden-sharing could imply that they are willing to cooperate with the United States in building capabilities to address shared challenges.

However, a frequent problem also noted by several allies is that they have insufficient or unclear information from the United States about what capabilities to prioritize or what new systems would represent cutting edge capabilities. Part of their concern may stem from the lack of coherence of DoD organizations, which we discussed in Chapter 2. We further discuss allied views of this concern below. Some allies need to move ahead with their planned procurement activities, but without relevant information, they could invest in systems that do not provide the most modern capabilities, replicate U.S. capabilities, or make investment decisions that do not most efficiently fill shared needs.²⁵¹

Whatever frustrations allies have with cooperation, they recognized the United States as the intellectual leader on space issues and appreciated the training and exercise venues provided by

²⁴⁶ Australian analysts, interviews with the authors, March–June 2022.

²⁴⁷ Allied officials, interviews with the authors, January–March 2022.

²⁴⁸ French analysts, in-person and virtual interviews with the authors, January–March 2022.

²⁴⁹ One German official observed that they receive data from the United States, so they “want to share something with the [United States].” Canadian officials, for example, explained that their space capabilities were “allied by imperative” and that maintaining “the relationship with the [United States] is critical to [Canada’s] warfighting capability.” UK officials similarly recognized their dependence on U.S.-provided capabilities (Canadian, UK, and German officials, interviews with the authors, March–April 2022).

²⁵⁰ Canadian official, interview with the authors, March 2022.

²⁵¹ One UK official explained that the window of opportunity for the United States to provide information to shape some UK investments was closing, given the United Kingdom’s need to move ahead, although discussions with UK officials highlighted the variability of different development levels of different UK programs (UK and French officials, in-person interviews with the authors in the United Kingdom and France, respectively, March 2022).

the United States. Multiple allies mentioned participation in the Schriever wargame as critical for driving their own space policy.²⁵²

Allies Seek Deeper Cooperation Within the CSpO Initiative and Operation Olympic Defender

Allies generally shared a desire to deepen their cooperation and information-sharing with the United States, especially by finding additional ways to work within the CSpO Initiative and OOD. Current participants of both were particularly concerned that adding members would dilute the potential of these organizations.

Allied officials are on the whole disappointed with the achievements of the CSpO Initiative, although they do see value in the organization in line with U.S. views presented in Chapter 2. For example, when we asked U.S. officials to identify the concrete achievements of the group, they had little to point to except the public release of the CSpO Vision 2031.²⁵³ While one might think the CSpO Initiative would be focused on operations given the inclusion of that word in its name, one official observed that “CSpO ends where operations start . . . it is really just a political place [that] can’t do operations.”²⁵⁴ The lack of progress is striking given that the initiative has sought to synchronize combined operations, acquisitions, and procurement for more than a decade.²⁵⁵ Allied officials did recognize that the CSpO Initiative helped to introduce them to their counterparts, establish lines of communication that would not otherwise exist, and develop thinking on shared norms of behavior in space. While the policy coordination associated with the CSpO Vision 2031 document was time consuming and frustrating, it did help participants understand each other’s policies.²⁵⁶

Officials representing the members of the CSpO Initiative were skeptical about expanding membership beyond the current seven members. They raised concerns that policy divergence and problems with information-sharing were likely to multiply by adding more countries. But a greater concern seemed to be that adding more countries would lead the CSpO Initiative to

²⁵² One official explained that the Schriever wargame drives discussion within the Bundeswehr, for example, because “it shows everything that is possible” in future space operations (German official, in-person interview with the authors in Germany, March 22, 2022).

²⁵³ One official noted that “to achieve the ambition of CSpO you’d have to actually do the things you talk about in the meetings” (Allied space officials, in-person interviews with the authors, January–April 2022).

²⁵⁴ One official observed that CSpO has the ambition that “we should all have the same networks but not much deeper” than that (German space official, in-person interview with the authors, March 2022).

²⁵⁵ CFSCC, 2012. This document was developed before France and Germany joined the CSpO Initiative in 2019 and 2020, respectively. See U.S. Space Command Public Affairs, 2020; 14th Air Force and JFSCC Public Affairs, “Multinational Statement for Combined Space Operations,” U.S. Strategic Command, April 10, 2019; Pellerin, 2014.

²⁵⁶ In particular, different countries objected to the inclusion of particular words in the document, such as “integration” and “deterrence,” leading to relatively bland language (Allied officials, in-person interviews with the authors, January–April 2022).

become even less operationally relevant and reinforce its role as a “talk shop.” One official suggested that “you shouldn’t have CSpO with a lot of countries [because] if you want to get work done you need people with muscles,” meaning countries with a lot of capabilities.²⁵⁷ Rather than using the CSpO Initiative as a political tool to involve more allies, current members hoped to find ways to deepen cooperation within the current framework, including through enhancing cooperation on new capabilities.²⁵⁸ At the same time, they did not offer specific suggestions about how to move past the current flaws of the organizations that have limited cooperation in the past.

OOD participants—namely the FVEY allies—similarly expressed a belief in the greater value of expanding cooperation with the current membership rather than expanding it.²⁵⁹ Challenges with collaboration over the past year led allied officials to reconsider whether OOD was meeting shared goals and to seek to “operationalize” the effort more than it already is.²⁶⁰ Adding more countries, according to multiple interlocutors, would only make the situation worse. As one official put it, adding additional allies into OOD would make it more similar to the CSpO Initiative as a forum for “talking” rather than a “real operational platform.”²⁶¹ That being said, these officials could envision an expanded CSpO Initiative if OOD did become more operationally effective.²⁶²

In our interviews with officials from countries who do not participate in OOD or the CSpO Initiative, they did not express a definitive desire for their countries to join these organizations, although they did express an interest in improving cooperation with the United States or learning more about these opportunities. Japan’s 2020 Basic Plan on Space Policy, for example, emphasized the desirability of “strengthening space cooperation with the United States and other partners.”²⁶³ Officials from France and Germany both expressed a desire to better understand OOD, although Germany would face significant internal policy challenges to join the operation even if they were to be invited to do so.²⁶⁴ There are practical challenges to any expansion,

²⁵⁷ Allied official, in-person interview with the authors, March 2022.

²⁵⁸ U.S. and allied officials, in-person interviews with the authors, January–March 2022.

²⁵⁹ For background on OOD, see Cohen, 2021.

²⁶⁰ Allied officials, in-person interviews with the authors, March–April 2022.

²⁶¹ Allied official, in-person interviews with the authors, March 2022.

²⁶² Allied official, in-person interviews with the authors, March 2022.

²⁶³ Japanese National Space Policy Secretariat, 2020.

²⁶⁴ France, for example, visited Vandenberg SFB in April 2022, and French officials expressed a desire to learn more about the operation. Germany’s perspective was more complicated. German officials voiced an aspiration to conduct operations that could be interoperable with OOD and eventually to join OOD. But they also highlighted Germany’s preference for working within the European Union and NATO rather than through a U.S.-led operation, even though they admitted there was little prospect for an equivalent operation to OOD within NATO because NATO’s policy on space was that nations would provide products and services to NATO rather than NATO having capabilities of its own. Their final concern was that by joining OOD, Germany might become a party to offensive

especially that any information shared within the CSpO Initiative and OOD would need to be releasable to all members, which could limit what allies share inside these organizations in the future.

Allies Face Their Own Policy and Resource Constraints to Integration

Not all of the challenges or limits to cooperation stems from U.S. policies or practices. Allies' own policies, resources, and practices also shape and limit their desired or feasible level of integration. As one official explained, to cooperate with other countries "you need personnel and concrete objectives," yet many countries have only nascent space organizations that are both short staffed and are still working to fully articulate their policy objectives.²⁶⁵ As countries articulate their policies and grow their organizations, their cooperation with the United States will likely evolve. In the meantime, it will be difficult to identify any firm limits on their ultimate level of desired cooperation with the United States, especially because allied officials are uncertain about future policies and unwilling to reject hypothetical future cooperation.

As specified above, the United Kingdom, Canada, and to a lesser extent Australia have the greatest interest in close integration with the United States, but they also face internal challenges, especially from their nascent space organizations and constrained resources. The UK Space Command, for example, has only existed since April 2021, and at the time of this writing, it is still in the process of assuming responsibilities for key capabilities from other UK military organizations.²⁶⁶ The Australian government, likewise, has only strongly incorporated space organizations recently, with the advent of the Australian Space Agency and the Defence Space Command in 2018 and 2022, respectively. Although the major Australian strategic documents stress the desire to acquire many space capabilities in the future, Australia is still largely reliant on U.S. systems to date.²⁶⁷ Growing UK and Canadian organizations limit their countries' ability to welcome U.S. EOs, and interviews with officials from both countries suggest that there will be limited potential billets for mid-grade U.S. EOs.²⁶⁸

Outside the FVEY alliance, resource constraints are certainly important, but policy constraints can pose more fundamental limitations. For Germany, the recent approval of a 100-billion euro special fund in response to Russia's 2022 aggression against Ukraine may signal a

operations, which could be politically challenging for Germany (Luke Kitterman, "French Delegation Visits CSpOC During CFSCC Immersion," Vandenberg Space Force Base, April 18, 2022; French and German officials, in-person interviews with the authors in France and Germany, March 21–24, 2022).

²⁶⁵ Allied official, in-person interview with the authors, March 2022.

²⁶⁶ Government of the United Kingdom, 2021, p. 72; Space Symposium, "AVM Paul Godfrey, OBE, RAF," speaker profile, 37th U.S. Space Symposium, April 2022. On Canada's reorganization, see David Pugliese, "Military Plans to Create Canadian Space Division in Coming Weeks," *Ottawa Citizen*, July 13, 2022.

²⁶⁷ Australian Department of Defence, 2022.

²⁶⁸ Canadian and UK officials, in-person interviews with the authors, Canada, the United Kingdom, and Washington, D.C., March–April 2022.

changing, if still uncertain, financial environment.²⁶⁹ Yet policy constraints are unlikely to be lifted: The closer that cooperation between Germany and the United States gets to activities that might involve offensive operations, the greater the legal and political challenges within Germany.²⁷⁰ France, by contrast, would welcome discussion about the protect-and-defend mission, yet its officials reject the desirability of integration per se in favor of interoperability, recognizing the importance of France's autonomy.²⁷¹ Japan has cooperated closely with the United States on ballistic missile defense, and it appears to welcome closer cooperation on space, particularly in the areas of SDA, missile warning, space control, and SATCOM.²⁷² As with Germany, however, legal and political constraints may arise if cooperation were to move toward areas enabling more-offensive operations.²⁷³

Across allies, our interlocutors highlighted the continued importance of civil and commercial partnerships. They explained that resource constraints make it all the more critical for their defense space organizations to leverage cooperation with their civil and commercial partners.²⁷⁴ The United Kingdom is a good example. One MOD official explained, "Space is a very joined up domain," which requires making decisions with other agencies within the United Kingdom and with international partners, especially given the United Kingdom's resource constraints.²⁷⁵ Of course, DoD also leverages partnerships with civil and commercial organizations, but from

²⁶⁹ Although German interviewees, inside and outside government, were uncertain about the prospects for new space systems in March 2022, early reports in June 2022 suggested that the 100-billion euro fund would include a space-based early warning system (German officials and subject-matter experts, interviews with authors, March 2022; "Air Force to Get Largest Share of Germany's 100 Billion Euro Defence Bulk-Up," Reuters, May 31, 2022).

²⁷⁰ U.S. and German officials, in-person interviews with the authors, January–March 2022.

²⁷¹ French officials explained that France wanted "to control the means to defend [their] interests," implying concerns about being constrained by a multinational structure. They also linked concerns about the term *integration* to France's decision to leave the NATO command structure, which it rejoined in 2009, except for nuclear weapons, which remain solely under national control. French officials also indicated that they had no objection to closer integration between the FVEY allies, but articulating that ambition within the CSPO Vision, as compared with OOD, was not desirable in their minds (French officials, in-person interview with the authors, March 2022).

²⁷² Japanese analysts, virtual interviews with the authors, February and August 2022. See also Japanese National Space Policy Secretariat, 2020.

²⁷³ Japanese analysts, virtual interviews with the authors, February and August 2022. Within the 2020 Basic Plan on Space Policy, Japan states its interest in developing disruptive space capabilities for the purposes of space control. Such capabilities might include spoofing or electromagnetic jamming. However, Japan's ability to use these capabilities are constrained by its constitutional obligations to pacifism under Article 9 (see Fukushima, 2017).

²⁷⁴ Allied analysts and officials, interviews with the authors, March–April 2022.

²⁷⁵ UK official, in-person interview with the authors, March 2022. The integration between civil and military organizations is central to the United Kingdom's integrated approach. The UK Defence Space Strategy opens with a March 2021 quote from Prime Minister Boris Johnson: "We will make the UK a meaningful actor in space, with an integrated space strategy which brings together military and civil space policy for the first time" (UK Ministry of Defence, 2022, p. 5).

the perspective of allies, DoD's relatively greater resources enable it to be a more independent actor.²⁷⁶

Allies also each have a unique organizational structure, which do not necessarily align with that of the United States. For example, the United Kingdom, Australia, Germany, and France have recently stood up space command organizations, but none has its own USSF-equivalent.²⁷⁷ Responsibilities for different space activities are also split in varied ways within allied militaries: For example, in Germany, the Information and Domain Service has responsibility for strategic reconnaissance and operates the Bundeswehr's Geoinformation Center.²⁷⁸ Civilian agencies often have a greater role or procurement practices may vary, which could challenge greater cooperation. In France, for example, the civilian space agency, French National Centre for Space Studies (CNES) has traditionally operated civilian and military satellites, and procurement responsibilities for space are coordinated between CNES and the Directorate General of Armaments although that may change in the future.²⁷⁹ One conclusion for U.S. officials is that organizational seams often appear in different places in different countries. Because allied organizations are often smaller than their U.S. counterparts, individual allied officers often have a greater scope of responsibility and therefore interact with multiple U.S. personnel in different U.S. organizations.²⁸⁰

Allies Perceive Diverse or Unclear Positions Among U.S. Organizations

Allied officials frequently observed that they received different responses from U.S. personnel in different organizations. Officials from one country noted "it never seems like all U.S. organizations are in sync"²⁸¹ and offered an example on a foreign military sales case in which different systems were handled by different organizations that were not aligned. This experience led them to believe that DoD should develop a single point of contact for foreign organizations on space issues. A policy official from another country noted that they saw differences between U.S. organizations—Department of State, DoD, and USSPACECOM—and observed that wargames were useful "to understand from U.S. agencies where their caveats are."²⁸² The fact that this official felt the need to identify the positions of different U.S. organizations may reflect a concern that they had difficulty identifying a unified U.S. perspective. Finally, a senior official from yet another country observed that they sometimes

²⁷⁶ Allied analysts and officials, interviews with the authors, March–April 2022.

²⁷⁷ Allied analysts and officials, interviews with the authors, March–April 2022.

²⁷⁸ Bundeswehr, "The Cyber and Information Domain Service," webpage, undated.

²⁷⁹ French analysts and officials, in-person and virtual interviews with the authors, January–March 2022. See French National Centre for Space Studies, "About CNES [EN]," webpage, undated.

²⁸⁰ UK, French, German, and Canadian officers, in-person interviews with the authors, March–April 2022.

²⁸¹ Allied official, in-person interviews with the authors, April 2022.

²⁸² Allied official, in-person interviews with the authors, March 2022.

provide “connective tissue” between U.S. organizations, meaning that they play a role in information-sharing between U.S. organizations that otherwise would not have coordinated with one another.²⁸³

One consequence of hearing varied information and policy positions from different U.S. organizations is that allies are unsure of U.S. priorities and cannot factor them into their own planning. One official explained, “There are a lot of U.S. organizations,” each with their own dialogues and meetings, yet they still “don’t necessarily know what the [United States] prioritizes in different areas.”²⁸⁴ The differing views of U.S. organizations can play into the next related challenge that allies do not have sufficient information about U.S. efforts to inform their own efforts.

The United States Faces Challenges in Sharing Information Necessary for Integration and Interoperability

While allies were quick to acknowledge challenges within their own systems that limited cooperation with the United States, they also highlighted various issues within the United States that make it difficult to achieve the aspired level of cooperation.

A first, central issue is that allies perceive the United States as overclassifying information, which hinders information-sharing. Allies in particular cite the “misuse” of the NOFORN caveat.²⁸⁵ According to the observation of one LNO, U.S. officials tend to include NOFORN information as a “badge of credibility.”²⁸⁶ From allies’ perspective, part of the problem is that U.S. officials often do not put much effort into minimizing or separating NOFORN information to facilitate REL versions of written documentation or REL-level briefings for allied officers.²⁸⁷ Allies have noted some progress, however. For example, Canadian Brigadier General Whale who was serving at the USSF SpOC did note that “we’ve received direction from higher [levels of command to] . . . knock off the no-foreign by default.”²⁸⁸ Even so, classification challenges persist and fundamentally limit allies’ ability to most efficiently contribute to shared needs. UK Air Vice-Marshal Godfrey was also quoted in a 2022 article concerning the impact of overclassification on efficient national acquisition efforts: “[I]f I’m looking to develop a capability that I’ve just classified, how can I then have the conversation with my colleagues here

²⁸³ Senior allied official, in-person interviews with the authors, March 2022.

²⁸⁴ Allied official, in-person interview with the authors, March 2022.

²⁸⁵ Allied LNO, in-person interview with the authors, March 2022.

²⁸⁶ Allied LNO, in-person interview with the authors, March 2022.

²⁸⁷ In public remarks, Brigadier General Whale noted that foreign officers may sometimes be asked to leave meetings because the overall classification of the meeting is NOFORN, even if there is REL information that may be discussed with the foreign officers (Morin, 2021).

²⁸⁸ Morin, 2021. The July 18, 2022, memorandum from the SECAF, CSO, and Chief of Staff of the Air Force also urges the creation of REL materials where possible (Secretary of the Air Force, Chief of Space Operations, and Chief of Staff of the Air Force, 2022).

to understand whether they're already developing that capability, and if I actually need to go and spend money somewhere else because they've got it."²⁸⁹ Allied officials recognized a need for the use of the NOFORN caveat and for U.S.-only discussions, and they acknowledge that they keep some information restricted to their own national use. But many allied officials have had experience collaborating with U.S. officials during military operations in which their U.S. counterparts were more willing to share information, suggesting that there are provisions that allow for more U.S. information-sharing, at least during combat operations. As UK Air Vice-Marshal Godfrey noted in the same article, "I've never come up against as much classification as I have in the space domain."²⁹⁰

A second challenge is the limits of existing IT systems. FVEY allies reported that their governments have secure communications with the United States at all classification levels, but they still face challenges, including lacking the ability of U.S. and allied EOs to access TOP SECRET systems in their host countries.²⁹¹ However, communications with non-FVEY countries, especially France and Germany, is more difficult. Communication for the CSPO meetings must default to NATO-level systems, namely the Battlefield Information Collection and Exploitation System (BICES), which offers some albeit flawed connectivity. As one official observed, "IT infrastructure is a huge problem."²⁹² Another official from a different country explained that BICES offers only "theoretical coverage," meaning that it is not reliable as a means of conversation. From their perspective, it is an "'80s style" of communication, relying on the exchange of paper or select in-person interactions between NATO ambassadors.²⁹³ Echoing concerns noted in Chapter 2, a lack of IT interoperability will prevent greater integration.

Another issue, made worse by over-classification and flawed IT infrastructure, is that allied EOs and LNOs face major challenges to their ability to fulfill their functions. In principle, foreign *exchange* officers serving in the United States are intended to act as U.S. officers during their tour of duty, while foreign *liaison* officers are meant to represent their home country. Along these lines, allied EOs should be expected to have access to information and IT systems similar to the access level granted to U.S. officers, but allied officers reported that this is not true in practice.²⁹⁴ As noted in Chapter 2, U.S. regulations limit foreign EOs' access to information that their home governments would have, which would mean that they would not have access to NOFORN information. Allied and U.S. officers note that allies do not constrain U.S. officers'

²⁸⁹ Lack of communication about capabilities, according to Brig Christopher Gardiner of Australia's Defence Space Command, "could amount to 'fratricide'" (Carberry, 2022).

²⁹⁰ Carberry, 2022.

²⁹¹ U.S. and allied officials, in-person interviews with the authors, March-April 2022.

²⁹² Allied official, in-person interview with the authors, March 2022.

²⁹³ Allied official, in-person interview with the authors, March 2022.

²⁹⁴ Allied EOs, in-person interviews with the authors, October 2021–March 2022.

access to information while serving in foreign positions to the same extent that allied officers' access is constrained in the United States.²⁹⁵

Information-sharing restrictions may contribute to the decision to frequently place allied EOs in positions focusing on international engagement because the information handled by those offices are generally more likely to be releasable.²⁹⁶ Such assignments limit the potential for allied officers to directly gain insight about U.S. thinking on operations or plans, however. In one case where an allied officer was placed in a deputy position in an operational role, they noted that limits on their ability to access U.S.-only information meant that there needed to be another U.S. officer in a deputy position in the same organization. To be sure, some allied officers, especially at the general officer level, did report making progress to gain access but that required significant U.S. staff assistance.²⁹⁷

Allied officers perceived that some of the problem could be alleviated without changing formal rules, including, for example, by addressing training gaps and improving IT systems. Allied officers noted that they were unaware of any training or education for U.S. personnel on how to engage with allied EOs or LNOs, which may have made U.S. personnel overprotective and disinclined to share information. FVEY personnel often had access to information via the SECRET Internet Protocol Router-Releasable (SIPR-REL) network, which was functional if limited, while non-FVEY personnel were more restricted. Allied officers were aware of planned IT systems that would give them more access, such as Torch and the Mission Partner Environment, but they emphasized that there were few available terminals or that they were still under development.²⁹⁸

Conclusions and Findings

We found that allies' defense space organizations welcome the potential for closer cooperation and, in some cases, integration with the United States, but the ability to deepen cooperation has been limited both by their own constraints and by U.S. policy and procedures. A recurring issue is the disconnect between what allies hear about U.S. desires to cooperate with them and what allies actually experience in their day-to-day interactions. The need for the United States to *manage allied expectations* was a core conclusion from our conversations with allies. However, allied concerns should be taken in context: Their interests are not necessarily the same

²⁹⁵ U.S. and allied personnel, in-person interviews with the authors, October–March 2022.

²⁹⁶ U.S. and allied personnel, in-person interviews with the authors, Vandenberg SFB, October–January 2022.

²⁹⁷ Allied personnel, in-person interviews with the authors, Vandenberg and Petersen SFBs, October 2021–January 2022.

²⁹⁸ Allied personnel, in-person interviews with the authors, Vandenberg and Petersen SFBs, October 2021–January 2022. See also Kimberly Underwood, "Interoperability Is the Key to Partnerships," *Cyber Edge*, February 1, 2022; and Lopez, 2021.

as U.S. interests, and any requests or recommendations that they offer should be evaluated to determine whether they align with U.S. interests.

While U.S. policymakers may decide not to address all allied concerns, it is important to address the perceived disjunction between U.S. rhetoric and practice. The need for clearer communication with allies about U.S. intentions and desires was a refrain in our discussions with allied officers. Allies understand that there are U.S. prerogatives and that the United States may choose not to share particular pieces of information with them. What frustrates them, and what could undermine the potential for U.S. cooperation, is the perception that the United States is not forthright or is not working to address internal problems within the U.S. system that preclude desired cooperation.

Our analysis of allies' perspectives suggests several specific findings to inform the recommendations presented in Chapter 5:

- *Better coordinate DoD goals for allies and then communicate which capabilities allies should prioritize.* Perhaps the most readily addressed problem is for DoD organizations to more clearly communicate what the United States wants allies to prioritize. Taking into account the incoherence across DoD space organizations that we discussed in Chapter 2, achieving clearer communication may require improving coordination among these organizations as a first step. In some cases, U.S. organizations focused on capability development may not have a clear picture of how allied capabilities fit into the desired U.S. end state. Building allied capabilities into the development of USSF architectures will be especially important. Once DoD organizations have a clearer picture of what they want from allies, it may be worth reconsidering whether the benefits of granting allied more access to U.S. information outweighs the risks.
- *Clarify roles of participants in the CSpO Initiative and OOD, including facilitating deeper cooperation among willing allies.* Our interviews highlighted two differing purposes of the CSpO Initiative and OOD: (1) the political benefits from including a maximal number of allies in these organizations and (2) actual cooperation with allies on operations, plans, or acquisition. While expanding CSpO and OOD participation offers benefits for political objectives, it also presents real trade-offs on members' ability to engage in practical cooperation. Including other allies on the currently FVEY-level CSpOC operations floor, for example, would force the United States to either downgrade the floor or change the classification of information that was previously shared.²⁹⁹ To address this issue, policymakers may consider making the CSpO Initiative a more inclusive political organization and focus on operational integration with OOD. It may make sense to limit membership in some of the CSpO working groups to facilitate deeper integration with allies who do not participate in OOD. Whatever the preferred option, clarifying the purpose of these organizations to allies will be important to avoid preventable frustration.
- *Increase and improve EO and LNO relationships.* Allies have used EO and LNO programs as a primary means of developing their own space programs, as well as strengthening their cooperation with the United States. It could be valuable for the United

²⁹⁹ Cohen, 2021.

States and allies to expand these programs by increasing the number of U.S. officers deployed abroad and deploying more allied officers in the United States. In some cases, given the smaller size of allied organizations, it may make sense to deploy more junior U.S. officers while receiving more senior allied officers into U.S. organizations.³⁰⁰

Policymakers should also ensure that EOs' job descriptions and expectations match their ability to function within U.S. organizations, including relooking at authorities to share information.

- *Develop interoperable IT systems.* Allied personnel highlight the importance of expanding interoperable IT systems. The communication networks currently available to allies (including SIPR-REL and BICES) often lack operational availability and reliability needed by users. Allied personnel described networks that were “down” when needed, stakeholders who they needed to communicate with not having access to those networks, and other challenges that cause existing networks to fail to meet current mission needs. Furthermore, allied personnel described challenges that are not limited to the space community but are widely experienced across missions for allied communications. Interoperable IT systems at all levels of classification can help improve coordination with allied counterparts in policy and operational organizations, as well as improve the effectiveness of allied EOs.

³⁰⁰ This would technically be a nonreciprocal exchange (U.S. Code, Title 10, Section 311, Exchange of Defense Personnel Between United States and Friendly Foreign Countries: Authority).

Chapter 4. Lessons from Other Domains

DoD partners with allied nations across a wide array of functions and mission areas. In some cases, there has been considerable success in integrating with allies to achieve shared objectives. We identified functional areas that offer insight for addressing the challenges that the DoD space enterprise faces as it aspires to integrate allies. These examples—nuclear weapons cooperation, a combined operations center for special operations, and partnerships within the IC—show how DoD organizations can achieve close partnerships, even on highly sensitive matters. They illuminate some specific lessons for what DoD organizations can do to overcome political, regulatory, and bureaucratic hurdles and also shed light on the underlying limits to working closely with allies on sensitive issues.

First, we identify our approach to selecting and executing these case studies, then we explore each of the three case studies in subsequent sections. At the end of this chapter, we present our conclusions based on these case studies for the space community.

Approach

In consultation with the sponsor, we explored several possible domains that provide good examples of cooperation with allies or similar challenges that might inform better coordination in the space domain. In many cases, officers from the DoD or an allied space enterprise had experience in one of these areas and believed that these domains or examples from them might have suitable lessons. In considering possible case studies, we sought to bear in mind specific challenges facing the DoD space enterprise, as identified in the previous chapters, and find experiences within these case studies that might speak to those issues. We also sought case studies that were most likely to allow transferable best practices.

Through literature review and interviews, we worked to learn more about the relevant domain and identify topics and issues relevant to the space domain. In addition to the nuclear enterprise, special operations, and the IC examples considered below, we also considered air operations centers and intelligence fusion organizations. From within each of these broad topics, we considered possible examples. For example, while we focused on nuclear sharing in the 1950s, there are many other possible focus topics within the nuclear enterprise. We ultimately decided on the following three case studies, all of which demonstrate some degree of successful cooperation and have sufficient unclassified information available and a clear linkage to a problem facing the DoD space enterprise:

- nuclear sharing with the United Kingdom and NATO from the 1950s and early 1960s to illuminate the political and legal constraints of close cooperation on emerging military technologies

- the establishment of a combined operations center for the special operations community, the USSOCOM's J3-I, to illuminate the challenge of creating effective combined operations centers under DoD regulations
- collaboration between the IC and its foreign partners to examine the differences between DoD and the IC and the potential for DoD-IC synergies.

While each case was selected in part because our interlocutors suggested that they exemplified high levels of integration, we found that U.S.-ally relationships in these cases were ultimately limited. The reasons for why and how integration was limited yield insight about what factors might limit greater cooperation in the space domain.

We recognize that there are challenges to directly applying or transferring lessons from one domain to another. The authorities, organizations, functions, and capability development activities in these example domains are not necessarily comparable or transferable to the space domain. The U.S. nuclear enterprise, for example, includes various organizations (the U.S. Department of Energy, the armed services, the national labs, and others) who cooperate with allies in varied ways for different purposes, both on nuclear reactors and nuclear weapons. A full review of the organizations and functions in these other areas would not necessarily be a useful or efficient approach to understanding relevant lessons. Furthermore, the three case studies were not of uniform length or depth given the available information we identified. But select areas in which organizations have achieved meaningful cooperation with allies in ways that are still challenging to achieve in the space domain can have valuable lessons.

For each case study, we first discuss the specific *issue* facing the DoD space enterprise that the case study seeks to address and how the experience in this other domain is relevant to the space domain. We then discuss the *experience* in the relevant domain with the goal of exposing experiences that are most relevant to the DoD space enterprise. The final portion of each case study presents *findings* for the DoD space enterprise.

Nuclear Weapons Cooperation with the United Kingdom and NATO

Issue

With the nuclear cooperation case, we seek to illuminate the political and strategic-level challenges, as well as best practices, for enabling the sharing of classified, strategically important military information with close allies. In particular, the case demonstrates how legislation limited cooperation between the United Kingdom and the United States for several years, until extensive interaction between the executive and legislative branches led to several changes in legislation. Furthermore, the level of cooperation with the United Kingdom greatly exceeded cooperation with NATO, and the reasons for this difference offer insight for why cooperation in the space domain may be more feasible on a bilateral rather than multilateral basis.

Although no analog is perfect, the dilemmas facing the United States in considering nuclear cooperation with close allies in the 1950s and 1960s are in some respects similar to the dilemmas

associated with cooperation with allies in the space domain today. In the mid-1950s, the United States had exceptional capabilities in a new technology domain, namely nuclear weapons, but an adversary—the Soviet Union—was gaining its own capabilities. Allies, especially the United Kingdom, possessed and were interested in developing some of their own capabilities, but they sought support from the United States.³⁰¹ U.S. officials, especially President Dwight D.

Eisenhower, sought to increase nuclear cooperation with allies but, as we explain below, faced significant legal and regulatory hurdles. This dynamic is reminiscent of the current strategic dilemma on space, where the United States faces growing challenges from adversaries and seeks to cooperate with allies to meet these challenges but has encountered difficulties in doing so.

There are several differences between space and U.S. nuclear cooperation with the United Kingdom, including a quite different historical period. There is arguably less concern about the implications of the proliferation of space technology than there was about the proliferation of nuclear weapons. There is also no direct analog on space to one important question of nuclear policy: how to organize operations for U.S. nuclear weapons deployed in allied territory or subordinated to NATO. The relevant balance of allied capabilities is also probably different, because the United Kingdom may have had a greater relative capability in the nuclear arena in the 1950s than it does in space today. Still, the operational discussion on nuclear weapons offers insight for CSPO that primarily involve U.S. capabilities.

Despite any differences, the Eisenhower administration's efforts and constraints in sharing nuclear technology and information illuminate the challenges facing the DoD space enterprise in trying to deepen cooperation with allies. Fundamentally, the U.S. system needed to synchronize its political aspirations with the practical realities of sharing sensitive strategic information. In the case of nuclear policy this happened through an extended interaction between the executive branch, allies, and Congress, which was accelerated by the Soviets' growing demonstration of space power with the Sputnik launch.

Experience

Background

From 1946 to 1960, the United States experienced a sea change in nuclear weapons policy: The Atomic Energy Act (AEA) of 1946 limited cooperation with allies, but by the end of Eisenhower's presidency in 1960, the rough outlines of U.S. nuclear sharing were in place, including close cooperation with the United Kingdom and a complex sharing arrangement with other NATO allies that maintained overall U.S. control. Much of the shift can be traced to Eisenhower's policy priorities. He sought to decrease the burden of the defense of Europe on the

³⁰¹ Brian P. Jamison, "Completing the Transatlantic Nuclear Bridge: A UK View," in Jenifer Mackby and Paul Cornish, eds., *U.S.-UK Nuclear Cooperation After 50 Years*, Center for Strategic and International Studies Press, 2008, p. 49; Jan Melissen, "Nuclearizing NATO, 1957–1959: The 'Anglo-Saxons,' Nuclear Sharing and the Fourth Country Problem," *Review of International Studies*, Vol. 20, No. 3, July 1994, p. 267.

United States through deploying U.S. nuclear weapons to the continent and strengthening European capabilities, including European nuclear capabilities.³⁰² Indeed, Eisenhower specifically envisioned European countries needing some type of U.S.-provided nuclear capability because, using a familiar logic from the contemporary development of space capabilities, he believed that it was not sensible for the United States and allies to invest resources on developing the same capabilities.³⁰³

The Atomic Energy Act of 1946

The purpose of the AEA of 1946 was to “assure the proper management of source, special nuclear, and byproduct material.”^a The bill was signed into law by President Harry S. Truman, and it transferred control over atomic energy from the Manhattan Engineer District to the civilian executive Atomic Energy Commission (AEC) on January 1, 1947.^b The most relevant provision of this legislation was that the act banned the sharing of restricted nuclear weapons information with other nations—ending most of the cooperation that occurred between the United States, Canada, and the United Kingdom during the Manhattan Project.^c

The AEA established the Joint Committee on Atomic Energy (JCAE), a congressional committee with legislative authority and “exclusive jurisdiction over ‘all bills, resolutions, and other matters’ relating to civilian and military aspects of nuclear power.”^d Additionally, it was the responsibility of the AEC to inform the JCAE “of all of the Commission’s activities,” which led to disagreements between the two bodies.^e Therefore, the JCAE, especially concerned with protecting U.S. nuclear weapons information, regulated what the executive branch could share with allies, and this led to conflict between various elements of the U.S. bureaucracy.^f

Decades later, subsequent laws and amendments moved many of the AEA’s functions to the Department of Energy, the Nuclear Regulatory Commission, and the Environmental Protection Agency.^g

SOURCES: Features information from the following:

^a Office of Environment, Health, Safety, and Security, “Atomic Energy Act and Related Legislation,” U.S. Department of Energy, undated.

^b Stephanie Hinnershitz, “The Atomic Energy Act of 1946,” National WWII Museum New Orleans, August 4, 2021.

^c John Baylis, “Exchanging Nuclear Secrets: Laying the Foundations of the Anglo-American Nuclear Relationship,” *Diplomatic History*, Vol. 25, No. 1, January 2001, p. 35; John Simpson and Jenifer Mackby, “The Special Nuclear Relationship: A Historical Chronology,” in Jenifer Mackby and Paul Cornish, eds., *U.S.-UK Nuclear Cooperation After 50 Years*, Center for Strategic and International Studies Press, 2008, p. 6.

^d Christopher M. Davis, *9/11 Commission Recommendations: Joint Committee on Atomic Energy—A Model for Congressional Oversight?* Congressional Research Service, August 2004, p. 2.

^e Jamison, 2008, pp. 62–64.

^f Jamison, 2008, p. 68.

^g Office of Environment, Health, Safety, and Security, undated.

However, Eisenhower and other proponents of nuclear cooperation faced many barriers. The AEA complicated international cooperation on nuclear matters because it banned the sharing of classified “nuclear weapons design and production information” with other nations.³⁰⁴ Furthermore, the discovery that the Soviet Union had gained knowledge about atomic secrets

³⁰² Marc Trachtenberg, *A Constructed Peace: The Making of the European Settlement, 1945–1963*, Princeton University Press, 1999, pp.146–149; Baylis, 2001, p. 36.

³⁰³ Trachtenberg, 1999, pp. 146–149, 155; Baylis, 2001, p. 36.

³⁰⁴ Baylis, 2001, p. 35; Simpson and Mackby, 2008, p. 6.

through compromising UK personnel hindered the budding collaboration.³⁰⁵ Nevertheless, a series of events led the United States to reconsider its policy. In August 1953, some seven months after Eisenhower took office, the Soviet Union conducted a thermonuclear test. Perhaps more significant was the Soviet Union's launch of Sputnik in 1957, which signaled the growing strategic capabilities of the USSR, which led to widespread panic among the U.S. public.³⁰⁶

This period marked the start of a robust U.S. nuclear weapons cooperation policy, but its policy on sharing with the United Kingdom evolved quite differently from its policy toward other NATO allies. This difference is informative for how the United States might engage with allies in the future. With the United Kingdom, a series of executive branch meetings and legislative action culminated in the 1958 U.S.-UK Mutual Defense Agreement (MDA), which permitted unprecedented sharing of nuclear materials (included in the 1959 amendments), technology, information, and capabilities.³⁰⁷ Subsequent U.S.-UK nuclear cooperation built on this initial agreement, including the 1963 Polaris Sales Agreement, which established a uniquely integrated arrangement for nuclear submarines, in which the United States would supply a nuclear propulsion system and ballistic missiles while the United Kingdom would manufacture its own submarines and warheads.³⁰⁸ The agreement established an enduring process for cooperation in which “delivery platforms are built through collaboration between the Royal Navy and the U.S. Navy, and warheads are designed through collaboration between the U.S. and UK nuclear laboratories.”³⁰⁹ By comparison, the United States rejected helping to develop other countries' own nuclear capabilities in favor of developing nuclear sharing of U.S. weapons under a NATO umbrella, which gave allies significantly less say in the operational use of the weapons.³¹⁰

Overcoming Legal Barriers to Achieve the U.S.-UK Mutual Defense Agreement, 1953–1960

Following Eisenhower's inauguration in 1953, his administration was initially stymied by congressional limits on sharing nuclear information in general with allies. In response to the restrictions imposed by the AEA, the Eisenhower administration published National Security Council note 151/2 (NSC 151/2) on the disclosure of atomic information to allied countries. However, this policy was insufficient to accomplish the administration's future goals with the

³⁰⁵ Simpson and Mackby, 2008, p. 7.

³⁰⁶ Melissen, 1994, pp. 257–259; Gates Mosley Brown, *Miscommunication and Misunderstanding: Eisenhower, IRBMs, and Nuclear Weapons in the NATO Alliance*, dissertation, University of Kansas, March 12, 2013, p. 13.

³⁰⁷ Jamison, 2008, pp. 53–55.

³⁰⁸ Simpson and Mackby, 2008, p. 15; Kristan Stoddart, “The Labour Government: The Inheritance of Polaris and Anglo-US Nuclear Relations, 1964–1966,” in *Losing an Empire and Finding a Role: Britain, the USA, NATO, and Nuclear Weapons, 1964–70 (Nuclear Weapons and International Security Since 1945)*, Palgrave Macmillan, 2012, p. 19.

³⁰⁹ Simpson and Mackby, 2008, p. 15.

³¹⁰ Trachtenberg, 1999, p. 215.

United Kingdom because it limited the sharing of “detailed scientific and technical information concerning the manufacture and design of atomic weapons.”³¹¹

Eisenhower quickly made some progress at changing the legislative environment. Following the recognition in NSC 151/2 that there may be legislative changes needed, Congress amended the AEA in 1954 to permit the sharing of information “on the external characteristics of nuclear weapons and their yields” and the formation of military and civil cooperation agreements with other countries, while continuing to prohibit the sharing of nuclear weapons “design and fabrication” information.³¹²

The administration used the newfound authorities to enter separate civil and military bilateral agreements with the United Kingdom.³¹³ However, transferring desired information and capabilities to the United Kingdom required further amendments to the 1954 AEA to share necessary information regarding the “storage and safety of the warheads.”³¹⁴ As congressional discussions progressed on further amendments to the AEA in late 1957, Eisenhower and UK Prime Minister Harold Macmillan met to begin developing the MDA.³¹⁵ Following congressional approval of another set of amendments to the AEA, Eisenhower signed the Act on July 2, 1958, which enabled increased sharing with allies that had made “substantial progress”—namely the United Kingdom.³¹⁶ A day later, the Eisenhower administration released the MDA to Congress, which explicitly permitted the exchange of information on the delivery of atomic weapons and the development of military reactors and nuclear delivery systems, as well as the transfer of a submarine nuclear propulsion plant.³¹⁷ Following initial resistance during the 1958 AEA congressional hearings, Congress approved amendments to the MDA the following year that permitted the transfer of nuclear materials to the United Kingdom for use in nuclear weapons.³¹⁸

Effectively, the Eisenhower administration had convinced Congress to overturn restrictions and help an ally continue to develop its own nuclear capabilities, which would prove to be a

³¹¹ James S. Lay, Jr., “NSC 151/2 Note by the Executive Secretary to the National Security Council on Disclosure of Atomic Information to Allied Countries,” declassified version, U.S. Department of State, Office of the Historian, December 4, 1953.

³¹² Jamison, 2008, p. 50.

³¹³ Jamison, 2008, p. 50.

³¹⁴ Simpson and Mackby, 2008, p. 9.

³¹⁵ Simpson and Mackby, 2008, p. 9; Jamison, 2008, p. 53.

³¹⁶ Agreement Between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the United States of America for Co-operation on the Uses of Atomic Energy for Mutual Defence Purposes, Treaty Series No. 41, Her Majesty’s Stationery Office, July 3, 1958 (U.S.–UK Mutual Defence Agreement); Baylis, 2001, p. 48.

³¹⁷ U.S.–UK Mutual Defence Agreement, 1958; Simpson and Mackby, 2008, p. 13.

³¹⁸ Simpson and Mackby, 2008, p. 13; Amendment to the Agreement Between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the United States of America for Cooperation on the Uses of Atomic Energy for Mutual Defense Purposes of July 3, 1958, Treaty Series No. 72, Her Majesty’s Stationery Office, May 7, 1959, p. 2.

unique event in U.S. history.³¹⁹ Scholars argue that Congress was particularly convinced by the idea that the launch of Sputnik had revealed “[risks to] allied air bases” and underscored that the United States no longer had a nuclear monopoly, even if Soviet capabilities were already understood by some in the administration.³²⁰ The United Kingdom had also promised to support an international nuclear test ban, and U.S. officials believed that cooperation would aid the U.S. program.³²¹

NATO Operational Control, 1953–1960

In parallel with the development of the MDA, the United States considered whether to also increase the level of sharing of nuclear technology with other allies. In 1954, at the same time it was signing new nuclear cooperation agreements with the United Kingdom, the United States also led the development of a new NATO policy—Military Committee 48—that emphasized the importance of “nuclear weapons for the defense of Europe.”³²² The United States sought to educate allies about the importance of nuclear weapons and incorporate them into NATO’s overall strategy. Some allies—namely Germany and Italy—generally welcomed the deployment of U.S. nuclear weapons, recognizing their dependence on U.S. nuclear capabilities.³²³ Although Eisenhower wanted “nuclear roles for [NATO] allies,” he observed that “[the United States] must and will retain the freedom to initiate use of these weapons.”³²⁴

While Sputnik expedited greater sharing with both the United Kingdom and NATO allies, it did not lead U.S. officials to seek the same level of cooperation in terms of weapons collaboration and control over weapons with other allies as they had for the United Kingdom. The United States saw good reason to place U.S. weapons in NATO countries, in part for the political benefits, but it firmly sought to retain U.S. control over these weapons through support of NATO rather than national programs.³²⁵ The nature of the disagreement within the U.S. government is telling: The U.S. Department of State favored a system in which there was an overall NATO stockpile, divided between different countries, while the Joint Chiefs of Staff,

³¹⁹ Jamison, 2008, p. 53; Amendment to the Agreement Between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the United States of America for Cooperation on the Uses of Atomic Energy for Mutual Defense Purposes of July 3, 1958, 1959, p. 2.

³²⁰ Brown, 2013; Eric Ridge, “Completing the Transatlantic Nuclear Bridge: A U.S. View,” in Jenifer Mackby and Paul Cornish, eds., *U.S.-UK Nuclear Cooperation After 50 Years*, Center for Strategic and International Studies Press, 2008, p. 67.

³²¹ Simpson and Mackby, 2008, p. 10.

³²² Trachtenberg, 1999, p. 158.

³²³ William Burr, “The U.S. Nuclear Presence in Western Europe, 1954–1962, Part I,” National Security Archive, July 21, 2020.

³²⁴ A. J. Goodpaster, Staff Secretary, “Memorandum to the Secretary of State, Secretary of Defense, Chairman, Joint Chiefs of Staff,” National Security Archive, December 8, 1954, declassified on January 9, 2001; Burr, 2020.

³²⁵ Trachtenberg, 1999, p. 211.

whose approach won out, favored bilateral storage agreements with each country.³²⁶ Either way, no one disagreed that the United States should retain effective control over the weapons.

By August 1960, the United States had reached stockpile agreements with Belgium, West Germany, Turkey, and the Netherlands, while negotiations with Italy continued until 1961.³²⁷ But the United Kingdom and France were less supportive of NATO sharing arrangements.³²⁸ France was specifically frustrated that it was left out of the U.S.-UK MDA and complained that NATO was effectively a “two-class alliance.”³²⁹ U.S. officials resisted greater cooperation with France in part out of fear that enabling France to develop nuclear weapons would lead to similar demands from West Germany. Enabling Germany to develop its own weapons was considered unacceptable, perhaps given Germany’s legacy in World War II and associated risk of a response from the Soviet Union.³³⁰ U.S. policy, aside from its cooperation with the United Kingdom, solidified around the idea that “U.S. help would be given only for ‘NATO’ and not ‘national’ weapons.”³³¹ However, NATO decisionmaking on the use of these weapons remained ill-defined during this period: The 1962 Athens Guidelines implied that consultation with NATO would only occur in certain circumstances.³³²

Findings

The development and challenges of nuclear collaboration during the 1950s and early 1960s offer at least four findings relevant to the space domain. First, special legal arrangements, in some cases with congressional support, are necessary to share the most sensitive information with close allies. While the sharing of nuclear information in the 1950s was perhaps higher profile than the sharing of information related to space in the 2020s, the same challenges apply: Without a specific legal or regulatory carve-out, sharing may not be impossible, but it is limited

³²⁶ C. Burke Elbrick and Gerard C. Smith, “NATO Atomic Stockpile,” memorandum to the Secretary, July 1, 1957, declassified on September 15, 1995, in William Burr, ed., “The U.S. Nuclear Presence in Western Europe, 1954–1962, Part I,” National Security Archive, July 21, 2020.

³²⁷ Christian A. Herter, Acting Secretary of State, “Bilateral Agreements Under the Atomic Energy Act in Implementation of the NATO Atomic Stockpile Concept,” memorandum to President Eisenhower, April 8, 1959, declassified on April 1, 1990, in William Burr, ed., “The U.S. Nuclear Presence in Western Europe, 1954–1962, Part I,” National Security Archive, July 21, 2020; William B. Macomber, Jr., Assistant Secretary of State for Congressional Affairs, letter to Thomas E. Morgan, Chairman of the House Foreign Affairs Committee, August 24, 1960, declassified on February 15, 1995, in William Burr, ed., “The U.S. Nuclear Presence in Western Europe, 1954–1962, Part I,” National Security Archive, July 21, 2020.

³²⁸ Melissen, 1994, p. 261.

³²⁹ Melissen, 1994, p. 268.

³³⁰ Trachtenberg, 1999, p. 203.

³³¹ Trachtenberg, 1999, p. 211.

³³² Jeffrey H. Michaels, “‘No Annihilation Without Representation’: NATO Nuclear Use Decision-Making During the Cold War,” *Journal of Strategic Studies*, May 11, 2022, p. 15.

and complex. Without an agreement comparable to the U.S.-UK MDA for space, sharing with even the United Kingdom will remain challenging.

Second, the deeper collaboration that occurred between the United States and the United Kingdom versus U.S. collaboration with other NATO allies highlights how sharing with one or a few select allies is far more practical than sharing with larger organizations. So-called *slippery slope arguments*—how sharing with one ally will mean that the United States will be obliged to share with others—is but one likely reason for this difficulty. Given this constraint, it is inevitable that allies end up in different tiers of a sharing relationship. Explicit and frank policy on the break points between different categories is as sensible for space as it was for nuclear weapons. However, the costs of not sharing with certain allies must be considered as well: The decision to limit sharing with France ultimately hindered the United States’ ability to achieve its goals for NATO at the time.³³³

Third, an important, but not decisive factor in the U.S. decision on how much to share was allies’ own capabilities and any secondary benefits from sharing. Available information on the U.S.-UK relationship seems to indicate that the potential to gain from the United Kingdom’s own effort had greater influence in the U.S. decision to share than UK procedures to protect U.S. information.³³⁴ Side agreements are also motivating: The United States’ desire to gain UK support for the nuclear test ban treaty influenced the U.S. decision to share.

Fourth, disagreements within the U.S. government, both within the executive branch and between the legislative and executive branches, limited sharing even when there was an expressed desire at the presidential level to increase sharing. The U.S. bureaucracy complicated Eisenhower’s agenda. The nuclear arena had a different bevy of organizations than does the DoD space enterprise (e.g., Congress, U.S. Department of State, to name a couple), but just as for space, internal U.S. government interactions seemed to be an important determinant of policy outcomes.

Creating a Combined Operations Center for USSOCOM

Issue

In this case study, we seek to identify best practices for combined operations centers and other facilities in which U.S. personnel can plan and coordinate activities with allies. DoD facilities must operate under a strict regulatory framework that can make it difficult to establish a collaborative environment where allied personnel can work effectively.

³³³ Melissen, 1994, p. 255.

³³⁴ Jamison, 2008, p. 51; Philip J. Farley, “Atomic Weapons Cooperation with the United Kingdom,” memorandum from the Office of Assistant to the Secretary for Atomic Energy Matters to the Under Secretary, September 3, 1958, declassified on September 25, 1995, in William Burr, ed., “The British Bomb and the United States—Part One,” National Security Archive, May 13, 2021; Baylis, 2001, p. 48.

While the analogy between space and special operations centers is imperfect, the case of the USSOCOM J3-I, a combined operations center with its headquarters located at MacDill AFB, Florida, offers insights for the DoD space enterprise about both best practices and challenges for integrating allied personnel inside U.S. facilities. Established under the leadership of ADM William H. McRaven, the J3-I was designed to integrate foreign SOF personnel from around the globe into the command's daily battle rhythm. Admiral McRaven's team encountered a series of bureaucratic obstacles that threatened to derail the J3-I. Some of these issues are familiar from the space context discussed in Chapters 2 and 3, including difficulty enabling allied and partner EOs and LNOs to operate effectively and establishing shared and interoperable classified IT systems. USSOCOM's success in addressing these challenges, as well as its difficulties—including an investigation by the DoD Inspector General—offer insight for the organizations within the DoD space enterprise. As of the time of our interviews, integration challenges persisted within the J3-I even after nearly a decade of global special operations.³³⁵ These persistent challenges suggest that reconsidering DoD-wide policies or even higher-level legal guidance on allied cooperation may be necessary if the United States wishes to enhance integration with allies on space-related activities.

Experience

In August 2011, Admiral McRaven assumed command at USSOCOM and initiated a review of the organization's overall posture. The results of the review spurred McRaven to articulate a command-wide goal of building a global SOF network (GSN), defined as a collaborative relationship among USSOCOM, the interagency, and foreign allies and partners.³³⁶ USSOCOM later established the International SOF Coordination Center—eventually renamed the J3-I—to integrate allied and partner SOF with U.S. units and promote collaborative decisionmaking at the strategic and operational levels.³³⁷ Frequently stating that “you can't surge trust,” McRaven asserted that regularizing interaction among allies and partners in peacetime through the GSN and a multinational operations center would enable different SOF organizations to work better together when they were called on to do so.³³⁸

McRaven and other SOF leaders drew their inspiration for a collaborative allied operations center from their experience with NATO SOF in Afghanistan. In interviews, retired allied SOF

³³⁵ Former and current J3-I personnel, in-person and virtual interviews with the authors, January–March 2022.

³³⁶ Stuart W. Bradin, “Team Leader Q&A: Improving SOF Support to the Geographic Combatant Commands,” *Special Operations Technology*, Vol. 11, No. 2, March 2013, p. 17; USSOCOM, *SOCOM 2020: Forging the Tip of the Spear*, 2020, p. 4.

³³⁷ Ken D. Teske, Michael D. Tisdell, and William C. Fleser, “International SOF Coordination Center (ISCC),” *19th International Command and Control Research and Technology Symposium*, U.S. Command and Control Research Program, June 2014, p. 3; SOF Lessons Learned Network, *Multinational SOF Planning Insights: Operation Inherent Resolve*, U.S. Special Operations Command, April 23, 2015, p. 2.

³³⁸ Former U.S. official, virtual interview with the authors, December 2021.

leaders highlighted their involvement with the NATO SOF Coordination Center, a multinational hub established in 2006, and their experience establishing ad hoc “plywood” operations centers in Afghanistan.³³⁹ Although the in-the-field operations centers were austere, they were collaborative environments where U.S. and foreign personnel could share information with minimal restrictions. Interviewees noted that this collaboration was enabled by special U.S.-issued permissions that grant exceptional authority to share classified military information under active combat conditions.³⁴⁰

In seeking to establish a multinational operations center on U.S. soil, USSOCOM faced greater restrictions. Multiple interviewees highlighted what they perceived as excessive bureaucratic restrictions and risk-averse behavior by career personnel within the command during the early years of the J3-I.³⁴¹

A first challenge confronting McRaven’s team concerned the establishment of a physical operations center to which foreign officers would have access. Previously, one DoD attempt at incorporating allies and partners within a CCMD headquarters—known as the “coalition village” at USCENTCOM—relegated foreign personnel to a grouping of trailers in the parking lot of MacDill AFB.³⁴² In the case of the J3-I, McRaven’s team intentionally positioned the J3-I workspace centrally within USSOCOM headquarters to convey a sense of inclusion toward the allies and partners who would occupy it.³⁴³ USSOCOM staff carefully examined U.S. Intelligence Community Directive 705, which enumerates guidelines for accrediting a workspace as a sensitive compartmented information facility (SCIF), to determine how to construct the physical space. To protect foreign information within the J3-I and limit allied and partner access to sensitive U.S.-only areas inside USSOCOM headquarters, McRaven’s team constructed the J3-I as a “SCIF within a SCIF.” Of particular importance was the establishment of security protocols that enabled foreign SOF to enter and exit the J3-I facility without escort by U.S. personnel.³⁴⁴

A second challenge was establishing access to various national classified systems from inside the J3-I facility. To maximize integration with partner countries, McRaven’s staff saw the benefit of providing foreign officers access to their own national classified systems, in addition to shared

³³⁹ Former allied officials, virtual interviews with the authors, December 2021–March 2022.

³⁴⁰ DoDD 5230.11 (1992, para. 4.8) states, “Under conditions of actual or imminent hostilities, any Unified or Specified Commander may disclose classified military information through TOP SECRET to an actively participating allied force when support of combined combat operations requires the disclosure of that information.” Interviewees also described additional exceptions or authorities by which foreign SOF were granted access to U.S. classified information, especially while abroad on current operations (current and former U.S. and allied officers, in-person and virtual interviews with the authors, March 2022).

³⁴¹ Current and former U.S. officials, virtual interviews with the authors, December 2021–March 2022.

³⁴² Former U.S. official, virtual interview with the authors, December 2021.

³⁴³ Former U.S. official, virtual interview with the authors, December 2021.

³⁴⁴ Former U.S. officials, virtual interview with the authors, December 2021–March 2022.

U.S. networks. On the main operations floor, workstations enabled both foreign and U.S. officers to access Battlefield Information Collection and Exploitation System Extended (BICES-X) for collaboration within the command, and U.S. and FVEY personnel gained access to SIPR and SIPR-REL networks, respectively, on the main floor. In addition, positioned around the main J3-I floor are isolated “SCIF-lets.” Within these small, controlled-access rooms, personnel from a given nation have access to their own national classified system, which enable them to reach back to their national authorities to receive guidance and identify information that might be shared with other members of the multinational J3-I collective.³⁴⁵

A third issue concerned navigating appropriate legal roles for foreign officers in combined missions in Afghanistan or other theaters where U.S. and foreign personnel often serve side by side on a common staff. However, given legal authorities within USSOCOM headquarters in the United States, foreign personnel had to either be designated as foreign EOs or LNOs.³⁴⁶ As noted in Chapter 2, foreign LNOs formally represent their country, while EOs serve as temporary U.S. officers. Former USSOCOM officials noted that they preferred having foreign representatives serve as EOs because they were more able and obliged to contribute to the command than LNOs.³⁴⁷ However, neither role appeared to have fully reflected the desired practice for foreign officers. Interviews with former U.S. officials indicated that part of the intended purpose of having EOs present is that they would provide insight into their country’s perspective. Interviews indicate that foreign EOs assigned to the command did interact with their home countries—for example, by using their own classified networks in their respective SCIF-lets—generally with the understanding that they were speaking as representatives of the United States and not for their own countries.³⁴⁸

Another challenge was inconsistent commitment to collaboration within the J3-I over time. According to one foreign official currently serving in the command, foreign EOs no longer feel as integrated into the decisionmaking process at USSOCOM as they once were. According to this official, U.S. officials are less willing to address complaints that foreign officers are being excluded from key activities within the division and the command.³⁴⁹ Interviews with other former U.S. officials also reflect a sense that the height of collaboration within the J3-I was during McRaven’s tenure.

As collaboration deteriorates, U.S. officials expressed concern that the quality of personnel sent by foreign partners might decline.³⁵⁰ Rather than being seen as a top assignment for rising

³⁴⁵ Former U.S. official, virtual interview with the authors, December 2021.

³⁴⁶ This is different from cooperation during coalition operations abroad, where U.S. and allied or partner SOF personnel would be effectively assigned the same mission.

³⁴⁷ Former U.S. official, virtual interview with the authors, March 2022.

³⁴⁸ Current and former J3-I foreign officers, virtual interviews with the authors, March 2022.

³⁴⁹ Current J3-I foreign officer, virtual interview with the authors, March 2022.

³⁵⁰ Current and former J3-I foreign officers, virtual interviews with the authors, March 2022.

stars, they speculated that an exchange post in the United States might be given to officers at the end of their careers. Such a shift could especially reduce a key potential benefit of an exchange program, which is building ties with rising allied and partner officers. One possible consequence is declining contributions from allies and partners over time. Indeed, interviewees recounted how foreign personnel sent to the J3-I early in their career have since advanced to some of the highest levels of their home nations' defense establishments.³⁵¹

Above all, former U.S. and foreign J3-I officials have emphasized the importance of accepting only the most capable and dedicated officers for service in the division.³⁵² Thus, the professional bonds forged at the J3-I have translated to closer military-to-military relations as U.S. and foreign alumni rotate to new assignments. Overall, allied and partner nations continue to see value in sending their personnel to J3-I. As the perceived quality of the J3-I experience for foreign officers deteriorates over time, however, allies and partners may become less willing to send their most capable personnel to USSOCOM. Such a loss of skilled manpower would severely hinder the division's ability to execute its global mission.

Across these issues, USSOCOM J3-I personnel explained that a primary challenge to establishing an effective combined operations center within USSOCOM's headquarters was the concern from headquarters' personnel that greater sharing with foreign personnel might violate established procedures.³⁵³ Indeed, the DoD Inspector General (DoDIG) found in 2016 that USSOCOM was not fully compliant on a range of issues.³⁵⁴ A declassified version of the report highlights the DoDIG's concerns, including compliance with procedures for releasing data to partners, whether international agreements had been completed to enable "the continued use of their national secure communication systems," inappropriate access to some TOP SECRET spaces, and insufficient manning of FDOs.³⁵⁵ USSOCOM also worked to bring its procedures into compliance: As of June 2019, DoDIG assessed that USSOCOM had conducted corrective actions to address 24 of 25 of its recommendations.³⁵⁶

Some of these DoDIG issues, such as the limits of information release, reinforce our observations in Chapter 2 about the challenges with existing U.S. procedures. Indeed, one of the DoDIG recommendations to the OUSD(P) was to update the policy on foreign assignments to

³⁵¹ Former U.S. officials and current and former J3-I foreign officers, virtual interviews with the authors, February–March 2022.

³⁵² Current and former J3-I officers, virtual interviews with the authors, March 2022.

³⁵³ Current and former J3-I foreign officers, virtual interviews with the authors, March 2022.

³⁵⁴ Our interviewees also explained that USSOCOM personnel sought to work more effectively with foreign officers despite the risk of violating established procedures (former U.S. officials, virtual interviews with the authors, December 2021–March 2022).

³⁵⁵ Office of Inspector General, *Follow-Up Evaluation of Corrective Actions Taken in Response to a Prior Evaluation of Foreign Officer at the United States Special Operations Command*, declassified version, U.S. Department of Defense, DODIG-2019-090, June 3, 2019, pp. 1–19.

³⁵⁶ Office of Inspector General, 2019, p. ii.

provide necessary exceptions, but that recommendation had yet to be addressed in 2019 when the DoDIG released its report.³⁵⁷ As of the writing of this report, DoDD 5230.20 still has not been updated: The last major revision was released in 2005.³⁵⁸ Another example is the intensive FDO requirements. The DoDIG recommended that USSOCOM assess the number of FDOs required and ensure adequate staffing. USSOCOM's response indicates that it had some such process in place. Nonetheless, at least from public reporting, neither organization seems to have addressed the more fundamental question of whether the FDO procedures are sensible given the relevant political objectives and risk.³⁵⁹

Findings

The development of the J3-I offers several lessons for the DoD space enterprise as it works to build operations centers that work in a more integrated manner with allied personnel. First, it offers an example of integration with allies. Consultation with USSOCOM or other organizations can offer insights on practical topics, including the physical construction of spaces accessed by multinational personnel, writing terms of reference for allied EOs or LNOs, and installing IT systems that facilitate collaboration with allies. Allies are often aware of examples of previous closer integration, which makes the United States' failure to learn lessons from other domains especially frustrating to them.

Second, leadership direction and a willingness to challenge procedures may be necessary to integrate foreign officers. A recurring theme from our interviews with former J3-I personnel is that U.S. personnel were often risk-averse about what they were willing to do in interacting with foreign personnel for fear of rebuke—in some cases, for good reason, given the DoDIG investigation. Admiral McRaven's leadership at the USSOCOM level was important to achieve progress in the case of the J3-I, but supportive leadership at all levels of command may be important for future reform.

Third, the experience of the special operations community raises the question of whether existing DoD rules and practices concerning such issues as foreign officer assignments, foreign disclosure requirements, and the extensive use of the NOFORN classification caveat are simply incompatible with closer integration with allies across all domains. USSOCOM may have formally addressed the DoDIG complaints, but the investigation and response do not address the deeper issue of whether the underlying regulations are appropriate.

³⁵⁷ Office of Inspector General, 2019, p. ii.

³⁵⁸ DoDD 5230.20, *Visits and Assignments of Foreign Nationals*, U.S. Department of Defense, June 22, 2005.

³⁵⁹ Office of Inspector General, 2019, p. 15.

Intelligence Community

To offer context for the differences between the IC and DoD entities, we cite publicly available documents in this section to distinguish the structure, roles, and responsibilities of the relevant parts of the IC compared with the DoD space enterprise, recognizing that some organizations are part of both. Thus, our account is necessarily incomplete because we cannot go into detail about specific activities given these restrictions.³⁶⁰

Issue

The IC has historically relied on allied and partner relationships to accomplish its core missions of collecting and analyzing intelligence to provide U.S. leaders with decisionmaking advantage, strategic warning, and operational information. The modern era's evolution of these relationships was forged during World War II when U.S. military and political leaders knew the war could not be won without intelligence sharing across the NATO alliance. In the National Intelligence Strategy of 2019, the Director of National Intelligence (DNI) began the document with a statement about the "strategic environment" and the role of partnerships:

The strategic environment is changing rapidly, and the United States faces an increasingly complex and uncertain world in which threats are becoming ever more diverse and interconnected. The increasingly complex, interconnected, and transnational nature of these threats also underscores the importance of continuing and advancing IC outreach and cooperation with international partners and allies.³⁶¹

Below we describe how IC intelligence sharing with allies has become an integral part of the IC, including within the defense intelligence enterprise.

Experience

Building an Enduring U.S.-UK Intelligence Alliance

The intelligence sharing between U.S. and UK intelligence that took place during World War II led to countless victories for allied forces during the war, and UK intelligence tactics, techniques, and procedures eventually led to the creation of the CIA.³⁶² On the ground in Vichy, France, as one example, UK-controlled intelligence officers organized saboteur networks,

³⁶⁰ DoD guidance notes that the specifics of intelligence cooperation may be classified: "The fact of intelligence cooperation between the United States and a specific governmental component in an allied country or general description of the nature of intelligence cooperation between the United States and any allied country may be classified" (Department of Defense Manual 5200.45, *Instructions for Developing Security Classification Guides*, April 2, 2013, incorporating change 2, September 15, 2020, p. 35).

³⁶¹ Office of the Director of National Intelligence, *National Intelligence Strategy of the United States of America*, 2019, 2019.

³⁶² Sonia Purnell, *A Woman of No Importance: The Untold Story of the American Spy Who Helped Win World War II*, Penguin Random House, 2019.

created and managed supply chains for materiel to French resistance forces, and related intelligence back to the United Kingdom about the progress and shortfalls of Nazi advancements along with information about landing strips and drop zones where supplies could be clandestinely delivered at night.³⁶³

In the decades after the war, U.S. military leaders in the Army, Navy, and Air Force operated mostly disconnected from each other until the Goldwater-Nichols Department of Defense Reorganization Act of 1986 mandated the development of the current CCMD structure.³⁶⁴ When U.S. forces migrated to a joint CCMD environment, USEUCOM was developed as the joint headquarters for U.S. forces in Europe, and its commander needed a single intelligence organization across all three military services. Until then, each service had its own intelligence units in different locations, spreading from the United Kingdom to Germany to Italy and elsewhere, and NATO had no major intelligence unit because, at that time, intelligence was considered a function of each member nation. When USEUCOM was formed, it initially only had a small electronics intelligence unit, and all other intelligence was fragmented across its component services. The centralization of joint forces created by the Goldwater-Nichols Act allowed for the centralization of military intelligence functions, and for the first few years, this was realized through changes to joint doctrine and the establishment of USEUCOM doctrine.³⁶⁵

Then in 1991, the Soviet Union fell, and the national security community experienced a massive shrinking of resources. Without a major adversary, Congress began turning its attention—and resourcing—to non-defense focus areas. The so-called *peace dividend*—the money that Congress and the United States could save by no longer having to compete against or defend against a Soviet Union—could lead to taxpayer savings and a redirection of priorities. Now DoD was faced with the need to consolidate its bases and facilities and reduce costs, and consolidating the disparate European intelligence activities was one such area identified for savings.³⁶⁶

Multiple UK locations were under consideration, and the Royal Air Force (RAF) station at Molesworth was ultimately chosen because the site was already shared with the United States, was well protected from a security perspective, and had plenty of open land available to build on.³⁶⁷ During World War II, RAF Molesworth was used by U.S. bombers, and later during the Cold War, it was a base for USAF personnel and equipment.³⁶⁸ The UK government responded favorably to the U.S. proposal to create an intelligence center at RAF Molesworth, but with one

³⁶³ Purnell, 2019.

³⁶⁴ Public Law 99-433, Goldwater-Nichols Department of Defense Reorganization Act of 1986, October 1, 1986.

³⁶⁵ Robert G. Stiegel, “The Origin and Evolution of the Joint Analysis Center at RAF Molesworth,” Central Intelligence Agency, Center for the Study of Intelligence, *Studies in Intelligence*, Vol. 62, No. 1, March 2018.

³⁶⁶ Stiegel, 2018.

³⁶⁷ Stiegel, 2018.

³⁶⁸ Forces War Records (UK), “Unit History: RAF Molesworth Northamptonshire,” webpage, undated.

request: USEUCOM proposed calling its new intelligence center the joint intelligence center (or JIC), and the UK government requested the name be changed. The United Kingdom already had an organization with the acronym “JIC,” and the name change has been attributed both to a desire to avoid confusion and, possibly, to distance the UK government from intelligence activities. The joint analysis center (JAC) was approved by both governments, and that name remains today.³⁶⁹ The JAC has since been essential in providing intelligence in support of the Global War on Terror and NATO operations.³⁷⁰

Intelligence Sharing in the Space and Technology Age

In addition to bilateral partnerships, like the one forged with the United Kingdom (the U.S.-UK MDA), the 20th century led to the development of multinational intelligence partnerships, and the most consequential of these to the United States is the FVEY intelligence-sharing relationship with Australia, Canada, New Zealand, and the United Kingdom.³⁷¹ As the era of space exploration advanced, so too did the United States’ intelligence capabilities in space and its partnerships in this domain.³⁷²

The DoD space enterprise and the IC overlap, as many DoD space assets are intelligence systems, and many intelligence systems are or involve space assets. The NRO, an IC element that is part of DoD, has the role of developing, acquiring, launching, and operating space-based intelligence and reconnaissance assets for DoD and its IC partners.³⁷³ The NRO’s organizational structure was initially designed by merging the USAF’s satellite reconnaissance program (called Program A), the CIA’s satellite reconnaissance program (Program B), the Navy’s program (Program C), and a joint USAF-CIA program that was responsible for the U-2 and the A-12/SR-71 reconnaissance programs (Program D).³⁷⁴ This organizational structure, formed by consolidating disparate space programs, survived for 30 years, and lessons from this organizational structure informed the creation of the USSF in 2019. When the USSF was

³⁶⁹ Stiegel, 2018.

³⁷⁰ USEUCOM, “Joint Intelligence Center Celebrates 25th Anniversary,” news release, September 7, 2017.

³⁷¹ Wells, 2020. DoD guidance explains, “Normally, the fact of broad, U.S. general intelligence cooperation with foreign countries or groups of countries with which the United States maintains formal military alliances or agreements (e.g., the North Atlantic Treaty Organization (NATO)) is not classified” (Department of Defense Manual 5200.45, 2013, p. 34).

³⁷² Frederic C. E. Oder, James C. Fitzpatrick, and Paul E. Worthman, *The Corona Story*, National Reconnaissance Office, Center for the Study of National Reconnaissance Classics, reissued September 2013; Frederic C. E. Oder, James C. Fitzpatrick, and Paul E. Worthman, *The Gambit Story*, National Reconnaissance Office, Center for the Study of National Reconnaissance Classics, reissued April 2012a; Frederic C. E. Oder, James C. Fitzpatrick, and Paul E. Worthman, *The Hexagon Story*, National Reconnaissance Office, Center for the Study of National Reconnaissance Classics, reissued April 2012b.

³⁷³ NRO, 2022.

³⁷⁴ Bruce Berkowitz, *The National Reconnaissance Office at 50 Years: A Brief History*, Center for the Study of National Reconnaissance, National Reconnaissance Office, September 2011, p 13.

established, former airmen working at the NRO were transferred to the USSF, and, according to the NRO, hundreds of USAF and USSF personnel have been assigned to the organization.³⁷⁵

Beyond the hardware of space assets, other defense intelligence agencies have responsibilities for the collection and analysis of data. NGA specializes in geographic intelligence and imagery analysis, and NSA specializes in signals intelligence. Both are combat-support agencies within DoD and members of the IC.³⁷⁶ They are also close partners with the USSF, USSPACECOM, and other non-IC organizations within DoD.

Beyond the organizational and mission alignment between DoD and the IC, many DoD entities—including the DoD space enterprise—use IC infrastructure and partnership agreements to communicate and collaborate with partner nations. For example, the official NRO history notes that the “NRO maintains an extensive global communications network that supports both NRO operators and other military and intelligence users.”³⁷⁷ Joint Publication (JP) 2-01 notes how intelligence-sharing relationships facilitate communications:

Some allied countries have established intelligence-sharing agreements with the US, which permit almost seamless two-way flow of intelligence. A presidential decision directed access for Commonwealth allies (Great Britain, Australia, New Zealand, and Canada) to information at the collateral level via a Commonwealth releasable segment of the US SIPRNET in order to enhance information sharing.³⁷⁸

JP 2-01 also explains that there are “robust, multinational networks used as a backbone for intelligence exchange,” such as BICES and BICES-X.³⁷⁹ In public statements, Defense Intelligence Agency leaders have noted that they are pursuing new platforms such as Torch to facilitate collaboration between FVEY organizations,³⁸⁰ and integrating the TOP SECRET Joint Worldwide Intelligence Communications System with FVEY allies’ networks.³⁸¹ Other DoD organizations already use networks enabled by these intelligence relationships. As we discussed in Chapter 2, the CSPOC leverages BICES to share information with allies, but there are numerous shortcomings with this approach for operations.

³⁷⁵ Anna-Marie Wyant, “NRO Airmen Transfer to U.S. Space Force,” National Reconnaissance Office, news release, September 3, 2020.

³⁷⁶ See NGA, “NGA History,” webpage, undated.

³⁷⁷ Berkowitz, 2011, p. 26.

³⁷⁸ JP 2-01, *Joint and National Intelligence Support to Military Operations*, Joint Chiefs of Staff, July 5, 2017, p. II-37. Although the original text specifies Commonwealth allies in general, not all Commonwealth countries have specified access.

³⁷⁹ “STONEGHOST is an encrypted communications network designed to support collaboration and intelligence sharing between the US defense IC and its Commonwealth allies during combat operations. Other allies have long-standing relationships with US Services and intelligence agencies, but release of US-produced intelligence is subject to review by the FDO” (JP 2-01, 2017, p. II-37).

³⁸⁰ Underwood, 2022; officials, interviews with the authors, October 2021–February 2022.

³⁸¹ Billy Mitchell, “Modernization of JWICS a Top Priority for DIA, CIO Says,” FedScoop, December 8, 2021.

Findings

Although IC organizations have some overlap with DoD, they have some authorities under different statutes, particularly regarding the release of classified information to foreign governments and entering into new agreements with foreign governments. An understanding of these distinctions could benefit the DoD space enterprise.

First, the DoD's and the IC's regulatory and policy frameworks for disclosure differ. In general, across both enterprises, the organization originating classified information determines its releasability. Within the IC, non-originating organizations explicitly have the authority to disclose information that is marked REL, unless it is also marked as Originator Controlled, while DoD regulations limit disclosure solely to originating organizations.³⁸² This arrangement benefits intelligence entities that need the flexibility to share and exchange intelligence with foreign governments, while creating hurdles for other governmental entities—including non-intelligence components of DoD—who similarly need to share and exchange information but lack the authority to do so. Another issue that points to the formal differences in procedures is that DoD and the IC have different policies for the use of the NOFORN caveat. DoD regulations indicate that, except for three exceptions, there is “no authorized DoD use for the NOFORN caveat on non-intelligence information.”³⁸³ Instead, DoD rules encourage the use of a no-caveat marking (e.g., SECRET) for material that has not yet been approved for release.³⁸⁴ IC personnel are directed to apply dissemination markings (i.e., NOFORN, REL TO) “as soon as practicable,” and documents that do not bear dissemination markings are assumed to be widely releasable.³⁸⁵

Another difference is that IC organizations participate in policy decisions about the release of classified military information (CMI), but military services do not routinely have the benefit of participating in discussions about the release of intelligence information that is not considered CMI. The disclosure of CMI is regulated by NDP-1 and overseen by the NDPC (as discussed in Chapter 2). The membership of the NDPC includes the DNI, the CIA director, and other IC leaders, in addition to DoD leadership.³⁸⁶ In other words, intelligence leaders are included in discussions about the release of CMI. Many organizational equities are considered in any decision to release CMI, which not only includes military intelligence information, but also covers other information developed by DoD. By contrast, information that is not considered CMI—such as finished intelligence and raw intelligence reporting—is regulated by Intelligence

³⁸² Intelligence Community Directive 403, 2013, p. 3; DoDD 5230.11, 1992, p. 2.

³⁸³ Department of Defense Manual 5200.01, *DoD Information Security Program: Marking of Information*, Vol. 2, February 24, 2012, incorporating change 4, July 28, 2020, p. 65; Radin, 2021.

³⁸⁴ Department of Defense Manual 5200.01, 2020, pp. 91–92.

³⁸⁵ In particular, documents created on or after June 28, 2010, without dissemination markings are assumed to be Releasable by Information Disclosure Officer (RELIDO) (Intelligence Community Directive 710, *Classification Management and Control Markings System*, Office of the Director of National Intelligence, June 21, 2013, p. 4).

³⁸⁶ Office of Inspector General, 2016; Defense Technology Security Administration, undated-b.

Community Directive 403, which “generally” provides the originating agencies with release authorization for “routine foreign disclosure.”³⁸⁷ Challenges exist when each new request is perceived as non-routine and when agencies do not make decisions within a time frame necessary for events. Although the ease and level of sharing will vary in practice, these rules suggest that IC elements have more flexibility in sharing information with partners than non-intelligence DoD organizations have.³⁸⁸

The second authority that IC agencies benefit from is the authority to enter into international agreements. Within DoD, all international agreements undergo an extensive process that involves equities from across DoD, as well as coordination with the U.S. Department of State.³⁸⁹ This creates a lengthy process that does not always achieve the desired result within the desired time frame. In the IC, by comparison, intelligence agreements can be created and modified without DoD-wide coordination, as long as the agreement is limited to intelligence information and intelligence operations. For intelligence-related matters, the DNI “[m]ay enter into intelligence and counterintelligence arrangements and agreements with foreign governments and international organizations,”³⁹⁰ and the heads of intelligence elements shall “disseminate information or intelligence to foreign governments and international organizations under intelligence or counterintelligence arrangements or agreements.”³⁹¹ This authority applies equally to DoD and non-DoD elements of the IC, allowing members of the Defense Intelligence Enterprise to enter into such agreements with their foreign counterparts.

Elements of the IC already partner with allied ministries of defense on space projects. For example, on May 10, 2022, the UK Ministry of Defence announced collaboration with the NRO on the launch of a two CubeSats,³⁹² which are smaller and cheaper satellites than have historically been launched. These CubeSats also have equipment on board to test the United Kingdom’s Minerva program, which intends to establish a space “digital backbone.”³⁹³ This type of cooperation between the U.S. IC and allied militaries highlights how allies may see the IC as a

³⁸⁷ The DNI also provides overall guidance and authorizing disclosure in response to NSC policy direction (Intelligence Community Directive 403, 2013, pp. 1–3).

³⁸⁸ See Intelligence Community Directive 403, 2013, p. 3.

³⁸⁹ DoD Instruction 5530.03, *International Agreements*, U.S. Department of Defense, December 4, 2019, p. 24.

³⁹⁰ Executive Order 12333, “United States Intelligence Activities,” Executive Office of the President, as amended by Executive Orders 13284, 2003; 13355, 2004; and 13470, 2008.

³⁹¹ Executive Order 12333, 2008.

³⁹² UK Ministry of Defence, UK Space Agency, and Defence Science and Technology Laboratory, “First UK Satellite Launch in Summer 2022,” Government of the United Kingdom, May 10, 2022.

³⁹³ Defence Science and Technology Laboratory, “Space: Defence Science and Technology Capability,” Government of the United Kingdom, March 31, 2022; UK Ministry of Defence and Defence Equipment and Support, “First £22 Million MINERVA Satellite Supports 100 UK Jobs,” Government of the United Kingdom, April 4, 2022.

desirable partner on some issues instead of or in addition to their cooperation with non-intelligence DoD space organizations.

The different authorities available in public documents suggest that the IC and DoD space enterprise will have varied means and ability to cooperate with allies. There may be some direct lessons for the DoD space enterprise from past cooperation by the IC, but much of the experience of the IC may not be directly replicable. Instead, the DoD space enterprise should look to the IC as an important collaborator, seeking to take advantage of complementary authorities, capabilities, and relationships.

Conclusion

The experiences of nuclear cooperation, developing a combined special operations headquarters, and the IC offer insights for the DoD space enterprise. Because we have highlighted findings in the above sections, we do not reiterate them here, but they will be developed further in Chapter 5.

Chapter 5. Overarching Findings and Recommendations

Overarching Findings

We identified several overarching findings as a result of our research and analysis. These are issues that were evident across multiple data sources or were revealed during this study, or both, but they had not been previously well documented by the U.S. government.

DoD Lacks a Consistent Vision and Desired End State for Partnering with Allies

Across DoD organizations, leaders face two challenges in formulating objectives for cooperation with allies. First, their priorities for cooperation with allies often differ, which leads to an inconsistent vision. Beyond top-level DoD documents, USSPACECOM, the DAF, and the USSF all have their own guiding documents and processes that are often uncoordinated across the various organizations. The result is a DoD space enterprise that lacks coherence in its objectives. Second, and relatedly, these organizations lack a clear desired end state, or *ultimate goal*, for allied coordination, cooperation, interoperability, or integration in the space domain. The DSS and Space Policy directive, as discussed in Chapter 2, describe a desire to “cooperate,” “expand information sharing,” “align . . . on space policy,” and “expand cooperative research, development, and acquisition” but without specifying end states for such cooperation, expansions, or alignments.³⁹⁴ The benefits of closer cooperation and ways to mitigate the risks associated with cooperation with allies are not widely understood or shared across the DoD space and non-space (security) enterprise. The lack of a widely shared end state and an associated cost-benefit analysis likely contributes to the first challenge: that is, leaders in DoD, USSPACECOM, the DAF, and the USSF all seem to pursue different priorities for allied cooperation.

DoD Space Enterprise Roles and Responsibilities Remain Ambiguous and Disputed

OSD has provided a relatively broad top-level DSS and a recently revised Space Policy directive that spells out some additional details, but these do not appear to be adequate to address the full range of roles and responsibilities for the various DoD space enterprise actors. Current policy and strategy documents, combined with existing guidance from U.S. Code, Title 10 and DoD regulations, do set some top-level roles and responsibilities. However, overlaps and ambiguities remain. There are now more than a dozen organizations across the DoD space enterprise that claim a role in coordinating cooperation with allies, and at the time of our research, each of these organizations prioritized allies and topics differently based on their equities. OUSD(P) for space and for regions, the USSF, SAF/IA, and USSPACECOM each

³⁹⁴ DoD, 2020, p. 9; DoDD 3100.10, 2022.

develop separate allied cooperation approaches, and each have separate engagement activities. Without a more complete statement of roles and responsibilities across the DoD space enterprise, there is often confusion about who is implementing what part of the strategy and who has the authority to adjudicate disagreements within the U.S. system. Some DoD space enterprise stakeholders have described the current situation as chaotic, random, and inefficient. Allies often hear divergent statements from different organizations, resulting in uncertainty about who within DoD has the lead for a given topic. Furthermore, allies note that various DoD officials are often inconsistent about which areas DoD is willing to prioritize and to what degree the United States is willing to partner. The 2022 update to the Space Policy directive and recent efforts by USSPACECOM to coordinate across the various DoD space enterprise stakeholders show promise, but it is too early to tell if these efforts will shift the current paradigm and result in an adequately coordinated approach to allied space cooperation.

In Their Current State, DoD Regulations, Processes, and Infrastructure Limit the Feasibility of Integration

Beyond clarity about policy, the underlying regulations and infrastructure prevents DoD space organizations from achieving higher levels of integration with allies specified in U.S. policy pronouncements. The United States does not yet define clearly what it means when it uses the term *integration* because various documents use it differently. According to the allied relationship spectrum that we developed for this study, actual integration is unlikely in the next two to five years without significant changes to U.S. policies and procedures. The first impediment is the DoD-level disclosure policies described in Chapter 2. For example, USSPACECOM and the USSF struggle to receive approval to disclose classified information owned by other organizations. Also, as discussed in Chapter 3, allied EOs from trusted nations embedded within the DoD space enterprise do not have the necessary infrastructure and access to do their jobs because of DoD-level regulations. And the USSF force design process currently focuses on U.S. needs with limited consideration of potential allied contributions.

Together, these issues limit the realistic level of relationship that the DoD space enterprise can develop with allies. If the United States does not want to become too dependent on allies for military space activities or share information about specific space systems with allied personnel, combined operations become infeasible. Some allies also remain cautious about integration. Each ally studied generally voiced a desire for a deeper relationship with the United States, but in practice, each pursues strengthening their relationship with the United States incrementally, given their own internal policy priorities and capabilities. Even if true integration were impossible, collaboration and interoperability are still meaningful and can enable the United States and allies to collectively make better use of limited resources.³⁹⁵

³⁹⁵ The terms *integration*, *collaboration*, and *interoperability* as we use them are defined in our allied relationship spectrum (see Figure 1.2 in Chapter 1).

The United States and Allies Lack Adequate, Interoperable Communications Standards and Infrastructure Across All Levels of Classification

This shortcoming exists despite more than 15 years of lessons learned from wargames and a decade of discussions with allies calling for a multilevel classification system for space operations. DoD and allies depend on an array of undercapable systems (such as BICES and SIPR-REL) and manual workarounds (e.g., phone calls and couriers) to share information. The existing system is inadequate for wargames and exercises in terms of necessary bandwidth (*quantity* of information) and classification levels (*types* of information). Thus, the current infrastructure and lack of common standards is likely insufficient for actual warfighting operations. Shared TOP SECRET systems are scarce and largely unavailable outside of the FVEY alliance, which makes substantive collaboration on space issues challenging. Even when these systems do exist, there are too few terminals and too few authorized users in each country to allow for effective collaboration during a crisis or war. While proposed systems, such as Torch, SABRE, and the MPE-IS, may help alleviate these gaps, such systems are still far from operational and there is no official plan for a space C2 system that allows allies to communicate at various classification levels. As the United States considers cooperating with additional countries, difficulties in communication with new cooperation partners will increase.

Absent Change, Continued U.S. Inefficiencies and a “Say-Do Gap” Risk Weakening the Allied Space Coalition

We determined that the existing “say-do gap” results in at least one possible negative impact: a loss of efficiency that affects the ability of the allied space coalition to meet shared objectives.³⁹⁶ One premise of DoD policy statements advocating for strengthening relationships with allies on space-related defense activities is that increasing allied contributions and coordination will help the United States meet growing challenges in the space domain. Weak and unclear relationships between the United States and allies create inefficiencies in meeting shared challenges.

There are several tangible examples of this loss in efficiency. First, allies state that they often lack sufficient details of desired capabilities for specific acquisition efforts. Because allies must move ahead with acquisition efforts in spite of limited information, they will not make the most efficient use of limited resources. A similar loss in potential comes from failing to make the greatest use of allied EOs, missed opportunities for shared training and education, and weaker operational cooperation. Another loss in opportunity is the failure to take advantage of allied capabilities to build collective resilience or to leverage allied capabilities to dissuade adversaries from undertaking attacks. The United States might decide that the risk of deepening U.S.-allied

³⁹⁶ As noted earlier, while defined differently by various stakeholders, we define the *say-do gap* as the divide between U.S. policy statements that promote deeper integration with allies on space issues and the practical realities of U.S. procedures and practices.

cooperation may not be worth the potential reward; however, current U.S. policy statements suggest that senior leaders either have already assessed that the potential benefits of greater cooperation outweigh the risks, or they have elected to make broad policy statements without ensuring the DoD space enterprise can achieve the stated levels of cooperation. The “say-do gap” thereby poses another risk to the overall efficiency of the allied defense space effort and contributes to a weaker allied space coalition.

There Are Some Examples of Efforts to Articulate a Vision for Cooperation and Improving Overall Coordination Across the DoD Space Enterprise, but They Are Nascent and, So Far, Insufficient

There are some examples of efforts to improve the vision and coordination issues described above, spearheaded by multiple organizations. At the DoD level, the August 2022 publication of the Space Policy directive has reinforced the policy goals originally specified in the DSS and, at a high level, clarified some roles and responsibilities for OSD, the DAF, USSPACECOM, and the military services. However, this Space Policy directive and the DSS still leave gaps in clarifying roles and responsibilities for several stakeholders. For example, the Space Policy directive directs USSPACECOM to “[s]ynchronize the posture of space forces and security cooperation activities with other CCMDs,” and specifies that the ASD for Space Policy is responsible for policy and guidance on space cooperation and “[l]eading the development of strategic messaging.”³⁹⁷ However, it does not fully clarify the role of key organizations within the SAF and the USSF, including to what degree the USSF’s role in “[o]rganizing, training, and equipping organic and assigned space forces serving in the United States and overseas” may include engagement with foreign space organizations, mirroring activities by other services.³⁹⁸ The current policy and strategy documents also do not connect various goals, such as “integrating” and “expanding information sharing” to concrete desired outcomes and end states, such as the degree to which the United States and allies should exchange information or partner on acquisition efforts.³⁹⁹ Separately the CSpO Vision 2031 objectives provide clearer end states, but it is not clear, based on past performance, whether the United States and allies are truly able to achieve some of the ambitious goals specified.⁴⁰⁰

³⁹⁷ DoDD 3100.10, 2022, pp. 10, 17.

³⁹⁸ DoDD 3100.10, 2022, p. 15.

³⁹⁹ For example, such statements in the DSS as “[e]xpand information sharing relationships with capable allies and partners” focus on specific objectives but do not define actual end states (DoD, 2020, p. 9).

⁴⁰⁰ The new CSpO vision, which took three years to create, calls for “combined space operations by sharing information across multiple classification levels and at a pace that is operationally relevant through real-time synchronized networked operations centers” (Governments of the United States, Australia, Canada, France, Germany, New Zealand, and the United Kingdom, 2022). This is a laudable goal but, on its face, seems overly ambitious.

USSPACECOM has also made progress coordinating with its various space cooperation stakeholders through a series of security cooperation planning efforts begun in 2021 and projected to continue. At the DAF level, efforts such as the July 2022 memorandum on expanding information-sharing are also encouraging, but that memorandum is only applicable to the DAF and does not address larger regulatory hurdles.⁴⁰¹ Within the USSF headquarters, the Global Engagement office is working hard to align the service vision with SAF/IA and USSPACECOM with the very limited resources available to them. SSC continues to be a leader in working with allies on a variety of initiatives, but it lacks clear investment priorities from USSPACECOM and the USSF. These various enterprise efforts reflect a desire to make progress toward greater cooperation with allies but are, to date, nascent, not fully coordinated across the enterprise, and appear to be insufficient.

Historical Examples of U.S.-Allied Cooperation in Mission Areas Other Than Space Suggest Opportunities for Addressing Current Challenges in the Space Domain

The case studies of allied cooperation that we examined in Chapter 4 demonstrate how, under specific conditions, the United States has achieved higher levels of cooperation with allies. In the case of nuclear weapons cooperation in the 1950s, the Eisenhower administration worked with Congress to explain the necessity for greater nuclear weapons cooperation with the United Kingdom, which culminated in the U.S.-UK MDA and later the Polaris Sales Agreement. These agreements established unprecedented sharing of classified information. This example demonstrates how agreements with specific countries on narrow issues may be necessary to achieve deeper cooperation on sensitive, strategically important military systems.

The case of the development of a combined special operations center shows the challenges and possibilities of working closely with allies in a shared military facility. USSOCOM needed to develop novel approaches to comply with existing U.S. regulations to bring allies into U.S. facilities and provide them with necessary information systems. The subsequent DODIG investigation demonstrates the difficulty of achieving such integration within the U.S. regulatory framework. However, both of these examples offer options for the DoD space enterprise to examine as it seeks to close the gap between U.S. aspirations for allied cooperation in the space domain and current operational reality.

Recommendations

Drawing from our analytical findings, we offer four overall recommendations. For each recommendation, we describe the problem that needs to be addressed, any specific approach or steps, and the stakeholders who should lead or be involved in implementing the recommended actions.

⁴⁰¹ Secretary of the Air Force, Chief of Space Operations, and Chief of Staff of the Air Force, 2022.

The United States Should Be Consistent Across the DoD Space Enterprise and Clear with Allies When and Where Cooperation and Information-Sharing Are Possible

Our research indicates wide agreement by allies that whatever actions the United States elects to take, U.S. leaders should set realistic expectations for allies about the level of integration the United States is willing to pursue. It may not be desirable or feasible for the United States to fully integrate with all allies, and lower levels of cooperation may be more realistic. Allies clearly understand that in many cases the United States would need to act independently; allies noted that they have similar national priorities and limitations. However, to address the “say-do gap” between broad policy pronouncements seeking integration and the reality of what the U.S. system will allow, the United States needs to be forthright with allies when and where cooperation and information-sharing are possible. Allies should do the same with the United States.

In addition to improving overall consistency, the United States should be more thoughtful and transparent about what can be done with allies. For example, U.S. leaders should be more strategic in using the CSpO Initiative, OOD, and bilateral cooperation with allies to serve shared interests and set expectations based on a specific activity.

The United States should be conscious that allies value the information exchange and perspective-sharing among CSpO participants. Therefore, the United States and allies should continue such valuable exchanges through the various CSpO working groups while also making clear the historically limited ability of those groups to create change without broader approval from the DoD space enterprise. The United States should be more explicit that, without significant changes to the DoD space enterprise approach to allied cooperation, relationship-building rather than any particular product or system represents a realistic goal of participation in the CSpO Initiative. This could present a challenge given the explicit goals stated in the CSpO Vision 2031.⁴⁰² OSD, USSPACECOM, and the USSF already jointly lead the CSpO effort for the United States and should be the lead for this effort.

While the CSpO Initiative may be a viable venue for greater inclusion of allies, we recommend that the United States very carefully consider any OOD membership growth. In the near term, the United States should focus on rejuvenating OOD as a primary venue for deeper cooperation on operational issues. Several allies were disappointed with the level of cooperation within OOD during the period of this research. The United States, through USSPACECOM, should consider prioritizing OOD as the focus for greater operational integration.

⁴⁰² We also found a need for a common database for CSpO materials. It was not clear during our research whether information from the CSpO and each working group were made available and accessible to all participants of the CSpO Initiative and its working groups. Implementing an information-sharing or knowledge-management process would provide stakeholders and countries with the results of these discussions. If this database already exists, it should be more widely advertised because many of the allies are not aware of it.

Finally, the United States should coordinate among the DoD space enterprise, especially OSD, USSPACECOM and the USSF, to align the various bilateral agreements and associated meetings. As in other areas, there are signs of progress in this area, so key stakeholders should continue their efforts at informal coordination until a more formal overall strategy exists for the enterprise. Whatever the path ahead, all stakeholders should set clear expectations on the purpose and limitations of CSpO, OOD, and bilateral MOUs and engagements. The United States currently has no process for achieving a combined architecture within the existing acquisition framework, and this paradigm is unlikely to change soon. Therefore, all stakeholders—including the United States—should clearly explain which expectations are reasonable and likely and which are not.

DoD Should Build on Early Efforts to Create a DoD-Wide Approach to Space-Related Activities, Including Allied Space Cooperation, That Fully Develops Stakeholder Roles and Responsibilities and Articulates Realistic Desired End States with Each Ally

The above findings highlight how DoD has made progress in addressing existing challenges within the DSS, Space Policy directive, and other documents. Additional work remains to be done, especially to address overlapping and ambiguous roles and responsibilities and to better articulate the vision and realistic desired end states for relationships with allies. To address outstanding issues, we recommend a high-level space working group, including key DoD and IC stakeholders, chaired by the Deputy Secretary of Defense (DSD) and chartered to meet regularly for at least two years.

We suggest that the DSD chair the working group because the lack of clarity and disagreements are at the DoD component level, including between OUSD(P), the DAF, the USSF, and USSPACECOM, which means that solutions cannot be adjudicated at lower levels.⁴⁰³ Recognizing the limitations of the seniority of such a working group, we suggest that this working group examine allied issues as just one among several issues facing the DoD space enterprise that require high-level adjudication on roles and responsibilities or greater articulation of objectives. Issues that are likely to require higher level adjudication include acquisition priorities and processes, coordination and cooperation with intelligence entities, commercial cooperation, and integration with the other services.⁴⁰⁴ Where principal-level decisions are not

⁴⁰³ If the DSD chooses to delegate the chair role, we recommend that the Chairman of the Joint Chiefs of Staff (CJCS) and OUSD(P) should *jointly* co-chair such a working group. OUSD(P) has the expertise and knowledge needed in this area, but CJCS will be perceived by stakeholders as more impartial without its own equities in the solution.

⁴⁰⁴ Frank Wolfe, “US Space Force Systems ‘Can’t Afford to Be Overly Redundant’ with NRO’s, Saltzman Says,” *Via Satellite*, September 14, 2022; Hitchens, 2022d; Summer Myatt, “Air Force, Space Force Officials Say Integration Remains Number One Challenge For Joint Force,” *GovConWire*, August 3, 2022; Michael Spirtas, Sarah Harting, Julia Brackup, Christopher Ferris, Jonathan Fujiwara, George Nacouzi, Michael Nixon, Joseph B. Piroch, Anthony D. Rosello, and Ryan C. Thulin, unpublished RAND Corporation research, 2022.

necessary or appropriate, the working group can defer deliberations to subordinate working groups focused on specific issues.

The following DoD organizations should be included in such an effort: OUSD(P)/Space; other OSD elements with space equities, including OSD(A&S) and OSD(R&E); DAF-level organizations, including SAF/SQ and SAF/IA; USSF/S5P, SSC/IA, SpOC, and any other USSF components; and USSPACECOM J5 and J3. This effort, in coordination with the Office of the DNI, should also identify and explain the relationships between DoD and the relevant organizations within the IC, including NRO, NGA, and the Office of the Under Secretary of Defense for Intelligence and Security. Although including these IC organizations will complicate the process, their participation is critical because the distinction between intelligence and military information is an important challenge for deepening allied cooperation, among other issues.

The proposed working group should cover all space enterprise issues and include a specific track focused on roles, responsibilities, and a strategy for allied space cooperation. Roles and responsibilities should align with U.S. Code, Title 10 and DoDD 5100.01 and clarify terms and responsibilities identified in other documents, including DoDD 5132.03, which specifies roles and responsibilities for security cooperation. DoD-level guidance on cooperation with allies should encourage DoD components to ensure that allied considerations are incorporated from the beginning to the end of any policy process, including USSF force design. International cooperation should not only be the role of policy or engagement offices but also of all space capabilities, plans, operations, and acquisitions offices.

In addition to roles and responsibilities, this working group (and its likely subordinate working groups) should address in more detail the value proposition and desired end states for partnering with allies. This will involve building on established rationales for cooperation with allies to gain agreement on what relationships with allies are needed to address gaps, enhance resilience, or deter adversaries, as well as to what degree space cooperation may be valuable to build relationships with allies to pursue goals related to other domains. Some organizations, such as SAF/IA, USSPACECOM, and even the USSF field commands (SpOC and SSC, specifically) have useful examples of more-specific approaches to allied cooperation, but there does not seem to be an enterprise-wide effort to coordinate these approaches. An agreed overarching vision with specific end states would set the stage for more-specific work within subordinate commands of USSPACECOM and the USSF. This working group (or subordinate groups) will also establish a forum for coordinating bilateral agreements and meetings with key allies to meet the agreed-upon overarching vision.

DoD Should Conduct Operational Analyses of Relevant Functional Areas with a Focus on Collaboration and Identify the Desired Elements and Levels of Relationships with Each Ally

Once there is a coherent and shared overall vision, the responsible organizations within the DoD space enterprise can pursue the operational analysis necessary to achieve the desired effects. Relevant organizations should coordinate on functional and ally-specific products that would be repeated annually or on an as-needed basis. The USSPACECOM planning activities described earlier are useful and should continue; however, they do not cover a wide range of topics that warrant more attention and coordination. For example, a complete operational analysis should include the following topics (with likely offices of primary responsibility [OPRs] identified for each) and broken out by subject area to include only relevant stakeholders:

- **Personnel exchanges** (USSPACECOM, SAF/IA, the USSF). Personnel exchanges are the primary way in which countries integrate with the U.S. space community; therefore, these partnerships establish the foundation for the DoD's space relationships with allies. The operational analysis should examine how DoD decides (1) where to send U.S. EOs, (2) the appropriate rank of U.S. personnel sent, (3) the roles of allied and partner EOs in DoD, and (4) challenges and mitigations in sharing classified and unclassified information with allied and partner EOs.⁴⁰⁵
- **Training and exercises** (USSPACECOM and the USSF). The operational analysis should examine how USSPACECOM and the USSF includes allies in U.S. activities ranging from training courses to wargames, exercises, and experiments. Some internal U.S. discussions have begun, and thus far, DoD has not developed a robust or releasable space training plan for how the United States will offer training to allies that is coordinated with USSPACECOM. DoD currently has a nascent level of coordination, and an operational analysis could formalize this capability and create goals for different training topics and different allies.
- **Force design** (SWAC, SSC, and SAF/SQ). USSF force design should be adjusted so that it incorporates an operational analysis of potential allied contributions and requirements up front. This could involve SWAC factoring in allied demand and possible contributions, the CSRO formalizing allied considerations into formal requirements, and adjusting the incentives of PEOs to take advantage of allied systems and procurement budgets. The PIC structure currently focuses on U.S.-only capabilities and considers allied contributions arguably too late in the force design process to be meaningful.
- **SDA and space operations C2** (USSPACECOM and SSC). Accelerate the development and release of shared standards for SDA and space operational C2 systems. The United States and allies should mutually contribute to shared software capabilities to develop data standards and IT systems with technical interoperability. A focus on shared standards for interoperable systems will likely be more effective than the development of releasable systems or pursuing a combined acquisitions effort.
- **Interoperable IT systems** (OSD, USSPACECOM, SSC, and DoD Chief Information Officer [CIO]). The DoD space enterprise should work with the DoD CIO to accelerate

⁴⁰⁵ Existing DAF processes for MPEP address some but not all of these issues.

the implementation of a program of record that fulfills the requirements for an interoperable system for day-to-day work. The DoD space enterprise should also explore the development and widespread implementation of shared TOP SECRET systems within and beyond FVEY members. This may involve collaborating with the IC to implement new IT infrastructure.

- **Facilities** (USSPACECOM and the USSF). Develop requirements for classified facilities (physical spaces) that allow allied officers access to a common space with classified computing that provides each country with private office space where its officers can access their own host nation classified computing networks. Build on examples from USSOCOM and existing nascent facilities at the CSpOC.

The United States Should Consider a Range of Options to Address Regulatory and Practical Constraints on Sharing Classified Information with Allies

The ability to share classified information with allies is a central challenge identified in this study. As we highlighted in Chapter 2, while there are practical steps that members of the DoD space enterprise could take to improve information-sharing, there are also high-level DoD policies that limit what information can be disclosed to allies.

Below, we identify a range of options to address such challenges (with recommended OPRs for each), in descending order of the hierarchy of policies that they would seek to affect, from interagency-level policies down to field command-level actions. In general, changing higher-level policies will require support from a larger group of organizations than lower-level policies but addressing higher-level policies will often obviate the need for lower-level changes. For example, getting a NSC-level carve-out for sharing information on space or a change to DoD procedures will make it less necessary to increase the number of FDOs in lower commands. Changes to USSF or USSPACECOM field command policies will be easier to achieve than service-, DAF-, or DoD-level policies but also will be less able to mitigate the larger constraints. We recommend considering the highest-level options first.

- *Consider a Space Mutual Defense Agreement (SMDA) arrangement with select allies* (NSC). The case study on nuclear weapons cooperation between the United Kingdom and NATO highlighted how congressional approval for a 1958 MDA with the United Kingdom overcame existing legal hurdles to sharing information. If the United States truly intends to integrate with select allies, a similar MDA may be needed for space. The United States already has agreements that provide for mutual defense guarantees with key allies, but as the case study shows, the 1958 MDA with the United Kingdom provided a different level of cooperation, including a unique degree of sharing. As in the case of the nuclear MDA with the United Kingdom, an SMDA with allies would likely specify what U.S. information or capabilities would be shared and reciprocal actions by allies. The operational analysis of desired allied contributions described above could inform an equitable agreement. Although this topic requires further analysis, our research indicates that many of the regulations appear to be issued by the executive branch rather than congressionally mandated, so presidential or principal-level approval within the NSC or NDPC may be sufficient and an actual SMDA may not be required. We recommend

further, detailed analysis of the existing authorities if there is interest in true integration with select allies.

- *Lower the classification of some space information* (OSD, DNI, the DAF). One way to facilitate greater sharing is to downgrade classified information within DoD and the IC, such as making information SECRET rather than TOP SECRET, making it releasable to a wider number of allies, or even declassifying it. USSPACECOM and USSF leaders have publicly advocated for declassifying some information, in part to signal adversaries and thereby enhance deterrence.⁴⁰⁶ Downgrading classification levels would also facilitate sharing with allies, especially for allies who lack interoperable classified networks.
- *Revise DoD and DAF regulations to provide greater disclosure authority* (OSD, Defense Technology Security Administration, SAF/IA). Commensurate with the value proposition of cooperation with allies, the DoD space enterprise could also advocate for a change to DoD regulations for sharing classified information with allies, especially DoDD 5230.11. The stated importance of collaboration with allies and partners in recent DoD strategy in general points to the need to reconsider DoD policies. DoD could reconsider the requirement that FDOs must consider the value proposition for the United States for each disclosure, further delegate the authority to disclose information, or develop a more streamlined way for DoD components to release information created by other organizations (such as replicating IC practices). This recommendation would require the Secretary of Defense to amend DoDD 5230.11. Some regulatory change could happen at the DAF level, however. In particular, DAF regulations could be changed so that if a security classification guide (SCG) specifies that a piece of information is releasable, no further review by FDOs would be required. With such a change, additional procedures could be required for the disclosure of information to allies, including tracking that disclosures occurred or providing special training to personnel.
- *Expand authorities for sharing information under OOD* (USSPACECOM). If the previous recommendation is too difficult to achieve, USSPACECOM should propose expanding authorities to share information within OOD. Existing authorities for commanders to provide information under actual or imminent hostilities could, in principle, be expanded. In OOD, allies are participating with the United States in current space operations: As one allied officer explained, the United States is already engaged with its allies, but procedures have not caught up to this reality.⁴⁰⁷ While space operations obviously have a different character from recent operations in Afghanistan, Syria, and elsewhere, allies are taking risks and providing capabilities in these terrestrial operations, and it would make sense to give the commander of OOD greater authority to share information with them.
- *Revise DoD and DAF regulations to allow allied and partner EOs greater access* (OSD, Defense Technology Security Administration, and SAF/IA). The stated value of exchange programs is based on reciprocity that allows partner countries to be granted access to processes. The practical limitations imposed by existing regulations hinder the goals of EOs and may undermine U.S. partnerships. OSD(P), the office of primary

⁴⁰⁶ Sandra Erwin, “On National Security: How Space Force Learned to Worry About Its Culture of Secrecy,” *Space News*, August 7, 2021b.

⁴⁰⁷ Allied official, in-person interview with the authors, March 2022.

responsibility (OPR) for DoDD 5230.20, and SAF/IA, the OPR for AFI 16-107, could begin a process to examine whether there should be changes to these policies to permit exceptions for at least some EOs to receive additional information than that which is available to their home country government. This would require the Secretary of Defense to amend DoDD 5230.20 or the SAF to amend AFI 16-107.

- *Review SCGs* (USSPACECOM and the USSF). USSPACECOM and the USSF field commands—especially SpOC and SSC—should review existing SCGs to ensure that they include releasability to the maximum extent possible. Some SCGs are out of date and should be prioritized for immediate review.⁴⁰⁸ Reviewers of the SCGs should engage with FDOs to see where it is possible to have releasable information written into the SCG.
- *Update annual security training* (all DoD space units). To address the tendency of personnel to overclassify documents despite existing rules and procedures, commands should update their annual training to include the appropriate use of NOFORN, the foreign disclosure process, and interactions with allied and partner EOs and LNOs. In many cases, training requirements are decentralized, so this recommendation could be implemented by field commands or be instituted at the DAF or the USSF level.
- *Increase the number of FDOs* (USSPACECOM, USSF). This is a common suggestion from our interviewees.⁴⁰⁹ Doing so could help to alleviate some bottlenecks within USSPACECOM and the USSF, but it is unlikely to resolve the fundamental issues that we identified. FDOs can only approve disclosure if documents meet standards for release based on existing SCGs and regulations. The addition of more FDOs will not resolve any issues if documents are properly marked NOFORN based on current procedures. Adding FDOs also intensifies the staffing burden; however, if no other steps are taken, this step could mitigate local impacts.

Clearly, it is unlikely that the United States will be able to implement all these recommendations within the next two to five years. However, we encourage addressing as many identified challenges as possible for maximum effect. The DoD space enterprise is working hard to cooperate with allies, and recent events, including a revised Space Policy directive; coordination efforts among OSD, USSPACECOM, and the USSF; and other efforts are an encouraging trend. The United States can increase the effectiveness of coalition space operations by strategically and thoughtfully developing an enterprise-wide approach to allied space power. Failure to act now may risk a weaker allied space coalition in the future when the emerging threat indicates the need for such cooperation might be at its greatest.

⁴⁰⁸ U.S. official, virtual interview with the authors, April 2022; April 2022 review of Defense Technical Information Center, homepage, undated-a.

Abbreviations

18th SPDS	18th Space Defense Squadron
ACGU	Australia, Canada, Great Britain, United States
AEA	Atomic Energy Act
AFB	Air Force Base
AFI	Air Force Instruction
AOR	area of responsibility
ASD	Assistant Secretary of Defense
ATLAS	Advanced Tracking and Launch Analysis System
BICES	Battlefield Information Collection and Exploitation System
BICES-X	Battlefield Information Collection and Exploitation System Extended
C2	command and control
CCMD	combatant command
CFSCC	Combined Forces Space Component Command
CIA	Central Intelligence Agency
CSO	Chief of Space Operations
CSP	campaign support plan
CSpO	Combined Space Operations
CSpOC	Combined Space Operations Center
CSRO	Chief Strategy and Resourcing Officer
CUI	controlled unclassified information
DAF	Department of the Air Force
DNI	Director of National Intelligence
DoD	U.S. Department of Defense
DoDD	Department of Defense Directive
DoDIG	Department of Defense Inspector General
DSD	Deputy Secretary of Defense
DSS	Defense Space Strategy
EO	exchange officer
FDO	foreign disclosure officer
FVEY	Five Eyes
FY	fiscal year
GCC	geographic combatant command
IC	intelligence community
ICD	Intelligence Community Directive
ISCS	International Space Cooperation Strategy

ISR	intelligence, surveillance, and reconnaissance
IT	information technology
J3-I	J3-International
JP	Joint Publication
JROC	joint requirements oversight council
JTF-SD	Joint Task Force-Space Defense
LNO	liaison officer
LOE	line of effort
MDA	Mutual Defense Agreement
MOD	Ministry of Defence/Defense
MOU	memorandum of understanding
MPE-IS	Mission Partner Environment–Information System
MPEP	Military Personnel Exchange Program
NATO	North Atlantic Treaty Organization
NDAA	National Defense Authorization Act
NDP	National Disclosure Policy
NDPC	National Disclosure Policy Committee
NDS	National Defense Strategy
NGA	National Geospatial-Intelligence Agency
NOAA	National Oceanic and Atmospheric Agency
NOFORN	Not Releasable to Foreign Nationals
NRO	National Reconnaissance Office
NSA	National Security Agency
NSC	National Security Council
NSDM	national security decision memorandum
NSSI	National Security Space Institute
OOD	Operation Olympic Defender
OSD	Office of the Secretary of Defense
OUSD(P)	Office of the Under Secretary of Defense for Policy
OUSD(R&E)	Office of the Under Secretary of Defense for Research and Engineering
PEO	program executive office
PIC	Program Integration Council
PNT	positioning, navigation, and timing
RAF	Royal Air Force
REL	Releasable
S4S	U.S. Space Forces–Space
SACT	Sprint Advanced Concept Training
SAF	Secretary of the Air Force
SAF/IA	Secretary of the Air Force, International Affairs

SAF/IARS	space division of SAF/IA
SAF/SQ	Secretary of the Air Force for Space Acquisition and Integration
SATCOM	satellite communications
SCG	security classification guide
SCIF	sensitive compartmented information facility
SDA	space domain awareness
SFB	Space Force Base
SIPRNET	SECRET Internet Protocol Router Network
SIPR-REL	SECRET Internet Protocol Router-Releasable
SOF	special operations forces
SpOC	Space Operations Command
SSA	space situational awareness
SSC	Space Systems Command
SSC/IA	Space Systems Command, International Affairs
SSIO	Space Systems Integration Office
SWAC	Space Warfighting Analysis Center
UK	United Kingdom
USAF	U.S. Air Force
USCENTCOM	U.S. Central Command
USD	U.S. dollar
USEUCOM	U.S. European Command
USINDOPACOM	U.S. Indo-Pacific Command
USSF	U.S. Space Force
USSOCOM	U.S. Special Operations Command
USSPACECOM	U.S. Space Command

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Recent U.S. strategy documents, such as the 2022 National Defense Strategy, clearly state that close cooperation with allies is central to U.S. policy, especially in space. However, allies have grown increasingly vocal about a “say-do gap” between U.S. high-level policy statements versus tangible U.S. cooperation on defense-related space activities.

Some allies perceive cooperation as an afterthought rather than as a consciously planned activity undertaken “by design.” In this study, sponsored by the U.S. Space Force’s (USSF’s) Space Operations Command (SpOC), the authors investigate how U.S. policy can more effectively achieve improved integration of allied space capabilities for select allies.

In this report, the authors assess the goals, organization, and activities of the U.S. Department of Defense (DoD) space enterprise. They also evaluate six allied nations—Australia, Canada, France, Germany, Japan, and the United Kingdom—to determine their interest in, potential for, and perspectives on cooperation with the United States on defense-related space activities. Their findings from reviews of policy documents, articles, reports, and public statements by senior leaders, as well as over 144 interviews with more than 150 DoD and allied officials and staff, provide insights on cooperation with allies on nuclear weapons, combined operations, and intelligence that reveal opportunities for a more effective approach to allied space power.

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