Space to Grow

Foundational Opportunities and Challenges for the U.S. Space Force

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01 Executive Summary
03 A Young Service and Its Monumental Task
05 The Argument for a Space Force
08 Progress toward a Unifying Narrative
15 Challenges and Unanswered Questions
19 Semper Forward: Next Steps for the Space Force
Executive Summary

In the more than 50 years since the first satellite launch, space has become irrevocably intertwined with the American way of life and the American way of war. During the Cold War, it provided early warning of missile attacks and supported nuclear command, control, and communications, thereby stabilizing competition in a fraught nuclear era. After the Cold War, space became a critical part of the U.S. conventional way of war, providing surveillance capabilities, supplying high-bandwidth communications, and supporting precision strike through the deployment of GPS. In recent years, potential adversaries have recognized space as a key American military strength and focused on developing the ability to neutralize it. Both China and Russia, priority threats in the 2022 National Defense Strategy, have demonstrated capabilities that would allow them to deny U.S. use of space and have voiced a willingness to use these counterspace capabilities if necessary. Thus, space, long acknowledged as a vital war-supporting domain, is increasingly seen as a domain of war in itself. In December 2019, the U.S. Space Force was created in acknowledgment of the importance and vulnerability of U.S. space-based capabilities.

The Space Force’s mandate is to organize, train, and equip forces to “provide freedom of operation for the United States in, from, and to space; conduct space operations; and protect the interests of the United States in space.” At its birth, the Space Force inherited a passionate cadre of military space professionals and world-class space assets; it also inherited a bureaucracy, mature 21st-century adversaries, and the pressure to quickly become a world-class military force. As a new service, the Space Force has had to define, differentiate, and justify itself while working jointly with fellow services and integrating with civil space, commercial space, and allies and partners. It has had to do so in an environment where some have perceived it to be at best superfluous and at worst harmful.

If the Space Force is to prevail in the already-fierce interservice competition for resources, relevance, and missions and achieve its founding objectives, it needs three things: First, it needs a well-articulated and communicated strategic concept—that is, an explanation of its purpose and unique contribution to national security. Second, it needs an organizational plan that follows logically from and institutionalizes that strategic concept. Third, it needs a vision for a distinct and cohesive service culture, initially dictated from the top down through the strategic concept and institutionalized as the organizational plan is executed.
This report assesses the Space Force’s progress in developing these three critical components from its inception through 2022. To undertake this analysis, the author studied official Space Force documents, statements, doctrine, policy, and procedures and interviewed Space Force service-members ranging in rank from an E-1 fresh out of training to the first Chief of Space Operations (CSO), General John W. Raymond, as well as then Lieutenant General B. Chance Saltzman, who was the deputy CSO for Operations, Cyber, and Nuclear. These interviews took place between February and April 2022 and the supporting research was completed by the end of the year. Since then, the service has made material progress on many of the issues identified in this report. However, this research documents some of the foundational challenges that the Space Force faced, some of which will linger as the service continues to develop and mature.

Findings
In its first three years, the Space Force worked to fulfill its mandate, but fell short of articulating a clear strategic concept and realizing a cohesive service culture. At three years, many Americans remained unaware of its existence, and most did not understand its role. Interviews with guardians revealed that even those within the service were still developing a common understanding.

Foundational Space Force documents articulated many virtues of a guardian and the service, providing a sketch of an aspirational culture. The author distilled these virtues into three explicit and interrelated themes: agility, innovation, and a warfighting spirit. While agility and innovation have strong logical ties to the nature of the space domain, only agility had been clearly conceptualized and executed at the time this research was conducted. Innovation had come to encompass such a wide range of activities that its meaning as a core value had been diluted. While the service sought to differentiate itself through its focus on agility and innovation, its emphasis on a warfighting spirit meant to draw a similarity between the Space Force and the other services. Ironically, the warfighting spirit theme provided one of the bigger stumbling blocks in the service’s concept, culture, and partnerships in its first few years.

This study produced a list of persistent challenges that require the Space Force’s attention. These include challenges in partnering within the Department of Defense, across the U.S. government, and around the world; challenges with public understanding and buy-in; and a lingering question about the importance of the warfighter designation for Space Force guardians. From these challenges stem several recommendations for the Space Force.

**Recommendations for the U.S. Space Force**

- **The Space Force should clarify the service line on the warfighter label and promote a common understanding throughout the service.** After its first years, such a fundamental part of the service identity should not be in question among its ranks, even if it remains in question among its partners. The continued debate does more harm than good, especially without clarity and cohesion on the inside.

- **The Space Force should lower classification barriers, where possible, to improve public understanding of the service and its missions.** Space Force leaders must be bold and find places where they can publicize successes and explain requirements without compromising security.

- **Guardians should learn and retell military space history and capitalize on current events to teach the public about the importance of this hard-to-grasp domain.** All-out war in space remains theoretical, but with careful explanation, that fact should not inhibit public understanding. The Space Force can continue to leverage social media and popular news media to tell these stories.

- **Guardians should steer clear of public relations distractions, specifically in the science fiction realm.** Many Space Force headlines have captured public attention but failed to educate. Military space is a serious business, and the Space Force should lead the way in treating it as such.

Ultimately, space is not just a war-supporting and warfighting domain. Space has been and continues to be a critical war-deterring domain. By assuring allies, partners, and would-be adversaries of the United States’ commitment to space and by ensuring the resilience of U.S. space capabilities, the United States can bolster combat-credible deterrence against aggression in all domains. That work begins with a unified service supported by the American public.
A Young Service and Its Monumental Task

In December 2019, President Donald Trump signed the 2020 National Defense Authorization Act (NDAA), which established the U.S. Space Force, the first new military service in almost 75 years. The bill charged the service with organizing, training, and equipping forces to protect U.S. interests in space and provide space capabilities to the larger U.S. military. The service's creation acknowledged the changing nature of space, its critical role in U.S. national security, and the need to empower military space professionals to secure space priorities. While many in the space community had pushed for an independent service for decades, making their case within the Air Force and to decision makers in the White House and in Congress, their messaging did not reach the American public. As a result, when the service was born, Americans had fundamental questions: What does space have to do with national security? Why does it require an entire independent military service, with all the costs and manpower that go along with that? And why now, when the idea of war in space seems so far off? Every guardian—the official title for Space Force personnel, both military and civilian—should be able to easily answer these questions. Yet, by the end of 2022, three years in, the Space Force remained the subject of confusion and often derision, indicating that the service, in spite of its efforts, has not sufficiently explained its purpose to the public. This failure betrayed foundational internal inconsistencies that could challenge the service’s ability to secure the resources, authorities, and recruits it needs, ultimately threatening the service’s ability to fulfill its mandate.

Five services now make up the U.S. military: the Army, Navy, Marine Corps, Air Force, and Space Force. Of these, the Army, Navy, and Marine Corps date back to the nation’s founding. Today, all three are regarded as world-class fighting forces, but none garnered such respect or confidence in their early years. The Army in particular was the subject of suspicion for early Americans still wary of a federalized armed force, having just escaped the abuses of the British Army. For similar reasons, the new U.S. government kept the Navy weak with a small budget and narrowly scoped mission, and the Marine Corps floundered in its first decades, searching for a purpose that distinguished it from the other two services. All three services struggled with poor organization, funding, and recruitment, but over time demonstrated their value.

These three original services demonstrated their value by proving themselves in battle, showing their unique contributions to national security, and thereby justifying their existence and growing in prestige. The Army’s and Navy’s reputations began to improve only through their victories in the War of 1812, and the Marine Corps did not achieve distinction until its widely publicized feats in the Spanish-American War in 1898. In contrast, the Air Force’s origins gave airmen the opportunity to prove themselves in battle before the creation of an independent service in 1947, through their successes in the Army Air Corps in World War I and then in the Army Air Forces in World War II. Even still, each service has had to continually reinvent itself to remain relevant and retain public support as the character of war and threats have evolved.

In some ways, the Space Force’s early troubles with public perception reflect those of the other services. Like the early Army, Navy, and Marine Corps, the Space Force currently lacks visible battlefield victories on which to hang its warfighting hat. It is therefore unsurprising that it has not yet achieved widespread public understanding or support. The Air Force Space Command (AFSPC)—the Air Force component responsible for space-based operations; space acquisition; and for a time, cyber-space missions and command and control for intercontinental ballistic missiles—would form the
Members of the Space Force, military and civilian, are called guardians. This title honors the history of space operations that pre-dates the service and refers to the Air Force Space Command, which held the motto “Guardians of the High Frontier.” (Jessica Sanchez-Chen/DVIDS/U.S. Air Force)

foundation for the new service. When it was part of the Air Force, AFSPC contributed to landmark battlefield victories such as the first Gulf War (sometimes called the first space war), but it did so as a support force, not a warfighting force. The Space Force has postured itself as a warfighting service, as opposed to simply a war-supporting or war-enabling service. Indeed, the argument for the service’s creation hinged on the idea that space has become a warfighting domain.

But the Space Force faces additional challenges to convincing the public of its importance. While Americans had a basic understanding of the air, ground, and sea domains at the time of the other services’ creation, most do not currently understand the value of the space domain, either in their daily lives or in modern warfare. Most space operations occur outside the public’s field of view and technologically beyond the layman’s understanding, and most space successes—in, for example, surveillance or satellite collision avoidance—remain classified. It is not just that the Space Force has not demonstrated its value in battle; it is that the idea of war in space remains wholly theoretical. For these reasons, unlike the other services, the Space Force has no readily available symbology or commonly known history with which to explain its unique mission to a wider audience. Because space is distant, complex, classified, and still largely conceptual, convincing the American public to put resources into protecting it presents a bigger challenge than other services have faced.

Unlike the early Army, Navy, and Marine Corps, the Space Force does not have decades to find its way. At its inception, the Space Force inherited a bureaucracy (small by military service standards, but large nonetheless), staggering strategic threats, mature 21st-century adversaries, and the pressure to be a world-class military force. The Space Force must contend with these global pressures immediately while facing the same herculean challenges as any new service, challenges that are daunting monetarily, intellectually, bureaucratically, and logistically. To prevail in the already-fierce competition for resources, relevance, and missions to achieve its founding objectives, the Space Force must work to define, differentiate, and justify itself. It must do so even as the U.S. military strives for new heights in jointness, attempting to break down barriers between distinct armed services for greater cooperation and coordination. It must do so without any warfighting experience to show. It must do so in an environment where some perceive it to be at best superfluous and at worst harmful, and many do not know about it at all.

To gain the public support required, a service must identify, instill, and promulgate a compelling narrative about who its members are, what they do, and why this constitutes a unique and essential contribution to the nation’s security. Developing that narrative takes significant internal work. The narrative should stem from the service’s mission and flow through every aspect of the service, informing structures, processes, and the collective identity of its members. The service must follow up this internal work with efforts to translate its story to the public and to lawmakers.

The Space Force worked to fulfill this mandate, but as of 2022 it had not yet achieved its goals. Service leadership published papers and held public events but missed key opportunities to educate the public when military space stories reached national news. As noted, many Americans remained unaware of the Space Force’s existence, and most did not understand what it does. The idea of aliens and “boots on the moon” pervaded the common discourse, thanks in no small part to the role of pop culture, which has filled gaps left by the Space Force. In the process of researching for this paper, conversations with guardians have revealed that even those within the service were still developing a common understanding.
The Argument for a Space Force

The U.S. Congress is charged with providing for the common defense, which it does by funding and providing oversight for the Department of Defense (DoD). But the broad term “common defense” leaves room for debate about what constitutes a threat and what actions may be taken in service of the nation, and when and where they may be taken. Congress’s answers to these questions have changed over time, as the nation’s interests, threats against them, and the character of war itself have evolved. The military services carry out the work of the common defense. An independent military service is not always the solution to a national security problem—indeed, a new service can create many additional challenges, so the rationale for creating one must be strong. This section addresses why space has long been an important part of the common defense, why some argued that a military service was a necessary tool to secure it, and why they argued 2019 was the time to create that service.

Why Space?

In the more than 50 years since the first satellite launch, space has become intertwined with almost every aspect of American life. Satellite-enabled GPS provides navigational support but is also critical to banking and power grid regulation. Remote sensing satellites provide weather and climate data, allowing for the mapping of forest fires and monitoring for dust storms. Communications satellites enable radio, television, telephone, and internet. Alternatives to some space-based systems exist, including ground-based navigation systems or undersea internet cables, but they come with their own vulnerabilities and are not uniformly perfect substitutes.

Space-based capabilities have also proved integral to many aspects of the American way of war, from air to land to sea, from strategic to operational to tactical, from intelligence gathering to logistics to enabling strike. For decades, space-based capabilities have played a role not only in how the United States practices war but also in how it deters aggression in peacetime. During the Cold War, space-based assets became an integral part of nuclear deterrence, providing early warning of missile attacks and supporting nuclear command, control, and communications. Later, remote sensing capabilities provided critical intelligence and lent enforceability and therefore credibility to arms control agreements that, along with space-based missile warning, helped stabilize competition in a fraught nuclear era. After the Cold War, space became critical to the U.S. conventional way of war. In Desert Storm in 1991, the United States leveraged surveillance satellites to hunt for Scud missiles, high-bandwidth communications satellites for robust command and control, and GPS to perform previously unthinkable maneuvers in the desert. During Operation Inherent Resolve in the 2010s, positioning, navigation, and timing (PNT) capabilities such as GPS allowed U.S. forces to strike targets from great distances while minimizing collateral damage. Most space-based intelligence successes are likely classified, but commercial space-based surveillance shows some of what is technologically possible. For example, in 2019, commercial satellite imagery revealed new Chinese missile fields, alerting analysts to possible paradigm-shifting changes in Chinese nuclear arsenal posture. In these ways and more, space has been proven an essential war-supporting or war-enabling domain.

This dependance creates a vulnerability. Potential adversaries have recognized U.S. space capabilities as a key American military strength and have focused on developing the ability to neutralize them in wartime. Ground stations and the exquisite and costly systems in orbit on which the country depends make rich targets. Because, at least by outward indications, the United States long assumed space would remain benign, it
created an on-orbit architecture that is neither resilient nor redundant enough to withstand modern threats. Furthermore, until recently, the cost and time involved in producing and launching military satellites made the idea of reconstituting those damaged in wartime nearly unfeasible. As launch costs drop and space and counterspace capabilities proliferate, reconstitution has become more feasible. These trends also mean adversaries are better equipped to strike U.S. targets in a variety of ways.20

Attacks against space capabilities can range from surgically precise to disastrously indiscriminate, and can be reversible or irreversible, and immediately evident or almost undetectable.21 Both China and Russia, priority threats in the 2022 National Defense Strategy, have demonstrated some of the more technologically advanced and destructive of these capabilities—direct-ascent anti-satellite weapons, which are launched from Earth to strike a satellite in orbit, and co-orbital anti-satellite weapons, which allow one satellite to maneuver and attack another while in orbit. In addition to attack by direct ascent weapon or co-orbital maneuver, space assets can be jammed, spoofed, or attacked through cyber means. Some actors have also developed counterspace doctrine that suggests they are prepared to attack U.S. space assets under certain conditions, including preemptively.22

### War in space is not a bloodless proposition.

The U.S. dependence on space, in addition to the maturation and proliferation of counterspace capabilities and doctrine, indicates that the country can no longer take for granted space’s sanctuary status. In this environment, providing for the common defense requires the U.S. military to defend U.S. space assets. Conversely, many potential adversaries share the United States’ dependence on the space domain. The United States may choose to exploit that vulnerability and deny the benefits of space through offensive space operations. Because of its value as a war-supporting domain, space has become a potential warfighting domain.

For that reason, space can also be a critical war-deterring domain. Resilient, redundant, reconstitutable space architectures and demonstrated defensive and offensive capabilities in space could cause an adversary to think twice before provoking the United States, on Earth or in space. Furthermore, space operations support integrated deterrence, a key pillar in the 2022 National Defense Strategy. The concept of integrated deterrence requires the United States to combine efforts across warfighting domains, theaters, the spectrum of conflict (from peacetime competition to war), and instruments of U.S. national power (diplomatic, information, military, and economic), in coordination with allies and partners.23 The space domain already supports operations in every other domain, hosts operations across the spectrum of conflict, supports all four instruments of national power, and provides opportunities for international partnership.24 Space is essential to deterring and, if necessary, defeating any adversary the United States may encounter.

### Why an Independent Military Service?

In the U.S. national security apparatus, the military holds the sole responsibility for “managing and employing organized violence on behalf of the nation.”25 The idea of a military service for the space domain may seem unnecessary because the idea of violence in space seems unthinkable. Space was historically presented as a sanctuary and a domain of international cooperation and scientific exploration—even though space has been involved in military operations since the late 1950s. Additionally, there are very few people orbiting in space. How can there be violence where there are no people? In response to this question, some have referenced the Law of Armed Conflict (LOAC). According to the LOAC’s principles of lawful targeting and military necessity, the right to self-defense extends not only to territory but also to physical property. This means nations can take military action to defend satellites and critical space systems.26 Additionally, within the bounds of the LOAC, a nation can respond to an attack on space systems in another domain, meaning hostilities that start in space could spread to air, land, or sea.27 Furthermore, even if war in space does not extend to earthly domains, denial of space could easily have fatal effects for people on Earth. Thus, even with few people in orbit, war in space is not a bloodless proposition. This is part of the argument for a military service.

The second part of the argument for an independent service is bureaucratic. As a first step to address the increasingly contested nature of the space domain, the Trump administration reestablished U.S. Space Command (SPACECOM) as an independent combatant command (COCOM) in August 2019, four months before the Space Force was signed into law.28 In today’s U.S. military, services “organize, train, and equip” forces, while COCOMs (e.g., U.S. Indo-Pacific Command, U.S. Transportation Command) combine and employ those forces, per the Goldwater-Nichols Department of Defense Reorganization Act of 1986.29 In short, services present ready forces and COCOMs fight wars. As a COCOM,
SPACECOM was initially charged with planning, executing, and integrating military space forces from the Army, Navy, and Air Force to conduct multi-domain global operations. Arguments for SPACECOM’s reestablishment resembled those of Space Force advocates: that space was changing and required distinct and increased focus and resources. Its reestablishment focused resources and planning, but the U.S. military space apparatus faced deep manpower and acquisition challenges that a COCOM could not resolve. These challenges would require a military service.

Before 2020, every service held some space missions, but responsibility for space resided largely within the Air Force. In 1961, the Air Force was designated the executive agent for space matters, making it responsible for organizing, training, and equipping the majority of space forces along with its air forces. While the Air Force always proudly clung to its space portfolio, it often placed space priorities second to air priorities, and space priorities suffered as a result. The Air Force Space Command struggled to recruit and retain top-tier talent without viable career paths for space professionals. Space acquisition capability atrophied even as the commercial space sector boomed. Those who opposed creating a new service argued that the AFSPC could resolve these issues within the Air Force. Others, including many military space professionals, disagreed.

From an organizational perspective, an independent service offered consolidated authority and responsibility. It offered the opportunity to develop more attractive career paths to recruit top-tier talent, foster space professionals, and retain them. As an independent service, the Space Force would have a seat on the Joint Chiefs of Staff, elevating space-related matters to the joint conversation and allowing greater advocacy for space priorities in the interservice contest for resources. Service leadership, similarly, would have greater room to advocate before Congress for resources and attention. Overall, as advocates argued, a more empowered space apparatus would allow the United States to intentionally shape the fast-changing space domain and better serve the joint force and the nation.

Why Now?
The idea of an independent space force arose several times in military space history. Early on, the Air Force fought the Army and Navy for ownership of the space portfolio and largely won, temporarily foreclosing any conversation about an independent service. In the early 2000s, several called for the establishment of a space guard or space corps, criticizing the Air Force for failing to provide development paths for space experts and failing to resource space adequately. While recommendations from the 2001 Space Commission to create a space corps gained traction, the events of September 11, 2001, diverted the Defense Department’s attention to counterterrorist operations. The Global War on Terror saw space relegated to its role as a critical enabler for these operations. In 2002, Secretary of Defense Donald Rumsfeld announced the merging of SPACECOM missions into Strategic Command, signaling a deemphasis on space operations.

The wisdom of this deemphasis came into question in 2007, when China successfully tested an anti-satellite weapon, becoming only the third country to do so, after the United States and the Soviet Union in the late 1950s to early 1960s. In addition to demonstrating this new capability and risking enflaming tensions, the test increased the debris orbiting Earth by 10 percent, threatening other objects in orbit and further congesting the domain. Since 2001, the space-based technologies and space capabilities pioneered in the Gulf War had matured, enabling the United States to prevail in counterinsurgency operations with relatively few American casualties compared to preceding large-scale conventional wars. In this time, the commercial space sector continued to grow, the cost to launch objects into space dropped dramatically, and new state space actors entered the arena. In addition to the organizational and operational reasons for a space force, a strategic reason arose: the need to signal resolve in space. In reestablishing SPACECOM and creating a space force, committing greater bureaucratic, financial, and human resources to the space mission, the United States could openly acknowledge the changing nature of the domain and its intentions to defend its space assets.

Ultimately, a mix of political and geostrategic timing resulted in the Space Force’s creation. In 2017, the issue gained a powerful champion, U.S. Armed Forces Commander in Chief President Donald Trump. At the time, the geostrategic reasons for the Space Force’s creation had long existed, and Washington was finally committing itself to prioritizing the threats of great power competition. Still, while space advocates’ patience with the Air Force had been wearing thin for at least 20 years, many senior leaders remained vocally opposed to an independent space service, concerned about bureaucratic burden, cost, and classification. There was concern that openly acknowledging the warfighting nature of the space domain would become a self-fulfilling prophecy, and that the Department of Defense would
better serve the nation by investing in space less conspicuously. It was in this contentious climate that Trump gave unprecedented attention to the space domain, raising these issues to the national consciousness in the 2017 National Security Strategy and in subsequent public speeches and through Twitter advocacy. Trump’s leadership broke norms by publicly discussing the space threat and the idea of space warfighting. This airtime and candor from the president provided the final political push for lawmakers to seriously consider the needs of the space domain. Before reestablishing Space Command in August 2019, Trump had already announced much more politically daunting intentions to establish an independent space force in March 2018. There was heated debate within the executive branch, on the Hill, and in the public conversation, but, in the end, a strategic moment met a bipartisan, impassioned congressional movement and a willing White House, and the Space Force was born.

Progress toward a Unifying Narrative

For the Space Force to succeed as a new service, it needs three things. First, it needs a well-articulated and communicated strategic concept—that is, an explanation of its purpose and unique contribution to national security. Second, it needs an organizational plan that follows logically from and institutionalizes that strategic concept. Third, it needs to present a vision for a distinct and cohesive service culture, initially dictated from the top down through the strategic concept and institutionalized as the organizational plan is executed. Eventually, this culture should be fine-tuned, perpetuated, and reinforced by personnel at all levels. If well conceived and executed, these three components together will help the Space Force better accomplish its mission today and sell itself to the American public and lawmakers, so that it can secure the funding and authorities to continue accomplishing its mission in the future.

It is not an indictment of the Space Force to say it did not meet this requirement in its first three years. Formulating a consistent strategic concept, organizational plan, and culture is a challenging task conceptually, organizationally, and politically. This service has had to build the proverbial airplane—or perhaps, in this case, satellite—while flying it, working on short, congressionally driven deadlines to make big organizational decisions while under heightened scrutiny. This is also a task that the service will never truly complete. All military services should regularly reevaluate and reformulate these three components to ensure alignment with the nation’s needs, current threats, and the evolving character of war. However, at three years in, it is reasonable to expect the Space Force to be homing in on a defined concept that guardians at all levels can articulate clearly and on command. Additionally, the service should be making concerted efforts to promulgate that narrative, such that fellow services, the American public, and defense-focused representatives on the Hill can clearly articulate it as well. In its initial years, the service should have aligned its organizational plan to fit its strategic concept, though that plan may take several more years to fully implement. The top-down culture at this stage should be aligned with the first two components, and its implementation should not take years but be communicated quickly in word and then reinforced in structure and policy as the organizational plan manifests. After the first years, an organic culture should already have begun taking shape, and will be increasingly difficult to mold with future changes in the concept. Any significant inconsistencies within the concept should be quickly identified and addressed. The longer the Space Force waits to identify and implement its vision, the harder it will find steering its growing constituency.
The remainder of this section evaluates the Space Force's progress toward a unifying narrative through 2022. After inferring a working strategic concept for the service from Space Force literature and public statements, it identifies three key themes in how the service describes itself—these represent an aspirational, top-down culture—and assesses how well each theme ties back to the strategic concept and permeates Space Force structure, practices, servicemember identity, and public discourse. This analysis draws on public statements, Space Force literature, and private interviews conducted with Space Force guardians.

**Defining a Strategic Concept**

In its initial years, it has been incumbent on the Space Force to address the major gaps in understanding around its existence. Those gaps in understanding circle around the dire problem the Space Force was created to address and the solution the Space Force offers.

Internally, the Space Force has done a better job explaining the problem than the solution. This is perhaps because the former is much less controversial than the latter, which involves publicly developing the ability to use force in space. Space advocates within the Air Force began articulating the problem through congressionally mandated reports and in the documents proposing a new service. After the service's creation, its leadership began laying the groundwork for a common narrative by publishing a handful of foundational documents, including the Space Capstone Publication *Doctrine for Space Forces* (referred to hereafter as the Capstone) and the *Chief of Space Operations' Planning Guidance*, both released in the service's first year. These two documents, directed toward guardians, describe the history of the domain and the evolution of capabilities and actors that presented the need for a shift in the U.S. approach to space security. Senior leaders have since reiterated these points in public remarks and testimony targeted at the American public and lawmakers. The core story they present is that the United States relies on space in its daily life and in its way of war, that U.S. space architectures are vulnerable to attack, and that potential adversaries have demonstrated the capabilities to threaten U.S. space assets. This discourse remained stable throughout the service's initial years.

Internally, unfortunately, the Space Force failed to clearly and concisely define the solution it presents. The cornerstone responsibilities laid out in the Capstone state that the Space Force exists (1) to preserve freedom of action in the space domain; (2) to enable joint lethality and effectiveness; and (3) to provide independent options to U.S. national leadership, supporting operations in, to, and from space, as a domain in itself. This third responsibility is the “warfighting” role—which some senior Space Force officers interviewed for this report cited as the true reason for an independent service. The second responsibility refers to the more traditional war-supporting role (which accounted for 90 percent of the service, according to Raymond). The first responsibility refers to the more passive ways the Space Force ensures peace in space, for example, by improving the resilience of space architectures. This responsibility is paramount and a prerequisite for the others; as the Capstone argues, “any loss of space domain freedom of action compromises the other two responsibilities.”

Externally, the Space Force failed to explain the problem and the solution. The former is a failure in public relations. The Space Force had a clear formula, laid out in the Capstone, but it had not translated that into materials designed for the public. This is a critical flaw because, as Alan Vick wrote in a 2015 assessment of the Air Force strategic narrative, “If the public is not interested in the problem as defined in the [strategic concept] . . . then it will not be interested in the solution.” The latter is an indication of internal inconsistency that must be resolved.

**Concept into Action: Organization and Culture**

Foundational Space Force documents articulate the virtues of a guardian and the service, which the author distills into three explicit and interrelated core values: agility, innovation, and a warfighting spirit. Space Force literature makes the case that each of these values flows necessarily from the strategic concept, the nature of the space domain, and the Space Force’s missions, and therefore represent national security imperatives. To varying degrees, each value is echoed by subsequent official statements, institutionalized through organizational decisions, and embodied by guardians.

**AGILITY**

“Space moves fast.” Space Force literature repeats this mantra, as did the guardians interviewed for this report. The phrase refers to the speed of technological advancement in space, the near-instantaneous impact of changes in space on other warfighting domains, and the seconds in which the space operating picture can change. To meet that challenge, Space Force leadership has embraced agility as a core service value, which it often associates with leanness. In his interview for this report, General Raymond said, “We purposefully built a service to be small. I talked to a lot of innovative folks in industry,
FIGURE 3: CORE SPACE FORCE MISSIONS

CORNERSTONE RESPONSIBILITIES
Preserve freedom of action
Enable joint lethality & effectiveness
Provide independent options

Why spacepower is vital to prosperity & security

CORE COMPETENCIES
Space security
Combat power projection
Space mobility & logistics
Information mobility
Space domain awareness

How military spacepower is employed

SPACEPOWER DISCIPLINES
Orbital warfare
Space electromagnetic warfare
Space battle management
Space access & sustainment
Military intelligence
Cyber operations
Engineering/acquisitions

Who is needed & the skill sets they will employ

Space domain awareness
Identification, characterization and understanding of any factor associated with the space domain that could affect space operations.

Orbital warfare
Knowledge of orbital maneuver as well as offensive and defensive fires to preserve freedom of access to the domain. Skill to ensure United States and coalition space forces can continue to provide capability to the Joint Force while denying that same advantage to the adversary.

Space electromagnetic warfare
Knowledge of spectrum awareness, maneuver within the spectrum, and non-kinetic fires within the spectrum to deny adversary use of vital links. Skill to manipulate physical access to communication pathways and awareness of how those pathways contribute to enemy advantage.

Space battle management
Knowledge of how to orient to the space domain and skill in making decisions to preserve mission, deny adversary access, and ultimately ensure mission accomplishment. Ability to identify hostile actions and entities, conduct combat identification, target, and direct action in response to an evolving threat environment.

Space access and sustainment
Knowledge of processes, support, and logistics required to maintain and prolong operations in the space domain. Ability to resource, apply, and leverage spacepower in, from, and to the space domain.

Military intelligence
Knowledge to conduct intelligence-led, threat-focused operations based on the insights. Ability to leverage the broader Intelligence Community to ensure military spacepower has the ISR capabilities needed to defend the space domain.

Cyber operations
Ability to defend the global networks upon which military spacepower is vitally dependent. Ability to employ cyber security and cyber defense of critical space networks and systems. Skill to employ future offensive capabilities.

The Space Force seeks to develop guardians to perform several warfighting and war-supporting missions. Through this framework, provided in the Space Force Capstone, guardians can tie their disciplines back to key Space Force missions.

and the common theme was that big organizations don’t move fast.” The fiscal year 2023 NDAA authorized for the Space Force an end-strength of 8,600 uniformed personnel, up from 8,400 in the previous year. The next largest service, the Marine Corps, was authorized at 177,000, and the next, the Air Force, at 325,344. The Navy was authorized at 354,000, and the largest, the Army, at 452,000 uniformed personnel.

While the service has made its small size part of its identity, that size was originally a political necessity, a function of the compromises made to ensure its creation. A new military organization such as a service typically requires significant initial and continued investment in money and manpower. The Space Force was made palatable because advocates presented it as a cost-neutral proposition, at least in the short term.

The Space Force can afford to be small and agile because of three organizational decisions: its decision to keep administrative functions within the Air Force, its unprecedented reliance on contractors, and its relatively flat hierarchy compared to other services. By design, the Space Force still relies on the Air Force for many essential services and personnel, including logisticians, security forces, and civil engineers, as well legal, medical, and public affairs professionals. In its first three years, this seemed to be a permanent structural decision, even as other missions and personnel transferred into the Space Force from other services. General Raymond was content to keep that structure at one year in, and General Saltzman confirmed a commitment to that structure early in his tenure. This efficiency measure enables the Space Force to focus its limited resources elsewhere, but it comes with compromises. Some Space Force watchers attribute the service’s public relations problems to the fact that it does not have its own dedicated public affairs team. General Raymond disputed that claim.

A large contractor contingent heavily augments the service’s lean and agile active-duty component. The exact numbers are not available, but one Forbes article states that “90 percent of the total labor to accomplish the Space Force mission is led and managed by contractors,” a marked increase over the 25 percent recorded in the Air Force Space Command. Contractors provide flexibility and technical expertise, but several interviewees for this report expressed concern about the proportion of contractors to active-duty and civilian personnel, and the use of contractors in general has been an area of concern for the Government Accountability Office for years.

Contractors may be more transient, and they do not take the same oath and are not required to make the same commitments as servicemembers. In an interview for this report, one captain said, “I’d take the contractors away and make those skills for guardians. Until then, the contractors are king. And they won’t go deep because they only need to be here a few years.” This poses operational challenges, but also challenges for fostering a cohesive, lasting organizational culture. One colonel said contractor numbers might be reduced in the future.

Lastly, the Space Force has worked to realize the ideal of agility by flattening the traditional military hierarchy and by empowering each guardian through a two-centuries-old concept called mission command. Mission command, as defined by the Chief of Space Operations’ Planning Guidance, is “the conduct of military operations through decentralized execution based on mission-type orders, which enables tactical-level initiative.” In simpler terms, commanders relay their intent, rather than explicit prescriptive instruction, and trust their subordinates to execute. The related idea of command by negation, embraced by Raymond, describes a structure in which guardians “default to action,” or “conducted operations as they see fit unless denied by their superior,” rather than having to solicit approval at every step.

Space Force literature connects these command approaches—mission command and command by negation—to its identity and argues that they flow necessarily from the service’s small size and the unique nature of space operations. Space Force doctrine claims that they “allow for tactical boldness and a level of agility not historically seen within industrial-era control systems.” It further dictates that every guardian should be able to tie personal tasks and decisions up to the larger mission and the larger strategic implications (see figure 3). According to the Capstone, “This is because a single spacecraft may support multiple theaters, be difficult to replace, and represent immense national strategic value. This often amplifies tactical action, rapidly propagating the results of a confined engagement into operational and strategic level effects.”

From the size of the force and this concept of integration stem values such as empowerment, initiative, risk-taking, and a high degree of accountability.

Implementing mission command requires unlearning some of the risk-averse behaviors resident in other services. A thirst for constant information from the highest levels, often reported in the Air Force and Navy, not only adds administrative burden but can slow decision-making, which could have devastating consequences in such a fast-moving domain. In the Space Force, young guardians operate extremely expensive equipment and may be responsible for making quick decisions with far-reaching consequences. One major in an interview praised the Marine Corps’ idea of a strategic corporal as a good model; in this model, all ranks should understand the strategic implications of their actions. The major said, “We have to say, it’s okay that an 18-year-old is part of that.”

This sentiment echoes language in the 2020 Capstone.
The Space Force recruits with agility in mind, seeking bold, driven candidates who will thrive in a mission command-style environment. *The Guardian Ideal*, a document published in the Space Force’s second year, addresses prospective and new guardians and articulates an aspirational culture for the Space Force. It extols the virtues of mission command as a feature that distinguishes the Space Force from other services and employers. This recruitment strategy should appeal to Gen Z, which, studies show, wants that autonomy. Perhaps because of this strategy, while other services have struggled to meet recruitment numbers, the Space Force has not. In fact, then Lieutenant General Saltzman told the Senate Armed Services Committee in August 2022, “we have more volunteers that we have spots to fill.”

**If the Space Force can remain focused on innovation rather than technology, the service will have achieved the innovation ideal necessitated by the Space Force’s strategic concept.**

Beyond recruitment, the idea of agility through empowerment has permeated the ranks. Interviewees provided several examples of mission command, at the commander and the commanded levels. One colonel spoke about how he daily puts the ideals of mission command and command by negation into action as commander of his delta. This philosophy, as he described it, “flips the organization upside down so that the command exists to enable squadrons,” as opposed to the reverse. This is a culture that must be nurtured, another colonel said. When his reports come to him asking permission, he sends them back, saying, “Why are you asking me? Go make it happen.” He reported positive results as he repeatedly demonstrated trust in his team. Similarly, the first colonel reported positive results from flattening the organization. He felt he had access to and the trust of his superiors. He was only two steps from General Raymond, who sat on the Joint Chiefs of Staff and had a direct line to then Lieutenant General Saltzman. One captain interviewed reported that his feedback up the chain was received: “Surprisingly, yes, [the CSO’s office] is listening.” But solutions were not coming as quickly as he would have liked: “There needs to be less talk about it, more being about it. Tangibles. There is movement, but it’s *sempra soon.*”

Soon after General Saltzman ascended to the position of CSO in November 2022, he publicly put this value into practice, releasing concept notes (called c-notes) numbered 3, 4, and 5 detailing the Space Force’s three lines of effort (LOEs). The c-notes effectively preach and demonstrate mission command. Guidance is clear and succinct, and c-note five concludes with: “Command teams are empowered to accelerate activities that align with these LOEs and discard activities that don’t.” These c-notes now number 26 and have continued in the same spirit, with none exceeding a single page.

The Space Force’s small size is a feature, not a bug, but it also has drawbacks. As then Lieutenant General Saltzman said in an interview, “Small size is an advantage, until that small staff has to fight into the huge bureaucracy of the Pentagon.” As a service, the Space Force is now in every important room, but because it is so small, it may not be able to send officers of commensurate rank to their Air Force, Army, Navy, or Marine Corps counterparts to every meeting. In December 2022, the Space Force was authorized to have 21 general officer billets, which accounted for about 4 percent of the 620 active-duty service-specific general officer billets, as capped by Congress. This is a large percentage for its size, but hardly allows the service to have a general in every room. This means that often a Space Force colonel will speak for space matters in a room of generals, a challenge the Marine Corps has dealt with for decades, but the Space Force must do so at a different scale, albeit to a different degree. Additionally, as the Space Force empowers and encourages its young guardians to be outspoken, those same guardians may serve in joint capacities that have a lower tolerance for that candor and boldness. Collapsing layers of command and carving out two levels of the hierarchy received some pushback from the Air Force, but, according to Raymond, this is a feature of the Space Force model.

Space Force foundational literature makes a case for the importance of agility in the strategic narrative, and that argument is clearly felt throughout the organization from top to bottom. The resulting mandate to all guardians is clear: delegate, empower, take initiative, and be bold. The small size of the service supports this mandate, and the hierarchical structure that the Space Force inherited from the Air Force has been adapted to make the most of that size. As long as it remains at its current size, the Space Force will face the challenges of a small service, specifically in its joint relationships, but the advantages of agility for this service and the needs of the space domain outweigh the disadvantages.
INNOVATION
Innovation headlines almost all Space Force literature, but it includes several more disparate components and is less cohesively conceived and communicated than the theme of agility. The innovation theme acknowledges three realities: the high-tech nature of space, the outsized role that commercial industry has come to play in the domain, and the drawbacks of the traditional, slow-to-modernize, risk-averse bureaucratic personnel and acquisition models characteristic of other U.S. military services.77

Space Force literature explains that space is technologically advanced. In addition to the high-technology hardware in orbit and in ground stations, key space competencies such as space domain awareness present big data problems that require big data solutions.78 Securing space therefore requires technical skills in engineering, data science, and more. This technological aspect of the innovation theme mirrors the high value the Air Force places on technology and is one of the areas where the Space Force’s Air Force heritage shines through most clearly.79

Space Force literature also highlights the significant role played by commercial industry, specifically commercial space providers. This literature presents commercial industry largely as an American asset to be leveraged, though commercial space also poses risks and threats. The U.S. military has already leveraged commercial space capabilities in wartime, and benefits today from commercial technological advancement and from cheap commercial space launch. In Desert Storm, the U.S. military used commercial communications satellites for additional bandwidth.80 More recently, the private company SpaceX supplied satellite-enabled internet to Ukraine, allowing commanders to coordinate in real time against the 2022 Russian invasion, direct drone operations, and counter Russian misinformation.81 Rapidly accelerating commercial space capabilities promise greater military applications in the future, including rapid travel and supply delivery across the globe.

The Space Force Capstone, the Chief of Space Operations’ Planning Guidance, and The Guardian Ideal group several goals under the umbrella objective of becoming the nation’s first “digital service”—a term these documents fail to clearly explain. The Space Force’s Vision for a Digital Service, released in May 2021 by the chief technology and innovation officer, offers a definition.82 It states that in the process of developing a digital service, the Space Force will “foster an environment that incubates quick-turn, innovative solutions in every aspect of capability development” and “flatten bureaucracy and empower rapid, data-driven decision-making at all levels” through “cutting-edge training” and tailored professional incentives.83

Unfortunately, the “digital service” umbrella incorporates so many goals of varying importance to the mission that the meaning is diluted. Furthermore, it glorifies the means (being digital, being innovative) as ends in themselves, failing to draw a strong conceptual line for a compelling narrative. For example, automation, which falls in the “means” category, is exalted without any specificity, simply because of the service’s small size. The Guardian Ideal says, “Our service lacks both the numbers of people and the desire to expend unnecessary effort performing routine and mundane tasks,” a sentiment with which all services likely sympathize.84 Perhaps because of the weakness of this too-broad initiative, several of the guardians interviewed for this report in 2022 were not able to explain what the “digital service” mandate meant.

The “digital service” language was less prevalent after General Saltzman’s confirmation and did not appear at all in his inaugural concept notes, nor in early testimony before Congress. Instead of emphasizing technology, as the digital service phrasing does, General Saltzman focuses more on the human aspect, writing, “the Space Force does not present technology, systems, or capabilities to the Joint Force; we present space forces.”85

Where words have fallen short, the Space Force has followed through on the innovation value in some of its actions. It has established systems to recruit and develop personnel with high technological fluency and technical skill sets and empowered them to be innovative and risk tolerant through mission command culture. From the beginning, Raymond talked about every guardian knowing at least two languages, with one of those being a coding language—as being one of the skills selected for in recruiting and part of the training. Saltzman’s work on personnel policy goes beyond the basic need for training for digital fluency to pursue trickier and more nuanced human capital issues through programs such as the Constructive Service Credit Program, which brings skilled professionals in intelligence and cybersecurity into the service at a rank equivalent to their civilian experience, and an initiative to create part-time positions within the service.86

The skill sets the Space Force needs are in high demand in the private sector, which can offer higher pay and greater flexibility. The Space Force needs to worry not only about recruiting the right people, but also about retaining them once they have acquired highly marketable skills. The Constructive Service Credit Program, among other initiatives, offers solutions by bringing in professionals who already have those skills, and by increasing flexibility in career paths. Space
Force leadership argues that members with experience in commercial industry bring an important perspective. In many ways the Space Force seems to want to mimic commercial space culture—leaning forward, accepting risk, and moving fast. These programs, as well as industry exchange programs, are a path to building and reinforcing that culture. The Space Force needs to determine how it can compete with the private sector for talent when it cannot offer greater pay. A strong narrative emphasizing the organization’s mission and the ideal of service is one possible answer.

The innovation and agility themes also come through in how the Space Force talks about space acquisition, an area that struggled when space forces were housed primarily under the Air Force, which consistently prioritized aircraft and sluggishly pursued missiles and satellites. In efforts to reform acquisition practices for space assets, the service has preached flexibility, risk-taking, and, above all, speed. One interviewee provided some context for the Space Force’s approach to acquisition, saying that the service is experimenting with blended development and operations, organizing by technology and taking it “cradle to grave.” He went on to say that “As a new service, we have a chance to do more that’s consistent with the current innovation environment,” rather than the “traditional acquisition ‘horse blanket’ chart” with hundreds of steps and reviews.87 In the past, he said, processes favored “avoiding failure, not gaining success,” a statement that echoes the tenets of risk in innovation put forth in the Capstone.88 This forward-leaning acquisition posture is a hallmark of the space community, which was forced to move quickly once national leaders decided to invest in space and demanded the slow Air Force bureaucracy respond and goes back to General Bernard A. Schriever and the development of the first intercontinental ballistic missiles. In 2001, the AFSPC incorporated the Space and Missile Systems Center (previously in Air Force Material Command), making it the only Air Force command with the development, testing, and evaluation.90 The Space Force is putting in money and effort to meet its innovation goals. More than 60 percent of the service’s fiscal year 2023 budget request was dedicated to research, development, testing, and evaluation.50 To institutionalize a mission-focused, innovation-forward approach, in May 2020, the Space Force submitted a report to Congress on an Alternative Acquisition System for the United States Space Force that recommended consolidating budget items based on mission areas to allow greater flexibility in acquisition.91 Here, the Space Force takes inspiration from the National Reconnaissance Office, which also organizes its acquisition by mission area.92

The Space Force has self-corrected some issues with its initial approach to innovation, which was simultaneously too narrow, focusing only on technology and technical skills, and too broad, labeling anything related to technology essential to mission success. But the core idea, the need for true innovation, stems logically from the nature of military space. The efficiencies argument that the service’s small size requires it to capitalize on the benefits of higher-tech solutions is a weaker and distracting argument but remains true. Organizational decisions, such as pursuing innovative policies and procedures, have successfully institutionalized some of the goals associated with this value. While the concept of a digital service does not seem to have permeated the ranks, the embrace of mission command indicates an understanding of the innovativeness, boldness, and risk acceptance that has been dictated from the top. If the Space Force can remain focused on innovation rather than technology, using humans to find solutions that incorporate the right high-low mix of capabilities on the right timeline at the right price, and then identify creative ways of using them, the service will have achieved the innovation ideal necessitated by the Space Force’s strategic concept.

A WARFIGHTING SPIRIT
Unlike the ideals of agility and innovation, which seek to differentiate guardians from other servicemembers, the Space Force uses the ideal of a warfighting spirit to highlight similarities between itself and the other services. The Space Force’s strategic concept argues that space is threatened and must be defended, by force if necessary. It follows, then, that the service’s members, those training to carry out that defense, would be termed warfighters. The warfighting mission is not a mere component of the service; according to some, it is the service’s entire raison d’être. One Space Force officer interviewed for this report said that the Delta 9 mission—orbital warfare—was the justification for creating the service.93

Unfortunately, this idea received the most uneven treatment in initial official Space Force discouse. This makes some sense, because of the history of classification around space and because of the DoD’s reticence to talk about space as a warfighting domain as opposed to a peaceful domain with a war-enabling role. The warfighting aspect was appropriately highlighted in arguments for the Space Force’s creation, but that emphasis decreased somewhat in the subsequent three years. Will warfighting be emphasized in future resourcing arguments? Interestingly, around the first anniversary of the Space Force, then CSO General Raymond, in comments before the National Press Club, highlighted the responsibilities of the Space Force to
preserve freedom of action and support the Joint Force, but his remarks were light on the warfighting aspect. In an interview for this report, General Raymond indicated the organization might move away from the label, or at least emphasize it less, conceding that the service is 90 percent war-enabling as opposed to warfighting.

Despite inconsistent rhetoric, some guardians have embraced the value of a warfighting spirit for space, and interviewees offered their own justification for the use of that term. While most guardians would not encounter personal danger on the job, they described the importance of service and sacrifice in their definition of a warfighter. The passion behind this argument became clear in criticisms of The Guardian Ideal, which effectively reiterated the values of agility, innovation, and a warfighting spirit, but omitted discussion of service. For many of the guardians interviewed, service is the attribute that sets the Space Force apart as an employer from more lucrative private sector jobs. Omitting service value from The Guardian Ideal seemed like a significant step away from the Air Force core values of “integrity first, service before self, and excellence in all we do.” For a document that was directed toward potential recruits, that oversight was significant.

Other guardians are less convinced of the importance of the warfighter label. When asked about where he would like to see the service in 10 years, one colonel said he hoped to see “a clearer argument for warfighting, if we care about that.”94 One captain said the word “warfighter” has been pushed from above and does not necessarily resonate with every young guardian.95 It is easier for members of Delta 3 (electronic warfare, embedded in other units) and Delta 9 to embrace the term, but the Space Force’s first goal is preserving freedom of action in space, and Delta 9’s mission of orbital warfare “is just part of that.”96 That mission also includes missile warning, military satellite communications, and coordination in theater.

Researchers at the RAND Corporation anticipated this problem and recommended that Space Force leadership clearly define space warfighting missions and develop and share a coherent theory to indoctrinate personnel.97 They also suggested developing weapon systems and support systems to “bring substance” to that theory. High classification of military space activities, past and present, plays a part here. Because of classification, the Space Force has not benefited from great public thinkers such as Alfred Thayer Mahan for the U.S. Navy or Billy Mitchell for the U.S. Air Force, who developed operational concepts and theories to explain how their service could help win wars. With uneven rhetoric and lacking theory and material actions, this warfighting ideal is the most inconsistent value in the culture that is developing.

Challenges and Unanswered Questions

The Space Force has taken steps to make the ideals of agility, innovation, and a warfighting spirit a reality. As the service reflects on the culture it is building, it should consider the challenges posed by partnership, public understanding, and the warfighter label.

The Partnering Challenge

Jointness is a key part of integrated deterrence, a pillar of the 2022 National Defense Strategy. Acting jointly presents challenges for all five services, but the Space Force has the dual challenge of establishing itself as an individual service and competing for resources while figuring out how to integrate with the others. This task is made even more challenging because the Space Force goes against the traditional service model in many ways. Aside from its small size, larger contractor population, close commercial relationships, and significant overlap with civil space, the personnel are different. The officer-enlisted relationship and their respective roles remain unclear in the Space Force.98 Additionally, the Space Force currently has no reserve component. Some interviewees raised questions about the purpose of an officer-enlisted delineation and the possibility of collapsing active-reserve space forces. If either were to happen, the Space Force would be even less recognizable to its peer services. In some cases, efforts to emphasize the Space Force’s differences, such as the decision to partner with the civilian institution Johns Hopkins University for Space Force professional military education, may widen the gap between the Space Force and other services.99 Fortunately, as General Raymond said, “There’s an understanding among other services that they need us to be successful for them to be successful.”100

The relationship with the Air Force is perhaps the most important. In his interview for this report, General Raymond said, “The Air Force built the world’s greatest space force. As we’ve become independent, we’re still very connected to Air Force. All the support capabilities come from them—public affairs, medical, lawyers, civil engineers—there will always be that linkage. . . . Our heritage remains. . . . There’s a healthy tension between wanting to stay close with the Air Force because we rely on them but having enough independence to spread our wings.” In a cultural sense, the Air Force relationship may prove easier than relationships with other services. Most of the transfers in the Space Force came from the Air Force, and most Space Force senior officers spent their entire careers as airmen. However,
in an operational sense, the Air Force may pose more of a challenge. While other services have spent decades arguing for their own organic space capabilities and learning what to ask for from AFSPC, the Air Force took space support for granted.101 As one interviewee said, “Now the Air Force needs to ask for space [capabilities].” This has not been an easy transition. The same guardian reported that “at the secretary level, it’s ‘one team, one fight,’ but at the strategic level, it’s more complicated.”102 Another interviewee saw the Space Force and Air Force as too close, saying in April 2022 that “the Space Force buildout included a lot of flattening. . . . But it’s same people, different jersey. The structure has changed but not much else.”103

“The Air Force built the world’s greatest space force. As we’ve become independent, we’re still very connected to Air Force.”
—General Raymond, Chief of Space Operations, United States Space Force

Relationships with other services pose different challenges. Several space components from different services have been gradually transferred to the Space Force since its establishment. For example, in September 2021, the Navy transferred satellite communications capabilities to the Space Force, and in August 2022, the Army satellite communications mission officially transferred to the Space Force, bringing all military satellite communications under one service for the first time.104 Other components remain in their original organizations, such as the U.S. Army Space and Missile Defense Command.105 Getting the right components transferred is important, as one interviewee put it, “to avoid the ‘four air forces’ problem,” referring to the dispersal of air capability across all services.106 Figuring out a way to work with the components that remain within their original service is also important. In their study A Separate Space, RAND researchers recommended that the Space Force work with other services to define relationships and even craft formal agreements, specifically with the Air Force.107

Beyond the Joint Force, the Space Force has many other relationships to manage.108 The U.S. Space Force does not own all of space. The Space Force is just one player in a larger cast of civil, commercial, and other military space actors, creating what the 2020 Capstone called a “contested, congested, and competitive” domain.109 Several challenges emerge from this dynamic: those of dispersed and overlapping authorities with other military and civil space entities, including the intelligence community, and those of cooperating with commercial space and allies and partners. The highly developed commercial landscape complicates the domain. In some ways, it offers a blueprint for agility but in other ways poses challenges for the Space Force. As one colonel interviewed for this report said, “The Space Force must do their ‘preserve freedom of action’ role commercially.”110 This will require working closely with industry partners and with Congress to establish new pathways for cooperation. To operate effectively, the Space Force will also need to closely examine and intentionally approach all these relationships in the larger U.S. and global space apparatus.

The Space Force–Space Command relationship is another challenge. As then Lieutenant General Saltzman pointed out in an interview, “The Space Force is the only service built after Goldwater-Nichols. Others have had decades to hone their niche, tactics, techniques, doctrine, without the joint overlay to navigate.”111 One colonel interviewed in April 2022 observed, “We have to figure out, are we a wholly owned subsidiary to SPACECOM? Or a warfighting service like the Air Force?”112 Officially, the Space Force organizes, trains, and equips forces for employment by COCOMs, but the mechanics of this relationship have yet to be ironed out.113 While SPACECOM draws from all five services, the Space Force primarily serves SPACECOM, which is unique. Parsing out their distinct roles may be difficult, especially as the Space Force is responsible for several ongoing operational peacetime missions. Confusion persists, leading some experts to call for disestablishing SPACECOM once again.114

The Public Understanding Challenge
Generating public understanding is part of the service’s duty to the American people. Samuel Huntington wrote of the U.S. Navy, “The service has the responsibility to develop this necessary support, and it can only do this if it possesses a strategic concept which clearly formulates its relationship to the national security.”115 A service must answer the question, “What function do you perform which obligates society to assume responsibility for your maintenance?”116 A failure to garner public support will also harm the service’s efforts to solicit the funding and authorities it needs from Congress and can affect a service’s self-conception. Guardians should be proud of their work, but as one captain put it, “The ‘is the Space Force real? Do you fight aliens?’ line of questioning affects morale.”117
Three main factors impede public understanding: the science fiction distraction; the distant, intangible, technical nature of the space domain; and the high level of classification keeping space imperatives and success stories under wraps.

The Space Force has been challenged in creating public buy-in because of the science fiction aspect of current public perception of the service. Pop culture and familiar sci-fi concepts filled the early vacuum of information when the service was created. The Space Force tried to forge a unique brand, conceiving original cultural artifacts including its motto, *Semper Supra* (“always above”) and song by the same name. Unfortunately, what began as a joke from the public was reinforced by certain official branding and organizational decisions, and public response has likely not been what many hoped. The service named its members “guardians” and created a seal reminiscent of the Star Trek emblem. It named one of its components Space Operations Command (SpOC), and it developed unique uniforms with baggy pants. And these were created at a time when the service did not have much of a culture to promote. But each choice represented an opportunity to tell the Space Force story. Several reference space operations history but not in a way that was explained to the public. For example, the delta on the seal resembling the Star Trek emblem takes inspiration from the original AFSPC logo. And while the term guardian may evoke the superhero movie *Guardians of the Galaxy*, it refers to the original 1983 AFSPC motto, “Guardians of the High Frontier.” Several of these symbolism choices were crowdsourced and drawn from U.S. military space history, two valid resources. But given the already confusing information environment surrounding the service, it needs a more intentional public relations strategy going forward.

The idea of space as a military domain is unfamiliar to many Americans, but space has long been militarized. Military operations in space are inherently far-off, intangible, technical, and in some ways still theoretical and therefore not readily understood by the public. As General Raymond explained, “The only thing tangible in space is a launch because you can see it. . . satellite operations are hard for people to wrap their head around. . . . average Americans think NASA when they think of space. They don’t know military plays a role. They know there are satellites called GPS but don’t know that the Air Force operated it for decades.” Some Americans may have a cursory understanding of the role space plays in daily life or has played in recent conflicts, but the idea of space as a theater of war is too theoretical. Unfortunately, the Space Force failed to capitalize on the rare illustrative events in space, most notably the November 2021 Russian anti-satellite test, which captured public attention. The Space Force, which has garnered attention through social media before, missed the opportunity to leverage its platforms for an education campaign following this incident. Overclassifying space operations and capabilities hinders public understanding of Space Force activities and contributions to national defense. General Raymond said, “It’s a huge hindrance. It’s hard to tell your story when you can’t tell your story. We have approval to talk more about the threat than we could in the past, but we’re still limited in discussing what we’re doing about it.” Simply creating the service demonstrates a huge leap in this arena. One captain echoed the sentiment, saying, “Four years ago, we couldn’t say orbital warfare outside a SCIF!” Despite progress at this high level, there are remnants of a culture that is hesitant to share information. Fortunately, there is momentum to change this culture. When asked where he hoped to see the Space Force in 10 years, one colonel said, “We have to demystify and declassify stuff. . . . We need to get to the point where the U.S. public won’t stand for a certain capability not being fielded.” To get there, the American public needs to first understand what the Space Force does and how. Civilian national security leaders are also looking at this issue. The 2022 NDAA mandated a review of classification in space programs, and in 2023 Deputy Secretary of Defense Kathleen Hicks led a review of the highly classified programs.

**The Warfighter Question**

The warfighter designation is the gaping hole in the Space Force strategic concept and resulting culture. Muddy definitions and inconsistent rhetoric have made for an inconsistent self-perception and public perception. The archetype of the warrior or warfighter has evolved over time but remains a strong symbol in today’s military. For the public to buy in, the argument needs to...
be solid and wholehearted. The average Space Force guardian does not look like your archetypal modern American “warfighter”—which in the public’s mind is probably an infantryman in full combat gear. This is because war in space looks very different from war on land, in the air, or at sea. These servicemembers are physically far from the fight, likely stationed in the United States, and not significantly more at risk than most civilians. They operate one or more satellites miles overhead or on the other side of the Earth. They may work to maintain GPS, reconnaissance, or space situational awareness. They may even operate satellites for defensive or offensive use. But the lack of personal risk and the distance from the fight differentiate them from the common conception.

The debate is part of a larger discussion about the changing character of war. Former Air Force officer Dr. Paula Thornhill writes, “Does a personal connection to organized violence still matter?” and “if it does matter, how should we think about individuals personally removed from violence but still somehow associated with it?” Thornhill presents a new paradigm for the common defense that sees its location as boundless and violence as something that can be inflicted remotely by an organization that depends on military, civilian, and contracted personnel. But the ideas of inflicting violence remotely and incorporating civilian and contractor personnel are not new. Perhaps instead of asking whether guardians are warfighters as a way to justify the Space Force, the question should be: Is it important that all guardians are warfighters? If yes, what does “warfighter” mean in the 21st century? There is a sense from some servicemembers that the warfighting label is an over-compensation for Space Force’s necessary differences and may be counterproductive. Aside from the Marine Corps—in which “every Marine is, first and foremost, a rifleman,” and which justifies the label with investments in organization and training—no other service insists so strongly that every member is a traditional warrior.

If the Space Force wants to establish guardians as warfighters, it first needs to strongly embrace and explain the idea of war in space. How all-out war in space looks is unknown, but there are indications from U.S., partner, and competitor capabilities as well as U.S. experience operating in the domain for almost a century. General Raymond has said that space moves fast, and in some ways, that is true. Technological innovation for space has accelerated markedly in the past 10 years, decreasing cost to launch objects into space and dramatically changing the space landscape. Theoretically, a single action in space, such as a destructive-enough anti-satellite weapon or nuclear blast, could have such a widespread effect that it would change the domain in an instant. Needs for space capabilities on Earth are often urgent and, typically, people can get information from satellites in an instant. But day to day, things in space physically move slowly. For example, if an actor wants to use a robotic arm on one satellite to damage another satellite, it would need to set a trajectory toward the target and reach it, which does not happen instantaneously. An actor with sufficient space domain awareness has a chance of identifying the potential threat relatively far in advance and maneuvering away. As a guardian said in an interview, the best defense is to move away. Chances of surprise in these kinds of co-orbital anti-satellite attacks are slim, so the kinetic fight in space revolves largely around space domain awareness and maneuverability. Constellation resiliency and rapid reconstitution capabilities could also play a role. Direct-ascent anti-satellite attacks from Earth to space offer a greater opportunity for strategic surprise but can have more indiscriminate effects with the resulting debris. Actors can also target space operations with non-kinetic means, using jamming, dazzling, or cyber attacks, having a range of temporary and permanent, reversible and non-reversible, attributable and non-attributable effects.

When asked about the challenge of creating a warfighting culture without personal risk, General Raymond said, “It is a huge challenge that I’ve been addressing for many years even before the Space Force. I don’t see proximity of the fight as indicative. I see them as warfighters.” General Raymond said there were other attributes to a warfighter that included rejecting mediocrity, embracing competition, collaborating, and demonstrating mission focus. These comments open a conceptual space to shift gently away from the strong emphasis on warfighting without losing progress in public understanding or internal sense of purpose. In one subtle example, Saltzman’s c-note on “Amplifying the Guardian Spirit,” identifies the three core traits as “principled public servant,” “space-minded warfighter,” and “bold and collaborative problem solver,” placing warfighter as just one of the three and after the concept of service. In this case, the warfighter label is not rejected but superseded by a value for service.
Semper Forward: Next Steps for the Space Force

Critics have said the Space Force needs to worry less about public relations and focus on delivering results. Delivering results must be the priority, but this can be difficult to see in peacetime. In the absence of war, the Space Force will show results through innovation and acquisition wins, recruitment and training successes, and, most frequently, positive day-to-day interactions between guardians and those outside the service. The service needs a cohesive culture so that each member can act as a representative, teaching fellow Americans about the essential nature of their work. For the foundation of that culture, the service needs a strong and clear strategic concept. In the time since the research for this report was concluded at the end of 2022, the Space Force has improved on this front and emphasized that telling its story is a priority.

The author offers the following recommendations to the Space Force to strengthen its strategic concept, foster greater cultural cohesion within the service, and better communicate with its partners and the nation. Transparency, within reason, is part of a service’s duty to the American public, and, furthermore, it supports deterrence. Fostering unity behind the mission and sharing information on capabilities, doctrine, processes, frameworks, and assumptions decreases uncertainty in the domain and may spur a would-be adversary to think twice before taking aggressive action against the United States or its allies and partners. The DoD talks ad nauseam about deterring and, if necessary, defeating U.S. adversaries. As part of its primary goal—protecting freedom of action in space—the Space Force should strive to ensure that war in space, however real a threat it may be, remains theoretical for as long as possible. General Saltzman captured this best: “A resilient, ready, and combat-credible Space Force is indispensable to deterrence today, tomorrow, and every day after that.”

Recommendations for the U.S. Space Force

Clarify the service line on the warfighter label and promote a common understanding throughout the service.

After its first three years, this fundamental part of the service identity should not have been in question among its ranks, even if it remained in question among its partners. The continued debate does more harm than good, especially without clarity and cohesion on the inside.

Lower classification barriers, where possible, to improve public understanding of the service and its missions.

Space Force leaders must be bold and find places where they can publicize successes and explain requirements without compromising security.

Retell military space history and capitalize on current events in real time to teach the public about the importance of this hard-to-grasp domain.

All-out war in space remains theoretical, but this should not inhibit public understanding. The world has not yet seen a nuclear war, but through tests, one-sided nuclear attacks, and near-scrapes with escalation, the public has come to understand its devastating effects. Space is more multifaceted than nuclear war but could benefit from the same treatment, including a careful explanation of the dangerous effects of risky or escalatory tests conducted by other space actors. The Space Force has already leveraged social media and popular news media to reach the public, to varying success. It could use these same outlets to tell these stories.

Steer clear of public relations distractions, specifically in the science fiction realm.

Many Space Force headlines have captured public attention but failed to educate. Ultimately, they amount to a distraction, and the Space Force should bear in mind these pitfalls and avoid them. Military space is a serious business, and the Space Force should lead the way in treating it as such.

The Space Force came a long way in its first three years, but it did not overcome the challenges necessary to clearly articulate its purpose, either internally or externally.

Some of these challenges linger today. By facing these challenges directly, embracing the unique features of its domain, mission, and personnel, and translating its identity into accessible words and visible actions, the Space Force will better situate itself to justify its existence, motivate its members, and achieve its purpose.

2. All interviews were conducted in confidentiality, and the names of interviewees are withheld by mutual agreement.


5. Although the Coast Guard is a service branch of the U.S. armed services, it is excluded here because it reports to the Department of Homeland Security except in times of war.

6. The U.S. Marine Corps also played a role in the First Barbary War and the Mexican American War but did not receive as much recognition for these contributions. Paula G. Thornhill, Demystifying the American Military: Institutions, Evolution, and Challenges Since 1789 (Annapolis, MD: Naval Institute Press, 2019), 59–62, 85.


11. All interviews were conducted in confidentiality, and the names of interviewees are withheld by mutual agreement.

12. The Space Force’s Space Delta 8 Satellite Communications and Navigational Warfare is responsible for GPS operations.


25. Thornhill, Demystifying the American Military.


Public statements, which include doctrine, concept notes, and senior leader testimony, speak to the strategic concept the service has identified and the aspirational culture it is attempting to build. Organizational decisions, found in budget requests, personnel policies, and bureaucratic structure, show where the Space Force follows through on its strategic concept and reveal values that are not explicit in official statements. Interviews offer anecdotal evidence for how the strategic concept and aspirational culture has trickled down through the middle and lower ranks and for how the nature of the organic culture that has begun to take shape.


Spacepower: Doctrine for Space Forces, 28–33.

Interview A, April 5, 2022.

Interview with John W. Raymond, April 12, 2022.

Spacepower: Doctrine for Space Forces.


Spacepower: Doctrine for Space Forces, 34, 51.

Interview with John W. Raymond, April 12, 2022.


58. Interview C, April 4, 2022.

59. Interview A, April 5, 2022; Interview E, April 5, 2022.


63. *Spacepower: Doctrine for Space Forces*.

64. *Spacepower: Doctrine for Space Forces*.

65. Interview E, April 5, 2022.

66. *Spacepower: Doctrine for Space Forces, 41*.


71. The U.S. Space Force is divided into deltas. Each of is comprised of squadrons focused on the same missions, like training or orbital warfare.


73. Gen. B. Chance Saltzman, Chief of Space Operations, “CSO Notice to Guardians (C-Note #5): Partnering to Win.”

74. Interview with B. Chance Saltzman, February 16, 2022.


76. Interview with John W. Raymond, April 12, 2022.

77. The U.S. Space Force’s Vision for a Digital Service includes the statement: “Combined with the right policies and processes, we will flatten bureaucracy and empower rapid, data-driven decision-making at all levels” (Arlington, VA: U.S. Space Force, May 2021), https://media.defense.gov/2021/May/06/2002635623/-1/-1/USSF%20VISION%20FOR%20A%20DIGITAL%20SERVICE%202021%20(2).pdf.

78. Spiretis, A Separate Space, 97.


80. Spiretis, A Separate Space, 12.


82. Vision for a Digital Service.

83. Vision for a Digital Service.

84. The Guardian Ideal.


87. The “horse blanket chart” refers to a large, convoluted flow chart that details every step of the DoD acquisition process. Interview B, April 4, 2022.

88. Interview B, April 4, 2022; Spacepower: Doctrine for Space Forces.


93. Interview A, April 5, 2022.

94. Interview B, April 4, 2022.

95. Interview C, April 4, 2022.

96. Interview C, April 4, 2022.


100. Interview with John W. Raymond, April 12, 2022.


102. Interview B, April 4, 2022.

103. Interview C, April 4, 2022.


110. Interview A, April 5, 2022.

111. Interview with B. Chance Saltzman, February 16, 2022.

112. Interview B, April 4, 2022.


114. Eaglen and Harrison, “It’s Not about Where U.S. Space Command Goes but Whether It Should Exist at All.”


117. Interview C, April 4, 2022.


120. Interview B, April 4, 2022.

121. Interview B, April 4, 2022.


124. Interview with John W. Raymond, April 12, 2022.


126. Interview with John W. Raymond, April 12, 2022.

127. Interview C, April 4, 2022. A SCIF is a Sensitive Compartmented Information Facility or a space secured and cleared for discussing classified information.

129. Interview A, April 5, 2022.


131. Thornhill, Demystifying the American Military.


133. Interview B, April 4, 2022.

134. Interview with John W. Raymond, April 12, 2022.


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