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Designing a New Framework for the U.S. Space Force Workforce

The U.S. Space Force (USSF) became a separate military force in December 2019. It is distinctly different from the other U.S. military forces in terms of its very small size (of fewer than 7,000 funded military personnel billets), its limited number of included occupational specialties, and its few fixed operating locations. These distinctions offer several opportunities on which the USSF may be able to capitalize in terms of talent management.

Following the transition in 2019, USSF leaders began to ask important forward-looking questions about the culture they hoped to establish in their new organization, including “What defines the USSF as a distinct service?” and “How can we establish a culture that best supports the USSF’s mission?” They have also begun to articulate specific answers to these questions in a range of foundational USSF documents. For example, the USSF’s initial doctrinal document, *Spacepower: Doctrine for Space Forces*, articulates “who military space forces are, and what military space forces value” as the following:

Military space forces—*protectors of America’s space interests*—are first and foremost the warfighters who protect, defend, and project U.S. spacepower. These professionals must simultaneously commit themselves to two demanding professions: warfighting and the mastery of space. This duality blends

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science and art and forms the core of the purpose, identity, and culture of military space forces. (USSF, 2020, p. xiii)

USSF leaders have also recognized that USSF culture is driven in part by the policies that the USSF establishes for managing, interacting with, and supporting its workforce. With this in mind, leaders also proactively asked, “Which personnel management policies should we change to help support the new culture we hope to achieve?” They began by reconsidering a foundational element: how to define and

structure the types of work people perform and the segments of the workforce performing that work. In this Perspective, we describe a way for the USSF to define its jobs and manage its workforce to better meet the organization’s and the nation’s needs for an agile, flexible, responsive force dedicated to the ever-evolving domain of space.

Two further points are worth noting. First, under the existing Department of the Air Force (DAF) workforce framework, both jobs and the people performing them are referred to by *career field* designators known as Air Force Specialty Codes (AFSCs). When the DAF initially transferred members from the U.S. Air Force (USAF), the USSF retained the existing USAF officer career field designators (i.e., 13S–Space Operator, 14N–Intelligence Officer, 17D–Cyber Officer, 62E–Engineer, and 63A–Acquisitions Officer). However, top USSF leaders quickly signaled a desire to evolve away from this approach,¹ and they replaced the concept of career fields with that of *disciplines*:

Spacepower disciplines include operations, intelligence, engineering, acquisitions, and cyber. . . . Successful integration of these disciplines requires a deliberate process that cultivates a common knowledge base, incorporates all skill sets across the core competencies, and allows a range of opportunities for leadership advancement. (USSF, 2020, p. 47)

Abbreviations

ACC	Air Combat Command
AFSC	Air Force Specialty Code
AFSPC	Air Force Space Command
AMC	Air Mobility Command
DAF	Department of the Air Force
IST	initial skill training
KDLP	key developmental leadership position
MAJCOM	major command
ROTC	Reserve Officers’ Training Corps
SME	subject-matter expert
USAF	U.S. Air Force
USSF	U.S. Space Force

This change differentiated the USSF's workforce-management approach from that of the USAF. USSF leaders wished to develop a future-facing workforce whose members share a "common knowledge base" and have more "opportunities for leadership advancement" (USSF, 2020). Both of these changes stray from traditional Air Force personnel management, which sorts individuals into specific career fields, in which they gain and exercise expertise primarily in that field only, rather than mastering a shared, force-wide knowledge base that transcends career-field-specific knowledge. The career field approach offers the virtue of developing individuals with deep, field-specific expertise, but comes with the accompanying drawback of fostering a narrow career focus that may limit many members' leadership opportunities and career development.

Aware of this trade-off and others, USSF leaders asked the RAND Corporation to develop alternative workforce frameworks conceived independently of the existing USAF structure (i.e., not based on what has been done before). They further requested that we consider approaches that may differ greatly from the existing USAF structure, not for the sake of being different, but rather to allow USSF the flexibility it needs given its small size and the workforce qualities best suited to the space domain. In redesigning the workforce structure, USSF leaders also wished to foster a positive organizational culture that would appeal to and retain high-caliber individuals with the best mix of talent for the U.S. space mission. They asked us to begin with a "clean sheet of paper," giving only limited regard to existing organizational constraints. They further requested that we focus our efforts on the USSF officer force.²

After consultation with USSF leaders and subject-matter experts (SMEs),³ we arrived at the following goals for the framework, which served to both guide and bound our thinking on promising approaches for the USSF. The first three goals serve the USSF's mission needs:

1. Attract, develop, and retain the talent needed to sustain a strong USSF and grow the service over time.
2. Develop strong technical expertise and leadership skills in personnel at all levels.
3. Develop guardians well-suited to become USSF senior leaders.

The second three goals provide for the USSF's longer-term organizational requirements:

4. Establish careers organic to the USSF, enabling members to serve their entire careers there.
5. Provide viable, attractive career paths to encourage lasting commitment to the USSF.
6. Foster a distinct and positive organizational culture that supports both excellence and inclusion.

The last two goals incorporate values that USSF leaders want built into the new workforce approach, and with which we concur, based on decades of military workforce research:

7. Avoid silos that divide the force and lead to internal divisions, stovepiping,⁴ and "tribes." Establish paths out of stovepipes and incentives to take them.⁵
8. Develop guardians deliberately, yet capitalize on individuals' desires to shape their own careers.

With these goals to bound our thinking, countless possibilities remain. Throughout the course of this project, we considered numerous options. In this Perspective, we

describe the approaches that emerged as most promising—in that they address the eight goals as fully as possible, while also remaining realistic, achievable, and supported by research.

Before discussing our recommended workforce framework, however, as context we offer a recap of the evolution of concepts for the space-related workforce.

The Evolution of the Space-Centered Workforce from the USAF to the USSF

Establishing the USSF as its own organization is one (highly consequential) stage of many in its evolution. Space operations have been a part of the USAF since the “Western Development Division (WDD) of the Air Research and Development Command (ARDC) . . . was activated on 1 July 1954 and was redesignated the Air Force Ballistic Missile Division (AFBMD) on 1 June 1957” (Los Angeles Air Force Base, Historical Office, 2003, p. 1). This shared history with the USAF carries with it deep cultural ties to USAF structures and operations. In forging a path forward, it is worthwhile to understand at least the recent evolution of USSF personnel structures out of the USAF. Hence, we begin with a review of how the framework for space personnel evolved from Air Force Space Command (AFSPC) to the workforce concepts promoted by Space Force senior leaders from the beginning of the USSF in December 2019 through to the time this Perspective was written, in mid-2021.

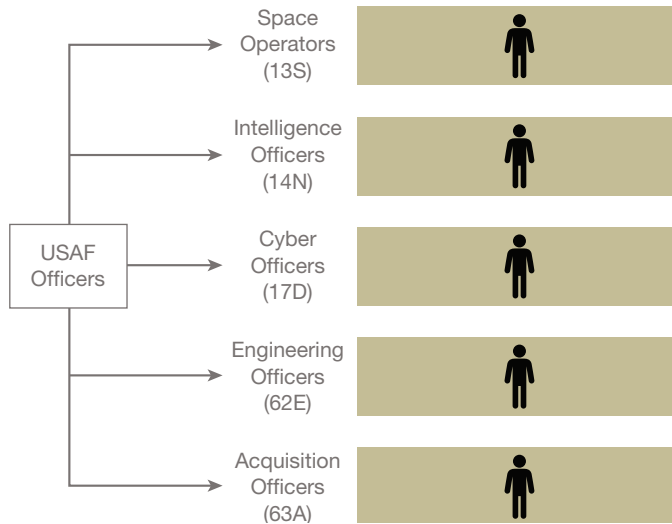
Officer Career Fields within Air Force Space Command⁶

Prior to 2019, AFSPC was a major command (MAJCOM) within the Air Force tasked with responsibility for all space operations. The workforce within that command comprised the Air Force’s *space workforce* or *space cadre*. Like other workforces in the Air Force, officers in the space cadre were identified and grouped by their AFSC. One group, the *space operators*, designated by the AFSC 13S, composed the bulk of the workforce that made up the space cadre. Four other groups of officers within the Air Force also contributed to space operations in AFSPC in varying capacities. Those AFSCs were 14N (Intelligence Officers), 17D (Cyber Officers), 62E (Engineers), and 63A (Acquisitions Officers).

However, unlike 13S, the other four career fields—14N, 17D, 62E, and 63A—were not limited to space-related assignments. Each of these career fields included officers who, as a group, served across a wide variety of missions and MAJCOMs; only a subset of each of these other career fields’ personnel were assigned to AFSPC at any given time.⁷ As a result, training and development within these career fields was generalized rather than space-focused.⁸ The training addressed the broader need to develop officers who could serve a wide range of Air Force missions, possibly across multiple MAJCOMs, over their careers.

Figure 1 provides a simple illustration of how the USAF organized and managed its space officers in all five career fields. The figure depicts each USAF career field with a separate row, labeled with its name and AFSC in the center. The figure shows *person icons* on the right to remind us that each career field is populated by individual

FIGURE 1
 USAF Career Field Structure for Space-Related Officers from 2016 to Early 2019: AFSC as Primary Identifier



members, each one a contributor to the organization *and* an officer developing along their individual career path. Each row is separate to represent how the career fields were essentially siloed and treated as entirely distinct from each other. To the left of the career field names, the figure shows a box labeled “USAF Officers” with arrows pointing to each of the career fields. These arrows are intended to depict the path that USAF officers take over their career: They join as Air Force officers and are then trained and developed as members of a specific career field within the Air Force. With few exceptions, they maintain their specific career field designator and are assigned to positions designated for that career field over the course of their career.

We introduce this simple, stylized figure depicting how USAF organized and managed its space officers prior to 2019 as a starting point. Throughout the rest of this Perspective, we build on and modify it to help illustrate the subsequent changes and evolution in how the space workforce was managed in the USAF and initially conceptualized by the USSF, as well as to depict our recommendations for how to redesign it in the new space-centered service, the USSF.

Key Changes to the USAF’s Management of 13Ss Between 2016 and 2019

Prior to 2019, USAF senior leaders in space operations had already begun to make changes in how they thought about and managed the space workforce. In particular, they began shifting the focus away from thinking about the space force as a support workforce (i.e., personnel who provide services in support of other warfighting operations and missions) and toward thinking about it as a warfighting force. This transition to a *Space Mission Force* concept—from a culture of information-providers to warfighters in their own right—can be traced to a white paper titled *Space Mission Force: Developing Space Warfighters for Tomorrow* (Hyten, 2016). A key change was to clearly separate warfighting duties from service-centered activities. This thinking ultimately led to a proposal to organize the space cadre according to the following:

1. Divide operating tempo into combat rotations and dwell time.
2. Establish four major warfighting functions (Orbital Warfare, Space Electronic Warfare, Space Battle Management, and Space Access and Sustainment).

3. Track officers who are space operators into one of the major warfighting functions.
4. Require a minimum of two operational tours and one staff tour prior to competing for key developmental leadership positions (KDLPs) at the squadron level.

Left unsaid in that proposal were (1) whether officers from other primary technical career field specialties (cyber, intelligence, engineering, and acquisition) should retain their career field identification while also being tracked into a major warfighting function and (2) whether cyber, intelligence, engineering, and acquisition officers would also follow a regimen of combat rotations and dwell time and be required to meet the goal of two operational tours and one staff tour prior to competing for a squadron-level KDLP. This was perhaps because, at the time, people in these specialties served across the entire Air Force and not just in space organizations.

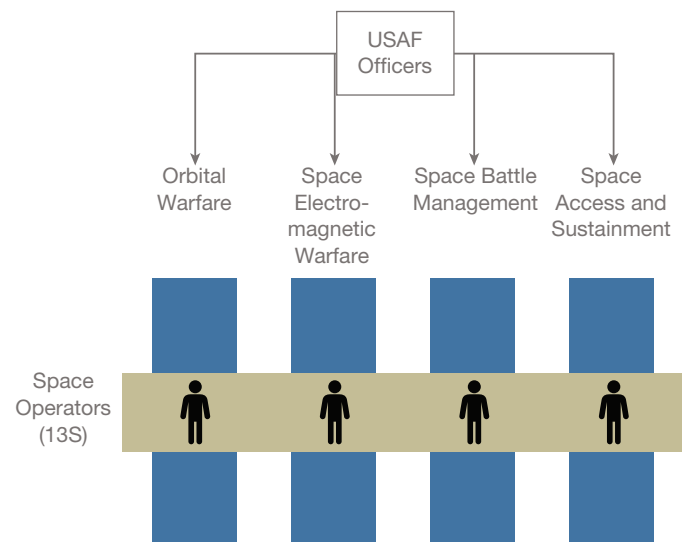
The only recommended modification to the existing career field system of staffing in Hyten’s (2016) white paper was to identify space operators (13S) with a specific warfighting mission area and to use that information to focus their training and assignments on the development of deep expertise in their assigned warfighting mission area. This concept is illustrated in Figure 2, in which we show only the 13S career field, in a horizontal row intersected by the four warfighting mission areas shown in the vertical blue columns.

Figure 2 depicts how 13S officers—or space force operators, represented by the horizontal row—could be thought of as belonging to *both* the 13S career field *and* a specific warfighting mission area. The arrows in this figure have been shifted to the top to show that an Air Force officer

would enter the Air Force and then be allocated to one of the four 13S career field warfighting mission areas. In this way, a person could move from one warfighting domain to another and still be in the 13S career field. Or a person could stay in the same warfighting mission area (i.e., the blue box) for their entire career. This latter approach (i.e., staying in the same warfighting mission area) was what was advocated by Hyten (2016). As with Figure 1, Figure 2 is intended to help clarify figures shown later in this Perspective that build on the concepts discussed here.

Although the 13Ss continued to be managed as a single career field, Figure 2 shows how the idea to align 13S career paths with warfighting mission areas in an implied matrix led leaders to substantially change how personnel

FIGURE 2
In 2019, the USAF Aligned Space Operators (Only) with Specific Warfighting Mission Areas



were managed and trained within the 13S workforce, even when space officers and missions were still housed within the USAF. Between 2016 and 2019, the Air Force began to modify how 13S officers were trained and developed to align with those warfighting mission areas.

These changes were therefore independent of and underway well before the USSF was announced as a separate service. However, the changes to how the space workforce was managed were also still *constrained* by the fact that the workforce existed within the USAF and not independent of it. Because 13S officers were located entirely within AFSPC, leaders could make sweeping changes to the management of that particular AFSC without requiring buy-in on those changes from any other MAJ-COMs. For the other career fields that were also critical to space—14N–Intelligence, 17D–Cyber, 62E–Engineering, and 63A–Acquisition)—AFSPC leaders did not have complete ownership and therefore could not make similar changes to how personnel in those career fields were managed.

Workforce Framework Described in *Spacepower: Doctrine for Space Forces* (2020)

After the U.S. Space Force was formally established, *Spacepower: Doctrine for Space Forces* (USSF, 2020), the first USSF statement of doctrine, conveyed the next evolutionary step in the design of the USSF workforce:

As the custodian of military spacepower, the United States Space Force has three Cornerstone Responsibilities: Preserve Freedom of Action, Enable Joint Lethality and Effectiveness, and Provide Indepen-

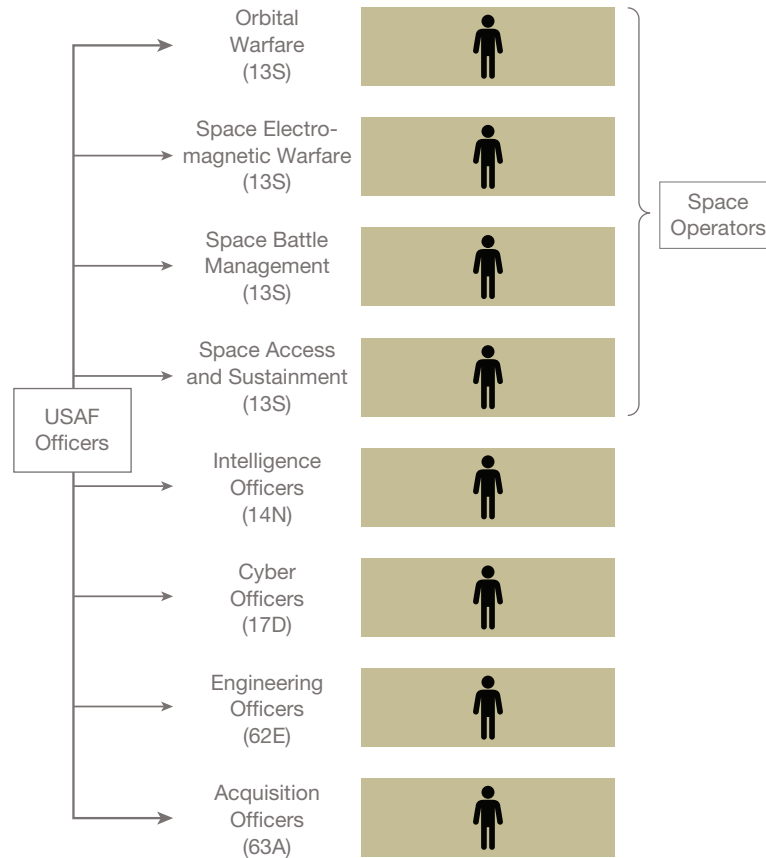
dent Options. These responsibilities are fed by the five Core Competencies of Space Security, Combat Power Projection, Space Mobility and Logistics, Information Mobility, and Space Domain Awareness. In turn, these Service competencies require specialization in the spacepower disciplines of *Orbital Warfare, Space Electromagnetic Warfare, Space Battle Management, Space Access and Sustainment, Military Intelligence, Cyber Operations, and Engineering/Acquisitions*. (USSF, 2020, p. xiv; emphasis added)

Spacepower: Doctrine for Space Forces describes a workforce organized into the *spacepower disciplines* listed down the left side of Figure 3.⁹ Note that by keeping military intelligence, cyber operations, and engineering/acquisitions disciplines distinct from the warfighting mission areas, the structure outlined in the document implies that the warfighting mission areas are populated only by the former 13S space operators who have now been separated into four groups, aligned with the four warfighting mission areas, as envisioned by Hyten (2016). These warfighting mission areas are shown as the top four disciplines in Figure 3. The remaining disciplines in the USSF (formerly called *career fields* in the USAF) retain the same identities they held in the USAF but are identified by titles alone (i.e., leaving off the AFSCs).

In Figure 3, each tan box represents a group of personnel within a USSF *spacepower discipline*, each with its own training and career path in the USSF. As in Figure 1, the arrows in Figure 3 are on the left and are intended to depict the notional path that USSF officers would take over their career: They join as USSF officers, are then trained and developed as members of a specific spacepower discipline

FIGURE 3

In 2020, the USSF Capstone Publication Divided *Only* 13S Space Officers by Warfighting Mission Areas



NOTE: The 2020 capstone publication (USSF, 2020) lists only seven disciplines because it combines engineering and acquisitions into a single discipline. However, not all acquisition officers are engineers, nor do all engineers become acquisition officers. Because of this, we prefer to keep them separate and refer to eight disciplines instead of seven. The 2020 capstone publication (p. xiv) also leaves off the alphanumeric specialty codes used by the USAF. We include them here for clarity.

within the USSF, and stay in that same spacepower discipline over the course of their career.

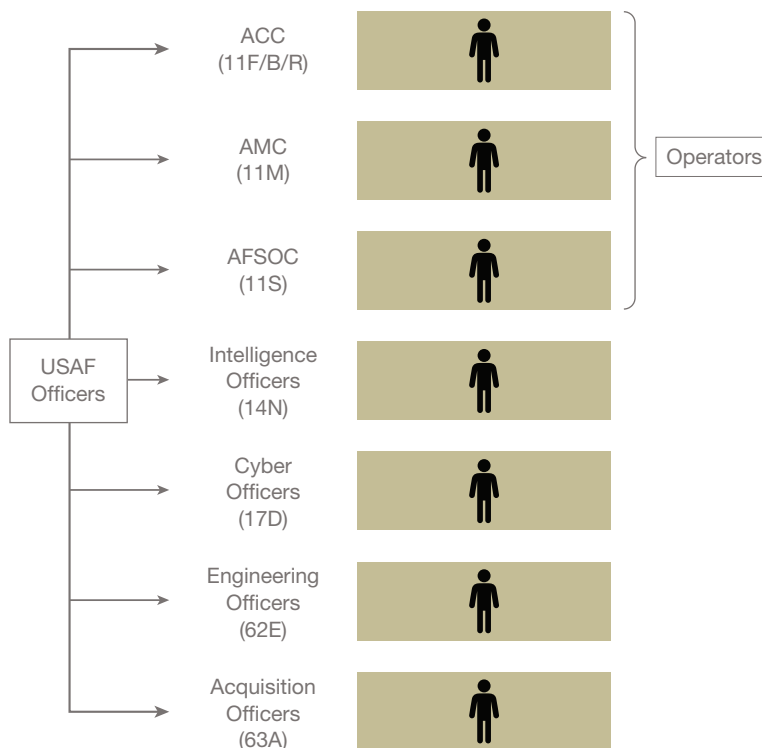
On the right side of Figure 3, we have included a bracket that groups the four warfighting mission areas to acknowledge that these are the same warfighting disciplines as the matrixed blue boxes shown in the prior figure (Figure 2). The 2020 USSF capstone publication treats each warfighting domain as a separate spacepower discipline rather than as four areas of specialization within a 13S discipline.

It is worth noting that the 2020 capstone publication presents a view of the USSF that is remarkably similar in form to the way aircraft pilot career fields are organized and managed within USAF. Recall that the 2020 Space Force capstone publication categorizes space operators into four warfighting mission areas. Figure 4 shows that, like USSF operators in the 2020 capstone publication, USAF operators (i.e., pilots) are assigned to a specific operational domain (i.e., Air Combat Command [ACC], Air Mobility Command [AMC], and Air Force Special Operations Command [AFSOC]) for the majority of their Air Force careers.

The upper three boxes in Figure 4 show the three USAF operational domains we listed above (ACC, AMC, and AFSOC) and the AFSC of the pilots that belong to each domain. 11F–Fighter Pilots, 11B–Bomber Pilots, and 11R–Reconnaissance/Surveillance/Electronic Warfare Pilots are assigned to and aligned with ACC. 11M–Mobility Pilots are aligned with AMC. 11S–Special Operations Pilots are aligned with AFSOC. In contrast, the rest of the AFSCs shown in the figure

(14N–Intelligence, 17D–Cyber, 62E–Engineer, and 63A–Acquisitions) are not aligned with those specific operational domains. They instead can be assigned to any of these MAJCOMs over their career, and they are expected to move from one operational domain to another.¹⁰

FIGURE 4
Operators in USAF Are Categorized by Operational Domains



NOTE: There are many more-specific AFSCs in USAF. For ease of comparison with Figure 3, we show only the same bottom four career fields as in Figure 3.

Our Recommendation for a New USSF Workforce Framework

In the previous section, we described how the framework for organizing and managing space personnel in the Air Force evolved in recent years and how similar the framework outlined in the 2020 USSF capstone publication is to the USAF's approach. In this section, we describe a new workforce framework that we recommend for the USSF. It is grounded in the ideas embedded in the capstone document, but it builds on them and expands on them—beyond the bounds of more-traditional approaches. To introduce the new workforce framework, we first describe how we arrived at it.

How We Arrived at Our Recommended Framework

The process to develop a new approach was layered and iterative. We first held several discussions with USSF senior leaders and SMEs to inform our thinking about a more-effective USSF workforce framework. As explained at the outset of this Perspective, those discussions helped establish the initial goals for the framework and bound our

thinking about what should be included in the clean-sheet approach. They also provided insights that were critical in helping us to further narrow and refine our thinking about a more-ideal approach.

The discussions with senior USSF leaders surfaced the following priorities:

- **Technical Expertise:** Foremost in the minds of USSF leaders was (and still is) the need to develop and retain a workforce that provides the personnel to fill every billet with the depth of technical expertise necessary to succeed in a contested space environment. The senior leaders we interviewed emphasized this point.
- **Positive Organizational Culture:** Next, senior leaders expressed the importance of developing a distinctive and positive USSF culture—recognizing that the structure of the workforce will play a major role in shaping its organizational culture, which in turn, will affect its success. As Collins (1998) notes, “Military culture—the prevailing values, norms, philosophies, customs, and traditions of the armed forces—has always had a significant impact on operational effectiveness” (p. 213).

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- **Sustainability:** Hand in hand with the priorities above is the ability of the USSF to attract, develop, and retain the talent it needs to sustain and grow the organization and its future senior leaders.

We also learned that senior leaders believe that several features might be considered beneficial in whatever framework was adopted. For example, in early discussions, some USSF leaders expressed an interest in aspects of the U.S. Marine Corps' approach, "every Marine a rifleman." One way to apply this to the USSF would be to assert that every guardian must start out as a space operator, and therefore every guardian would have space operator skills.¹¹ This would be akin to adopting a similar motto to that of the Marine Corps (e.g., "every guardian a space operator"). However, this approach may not be ideal for the USSF, in part because it necessarily limits the shared experience to only that of space operator. Doing so may create the sense that operators are the first-class personnel, a sentiment leaders have also said they want to avoid.¹² However, another way of applying this concept to the USSF would be to focus on the ethos of the statement and assert that every guardian must have a shared foundational training, knowledge, and experience that binds all members to the overarching USSF mission and culture. We consider this latter application to be of more value for the USSF. That is, instead of selecting space operator skills alone as the common foundation, the USSF could seek to develop its members to hold shared cyber, engineering, acquisitions, and intelligence knowledge and skill as well.

Our discussions with leaders also raised the question of whether *career fields*, as they exist in the USAF, are desirable in the USSF. Some see them as creating unnecessary silos within the force that may contribute to a nega-

tive organizational culture with an unofficial hierarchy, in which members of certain career fields are routinely given more career growth opportunities. We interpret the suggestions to eradicate career fields entirely as referring to the existing USAF instantiation of career fields—that is, categorizing personnel according to AFSCs. Nonetheless, whether the USSF uses a career framework that is similar to the USAF's career fields or adopts elements of the Marine Corps' framework (i.e., everyone trains initially as a rifleman and branches out later), the USSF needs a framework within which to organize its workforce—having no organizing principle is not an option. In light of the expressed priorities, we considered several different organizing principles that ranged from those with very little structure to those with a great deal of structure.

To arrive at our recommended framework, we generated, considered, and revisited a wide range of options. The process that we used to generate options was organic and iterative, evolving over time. Initially, we set out to conceptualize as many out-of-the box options as possible. To accomplish this, each member of the team independently brainstormed as many ideas for novel and conventional structures for an organization's workforce as they could. At this initial brainstorming stage, our ideas were purely notional and not deeply or clearly developed. The intent at that point was instead to be more comprehensive and creative in our clean-sheet thinking. We then met as a team and discussed and debated the range of ideas we generated and noted any obvious pros and cons of each idea. Those that were too outlandish (i.e., that were obviously unworkable or that would clearly not lead to any benefit for individuals or the organization, such as an entirely unstructured approach we humorously labeled "anarchy")

were dismissed at that stage. Those that remained were subjected to further articulation, analysis, and discussion by the team. We continued to develop these options internally before, during, and after our initial discussions with USSF personnel. We then summarized the options we had been considering and their respective pros and cons and shared them with our sponsor's office to get feedback. We then interviewed more Space Force senior officers and continued to refine options based on their insights.

Through the course of the project, we actively questioned, revisited, and internally debated the definitions of key terms (e.g., *organizational structure*, *workforce structure*, *career field*), reviewed and revisited a range of foundational documents (e.g., USSF, 2020), and sought further interviews with Space Force officers who might further clarify the needs and challenges the USSF would face in managing its workforce.

The entire process was fundamentally informed by our team's combined and individual expertise in workforce management and organization development, RAND's body of research on military personnel management issues, our interviews with USSF senior leaders, conversations with our sponsors, and careful reviews of foundational USSF and USAF documents.

In the next section, we present our proposed workforce framework for how to develop and manage Space Force officers from the time one enters the USSF and onward throughout one's career. As explained at the outset of this Perspective, a primary goal of this framework is to establish paths for the development and specialization of personnel such that sufficient personnel exist with the right technical skills and expertise to accomplish the USSF mission. With this in mind, our framework introduces

two concepts into USSF career development paths that are not part of the workforce development approach inherited from the USAF:

1. requiring all officers to specialize in *both* a warfighting mission area and an occupational competency during their first service commitment¹³
2. requiring some or all officers to adopt a third specialty area (i.e., either an additional warfighting mission area or occupational competency) partway through their careers.

Details of the Recommended Framework

As we have previously noted, there has been an evolution in USSF thinking about how to organize the USSF's alignment of occupational skills, with its most recent rendition of space disciplines laid out in the 2020 capstone publication (USSF, 2020), as shown in Figure 3. We believe that the concepts in that document are extremely useful as a foundation for a new USSF framework, and we therefore have built on those concepts in the framework we propose.¹⁴ However, we do not think that the 2020 capstone publication's approach goes far enough in creating a unified culture in which every officer identifies themselves first as a USSF officer rather than as a space operator or as an intelligence, cyber, engineer, or acquisitions officer, nor does it provide for the assignment flexibility needed in a small service to meet mission requirements. To explain, it is only space operators who are explicitly identified with a warfighting discipline in the 2020 capstone publication, as illustrated in Figures 3 and 4; other USSF personnel (those performing intelligence, cyber, engineering, or acquisition duties) are not.

Instill Both Warfighting and Occupational Skills in Each USSF Officer¹⁵

To address this, in our framework we extend the 2020 capstone publication's idea of developing depth in a warfighting discipline to the entire USSF workforce. That is, we recommend defining personnel using a matrix that includes the 2020 capstone publication's four warfighting disciplines (which we refer to as *warfighting mission areas*) crossed with all five technical occupational disciplines or competencies employed in the USSF: space operations, intelligence, cyber, engineering, and acquisition (which we refer to as *occupational competencies*).¹⁶ A conceptual diagram illustrating this crossing of warfighting mission areas and occupational competencies is shown in Figure 5. In Figure 5, the four *warfighting mission areas* from the 2020 capstone publication are shown in the blue vertical columns labeled across the top, and the five *occupational competencies* are illustrated in the tan horizontal rows labeled on the left.

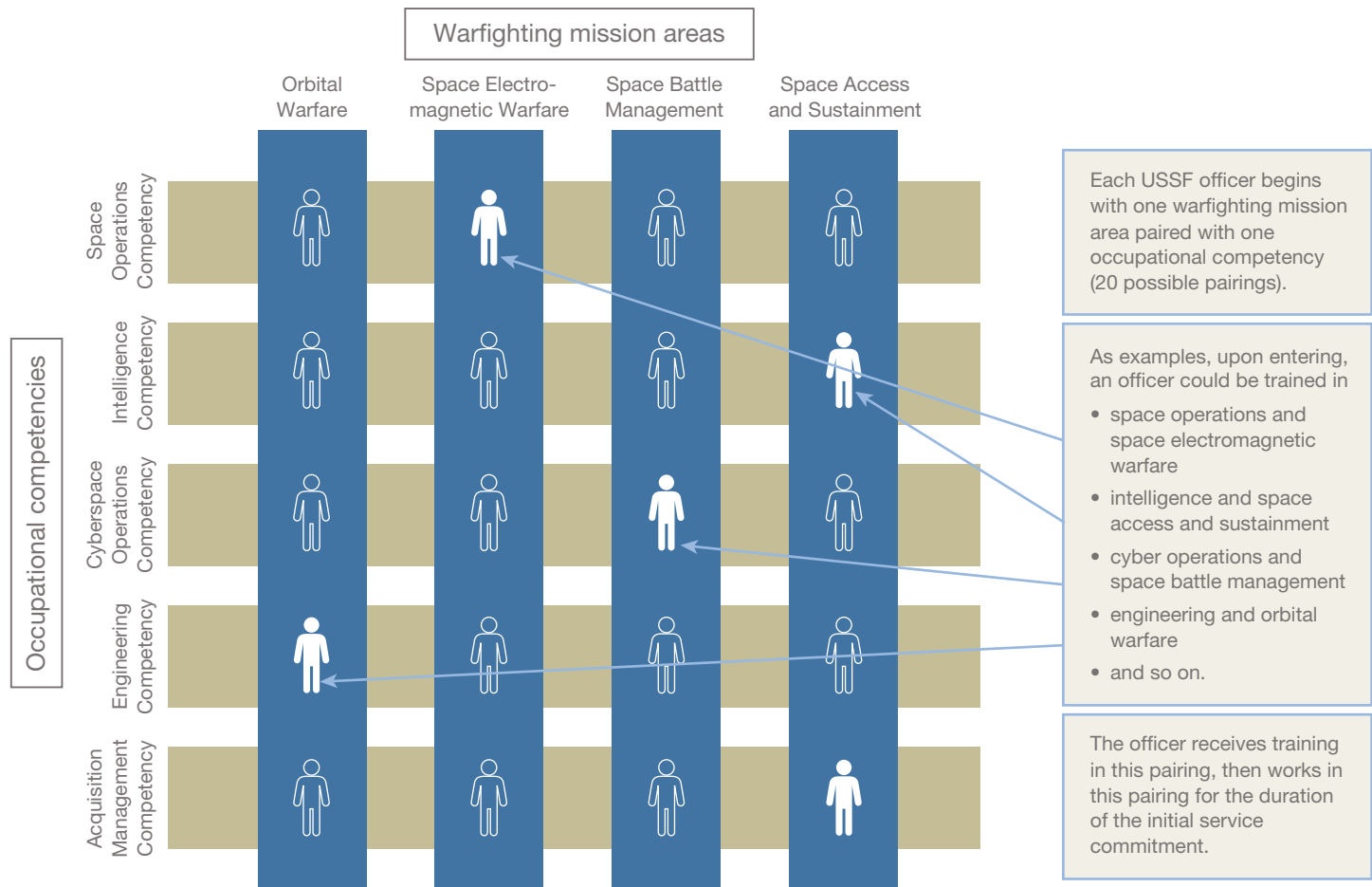
The approach illustrated in Figure 5 represents the basic foundation of the workforce framework we recommend. In this structure, every USSF officer would be identified with *both* a warfighting mission area and an occupational competency (rather than either a warfighting mission area or an occupational competency alone). Including a specific warfighting mission area when classifying each officer acknowledges the emphasis that the 2020 capstone publication places on the ascendancy and importance of warfighting skills, and it has the added benefit of focusing personnel on warfighting mission areas and thereby reducing the tendency for tribes to form around sets of occupational competencies (a concern that a number of Space Force leaders raised during the interviews).¹⁷

Including a specific warfighting mission area when classifying each officer can help reduce the tendency for tribes to form around sets of occupational competencies.

Figure 5 shows that when officers begin their career in the USSF they would be trained in *both* a warfighting mission area and an occupational competency. Each person icon in the figure represents an officer who is initially developed in the two corresponding skill areas (i.e., each person icon is sitting on one occupational competency and one warfighting mission area). All possible starting combinations in the matrix are marked with a person icon (either outlined or solid). As examples, we call out a few specific combinations (represented in the figure as *solid* person icons) and provide text on the right side of the figure to further explain the concepts.¹⁸ Combinations not called out in the text on the side are shown as *outlined* person icons.

FIGURE 5

A Proposed Matrix of Warfighting Mission Areas and Occupational Competencies for Entering USSF Officers



NOTE: Person icons show possible skill combinations that officers could receive at the start of their career. Solid icons show skill combinations that are called out in the text on the side of the figure. Outlined icons represent the possible combinations that are not featured in the figure's text examples.

Broaden Space Officers Who Remain Beyond Their Initial Service Commitment

In our view, the original 2020 capstone publication’s approach does not go far enough to address the potential negative effects of the USSF having a very small number of intelligence and cyber officers. We therefore incorporate this second element (cross-skilling each officer to build depth in a third specialty area) into the framework in part to address the potential negative effects.

Having occupational competency areas with such small numbers of officers poses three potential risks. First, even a few personnel losses from a highly technical force that is small in number can have profound and undesirable effects on the already-small grade pyramid of intelligence and cyber officers, by shrinking an already-small pool of qualified experienced officers from whom to select for positions of greater responsibility. Second, the small grade pyramid in these fields creates either perceived or actual developmental challenges that can negatively affect the morale of junior intelligence and cyber officers and their development into senior intelligence and cyber leaders. Third, intelligence and cyber officers—as small groups within a USSF overwhelmingly dominated by space operators, engineers, and acquisition officers—may naturally be drawn to identify more closely with their own subgroups than with the Space Force overall, potentially (and unintentionally) fostering division rather than unity.

In addition, there is tension between developing officers with deep expertise and avoiding stovepiping. Developing deep expertise in any of the highly technical fields that constitute the USSF usually requires that an officer specialize in a particular area and work in that area for the time it takes to hone their craft. However, such long-term

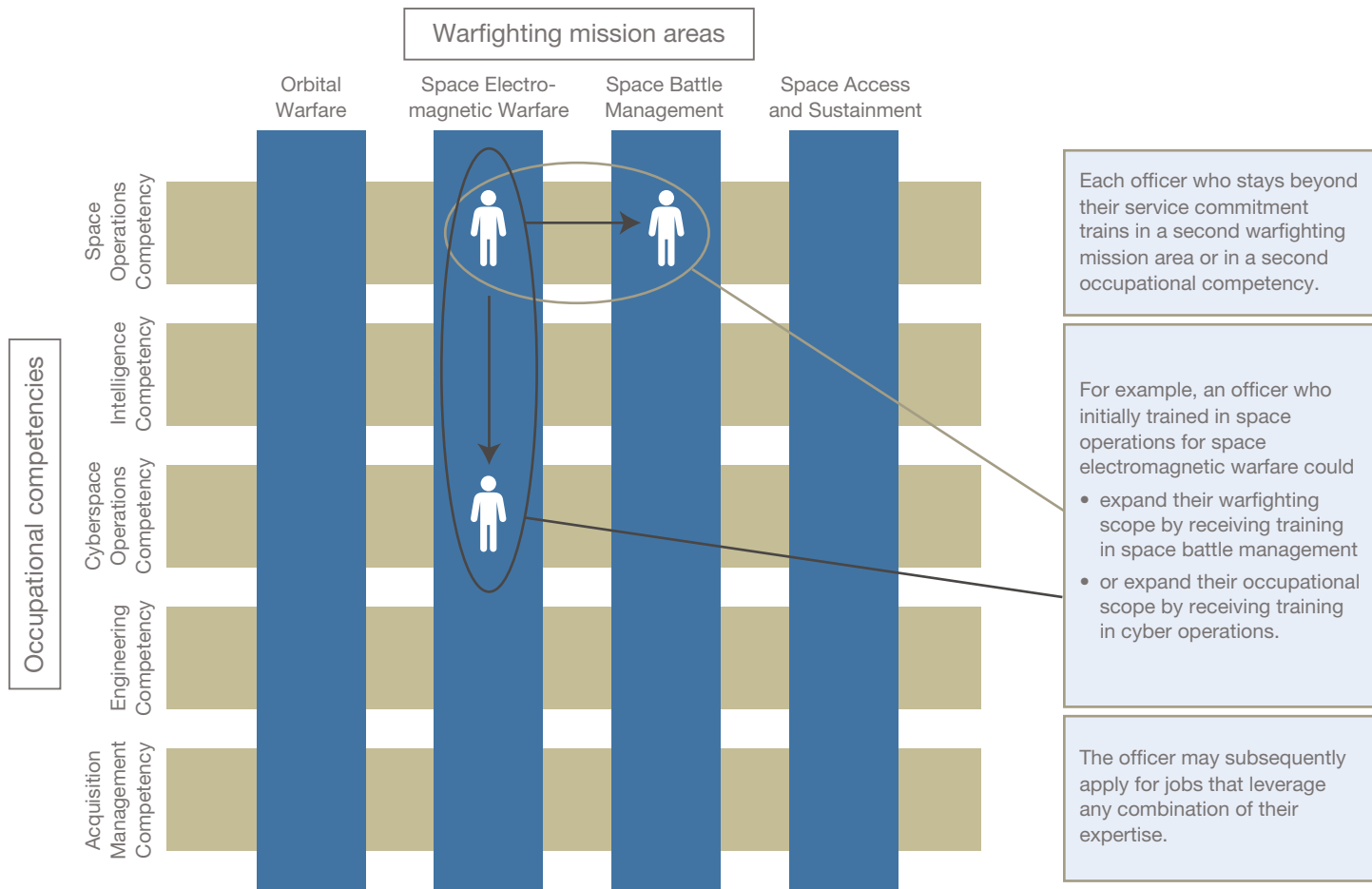
technical specialization often leads to *de facto* stovepiping of personnel into different technical tracks—an outcome that many USSF leaders in our interviews said they want to avoid. The opposite end of the spectrum would be to have no technical specialization and instead rotate officers through every type of technical specialty to give them breadth of experience. While that approach might help prevent stovepiping, it is unlikely to develop a workforce with the deep technical expertise that the USSF mission demands. In the interviews, USSF leaders characterized this undesirable outcome as “jack of all trades, master of none.”

With these concerns in mind, we added a feature to those described above. In addition to associating every new USSF officer with both a warfighting mission area and occupational competency (see Figure 5), the USSF should either encourage or require all USSF officers who continue beyond an initial service commitment to broaden their expertise into an additional warfighting mission area or an additional occupational competency (see Figure 6). In other words, they would be broadened to acquire a third skill area. Once broadened in this way, a USSF officer would have either two warfighting mission areas and one occupational competency *or* one warfighting mission area and two occupational competencies.¹⁹

Figure 6 builds on the matrix depicted in Figure 5 to illustrate an example of how a notional Space Force officer could acquire this new, third skill area as a captain, after completing their initial service commitment. Figure 6 uses a solid person icon to represent a Space Force officer who started their career in space operations (their *occupational competency*) and space electromagnetic warfare (their *warfighting mission area*). Further, the figure uses arrows and

FIGURE 6

Illustration of Broadening of Captains to Receive an Additional Warfighting Mission Area or Occupational Competency



NOTE: Solid person icons indicate two examples of how a captain might move to a different location in the matrix to acquire a second warfighting mission area or a second occupational competency.

additional solid person icons to illustrate how that same person could then choose to move either horizontally in the figure to a different warfighting mission area (e.g., to space battle management) or vertically in the figure to a new occupational competency (e.g., to cyber operations). For simplicity, the figure does not include an icon for every possible selection that the officer could make; it represents *only two of the many options available* to this notional USSF officer.

Continuing in this vein, Figure 7 illustrates some notional career paths to demonstrate how this approach could be applied over the course of a career for an officer who starts out in the intelligence occupational competency and orbital warfare warfighting mission area. The top row of Figure 7 shows a career path that accomplishes *warfighting mission area depth* in orbital warfare and *occupational depth* in both intelligence and cyber. The career path in the second row achieves *warfighting mission area depth* in both orbital warfare and space battle management and *occupational depth* in intelligence. For comparison only, the third row shows an example of a career path that is typical for Air Force officers today.²⁰

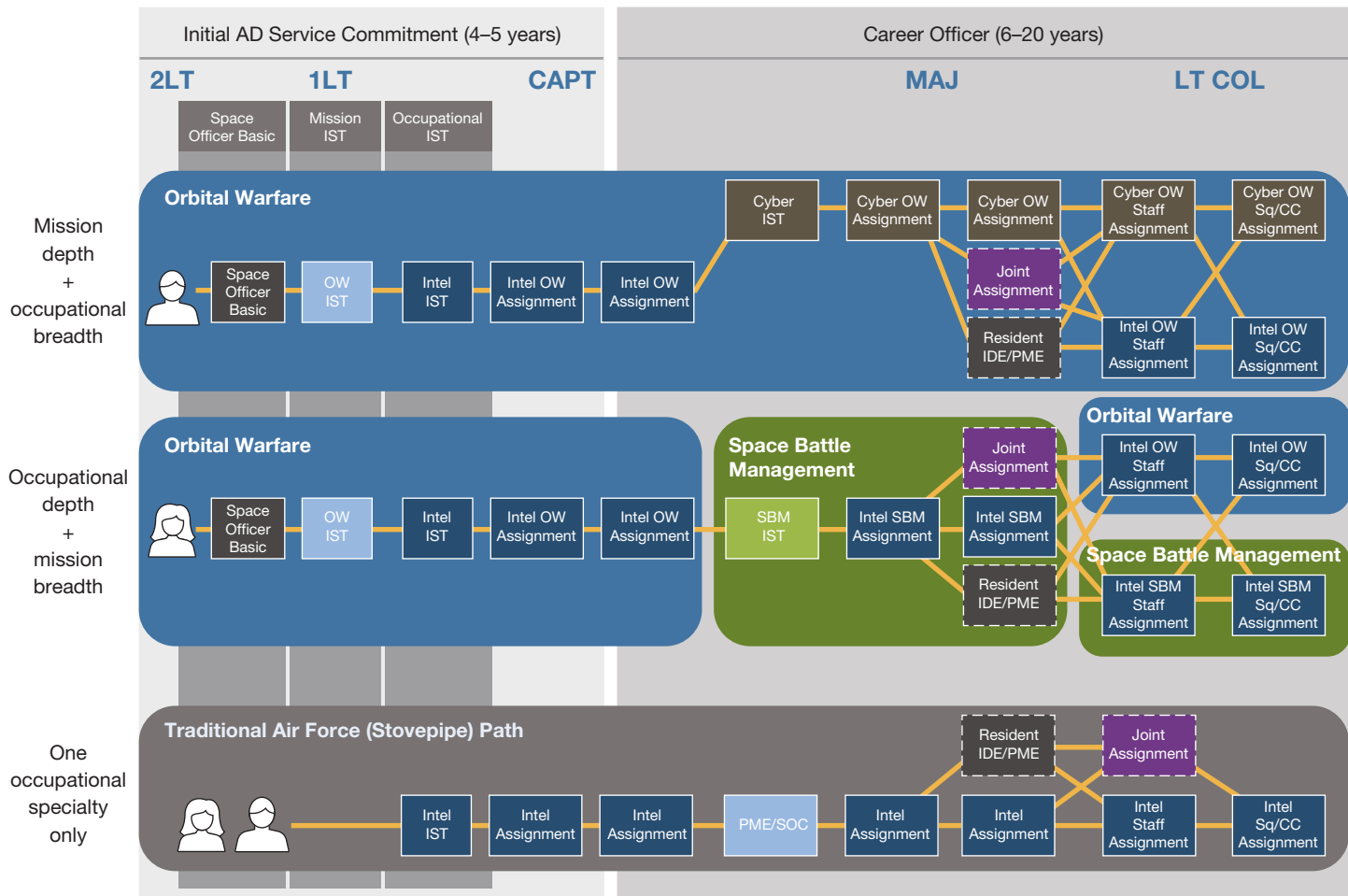
Next, we examine these career paths in more detail. Following our recommended framework, in the first term of service, a Space Force officer will specialize in both a warfighting mission area and an occupational competency. In Figure 7, orbital warfare/intelligence is the officer's first specialization (i.e., the officer is specializing in both intelligence as an occupational competency and the orbital warfare mission area). As illustrated in Figure 7, each officer's specialization would include technical training in both their occupational competency and their warfighting mission area, as well as related follow-on on-the-job experi-

ence in the first-term assignments that make up the four to five years to achieve the rank of captain. Then, as shown in Figure 7, the individual will choose (or be given) either an additional warfighting mission area or an additional occupational competency that they will pursue at the start of their second term. This new area of expertise becomes their broadening area of specialization (ideally with a commensurate level of depth of training and amount of experience involved).²¹ During that second term, the individual would go to technical training for that second warfighting mission area or occupational competency—and then take on at least one job assignment in that new area to build on-the-job experience and expertise in it. As shown on the far right-hand side of Figure 7, after that on-the-job experience, the individuals could return to assignments in their first area of concentration (in the top row, this would be returning to an intelligence assignment), or they could continue in their second area of concentration (in the top row they would continue to a second cyber assignment).

This process of systematically broadening mid-career personnel would have the benefits of breaking stovepipes while multiplying assignment and development possibilities for all USSF officers and providing each officer with a greater say in the trajectory of their career.²² As shown in Figure 7, the officer with both intelligence and cyber experience (top row) could be placed into assignments for either occupational specialty. Similarly, the intelligence officer in the middle row who has both orbital warfare and space battle management experience could be qualified for assignments in either warfighting mission area. This cross-skilling approach will be especially beneficial for ensuring that sufficient numbers of personnel are available in the workforce who have the requisite skill areas. In the occupa-

FIGURE 7

Two Notional Career Paths in the Recommended Workforce Framework (in blue) Compared with a Traditional Air Force Career Path (bottom of figure)



NOTE: AD = active duty, IDE = Intermediate Developmental Education, IST = initial skills training, OW = orbital warfare, PME = professional military education, SBM = Space Battle Management, SOC = squadron officer college, Sq/CC = squadron commander.

tional competency areas where the numbers of personnel are quite small (cyber and intelligence), small perturbations in the workforce's size (e.g., from changes in retention, personnel cuts, or needs for personal ramp ups, etc.) could be catastrophic for those occupational competencies and lead to major shortfalls in personnel. Having personnel cross-skilled in these domains protects against these potential sudden shortfalls. In addition, it would provide much greater flexibilities in command opportunities for those individuals, which could lead to higher retention of personnel in those occupational competencies.

Although there are potential benefits that could be realized with this cross-skilling approach, we noted previously that USSF leaders point to depth of technical expertise as critical to USSF mission success. For this reason, our recommendation for cross-skilling should not come at the expense of developing depth of expertise. Developing *breadth* without *depth* is unlikely to realize the benefits that we mention above. For example, if people do not have deep enough expertise to perform the job, then it means they cannot serve as a bench of personnel to address unexpected shortfalls in retention rates in the small occupational competencies or backfill when personnel demand surges. It also means they may not actually be qualified for a wider range of command assignments. As a result, for this to be successful, depth (developed through training, assignments, and on-the-job experience developed over time) in all three areas will need to be supported in each officer's career path. Figure 7 is intended to illustrate two possible career paths that could allow an individual to acquire that necessary depth (including through training, assignments, and on-the-job experience opportunities) in the three areas over the course of their career.²³

Figure 8 shows all possible combinations of first assignment area of expertise and follow-on broadening areas. Figure 8 shows this concretely, by listing every possible combination. It displays the full range of expertise combinations that a USSF workforce could come to have at the level of senior company-grade officers and ranks above. In the figure, the range of possible starting specializations (i.e., the possible warfighting/occupation combinations) for all officers in their first term of service is shown in the left-most column of Figure 8. The range of possible follow-on broadening areas for each officer is shown across the top of Figure 8. Broadening areas that represent an additional *warfighting mission area* are shown with a blue heading, and broadening areas that represent an additional *occupational competency* are shown with a brown heading. The X's in Figure 8 indicate all possible broadening areas that are available, given all possible starting specializations that an officer might have. That is, if someone started out with an initial specialization in orbital warfare/intelligence (as shown in the leftmost column in Figure 8), they would then be able to choose from among the seven broadening options in that row (marked by the seven X's) for their second-term training and assignments.

Figure 8 shows how the foundation depicted in Figure 5 can be combined to create a greater variety of options that then yield a complex workforce framework. However, the workforce framework is not complete without a scaffolding. The scaffolding for the workforce framework for the USSF consists of the manpower requirements (i.e., the competency requirements of each position) for the USSF. That is, each billet's competency requirements can be defined by the warfighting mission areas and occupational competencies required. They can also be defined by

FIGURE 8

Matrix of Possible Skill Combinations in a Redesigned USSF Workforce Framework

Warfighting mission area/ occupational competency	Additional broadening area (trained during dwell periods)								
	Orbital Warfare	Space Electromagnetic Warfare	Space Battle Management	Space Access and Sustainment	Space Operations	Intelligence	Cyber	Engineering	Acquisition
Initial specialization in one warfighting mission area and one occupational competency	Broaden into additional warfighting mission area				Broaden into additional occupational competency				
Orbital Warfare/Space Operations		x	x	x		x	x	x	x
Orbital Warfare/Intel		x	x	x	x		x	x	x
Orbital Warfare/Cyber		x	x	x	x	x		x	x
Orbital Warfare/Engineering		x	x	x	x	x	x		x
Orbital Warfare/Acquisition		x	x	x	x	x	x	x	
Space Electromagnetic Warfare/Space Operations	x		x	x		x	x	x	x
Space Electromagnetic Warfare/Intel	x		x	x	x		x	x	x
Space Electromagnetic Warfare/Cyber	x		x	x	x	x		x	x
Space Electromagnetic Warfare/Engineering	x		x	x	x	x	x	x	x
Space Electromagnetic Warfare/Acquisition	x		x	x	x	x	x	x	
Space Battle Management/Space Operations	x	x		x		x	x	x	x
Space Battle Management/Intel	x	x		x	x		x	x	x
Space Battle Management/Cyber	x	x		x	x	x		x	x
Space Battle Management/Engineering	x	x		x	x	x	x		x
Space Battle Management/Acquisition	x	x		x	x	x	x	x	
Space Access and Sustainment/Space Operations	x	x	x			x	x	x	x
Space Access and Sustainment/Intel	x	x	x		x		x	x	x
Space Access and Sustainment/Cyber	x	x	x		x	x		x	x
Space Access and Sustainment/Engineering	x	x	x		x	x	x		x
Space Access and Sustainment/Acquisition	x	x	x		x	x	x	x	

NOTE: Hyten (2016) recommended dividing operating tempo into combat rotations and dwell time. The additional training that we recommend could be provided during that dwell time.

the grade experience levels of personnel in general or in those specific competency areas.

In some cases, particularly at higher ranks, a position may be equally well filled with any one of several officers, each having had different warfighting and occupational training and experiences. Identifying the manpower requirement for such positions with only one specific combination of training and skill does not do justice to the flexibility inherent in choosing someone to fill such positions. In these cases, it would be better to identify the limits of flexibility in the skills and experiences for filling such positions than to say that only one specific combination of skill and experience is required and acceptable (see Robbert et al., 2005).²⁴

These competency requirements and grade/experience requirements can then be used to approximate the total numbers of personnel of each type that are needed overall. That information can then be used to determine how many personnel or an acceptable range of numbers of personnel to ideally develop in each combination of competencies shown in Figure 8.²⁵ Although Figure 8 is intended to reflect a complex workforce with a maximum level of variety in competency and warfighting area combinations, the scaffolding of underlying USSF job and manpower requirements may not align well with this maximum level of complexity in the workforce. In other words, while this matrix of *possible* combinations reflects the full potential of the cross-skilled workforce framework that we are proposing, we acknowledge that this level of career path variety may be unnecessary to achieve USSF goals and far too complex for the USSF to execute in practice. Allowing that level of complexity could become unwieldy for the personnel management and assignment system, so much so that

the matching of assignments to skill areas could become an entirely infeasible process.

To reduce the complexity, we recommend a variation of this concept in which only some of the potential combinations are permitted (i.e., restricting combinations to only a subset of the X's shown in the Figure 8) to achieve a slightly less complex structure. That less complex structure could be much more feasible and approachable as a realistic solution. We therefore highly recommend that the USSF consider a simplified version in which a set of only 10 or 15 possible three-way combinations are permitted (or fewer), at least initially. There may be certain combinations that may be more desirable than others. Multiple factors should be considered, including how much additional retraining is needed; whether the requisite educational backgrounds tend to align (e.g., if an engineering degree is mandatory); whether the combination provides future leaders with breadth that is beneficial to the enterprise; whether the combination will help sustain and retain personnel in the smaller career fields; and the retraining interests of the officers in the workforce, to name a few.²⁶

Training and Acculturation to Establish a Shared Identity in the USSF

As noted previously, leaders and SMEs stressed in our interviews that it would be important to ensure that all USSF personnel have a shared identity and a strong shared culture that is unique to the USSF and distinct from the other services. The framework we propose emphasizes both specialization and cross-skilling as ways to help break

stovepipes that might naturally occur in a workforce that consists of multiple highly technical fields. However, the framework alone does not itself serve to unify personnel who are entering the USSF with a shared mindset or a shared understanding of the entirety of the mission and how their work fits into it. Instead, to help create a shared culture, identity, and overarching enterprise knowledge, we recommend establishing two sets of shared experiences for all entering USSF personnel (i.e., at the start of their career) to help with their acculturation to the USSF.

Pre-Commissioning Activities for All USSF Cadets²⁷

As in all military services, there is more to being a member than wearing a uniform and doing a job. The organization develops practices and values that shape the culture in which each member participates. To help ensure that personnel are indoctrinated to that culture, and to ensure that the culture is strong (views and norms are shared and similar across personnel) rather than weak (with people holding many different views and there being few shared norms), socialization to that culture should begin at the point when someone decides to become a USSF professional.²⁸

To accomplish this, we recommend establishing a series of USSF-specific pre-commissioning activities for USSF cadets. These ideally would involve extended time spent immersed with other USSF peers and leaders/instructors to help develop that shared experience and shared culture among USSF personnel. Having these distinct and immersive activities will be especially important to the USSF socialization process because Space Force cadets will be surrounded by Air Force cadets and immersed in Air Force culture throughout their time in

college, whether at the Air Force Academy or in a Reserve Officers' Training Corps (ROTC) program.²⁹ The same may be true for many USSF officers during initial skill training. A reasonable model to follow is the experience the Department of the Navy provides for its Marine Corps cadets, who are immersed in a sea of Navy cadets. For example, summer activities for Marine Corps cadets differ from the summer activities for Navy cadets.

Post-Commissioning Activities for All Newly Commissioned USSF Officers

Senior USSF leadership has discussed the idea of bringing all newly commissioned USSF officers onto active duty for some period of time prior to sending any to specialty technical training. Our interpretation of this is a desire on the part of senior USSF leaders to create a culture of solidarity, like the Marine Corps concept of “every Marine a rifleman” discussed previously. The Marine Corps uses a 28-week Basic Officer Course at The Basic School to provide every officer with basic combat and leadership training, and to sort officers into follow-on specialties for training.

Recalling the Marine Corps' premise “every Marine a rifleman,” the USSF does not have an analogous competency that would make sense for all USSF officers. While it might be possible to train everyone as a space operator first so that they could all lead a group of space operators, similar to the concept of “every Marine a rifleman,” this may not be appropriate for USSF jobs, which are highly technical and require years of training and experience to reach the required depth of expertise. The time required to build sufficient space operator expertise in every Space Force officer is simply too great. Couple that with the fact that

the USSF needs technical experts in the other domains as well and that expertise also takes time to build, we believe it is unwise to divert all entering personnel to a space operator track first. This could also make the job less appealing for some candidates (such as those interested in cyber).

However, there are aspects unique to operating in the space domain, the knowledge of which may strengthen all USSF officers in their service. To impart and reinforce that knowledge and the ethos associated with it to every USSF officer regardless of technical specialty and projected career path would unify Space Force members and socialize them to the same, shared USSF culture.

Implementing the Framework³⁰

Our recommendations include several major changes to the way military organizations train and staff their organizations. A necessary first step is for the USSF to do the work to understand and articulate its manpower requirements, as noted above.

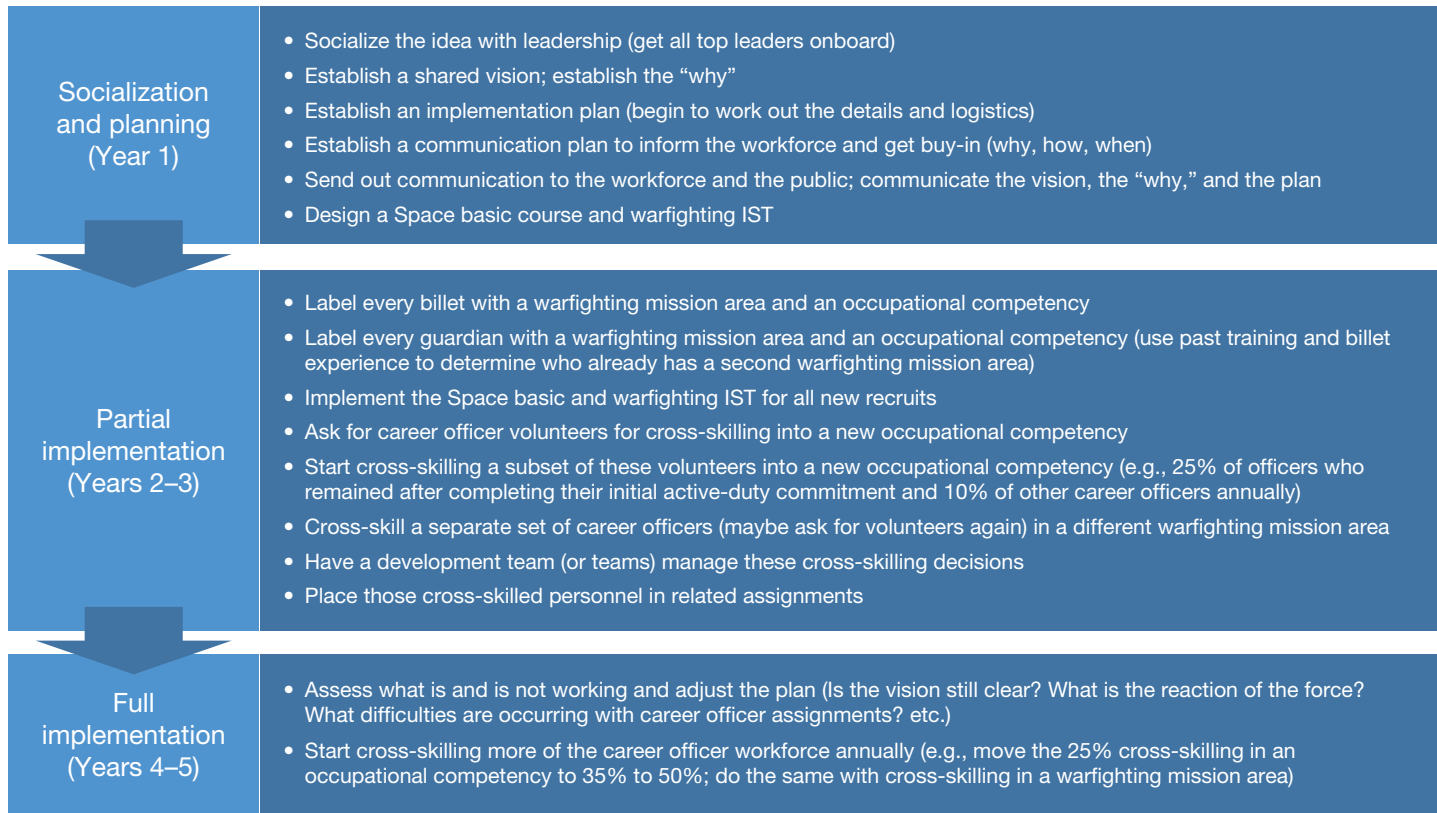
Of all our recommendations, the first and easiest step will be for the USSF to identify each current officer with a warfighting mission area and occupational competency, and to begin to use that information to track each officer and to make follow-on assignments. We know that to some degree this is already happening.

We think that the framework we propose will help the USSF set itself apart from the other services by building a reputation for requiring its officers to become multiskilled, with some becoming multiskilled in warfighting mission areas and some becoming multiskilled in occupational competencies. However, developing personnel with expertise in two occupational competencies will take years to

The framework we propose will help the USSF set itself apart from the other services by building a reputation for requiring its officers to become multiskilled.

execute. For that reason, we see this as a long-term goal for USSF structure, and there may need to be an interim solution to bridge the gap. What might be a more manageable short-term goal, at least initially, is having all officers become multiskilled in a second warfighting mission area. In other words, we see moving to the multiskilled workforce depicted in Figure 9 as a multistep process. As a first step, the USSF could require every officer to gain experience in more than one warfighting mission area. The next step could be to encourage officers to *volunteer* for additional occupational competency training and experience. The final step could be to *require* all officers to become broadened in either a warfighting mission area or occupational competency, and to prespecify a target number of officers that would receive each type of broadening. In addition, development teams are well-positioned to manage the process of sorting out which officers are interested in

FIGURE 9
Notional Three-Phase Implementation Plan



which types of broadening along with which of the three-skill combinations of warfighting mission areas and occupational competencies are most needed at any given time, in order to ensure that the needs of USSF are met with the most-qualified officers.

Figure 9 offers some additional details of how this incremental implementation might occur. In Figure 9, we propose proceeding with a three-phase process. The first

year (Phase 1) would focus on socialization and planning.³¹ In the second and third years (Phase 2), the USSF would take stock of its current inventory of cross-skilled personnel by identifying each person’s warfighting mission area expertise and their occupational competency expertise and then gradually begin implementing the broadening of personnel into different warfighting mission areas and occupational competencies. It is highly likely that many

individuals in the USSF already have experience in more than one warfighting mission area, and, for that reason, the first step we described in the prior paragraph (broadening personnel in a second warfighting mission area) may already be largely accomplished. If that is the case, then the step of assigning people the appropriate labels would be an important step in formalizing the new structure and would help solidify the new culture and approach to developing USSF officers. But this would also mean that the USSF could then focus years 2 and 3 largely on starting the process of cross-skilling more senior-level volunteers in a second occupational competency, and they could begin the process of cross-skilling captains who are beginning their second term. Lastly, in years 4 and 5 (Phase 3), the USSF could begin to ramp up cross-skilling of personnel to eventually reach a normalized state in which all personnel cross-skill after their initial service commitment is up, with preplanned numbers of personnel cross-skilling into a prespecified set of warfighting mission area and occupational competency combinations (see all possible combinations in Figure 8).

Although Figure 9 offers a very high-level overview of a proposed three-phase process, such a process would be a very large undertaking. The outline we offer suggests a highly aggressive timeline of only five years, a timeline that should be viewed as aspirational at best. The timing and success of the process would be entirely dependent on how much work is undertaken at each step in the process and how well the work is done. Executing this type of workforce change will be complicated and will require attending to many moving parts, drawing on support from many data collection efforts (e.g., piloting changes with multiple populations, conducting employee viewpoint surveys, etc.),

identifying and executing many policy changes, and gaining buy-in from many leaders and stakeholders along the way.³² Given this, outlining all the research efforts and steps to be taken and anticipating all the important execution details that should be attended to at each point is far beyond the scope of this Perspective. Instead, we advise that the phased implementation approach outlines in Figure 9 be considered as notional only and illustrative of an ideal to aim for, not necessarily a plan and timeline to be followed in lockstep.

Recommendations

The following are the key recommendations we propose:

- **Recommendation 1a: Begin acculturation early through USSF-specific development for cadets.** All USSF cadets should be exposed to a variety of USSF activities throughout their time in college, beginning with an introductory shared USSF immersion experience during the summer prior to their entering ROTC or the U.S. Air Force Academy.
- **Recommendation 1b: Provide an introductory Space course to give all new USSF officers an early shared experience and knowledge base.** All newly commissioned USSF officers should complete an introductory Space course together prior to other initial skill training.
- **Recommendation 2a: Update skill requirements for each USSF billet.** Identify the manpower requirements for each billet in the USSF that identify which areas of expertise (which warfighting mission areas and which occupational competen-

cies) are required to fill the position. For senior leader positions, a rank-ordered list of preferred occupational competencies and warfighting mission area combinations should be identified for each position to provide greater assignment flexibility.

- **Recommendation 2b: Identify every officer with both a warfighting mission area (primary) and an occupational competency (secondary).** The choice of initial skill and mission qualification training for each newly commissioned officer should be tied to a specific major warfighting mission area and occupational competency. Which mission area and occupational competency combinations are made available to a new officer should be decided based on the needs of the USSF.
- **Recommendation 3a: Broaden officers through training in an additional warfighting mission area or occupational competency.** Each officer who decides to continue in the USSF beyond their initial service commitment should be encouraged or required to make a choice of training in either an additional occupational competency or warfighting mission area, subject to the needs of the USSF.
- **Recommendation 3b: Identify which skill combinations are the most ideal for the USSF to support.** Identifying the ideal skill combinations requires that the USSF first identify a comprehensive set of important considerations that should factor into selection of the ideal skill combinations.³³ SMEs, functional managers, senior leaders, and stakeholders all have a viewpoints and insights that should be considered and weighted in the decision.

- **Recommendation 4: Provide greater flexibility in career paths.** This recommendation focuses on the characteristics of a talent management system for the USSF that provide greater flexibility in career paths by ensuring visibility and transparency in the assignment process to USSF officers.³⁴ Specifically, the USSF talent management system should, at a minimum, provide officers with access to a list of position openings that identify the required and desired training and experience of the person the position owner is seeking to hire; allow individuals to easily apply for open positions; include the preferences of both the individual applicant officers and the hiring authority in matching individuals to assignments in a transparent fashion; and meet the needs of the USSF.

At the outset of this Perspective, we outlined the eight priorities and goals that bounded our effort. Those are listed in the header rows of Table 1, which summarizes how our recommendations are linked to and support these goals, both directly and indirectly. Black X's show the recommendations intended to directly address a given goal or priority. Gray X's show the recommendations that, in our view, help address a goal indirectly. As shown in the table, the priority of broadening (developing a workforce with depth in a second warfighting mission area or occupational competency) is key to addressing the goals USSF leaders articulated. We offer these recommendations as a promising way forward.

TABLE 1

Mapping of the Links Between Recommendations and Goals

Recommendation	Goal							
	1	2	3	4	5	6	7	8
	Attract, develop, and retain the talent needed to sustain a strong USSF and grow the service over time	Develop strong technical expertise and leadership skills in personnel at all levels	Develop guardians well-suited to become USSF senior leaders	Establish careers organic to the USSF, enabling members to serve their entire careers there	Provide viable, attractive career paths to encourage lasting commitment to the USSF	Foster a distinct positive organizational culture that supports both excellence and inclusion	Avoid silos that divide the force and lead to internal divisions, stovepiping, and “tribes.” Establish paths out of stovepipes and incentives to take them	Develop guardians deliberately, yet capitalize on individuals’ desires to shape their own careers
Acculturation								
1a. Begin acculturation early through USSF-specific development for cadets				X		X	X	
1b. Provide an introductory Space course to give all new USSF officers an early shared experience and knowledge base				X		X	X	
Initial specialization in a warfighting mission area and occupational competency								
2a. Update skill requirements for each USSF billet		X		X	X			
2b. Identify every officer with both a warfighting mission area (primary) and an occupational competency (secondary)		X		X	X	X		
Broadening to a second warfighting mission area or occupational competency								
3a. Broaden officers through additional training in an additional warfighting mission area or occupational competency	X	X	X	X	X	X	X	X
3b. Identify skill combinations that are the most ideal for the USSF to support	X	X	X	X	X	X	X	X
Talent management								
4. Provide greater flexibility in career paths	X	X	X	X	X	X		

NOTE: A black “X” indicates that the recommendation directly supports the goal; a gray “X” indicates that the recommendation indirectly supports the goal.

Notes

¹ A *framework* is generally understood to refer to a basic structure for a system. However, there is no established definition of what is meant by a *workforce framework*. It is not a commonly used term of art. Instead, we use this term here to describe the way different groups in a workforce (different types of people) are defined and how the organization manages and develops people in those groups across their careers to help support the organization's goals. This is consistent with how the National Initiative for Cybersecurity Education (NICE) cybersecurity workforce framework, developed by the National Institute of Standards and Technology (NIST), is defined and described in Petersen et al. (2020). According to that document (p. vi):

The NICE Framework has been developed to help provide a reference taxonomy—that is, a common language—of the cybersecurity work and of the individuals who carry out that work. . . . The NICE Framework provides a set of building blocks for describing the tasks, knowledge, and skills that are needed to perform cybersecurity work performed by individuals and teams. Through these building blocks, the NICE Framework enables organizations to develop their workforces to perform cybersecurity work, and it helps learners to explore cybersecurity work and to engage in appropriate learning activities to develop their knowledge and skills. This development, in turn, benefits employers and employees through the identification of career pathways that document how to prepare for cybersecurity work using the data of Task, Knowledge, and Skill (TKS) statements bundled into Work Roles and Competencies. The use of common terms and language helps to organize and communicate the work to be done and the attributes of those that are qualified to perform that work. In this way, the NICE Framework helps to simplify communications and provide focus on the tasks at hand. Finally, use of the NICE Framework improves clarity and consistency at all organizational levels—from an individual to a technology system to a program, organization, sector, state, or nation.

² The Space Force workforce consists of officers and enlisted personnel, civilians, and contractors. Our study effort focused only on the officer force, but our recommended framework may also have application and value for the enlisted workforce. Restructuring the framework of civilians and contractors was not included as part of this effort.

³ Over the course of our project, we consulted with our sponsor and our project points of contact and interviewed several other leaders and SMEs to gather their views on what they believe a workforce framework should ideally achieve for the USSF, as well as what they saw as downfalls of the existing framework based on DAF career fields (see next section for more on the existing DAF framework). We also asked our

sponsor for guidance on what should bound our clean-sheet approach to a workforce framework on this project. This list of goals reflects their guidance to us. It also reflects our independent thinking on what to include in the framework, which overlaps with what was identified by USSF leaders.

⁴ According to Laslie (2018):

Air Force officers are divided into dozens of different specialty career fields, commonly referred to as stove pipes. It is more important to look at the Air Force's stove-piped officer development than at the organization as a whole to understand Air Force professionalism. It is impossible to study the Air Force as a monolithic entity. While the Air Force has long struggled to break down these stove pipes, these stove-piped career fields, each with its own identity and culture, provided the correct avenues for solving problems within the service.

⁵ “Our efforts must minimize barriers that stovepipe civilian, officer, and enlisted members to enable a more holistic development and talent management approach with reduced administrative burden” (U.S. Space Force, 2021, p. 6).

⁶ This Perspective focuses on the USSF officer corps. There are parallel enlisted occupations for operators, intelligence, and cyber in the USAF that have been carried over into the USSF. However, there are no enlisted personnel in occupations parallel to engineering or acquisition.

⁷ When the USSF was established, USAF units responsible for space operations were transferred into the USSF. All 13S billets transferred to the USSF. However, fewer than 120 out of more than 3,500 14N billets in the USAF were transferred, and fewer than 140 17D billets out of more than 3,000 in the USAF were transferred.

⁸ For example, the 14Ns (Intelligence Officers) are heavily tasked in a range of air operations within ACC. Their training and work therefore focused on many different mission sets in the Air Force, space being only one of them.

⁹ Because not all engineers are acquisition officers and not all acquisition officers are engineers, we depict them as two separate disciplines in Figure 3.

¹⁰ Other types of operators in the USAF are similarly aligned with an operational domain (e.g., missileers are aligned with AFGSC, space operators were aligned with AFSPC when they were under the USAF, etc.).

¹¹ We note that within USMC, there is disagreement over the value of the “every Marine a rifleman” approach. For example, see Grove (2019).

¹² We discuss this and other reasons that developing all personnel as space operators first may not be ideal in a later section.

¹³ USSF military personnel will continue to be assigned to joint and combined organizations and agencies, such as the National Reconnaissance Office, which are not part of the Space Force itself. It is important that those organizations and agencies continue to be able to understand the competencies that USSF personnel provide. One purpose of identifying USSF personnel with recognizable occupational competency labels in addition to warfighting mission areas is to provide this linkage. It also allows these outside organizations and agencies to continue to communicate changes in their personnel requirements to the USSF in familiar ways. That is, the proposed framework does not break well-worn paths of people or communications between organizations.

¹⁴ Many of the same statements and arguments in support of the framework we are proposing could be made if we had been asked the same question by any other of the U.S. military services. That is, this new framework could be beneficial for the other services as well, in many of the same ways as it would be for the USSF. This is true for much of the reasoning we offer in the remainder of this section, except possibly for the complexity wrought by the size of the other services’ forces and the number of different career fields they include. With respect to the Space Force, as we noted at the outset of this Perspective, some key features that distinguish it from the other services are that (1) it is extremely small in numbers relative to any of the other military services, (2) it is unique in being a service that for the near future has only five occupational specialties, each highly technical in nature, and (3) it has only a small number of fixed base locations. These distinguishing characteristics position the Space Force to be able to manage its personnel more easily and at a greater level of detail than any of the other services.

¹⁵ Our proposed framework assumes that the warfighting mission areas and occupational areas that are included in the 2020 capstone publication will not change substantially within the next several years. There are many other assumptions that underlie our recommendations for the ideal framework and that likely have a bearing on whether the recommended framework would ultimately be successful or useful to the USSF. For example, the framework assumes a responsive talent management system that properly recognizes and incentivizes individual behaviors for the needs of the USSF. Similarly, it assumes that this system is sufficiently transparent and consistent in functioning so that individuals trust that its past practices will treat them the same in the

future. It also assumes that the USSF will value education in terms of its promotion decisions and make relevant assignments so that individuals apply knowledge gained while out of the operational forces. These are just a few examples of the assumptions that would need to be met for the framework to be successful and effective; there are many others.

¹⁶ We use the terms *warfighting mission areas* and *occupational competencies* as general terms for the purposes of explaining the concepts in this Perspective. They are intended as placeholders for terms to be selected later in consultation with Space Force leaders.

¹⁷ The silos that are widely thought to exist in the USAF may differ from those that could arise in the USSF, because the services differ in the ways in which operators and officers in other disciplines interact. In the USAF, pilots are a small proportion of the total Air Force population, and they are sequestered in flying squadrons and down at the flightline. Many career fields (e.g., personnel, cyber, most intelligence outside of air intelligence) rarely interact with those rated personnel in their job duties. But in the USSF, the dynamics may be completely different. Space operators and engineers will vastly outnumber space acquisitions, intelligence, and cyber personnel. As a result, intelligence and cyber officers could become much more closely integrated with operations and possibly even be surrounded by them. Nevertheless, it is still possible that cyber and intelligence officers especially, constituting much smaller numbers in the USSF, might still feel as though they are part of different tribes than the operators.

¹⁸ We show all possible combinations but do not assert that all possible combinations will be needed in the USSF. As we note in other parts of this document, it is for the USSF to determine the skill combinations it requires.

¹⁹ We realize that encouraging or requiring individuals to pick up a second warfighting mission area or occupational competency would require an increase in manning, as well as careful talent management to keep operational positions filled and rank structures relatively constant.

²⁰ The USAF illustration we offer is for an intelligence officer, but the path shown is common for most USAF AFSCs. The illustration shows how the USAF officer tends to stay within the same AFSC and hold assignments tied to that AFSC over their entire career. In this way, it is more stovepiped than the path we are proposing for USSF personnel. That said, it is also worth noting that, in practice, many USAF officers diverge from the path we show in the figure, and this does help reduce the stovepiped nature of the USAF career fields. What we propose for

the USSF is that that divergence be an established as an intentional planned path and a path intended for everyone (or at least for many).

²¹ Whether it would function as a full specialization in the second area of concentration would depend on the depth of the technical training and the length of the subsequent assignments.

²² Breaking the stovepipes in this way not only helps eliminate the potential for tribalism, it also provides each member of the workforce with a broader picture of the enterprise, making them potentially better decisionmakers as they rise through the ranks than if they had limited insights into other parts of the organization. Additionally, by developing them deeply in a second warfighting mission area or occupational competency instead of seeking to give them only a shallow experience in all warfighting mission areas or occupational competencies, each USSF officer will become a highly experienced expert in each of their selected warfighting mission areas or occupational competencies.

²³ Functional authorities and SMEs should weigh in on what is ideally needed to develop and maintain depth in each occupational competency and warfighting domain. Some skill areas may require greater emphasis on holding multiple assignments in the domain, whereas others may demand extensive additional classroom training, for example.

²⁴ We also know from our experience in research on USAF general officers (Robbert et al., 2005) and the literature on senior organizational leaders that flexibility is desirable in choosing someone for a senior leader position, and often some breadth of training and experience outside of a stovepiped career is especially valuable. However, any breadth of experience may be of only limited value unless someone also has an opportunity to gain depth and technical expertise in another area. In other words, there is a natural tension between the objective to generate highly specialized and educated technicians and the objective to provide career-broadening experiential assignments to achieve greater personnel substitutability and to support development of a bench of future leaders. As Gabarro (1985) noted, “The all-purpose general manager who can parachute into any situation and succeed is a myth. Experience and special competencies do matter” (p. 116). This fundamental struggle between breadth (generalist) and depth (specialist) is not new, and there is no single answer to how to balance the two. The framework we have proposed (i.e., one or two occupational competencies and one or two warfighting mission areas) does have this balancing act in mind. One intent of the framework is to provide the USSF with a bench of potential leaders, each with depth of technical expertise and career experience in more than one area.

²⁵ We have not discussed in detail but recognize that one basis on which a system such as this must be built is a clear understanding of requirements. However, it is perhaps more important for the USSF to understand its specific manpower requirements for company-grade positions, squadron and delta command positions, and senior leader positions, than for mid-grade staff positions. This is because the requirements for company-grade positions set the demand function for recruiting, commissioning, and training officers, and the requirements for commander and senior leader positions set the target for preparing junior officers for command and developing them into senior leaders.

²⁶ Force employment decisions will affect and should therefore be closely tied to decisions about any new framework. As discussed in note 15, there are many considerations that might lead to the view that one framework or one skill combination is superior to another.

²⁷ We recognize that the development of these activities is underway, but for completeness we emphasize the importance of these activities to developing USSF professionals.

²⁸ The culture is in part driven by the organization’s values, vision, and mission; the norms and shared experiences of its members; messages sent by its leadership; etc. It is also codified in formal policies and developed through training and indoctrination that occurs over the course of one’s time in the organization.

²⁹ For Air Force ROTC cadets, this is referred to as “field training.” Summer training for Navy ROTC midshipmen and Marine Option midshipmen is generically referred to as “Summer Cruise.” For example, in the summer before freshman year, incoming Navy ROTC midshipmen are required to attend the Navy ROTC indoctrination program. See U.S. Navy (undated), accessed May 2, 2022. The U.S. Naval Academy has a program for entering midshipmen called “Plebe Summer” (U.S. Naval Academy, undated).

³⁰ The framework we propose addresses only the development and use of USSF officers. We recognize that there are three additional elements of the USSF workforce: USSF enlisted personnel, USAF personnel working in USSF organizations, and civilians working in USSF organizations. At the time this report was prepared, enlisted USSF personnel were developed and work only in operations, cyber, and intelligence. Our framework for USSF officers could be extended to USSF enlisted personnel. The opportunity for cross-assignments between the USAF and the USSF will likely continue to exist for cyber, intelligence, and acquisition officers and for cyber and intelligence enlisted personnel. In addition, the USSF could provide development and assignment opportunities to

its civilian workforce within much the same framework we propose for USSF officers.

³¹ Socialization could begin before the USSF has identified what combinations are truly feasible, which have the most potential to be successful, and which to execute first, etc. (i.e., Phase 2), in order to help inform USSF Phase 2 decisions (i.e., members of the workforce may have strong preferences that might be important to factor into the USSF's decisions). However, decisions about what cross-skilling pairings to prioritize in Phase 2 efforts would be an important part of the Phase 1 planning process, and decisions (at least preliminary decisions) about what cross-skill pairings to prioritize should be made before cross-skilling or broadening is implemented in Phase 2. As noted elsewhere in this report, there are a range of important considerations that should factor into what pairings and three-skill combinations are ultimately prioritized. Those considerations should be laid out clearly in advance and explored during Phase 1. SMEs and functional managers should be consulted, and their views and insights into on each of those considerations should be gathered during Phase 1 and weighed in the final prioritizations.

³² Another example of efforts that should be included in executing a workforce change of this magnitude would be adding steps in the process to test the robustness and outcomes associated with the change. This includes identifying what success looks like and how it should be measured. Assessment should be a built-in dimension for proper evalu-

ation. This should also include criteria for what data to collect and how the data should be analyzed to inform leaders' decisions.

³³ A starting list includes how much additional retraining is needed, whether the requisite educational backgrounds tend to align (e.g., if an engineering degree is mandatory), whether the combination sets future leaders up with a good breadth across the enterprise, whether the combination can help with sustaining and retaining personnel in the small career fields and retraining interests of the workforce, and what pairings are most ideal for developing breadth of technical expertise among senior leaders. This list is not comprehensive. There may be other additional considerations to include.

³⁴ The USSF published its talent management strategy as *The Guardian Ideal* (USSF, 2021). See Maucione (2021) for an external perspective on this aspirational talent management strategy. In working out the details of USSF talent management, it may be useful to track related efforts being undertaken by their sister services. For information about an Army talent management initiative, see U.S. Army Human Capital Enterprise (2016). The Navy also has a website referencing several talent management-related programs; see Navy Personnel Command (undated).

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About This Perspective

The U.S. Space Force (USSF) came into existence on December 20, 2019, as a small and highly technical U.S. military service. USSF leaders asked RAND to begin with a “clean sheet of paper” and develop ways to structure the USSF officer workforce that are not tied to the traditional Air Force structure of stovepiped career fields.

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