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# Progress Report: United States Space Force

Raghav Dua

Edited by: Aryan Gupta

The United States Space Force (USSF) is the only independent space force in the world today. This paper aims to provide a brief introduction to the USSF. It begins with a quick look at the history of the US space agenda, which is followed by an overview of its structure, Raison d'être, Organisation, Capabilities, and Doctrine. Lastly, we look at its recently announced *Vision for a digital service*.

## A SHORT HISTORY OF US SPACE AGENDA

The Origins of United States' space power lie in the Cold war. The intense competition between US and Soviet Union to establish superiority pervaded all spheres of activity. Space was no different. The Soviets successfully launched the first earth-orbiting satellite, *Sputnik 1* on October 4, 1957, triggering a "Space Race" between the two countries. The launch caused "uproar in the United States with the public fearing that the Soviet Union might be able to place nuclear weapons in space, rendering America vulnerable to an attack."<sup>1</sup> Although this fear was unfounded, it managed to bring space at the forefront of public attention; catching the US military unprepared for the space age.<sup>2</sup> The military lacked a space doctrine, and rather than concentrating its efforts into a presenting a united front, each service chose to separately investigate the military uses of space.<sup>3</sup>

The military was largely unsuccessful in strengthening their presence in space during the early years, so, US took the civil route. In 1958, US congress passed the 'National Aeronautics and Space Act' which created the National Aeronautics and Space Administration (NASA). The Space Act gave NASA the control of all aeronautics and space related activities except for weapons development, defence, and military operations, which remained under the purview of the DOD. Meanwhile in the military sphere, the United States Air Force (USAF) claimed space missions as an inherent part of airpower. In 1961, it was "named the executive agent for space research and development, but at that point, the Army and Navy already had well-established programs."<sup>4</sup> President Eisenhower championed the policy of 'Peaceful Uses of Outer Space' with a focus on preserving space for commercial and exploration purposes. The origins of today's governmental

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<sup>1</sup> David Jordan. "Air and Space Power," in *Understanding Modern Warfare* (Cambridge: Cambridge University Press, 2016), 268.

<sup>2</sup> Dustin L. Grant and Matthew J. Neil, *THE CASE FOR SPACE: A Legislative Framework for an Independent United States Space Force*. (Montgomery: Air University Press, 2020).

[https://media.defense.gov/2020/Feb/12/2002248561/-1/1/0/WF\\_73\\_GRANT\\_NEIL\\_THE\\_CASE\\_FOR\\_SPACE\\_A\\_LEGISLATIVE\\_FRAMEWORK\\_FOR\\_AN\\_INDEPENDENT\\_UNITED\\_STATES\\_SPACE\\_FORCE.PDF](https://media.defense.gov/2020/Feb/12/2002248561/-1/1/0/WF_73_GRANT_NEIL_THE_CASE_FOR_SPACE_A_LEGISLATIVE_FRAMEWORK_FOR_AN_INDEPENDENT_UNITED_STATES_SPACE_FORCE.PDF)

<sup>3</sup> Ibid.

<sup>4</sup> John Venable, "US Space Force" in *2021 Index of US Military Strength* (Washington DC: Heritage Foundation, 2021). [https://www.heritage.org/sites/default/files/2020-11/2021\\_IndexOfUSMilitaryStrength\\_ASSESSMENT\\_POWER\\_SPACE-FORCE.pdf](https://www.heritage.org/sites/default/files/2020-11/2021_IndexOfUSMilitaryStrength_ASSESSMENT_POWER_SPACE-FORCE.pdf)

space structure can be found in his administration. His policy of ‘Peaceful uses of Outer Space’ coupled with the splintering of space command and control within the DOD, which was sustained by almost every administration for the next five decades, prevented space from being recognised as a separate war fighting domain.<sup>5</sup>

The US Space Program gained traction in the 1960s. The successful moon landing of Apollo 11 in 1969 established US superiority in spaceflight. Before 1972 was over, NASA had successfully carried out six manned missions to the surface of the moon and began framing the Space Shuttle Program. The civil space program had already established considerable lead by 1991 and the military program, although still splintered, “had launched more than 300 reconnaissance and 68 navigation satellites, including the Navy’s Transit Navigation System and the Global Positioning System.”<sup>6</sup> This superiority was on open display in Operation Desert Storm carried out in Iraq. Countries like Russia and China took note of the growing dependence of US on space and started to place themselves against it. The Rumsfeld Commission was established in 1999 to assess the US National Security Space Program. It reported in 2001, that “America’s growing dependence on space-based systems, coupled with the vulnerability of its assets in that domain, warranted reorganization.”<sup>7</sup> The commission recommended the establishment of a US Space Corps under the DAF. But these plans were delayed due to the 9/11 attacks. Even during 2010s, the splintering of the space command and control persisted. By the mid-2010s, about 60 DOD offices possessed control in defence related-space activities. Meanwhile, Russia and China developed their own space organisations doctrines, capabilities and invested heavily in the ground-based anti-satellite (ASAT) missiles and orbital ASAT programs. It was only in 2017 that US took the first necessary steps to reorganise space as a war fighting domain.<sup>8</sup>

The DOD, as mandated by the 2017 National Defence Authorisation Act (NDAA), conducted a review of the command and control of space assets within the organisation and presented a report in August 2018, which recommended a two-phase approach. The first phase consisted of three actions: (a) establishing the Space Development Agency (SDA); (b) identifying space personnel in DOD; and (c) creating a new space combatant command. Completion of these steps was vital for the second phase which consisted of congress enacting the legislation for instituting the new space service.<sup>9</sup>

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<sup>5</sup> Ibid.

<sup>6</sup> John Venable, *Rebuilding America’s Military: The United States Space Force*. (Washington DC: Heritage Foundation, 2021). 12. <https://www.heritage.org/sites/default/files/2021-04/SR245.pdf>

<sup>7</sup> Ibid, 13.

<sup>8</sup> Ibid, 14.

<sup>9</sup> Ibid.

## QUICK DESCRIPTIONS

### Space Development Agency (SDA)

Established in 2019 “to create and sustain lethal, resilient, threat-driven, and affordable military space capabilities that provide persistent, resilient, global, low-latency surveillance to deter or defeat adversaries.”<sup>10</sup> Earlier, the process of designing, acquiring, and fielding systems for the space program was highly insufficient and had significant overlaps. 6 organisations dealt with requirements, 8 with acquisition, with none in-charge of the process.<sup>11</sup> The SDA is expected to transition to the USSF by October 2022.<sup>12</sup> Currently, it is an independent agency under the Office of the Under Secretary of Defence for Research and Engineering.<sup>13</sup>

### US Space Command (USSPACECOM)

Established in 2019 as a Unified Combatant Command, it is the “war fighting component that actively employs forces from the U.S. Army, Navy, Marine Corps, Air Force and Space Force to accomplish the mission in space.”<sup>14</sup> Its geographical Area of Responsibility (AOR) includes “surrounding the earth at an altitude greater than 62 miles, or 100 kilometres, above average sea-level”<sup>6</sup>. Previously it was established in 1985 as a functional combatant command to coordinate the use of army, navy and air force space forces and the strategic defence initiative. It was disbanded in 2002, and its responsibilities were handed over to the US Strategic Command (STRATCOM).<sup>15</sup>

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## Introduction

The NDAA for the Fiscal Year (FY) of 2020 was signed into law by President Trump on December 20, 2019. It established the USSF as a distinct branch of military service within the Department of

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<sup>10</sup> Ibid.

<sup>11</sup> Ibid.

<sup>12</sup> “FAQ,” Space Development Agency, accessed March 29, 2022. <https://www.sda.mil/home/about-us/faq/>

<sup>13</sup> Ibid

<sup>14</sup> “FAQ,” U.S. Space Command, accessed March 29, 2022. <https://www.spacecom.mil/About/Frequently-Asked-Questions/>

<sup>15</sup> “United States Space Command,” Global Security, accessed March 29, 2022. <https://www.globalsecurity.org/space/agency/usspacecom.htm>

Air Force (DAF) under the Department of Defence (DOD). The USSF is a co-equal service to the United States Air Force (USAF). It is led by a four-star general serving as the Chief of Space Operations (CSO), who acts as “the principal uniformed advisor to the Secretary of Air Force on Space Force activities” and is also a full-fledged member of the Joint Chiefs of Staff (JCoS). General John W. Raymond is both the inaugural and current holder of this post.<sup>16</sup>

The USSF is tasked with protecting US and allied interests in space. It is responsible for: (a) organising, training and equipping space guardians (personnel) to conduct global space operations; (b) acquiring military space systems; (c) maturing the space power doctrine, and (d) organising space forces to present to the Combatant Commands.<sup>17</sup>

## Raison d’être

Space systems affect our daily lives and are vital for the economy. Satellites enable the internet, financial transactions, the GPS, web communications and much more. The United States relies on space assets more than any other country.<sup>18</sup> Space is extremely vital for US security and prosperity. Not only the economic systems but also its defence systems are dependent on Space. Any adversary aiming for tactical advantage is likely to attack satellites to disable US access to intelligence. During Operation Iraqi Freedom, Iraqis used GPS jammers purchased from Russia to do the same. Although, this attempt was unsuccessful, it was clear that adversaries of the US would attempt to mitigate its space capabilities.<sup>19</sup>

Countries like Russia and China, considered adversaries by the United States, have developed significant space capabilities in recent times. China especially, has made considerable headway in Space. In 2016, China released a space white paper which stated its intention of becoming a “space power in all respects”. China like the United States considers space as a separate war fighting domain. Earlier in 2015, it also called space the “new commanding heights of strategic competition.” The importance of the space domain for China was again highlighted in the 2019 defence white paper. It has also made considerable changes in its structure and policy towards space.<sup>20</sup> The PLA Strategic Support force was established in 2015 with the responsibility of “Centralising and conducting PLA space operations and integrating them with cyber and electronic

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<sup>16</sup> Congressional Research Service, *Defense Primer: The United States Space Force*. January 11, 2022.

<https://apps.dtic.mil/sti/pdfs/AD1111640.pdf>

<sup>17</sup> John Venable, “US Space Force” in *2021 Index of US Military Strength* (Washington DC: Heritage Foundation, 2021). [https://www.heritage.org/sites/default/files/2020-11/2021\\_IndexOfUSMilitaryStrength\\_ASSESSMENT\\_POWER\\_SPACE-FORCE.pdf](https://www.heritage.org/sites/default/files/2020-11/2021_IndexOfUSMilitaryStrength_ASSESSMENT_POWER_SPACE-FORCE.pdf)

<sup>18</sup> “About us,” Space Operations Command, accessed 29 March 2022. <https://www.spoc.spaceforce.mil/About-Us/About-Space-Operations-Command>

<sup>19</sup> Ibid.

<sup>20</sup> Langeland, Krista and Derek Grossman, *Tailoring Deterrence for China in Space*. (Santa Monica, CA: RAND Corporation, 2021). [https://www.rand.org/pubs/research\\_reports/RRA943-1.html](https://www.rand.org/pubs/research_reports/RRA943-1.html)

warfare capabilities.”<sup>21</sup> China has in the past, developed not only ASAT capabilities but also other kinetic and non-kinetic counterspace technologies like directed-energy weapons, satellite jammers among others, and it continues to do so much like the United States. It possesses counterspace weapons capable of targeting all classes of US Space assets<sup>22</sup>. As mentioned before, US relies heavily upon its space assets. It perceives China’s advancement in space as a threat to its hegemony and seeks to deter it. The USSF protects the United States against any threats in the space domain like the army, navy, and air force in their respective domains.

## Organisation

After President Trump signed the NDAA FY2020 into law establishing the USSF within DAF; the Secretary of Air Force re-designated Air Force Space Command (AFSPC) as USSF with all its personnel re-assigned as well. In addition to this, the 14<sup>th</sup> Air Force was re-designated as the Space Operations Command. This was only the first step towards creating a light, lean, and agile service.<sup>23</sup> One of the major objectives of USSF has been to cut traditional layers of bureaucracy. In this pursuit, it will leverage DAF for more than 75 percent of its functions. USSF has a four-tier organizational structure: USSF Headquarters at Pentagon, Field Commands, Deltas and Garrisons, and Squadrons.<sup>24</sup> The field commands, three in number, are as follows:

**(a) Space operations Command (SpOC):** Established on October 20, 2020, as the first major field command under USSF. It is tasked with the responsibility of “organizing, training, and equipping space forces assigned to combatant commands.”<sup>25</sup> On October 21, 2021, the SpOC at Vandenberg Air Force Base (which previously served as the Headquarters for the 14<sup>th</sup> Air Force) was re-designated as SpOC West. It serves as the headquarters for USSPACECOM’s Combined Force Space Component Command (CFSCC) instituted to “plan, integrate, conduct and assess global space operations in order to deliver combat relevant space capabilities to Combatant Commanders, Coalition partners, the Joint Force, and the Nation.”<sup>26</sup>

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<sup>21</sup> Ibid.

<sup>22</sup> Ibid.

<sup>23</sup> “About us,” Space Operations Command, accessed 29 March 2022. <https://www.spoc.spaceforce.mil/About-Us/About-Space-Operations-Command>

<sup>24</sup> “About Us,” Space Training and Readiness Command, accessed 29 March 2022.

<https://www.starcom.spaceforce.mil/About-Us/Who-We-Are/>

<sup>25</sup> John Venable, *Rebuilding America’s Military: The United States Space Force*. (Washington DC: Heritage Foundation, 2021). <https://www.heritage.org/sites/default/files/2021-04/SR245.pdf>

<sup>26</sup> Space Operations Command, Ibid.

**(b) Space Systems Command:** Established on August 13, 2021 with the responsibility of “developing, acquiring, fielding and sustaining space capabilities.”<sup>27</sup> Previously, the Space and Missile Systems Centre served as DOD’s primary agency for Space Procurement.

**(c) Space Training and Readiness Command:** Established August 23, 2021, to “develop, educate and train space professionals; develop space war fighting doctrine, tactics, techniques and procedures; evaluate USSF capabilities.”<sup>28</sup>

These commands further lead to creation of Deltas and Garrisons, both of which are equivalent to Air Force groups. Deltas are responsible for specific missions whereas Garrisons support deltas with Air Force ‘base-level command-like functions. Squadrons fall under deltas and garrisons.<sup>29</sup>

## Capabilities

Assessing USSF’s capacity and capabilities is a challenging task, owing to the classified nature of deployed assets in space. In 2018, the Secretary of Air Force announced that Air Force operates 77 satellites vital to its national security. These reside within the USSF now.<sup>30</sup> As of May 20, 2021 there are 90<sup>31</sup> satellites in its portfolio. The satellites provide “essential in-theatre secure communications, weather and navigational data for ground, air and fleet operations and threat warning.”<sup>32</sup> It also has ground and space-based systems to monitor the launch of ballistic missiles around the world, and a “global network of space surveillance sensors” to provide information on the location of satellites and space debris. In addition to this, “Spacelift operations at east and west coast launch bases provide services, facilities and a range safety control for the conduct of DOD, NASA and commercial Space launches.”<sup>33</sup>

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<sup>27</sup> “Space Force unveils plans for Space Systems Command,” C4ISR, accessed 30 March 2022.

<https://www.c4isrnet.com/battlefield-tech/space/2021/04/08/space-force-unveils-plans-for-space-systems-command/>

<sup>28</sup> “About Us,” Space Training and Readiness Command, accessed 29 March 2022.

<https://www.starcom.spaceforce.mil/About-Us/Who-We-Are/>

<sup>29</sup> John Venable, *Rebuilding America’s Military: The United States Space Force*. (Washington DC: Heritage Foundation, 2021). 16. <https://www.heritage.org/sites/default/files/2021-04/SR245.pdf>

<sup>30</sup> John Venable, “US Space Force” in *2021 Index of US Military Strength* (Washington DC: Heritage Foundation, 2021). [https://www.heritage.org/sites/default/files/2020-](https://www.heritage.org/sites/default/files/2020-11/2021_IndexOfUSMilitaryStrength_ASSESSMENT_POWER_SPACE-FORCE.pdf)

[11/2021\\_IndexOfUSMilitaryStrength\\_ASSESSMENT\\_POWER\\_SPACE-FORCE.pdf](https://www.heritage.org/sites/default/files/2020-11/2021_IndexOfUSMilitaryStrength_ASSESSMENT_POWER_SPACE-FORCE.pdf)

<sup>31</sup> John Venable, “US Space Force” in *2022 Index of US Military Strength* (Washington DC: Heritage Foundation, 2022). [https://www.heritage.org/sites/default/files/2020-](https://www.heritage.org/sites/default/files/2020-11/2021_IndexOfUSMilitaryStrength_ASSESSMENT_POWER_SPACE-FORCE.pdf)

[11/2021\\_IndexOfUSMilitaryStrength\\_ASSESSMENT\\_POWER\\_SPACE-FORCE.pdf](https://www.heritage.org/sites/default/files/2020-11/2021_IndexOfUSMilitaryStrength_ASSESSMENT_POWER_SPACE-FORCE.pdf)

<sup>32</sup> “Space Capabilities,” United States Space Force, accessed 30 March 2022. <https://www.spaceforce.mil/About-Us/About-Space-Force/Space-Capabilities/>

<sup>33</sup> Ibid.

## Doctrine

The report titled *Rebuilding America's Military: The United States Space Force* published by *The Heritage Foundation* notes that the USSF Space doctrine is broken down at three levels: Space Capstone publication titled *Spacepower: Doctrine for Space Forces* at the top level (presents USSF's conception of Space power); Operational doctrine at the intermediate level; and tactical at the final level. USSF published its inaugural space doctrine in June 2020. It defines national spacepower as “the totality of a nation’s use of space capabilities in pursuit of national prosperity and security.”<sup>34</sup> It further elaborates that “National Spacepower is comparatively assessed as the relative strength of a state’s ability to leverage the space domain for diplomatic, informational, military and economic purposes.”<sup>35</sup> Articulating Spacepower as a distinct form of military power is crucial to address the growing importance of the space domain. Earlier, spacepower was considered an adjunct of Airpower.

The operational and tactical level doctrines concerned with the deployment and employment of military space forces have not been published yet. USSF will leverage the strategic foundation of the capstone publication to support their development.<sup>36</sup>

## Vision for a digital service

In 2020, General Raymond presented the CSO Planning Guidance (CPG) to USSF articulating his top five priorities for the next decade. “Creating a digital service to accelerate innovation” was one of those priorities.<sup>37</sup> Following which in May 2021, the USSF presented its *Vision for a Digital Service*. The document begins by highlighting USSF’s cognizance of increasing threats to US national security and its assets and activities in the space domain; and the small size of the USSF. It describes what it means to be a digital service and identifies four focus areas to translate its vision into reality. The USSF is the only service to be born in the information age and therefore has the unique opportunity to be “born digital” and lead the way for other services in the turn towards a modern tech-based world. The aim is to create a small but lethally efficient and specialised service with a digitally fluent space cadre. Many have criticised the lean nature of USSF, but its leadership considers it an inherent advantage. The document also recognises the

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<sup>34</sup> United States Space Force, *Spacepower: Doctrine for Space Forces*. June 2020. 12. [https://www.spaceforce.mil/Portals/1/Space%20Capstone%20Publication\\_10%20Aug%202020.pdf](https://www.spaceforce.mil/Portals/1/Space%20Capstone%20Publication_10%20Aug%202020.pdf)

<sup>35</sup> Ibid.

<sup>36</sup> John Venable, *Rebuilding America's Military: The United States Space Force*. (Washington DC: Heritage Foundation, 2021). 34.. <https://www.heritage.org/sites/default/files/2021-04/SR245.pdf>

<sup>37</sup> Zhanna Malekos Smith. *Is the Space Force's New Operations Planning Guide Aiming for the Right Priorities?* (Centre for Strategic & International Studies, 2020). <https://www.csis.org/analysis/space-forces-new-operations-planning-guide-aiming-right-priorities>



need for robust industry and governmental partnerships in order to modernise the digital infrastructure.<sup>38</sup>

Digital Service is defined, in the vision document, as “an interconnected, innovative and digitally dominant force.” This essentially means: (a) creating a robust digital infrastructure that is ‘data-centric’ and enables unrestrained exchange of information and ideas amongst stakeholders. This also entails the creation of a site-agnostic mobile force with digitally nomad guardians who are able to support multiple missions virtually; (b) creating a service that continuously evolves, improves and champions innovation in a rapidly changing world; (c) creating a ‘digitally dominant force’ that “translates its technical prowess into potent force multiplying effects to develop, field and operate capabilities more quickly and efficiently than any other adversary” and makes data-driven decisions.<sup>39</sup> Further, the vision document identifies four focus areas, necessary for establishing a framework for implementing the proposals mentioned above: Digital Engineering, Digital Headquarters, Digital Workforce and Digital Operations.

- **Digital Engineering:** one of its key aims is to “manage the complexity of current weapon systems acquisition and accelerate and modernise the capability development cycle”. The USSF intends to maintain a resilient Digital Engineering Ecosystem (DEE) that enables its personnel to “rapidly mature innovative concepts into integrated solutions and deliver war fighting capability.”
- **Digital Headquarters:** key aim is to enable fast and smart data-driven decision-making while also eliminating unnecessary bureaucracy and focusing its personnel on value-added actions.
- **Digital Workforce:** key aim is to establish a digital fluent cadre, which essentially means that all USSF personnel are able to effectively engage with appropriate technological tools relevant in a digital global world.
- **Digital Operations:** key aim is to translate digital dominance to battle space superiority by exploiting the advantages provided by a digitally interconnected infrastructure and a digitally fluent workforce.<sup>40</sup>

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<sup>38</sup> United States Space Force, *Vision for a Digital Service*. May 2021.

[https://media.defense.gov/2021/May/06/2002635623/-1/-1/1/USSF%20VISION%20FOR%20A%20DIGITAL%20SERVICE%202021%20\(2\).PDF](https://media.defense.gov/2021/May/06/2002635623/-1/-1/1/USSF%20VISION%20FOR%20A%20DIGITAL%20SERVICE%202021%20(2).PDF)

<sup>39</sup> Ibid.

<sup>40</sup> Ibid.

## CONCLUSION

The US has made considerable headway in space in the last two decades despite many hurdles. The imminent rise of China is likely to pervade all spheres, significantly altering the strategic landscape. China's embrace of modern technology coupled with its knack for rapid growth will make for a much stronger and resilient adversary than the USSR. Its recent alignment with Russia poses another challenge. The second half of this decade, in all likelihood, is set to witness another intense space race or, at the very least, a competitive arms race. The US must embrace the dynamic nature of technology and work to fulfil its vision of a digital service, if it is to deter China in space. It must also strengthen its partnerships with allies and engage in tactful diplomacy to compensate for its declining status.

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*Raghav Dua is a postgraduate student at the Jindal School of International Affairs and is a Research Intern at the Centre for Security Studies, JSIA. All views expressed in this publication belong to the author and do not reflect the opinions of the Centre for Security Studies.*

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