



Space Policy Review

Orbiting Partnerships: A Constellation's Second Life in Space Defense

By: Peter Garretson, Natalie Sturza, and Ashton Walter

The Big Picture

- ◆ The U.S. Space Force's plan to deorbit Proliferated Warfighter Space Architecture (PWSA) satellites presents a strategic opportunity to advance defense partnerships.
- ◆ Instead of destroying decommissioned satellites, they could be repurposed for Foreign Military Sales, Excess Defense Articles, or Direct Commercial Sales to allies.
- ◆ This approach could strengthen international alliances, enhance global defense capabilities, and support the U.S. aerospace industry.
- ◆ Current barriers to space defense exports include high costs, restrictive International Traffic in Arms Regulations (ITAR), and overclassification of space technologies.
- ◆ The paper proposes policy changes and recommends actions for Congress, the Department of Defense, and the U.S. Space Force to facilitate these exports.
- ◆ Implementing this strategy could lead to improved interoperability with allies, expanded global missile defense, and economic benefits for the U.S. space industry.
- ◆ There is a limited window of opportunity to act before allies seek alternatives, potentially compromising U.S. leadership in space defense.

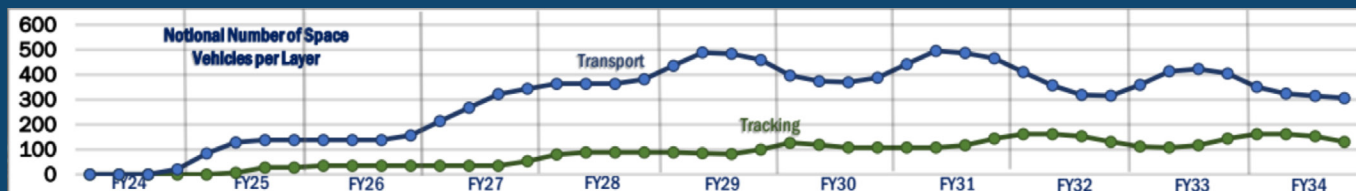
In an era of rapidly evolving space technologies and growing global threats, the United States will need to seek novel ways to remain a leader in space. After years of relying on large and expensive satellites, the military has moved toward a low-cost, distributed architecture to meet national security needs. *This paper explores an innovative strategy to leverage the U.S. Space Force's Proliferated Warfighter Space Architecture (PWSA) as a tool for enhancing international defense partnerships. Rather than give these satellites a fiery grave burning up in Earth's atmosphere, the military should consider repurposing decommissioned PWSA satellites for allied use.* These old satellites can be sold to allied foreign militaries, which would provide an opportunity to strengthen our global defense network and bolster the aerospace industry. This approach would be highly beneficial because it would open new avenues for diplomatic and strategic cooperation.

The Proliferated Warfighter Constellation

In the past, the U.S. military relied on a handful of very expensive satellites to provide valuable imaging, navigation, and defense capabilities.¹ However, the size, limited number, and price tag of these satellites has made them a prime target for America's enemies, and their destruction would leave the U.S. incredibly vulnerable in the event of an attack.² Strategic considerations, and lowered satellite construction and launch costs, have enabled a new approach. Specifically, the U.S. Space Force (USSF) Space Development Agency

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Figure 1. Number of Tracking and Transport Space Vehicles in Orbit per Fiscal Year¹⁵



(SDA) has begun constructing the Proliferated Warfighter Space Architecture. The PWSA is a constellation of hundreds of smaller, cheaper satellites. As USSF Chief of Space Operations (CSO) Gen. Chance Saltzman explained, “[if] it only takes me five satellites to perform a mission, that’s not very many targets for an adversary to think about. But if we proliferate that out to hundreds of satellites performing that [mission], it changes the attack calculus substantially.”³ SDA Director Derek M. Tournear similarly commented that “[n]ow our satellites are more affordable than the missiles that you need to shoot them down. So, we’ve kind of taken that off the table. We made it to where it’s difficult to shoot those satellites down just by virtue of proliferation.”⁴

Instead of launching a few, large satellites into geosynchronous Earth orbit (GEO) for \$1–\$2 billion, the SDA has turned to launching many, smaller, cheaper satellites into low Earth orbit (LEO). These can generally be divided into two groups: tracking and transport satellites. The former cost \$14–\$15 million each, and the latter, \$42–\$45 million each, for a sum of around \$4 billion spent annually.⁵ The price tags of these individual satellites are far more manageable for the United States’s allies and partners.

To implement the PWSA, the SDA is relying on a spiral development model to develop and test its constellation of satellites and sensors.⁶ Each iterative cycle, or spiral, begins with clear objectives set for enhancing satellite capabilities, improving resilience, integrating new technologies, and so on.⁷ Risks such as technological obsolescence, lack of interoperability with existing systems, security vulnerabilities, and performance under varying operational conditions are systematically evaluated and mitigated in each spiral.⁸ Stakeholders, including military users and technical experts, can provide feedback that informs adjustments to requirements, designs, or

operational strategies for future spirals.⁹ Lessons learned from previous iterations and technological advancements are built into subsequent developments, which ensures that the PWSA evolves over time to maintain operational relevance and superiority.¹⁰

The SDA plans to “spiral in” a series of new satellites and sensors approximately every two years to update the technology and increase the capabilities of the constellation.¹¹ Tranche 0 was successfully deployed in 2022, and Tranche 1 is intended to go up this year.¹² *The SDA plans to deorbit, or “intentionally [bring] back down to Earth in a controlled manner,” approximately 60–80 satellites per year.*¹³ Tournear’s business model is to launch new tranches every two years in order to rapidly refresh, “take more risks,” and upgrade the technology in each successive spiral.¹⁴

The Opportunity for the USSF

The planned deorbit of 60–80 stars in the PWSA constellation every year provides an opportunity to change the game with respect to the export of military space systems. SDA intends to continually refresh its satellite constellation to upgrade its technology—even without planned obsolescence—and it is not unusual for military satellites to last well beyond their design lifetime. Export controls present a significant challenge, but a solution could be possible.

According to Gen. Saltzman, as well as Lt. Gen. Michael Guetlein, then-commander of the USSF’s Space Systems Command, and Deanna Ryals, director of the International Affairs Office at the USSF’s Space Systems Command, foreign collaboration is a top priority for the Space Force.¹⁶ Collaboration will be accomplished through work culture changes, policy changes, foreign exchanges, security cooperation initiatives, standards

for compatibility, and more.¹⁷ One important example is the establishment of “what we call ‘allied by design,’ where the Space Warfare Analysis Center (SWAC) is now inviting allies into the discussions,” in order to develop joint systems that ensure interoperability among data sharing, classification networks, and other relevant capabilities for the coalition.¹⁸ This is accomplished by “taking into consideration what [our] allies are [doing] from the very beginning” and “thinking about the integrated architecture and the systems we’re going to build, buy[,] or borrow based on [those] inputs.”¹⁹ Ryals quotes “Guetlein’s mantra of ‘[e]xploit what we have; buy what we can; and only build what I must.”²⁰ This allows the USSF to prioritize funding and gives it access to the best technology from around the world.

A hand-me-down concept for PWSA satellites could advance these goals by giving allies a chance to operate the satellites, develop familiarity with common systems, and provide inputs. A legal precedent exists to transfer ownership of satellites on orbit. For example, the UK transferred AsiaSat 1 and 2 to China in 1984 and BSB-1 to Sweden in 1996.²¹ While the U.S. would maintain the lead in capability and experimentation, handing off satellites to allies could enable an even faster refresh, a larger cadre of trained personnel, backup command and control, and a constellation with more coverage.

U.S. Policy to Advance Defense Cooperation

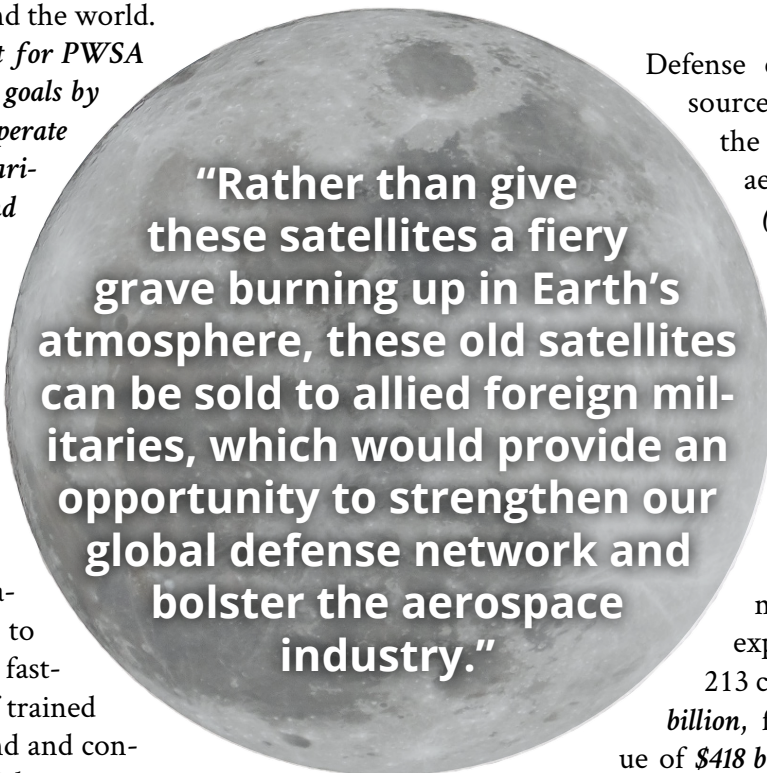
Defense exports provide the United States with a valuable foreign policy tool. They reduce the burden of overreliance on the U.S. to stand alone against hostile powers by equipping allies and partners with the weapons and articles needed to address joint security concerns. Furthermore, exports strengthen relationships by providing these allied nations with prestigious and reliable equipment, increasing interoperability by featuring the same

systems and training, and offering trust through data sharing and long-term contracts. They also prevent these same nations from turning to the United States’s competitors and enemies, limiting the latter ones from receiving these associations and economic benefits.²² Finally, on the domestic side, they create advantageous economies of scale by increasing production volume, which makes the manufacturing process more stable and efficient, as well as cheaper, and this ultimately benefits taxpayers.²³ Defense exports offer significant advantages to the United States’s foreign policy and domestic economy.

Defense Exports Support Jobs and the U.S. Economy

Defense exports are a significant source of jobs and revenue for the United States. The U.S. aerospace and defense (A&D) sector employs 2.2 million people, or 1.47 percent of the country’s total employment base, and the average salary is \$108,900, which is 55 percent higher than the national average.²⁴ The U.S. is also the world’s largest exporter of defense materials. In 2022, the U.S. exported defense articles to 213 countries, generating \$104.8 billion, for a total economic value of \$418 billion, or 1.65 percent of the nominal gross domestic product.²⁵ More-

over, exports are growing. In 2023, Direct Commercial Sales (DCS) had a 2.5 percent increase from 2022, while Foreign Military Sales (FMS) saw the largest annual increase in history, 55.9 percent. Thus, in fiscal year 2023, the U.S. government conducted \$80.9 billion worth of FMS, while the U.S. A&D industry sold an additional \$157.5 billion worth of defense articles through DCS authorizations.²⁶ Yet tragically, the sales of U.S. manufactured satellites and associated ground systems has not yet been a significant contributor to U.S. defense exports.



“Rather than give these satellites a fiery grave burning up in Earth’s atmosphere, these old satellites can be sold to allied foreign militaries, which would provide an opportunity to strengthen our global defense network and bolster the aerospace industry.”

U.S. DEFENSE EXPORTS: ECONOMIC IMPACT



U.S. Aerospace and Defense (A&D) Sector



2.2 Million
A&D Employees

1.4%
U.S. Employment



\$108,900
Avg. A&D Salary

55%
Higher than National avg.



\$80.9 Billion
Foreign Military Sales

\$157.5 Billion
Direct Commercial Sales



\$418 Billion
Total Economic Value

1.65%
Nominal GDP

Source: American Foreign Policy Council

Space Defense Systems Cooperation Has Been Minimal

While the United States is a major exporter of defense systems in almost every other sector, it has not conducted the sale or transfer of space-related defense systems to its allies.

This is clearly a lost economic opportunity and a failure to support our industrial base. A report conducted by the Department of Commerce in 2014, which surveyed hundreds of commercial companies, universities, nonprofit organizations, and U.S. government agencies with equities in space-related industries, revealed that *35 percent of the participants identified lost*

sales opportunities due to complex export controls on space-related systems. These *missed opportunities were estimated to be valued between \$988 million and \$2 billion over a period of four years.*²⁷

Over the past decade, the United States has recognized the importance of increased defense cooperation with its partners and allies, specific to space. The Department of Defense clearly articulates in the most recent Defense Space Strategy Summary that it will “expand its space partnerships” and “establish new and deeper pathways to collaborate with allies, partners, industry, and other U.S. Government departments and agencies, making cooperation and collaboration a matter of course in future capability development and operations.”²⁸ Back in 2014, the U.S., U.K., Australia, and Canada wrote a joint memorandum and formed the multinational Combined Space Operations (CSpO) Initiative Principle Board, which has since gained members such as France, Germany, New Zealand, Italy, Japan, and Norway.²⁹ According to John Plumb, former assistant secretary of defense for space policy, “[c]ooperation with our allies and partners strengthens deterrence. It broadens the number of systems available for space operations and extends our options for diplomatic and military responses in crisis. ... [It] is critical as global competitors increasingly look to space as the next frontier of warfare”.³⁰ And USSF CSO Gen. Saltzman has stated, “The most important part is partnerships, and I mean this. It’s not just our joint partners; it’s our allies and other international partners.”³¹

Examples of attempts to forward space partnerships include AUKUS creating a joint space initiative in 2023; the 2023 U.S.-Japan “Framework Agreement for Cooperation in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, for Peaceful Purposes”; the USSF integrating payloads on Japanese and Norwegian satellites in 2023 and 2022, respectively; and the SDA installing an antenna for its PWSA constellation in Norway earlier this year.³² The United States has repeatedly demonstrated its desire to work with others in regards to space through summits, treaties, and technological partnership.

Yet sales of space defense systems have lagged. While not an on-orbit system, a potential bright light and pathfinder that hints at the market potential is the sale of the Counter Communications System, a satellite jammer, to Australia in 2023.³³ Lt. Gen. Guetlein, the former com-

mander of the Space Systems Command, says that sales like these of military space hardware amounted to about \$570.5 million last year, and he expects they will rise to “more than \$4 billion” within the next two years.³⁴

The next step is defense exports of satellite systems and their control stations.

Why Has Space Defense Systems Cooperation Been Minimal?

Three major reasons have led to minimal defense cooperation (as summarized in Table 1).

EXPENSES

Until recently, the U.S. military relied on a handful of very expensive satellites to provide valuable imaging, navigation, and defense capabilities.³⁵ The high costs associated with the production and launch of these space defense systems put them outside of the range of most allies. A good example is the Milstar satellite constellation. Each Milstar satellite cost \$1–\$1.3 billion to build in 1994, equivalent to over \$2 billion in 2024, and an

additional \$258 million, or \$604 million today, to send into orbit.³⁶ These extremely few (just five) satellites were of such high cost that few allies could afford them, and of such exquisite capability that the U.S. was loath to transfer them. All five still remain operational, despite the oldest one having been launched 30 years ago, well past their expected 10-year lifetime.³⁷

INTERNATIONAL TRAFFIC IN

ARMS REGULATIONS

Another barrier has been the International Traffic in Arms Regulations (ITAR). As mentioned above, the U.S. is losing billions in potential opportunity because current congressional language fails to differentiate between adversaries and allies and thus creates barriers to forming the very relationships other legislation attempts to forward. How did this happen?

While the United States dominates the commercial launch sector today, primarily due to the success of SpaceX, in the early and mid-1990s, the U.S. accounted for less than half of all commercial launches.³⁸ Increased

Table 1. Minimal Defense Cooperation Summarized

Challenge	Description
Expenses	<ul style="list-style-type: none"> The high costs of space defense systems, like the Milstar satellites, were a deterrent for U.S. allies. The U.S. has in turn been reluctant to transfer such sophisticated systems to allies, due to their significant value and capabilities. Only recently have satellites been built in larger quantities and at lower cost.
International Traffic in Arms Regulations (ITAR)	<ul style="list-style-type: none"> ITAR have restricted the export of satellites and related technologies, creating barriers for cooperation with allies. The regulations were tightened after U.S. satellite manufacturers inadvertently aided Chinese missile technology in the 1990s. ITAR are seen as complex, costly, and significant impediments to forming international partnerships in space defense.
Classification	<ul style="list-style-type: none"> The relatively new field of space defense is heavily classified, making it difficult to share with allies. Efforts to do so are hindered by confusion within the Department of Defense about who has the authority to share sensitive information with allies, with no clear decision-maker below the four-star level. Congress has urged the department to reconsider the classification levels of space defense programs to facilitate better international partnerships.

Source: American Foreign Policy Council

openness to trade with China encouraged American satellite companies to launch on cheaper Chinese rockets.³⁹ The prominent failures of the Chinese Long March 2E and 3B orbital launch vehicles carrying U.S. satellites led satellite manufacturers Hughes and Loral to work together with China to analyze the launches and determine what went wrong.⁴⁰ According to the Defense Threat Reduction Agency (DTRA) and National Air and Space Intelligence Center (NASIC), this work revealed specific details on how to modify fairing designs and launch operations, coupled loads analysis, and U.S. diagnostic techniques, which enabled Beijing's engineers to detect flaws in launch vehicles and missiles.⁴¹ NASIC also concluded that part of the launch mechanism used to launch Hughes's APStar 2 satellite, which had its own solid and liquid fuel propulsion, avionics, guidance, and communications, *provided China with additional technologies and capabilities not previously available to them.*⁴²

One of these was MIRV, which allows a single rocket to deploy more than one nuclear warhead, and which appeared on the future DF-5 Mod 2 intercontinental ballistic missile.⁴³

Outraged, in 1998, the U.S. Congress sought to constrain such proliferation of commercial dual-use capabilities, to the detriment of the nation, but drew lines far beyond America's adversaries to include all friendly nations. They removed all satellites and related technologies from dual-use items controlled by the Commerce Department and moved them to the State Department's U.S. Munitions list, *with no differentiated procedure for adversaries versus allies.*⁴⁴

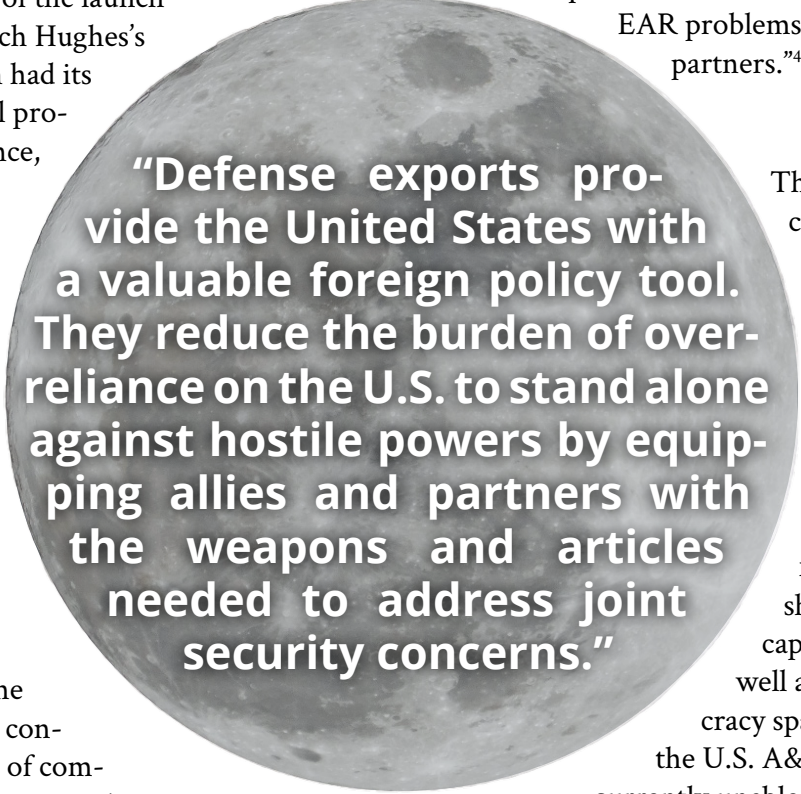
Thus, the current Code of Federal Regulations ITAR prevent commercial companies from exporting this class of products abroad easily. According to ITAR §121.1, category XV, “[s]pacecraft, including satellites and space vehicles, whether designated developmental, experimental, research, or scientific, or having a com-

mercial, civil, or military end-use” *are labeled as defense articles subject to export controls.*⁴⁵ While commercial companies may apply for licenses and exemptions, pursuant to ITAR §120.14 and §120.15, this process is long, arduous, and expensive enough that many do not even attempt to do so.⁴⁶ The common consensus is that “the complexity of understanding ITAR regulations exceeds the potential value of the opportunities.”⁴⁷ According to the Defense Innovation Unit’s “State of the Space Industrial Base Report” for 2023, “the current ITAR/EAR creates too much of an impediment to working with allies and partners. U.S. industry cannot fulfill a role as a leader and partner in space because of their perceived requirement to steer clear of potential ITAR/EAR problems, even with close allies and partners.”⁴⁸

CLASSIFICATION

The third barrier has been classification. Some observers consider this “the most substantial issue precluding coordinated development of ‘protect and defend’ capabilities with our allies.”⁴⁹

While the Department of Defense prioritizes “[e]xpand[ing] information sharing relationships with capable allies and partners,” as well as streamlining the bureaucracy space-related partnerships, the U.S. A&D industry states that it is currently unable to “[engage] with foreign governments for months or years to offer insights into the ‘art of the possible’ and to refine the requested solution from allies to best meet their needs” because of how classified this field is.⁵⁰ While many weapons systems in other domains (land, sea, undersea, air, and cyber) have classified elements, when it comes to space, it is “unclear who has the authority to allow the sharing of specific information during discussions with allies. . . . Seemingly no one can definitively identify who is empowered to say ‘yes’ below the 4-star level, but anyone can seemingly say ‘no.’ This decision authority factors into ITAR decisions as well.”⁵¹



“Defense exports provide the United States with a valuable foreign policy tool. They reduce the burden of over-reliance on the U.S. to stand alone against hostile powers by equipping allies and partners with the weapons and articles needed to address joint security concerns.”

Aware of the limits that overclassification imposes on a range of issues beyond international partnerships, including the ability to exercise congressional oversight, raise public threat awareness, reduce the cost of special access programs, facilitate cross-domain knowledge and military planning, and enable participation from a broader ecosystem of U.S. industry, Congress has pushed the Department of Defense to reexamine space-related classification. In fact, the 2023 National Defense Authorization Act required that the department ascertain whether USSF programs can be reclassified to a lower level or even declassified entirely.⁵² Many in both Congress and the Defense Department share a USSF assessment that “the need and benefits from partnerships outweigh the risk that’s created by sharing information and capabilities with our allies,” but Congress will still need to author legislation vesting authority to share information with allies to facilitate space defense sales.⁵³ Given that Congress has sought to make the USSF CSO the Force Design Architect for Space Systems of the Armed Forces, it may be appropriate to provide this authority to the CSO.⁵⁴

Numerous Export Options

Should the USSF act on the opportunity provided by the planned refresh of PWSA satellites, there are three separate legal mechanisms for the export of military space systems: Foreign Military Sales, Excess Defense Articles, and Direct Commercial Sales (as summarized in Table 2). Moreover, for a select subgroup of close partners, there are facilitating authorities that could accelerate equipping U.S. allies with U.S. equipment.

FOREIGN MILITARY SALES

Foreign Military Sales (FMS) are the direct transfer of defense articles by the U.S. government to foreign ones. Title 22, chapter 39, subchapter II, § 2761 of the U.S. Code states that “[t]he President may sell defense articles and defense services from the stocks of the [Defense Department] and the Coast Guard *to any eligible country or international organization if such country or international organization agrees to pay in United States dollars.*”⁵⁵ This process starts with a foreign government submitting a Letter of Request (LOR), which is an informal document indicating

Table 2. Export Options Summarized

Export	Description
Foreign Military Sales (FMS)	<ul style="list-style-type: none"> The FMS are the direct sale of active defense articles from the U.S. government to foreign ones. The Department of Defense provides comprehensive support, training, and sustainment to ensure proper use and maintenance of the defense systems, fostering long-term cooperation. FMS agreements often include “offsets,” where the U.S. invests in the purchasing country’s economy, potentially building a stronger industrial base in friendly nations.
Excess Defense Articles (EDA)	<ul style="list-style-type: none"> EDAs are surplus U.S. defense systems that are no longer needed and can be sold or granted to allied countries at a reduced cost. These articles help allies modernize their defense capabilities by acquiring systems at a fraction of their original cost. The pricing of EDAs is based on their condition, ranging from 50% of the original value if new, to 5% if they require repairs.
Direct Commercial Sales (DCS)	<ul style="list-style-type: none"> DCS allow American companies to sell defense products directly to foreign governments, provided they obtain an export license from the State Department or the Department of Commerce. These sales are conducted without direct U.S. government involvement, offering greater negotiating flexibility to foreign buyers compared to FMS. But like FMS, they can include offsets that benefit the purchasing country’s economy.

Source: American Foreign Policy Council

what defense technology they wish to acquire.⁵⁶ The Defense Security Cooperation Agency (DSCA) processes the LOR and drafts a Letter of Offer and Acceptance (LOA), which is far more detailed and includes cost.⁵⁷ The LOA is approved by the State Department and sent by the DSCA to the requesting government. Once they sign the LOA, it becomes a legally binding agreement, and the Defense Department is responsible for seeing it through.⁵⁸

The Defense Department takes a “total package approach,” which means that it provides the necessary training, support, and sustainment to ensure that the purchased defense article or service is used properly and can be maintained for years.⁵⁹ This creates a long-term relationship between the United States and the purchasing country, helping to foster cooperation. Such relationships are further facilitated through the personnel who operate such systems. It is not uncommon for the U.S. to provide training for these systems through the DSCA’s International Military Education and Training program.⁶⁰ The USSF’s sister service in the same department, the Air Force, often executes these through the Air Force Security Assistance Training Squadron (AFSAT).⁶¹ Additionally, appropriations from partner purchases are often held in interest-bearing U.S. Treasury accounts for as long as seven years, providing increased stability to the U.S. financial system.⁶²

FMS negotiations also bring other opportunities to advance partnerships. Foreign governments often stipulate what are called “offsets” in negotiating FMS contracts. They trigger U.S. investments in their domestic economy to help ease the burden of expensive purchases.⁶³ A direct offset requires the United States to invest in something directly related to the defense article or service being exported, such as a certain component that is produced in the purchasing country.⁶⁴ An indirect offset is unrelated to the defense article or export and has included agricultural products, manufactured goods, and other services that are purchased as a condition for the original sale.⁶⁵ A forward-looking policy could use offsets to build a more reliable industrial base in friendly nations—particularly for materials, components, expertise, or services that might otherwise come from adversarial countries.

EXCESS DEFENSE ARTICLES

Under title 22, chapter 32, subchapter II, part II, § 2321j

of the U.S. Code, “[t]he *President is authorized to transfer excess defense articles ... to countries for which receipt of such articles was justified pursuant to the annual congressional presentation documents for military assistance programs.*”⁶⁶ *Excess Defense Articles (EDA) are weapons, defense systems, and the like that are owned but no longer needed by the United States.*⁶⁷ They are sold as FMS or through grants to help the receiving country, an ally of the U.S., modernize and augment its own defense capabilities.⁶⁸ According to Defense Department pricing, *EDA are sold for between 50 percent of the original acquisition value, if new, and 5 percent, if they need repairs.*⁶⁹

DIRECT COMMERCIAL SALES

Upon obtaining an export license provided by the State Department’s Directorate of Defense Trade Controls or the Department of Commerce’s Bureau of Industry and Security, *American firms and companies are authorized to sell defense products on the U.S. Munitions List directly to foreign governments without the involvement of the U.S. government.*⁷⁰ Direct Commercial Sales (DCS) are authorized by title 22, chapter 39, subchapter I, § 2751 of the U.S. Code, which defines defense articles and services as “licensed or approved for export under section 2778 of this title to, for the use, or for benefit of the armed forces, police, intelligence, or other internal security forces of a foreign country or international organization under a commercial sales contract.”⁷¹ Like FMS, many DCS agreements stipulate offsets for the purchasing country.⁷² DCS also provide U.S. allies and partners with greater negotiating power than they would have with FMS.⁷³

Foreign Military Sales, Excess Defense Articles, and Direct Commercial Sales usually employ former U.S. military members as contractor subject matter experts, providing both post-military employment opportunities and people-to-people contact.

Other Potential Options

The United States could take advantage of already established frameworks to fund and facilitate the transfer of military space systems to its allies and partners. First, Congress in 2020 authorized the creation of the Countering the PRC Malign Influence Fund to provide “the U.S. interagency with a flexible mechanism that will bolster our efforts to strengthen our partners’ resiliency to China’s malign influence worldwide.”⁷⁴ China has been rapid-

ly advancing its capabilities in the space realm and was identified as one of the largest threats to the U.S. in this realm by the 2020 Defense Space Strategy.⁷⁵ According to this document, China has “developed doctrine, organizations, and capabilities specifically designed to contest or deny U.S. access to and operations in the domain. ... [Chinese] military doctrines indicate that they view space as important to modern warfare and consider the use of counterspace capabilities as a means for reducing U.S., allied, and partner military effectiveness and for winning future wars.”⁷⁶ Since China is designated a major threat to the United States and its allies and partners, the fund could be used to subsidize friendly purchases of PWSA satellites to help counter China’s influence and rising power within space.

Next, the *NATO Security Investment Program (NSIP)* could be used to finance NATO members’ purchases of these satellites. NATO’s official space policy articulates how “[s]pace must be seen as an integral part of the Alliance’s broad approach to deterrence and defence, drawing upon all of the tools at NATO’s disposal,” and it considers “ways to improve space resilience Alliance-wide” to be a major priority.⁷⁷ Investing in decommissioned satellites from the PWSA would accomplish this by increasing the resilience and interoperability of the entire security alliance. The NSIP is a pooled fund that each member state contributes to and is intended to be used for “providing major capabilities, enabling deterrence, defence and interoperability, and supporting consultation and decision-making at the highest levels.”⁷⁸ Since NATO sees space resiliency as a top priority, it should consider utilizing the NSIP to fund the purchase of U.S. satellites.

Finally, under the Defense Production Act (DPA), Canada is designated as part of the American industrial base and, as of this spring, so are the U.K. and Australia.⁷⁹ Title III of the DPA focuses on the expansion of productive capacity and supply by providing incentives to develop, maintain, modernize, and expand production capacity of critical technologies through purchases, grants, loans, and subsidies.⁸⁰ *Since these three countries qualify under the DPA as part of the U.S. industrial base, companies within them are eligible to receive funding for the development of satellite technology,* streamlining technological and defense collaboration and cooperation between the United States and its allies.

PWSA CONSTELLATION BENEFITS

Partner Groups

Benefits



NATO & European Allies



Indo-Pacific Allies



Japan, South Korea, India



Middle East Partners



Israel, Saudi Arabia, UAE, Qatar



Five Eyes Partners



Australia, Canada, New Zealand, UK



Missile Warning and Tracking



Combat Aircraft Data Links (F-16/F-18/F-35)



Secure Data Transfer

Source: American Foreign Policy Council

Numerous Partners Could Benefit

The most critical benefit of the PWSA constellation is probably its “global and persistent indications, detection, warning, tracking, and identification of conventional and advanced missile threats, including hypersonic missile systems,” 24 hours a day, 365 days a year.⁸¹ This would benefit virtual-

ly all of America's allies and partners. Our close allies in NATO and Europe, as well as *Japan, South Korea, India, Israel, Saudi Arabia, the United Arab Emirates, and Qatar*, would appreciate improved missile warning and tracking. Our intelligence partners, especially in the "Five Eyes" (i.e., *Australia, Canada, New Zealand, and the United Kingdom*), would enjoy the secure data-transfer opportunities.⁸² And any ally that operates a U.S. combat aircraft, such as an F-16, F-18, or F-35, would be able to use the space-based data links.⁸³ Allied participation using hand-me-down PWSA systems likely would enable a number of collective benefits: larger constellations, more bandwidth, greater resilience, lower latency, improved deterrence, and even faster refresh. Early experimentation with allied PWSA hand-me-downs will provide ample time to iron out information sharing procedures and interoperability concepts.

A Limited Window of Opportunity and the Risks of Inaction

The United States must not be flat-footed when it comes to military satellite defense sales. A failure of the U.S. to provide low-cost satellites and proliferated space systems will cause interested partners to seek other sources or to develop their own. The early adoption of American systems and training establishes buy-in and practically ensures subsequent purchasing of upgrades. Previously negotiated agreements for technology safeguards, intelligence sharing, and cryptological safeguards lower the barrier to entry for the purchase of such future systems. A history of interoperability of meaningful capabilities is likely to enhance allied command and control, and exchange personnel in combined space operations centers.

The converse has been the case in other areas, such as light combat aircraft, where adversarial or competitor nations stepped into the gap and offered their own "entry level" systems, which reduced options for partnerships and follow-on upgrades. A failure of the U.S. to provide opportunities for allies to gain an early foothold in PWSA systems is a failure to create allied interoperability and standards. By acting early, the U.S. could set the international standards for future deals, whereas a failure to sell such technology would cede all of these advantages. The United States risks losing an important opportunity to bring together partners,

expand the PWSA's reach, and enhance the American industrial base and export sector.

Very likely the U.S. has only a two-year lead time before this becomes urgent. In that time we must identify the key partners identify the preferred method of transfer; create concept briefings for senior defense officials/defense attachés; initiate engagements with international partners through the Secretary of the Air Force International Affairs (SAF/IA) and the DSCA; and develop a training pipeline through Space Training and Readiness Command (STARCOM). While both SAF/IA and DSCA have ample experience with Foreign Military Sales, the example for the U.S. sales of Predator unmanned aircraft systems and corresponding ground stations to France may provide a recent useful analog and case study.⁸⁴

Recommendations

If the United States wishes to realize the strategic benefits offered by the planned deorbit of PWSA systems, it must create a plan. This plan starts with a vision of using PWSA to build an allied constellation. Congress, the Department of Defense, and the U.S. Space Force must take significant actions to realize the potential:

1. *Congress should express that it wishes the USSF to advance military defense exports* and to design future tranches and ground systems for exportability. Congress may also wish to express its sense of priority partners.
2. *The USSF, SAF/IA, and DSCA should work with U.S. Space Command, regional combatant commands (USIN-DOPACOM, USEUCOM, USCENTCOM, USSOUTHCOM, USAFRICOM, USNORTHCOM), and Department of State regional bureaus to identify priority partners that advance U.S. interests and develop a strategy of engagement.*
3. *The USSF through STARCOM should begin training an instructor cadre and building a schoolhouse* and curriculum and training procedures for foreign partners (similar to AFSAT) that would receive PWSA or PWSA systems.
4. *The USSF should develop procedures and templates to allow interoperability and data sharing* between partners.
5. *Since Congress has designated the Chief of Space Operations as the Force Design Architect, Congress should author legislation vesting specific authority with the USSF CSO to share information with allies to facilitate space defense sales.*

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