

Japan and South Korea: Two Important Partners for the United States for Space Security in East Asia¹

Sam Wilson, October 2022

Introduction

Space partnerships play a critical role in U.S. national security space strategy. The Department of Defense’s Defense Space Strategy, released in June 2020, emphasizes international space partnerships. One of the objectives of the strategy is to “integrate allies and partners into plans, operations, exercises, engagements, and intelligence activities.”¹ The commitment to international defense partnerships is highlighted in other relevant strategic documents, including the 2018 National Defense Strategy and 2011 National Security Space Strategy.² Identifying and expanding areas for international cooperation is also a central theme in the 2020 National Space Policy.³

Space partnerships offer enormous advantages. Next year, the United States and Norway are planning to launch a Norwegian satellite that will be hosting U.S. national security payloads. This is projected to save the United States up to \$900 million, and it will be the first time that the United States has ever put a national security payload on a foreign satellite.⁴ In the next two years, the United States will be launching U.S. national security payloads on a Japanese satellite.⁵ That will be the first time the United States has ever put a national security payload on a foreign satellite and foreign launcher. This saves money, it allows the allied and partner nations to leverage each other’s unique capabilities and systems, and it also offers deterrence advantages – an adversary may think differently about attacking a system if that system is connected to multiple countries.⁶

Another important benefit of space partnerships is geography, and there is no region more important than East Asia for space security. China has been developing and testing counterspace weapons, and senior U.S. officials have said China is developing weapons for all orbits, including those of U.S. nuclear command and control satellites.⁷ Moreover, the region has been an area of intense growth for space activity. In such a context, Japan and South Korea—important allies of the United States and established and growing space nations—represent crucial partners for space security.

Long History of Japan’s Shift Toward Space Security

Japan is one of the most mature space nations in the world and is becoming a major defense space nation. As of 2022, it has the third largest space budget and the fourth most satellites in orbit.⁸ Japan has an array of dual use space assets. The country has its own reconnaissance satellites, is developing its own defense satellite communications system, and is pursuing a space

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(Source: Aerospace Corporation, [Japan's Gradual Shift Toward Space Security | The Aerospace Corporation](#))

Ministry of Defense.¹¹ The Yasuhiro Nakasone administration maintained this was consistent with the 1969 resolution.¹² As explained by Japanese space scholar Setsuko Aoki, “In 1985, a unified governmental view was issued that interpreted the ‘nonmilitary’ principle as permitting

situational awareness radar that will look out past geosynchronous Earth orbit (GEO). Japan’s maturation as a space nation reflects its long history in space. In 1970, the nation launched “Ohsumi,” its first satellite launched into orbit. The successful launch made Japan the fourth spacefaring country after the Soviet Union, United States, and France. Its maturation as a defense space power reflects a long shift toward focusing on defense space activity.

In the early stages of Japan’s space program, the country sought to make a sharp distinction between its space and military activity. In 1969, the Diet, Japan’s Parliament, passed the Peaceful Purposes Resolution, which excluded military space activity in response to the 1967 United Nations (UN) Outer Space Treaty. The treaty notes the “use of outer space for peaceful purposes,” but Japan’s interpretation was unique among the members of the treaty.⁹ Most countries, including the United States, held that the agreement allowed military space activity if it was nonaggressive. Japan’s position that its space activity was to be nonmilitary aligned with its post-World War II pacifist constitution.¹⁰

Although the Peaceful Purposes Resolution remained intact for nearly 40 years, Japanese leadership across administrations made a series of decisions beginning in the 1980s that softened the lines between their space and military activity.

Generalization Theory

The Japanese government started buying imagery from the U.S. LANDSAT satellites in 1984 and from French SPOT satellites in 1987 for multiple agencies, including the Japanese Defense Agency, the predecessor to the

the use of satellites so long as these satellites were widely used in everyday civil life.” The Japanese military could use satellite technologies that were readily available on the commercial or civilian side. This position, called the “generalization theory,” was an important step toward the country’s embrace of defense space activity.¹³

Development of Reconnaissance Satellites

In 1998, the Keizo Obuchi administration made the decision to develop government-owned and operated reconnaissance satellites called Information Gathering Satellites.¹⁴ Although the satellites also had civilian purposes—such as monitoring natural disasters and weather patterns—this was the first time in which Japan acquired satellites that would have a direct defense application. The first two satellites were launched in March 2003, and the newly formed Cabinet Satellite Intelligence Center would oversee the reconnaissance satellites. Because the new center was not part of the defense agency but part of the Cabinet Secretariat, the oversight stayed within the parameters of the 1969 resolution.¹⁵

Although there are competing explanations for the development of reconnaissance satellites, North Korean missile tests in the 1990s stand out for having an important effect among the Japanese. A 1998 test particularly made it clear that North Korea had the capability to hit targets almost anywhere in Japan. These tests contributed not just to Japan’s development of its reconnaissance satellites but also its ballistic missile defenses, which the country decided to adopt in 2003.¹⁶

Passage of Basic Space Law

The Basic Space Law in 2008 is often regarded as a pivotal moment in the country’s push toward space security. The law reversed the 1969 Peaceful Purposes Resolution, allowing for military space capabilities if they were “nonaggressive.” It also acknowledged the importance of using space for national security purposes. According to an unofficial translation, the law asserts: “The State shall take necessary measures to promote space development and use to ensure international peace and security as well as to contribute to the national security of Japan.”¹⁷

Counterspace and Missile Warning

In recent years, Japan has expressed interest in capabilities that would almost exclusively be used for defense purposes. Along these lines, Japan’s guidance reflects interest in developing counterspace systems and missile warning satellites.

The 2018 National Defense Program Guidelines was the first official Japanese document to call out a need for counterspace systems. Specifically, the guidelines say that the Self Defense Forces will work to improve defense capabilities, including the “capability to disrupt opponent’s command, control, communications, and information.”¹⁸ Experts have said that National Defense Program Guidelines referred to jamming technologies that the Ministry of Defense is considering acquiring.¹⁹

In 2020, the Diet approved the newest version of the country's national space policy, which was last updated six years prior. The new policy says the country will study small-satellite constellations with infrared sensors for missile warning. In 2021, Japan released its

implementation plan of the national space policy, which also discussed missile warning. Japan developing its own early warning satellites would be significant. Currently, only the United States and Russia operate early warning satellite systems. Among other things, it would signal Japan's maturation as a defense space power.²⁰

South Korea's Rapid Acceleration in Space

South Korea is also emerging as an important defense space nation, albeit in a much more accelerated fashion and with a later start than Japan. In 2013, South Korea launched its first space launch vehicle that reached Earth orbit.²¹ In 2022, for the first time, the country launched its own satellite from its own domestically built rocket, putting it in a small exclusive group of countries that can independently launch into orbit.²² Despite only having a small number of active satellites, the nation is planning to increase that number dramatically.²³

Among the 10 biggest spenders in space, South Korea its own military communications satellites and earth observation satellites and has ambitious plans for its space program. Its reported space budget for 2022 is \$619 million, a 19 percent increase from the prior year.²⁴ This budget will support launch vehicle development, Earth observation satellites, communication satellites, a new satellite operations center, and the Korean Positioning System (KPS). KPS would be South Korea's space-based positioning, navigation, and timing (PNT) system. The successful fielding of those satellites would make South Korea one of six nations that has its own PNT satellites, along with the United States, Russia, China, India, and Japan. The country is reportedly pursuing eight KPS satellites; seven would be necessary to deploy an independent regional system.²⁵ PNT satellites, similar to communications and earth observation satellites, are inherently dual use.

Much of the focus in South Korea is on commercial policy. In August 2022, in the release of the budget, the Ministry of Science and ICT notes the "acceleration toward the private led space economy."²⁶ In July 2022, the ministry announced five key action plans for the administration, which included transferring space technologies from the government to the private sector. Specifically, it said: "The space industry, originally led by the government, will nurture companies with many responsibilities (manufacturing + launch operation) and promote the development of space economy, by transferring technology and designating clusters (let the private sector utilize infrastructure)."²⁷ In June 2022, the South Korean National Assembly passed an amendment to the country's Space Development Promotion Act that largely focused on commercial activity. The amendment calls for the "establishment of space infrastructure for space development and provision of open access to the private sector...introduction of a new contract format to ensure companies' profitability...designation of new space technologies and acceleration of technology transfer..." and "promotion of talent nurturing and entrepreneurship."²⁸

This focus on commercial space ventures had already some success. South Korean company Hanwha Systems, for example, announced plans to deploy a constellation of 2,000 communication satellites in low Earth orbit by 2030.²⁹ (For context, as of May 2022, no country outside of the United States has more than 2,000 satellites in orbit.) Hanwha is involved in a separate project to build small surveillance satellites, which would have civilian and military

applications, including monitoring North Korea.³⁰ Through a technology transfer from the state-funded Korea Advanced Institute of Science and Technology, the firm also plans to develop laser inter-satellite links. The Korea Advanced Institute of Science and Technology also has a partnership with Korea Aerospace Industries, a private company, to build a space research center. In 2021, Korea Advanced Institute announced plans to invest \$880 million over the next five years to expand its space business, including satellite production, and hopes to develop a ground station and satellite imagery analysis services in the next few years.³¹

Economic indicators suggest South Korea's GDP will continue to fare relatively well, which could help its industry's acceleration in space. South Korea is not only one of the biggest economies in the world, but its economy is growing at a high rate relative to other countries with high GDP. Among the countries with the top 15 highest GDPs, only India has a higher rate of growth in GDP than South Korea.³²

Opportunities for Defense Space Partnerships for the United States

Although the United States has collaborated with Japan and South Korea, there is room for growth.

Japan and the United States

Japan and the United States have a robust defense space partnership. The two countries have had a space situational awareness agreement since 2013.³³ In recent years, Japanese military forces have taken U.S. Space Force space operations courses, including courses in space situational awareness and orbital mechanics, and have participated in space security exercises and wargames, such as the situational awareness exercise called Global Sentinel and the space wargames at Schriever Air Force Base.³⁴ Further, as mentioned, the United States is placing U.S. national security payloads on Japanese satellites (Japan's PNT satellites) in the next two years.

Despite these successes, there are some areas where the partnership could expand.

(1) Space situational awareness represents a promising area for further collaboration. Japan is developing an ambitious deep-space radar system and command and control center. Japan's fiscal year 2022 Ministry of Defense budget dedicates about \$226 million to this effort, almost 40 percent of the ministry's defense space budget.³⁵ Given the counterspace threats in GEO, Japan's system could be extremely advantageous for the United States. The United States has had challenges ingesting space situational awareness data from allies and partners, but it is taking some steps along these lines to mitigate these challenges.³⁶

(2) Missile warning is another area in which the United States and Japan could partner more extensively. Japan's heightened interest in the mission area comes at a time in which the United States is beginning to develop and transition to a new missile warning and tracking architecture. The U.S. Department of Defense's fiscal year 2023 budget request includes funding for missile warning and tracking programs at GEO, Polar, medium Earth orbit, and low Earth orbit.³⁷ Such a diversified architecture could create opportunities for collaboration or joint development.³⁸

South Korea and the United States

South Korea and the United States have also cooperated on space. Although this has not yet extended to developing capabilities jointly, the amount of engagement between the countries on space issues has increased over the last few years.

Notably, in April 2022, the South Korea’s Defense Ministry and the U.S. Department of Defense—at the 18th session of the Space Cooperation Working Group—agreed to carry out research for a joint official document on space policy. “The representatives agreed on the ‘South Korea-US joint research on space policy’ for the first time to develop space policy at the South Korea-US alliance-level,” South Korea’s Defense Ministry said in a Korean-language statement.³⁹ The representatives included Cho Yong-geun, the South Korean director general of the North Korea Policy Bureau at the Defense Ministry, and U.S. Deputy Assistant Secretary of Defense for Space and Missile Defense John Hill.⁴⁰

PNT is an area that has generated some momentum for further collaboration. In August 2022, the Minister of Science and ICT met with Chirag Parikh, the Executive Secretary of the U.S. National Space Council. They reportedly discussed private space ventures and discussed collaboration for KPS.⁴¹ In 2021, the two countries signed a joint statement on cooperation for global navigation satellite systems, in which they “jointly decided to support Korea’s development of its own satellite navigation system, KPS, and enhance its compatibility and interoperability with the Global Positioning System (GPS).”⁴² A regional independent PNT capability over South Korea could be particularly valuable to the United States as an alternative to GPS.

The countries are exploring and pursuing collaboration in other areas as well. In August 2021, the two countries signed a memorandum of understanding on forming a joint space policy consultative body at Peterson Air Force Base in Colorado Springs, Colorado. Under the agreement, the two sides have reportedly “run a joint consultative body on space policy, shared information on space surveillance and worked together to enhance joint space operations capabilities such as missile defense.”⁴³ In April 2022, the two countries announced an agreement that included cooperation on space situational awareness for military purposes—to “share intelligence about outer space, nurture space experts through training and exercises, and enhance interoperability for combined space operations.”⁴⁴

Implications of More Extensive Partnerships

More extensive defense space partnerships with Japan and South Korea will offer important advantages for the United States as well as for Japan and South Korea. As discussed, integrated capabilities like hosted payloads can generate savings and deterrence advantages. The advantages of these partnerships could also benefit broader geopolitical relationships. With Japan, the United States recently agreed to extend its security umbrella to outer space, ensuring that the United States would seek to protect Japanese satellites.⁴⁵ The partnership with Japan may serve as forerunner for what may be possible with South Korea. For example, hosting U.S. national security payloads on Japan navigation satellites may create a precedent in which the United States could host GPS payloads on South Korea’s proposed navigation satellites.

In addition to bilateral efforts, there are also opportunities for trilateral space collaboration. In August 2022, Japan, South Korea, and the United States participated in a missile warning and ballistic missile and tracking exercise, which followed a trilateral ministerial meeting in Singapore.⁴⁶ Even more recently, in September 2022, Japanese Prime Minister Fumio Kishida met South Korean President Yoon Suk-yeol for a short meeting at the UN General Assembly.⁴⁷ As the United States treats defense space partnerships as more of a priority, bilateral efforts could extend to multi-lateral partnerships in the region, such as with Australia and New Zealand.

Conclusion

U.S. defense space partnership with Japan and South Korea will continue to grow more valuable in the years to come. The importance of the domain and the region behooves the United States to push for more defense space collaboration with these crucial partners. Japan and South Korea have been extremely important allies for the United States; in fact, both rank among the top three countries in the world for the number of military personnel the United States stations there. Although the United States, Japan, and South Korea have made significant strides for collaborating on space systems, there is ample room for growth.

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⁶ For more discussion on the importance of defense space partnerships for the United States, please see: Sam Wilson, Colleen Stover, and Steven R. Jordan Tomaszewsk, “Defense Space Partnerships: A Strategic Priority,” The Aerospace Corporation, (September 2020).

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