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What will international partnerships look like post-International Space Station?

BY Annalise Johnson

"**Tonight, I am directing NASA to develop a permanently manned space station and to do it within a decade**," President Ronald Reagan stated in his 1984 State of the Union address.[1] In the following decade, Canada, Japan, and the European Space Agency (ESA) joined with the United States in a successful multilateral effort to build the International Space Station (ISS). This massive international project marked a shifting paradigm in international space activity from mainly single-nation projects to large, cooperative endeavors. Another major shift is happening in today's space ecosystem as the ISS is nearing the end of its lifetime. The nature of international relationships for space station cooperation is shifting to become more commercially led in place of government-to-government agreements.

The Canadian government cited many motivations to join the ISS project, including national prestige in technology, developing a technologically skilled workforce, and securing access to space for Canadian

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Three Roscosmos components on the International Space Station / NASA

research.[2] Europe's reasoning was similar. Leaders hoped that the program would improve European knowledge in technology, automation, materials, and telecommunications.[3] Russia did not join the ISS until 1994 because of its adversarial relationship with the West during the Cold War. The new Russian Federation improved diplomatic relations with the United States and its allies after the Soviet Union's collapse in 1991. The ISS benefited from Russian expertise in engineering and rocketry. Russia's Mir space station was already in orbit and would be used for astronaut training before the launch of the ISS. Adding another partner also helped redistribute costs for all countries.[4] In total, fifteen participating nations signed the Inter-Governmental Agreement (IGA) in 1998 outlining the role of each country in the ISS and establishing a cooperative framework for the program.[5]

The first module of the ISS was built by the Russian space agency Roscosmos and launched in November 1998.[6] The first component built by the U.S. National Aeronautics and Space Administration (NASA) launched just two weeks later, attaching to the Russian control module. Three other international partners added modules and components to the station in the following decade. The Canadian Space Agency (CSA) added its most famous element, the robotic arm ("Canadarm"), to the station in 2001.[7] The Japan Aerospace Exploration Agency (JAXA) and European Space Agency (ESA) both added their first modules in 2008.[8] Throughout the almost 25 years of continuous human habitation of the International Space Station, astronauts from twenty-one countries — and experiments from even more — have flown on the station.[9] The ISS now is known as a symbol of international collaboration and peace.

NASA has announced that the International Space Station will be decommissioned and deorbited in 2030.[10] Following the decommissioning of ISS, the agency will make use of commercially owned and operated space stations in the same commonly used orbit closest to the earth, low Earth orbit (LEO). The use of commercial stations and activities in LEO is expected to cost less than continuing to maintain the ISS or building a new station, therefore allowing NASA to shift money toward other programs.[11] NASA supports commercial station ventures through new types of Space Act Agreements and contracts, which allow companies to leverage NASA expertise, experience, and capital.[12]

The ISS brought together adversarial nations through space. The decommissioning of the ISS will further the widening divide between the United States and Russia. It will also likely lead to a closer partnership between nations of BRICS (Brazil, Russia, India, China, South Africa) because China's Tiangong station will be the only governmental station in LEO and be used as a diplomatic tool by China. However, the other nations involved in ISS, and many new spacefaring nations, are involved in the creation of commercial space stations by U.S.

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companies. The involvement of both U.S. and non-U.S. companies and foreign governments and agencies has led to agreements between different entities and with purposes other than those made to build ISS. The landscape of international partnerships in human habitation of LEO will be substantially shifted after the ISS is decommissioned, including a deepening divide between the West and Global South, the inclusion of countries not previously involved in the space industry, and new types of international arrangements outside of government-to-government agreements being employed.

Russian and Chinese Collaboration

The partnership between Russia and the United States formed the "foundation for the international Space Station," and the ISS served as a key diplomatic tie between the United States and Russia despite the lack of political alignment between the nations on Earth.[13] Roscosmos and the Russian government have agreed to continue being a part of ISS until 2028 despite multiple previous threats to leave the station earlier due to political tensions.[14] However, the decommissioning of the ISS widens the already large gap between Russia and the United States. Former commander of ISS, Colonel Terry Virts of the United States, spoke in a 2022 National Public Radio (NPR) interview about his time on ISS during the Russian invasion of Crimea and echoed this idea: "you could count on one finger the number of good [aspects of] international relations between the West and Russia – and that was the space station."[15]

There are no plans for U.S.-Russia collaboration in the creation of any new LEO habitats by government agencies or commercial companies. Space and technology sanctions in response to Russia's 2014 and 2022 invasions of Ukraine and the ongoing conflict in the country have weakened the Russian space program, and the invasion furthered the lack of scientific and diplomatic engagement between the West and Russia. The United States and Russia continue to cooperate in relation to the ISS, such as sending American astronauts to the station on Russian Soyuz rockets.[16] However, the longer the Russia-Ukraine war goes on, the less likely it becomes that Russia or the West will want to or be able to work with each other after the station is decommissioned.[17] While collaboration through ISS does not improve the United States' and West's relationship with Russia, the loss of the station likely will be felt in the relationship as it continues to decline.

Lack of further cooperation between the United States and Russia will leave Beijing as Moscow's only partner in space. Later in his interview on NPR's *All Things Considered*, Colonel Virts addressed a likely future scenario in LEO: "If they [Russia] leave ISS, either they build their own space station…or they partner with the Chinese."[18] Many experts do not think that Russia has the resources to build its own station due to its declining economy and agree with Virts' assertion; Russia is expected to turn to China in the future. However, China has rapidly become a leading global power in technology and space and is seen as a "pacing

A Soyuz rocket launches with Expedition 33/34 crew members from Baikonur, Kazakhstan / NASA

challenge" for U.S. military and technological capabilities. The Chinese Tiangong station is the only other current LEO space station besides the ISS, which saw three of its modules launched in 2021 and 2022.[19] The station has a lifespan beyond that of the ISS because it is over two decades newer and boasts more

advanced systems.[20] China announced that Tiangong was open to foreign visitors in October of 2023.[21] However, Russia and China do not have any public plans for cooperation in LEO on China's Tiangong station. U.S. experts fear that a gap in LEO service will lead other countries with developing space programs to also partner with China alongside Russia.[22] The expansion of China's international collaboration through Tiangong would threaten the technological security and dominance of the United States. Dr. Mary Lynne Dittmar of Axiom Space emphasized this point in her February 2024 testimony to the Space and Aeronautics Subcommittee of the House Science Space and Technology Committee. She stated, "In the face of uncertainty and an absence of American capability, international industry and scientific institutions will be forced to partner with the Chinese in order to ensure their ability to continue to operate in low-Earth orbit."[23] While no official plans have been announced by Russia and China so far, the lack of American platforms would leave researchers and astronauts globally with only Tiangong as a destination. This makes American commercial stations critical to continuing U.S. presence in LEO.

A Shift from Government to Commercial Partnerships

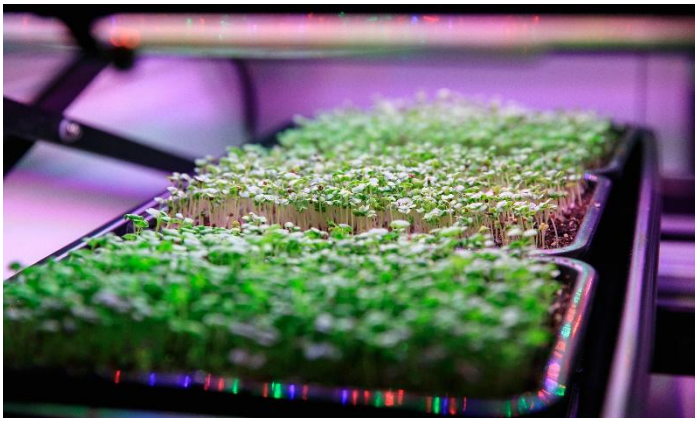
NASA's transition to commercial stations is an element of a larger shift in government space strategy to projects being commercially designed and manufactured rather than designed by NASA, as in previous stations. This paradigm shift has brought about different kinds of international partnerships than in prior decades. To build the ISS, agreements were made directly between governments: for example, between the United States and Japan. Today, U.S. companies are cementing agreements directly with foreign governments through their space agencies, and with non-U.S. companies, to collaborate on their commercial stations.

As of September 2025, six commercial space stations have been announced by U.S. companies. Axiom was the first commercial station company to be awarded a contract by NASA to build a station that would first attach to the ISS then detach to become free-flying. Starlab and Orbital Reef (made by Blue Origin and Sierra Space) were awarded funds through Space Act Agreements by NASA to develop free-flying stations in the first phase of NASA's Commercial LEO Destinations (CLD) program. Vast and Starmax (made by the company Gravitics) have unfunded Space Act Agreements with NASA. Through these agreements, the companies can access NASA facilities and expertise for development and testing but are not given any funding. Both companies aim to eventually produce stations with artificial gravity. A final company, ABOVE: Space, announced the development of a space station and was awarded a technology development contract through the U.S. Space Force's SpaceWERX organization.

View of Earth from the U.S. Space Shuttle / NASA

Two commercial stations currently in development stand out for their international partnerships and exemplify the shift from government to commercial agreements. Axiom Space, which received a NASA contract in 2020, has established agreements with foreign companies and governments for its commercial station program.[24] Axiom's major collaborating partner for its station, Thales Alenia Space—a joint venture between the French technology company Thales and Italian defense company Leonardo—is headquartered in

Cannes, France.[25] Axiom also founded a joint venture with the South Korean company Boryung Corporation to jointly explore business opportunities related to the station and manage business partnerships in South Korea.[26] Axiom signed Memorandums of Understanding (MoUs) agreeing to work with the space agencies of Canada and the United Arab Emirates (UAE), and with the governments of Italy, Hungary, and New Zealand. The company also signed a letter of intent with the Bavarian State Chancellery, the government of the German state of Bavaria.[27]



Plant Progress at the Plant Processing Area / NASA

A second Space Act Agreement recipient, Starlab, which received a NASA contract award in 2021, also boasts numerous international partnerships between U.S. and non-U.S. companies, foreign government agencies, and universities. The station is a joint venture between the U.S. company Voyager Space and the German and French corporation Airbus. Two other international companies hold equity in Starlab LLC: Mitsubishi Corporation of Japan and MDA Space, which was founded in Canada and has locations in Canada, the United States, and the United Kingdom. Starlab is also partnering with the Universities Space Research Association (USRA), which includes numerous American and international universities, and the International Association of Science Parks (IASP), which includes hundreds of science and business parks across the globe. Finally, Starlab has also signed MoUs with the ESA and the Indian National Space Promotion and Authorisation Centre (IN-SPACe) and NewSpace India Limited (NSIL), both government agencies of India. Jeffrey Manber, President of International and Space Stations at Voyager Space, told Forbes that Starlab will "replicate the ISS partnership on a commercial basis but without the Russians."[28]

Policy and Regulatory Questions Remain

Despite the many plans made, further questions regarding U.S. government policy and the government's role in commercial station development and operations must be addressed to maximize the potential of the stations. For example, NASA has not officially announced plans for the future of research through the ISS National Lab. The ISS National Lab facilitates research on the station by companies, organizations, and academics outside of NASA. In November 2023, NASA published a report exploring models for how it would conduct research on commercial stations.[29] The study proposed a range of models from NASA acting as a permanent tenant—buying space and lending it to other researchers, similar to the current ISS National Lab system—to NASA functioning as a customer alongside other commercial or academic entities and paying fees for service by project and not managing any type of National Lab. Commercial companies looking to perform research on commercial stations will be significantly impacted by NASA's final decision. These companies prefer that NASA purchase missions and do not want the agency to have any management oversight of a station. NASA's decisions could also provide a framework for how companies work with foreign governments. NASA and the companies it supports must firmly establish the framework through which the government uses and oversees stations.

Clarity on these questions as well as the creation of regulations for commercial stations will allow companies to confidently move into the future of human habitation in LEO in collaboration with a variety of

international partners. A recent executive order makes strides in giving regulatory guidance for novel space activity but expressly excludes human spaceflight.[30] The slow process of regulatory changes will also likely prevent any regulations from being updated quickly.

The use of commercial stations also raises questions about what role the government should play in commercial agreements. Can, or should, the government restrict the customers U.S.-based companies do business with? NASA continues to collaborate with Russia on ISS missions, but current U.S sanctions restrict companies' collaboration in space with Russia due to its invasion of Ukraine. It is unclear how leasing experimental or living space to the space agencies or companies of sanctioned countries will be handled. A change in political climate, such as an end to the Russia-Ukraine conflict, could directly affect partnerships and customer bases for companies. Could commercial agreements then be used to help repair the relationship between the United States and Russia?

Similar questions can be asked about commercial collaboration with China or Chinese companies. U.S. law prohibits NASA and the Office of Science and Technology Policy (OSTP) from bilateral collaboration with China without the authorization that the activities posed no risk of technology transfer.[31] In the current geopolitical climate, direct collaboration with China by the U.S. government is unlikely, with rare exceptions like the exchange of data for China's 2019 lunar landing.[32] Should the same restriction be applied to U.S. commercial space companies? The United States needs to address questions such as these to ensure that commercial stations have the regulatory stability to thrive as this commercial shift in LEO continues.

Conclusion

The growth of the commercial space industry has allowed NASA to transition from the government-owned and operated International Space Station to supporting new commercially-owned space stations in LEO. The decommissioning of the ISS will widen the already dangerous divide between the United States and Russia in space and diplomatic relations. With the current political climate and attitudes toward Russia due to its invasion of Ukraine, U.S. collaboration with Roscosmos seems unlikely despite its critical involvement in ISS. While no official plans have been announced, the only other option for Russia in LEO is thought by U.S. experts to be the Chinese Tiangong station, stoking U.S. concerns about the Sino-Russian relationship and growing Chinese dominance in space. Despite the lack of currently public plans for collaboration on Tiangong, Russian and Chinese military cooperation in other domains inflates this concern.

It is not all doom and gloom, however. Despite the many remaining questions policymakers need to address, commercially owned stations already have exhibited a shift in the kinds of international partnerships with U.S. companies. Commercial stations in LEO involve collaboration between U.S. and non-U.S. corporations and partnerships between U.S. companies and foreign governments. Many involve the same players as ISS as well as new space agencies and companies. These commercial destinations offer international partnership opportunities in the human habitation of LEO that ISS did not due to the many new countries participating in space and on current stations.

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