

**Forum:** United Nations Educational, Scientific & Cultural Organization

**Issue:** Measures to strengthen international cooperation in space exploration

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## **Introduction**

If properly managed, international cooperation in space exploration has the potential to benefit all participants significantly. Those partners who choose to approach space exploration as a mutually beneficial endeavor will reap advantages in the form of financial efficiency, programmatic and political sustainability, and workforce stability. In addition, a modern space exploration program must explicitly include international cooperation as a component and objective to facilitate coordination prior to the development of new hardware. This kind of coordination can take place at the industry and government levels, allowing for ahead-of-time planning and standardization that can improve the strategic use of redundancy through interoperability. Finally, leadership in subsequent phases of the Vision for Space Exploration will be made possible by the promotion of a set of industrial standards for cooperation in space exploration.

Countries are using space blocs to expand their spheres of influence on the ground in addition to pursuing power in space. The Asia-Pacific Space Cooperation Organization, which was established in 2005, is one example. It includes Bangladesh, Iran, Mongolia, Pakistan, Peru, Thailand, and Turkey, with China as its leader. The organization's primary objective is to expand and normalize the use of the Chinese BeiDou navigation system, which is the Chinese equivalent of GPS. Its broad objective is the development and launch of satellites. As is the case with Iran, countries that utilize the system run the risk of becoming dependent on China.

During the Cold War, space activities were dominated by the United States and the Soviet Union. Both took precautions to avoid escalating tensions on the ground and even collaborated on a number of space projects. There were a number of international collaborative groups that emerged as more nations established their own space agencies. The Consultative Committee for Space Data Systems, the United Nations Committee on the Peaceful Uses of Outer Space, and the United Nations Office for Outer Space Affairs are a few examples.

Throughout the course of the talks, representatives from countries outside of the region, such as France and Russia, provided support to industry experts from Asian nations like Japan, India, Indonesia, Thailand, Vietnam, Malaysia, and South Korea. The Asia-Pacific space collaboration could aid in the promotion of educational activities throughout the region by combining resources and providing essential information for disaster management plans. Additionally, joining forces increases the likelihood of future joint space explorations and makes it simpler to reach an agreement on a single space policy. A collaborative plan to develop CubeSats was one of the projects under discussion. These small satellites are made to do scientific research and observe the Earth. The CubeSats could better monitor rice crops in the Asia-Pacific region once they were launched, contribute to sustainable development, and monitor global rainfall. The primary goals of these international ventures were scientific collaboration and data exchange, encouraging international cooperation by achieving a common objective.

## **Definition of Key Terms**

### **International Cooperation**

All professional endeavors aimed at assisting those in need and fostering global economic, social, and cultural development are included in the term international cooperation. Humanitarian aid, development cooperation, and peace promotion are all examples of international cooperation.

### Political Sustainability

A policy is politically sustainable if it meets current political objectives and resource requirements without jeopardizing those of the future. Structures that not only meet the needs of the people who live there now but also make it easier for future generations to keep the community healthy.

### Humanitarian Aid

While development aid addresses ongoing structural issues, particularly systemic poverty, that may impede economic, institutional, and social development in any given society, humanitarian aid is intended to save lives and alleviate suffering during and immediately following emergencies.

### Social Cohesion

Social concord includes constructing shared values and groups of interpretation, lowering disparities in wealth and income, and usually allowing humans to have an experience that they may be engaged in a common enterprise, dealing with shared challenges, and that they may be contributors of the equal community.

### Space Blocs

In order to advance their interests in space, nations with similar strategic interests on Earth have formed space blocs. The most iconic illustration of international cooperation in space is the International Space Station.

### Interoperability

Defined as the ability in which different systems and applications are able to communicate with one another in an efficient and transparent manner. In essence, interoperability makes it possible for various information systems to communicate with

one another and comprehend information that is passed between them. Syntactic, structural, and semantic interoperability are the three main types of interoperability, each referring to the standardization of communication between a host party and a referral with contrasting levels of complexity.

## Key Issues

### Case of Interoperability

Interoperability is directly related to the way and efficiency of communication between parties, and the effectiveness of discussions is highly valued. Efforts to be transparent and minimize redundancies facilitate communication among national space exploration agencies; thereby enabling countries to change the relevant case. However, the U.S. says it will take the lead in space travel. International cooperation is often described as a government-to-government effort that is large, involves high-level diplomatic contacts, and has a cost. In reality, the International Space Station is a perfect example of this transportation method. NASA formally signed a Memorandum of Understanding (MOU) with the Japanese government, although NASA and other space agencies from Russia, the European Union, and the United States participated in agreements to implement it.

Each nation involved in this type of cooperation faces programmatic risk, potentially leading to inefficiency and political debates as nations question others' intentions and/or ability to perform certain actions. All other nations, in particular, are dependent on the critical-path nation. The critical-path nation is able to assume the role of "leader," but the other participating nations are unlikely to engage in such cooperation again.

### Space Race Refiguration

The battle between nations to achieve successes within the realm of space exploration is a competitive field witnessed consistently over the past few decades, the

most notable instance being the noted ‘Space Race’ between the United States and Soviet Union. Although, as political ties strengthen between nations across the world, the potential of reigniting a race similar to the aforementioned in hopes of achieving notable success is a highlighted concern that has been raised before.

In essence, as the world continues to develop technologically and build its knowledge of space-related functions, the ties developed between nations could be at risk; wherein one nation forgoes their duties in hopes of achieving a particular milestone before their direct competitor, or their potential ally. Such could disrupt the political flows of the world, raising questions about operating in ‘good faith’ or quite simply eradicating chances of betterment between nations.

## **Major Parties Involved and Their Views**

### **The United States of America**

The United States of America has been a major player within international space exploration since the establishment of the National Aeronautics Space Agency (NASA) by President Dwight D. Eisenhower, in 1958. NASA is one of the five entities operating on the International Space Station (ISS) along with Canada, Russia, Japan and Europe (ESA - European Space Agency). The United States has also signed the Artemis Accords, which was signed by President Donald Trump in 2020. The Artemis Accords are a comprehensive plan to expand space, in particular, lunar exploration, which is led by NASA, which plans to send the first woman and the next man onto the moon by 2024. NASA had announced that its signing of the Artemis Accords were to “expand” extensive space cooperation with the United States of America and its allies.

## European Union (United Kingdom & Switzerland)

The European Union, since its foundation, has looked to establish key space cooperation within its member states since the very beginning. The establishment of the ESA (European Space Agency) has greatly contributed to this. The European Space Agency even includes some non European Union member states such as the United Kingdom or Switzerland. The European Space Agency, is quite in retrospective terms, the largest example of international cooperation in space exploration, being one of the largest space agencies in the world having roughly 22 member states in total all committed to exploring space. The European Space Agency has signed Memorandums of Understanding with NASA (National Aeronautics Space Agency), JAXA (Japan Aerospace Exploration Agency), ISRO (Indian Space Research Organization), CSA (Canadian Space Agency) and Roscosmos (Russian State Space Cooperation). The European Space Agency also maintains cooperation programs, which work as observer states to the organization with Slovenia, Croatia, Malta, Slovakia, Bulgaria, Cyprus, Turkey, Israel, Ukraine, Latvia and Lithuania.

## Russian Federation

Russia has shown a heavy interest within the area of space exploration. The Russian Space Agency (Roscosmos) has worked heavily recently to bid for international co-operation. Most recently, Roscosmos had signed a memorandum of understanding to work on a new lunar exploration station with the China National Space Administration (CNSA), as Russia has announced its departure from the International Space Station (ISS). Russia has also worked several MOUs with space agencies from the United States as well as India. Overall, there is still a far way to go for an expansion of space cooperation with Roscosmos and the rest of the world as the War in Ukraine is fresh in the minds of most nations, which has scared away co-operation with Roscosmos heavily.

## State of Japan

Ever since Japan's massive economic miracle, spaceflight has been a particularly keen interest to the Japanese government. As such, JAXA (Japan Aerospace Exploration Agency) was established in 2003. JAXA has signed several key agreements with different space powers across the world, to expand its technical know-how in the realm of space exploration as well as conduct joint space missions with foreign nations. JAXA has communiques and MOUs (Memorandums of Understanding) with several different space agencies including NASA, CSA, ISRO, Roscosmos, ESA and the ISA (Indonesian Space Agency). This has directly coincided with Japan's foreign policy of strengthening ties with its Asian partners such as India or Indonesia. JAXA is also a heavy key contributor to the UNOOSA (United Nations Office for Outer Space Affairs).

## People's Republic of China

With the incoming rise of China, Chinese presidents since the Jiang Zemin era, have been pushing for the expansion of a Chinese space program. As such, the People's Republic had established CNSA (China National Space Administration), to procure Chinese interests in the realm of outer space, in 1993. When it comes to foreign cooperation, CNSA tends to stick to Roscosmos, as the Russian Federation was a key space supplier back when China was first establishing its space program. China has released several projects with Roscosmos, including the aforementioned joint lunar exploration station between Russia and China. The People's Republic has also signed an agreement with the BRICS (Brazil, Russia, India, China and South Africa) nations to begin to increase organizational cooperation and coordination in outer space affairs.

## Republic of India

With the birth of its space program, ISRO, in 1969, India has set to increase their foreign cooperation with multiple different nations, likely to expand ISRO's space capabilities,

and work towards a more lucrative commercial space market within the nation. In particular, ISRO has taken up missions with France, the United States and Japan to expand India’s capabilities within outer space along with its allies. Chandrayaan-1, has been a massive success to both India and the United States, as the joint ISRO-NASA mission managed to find water molecules on the moon surface, being the first nations to do so. Furthermore, India has taken up satellite missions with France, such as the MEGHA-TROPIQUES mission, which saw a joint satellite mission between India and France to study tropical atmosphere and other climate activities such as typhoons.

### Development of Issue/Timeline

Date	Event	Outcome
<b>May 10th, 1946</b>	The first space research flight is launched by the United States through a captured and improved German V-2 Rocket, restored through Operation: Paperclip by captured German scientists upon direct approval by US President Harry S. Truman.	Outlining the need for the United States public and administration for a continued space program, leads to massive alarm and concern within the Soviet Union with fears of the United States overcoming the Soviet Union technologically.
<b>August 21st, 1957</b>	The First Intercontinental Ballistic Missile was launched by the Soviet	This creates a fear within the United States about the Soviet exploitation of space



	<p>Union, using a modified V2 Rocket, gathered through Operation: Osoaviakhim.</p>	<p>to target the United States and the United States public. Leads to the establishment of more Soviet astrology and interplanetary organizations.</p>
<p><b>October 4th, 1957</b></p>	<p>The Soviet Union launches the first artificial satellite, “Sputnik-1”.</p>	<p>Start of the Space Race, leads to the United States and the Soviet Union spending more money on space travel, eventually overpassing the outlined budget set out by Soviet Premier Nikita Khrushchev.</p>
<p><b>April 12th, 1961</b></p>	<p>The United States ABMA (precursor to NASA) confirms the existence of the “Van Allen” Radiation Belt within space.</p>	<p>Leads to a more sophisticated space technology development program within the United States and the Soviet Union, also leading for more safety precautions to come into fruition regarding space travel.</p>
<p><b>July 20th, 1969</b></p>	<p>The United States launches</p>	<p>Intensifies the Space Race</p>

	<p>a mission to the moon which sees American Astronaut Neil Armstrong land on the surface of the moon, making him the first man to do so.</p>	<p>greatly, particularly within the USSR, leading to massive amounts of money being dedicated to space exploration.</p>
<p><b>April 19th, 1971</b></p>	<p>The Union of Soviet Socialist Republics established the first space station dubbed “Salyut-1” or “DOS-1”.</p>	<p>Leads to massive urgency between the Western powers, in particular the United States, United Kingdom and France to expand space cooperation.</p>
<p><b>May 30th, 1975</b></p>	<p>The European Space Agency, or the “ESA” is founded by Germany, the UK, Italy, Spain, The Netherlands, Switzerland, France, Belgium and Spain with the goal of expanding space co-operation to rival those of the USSR and USA.</p>	<p>Leads to the space race becoming a three way race between the Americans, Soviets and European powers.</p>
<p><b>July 15th, 1975</b></p>	<p>The United States and the Union of Soviet Socialist</p>	<p>Leads to an easing of tensions in regard to space,</p>

	<p>Republics conduct a joint multinational space mission dubbed the “Apollo-Soyuz Test”. The Apollo-Soyuz Test, was a mission designed to check compatibility between Soviet and American rendezvous and docking systems and their compatibility.</p>	<p>and paves the idea forward for space cooperation between nations. Also leads and paves the way for the creation of the “European Space Agency” and the “International Space Station”.</p>
<p><b>January 26th, 1978</b></p>	<p>The International Ultraviolet Explorer project is officially developed between NASA, the ESA and SERC (The Science and Engineering Research Council of the UK) as the first ultraviolet observatory.</p>	<p>Expansion of space cooperation further.</p>
<p><b>January 25th, 1983</b></p>	<p>The First Infrared orbital observatory is established by NASA, SERC and NIVR (Netherlands Agency for Aerospace Programs).</p>	<p>Expansion of space cooperation further.</p>

<p><b>January 25th, 1984</b></p>	<p>The United States begins work on the “Freedom Space Station” to combat the Soviet Mir Space Station, along with Japan, the European Union and Canada.</p>	<p>Effectively begins the establishment of International Space cooperation on a wider scale.</p>
<p><b>November 2nd, 2000</b></p>	<p>The first crew resides on the International Space Station, this being a NASA-Roscosmos joint crew.</p>	<p>Effectively eliminates tensions related to outer space affairs.</p>
<p><b>October 13th, 2020</b></p>	<p>The Artemis Accords are signed between the US Government and several other world governments, to work to jointly establish another person on the moon by 2024-2025.</p>	<p>This is expected to greatly create a new age of space cooperation, moving from the Space Race to Space Cooperation.</p>

## Previous Attempts to solve the Issue

### International Space Station (ISS)

The ISS, or the International Space Station was launched in 1998 and is the largest modular space station on the planet. The ISS had evolved from a NASA planned mission dubbed “Space Station Freedom”, an American response to the Soviet/Russian Mir-2

Space Research Station proposal. At the present, the ISS only contains five main members, this being NASA (The United States), JAXA (Japan), Roscosmos (Russia), CSA (Canada) and the ESA (European Union Member States). The main issue with the International Space Station is the cost it takes to run it. According to Roscosmos and NASA, the International Space Station has suffered multiple damages, and as the Station takes billions of dollars to run, the question of money is a large one. Another, is political differences. Roscosmos has announced that it plans to leave the ISS, in order for Russia to pursue their own space research station. On the other hand, the International Space Station has the expertise of various different space agencies, some of which offer a much broader perspective to issues onboard. The ISS also allows astronauts to monitor natural disasters of space, and has saved countless lives doing so. This is done through the ISS SERVIR (International Space Station Environmental and Research Program). The International Space Station also monitors water quality from space, and assess water quality, and ways to improve water purity in coastal oceans, which is done through its “Water Purification Program” run jointly by the Canadian Space Agency (CSA) and the American Space Agency, the National Aeronautics Space Administration (NASA). The International Space Station is largely debated on being a success or a failure partly due to it’s high costs but adverse positive effects to the environment. However, it has certainly involved from the twenty man research capsule in 2000 shared between 10 Russian and American astronauts jointly, to a massive research and testing ground making significant strides for humanity in medical research, as well as hosting the astronauts of roughly 15 different countries.

### **Artemis Accords**

The Artemis Accords are a group of multilateral agreements, signed by 22 different nations, including countries such as the United States, United Kingdom, Japan and South

Korea. The Artemis Accords intend to jointly work together between signatories to establish a human presence on the moon by 2025, led by the United States of America. The signatories of the accord also intend to use the objects in space for peaceful purposes and scientific exploration. However, the main problem with the Artemis Accords lies in the fact that it is a politically motivated agreement. The Artemis Accords contain only Western Nations, this could largely be due to the fact that the program is led by the United States, however, without help from countries such as Russia and India, who have top of the line space programs, The Artemis Accords can never truly go global. The Artemis Accords however, is the most expansive space cooperation agreement ever in history, uniting a total of 22 different nations to a common goal of space exploration. The Artemis Accords also aims to register space objects, which could help Earth avoid any sort of cataclysmic events in the future. Furthermore, the Artemis Accords also calls for the independent release of scientific data by space organizations as well as a provision of emergency assistance to countries who have lost their astronauts to the bearings of space. This will allow for more faith to be placed in safety when it comes to space, which can expand the commercial space market globally, and build more trust within space agencies, and less uncertainty from the general public.

## **Possible Solutions**

### **Political neutrality in Space Agreements**

When it comes to most space cooperation agreements, whether that is the ISS, or the Artemis Accords, these agreements often come under fire due to geopolitics, or hostility between nations, which leads to them falling apart. As such, one solution that member states could follow, would be establishing space cooperation agreements to be politically neutral from their very establishment and creation. This would help to remind states the importance of space exploration and mutual help with such, rather than petty politics or

political ideology. A maintenance of political neutrality within space agreements could see a larger budget for co-operative space missions being performed by nations, as well as an increased amount of data and research due to the difference in capabilities between space agencies. This would lead to a far more efficient space co-operative ecosystem across the world, as more nations would band together for international space cooperation. To be established globally, member states of the United Nations must work to adopt political neutrality as a fundamental part of their space policy, by enshrining it in their respective space agencies manifestos. The UNOOSA (United Nations Office for Outer Space Affairs) should be the monitoring body and power balance for such. This would effectively give space agencies the authority to cooperate with one another regardless of their set nation's political alignment.

### **UN Funding for Space**

Oftentimes, when it comes to space cooperation agreements, they remain underfunded due to the sheer amount of competitiveness within space exploration between nations, and the sheer repair cost when it comes to space assets. With this, the United Nations, specifically the United Nations Office for Outer Space Affairs, should work to fund space exploration as much as possible, so that nations have to deal with a lesser economic burden when it comes to exploring space. To secure UN Funding for Space, would essentially entail a separate banking organization similar to the IMF (International Monetary Fund) to become established. This can be powered by the UNOOSA (United Nations Office for Outerspace Affairs) to ensure funding for states can go smoothly. This will also allow for less developed and developing nations to heavily invest within their space programs.

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