

# NEERJA MODI SCHOOL MODEL UNITED NATIONS'20

*'Reimagining perspectives'*

20-22 November, 2020



MULTILATERAL AGENCY TO RESOLVE CONFLICTS IN  
OUTER SPACE

**Mission To Mars: Laying the Framework  
for the Colonisation of Mars**

## **Background guide**

## LETTER FROM THE PRESIDENTS

We, Diya and Lakshya, welcome you to MARCOS!

Together we would be entering into a realm of space missions including home governments and private space agencies and its governings. Given the very nature of the committee, it is essential that you delegates construct and aim to execute methods to decipher the crises that may arise. Thus, while the framework of the committee, and indeed that of the time, is forthright, the solutions must be enhanced to a situation rather different from what we have today. The gap between countries, defined by the incidents and events, must be bridged – and with procedures harmonious with the necessary principles of the United Nations, with the aim to bring long-term world peace.

A little about us, we are in grade 12th with major emphasis on science. We've been fascinated with space travel since a very young age. Whether it was binge watching Star Trek or reading sci-fi books like *The Abyss Beyond Dreams* or *The Force Awakens*, space was a big part of our lives. Luckily, now we get to take that passion into NMMUN with this committee! We couldn't imagine directing a better committee for NMMUN'20, and we hope that this committee is a blend of cooperation and individualism. Being a continuous crisis committee, prior preparation doesn't necessarily guarantee success but it definitely wouldn't hurt. More importantly, it's what you do in real-time and how you react to situations that count the most. Ultimately, this committee is what you delegates choose to make of it as anything could happen.

This conference is not only for debate, but also a space for you to act, write, and stretch your imagination; I hope that all of you will have both a fun and intellectually stimulating weekend and would be ready to shape the future of global technological discourse! We're excited to see what ideas you formulate for making this ultimate space mission a reality.

Existing in an online platform may dispense novel challenges, but we request you all to embrace this event with us as we try to make the best out of a convoluted situation. We know many of you have been itching to get back into NMMUN after quite some time of inactivity, so let's make this a great one! I wish you all luck and safety, and please feel free to contact us with any questions or concerns during your preparation.

Happy Researching!

-Diya Badola & Lakshya Dharwal

*Presidents*

Multilateral Agency for Resolving Conflicts in Outer Space, 2049

## LETTER FROM THE VICE-PRESIDENTS

Greetings fellow Martians,

We are over the moon to be chairing this committee and to be accompanying you into outer space, the final frontier. Together we can be the progenitors of space colonisation policies that will govern the activities of humankind for centuries to come.

At the risk of not sounding like aliens, let us introduce ourselves to you:

I, Shaurya Sharma , along with my good friends Prisha Poddar and Arnav Dayal, am in 11th grade. We have maintained a keen interest in emerging fields of science and technology since as far back as we can remember and, more importantly, we have rewatched the Star Wars movies enough times to beat you all on trivia night. When we are not obsessing about worlds unknown, we can easily be found scrolling through the meme archives of reddit and binging The Big Bang theory, so do not mistake us for being boring science nerds.

We look forward to an intense three days of exhilarating debates filled with energy and enthusiasm. Don't be worried about reaching out to us. This is our first time chairing, so it's a learning experience for all of us, but rest assured, we will ensure that your MUN experience with us isn't only knowledgeable, but also fun, entertaining and definitely unforgettable. We hope this conference leaves you with broadened horizons.

Happy Researching!

-Shaurya Sharma, Prisha Poddar & Arnav Dayal

*Vice Presidents*

Multilateral Agency for Resolving Conflicts in Outer Space, 2049

## *Committee description*

Welcome to the Future!

The year is 2049 - a time of momentous significance - for humankind has begun its inevitable search to establish a permanent colony on Mars.

This committee must develop the basis of a framework governing the establishment of a human colony on Mars which might force countries who are enemies on Earth to collaborate, in some capacity at least, on Mars, to achieve this incredible feat. Diplomacy in this committee will be particularly tricky and interesting – while firmly established Earthly alliances cannot be ignored, establishing a human colony on a new planet requires international cooperation on a scale unlike any other. Keep in mind, the delegates of this committee are representatives of their home governments and private space agencies, some of whom have already sent scientists to Mars to explore the possibility of colonisation, whose policies most certainly cannot be disregarded – ultimately, the colonists are existentially dependent on their home governments, for the crucial funding required to maintain the process of colonization. Also, while setting up a shared human civilization, you as delegates must further the interests of your own countries as much as possible. Delegates will have to formulate strategic policies that will best suit their nation's priorities and particular technological, economical and political advantages. This process will be made more challenging due to constant crises, aimed at shifting dynamics and testing alliances. Be ready to suddenly tackle unexpected situations that will undoubtedly be coming your way. The stakes, of course, are tremendously high. The unfolding of events remains to be seen, and lies in your hands, as pioneering Earthlings in charge of establishing humanity's much anticipated base on Mars.

### **Challenges that will be faced on Mars**

This mission to Mars presents us with grand challenges, obstacles and dangers as we should expect from the next biggest achievement of humanity. From our difficulty to safely land on Mars to simply ensuring that its foreign air contains the right molecules for our carbon-based lungs to breathe and to the political and social problems we will face, it is truly an exquisite puzzle that only a unified kind can solve.

Dreams of Space Colonization are easily crushed when one is presented evidence that the astronaut team chosen for the mission are essentially sacrificing themselves for the greater good of science. Their journey would consist of six to nine months where they shall expect a wave of radiation exposure resulting in a compromised physiological state. Of course, even if the astronauts do make it to Mars safely, their survival on it is not guaranteed. Since Mars contains water, pioneers hope that the hydrogen and oxygen atoms could be used to create fuel, thus eliminating the need to transport fuel from Earth to ensure survival. However, though water is present, it is trapped within minerals and would require energy to be extracted, further exacerbating the issue. Lack of access to fuel is essentially a lack of access

to energy which this mission would greatly need. Cold temperatures and the poisonous ground just add to the list of problems.

Finally, the political implications of such a journey are astronomical to say the least. There are currently no international space laws and the few treaties that have been signed are loosely respected. Important amongst them is the 1979 UN Moon Treaty, which states that the Moon shall be developed for the benefit of all nations, that no military bases shall be built on the moon or other celestial bodies, and any form of altering the environments of celestial bodies is banned. To this date no space-faring nation has ratified this treaty, so it has little real-world bearing, which has powerful ramifications when it comes to the accountability of governments and the increasing number of spacefaring corporations, which some delegates will have to reconcile with the urge for profit.

### **Guiding framework of committee and issues a resolution must consider**

As pioneering colonists, you will have to address innumerable issues. The following are a few examples of the more pertinent ones that need to be addressed with immediacy, but do not feel restricted to these.

1) Short-term territorial expansion and demarcation: Having just arrived on the Martian surface, the first task each of you is faced with is establishing your respective country-specific bases. While national boundaries may or may not persist in the long term (point 2), they certainly do for the present. It is extremely important for the committee to settle upon mutual guidelines governing the demarcation of territory and expansion of each nation's base, in order to avoid unpleasant clashes with fatally harmful weaponry on a foreign world. Given the 'cleanslate' character of the Martian surface, no single country can claim greater territory than any other – unless so determined by the guiding framework you create. It is your responsibility, as the architects of this settlement, to ensure that the Mars colony is a stable, sustainable one

2. Long-term global politics: This committee faces a choice, the first of its kind in history – whether to create an entirely new world order or continue with the political set-up that exists on Earth. You must collectively select your approach – does the concept of the nation-state remain in the best interests of society, with the UN as a platform for collaboration? Or, given the scale of debilitating international strife on Earth, is it ideal to work towards establishing a common world government? The implications are many and varied, ranging from citizenship to judicial systems to immigration.

3. Militarization rules: History is replete with uncountable examples of the ill effects of stockpiling weaponry. Now, in 2049, the stakes are infinitely higher, considering the massive increase in military and weapons capabilities. The terrifying arms race of the Cold War era diminishes into nothingness when compared to the potentialities of current weaponry. In

order to avoid self-destruction – the classic existential threat faced by a technologically advanced civilization – strict rules governing the acquisition and expansion of military arsenals must be formed and enforced. Currently, the colonists have brought no nuclear weapons to Mars. You must decide whether to make the Mars colony completely free of nuclear weaponry, or allow the presence of nuclear arsenals. You must carefully weigh all the implications, especially in terms of long-term global relations on Mars. It is up to you to decide what sort of weapons will be allowed on Mars, their numbers, and the circumstances warranting their usage.

4. Environment and use of natural resources: Human profligacy and callousness towards the environment has proven to be tremendously, some say fatally, harmful to the most beautiful planet (Earth) in our Solar System. While Mars lacks the prolific biodiversity and abundance of life that characterized Earth before humanity's terrible destructiveness, it has a significant store of natural resources that the human colony will inevitably exploit. In order to avoid thoroughly depleting Martian resources and initiating uncontrollable changes in climatic patterns, humanity's engagement with nature on Mars must be carefully thought out from the outset. Humanity cannot afford to repeat, on Mars, the mistakes it has made on Earth – this is possibly our only opportunity to create, from ground zero, a perfect, new world order. Remember, delegates – the future of our species lies in your hands. Use this power wisely.

5. Accommodating immigrants from Earth: The arrival of civilians from Earth presents a number of challenges. For instance, will settlers have to buy their own land on Mars, or will the concept of private property be abolished/modified for the sake of simplicity and sustainability, with the government determining land allocation? You must decide how many people should be allowed to join the settlement, whether to gradually increase the scale of immigration, and how freely settlers can move between the bases established by different Earth-nations, among other considerations.

#### Resource/Military allocation mechanism

As delegates representing the Mars mission of a nation, you are endowed with certain abilities and powers. You have the resources that your nation chose to bring to Mars, as well as certain advantages or disadvantages due to the location on Mars your nation chose to land on. Your short-term goal as a nation on Mars will be to expand your sphere of influence and/or dominate other nations while collecting further resources – utilization of the resources you are initially equipped with will be absolutely essential in accomplishing these goals. It is expected (and likely necessary) that you will be utilizing these resources to the fullest extent. You will have the capacity to expand your base and region of influence, build structures, survey the land, spy on others, and many, many more actions. Each action of yours will either be civilian, military, or some combination of the two. Please keep in mind that, as mentioned before, while you are technically “allowed” to violate the orders and policy of your Earth Government, you are reliant on them for resources (for now).

## TIMELINE

Every 26 months, there is a brief window of 3 weeks where the Earth is close enough to Mars for the fastest, most cost efficient journey to the red planet. The most recent travel window takes place from November 16th to December 4th 2049 , so it is highly likely that the weekend on which the Multilateral Agency for Resolving Conflicts in Outer Space meets will also witness several simultaneous launches to what will hopefully be the future home of human civilization.

[Post covid economic decline forces SpaceX and NASA to delay Missions to Mars]  
[Travel window begins, 29th April 2026]

3rd March, 2026= SpaceX launches first private rover to Mars along with cargo.

11th March, 2026= NASA launches first manned mission to Mars, fails to land on surface. Crew of 4 was declared dead.

5th May, 2026= SpaceX announces manned mission amid NASA's failure. Claims to be the first to put humans on Mars. Stock prices reach all time high

9th September, 2026= Blue Origin reveals plans for private space tourism industry

1st January, 2027= Blue Origin puts first private individuals into orbit. Inaugurated by Niel DeGrasse Tyson and Bill Nye.

17th February, 2027= Alexandria Ocasio Cortez sworn in as first female President of the United States, redirects funds from space research into welfare schemes and cheaper healthcare. Countries follow suit, research and development slows down significantly.

28th November, 2027= Scientists at CERN greatly improve efficiency of nuclear energy, mini reactors seen as the new future.

[Travel window begins, 6th May 2028]

10th May, 2028= SpaceX's ITS ship, aimed at revolutionizing space travel, fails. Explodes on launchpad. Halts manned mission plans.

15th May, 2028= CNSA and ROSCOSMOS launch jointly operated mining rover, plan to dig deep into the surface for minerals as well as signs of life in the form of microbes.

18th May, 2028= ISRO and CERN test miniature reactors. Sent along with MAHATMA probe to set up nuclear power stations on Mars.

29th December, 2028= United Kingdom and France announce series of joint ventures to the red planet, EU warns of economic burden

3rd April, 2029= Elon Musk reveals plans to launch two manned spacecraft simultaneously to Mars, urges investors to not lose hope

16th May, 2029= Japan shows interest in a colony on the Moon, JAXA begins work on possible infrastructure

7th November, 2029= Pakistan reveals plans to increase space research, claims to be the most successful agency

[travel window begins, 2nd August 2030]

5th August, 2030= SpaceX launches manned spacecrafts. Colliding with ITS fuel canisters, the crew was declared dead and equipment completely damaged. SpaceX goes bankrupt and remains only as an entity, taking no more action hereafter [until 2045]

9th August, 2030= NASA reveals that it has no further plans to reach Mars for the time being.

>Political pressure after the tragedy of SpaceX forces space agencies to cancel plans  
>Research and development at a virtual halt. Agencies look to solving more grounded problems

19th May, 2033= Global markets crash. Economies lowest since the Great Depression. Space research and exploration takes final blow as funding is stopped indefinitely.

18th August, 2042= ISRO launches SkyHook into orbit

28th December, 2042= ROSCOSMOS creates Lazarus (AI Humanoids) for setting up potential bases remotely

[travel window begins, 23rd May 2043]

29th May, 2043= NASA's Biome tested

8th June, 2043= Pakistan launches first rover to Mars

22nd June, 2043= JAXA perfects and sends advanced Aquaponics and soil decontaminants to be used on Mars

13th July, 2043= Sierra Nevada Corporation receives \$13.5 bn in funding from investors in midst of space race revival

[travel window begins, 25th July 2045]

30th July, 2045= North Korea's hasty rush towards space research pays off, surprisingly. Launch a private satellite to Mars, access to SkyHook denied due to international sanctions

2nd August, 2045= China launches Anti-Asteroid Artillery to Phobos and Deimos

9th August, 2045= SpaceX makes a comeback after a long, uneventful decade. Ties up with NASA to create an expandable living habitat that is easily portable with equipment.

16th August, 2045= SkyHook loses momentum, crashes into the Pacific ocean, forces nations to delay launch plans. Travel window wasted.

3rd December, 2045= Blue origin launches private SkyHook to profit off of government agencies, cost of interplanetary missions skyrockets (no pun intended)

21st December, 2045= Under diplomatic pressure from international space programs, the USA drastically reduces funding to Blue Origin. Corporation manages to stay active, launching several satellites from 2046 to 49. Cause unknown.

6th January, 2046= Countries meet at UN summit. Eco friendly countries raise concern over excess space junk and debris due to rapidly increasing space missions.

14th October, 2046= Nations meet at the UN and reveal cargo missions with Lazarus units to set up potential bases on Mars in the next travel window. [8th September, 2047]

>Japan wins space race, becomes the first to launch manned spacecraft to the red planet [scheduled to reach on 21st November, 2049]

[Travel window begins, 17th November, 2049]

## TECHNOLOGICAL ADVANCEMENTS IN 2049

It is assumed that over the course of the next 30 years, technologies enabling the safe transport of humans and resources to Mars have been well developed. Countries have decided to trade their services and technologies for each other's advancements, so the ideal Mars settlement will consist of each of these inventions. The following is a list of the major contributions made by countries towards creating a successful colony on Mars.

### **India:**

The frugal, yet undoubtedly ingenious Indian Space Research Organisation continues to be well known for their cheap and efficient solutions to major problems faced by space agencies world wide. The invention of the \*insert a probable indian name for the tech\*, more popularly known as the SkyHook, has done just this, and is perhaps one of the most important contributions towards space travel and exploration of all time, that will continue to be useful much after we colonize Mars and decide to explore the far reaches of the galaxy. Till the late 2030s, all attempts towards setting a potential base or even temporary settlement on celestial bodies were futile due to the abysmal fuel economy of spacecrafts; they simply required too much energy to push too little equipment into orbit. As a result, costs of sending rockets were high, and they couldn't carry enough payload for creating a settlement.

Typical structure of a space shuttle till SkyHook



Enter SkyHook. Simply a long tether with a counterweight on the other side, the SkyHook is able to propel spacecrafts at high speeds towards their destination, thereby reducing travel times to Mars to just 3 months with more equipment (and just enough fuel required to reach orbit) as compared to 10 months with the missions in the late 2020s and 30s, a brilliant achievement that now enables way more resources and equipment along with each trip while also reducing costs dramatically. The shortened journey also means lesser radiation exposure, leading to better physiological states in the crew.

So far, India's SkyHooks have been open to all space agencies, and have been used several times by countries sending their Lazarus and rovers to the red planet.

### **Russia:**

For long, it was accepted as an unfortunate, undeniable truth: the first humans brave enough to endeavour and land on another planet will be left alone, without support, accepting their dark and tragic fate. This scenario would have remained had the first three expeditions towards Mars not failed. Given the nature of loss of human lives, as well as the exorbitant amounts of money that governments had to redirect towards space programs, hope of an interplanetary human settlement was almost lost, and space agencies on the verge of giving up.

Thankfully though, humans thrive when pitched against the impossible. Not soon after the space race was reignited with ISRO's launch of SkyHook, Russia made a breakthrough with the creation of the Lazarus', artificially intelligent humanoids capable of carrying out tasks that would be too taxing on regular humans. These are to be sent alongside early equipment to set up the base for the human settlement and then deactivate until "revived" by the first humans on the planet, hence the biblical name.

Weary of giving so much power to another nation, each space agency tried to recreate the perfection of Lazarus. With some minor success, like that of China's WONG, but huge colossal failures like that of USA's KAREN, it was clear that any possibility of a Martian settlement would require interdependence of countries for each other's advancements. Initially reluctant, ROSCOSMOS finally agreed to share Lazarus units after countries had signed trade deals with the Russian federation. "It is crucial, however," commented a representative, "that the core code remain intact and unchanged," raising global speculation.

### **The United States of America (and SpaceX):**

Any list on space research and exploration would be incomplete without including the successors of the brains behind the first man on the Moon. It seems almost fitting then, that the National Aeronautics and Space Administration will invent the Biome that would house humanity hereafter, alongwith SpaceX.

Mars is far too hostile for human beings to live normally. Having only 38% of earth gravity, living on Mars for extended periods of time will lead to muscle atrophy, bone loss and cardiovascular problems. The lack of an atmosphere or magnetosphere also means that the surface of the red planet receives almost all cosmic radiation, increasing cancer risks in humans significantly. It would also be impractical to send the entire base and settlement along with the rest of the scientific equipment due to the sheer weight of the materials required to protect the crew from all forms of harm. NASA's Biome solves these problems dramatically.

With living spaces built upon rotating levels, the Biome is able to create a centrifugal effect which effectively replicates Earth's gravitational pull, albeit on a lateral plane. This greatly reduces the negative effects of the lower gravity, which can also be reduced by regular exercise. As for radiation, the Biome is covered with a layer of frozen carbon dioxide (harnessed directly from the environment) upon a thick covering of martian mud (added by Lazarus units). The shiny layer of CO<sub>2</sub> acts as a mirror and reflects incoming radiation, while the mud blocks out any radiation that may have made it through. To add to the elegance, the Biome is built using an improved design of SpaceX's inflatable habitat, (first proposed in 2017), that can carry the entire base in a compact space.

### **Japan:**

Since long established as an agricultural genius due to the marvelous engineering of advanced technology in the paddy fields, it came as no surprise that it would be the Japanese Aerospace Exploration Agency that would solve the most crucial requirement for continued human survival on other planets: easy availability of food.

Martian soil is alkaline and lacking in nitrogen, which severely complicates the possibility of growing food on Mars anytime soon due to the long, expensive work of decontaminating the surface. While this arduous, yet necessary task is carried out, the first human settlements will be able to maintain a rich, varied diet consisting of fishes and several aquatic plants, made possible by JAXA's Mizu nōgyō, (roughly translating to "water agriculture"), more commonly known as The Advanced Aquaponic system.

Being an almost perfect symbiotic system where the fish and plants exist in a harmony of interdependence, the Mizu Nogyo has been freely shipped to all nations who plan to send manned missions to Mars, and will undoubtedly aid humanity on its journey into the unknown.

### **China:**

Reaching Mars was just the first obstacle humanity will face on its journey to other planets. Due to its proximity to the asteroid belt and the lack of an atmosphere, the surface of the red planet is highly prone to meteorites which threaten any possibility of long lasting human settlements.

This is where China's Anti-Asteroid Artillery comes in. Originally planned by Russia in 2019, but delayed and eventually forgotten due to the success of ROSCOSMOS's Lazarus, the "Triple A" (as it's fondly called by the Chinese National Space Agency) is the ultimate defence system for human settlements on Mars. Positioned on both Phobos and Deimos, Mars' two moons, the Anti-Asteroid Artillery either redirects the incoming debris out of the collision course or blows it up into smaller, harmless parts, depending on the size.

Built and jointly operated by the CNSA and the People's Liberation Army, the defense system was originally criticized by the United States and India, who begged the question "Why is the AAA operated by the army and what stops them from targeting the settlements of other nations?". However, since an alternative as effective as the Triple A is yet to be made, countries will continue to rely heavily on China for ensuring future survival on the red planet.

## **Additional links and resources for delegate research**

<https://www.youtube.com/watch?v=uqKGREZs6-w&feature=youtu.be>

<https://www.youtube.com/watch?v=dqwpQarrDwk>

<https://www.bbc.com/future/article/20141030-five-steps-to-colonising-mars>

<https://onlinelibrary.wiley.com/doi/10.1002/gch2.201800062>

<https://www.bbc.com/future/article/20141002-time-to-plan-a-space-colony>

<http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html>

<https://youtu.be/wF1d75oY4Mw>

For research and agenda inquiries from the EB you can send us an email  
at:marcos2049nmmun@gmail.com

For other queries regarding the MUN in general,contact - secretariatnmmun2020@gmail.com