

XXVIII

TECMUN Jr.

United Nations
Committee on the
Peaceful Uses of Outer
Space

XXVIII TECMUN Jr.
Horario de sesiones

Miércoles 18 de noviembre

Ceremonia de Inauguración	9:00 – 10:00 h.
Receso	10:00 – 10:30 h.
Primera Sesión	10:30 – 12:00 h.
Receso	12:00 – 12:30 h.
Segunda Sesión	12:30 – 14:00 h.
Comida	14:00 – 15:00 h.
Tercera Sesión	15:00 – 16:30 h.

Jueves 19 de noviembre

Conferencia Magistral	8:30 – 9:30 h.
Receso	9:30 – 10:00 h..
Cuarta Sesión	10:00 – 11:30 h.
Receso	11:30 – 12:00 h.
Quinta Sesión	12:00 – 13:30 h.
Comida	13:30 – 14:30 h.
Sexta Sesión	14:30 – 16:00 h.

Viernes 20 de noviembre

Séptima Sesión	8:00 – 9:30 h.
Receso	9:30 – 10:00 h.
Octava Sesión	10:00 – 11:30 h.
Receso	11:30 – 12:00 h.
Novena Sesión	12:00 – 14:00 h.
Comida	14:00 – 15:00 h.
Ceremonia de Clausura	15:00 – 17:30 h.
TECMUN GLOOM ¹	18:00 – 19:00 h.

¹ TECMUN GLOOM es una experiencia únicamente para los delegados donde habrá actividades en las que los delegados y las mesas se podrán conocer.

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Agenda

Secretaria General: Nuria Vidal Castillo

ASAMBLEA GENERAL

Subsecretaria General: Aiko Valeria Aguilar Jiménez

Sesión Plenaria de la Asamblea General

Presidente: Javier Márquez Saucedo

- A) Medidas para controlar la creciente crisis social en Estados Unidos de América con enfoque al reciente movimiento *Black Lives Matter*
- B) Estrategias para la erradicación de los combates en el territorio de Libia provocados por los grupos del Gobierno de Acuerdo Nacional y el Ejército Nacional Libio

Primera Comisión de Desarme y Seguridad Internacional

Presidenta: Daniela Mejía Salgado

- A) Medidas para regular la fabricación, comercialización y el uso de armas letales autónomas (LAWS) para evitar una futura carrera armamentística a través de un marco legal a nivel internacional
- B) Estrategias para evitar la militarización del océano Ártico como producto de nuevas rutas de navegación

Organización Internacional para las Migraciones

Presidente: Manuel Alejandro Rosales Portillo

- A) Medidas para asegurar la integridad del pueblo migrante de Rohingya en su proceso de traslado hacia Bangladesh
- B) Problemáticas de la migración norcoreana causadas por el gobierno de la República Popular Democrática de Corea

United Nations High Commissioner for Human Rights

Presidente: Germán Osvaldo Nuñez Benitez

A) Suppression from the government of the People's Republic of China upon human rights, focusing on the use of economic power, censorship, indoctrination and heavy surveillance in Xinjiang

B) Oppression of women, the LGBT+ community and civil society activists in Iran, focused on the extreme measures applied by the national penal code and the Supreme Court

Organización Mundial de la Salud

Presidente: Ángel Daniel González Jasso

A) Estrategias para una segura reactivación de la economía en países de América Latina y El Caribe ante la reciente crisis causada por el COVID-19

B) Medidas para mejorar los servicios de salud pública en Yemen a causa de la presente catástrofe humanitaria

United Nations Committee on the Peaceful Uses of Outer Space

Presidenta: Alejandra Bañuelos González

A) Measures for the regulation of space tourism and passenger safety

B) The increasing threat to the global astronomic and space observation community from the rise of satellite constellations and the number of space debris

CONSEJO ECONÓMICO Y SOCIAL

Subsecretario General: Armando Daniel Navarro Sánchez

Fondo de las Naciones Unidas para la Infancia

Presidenta: Sofía Victoria Solís Uribe

A) Estrategias para brindar apoyo y medidas adecuadas de salubridad y nutrición a niños desterrados a causa del conflicto bélico en la República Árabe Siria

B) Medidas para prevenir la existencia del matrimonio infantil forzado y sus consecuencias en las niñas con enfoque en África Occidental

Programa de las Naciones Unidas para el Medio Ambiente

Presidente: Arturo Rubio Díaz Vázquez

- A) Medidas para evitar la sexta extinción masiva de fauna silvestre con énfasis en los incendios del bosque tropical de la Amazonia y el bosque de Malacura en Australia
- B) Medidas para disminuir la pérdida de agua potable causadas por el fenómeno de la industria de la moda rápida en la República Popular China y la República Popular de Bangladesh

International Criminal Police Organization

Presidenta: Andrea Michelle Martínez Lozano

- A) Measures to contain and dismantle the triads, the Korean criminal organizations, and groups of organized crime in the Golden Triangle
- B) Strategies to prevent radical acts that involve the use of chemical and nuclear weapons by extremist groups, focusing on the Middle East

Commission on the Status of Women

Presidenta: María Fernanda Casillas Monroy

- A) Measures for the attention of female victims of acid attacks due to its accessibility in the Middle East and United Kingdom with emphasis on the social consequences
- B) Measures to provide opportune prevention and support for women affected by female genital mutilation as sexual repression in regions of Northern and Western Africa

Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura

Presidenta: Samaria Sánchez Ramírez

- A) Acciones para garantizar un avance en materia de equidad e igualdad de género educativa ante situaciones de crisis en países de América Latina y el Caribe
- B) Medidas para asegurar la libertad de expresión y estabilidad artística, como parte de la diversidad cultural, ante la pandemia de COVID-19 con enfoque en América Latina y el Caribe

United Nations World Tourism Organization

Presidenta: Rebeca Ávila Delgado

- A) Measures to improve the development of alternative touristic areas in Latin American local communities and get rid of overtourism
- B) Measures to reactivate the Latin American tourism sector after the global pandemic caused by the spread of COVID-19

Commission Économique des Nations Unies pour l'Europe

Presidenta: Lianny Hernández Pérez

- A) Stratégies pour la protection et le placement des réfugiés Syriens en Europe pour éviter des problèmes sociaux et économiques dans l'Union Européenne, en mettant l'accent sur la République Fédérale d'Allemagne
- B) Le développement des politiques pour soutenir la promotion de l'indépendance économique des femmes et l'éradication du fossé salarial dans les pays sous-développés de l'Europe du sud-est

AGENCIAS ESPECIALIZADAS Y ORGANISMOS REGIONALES

Subsecretaria General: Montserrat Olivas Ramos

Organización de los Estados Americanos

Presidenta: Paola González Zapata

- A) Repercusiones sociales y políticas tras la censura de medios de comunicación en México, con énfasis en la persecución de periodistas por grupos de narcotráfico
- B) El neocolonialismo como un obstáculo para el desarrollo económico de las comunidades indígenas en América Latina

Comisión de Prevención del Delito y Justicia Penal

Presidente: Victor Daniel Meza Castillo

A) Estrategias para mejorar el estado de derecho y reducir la impunidad de las autoridades latinoamericanas con enfoque en la violación de derechos humanos y la ineficacia de las garantías constitucionales presentes en los movimientos sociales

B) Medidas para erradicar las prácticas de tortura en las cárceles africanas con base en Las Reglas Mínimas de las Naciones Unidas para el Tratamiento de Reclusos

United Nations Scientific Committee on the Effects of Atomic Radiation

Presidente: Santiago Makoszay Castañón

A) Measures to ensure radiation protection in case of a nuclear reactor accident. A study based on novel information on the effects and risks of radiation exposure due to the accident at the Fukushima Daiichi nuclear power station

B) Assessment of the biological mechanisms relevant to the inference of cancer risk after exposure to low-dose radiation

North Atlantic Treaty Organization

Presidenta: Mariana Cortés Gallardo

A) Political and military measures to prevent further naval and territorial conflicts between Ukraine and Russia

B) Reaffirm diplomatic and military strategies to increase the security of Afghanistan's inhabitants facing the current terrorist attacks by the Taliban

Security Council

Presidenta: Vanessa Arroyo Jerez

A) Strategies to suppress the resurgence of the Islamic State in the Syrian Arab Republic and the Republic of Iraq

B) Prevention mechanisms against the illicit trafficking of nuclear material within the Black Sea region

International Court of Justice

Presidenta: Carolina Elizabeth Vásquez Regalado

- A) Relocation of the United States Embassy to Jerusalem (Palestine v. United States of America)
- B) Application of the Convention on the Prevention and Punishment of the Crime of Genocide (The Gambia v. Myanmar)

“Make the most of yourself by fanning the tiny, inner sparks of possibility into flames of achievement”.
-Golda Meir.

Delegada/o, Ministra/o, Juez,

Lo peor que puedes hacer es subordinarte al contexto en el que resides. Esta es tu oportunidad de demostrarte que por medio de tu investigación, ideas, trabajo e innovación puedes y vas a cambiar al mundo. Entre más conocimiento adquieres, más te das cuenta de que la sociedad en la que vivimos está lejos de ser perfecta. Lo que necesita un mundo en crisis es a personas como tú que están dispuestas a alzar la voz en contra de injusticias, violencia, inequidad, fobias, machismo, entre muchas otras cosas. Necesita a personas que, a pesar de vivir durante una pandemia mundial, toma tres días para participar en un modelo en línea. Sé esa persona que el mundo anhela, esa persona que va siempre un paso más allá.

Este modelo es una muy pequeña representación de lo que en verdad está sucediendo alrededor del mundo y que decidimos ignorar porque vivimos en una posición de privilegio donde podemos asumir que nada ni nadie nos va a hacer daño; Sin embargo, como el último año nos ha demostrado, esto puede cambiar en cuestión de segundos. Así que aprovecha y toma ventaja de tu posición de privilegio y de todas las oportunidades que se te presentan gracias a ella. Porque si decides ignorar los problemas, te conviertes en una gran parte de ellos. Pelea con todo lo que tengas por lo que crees y sé la voz por los que son silenciados. Cualquiera puede quitarte lo que sea, menos el poder de alzar tu voz.

Delegada/o Ministra/o, Juez, es tu oportunidad de pensar fuera del estatus quo, de romper tus estándares y esos de toda la gente que te rodea, de ser tú misma o mismo, de romper o mejorar el sistema, de expresar tus ideas únicas y creativas y de salir de tu zona de confort que lo único que te está haciendo es nublarlo. Sí, da miedo, pero no dejes que esos pensamientos frenen tu capacidad de expresarte; Úsalos a tu favor y véncelos, porque la falta de confianza, la duda y el miedo siempre van a ser las cosas más difíciles de sobrellevar, pero, el hacerlo genera el verdadero cambio. Espero que confíes en el modelo y en el Secretariado, pero especialmente, espero que confíes en ti, que abras tu mente, que aprendas sobre una gran variedad de temas, que salgas de este modelo con una visión completamente distinta del mundo a la que tenías antes. Quiero que salgas con la capacidad de analizar críticamente y empatizar con otras personas y situaciones para que llegues a tener la habilidad de resolver estos problemas de la mejor manera posible no solo dentro de las salas de debate, sino en la vida real.

Finalmente, quiero que aproveches el momento, tu momento. Lucha contra el problema y haz la diferencia en esa sala de debate, porque esta es una simulación del mundo real, y lo que hagas ahí dentro representa lo que haces y harás por el mundo si no permites que se quede en esas 4 paredes. Recuerda que no hay experiencias que se repitan dos veces y que la que estás a punto de vivir, te marcará de por vida. Confío en ti y en tu capacidad, porque estás aquí por una razón; porque hay una chispa en ti esperando ser encendida y puede que esta sea tu única oportunidad de hacerlo. El mundo está en las manos de ti, de la juventud; si no aprendemos a tomar ventaja de esto y hacer del planeta un mejor lugar, nadie lo va a hacer. Encuéntrate en esta experiencia y cree en ti, en lo que puedes aportar al modelo y en el gran impacto que esto tendrá en las personas, porque yo te aseguro que confío ciegamente en ti.

Nuria Vidal Castillo
Secretary General for the
XXVIII TECMUN Jr.

Nuestra mayor gloria no está en fracasar nunca, sino en levantarnos cada vez que caemos .
-Confucio

No sé en qué momento exacto estarán leyendo esto. Puede ser el primer día del modelo, al momento de recibir estos documentos, puede ser que sea en la noche, o inclusive ni se molestaran en hojearlos, pero no tiene nada de malo.

Si me hubieran dicho, hace 3 años, que yo me encontraría aquí dirigiéndome a ustedes, estando a cargo del modelo de las naciones unidas más grande Latinoamérica, no me lo habría creído. Había fallado tantas veces ya, que simplemente no lo creía posible, y la verdad, es que sigo sin creerme que esté el día de hoy aquí con ustedes y viendo el fruto del maravilloso trabajo en equipo que hicimos mis compañeras y yo.

Hace algunos ayer, fui una de ustedes, sentada, nerviosa, ansiosa, por saber qué era lo que se avecinaba. Me daba tanta pena y temor de poder expresar mis palabras y puntos de vista, que había veces que inclusive me quedaba callada, por el “¿Qué dirán?”. Dos palabras que al principio, no sabes cuan pesado es su significado. Dos pequeñas palabras, que te atormentaran por el resto de tu vida, que te harán pensar si toda acción que has realizado hasta el día de hoy, es la adecuada, o fue la correcta. Si yo les dijera, que pronto aprendí una manera para que esas palabras no te afecten, es una mentira. Es más, me atrevo a decir, que si alguna persona les ha dicho eso, muy probablemente es mentira, o a lo mejor y no. Pero de algo estoy segura, tú el día de hoy, ya has sobrepasado esa dos palabras por el simple hecho de presentarte aquí, a este nuevo e innovador modelo. Porque, además de que es tedioso trabajar tres días en soluciones un tanto utópicas para diversos problemas, que nosotros no deberíamos de preocuparnos, lo estás haciendo en línea. Esas dos palabras, ahora se quedan cortas ante tal suceso que estás por realizar.

No pasa nada si el primer día, el segundo, o hasta los tres días no dices nada, créeme que eso no te hace peor o mejor que el otro delegado. Por el simple hecho de haber investigado antes de tu tópico o caso, de haber pensando en los pros y contras que tiene tu país y cómo se relaciona con los demás, no solamente has salido de tu zona de confort, sino que has callado muchas bocas. Has callado tantas bocas, que simplemente buscarán más defectos en ti, porque esas personas saben muy dentro de ellos, que has crecido como personas, por el mero hecho de presentarte hoy aquí.

No tengan miedo delegados, si ganan hoy, o no, o si ganan mañana, o no, o inclusive si no ganan nunca. No tengan miedo, que no solamente las palabras son lo que ayuda, a veces el silencio, es el arma más fuerte y poderosa, que nos ayuda a crecer y a generar un pensamiento crítico.

Les deseo la mejor de las suertes, y recuerden, escuchen, aprendan y principalmente, disfruten.

Subsecretary Aiko Valeria Aguilar Jiménez
Subsecretary for General Assembly
XXVIII TECMUN Jr.

Dear Delegate,

If you do not mind, I would like to ask you: why are you here? TECMUN by definition is a model of the united nations held at the Tecnológico de Monterrey, but it is one of those words that gain a personal meaning depending on whom you ask. The way I see it, TECMUN is an event that helps young brilliant minds, step outside their comfort zone and speak in representation of the States they have been assigned. It is a place where you can meet others with a shared interest in changing the world. And even if it seems useless, TECMUN is an opportunity to do something for other people around the globe that might not be as privileged as you and I are.

For the next three days you will be talking about outer space, and you will be representing a country that will not be your own. You will be discussing matters that you, most certainly, do not think about on a daily basis, but this does not make them less important. You will not be a student, you are going to be a diplomat, speaking for those who need you. You will notice a capacity of making a change, and you will use it.

I know the world seems messy right now, the world has a lot of problems that need a solution. Nonetheless, this cannot be achieved if someone is not willing to speak, listen, and do what is best for everyone. I believe, that you dear delegate, will give solutions that benefit the people of the country you are representing, as well as, encouraging others to participate and speak their minds. Do your best, and remember that: wishes only come true when you make them for someone else. I want you to keep this in mind for the rest of your life, or at least for the next three wonderful days. I trust you will do an amazing job and that when the time comes, you will transom the world for the better.

Alejandra Bañuelos González

President of United Nations Committee on the Peaceful Uses on Outer Space

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United Nations Committee on the Peaceful Uses of Outer Space

Background

The Committee on the Peaceful Uses of Outer Space (COPUOS) was created in 1959 by the General Assembly. It has grown since its foundation and now counts with 95 member States. The Committee is tasked to govern the exploration and the uses of space for the benefit of all humanity. It is the only committee of the General Assembly that deals with international cooperation in the peaceful uses of outer space. It serves as a forum to monitor and discuss developments related to space.

Faculties

- Reviewing the peaceful uses of outer space.
- Studying space-related activities.
- Studying legal problems that arise because of outer space exploration.
- Encouraging space research programs.
- Suggesting modifications to international space law.

Topic A

Measures for the regulation of space tourism and passenger safety

By: Alejandra Bañuelos González

Elizabeth Saldaña Andriano

José Mateo González Almanza

Luis Emilio García Alvarez

Introduction

Space tourism is defined as recreational² space travel, on government-owned vehicles, or those owned by private companies (Seedhouse, 2020). Since the first space tourist flight in 2001, this form of traveling and leisure³ has become increasingly more popular. This type of tourism includes a variety of flights and purposes, divided into suborbital, orbital, and deep space. Suborbital flights do not leave the Earth's orbit and could take place in the following years. Soon, it may allow flights to travel long distances in less time than an airplane.

The Committee on the Peaceful Uses of Outer Space (COPUOS) has a register of the member States' space programs, however, private companies have begun to take more interest in space activities. For instance, Virgin Galactic, SpaceX, and Blue Origin expect to send tourists out of the Earth's orbit in the next decade. More than 50 years after the moon landing, SpaceX launched its first rocket into space, becoming the first step of the new space race. Thereby soon, space travel could be a reality, but only for those who can afford it.

Most of the outer space treaties were created when all these possibilities were only speculations⁴. In March 2015, the International Civil Aviation Organization (ICAO) and United Nations Office of Outer Space Affairs (UNOOSA) organized an Aerospace Symposium⁵ intending to discuss the new challenges and opportunities space tourism and other emerging space activities could bring to civil aviation. Only States with advanced space programs (such as the United States of America, the French Republic, and the United Kingdom of Great Britain and Northern Ireland) have developed regulations for space activities. Consequently, there are no international laws about space tourism.

²**Recreational:** connected with ways of enjoying yourself (Cambridge Dictionary, n.d).

³**Leisure:** the time when a person is not working (Cambridge Dictionary, n.d).

⁴**Speculations:** guessing without having much information (Cambridge Dictionary, n.d).

⁵**Symposium:** a formal meeting at which several specialists deliver short addresses on a topic or on related topics (Merriam-Webster, n.d).

History of space tourism

Governments have sent objects to space since 1957. It all began with the launch of Sputnik 1, on October 4, 1957, without humans on board. It was not until the launch of Vostok 1 in 1961, when the Soviet cosmonaut, Yuri Gagarin, became the first man in Space. In the next years, The United States and the Soviet Union entered a competition among them to be the first nation to send a person to the moon. In 1969, the United States accomplished this goal with the launch of the spaceship Apollo 11 to the moon, becoming a giant leap for humanity.

In 1972, Richard Nixon, the 37th president of the United States, proclaimed⁶ that space transportation should start a new era for space travel, designed to be lower-cost and reusable. With this, Rockel International Company started thinking about that idea, although, it never came to fruition⁷. Since then, many years passed until the Space Shuttle Program was founded, this program launched and completed 135 missions. As a result, 355 people related to space exploration were sent out between 1981 and 2011. “Space shuttles could carry satellites, space probes, and other cargo into orbit around Earth on both commercial and non-commercial missions” (CNN, 2019).

Space tourism, formally, began with the desire of Dennis Tito, an American businessman, to travel to space. He worked with Space Adventures to transfer his ticket to the International Space Station. Dennis paid twenty million dollars to accomplish his dream. On April 28, 2001, Tito began an almost-eight-day stay aboard the International Space Station, becoming the first private citizen who had purchased his ticket to space.

Over the next few years, Space Adventures has arranged eight spaceflights for seven clients, who cumulatively⁸ spent over eighty days in space and traveled nearly thirty million

⁶**Proclaimed:** announced something publicly or officially (Cambridge Dictionary, n.d).

⁷**Fruition:** the obtaining of something desired (WordReference, n.d).

⁸**Cumulatively:** in a way that increases by one addition after another (Cambridge Dictionary, n.d).

miles in space. On February 18, 2020, SpaceX collaborated with Space Adventures, the space tourism agency, to sell rides aboard its spacecraft. On March 31, 2020, SpaceX launch the spaceship Crew Dragon with two NASA astronauts. This marked the beginning of a new era since it was the first time that a private company carried astronauts to the International Space Station (CNBC, 2020).

Importance of solving the topic

Without a regulatory framework⁹ of space tourism, there is a high risk for the passengers and the flight crew. Unlike astronauts, passengers are not likely to receive training that will prepare them for the impact during the takeoff and landing of the spaceship. Nonetheless, seven civilians have been into space, and this area is soon expected to become a multimillion-dollar industry. Thereby, space tourism is a reality even though there is no legal framework to regulate it yet. The existing regulations must evolve into guidelines¹⁰ that take into account everybody involved in space activities.

Furthermore, this new tourism type would change the possibilities for travel and create a whole different industry that would include not only the flight but hosting¹¹ and entertainment activities too. Endless opportunities will arise, and however, the governments' priority should be the security of all the individuals involved in this industry. Moreover, it is essential to take into account the possible environmental damage and restrictions that might develop in the process. For instance, a complementary relationship between aviation and commercial space travel will return new and efficient transportation methods (International Civil Aviation Organization, 2015).

⁹**Regulatory framework:** a system of rules that controls something (Cambridge Dictionary, n.d).

¹⁰**Guidelines:** information made to advise people on how something should be done (Cambridge Dictionary, n.d).

¹¹**Hosting:** receiving guests (WordReference, n.d).

Risks of space tourism for passengers

There is no conclusive¹² research to this day as to the dangers of prolonged exposure to the hostile¹³ environment that constructs everything outside the terrestrial atmosphere. Due to the nature of modern spaceflight, research regarding the prolonged space exposure is not available and most experiments that have been conducted outside of low earth orbit have been fairly quick, leading to a lack of data needed to ensure the safety of passengers and even astronauts. The data that is available concerning the exposure in low earth orbit (hereby referred to as LEO) has shown a very important decrease in bone density as well as proprioception¹⁴. Other effects that have been discovered to affect the body range from the fluid redistribution to vision impairments. Radiation exposure represents one of the biggest threats to human anatomy, as people may stray¹⁵ further from LEO, the decreased radiation shielding¹⁶ from the earth becomes a major threat, as long term exposure can lead to cancer as well as radiation sickness.

One of the many concerns for safety comes from the sheer¹⁷ power that rockets can produce and, thus, how they affect human physiology. A powerful rocket might be able to exert several G's of force directly onto a person. Astronauts are trained to understand the effects that this may have on their bodies as well as hypoxia¹⁸, but most space travelers will not have the necessary training. In addition, tourists might not be willing to expose

¹²**Conclusive:** proving that something is true, or ending any doubt (Cambridge Dictionary, n.d).

¹³**Hostile:** difficult or not suitable for living or growing (Cambridge Dictionary, n.d).

¹⁴**Proprioception:** perception or awareness of the position and movement of the body (Oxford Languages, n.d).

¹⁵**Stray:** occasional, or not part of a general group or tendency (Cambridge Dictionary, 2020).

¹⁶**Shielding:** to protect someone or something from something bad (Cambridge Dictionary, n.d).

¹⁷**Sheer:** used to say that a feeling or quality is very strong (Cambridge Dictionary, n.d).

¹⁸**Hypoxia:** a condition in which there is not enough oxygen available to the blood and body tissues (Cambridge Dictionary, n.d).

themselves to such rigor¹⁹ to enjoy what could be a very short trip to LEO, which may constitute a very big blow to the otherwise small clientele available for recreational space travel. Decompression sickness and its effects on the body are also a very big concern for tourists, as this can lead to very unpleasant side effects and conditions that impair people for prolonged periods and can even lead to death in extreme cases. Research is well underway to continue finding more problems associated with exposure to the vacuum of space and, thus, figuring out how to counteract these effects.

Nations that are willing to provide further legislation to cover the rising industry of commercial space travel must continue to issue safety regulations on the vehicles themselves, as well as, the means to make the travels as safe as possible for the customers. The automotive industry has ensued²⁰ with formal regulation in many parts of the designs that make up the modern automobile, most of them come in the mechanisms in place to mitigate the energy output by a hard crash, these often include seatbelts, crumple zones, and airbags. Other innovations made to ensure the safety of the passengers are traction control systems, along with automatic braking systems. The framework of regulations also includes the environmental acts which limit the exhaust components and the ingredients in the fuel. This has been developed over a century of experience and, thus, is not comparable to a short term solution to viable regulations, however, it does lay the foundations in which the regulations can be established. The international community must set the core of these regulations, as a single entity as the transport is not bound to a single nation and as the Outer Space Treaty of 1967 states, “outer space is not subject to national appropriation by claim of sovereignty²¹, by means of use or occupation, or by any other means.” (UNOOSA, 2020).

¹⁹**Rigor:** people are made to follow rules in a severe way (Cambridge Dictionary, n.d).

²⁰**Ensued:** happened after something else (Cambridge Dictionary, n.d).

²¹**Sovereignty:** the authority of a state to govern itself or another state (WordReference, n.d).

The impact of private companies on space tourism

As it was previously mentioned, the creation of international legislation on space tourism to ensure the protection of the passengers is currently ignored. The main obstacles to the creation of this set of laws are the lack of national regulations that apply to this topic and the participation of private companies to take people to space. Nowadays, not only governments are allowed to send satellites or shuttles outside the atmosphere of Earth, and the private sector has seen this as a great opportunity to generate revenue. The participation of companies, such as SpaceX, Virgin Galactic, and Xcor, is a new factor that ought to be considered to create an international law that guarantees the protection of all human beings aboard a spaceship.

The presence of these enterprises has modified the way space travel works. In terms of economy, the price of reaching space will go down, as reported by Richard Hollingham, the new generation of space planes will reduce the cost of space access (Hollingham, 2014). Be that as it may, the impact on the environment on Earth and in outer space of the commercialization of space tourism will bring major consequences. In 2010, computer simulations revealed that the soot²² emitted by rockets could raise the temperature of the poles (Shiga, 2010). Additionally, the increase in the number of flights with space tourists will result in the generation of more debris²³.

Existing international regulations on space tourism

As of 2020, there are no concrete²⁴ regulations regarding commercially available flights to space. There is also no clear determination where airspace ends and the vacuum of the

²²**Soot:** the black powder left after the burning of coal etc. (Cambridge Dictionary, n.d).

²³**Debris:** the remains of something broken, destroyed (Cambridge Dictionary, n.d).

²⁴**Concrete:** clear and certain (Cambridge Dictionary, n.d).

universe begins. The most agreed-upon limit to this is the Karman Line, which lies at 100 km from the surface of the planet. This is a very important factor, that ought to be contemplated when determining objective and useful regulations on the explorations beyond the atmosphere of Earth. Countries have complete sovereignty over their airspace, thus if there is no agreed limit, transgressions²⁵ and misunderstandings are bound to occur.

Space tourists have existed and to this date, there have been seven non-astronaut people flown to the International Space Station. This was a joint project for the Russian Space Agency, the International Space Station, and Space Adventures. Though the implications lie well beyond low Earth orbit as there may be two different types of flights, the suborbital and orbital variations. Each one has its unique challenges and needed regulations as a suborbital flight may not necessarily be conducted in a rocket, but it is capable of reaching space. Stephen Hobe (2007), director of the Institute of Air and Space Law in the University of Cologne, states that the differentiation and applicability of the regulation, may not need to be enforced as the altitude that any given vehicle may reach, but rather as judged by the vehicle itself.

The U.S. Commercial Space Launch Amendments Act of 2004 indicates that suborbital rockets are those which use a rocket to propel themselves where its thrust²⁶ is greater than their lift²⁷ through the majority of their ascent. This was made to differentiate the denominated space planes, from the normal aeronautical vehicles to facilitate given legislation. Many countries have then regulated the permits and all the requirements for any object or vehicle that is bound to be in space. The former regulation also established a difference between what is considered an astronaut and a passenger or participant. The main

²⁵**Transgressions:** the act of breaking a law (Cambridge Dictionary, n.d).

²⁶**Thrust:** a force produced by a propeller, etc., to propel a missile (WordReference, n.d).

²⁷**Lift:** a lifting or raising force, as upward pressure on an airplane wing in flight (WordReference, n.d).

dissimilarity drawn is the fact that the tourist or customer of the service is not part of the crew and consequently is only carried along with either in reentry or launch. This is also indicative of regulations that will determine the liabilities²⁸ and the compensation that these participants are entitled to if such circumstances were to become a reality.

This same legislation provides the framework in case of accidents which are prevalent²⁹ in the industry of space travel. It also implements a contractual consent³⁰ from all of the parties involved and realizing of responsibility unless there exists gross misconduct³¹ or negligence³². This is opposite to the European countries; none of them have made such regulations to date, and as a result, it all continues to be a long term idealistic profile of space travel, there is not a short-term framework for companies such as Astrium Space to adhere to. A greater part comes from the established regulations and the Rescue Agreement, where all space-capable nations must be willing to do whatever it takes to rescue an astronaut that is stranded³³ in space. There is no clear indication as to how the international community is going to adhere to such regulations as it becomes apparent that there may be civilians stranded in the vacuum.

²⁸**Liability:** the state of being responsible for something, especially by law (WordReference, n.d).

²⁹**Prevalent:** existing very commonly (Cambridge Dictionary, n.d).

³⁰**Contractual consent:** permission contained within a contract (Cambridge Dictionary, n.d).

³¹**Misconduct:** improper behavior, especially by an official in office, or in the administration of justice (WordReference, n.d).

³²**Negligence:** the failure to exercise that degree of care that, in the circumstances, the law requires for the protection of other persons or those interests of other persons that may be injuriously affected by the want of such care (WordReference, n.d).

³³**Stranded:** to leave in a helpless position (WordReference, n.d).

Existing national regulations on commercial space activities

The United States of America has a national regulation for Commercial Space; said regulation consists in obtaining a license³⁴ to where the company or the natural person³⁵ is authorized to practice this activity. The information and the procedure are in the Code of Federal Regulations. “This is the codification³⁶ of the general and permanent rules published in the Federal Register by the departments and agencies of the Federal Government” (U.S. Government Publishing Office, 2020). In the third chapter of this code, the regulations are established for Commercial space transportation.

It has three subchapters, which explain the steps necessary to obtain a license. Different types of licenses permit to do the following: Launch a launch vehicle³⁷ from the United States; operate a launch site within the United States; reenter a reentry vehicle³⁸ in the United States; or operate a reentry site within the United States. Also, in the Subchapter C part 460 exists an extra set of requirements for human space flights. Those requisites consist of: The crew members must complete training on how to carry out his or her role onboard or on the ground so that the vehicle will not harm the public and train for his or her role in nominal and non-nominal conditions, report the crew of risk, environmental control, and life support systems. “Each member of a flight crew must demonstrate an ability to withstand the stresses of space flight” (Code of Federal Regulations, 2020).

The applicants³⁹ have to choose one of the previously mentioned licenses because each of them has different requirements. Afterward, the applicants have to submit the request

³⁴**License:** an official document that gives a person permission to own, do or use something (Cambridge Dictionary, n.d).

³⁵**Natural person:** an individual human being (Cambridge Dictionary, n.d).

³⁶**Codification:** the act or process of arranging laws into a system (Cambridge Dictionary, n.d).

³⁷**Launch vehicle:** a rocket-powered vehicle used to send artificial satellites into space (Cambridge Dictionary, n.d).

³⁸**Reentry vehicle:** the part of a space vehicle designed to re-enter the atmosphere in the end of its trajectory (Cambridge Dictionary, n.d).

³⁹ **Applicants:** people who formally request something (Cambridge Dictionary, n.d).

to the Federal Aviation Administration (FAA). With the information provided in the application, the FAA considers whether the petitioner⁴⁰ should be licensed. If the people or companies obtain the license, they will have to allow access by and cooperate with Federal officers or employees or other individuals authorized by the Associate Administrator to observe licensed facilities and activities. The Federal Aviation Administration may suspend or revoke any license if the company or person has substantially⁴¹ failed to comply with any requirement of the regulation, “if the FAA finds that a licensee or permittee⁴² has substantially failed to comply with any requirement of the Act” (Office of the Federal Register, 2020).

Progress on national regulations about space tourism

In 2014, the Federal Aviation Administration (FAA) Office of Commercial Space Transportation (AST) of the United States published a series of recommended practices for commercial human space flights. These recommendations only considered suborbital flights that will remain in the Earth’s orbit for a maximum of two weeks, and that could return to Earth in less than 24 hours. The AST considered establishing a unique level of risk would limit scientific innovation. Therefore, three levels of risk were applied, taking into account the purpose, destiny, and spaceship architecture. Moreover, it considered three levels of care, based on the possible situations that might take place during the flight. The structure of the recommended practices takes into consideration three categories: design, manufacturing, and operations, always prioritizing the passengers' safety (FAA, 2014).

⁴⁰ **Petitioner:** a person who presents a petition to an authority (Cambridge Dictionary, n.d).

⁴¹ **Substantially:** to a large degree (Cambridge Dictionary, n.d).

⁴²**Permittee:** a person who has permission to do something (Cambridge Dictionary, n.d).

During the same year, the United Kingdom of Great Britain and Northern Ireland released a review of commercial spaceplane certification and operations. It describes the challenges, opportunities, and recommendations that the government of the United Kingdom considers a regulation on commercial space flights should include. The review highlights the importance of coordinated work between the space industry and commercial aviation to enhance⁴³ security measures. Furthermore, it promotes a permissive regulatory framework, which should be risk-based⁴⁴, allowing future development (Civil Aviation Authority, 2014). The documents of both countries aim to provide a solid foundation for the creation of guidelines ensuring the security of all passengers. Nonetheless, future regulations should take into consideration the medical limits for passengers and the peril⁴⁵ of constant exposure⁴⁶ to ionizing radiation⁴⁷ that could lead to an increased risk of developing cancer and other genetic disorders (Pelton & Jakhu, 2010).

⁴³**Enhance:** to improve the quality of something (Cambridge Dictionary, n.d).

⁴⁴**Risk-based:** done according to how much risk is involved (Cambridge Dictionary, n.d).

⁴⁵**Peril:** serious danger (Cambridge Dictionary, n.d).

⁴⁶**Exposure:** the fact of being affected because of experiencing something (Cambridge Dictionary, n.d).

⁴⁷**Ionizing radiation:** type of energy released by atoms in the form of electromagnetic waves (Cambridge Dictionary, n.d).

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Topic B

The increasing threat to the global astronomic and space observation community from the rise of satellite constellations and the number of space debris

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Introduction

In the past years there has been a steady⁴⁸ increment in the amount of hardware that has been sent on surveillance⁴⁹ and communications missions to various types of orbits. This is due to the growing industry of commercially available space transportation. Recent estimates, by National Geographic, tally⁵⁰ about 1,400 objects currently in orbit around Earth, but there appears to be at least 18,000 objects that range from mission debris⁵¹ to space-junk (National Geographic, 2020). The latest focal point in the area comes with the bold move from one of the most successful private brands of space technology, SpaceX, and their growing effort to provide high bandwidth internet coverage around the world with their Starlink satellite constellation. Though the mission of bringing internet access to the whole world via close orbital systems seems promising, many governments and scientists have seen it as a threat to sovereignty⁵² and to research. Due to its nature, anyone on earth may have access to the unfiltered network, which in some countries is highly restricted and regulated, thus impairing governments from their activities within borders.

There is a very compelling argument from which mostly astronomers have suggested in many papers and articles that the proximity these objects have to the surface interferes directly with outer space observations (Scharf, A. C., 2019). The build of the communication satellites makes them reflect sunlight even after twilight hours, thus impairing researchers from adequately monitoring space. Many papers have been published from many leading scientific journals, The European Space Agency has condemned the lack of action taken to

⁴⁸**Steady:** even or regular in movement (Dictionary.com, n.d).

⁴⁹**Surveillance:** the careful watching of a person or place by the police or the army (Cambridge Dictionary, n.d).

⁵⁰**Tally:** a record of a number of things (Cambridge Dictionary, n.d).

⁵¹**Debris:** broken or torn pieces of something larger (Cambridge Dictionary, n.d).

⁵²**Sovereignty:** supreme and independent power or authority in government as possessed or claimed by a state or community (Dictionary.com, n.d).

regulate the so-called mega-constellations due to the unforeseen⁵³ repercussions that they may bring and even comparing this to tardy global climate efforts (O’Callaghan, 2019). The importance of Starlink and its mission to properly connect all the world through a high bandwidth internet connection, at a relatively low cost of \$80 US dollars, cannot be overlooked as it is one of the biggest efforts to solve connectivity issues in rural and isolated areas, especially with the challenges that mega infrastructure poses to wildlife and governments in terms of cost.

Increase of satellites and space debris

Space debris has become a growing problem as hundreds of satellites begin to be launched into space each day. Private space companies have announced their intention to launch mega-constellations into the Low Earth Orbit (LEO). In October 2019, the Federal Communications Commission granted SpaceX an additional permission to launch 30,000 satellites extra from the 12,000 original request (Sheetz & Petrova, 2019). Those satellites belong to SpaceX’s Starlink project, which would provide low latency⁵⁴ internet access to customers worldwide, focusing on rural areas. Similar proposals come from One Web, Blue Origin and Telesat, resulting in an important increment of satellites in the LEO. However, the National Aeronautics and Space Administration (NASA) has warned of the risk these circumstances would bring upon, advising that 99 % of the satellites will need to be deorbited as soon as their mission is over (Grush, 2018).

Approximately 500,000 pieces of detritus⁵⁵ can be found currently in space. They all travel at speeds up to 28,000 kilometers per hour, resulting in a security problem among

⁵³**Unforeseen:** not expected (Cambridge Dictionary, n.d).

⁵⁴**Latency:** the fact of being present but needing particular conditions to become active or obvious (Cambridge Dictionary, n.d).

⁵⁵**Detritus:** waste material left after a particular event (Cambridge Dictionary, n.d).

satellites, increasing possible collisions⁵⁶ between them. According to the Organization for Economic Cooperation and Development (OECD), the use of space is growing at a steady and rapid rate. Therefore, space hazards have raised in the last decade, particularly those about space debris (European Space Agency, 2020). According to the European Space Agency (ESA) and NASA crashes would become more frequent so that the LEO would be too crowded (Grush, 2018).

The debris produced by satellites has gradually become an excessive cost for space programs. Consequently, States need to create additional measures to prevent collisions between satellites and reduce the detritus generated by them. Further, those guidelines should look forward to ensuring the security of the astronauts at the International Space Station (ISS), due to the risk that debris can bear on spacewalks. As well, the increase in space objects poses new difficulties for astronomers. The saturation of satellites and debris makes it complicated to visualize and study space.

The Kessler syndrome

The Kessler syndrome is defined as a series of closely correlated⁵⁷ events caused by the collision of space debris with satellites or spacecrafts, generating more trash (Spacey, 2016). This results in the destruction of space technologies across the orbital zone, threatening the global economy and satellite services. Hypothetically, all satellites in this zone could be destroyed, and it could take decades to repair the damages. This could be detonated by the destruction of a large satellite or by a manned⁵⁸ spacecraft.

⁵⁶**Latency:** the fact of being present but needing particular conditions to become active or obvious (Cambridge Dictionary, n.d).

⁵⁷**Correlated:** there is a relationship between the events (Cambridge Dictionary, n.d).

⁵⁸**Manned:** supplied with men (Cambridge Dictionary, n.d).

The Kessler syndrome was originally predicted in 1978 by Donald J. Kessler. He said that the exploding cascade of space debris would preclude the use of satellites for generations. The number of objects launched into LEO could create a dense environment above the planet, according to Kessler this would cause inevitable collisions among them. The dense environment might put in jeopardy⁵⁹ space programs, make more challenging missions beyond LEO, and affect terrestrial observation.

Actions of the international community against debris

The measures taken by the space agencies and commissions have been low regarding the handling of space debris. Several agencies have developed methods and protections to prevent spaceships from potential debris bumps. Various limitations have also been created with the purpose of prohibiting the generation of debris. Also, other restrictions apply to unnecessary satellite launches, decreasing the risks of re-entry of the satellites, as well as minimizing the risks of their explosions.

As more debris begins to be generated in space, the ESA has developed the Agency's Space Security program. It is focused on creating automatic functions that prevent collisions with space debris. In addition to trying to generate the first space mission that will focus on removing pieces of debris from Earth's orbit. This mission is called ClearSpace-1 and is expected to launch in 2025 and will be led by the ESA Clean Space initiative. It is sought that debris can be safely removed, because they are currently seeking to withdraw a total of 3,000 failed satellites and that continue in orbit. This will be the first of the missions that will start the project called Active Debris Removal / In Orbit Servicing (ADRIOS) (ESA,2019).

⁵⁹**Jeopardy:** in danger of being damaged or destroyed (Cambridge Dictionary, n.d).

International regulations for launching satellites

Since the Cold War some nations have advanced fastly in their space activities, that is why the international community created treaties to regulate outer space activities. The most important treaty related to space law is the Outer Space Treaty of 1967. This warrants perusing⁶⁰ by anybody inquisitive about seeking after space activities, and its main highlights encompass the correct manner to openly investigate external space, including the Moon and other places in space. “The Outer Space Treaty establishes that nation-states are the principal entities of international space law, both responsible for their national activities and potentially liable for any damage those space activities cause” (United Nations, 2017).

Any company or person that wants to launch a satellite has to completely meet certain requirements. First, they have to check which of the four categories of State applies to them, if they are: the State that launches, the State that procures the launch, the State from whose territory an object is launched, or the State from whose facility an object is launched. “The first category applies to national space activities by national governments and space agencies. The subsequent categories concern state involvement in launching like investigations.” (Johnson, 2013). To know which category a State will belong to, they have to check the number of nations that would be involved in the project and determine the goal of the launching, whether it will be for an international investigation or a national investigation.

According to the International Space Law, all member States of The United Nations, that are also signatories of the 1975 Registration Convention, have to complete a mandatory registration with the United Nations Office for Outer Space Affairs. This registration ensures that all nations have access to space, and it regulates the debris generated by placing articles in space. The satellite, that will be launched, has to demonstrate its relevance, leading to the

⁶⁰**Perusing:** to survey or examine in detail (Dictionary.com, n.d).

declaration of acceptance of their rights and obligations. In some cases, this registration would be made after the launch, nonetheless, The United Nations has control of the objects orbiting Earth.

Importance of solving the topic

Terrestrial observation is the most common way of space observations, and thus it is of utmost importance to keep the necessary visibility in the terrestrial orbit so everyone has access to the use of space for peaceful purposes. The limitation that poses bright objects can not be quantifiable due to the sheer size of the proposed fleet by SpaceX. OneWeb satellites in development have faced the same scrutiny⁶¹ as Starlink due to the similarities between the projects. Space is the ultimate boundary⁶² for humankind, its exploration and observation allows scientists to understand everything, from the beginning of the universe to its demise⁶³. The ability to conduct ground surveys of distant planets has reduced the need to invest greater quantities in satellite observation, although orbiting telescopes such as the Hubble and James Webb are gigantic leaps in the observation of the universe. The threat of a polluted sky not only affects orbital paths, but there have been many reports of falling debris that ended up affecting some populated areas.

Although NASA has previously stated that at least one piece of space debris, that is currently being tracked, has fallen to earth within the past 50 years. Donald Kessler has also theorized and updated the liabilities of his Kessler syndrome every year since its initial conjecture⁶⁴, stating that although there is no clear indication that cascades have formed, there

⁶¹**Scrutiny:** careful, detailed examination or inspection (Cambridge Dictionary, n.d).

⁶²**Boundary:** a real or imagined line that marks the limit of something (Cambridge Dictionary, n.d).

⁶³**Demise:** to end something that was previously considered powerful (Cambridge Dictionary, n.d).

⁶⁴**Conjecture:** a guess of something based on how it seems (Cambridge Dictionary, n.d).

is no way of knowing because they tend to form over many years. Notable disasters that have occurred over falling space debris range from injured Japanese sailors to human remains being found in the 10-mile radius around the Columbia disaster port. It is not common for human activities to be interrupted by falling debris, yet there must be action taken towards eliminating the possibility.

Measures taken to solve the issue

In the last months, SpaceX has released a number of initiatives to solve the brightness issues that their most recent Starlink constellation has. Elon Musk has personally taken responsibility for the problems that this might have caused. The current modifications to the satellites are in three main categories, painting the body, changing the angle of the reflective surfaces, and adding light obstruction mechanisms. Each of these has downsides and thus the need for each will be evaluated separately, for instance, the darker colored satellites, although non-reflective, are prone to overheating due to the light that is absorbed by the body.

Many other measures have been taken to prevent the further proliferation⁶⁵ of space debris. Due to the nature of the orbital paths traced by debris, there is no real accommodation to mitigate the existing ones, this is why the efforts are concentrated in not leaving any behind since space exploration missions will only become more prevalent⁶⁶. There is a specific orbiting path referred to as the parking orbit where many remains are left. This is by no means a long term solution, but it helps relieve the issues of dense pockets of debris around important flight paths.

As of 2020, there are no real international regulations that limit the space debris any nation or corporation shall produce. Though, there are many regional regulations such as the

⁶⁵**Proliferation:** the fact of something increasing a lot and suddenly in number (Cambridge Dictionary, n.d).

⁶⁶**Prevalent:** existing very commonly or happening oftenly (Cambridge Dictionary, n.d).

ones imposed by the European Space Agency and the US Government. The International Organization for Standardization has also published guidelines that illustrate the path that any voluntary party shall take action towards. The actions that the international community has taken against the proliferation of space trash are not enough to provide a safe extra-planetary climate to ensure healthy exploration by all nations. If regulations are not enforced and the problem continues to develop, humanity may be faced with the Kessler syndrome, only further deteriorating the status of terrestrial orbits and the healthy interaction with ground observations.

Obstacles towards a solution

Nowadays, there exist some regulations regarding the launch of satellites and few organizations that aim to guide companies and organizations on actions to manage space debris. The International Space Law obliges countries to review that each of their companies or stations that launch a satellite comply with the principles established in the national and international legislation. Although the Space Law operates at an international level, the countries that are not included within the 1975 Registration Conventions are not forced to follow these indications. This represents a difficulty to monitor spacecraft sent outside Earth atmosphere.

On the other hand, there is no international organization, that guides States and private companies on managing space debris. It does not exist an international regulation that sanctions those who do not follow the procedures to dispose of space trash, nor generate large amounts. Nowadays space programs are planning attempts to remove space debris from the orbit, however, more actions shall be taken to prevent this issue. Considering these factors, legislation could be made to ensure that the people responsible for launching rockets and

technologies to outer space, know, comply with, and follow the indications to avoid producing space debris.

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Preambulatory Phrases

Preambulatory Phrases are used at the beginning of every Resolution Paper in order to give context about the resolutions made for the topic. Preambulatory Phrases must be written in italics followed by a sentence that gives said context. For each Resolution Paper there must be five sentences beginning with a Preambulatory Phrase.

Affirming	Desiring	Noting with deep concern
Alarmed by	Emphasizing	Noting with satisfaction
Approving	Expecting	Noting further
Bearing in mind	Expressing its appreciation	Observing
Believing	Fulfilling	Reaffirming
Confident	Fully aware	Realizing
Contemplating	Further deploring	Recalling
Convinced	Further recalling	Recognizing
Declaring	Guided by	Referring
Deeply concerned	Having adopted	Seeking
Deeply conscious	Having considered	Taking into consideration
Deeply convinced	Having examined	Taking note
Deeply disturbed	Having received	Viewing with appreciation
Deeply regretting	Keeping in mind	Welcoming

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Operative Clauses

Operative Clauses are used at the beginning of every resolution within the Resolution Paper on the debated topic. It must be written in italics and bold.

Accepts	Endorses	Notes
Affirms	Draws the attentions	Proclaims
Approves	Emphasizes	Reaffirms
Authorizes	Encourages	Recommends
Calls	Expresses its appreciation	Regrets
Calls upon	Expresses its hope	Reminds
Condemns	Further invites	Requests
Confirms	Further proclaims	Solemnly affirms
Congratulates	Further reminds	Strongly condemns
Considers	Further recommends	Supports
Declares accordingly	Further requests	Takes note of
Deplores	Further resolves	Transmits
Designates	Has resolved	Trusts