

Forum: The United Nations Office on Outer Space Affairs

Issue #16-01: Addressing the privatization of outer space

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Introduction

In 1957 the Space Race began when the Soviet Union launched Sputnik, the first artificial satellite and man-made object to be placed into the Earth's orbit. Although the satellite itself wasn't spectacularly useful or innovative, the Soviet's sent a message to the United States: they were the first big player in space. Despite making the decision to avoid a competition of space dominance or superiority with the Soviet Union, the United States decided to up the ante in the domain of space. President John F. Kennedy, in his famous speech, said "We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard." In April 1961, the Soviet cosmonaut Yuri Gagarin became the first person to orbit Earth. Soviet Union failed four times between 1969 and 1972 to land man on the moon. On July 20, 1969 NASA's Apollo 11 capsule landed on the lunar surface. US astronauts Neil Armstrong, Edwin "Buzz" Aldrin and Michael Collins manned Apollo 11, Armstrong becoming the first man to walk on the Moon's surface. He famously called the moment "one small step for man, one giant leap for mankind." Ever since, thousands of satellites have entered orbit, establishing the infrastructure for many technological advancements like GPS, the Internet, satellite imagery, weather prediction, etc.

Without a doubt, space is profitable. However, the costly and heavily regulated

nature of space naturally leads to the issue of monopolies in space. As with all instances of privatization, corporations will naturally expand to fill the boundaries set for them. It is of immense importance that UNOOSA and its states agree on universal regulations to avoid the monopolization and gatekeeping of outer space.

Definition of Key Terms

Space

Space is the area outside the Earth's atmosphere. Anything in space is considered to be international "waters" and is therefore not able to be owned by any country (see ASTEROID Act for enabling commercial activities).

Space Law

Space law can be described as the body of law governing space-related activities. Space law comprises a variety of international agreements, treaties, conventions, and UN resolutions as well as rules and regulations of international organizations.

(Artificial) Satellite

Objects placed into orbit by mankind, notably different from natural satellites such as the Moon. Satellites are used by a country for a variety of reasons, most commonly, but not limited to: GPS, navigation, data collection, communication, military uses, etc. Satellites can be owned by governments or commercial bodies. (UNOOSA)

Space Agency

An organization organized by a country/countries in order to conduct activities in or about space. See: USA's NASA, Russia's Roscosmos, etc.

Celestial bodies

Any naturally occurring mass, or body, in space. Includes stars, planets, asteroids, moons, and other satellites.

Privatization of space

The privatization, or commercialization, of space. Refers to the enabling and promotion of space activities by private organizations to include exploration, colonization, mining, etc.

Monopoly

Exclusive control or management of a commodity. Outcomes may include corruption, price manipulation, inefficiency, lack of innovation and progress for the sake of profits, etc.

Market intervention

Modification of a market by a governing force, to balance or bias the market in a certain direction. Typically done in stagnant and dying markets, times of economic crisis, or in the presence of overwhelming monopolies.

General Overview

Space Race

After World War Two's end in 1945, the two giants of the world: the United States and the Soviet Union, saw the devastating potential of nuclear weapons after their use in Hiroshima and Nagasaki. In an unspoken mutual one-up match, both nations begin research in intercontinental ballistic missiles, also known as ICBMs, with an intent of topping the missiles with nuclear warheads. Inevitably, in the Cold War's exhibitionist competition to see who's best, this research led into space, and the focal point of space research begins to shift from military to scientific purposes. The Space Race is considered to have started when Sputnik

was launched, and ended when the United States “won” by landing man on the moon.

Joint Efforts

The International Space Station's (ISS) first module is launched in 1998, designed to be an orbital space station for joint scientific research purposes. In 1993 Russia joined the United States, Europe, Japan, and Canada in the ISS's rotational 6 month research programs. The formation of the ISS's joint program has led to the public notion of space seen as a bridge that spans societal, governmental, and cultural limitations. As pure as research can get, it is known as science in the name of humanity itself.

SpaceX: The Power of Increasingly Privatized Space Corporations

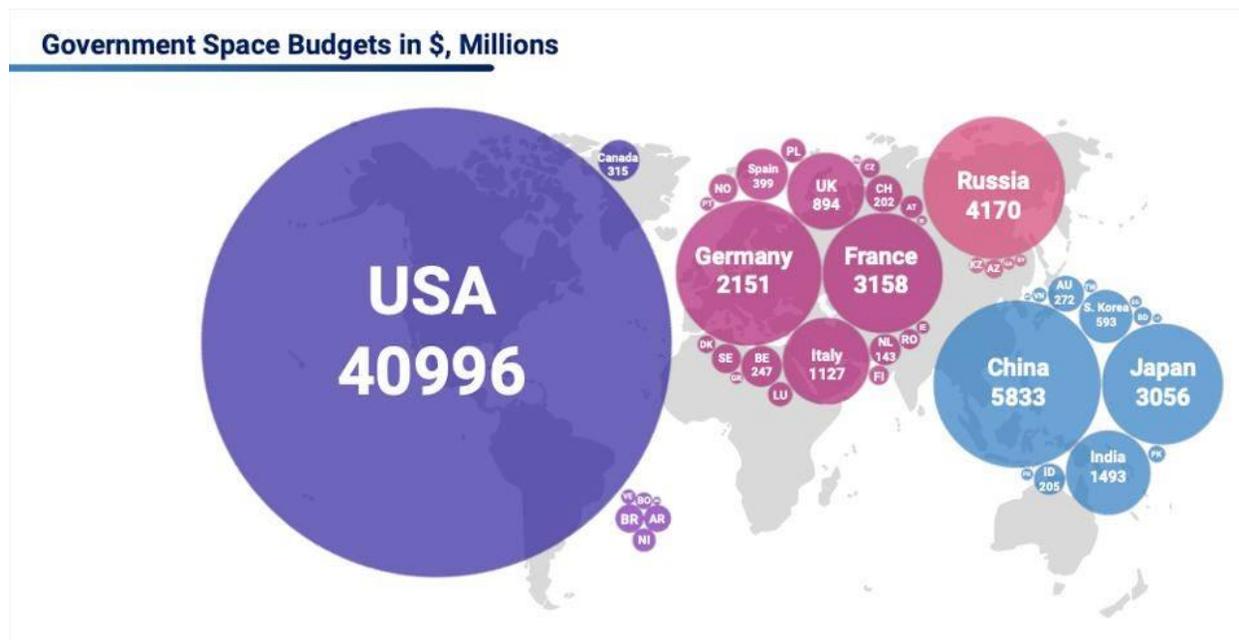
In the United States, President Ronald Reagan signs the Commercial Space Launch Act of 1984, mandating NASA to encourage private spaceflight. In 2014 NASA partitions 6.8 billion dollars to SpaceX and Boeing respectively, and United States President Barack Obama pledges to ramp up funding for private space companies.

The Future of Space

With increasing attention and importance on the international stage, space startups have become a normality. The democratization of space can be considered a success. Progress in Space and on Earth have been greatly accelerated by private space efforts. The future leaves the rules of the game to be decided when it comes to ensuring fair play by private actors, as in line with UNOOSA's mission of space for all: ensuring democratized space.

“Space for all.”

Major Parties Involved and Their Views



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United States

The United State's National Aeronautics and Space Administration (NASA) has always been, and continues to be, a major player in space. It's progressive views on space policy have resulted in massive funding for private partners, outsourcing much to private companies in light of the inefficiencies of state-run programs. Considered to be the leading country in Space, the US sits on the bleeding edge of technological advancement thanks to its stance on privatization (which may be its downfall).

Russia

Large classical competitor to the United States, Russia (formerly the USSR) has a large space program that's highly active and has their eyes set on the future of space. Recovered from large setbacks from the fall of the Soviet Union, Russia has fallen behind in space privatization.

China

China's one party system has allowed it to make unparalleled progress and development in the past decades, with space being no exception. The CNSA has large ambitions for space, such as the brand new Tiangong space station which is poised to outshine the now dated International Space Station (ISS). China is a strong competitor in space, backed by an economic powerhouse of a country, but because the government virtually controls every aspect of the economy in China, "privatization" has been mainly focused on economic aspects of space such as satellite sales.

Japan

JAXA, the Japan Aerospace Exploration Agency, was formed by Japan's three space agencies in 2003. Though the country's space activities were heavily monitored after World War II, Japan has reemerged as a major player in space. JAXA is the major actor in all spectrums of Japan's space activities: privatization has occurred but on a smaller scale than other countries.

India

The national Indian Space Research Organisation (ISRO) is India's national space agency. India has a huge presence in space, and ranks fifth in the world when it comes to the private space industry with 350 companies. The private space industry in India is booming from the government's increase in outsourcing.

United Kingdom

The UK is seeing a huge growth in the private sector of Space, with income having tripled in size since 2000. The United Kingdom Space Agency (UKSA) is the UK's governmental space agency, with the mission to "win sustainable economic growth, secure new scientific knowledge and provide benefits to all

citizens." With 15 billion in income every year from the space industry, the UK is hugely supportive of the private space sector.

Timeline of Events

Date	Description of event
1957	The Soviet Union launches the first satellite in space, Sputnik. It is a symbolic assertion of technological superiority, and begins the Space Race.
1969	Apollo 11 lands on the Moon with it's cargo: Neil Armstrong, Edwin Aldrin and Michael Collins. It is the end of the Space Race.
1984	Commercial Space Launch Act of 1984 United States President Ronald Reagan encourages NASA's recruitment of technological prowess and technical talent via privatized space industry
1993	Russia joins the United States, Europe, Japan, and Canada in the joint International Space Station program.
1998	The International Space Station's first module is launched.
2015	The European Agency lands the first man-made probe, Rosetta, to make a planned and soft landing on a comet.
2015	Commercial Space Launch Competitiveness Act of 2015 enables US industries to "engage in the commercial exploration and exploitation of space resources".
2015	NASA grants SpaceX a 1.5 billion dollar contract, pledging to grant over 6 billion in the ensuing years
2019	United States Vice President Mike Pence pledges for American astronauts to step foot on Mars before 2024.
2021	The Tianhe-1, the CSNA Tiangong space station's core module, is launched amidst plans for ISS decommissioning.

UN involvement, Relevant Resolutions, Treaties and Events

- COPUOS (Committee on the Peaceful Uses of Outer Space)

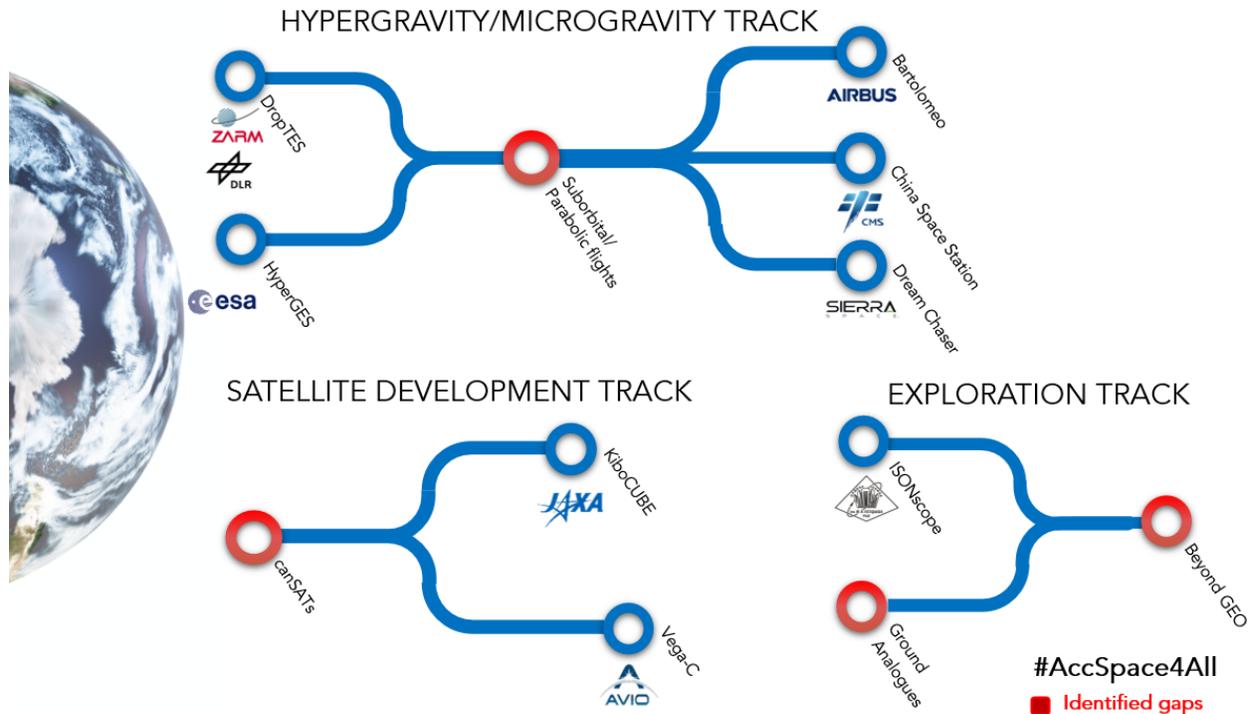
COPOUS was the initial UN response to the USSR's launch of Sputnik, with UNOOSA being a support element. Since then, UNOOSA still relies on COPOUS and the General Assembly for major resolutions, but has been given more freedom in implementing its own solutions.

COPOUS reviews international cooperation in peaceful uses of outer space, studies space-related activities that could be undertaken by the UN, encourages space research programmes, and studies legal problems arising from the exploration of outer space.

Delegations should have a good understanding of the COPOUS-UNOOSA relationship, as well as the extent of UNOOSA's legislative power.

- UN-SPIDER (The United Nations Platform for Space-based Information for Disaster Management and Emergency Response)

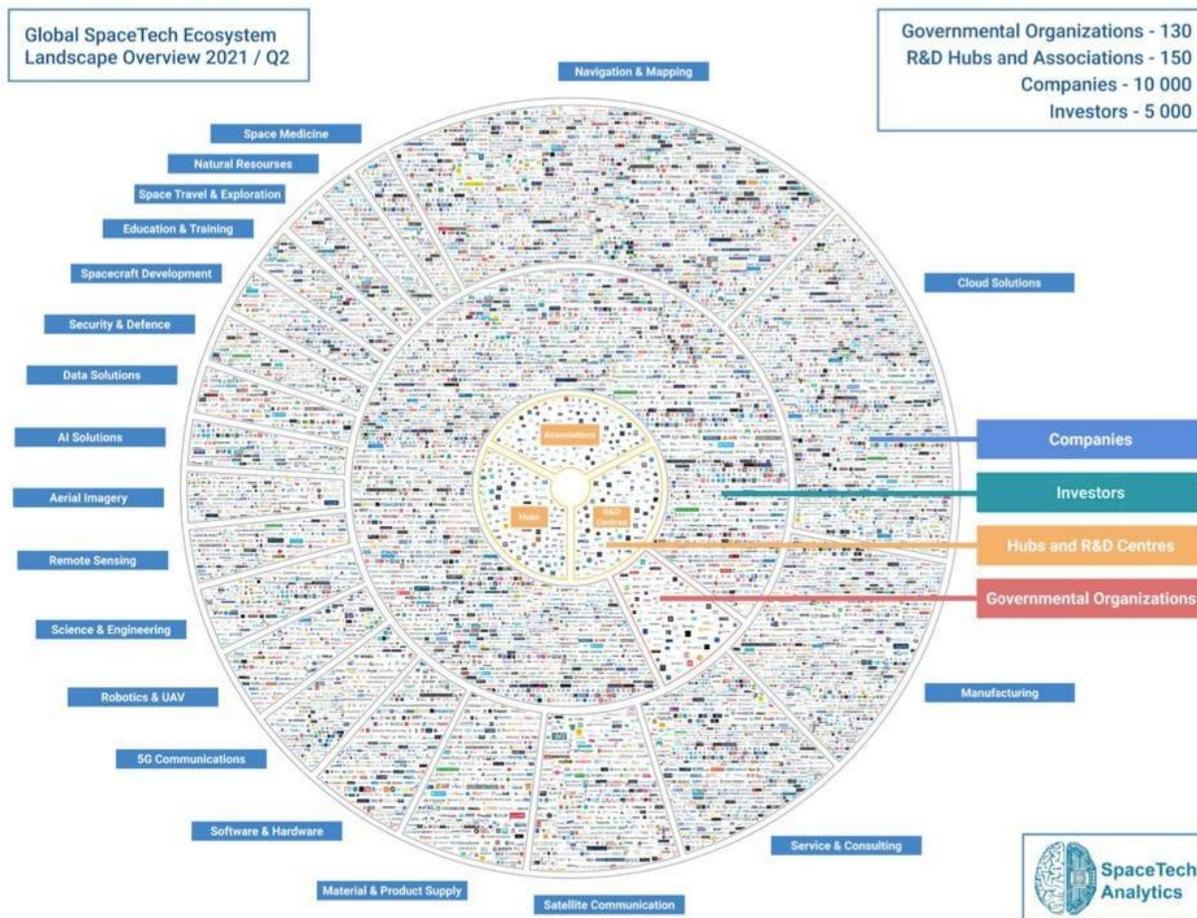
UN-SPIDER develops solutions to address limited space access in developing countries, primarily to geospatial technologies instrumental in disaster mitigation and damage control. Increased flow of Space based information is key to addressing equal access to space for all.



Access to Space 4 All Initiative: identified program gaps

- Space 4 All Initiative

The Space 4 All Initiative enables emerging and non-spacefaring nations and organizations to access and benefit from space technologies. Access to low-orbit laboratories, like the International Space Station and China's Tiangong space station. The Space 4 All initiative supports vital UN initiatives: the 2030 Agenda for Sustainable Development, the 2015-2030 Sendai Framework for Disaster Risk Reduction, and the Paris Agreement.



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Past action

Space Law

- Space Law

Space Law, although a general term, is comprised of international rules, regulations, agreements, treaties, conventions, and United Nations General Assembly resolutions.

- Outer Space Treaty

The 1967 Outer Space Treaty 1) bans the stationing of weapons of mass destruction in outer space, 2) prohibits military activities on celestial bodies, and 3) details legally binding rules governing the peaceful exploration and use of space.

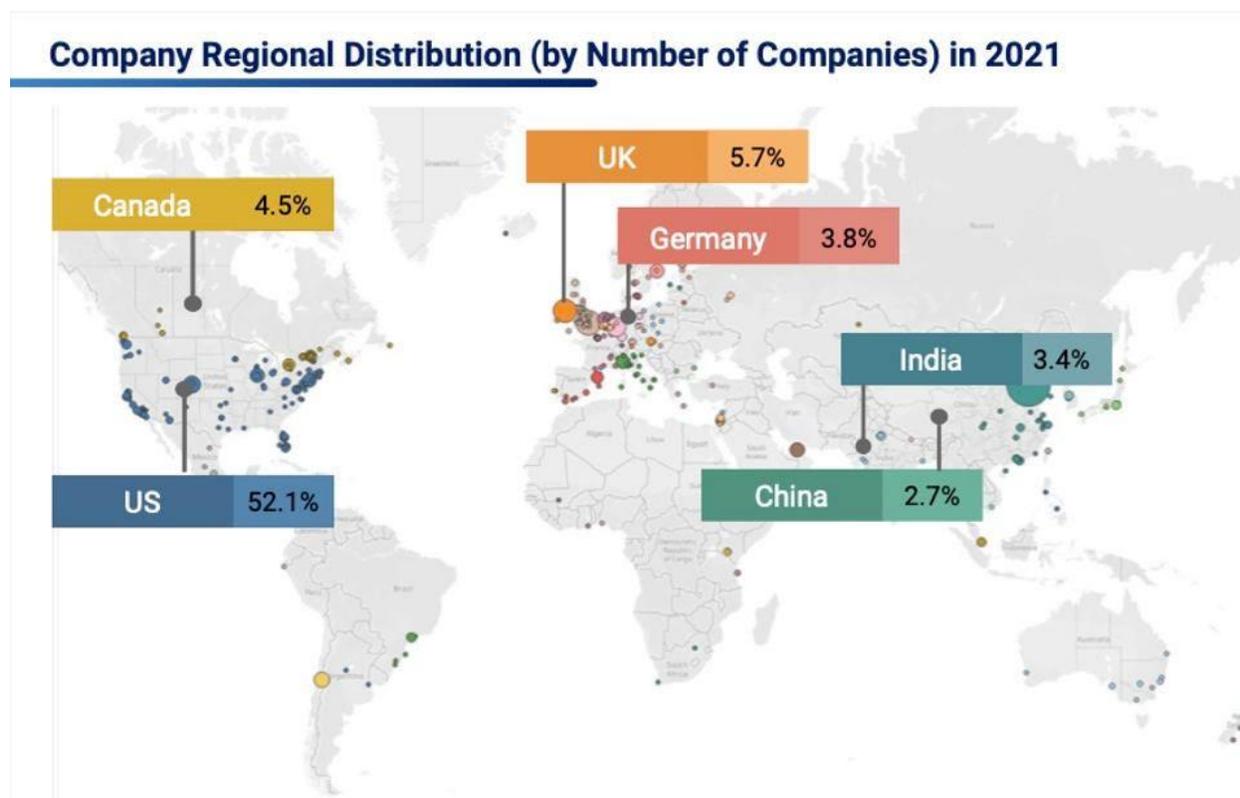
- 34/68. "The Moon Agreement"

Agreement Governing the Activities of States on the Moon and Other Celestial Bodies

The Moon Agreement is a multilateral agreement stating that the jurisdiction of the moon or any other celestial body belongs to the participating countries.

Possible Solutions

- UNOOSA functions in support of the 2030 SDGs are clear, however, increasing privatization presents new challenges for the committee. With the majority of private space organizations being isolated in only a few countries, UNOOSA is faced with the challenge of laying solid groundwork for international cooperation and ensured opportunity in space.
- Universal legislation requires thought and consideration of past, current, and future space actors: the consequences of which cannot be understated. UNOOSA legislation will set the parameters for future space activities.
- Privatization must be addressed in the field of space.



SpaceTech Analytics: Space Company Regional Distribution

Sustainable Development Goal (SDG)

As a general maxim, the United Nations' intent in Space has always been to advance the human condition as a byproduct of Space activity. Every SDG is impacted by UNOOSA's activities in one way or another:



United Nations 2030 Sustainable Development Goals

- SDG #1: No Poverty
 - Forecasting natural disasters and better coordinate subsequent aid provision
 - Optimising sustainable utilisation of natural resources
 - Providing efficient support to vulnerable populations
 - Mapping populated areas and their access to basic services
- SDG #2: Zero Hunger

- Optimising crop productivity through informed management process and increased efficiency in the use of existing resources, including land, seeds, fertilisers, plant protection agents and water
- Improving livestock management through enhanced monitoring and identification of suitable grazing
- SDG #3: Good Health and Well-being

- Studying disease epidemiology, by enabling increased use of spatial analysis to identify the ecological, environmental and other factors that contribute to the spread of vector-borne diseases, monitoring disease patterns and defining areas that require disease-control planning
- Addressing issues related to vision, cognition and disability assistance
- Monitoring factors that affect human health and well-being, like air quality and traffic
- Supporting health promotion and disease prevention, through the use of wearable monitoring devices
- Enabling remote healthcare
- **SDG #4: Quality Education**
 - High-speed internet connectivity and tailored online educational content delivered via satellite
 - Electronic attendance monitoring and provision of incentives for parents to reduce dropout rates
 - Remote learning, e-learning and lifelong learning opportunities for remote and isolated communities
- **SDG #5: Gender Equality**
 - Access to quality education even in remote and isolated communities

- Support for female entrepreneurship, through access to training, soft infrastructure, information and safety in the work environment
- Career development opportunities, often within STEM
- SDG #6: Clean Water and Sanitation
 - Water quality monitoring
 - Meteorological forecasting
 - Access to infrastructural support and technical know-how
- SDG #7: Affordable and Clean Energy
 - Critical infrastructure monitoring, particularly with regards to energy networks
 - Power grid synchronisation
 - Seismic surveying Identification of optimal sites for the production of renewable energy
 - Solar and wind energy production forecasting to estimate the amount of energy that needed from other sources
- SDG #8: Decent Work and Economic Growth
 - Global economies and GDP growth, contributing to a range of sectors, particularly service delivery, utilities, banking and finance, agriculture and communications Lone workers monitoring, establishing safe and secure working environments
- SDG #9: Industry, Innovation and Infrastructure
 - Infrastructure mapping and monitoring, including maintenance of road infrastructure in rural environments, where the most reliable technology is satellite-based
 - Construction surveying through machine automation
 - Smart mobility, e.g. reduced fuel consumption by smarter planning and monitoring of driving behaviour
- SDG #10: Reducing Inequality
 - Connectivity in remote and isolated areas

- Remote participation in democratic processes
- Reliable access to information
- Connectivity in remote and isolated areas
- Remote participation in democratic processes Reliable access to information
- SDG #11: Sustainable Cities and Communities
 - Urban planning, to pinpoint structures and reference points for cadastral and urban planning purposes Smart Cities, through the application of Global Navigation Satellite Systems, Earth Observation and Satellite Telecommunications
 - Improvement of city services, such as smart waste management systems
 - Air quality monitoring
 - Disaster management Infrastructure monitoring
 - Search and rescue operations
- SDG #12: Responsible Consumption and Production
 - Natural resources management
 - Food and dangerous goods traceability
 - Monitoring of endangered species trafficking and products of human slavery
 - Smart Agriculture by combining Earth observation, satellite telecommunications and Global Navigation Satellite Systems
 - Spin-offs of In-situ resources utilization (ISRU), such 3d printing technologies to create structures in orbit, could have applications on Earth
- SDG #13: Climate Action
 - Climate change monitoring
 - Weather forecasting
 - Disaster management

- Search and rescue operations
- SDG #14: Life Below Water
 - Mapping and monitoring of natural and protected areas
 - Fishing vessel tracking and navigation
 - Monitoring of illegal, unregulated and unreported fisheries
 - Fishery product traceability (endangered species, exploitation of fishery resources)
 - Assessment and monitoring of marine and coastal resources
 - Climate change monitoring, particularly water temperature
 - Identification of algal blooms
- SDG #15: Life On Land
 - Bio-geophysical land surface monitoring
 - Terrestrial biodiversity monitoring
 - Monitoring of poaching and identification of smuggling routes
- SDG #16: Peace, Justice, and Strong Institutions
 - Conflict monitoring
 - Enabling participation of remote and isolated communities in democratic processes
 - Enforcement of legislation
 - Access to reliable information
- SDG #17: Partnerships for the Goals.
 - International cooperation initiatives
 - Exchange of data and information
 - Open source databases Sharing of infrastructure and exchange of technical know-how

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