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The role of eu public diplomacy in affecting international security in the context of the development of the outer space traffic management

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Abstract

Objectives: The purpose of this article is to identify the role of international diplomacy in shaping the outer Space Traffic Management.

Methods: The theoretical research methods were used in this paper – analysis, synthesis, abstraction and generalization.

Results: The article presents the potential possibility of not only gaining the public awareness in the area of space traffic management problems thanks to the international mandate of institutions such as the European Union (EU) or NATO, but also its attempt to indicate the role of European institutions in shaping international security in the context of the development of space traffic management at the global level.

Conclusions: Taking into consideration all potential space threats and military and non- military issues of building international security we can find straight links of complexity with the outer space environment and multilateral diplomacy. It sems to be the most efficient tool to build resilience in the environment of international institutions of strategic status to establish space situational awareness of key importance for future global defence and deterrence. Taking a huge intensity of space traffic management, especially with the example of the tensed conflict in Ukraine since 24th February 2022 we are witnessing the new era of space technological resolutions. The awareness should also concern the possibility of technical achievement, as the example done by Chinese or Russians that can destroy satellites in orbit in case of the possible conflict scenario in the space.

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Introduction

It is very likely that the next few decades will turn us into an interplanetary civilization inhabiting not only our native Earth, but also the Moon or Mars and all these started inconspicuously with the first artificial object launched into space more than 60 years ago with the Soviet satellite Sputnik I before being destroyed during its entry into the Earth's atmosphere orbited the Earth 1400 times (Howell, 2020). It should also be remembered that, as early as, 1967 the Outer Space Treaty regulation of the rules for the usage of outer space entered into force (https://www.unoosa.org/). Since these two epochal space events mankind has enjoyed numerous spectacular successes, driven above all, by military competition of two world powers.

The main aim of the article is to show the possibilities of effective support of the key international institutions taking legislative and normative initiatives as actions of public diplomacy on the example of the EU. The paper focuses on the possibilities of setting the direction of development and raising awareness of the problem in state administrations of individual member states but not only. In addition, the article addresses a polemic on how to identify the possibilities of organizing regulations and set recommendations for the usage of space in the context of ensuring the security, prosperity and competitiveness of the European Union countries. The theoretical research methods were used in this paper – analysis, synthesis, abstraction and generalization. It is significantly important in the face of cyber threats era, potential incidents and regional conflicts, such as the war in Ukraine of February 24, 2022. It is also assumed that public diplomacy will be the most vulnerable area to the actions of unauthorized entities, if the space management area is not properly managed in the near future. The article analyzes, compares and synthesizes the problem from the information provided in the Scopus scientific databases, available press and scientific literature, as well as, texts posted on strategic websites of international institutions in the field of security dealing with the topic of space management. The content of the article suggests that the current regulations do not keep up with the changes, they require updating and adaptation to the operating conditions in this sector, which significantly affects the transfer of secure data in public organizations using public diplomacy in digital form. The solution to this issue could be a clearly defined scope of civil-military coordination and the possibility of an open public debate on the issue of secure connections in international strategic institutions. EU is now proposing such measures in its latest Secure Connectivity program, which will at least indicate further areas of activity. This was also a vulnerability found by the Authors of the article. The substance also analyzes how important is an issue in international security to combine the latest technological achievements

in space management with the challenges of the current public diplomacy in the international structures of the EU and NATO. In this spectrum, an initiative was taken for an open debate by the Space Department at the European Commission in 2022, as a result of EU activities.

In the introduction, the article refers to the history of activities in space, further draws attention to the dominance in space, which until 10 years ago was reserved only for superpowers, now there is a great change caused by the structural actions of NATO or the EU and the availability of a number of research programs still exploring the universe. The following parts of the article analyze the growing interest in the space of other European countries that are not superpowers, which caused chaos in space and information diplomacy. These intensified activities also produced more waste circulating in space, which could lead to collisions if the waste does not burn in the Earth's stratosphere to the weight of 1 tone. Such waste can therefore be equivalent to the force of a ballistic projectile at the point of impact with the ground. Next, the article shows in which areas STM works, provides definitions of public diplomacy and the role of official communication links in EU or NATO diplomacy, taking into account the problem of raising awareness of the activity of these processes.

The paper article summarizes the potential possibility of gaining public awareness in the area of problems related to space traffic management. However, thanks to the international mandate of institutions such, as: the European Union or NATO an attempt was made to indicate the role of European institutions in shaping international security in the context of the development of space traffic management at the global level using the public diplomacy tool for this purpose.

Currently, more advanced complexity of understanding the Earth is more crucial for the international efforts and the decision-makers to get an authoritative information how to react to critical situations. To achieve such level of perfectly delivered information some decades of physical and societal processes had to pass (https://www.scopus.com/record/display).

Yuri Gagarin, the First Man in Space, was the demonstration of the strength of the Soviet space program in April 1961 (Tillman, 2018). On the other hand, the United States responded with the first orbital flight of John Glenn on the Mercury 6 in February 1962 (NASA GOV, Historic Missions, 2021). In turn, an important technological proof of the use of space systems was the first telecommunications satellite Telstar 1 that had been launched by the USA in 1962 (Britain Science, 2021). It enabled television broadcasting and the use of several telecommunications satellites in 1964 for worldwide access and direct broadcasts of the Tokyo Olympics around the globe. The 1960s was marked as the height path of the tension between the two world powers with ambitions to conquer space. After several successive Soviet

spaceflights, the American "Moon Dream", materialized by the US's Apollo Lunar Program was the one to end the Soviet domination of space achievements and the accompanying propaganda (Logsdon, 2019). After years of research, test flights, the US sent a man to the moon, and on July 21, 1969, Neil Amstrong put his left foot on the lunar surface and famously declared: “That's one small step for man, one giant leap for mankind ”.

The next stages of competition between superpowers with ambitions to conquer space were: the development of space stations, allowing for numerous scientific experiments: the Soviet Salute 1 (1971), the American Skylab (1973); development of unmanned probes programs (the American Mariner 4, Mariner 9), landing on the surface of Mars: the Soviet probe Mars 3 (1972) and the American Viking 1 (1976), or the space shuttle flight program. July 17, 1975 finally brought a symbolic end to the cosmic race of both powers. It was the joint US-Soviet Apollo-Soyuz mission during which took place a historic merger of spacecraft with the US and the USSR.

1. Is the space race really over?

The race for space domination was a period of n scientific achievements, the development of military satellite systems that was identified also the expenditure of large funds on space projects and a great burden on the economies of participating countries. Definitely, it is not the subject of this paper to consider such problems. The main purpose of the previous paragraphs was to present briefly history of the conquest of space, primarily based on the technological competition, the domination race of two world superpowers in space. It was also to stimulate the reader's imagination and make it clear that what seemed impossible in the middle of the 20th century was already “within arm’s reach”. Probably, when the first satellite was launched, while world powers and two contradictory ideologies fought to conquer space, no one was able to predict what the future of space exploration will bring. Presumably, only few were likely aware of the fact that world economies would become more global and that there would be no part of the globe, oceans and air that would not be exploited by the mankind. With the help of commercial satellite systems playing a key role in providing services and solutions for various users and needs in the field of telecommunications, navigation, observation of climate phenomena and changes on the Earth's surface and its surroundings more possibilities are real to achieve (Bielawski, 2022). The above should be supplemented with the context of the so-called the "third space revolution", a new space age, which primarily uses the enormous potential of space technologies to create large, based on complementary business models, commercial ventures, examples of the commercial space flights, like one done by Elon Musk

and SpaceX. The fulfillment of dreams to reach the stars started to be realized by billionaires as the part of commercial space flights, e.g. on board the New Shepard spacecraft joining the project of the exploration of asteroids which are rich in precious metals and minerals.

In addition, apart from the usage of space systems for security purposes, including crisis management, border monitoring or ensuring diplomatic communication, an irresistible temptation has become the wish of militarization of the space. As described above, the space sector is growing and evolving at a very rapid pace which is reflected in the significantly increasing number of activities in there. As a result, more human made objects, satellites, space systems and installations will be in the Earth orbits, causing its congestion, especially in Low Earth Orbit (LEO).

Basing on the available and current data published by the European Space Policy Institute (ESPI) it should be added that since the beginning of the space age, that was 1957 about 6,000 rockets have been launched into space placing about 9,600 satellites into Earth orbit. On the contrary, the current data indicate that over 3,200 of them are still operational (PW-SAT2, 2015).

Space debris, as result of human expansion in space is a very important issue. It drastically and negatively affects the safety of space exploration. As a result of the conducted observations based on statistical models it is estimated that the number of space debris on the Earth orbit is greater than 128 million (objects smaller than 1 mm), 900000 (smaller than 1 cm) and about 34000 (1cm to 10cm). What is more, and it must be emphasized here clearly, the pieces of space debris are the densest in the LEO as most often used for satellites (Esa’s Annual Space Environment Report, 2022; Bielawski, 2019). Moreover, according to the forecasts of ESPI, the number of satellites will grow at a rate of 10-16% annually reaching the number of around 4200 active satellites by 2024, mainly deployed in LEO (the number would increase if the Starlink mega constellation accelerates). Hundreds of satellites are launched every year, and as estimated by Euroconsult, this means that over the next ten years over 15000 satellites will be launched into orbit taking into account the increasing number of exploration missions (Euroconsult-EC, 2021). As the consequence more launches and satellites in the orbit ultimately mean the increased number of space debris and probability of higher number collisions. It was reflected in the so-called Kessler's syndrome (NASA scientist), determining a cascading effect on the space debris population which threatens or even prevents the ambitious plans of the conquest of outer space (The Space Industry as defined here includes, 2022).

2. Globally supported solution as the answer for safe operating environment in the space as the opportunity for European Union.

The enormous increase in space activity, a new approach to space operations, and the growth in the commercial use of space has expanded numbers of satellite operators, both local and international, as well as numerous organizations with launching capabilities. Certainly, it also requires the technical and organizational changes aimed at managing space traffic ensuring a safe operating environment in space and enabling future growth of space sector that is presented in detail by Figure 1 and Figure 2 below. Therefore, the development and implementation of good Space Traffic Management (STM), including planning, coordination of activities in space to increase the safety and durability of operations in this environment in the zone of an international nature, is essential.

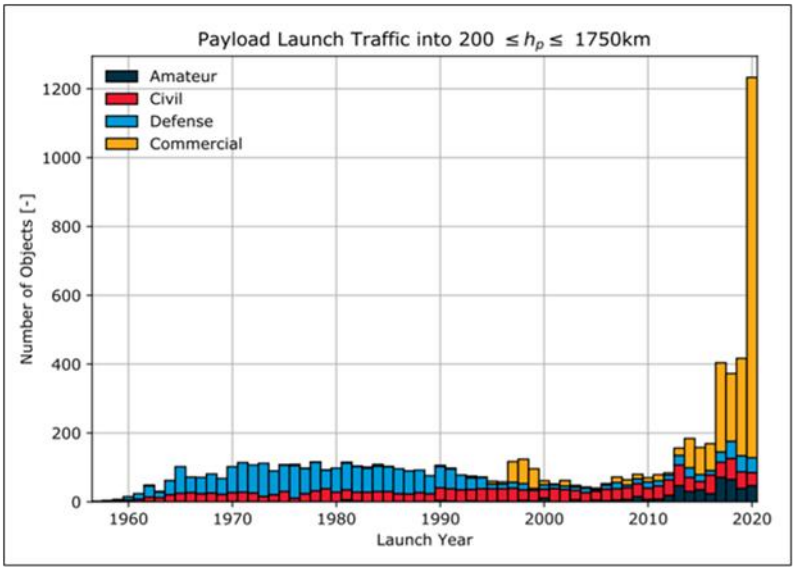

Fig. 1. The increase of the space object population by human activity since the beginning of the space age – Low Earth Orbit (LEO) payloads categorized in terms of the main funding source (Civil, Defence, Commercial, Amateur), hp – perigee height (the point of lowest altitude), data presented only relates to catalogued objects (2020)

Source: Esa's Annual Space Environment Report, 2022

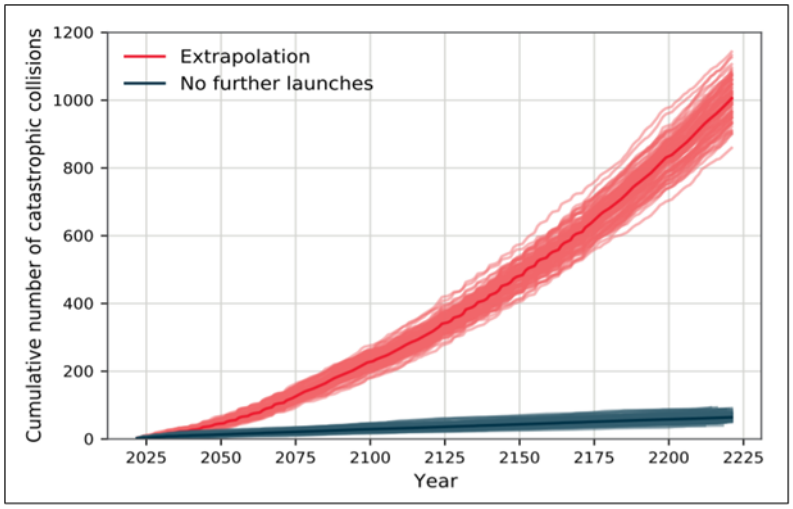

Fig. 2. The simulation of the future evolution of the number of objects larger than 10 cm and the cumulative number of catastrophic collisions (leading to the complete destruction of target and impactor (2020)

Source: Esa's Annual Space Environment Report, 2022

3. Space Traffic Management – Definition

The term Space Traffic Management (STM) is not new and first ideas were documented in 1980s as a need for regulatory works, which was taken by Prof. L. Perek within International Institute of Space Law publications (Perek, 2002, p. 2). The subject area has been taken to analysis during the next decades through different meetings and institutions e.g., workshops of American Institute of Aeronautics and Astronautics at the turn of 20th and 21st century, symposiums of UNCOPUOUS Legal Subcommittee or International Academy of Astronautics which published in 2006 Cosmic Study on STM. Then we could find one of the definition on STM describing it as: "the set of technical and regulatory provisions for promoting safe access into outer space, operations in outer space and return from outer space to Earth free from physical or radio-frequency interference" (Contant-Jorgenson, Lala & Schrogl, 2006, p. 10). During the next decade a number of institutions of public and private sector were continuing work on the concept of STM, a few with tangible results are worth to mention: International Association for the Advancement of Space Safety (IAASS), International Civil Aviation Organization (ICAO) or International Space University. Workshops, symposiums and conferences were conducted as well and diplomatic initiatives that can consider precursors of STM as a very relevant for its development e.g. the Draft International Code of Conduct for Outer Space Activities tabled by the EU in 2007, the Long-Term Sustainability of Outer Space Activities Working Group in the Scientific and Technical Subcommittee of the UNCOPUOS 2010, The Governmental Group of Experts on Outer Space Transparency and Confidence

Building Measures established by the Secretary General of the UN in 2010 (European Space Agency, 2022).

A lot of work done resulted in IAA Study published in June 2018 (Contant-Jorgenson, Lala & Schrogl, 2006, p. 10). The document re-examined approach to STM with inter-disciplinary context to support decision-making process. It has been a crucial attempt to adjust the STM concept to the new challenges resulting from technological development and evolution of space sector. In the same year US issued National Space Traffic Management Policy regulations which deliver its own definition: "STM shall mean the planning, coordination, and on-orbit synchronization of activities to enhance the safety, stability, and sustainability of operations in the space environment" (Space Policy Directive-3, 2022). Interestingly, this definition advanced in the US and continues to be controversial in Europe as it combines a regulatory approach with an operational perspective. Despite the definition proposed by the US, it can be concluded that there is no common agreement, generally accepted of such legal value that would compensate the interests of all stakeholders with the definition of space traffic management.

The concept of space traffic management without understanding and defining concepts, such as: Space Traffic Coordination (STC), Space Situational Awareness (SSA), and Space Surveillance & Tracking (SST) is incomplete. What is more, initiatives and actions, whether at the global level or taken by the US administration may have an impact on both the EU's preferred model of access to and use of space and reduction of the competitiveness of the European space industry. It is also perceived as potentially affecting sovereignty interests and needs of the EU. This effect results from the proposed dependence on US data, the need to implement of stringent requirements, and compliance with US guidelines. For that reason the EU recently has accelerated its discussion on the STM concept as it is sign of awareness of the new challenges. It also considers initiatives of others, like US with the regulations which would have an impact on regional or global level of threatening of the European sovereignty (Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, 2018). Unfortunately, the STM provisions were not included in the European Space Programme Regulation (2021-27) which only defines Space Situational Awareness as a holistic approach towards the main space hazards encompassing collision between satellites and space debris, space weather phenomena, and near-earth objects (Global Trends to 2030, 2015).

Nevertheless, a few initiatives have been carried out with the organized in July 2021 European STM Conference entitled: "Fostering a European approach on Space Traffic

Management" with the aim to understand better current regulatory frameworks in Europe (European Space Traffic Management Conference, 2021).

In addition to representatives of the Member States, the conference gathered both the EU and ESA participants including the European Commission and the European External Action Service. Obviously, the conference results were not binding to any participant or institution but they can contribute to a deeper discussion on the topic and its development leading to complied regulatory and procedural expectations in the future. By initiating the discussions on Space Traffic Management, European Union has a chance to ensure the protection of European interests in the context of the safety and protection of its own space infrastructure and related services. The added value of the European Union's activity is the ability to provide favorable solutions in the field of STM rules and procedures. Moreover, such an approach may be perceived by the global space sector and its community as more universal and neutral. The tasks that the European Union could implement are some solutions which should guarantee its interests in the light of global initiatives, decisions and reforms undertaken. As the example motivator started by the US administration regarding STM in the challenging environment for European space sector the following issues could have been included:

- coordination the efforts of the EU Member States to address STM regulation and standardization with a view to assess the technical requirements needed to handle the STM issues while ensuring Europe's freedom of action, sovereignty and autonomy,
- fostering the creation of an internal European market for SSA data and services,
- creation and support financial mechanisms, funded programmes to further develop European STM capabilities,
- promotion of the EU SST Consortium established on the basis of the decisions of the European Parliament and the Council as a fundamental element of the future civil European architecture of the SSA that is provided in detail in Figure 3 below.

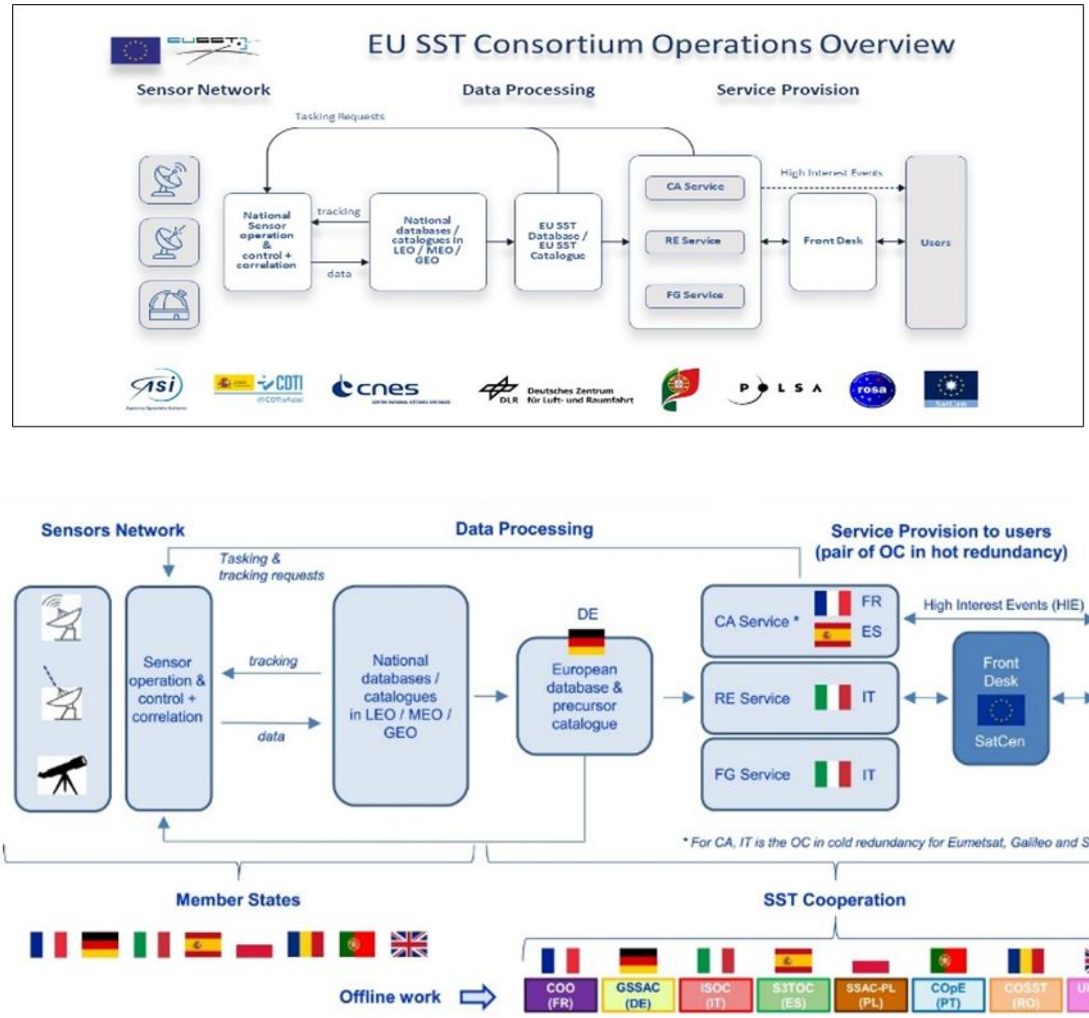

Fig. 3. EU SST Consortium operations overview.[1]
Source: European Union Space Satellite Traffic Consortium, 2020.

In general, STM may limit the freedom of use of outer space, and it has not been treated seriously so far as the number of serious disasters in space was deliberate or accidental (China's Anti-Satellite Test, 2007). Plans of megaconstelations, their implementations and Starlink constellation exceeds to 2000 satellites on the orbit (SpaceX passes 2,000 Starlink satellites launched, 2022). They dramatically increase the risk of conjunctions challenging the safety of space activities and access to space which totally has changed the approach worldwide. As there .order to elaborate binding regulations which would bring the collective benefits from "exploring" space in all possible dimensions: civilian, military, economic, scientific within the

[1] The Consortium created according to the Space Surveillance and Tracking (SST) Support Framework established by the European Union in 2014 with the Decision 541/2014/EU of the European Parliament and the Council. Initially, five EU Member States – France, Germany, Italy, Spain and United Kingdom – and then eight with the addition of Poland, Portugal and Romania in 2018, now reduced to seven with the removal of the UK following the Brexit process.

new emerging possibilities: space transportation, tourism in space or fast intercontinental transport. The work on STM is very complex and intricate, so there is a place for diplomatic agendas with prompt comprehensive reaction which is much more necessary when we see on TV these days with the first completely commercial demonstration of tourist flight of four passengers performed by the Virgin Galactic suborbital system – SpaceShipTwo (Steere, 2021).

4. Universal values of international space security in the actions of public diplomacy

The actions of the European Union listed above are crucial and clearly emphasize the role of the European Union in ensuring its member states the appropriate security in the management of outer space. Nevertheless, it seems that these activities may be insufficient, especially in the context of the inability to reach consensus in the establishing common global legal and administrative regulations in the field of space traffic management.

At this point, it may turn out that the role of diplomacy at the highest levels of government structures of EU Member States may turn out to be justified. Particularly when the current geopolitical situation is uniquely connected with the multi-threaded socio-political events, but also resonates with such issues as climate change, energy consumption, high rate of digital devices use, the Internet, or technological development in every field of human life. It should bring us to the reflection about the development and management of space traffic.

The European foreign policy is a fairly important part of the international community that upholds the global values of international security. Its main assumptions are: to resolve conflicts, deep mutual understanding and respect individual values of each of the member states. Mostly it is based on available instruments, such as diplomacy with appropriately taken security actions respecting international regulations (Kołodziejczak, 2021).

The role of the EU diplomatic service in this respect may be fulfilled by the example of institution: European External Action Service (EEAS) which has been primarily designed to internationalize and protect EU values and provide guidance to implement them properly in the international environment which may also determine the possibility of coordinating activities for tasks related to space exploration in wider range of the performed actions (European External Action Services, 2022).

By definition, the term of "public diplomacy" was initiated in 1965 with the activities of retired US Foreign Office official E. Gullion, Dean of the School of Law and Diplomacy at Tuft University who founded The Edward R. Murrow's Center for Public Diplomacy. The term defines the activities carried out by governments, private groups and even individuals serving

to influence the attitudes and opinions of other nations and even governments which in turn may shape their decisions in the field of foreign policy (Fater, 2019).

On the other hand, one of the Polish researchers of the notion of diplomacy, B. Ociepka, describes public diplomacy as a significant element of political dialogue in communication at the international arena, possible both through the mass media and direct channels. The subjects of public diplomacy are not only connected with government relations but also with the number of other organizations, including non-governmental activities (NGOs) and other actors of international relations who may have an impact on the image of a given country and society (Ociepka 2008, p. 289).

Bearing in mind the wide-developed possibilities of public diplomacy in international structures the unique mandate in the structures of European activities should be taken into account. It rises the possibilities of transatlantic related activities to establish the international security in cooperation with such institutions, as: NATO or UN in the context of the development of outer space traffic management. In the speech on "Shared Vision, Common Action: A Stronger Europe, A Global Strategy for the European Union's Foreign And Security Policy of 2016" provided by F. Mogherini a High Representative for the European Union for Foreign and Security Policy, the Vice-President of the European Commission even at that time emphasized the importance of the Union's structure and its power in the number of member states, the potential of their actions, as long as, they represent similar moral and legal values (Mogherini, 2016, p. 49).

However, thanks to such institutions as the European External Action Service (EEAS), it is possible to create an institutional diplomatic discussion and initiative to recommend some legal solutions for individual Member States regarding the disposal of outer space and the scope of activities in this area, especially with promotion of the strategic communication in the diplomatic action in the countries of the EU member states.

The European External Action Service (EEAS) is the example of entity that gives this opportunity to create a diplomatic initiative supporting mainly the Union's activities in many areas, including: human rights and democracy, climate, environment and energy, protection of migrants and emigrants, humanitarian aid and crisis management, or combating disinformation (European External Action Services, 2022).

In the entire range of activities there is also place to start making the civil society aware of the effects of space traffic management having at their disposal a soft communication tool which is a public diplomacy with its unique role in social media. Taking into account the dynamics of civilization development, a number of cyber threats, combating disinformation,

and on the other hand, the development of telecommunications in the area of international security we shall be aware of the fact that, we have been operating in this sector for several years. In this field there shall be undertaken only more visible discussions and European initiatives due to the increased activity in these areas which will be recognized very soon as an inseparable part of civilization development and research on maintaining the security on a global scale from the environment of new, inevitable technological challenges.

In this perspective the community of the European Union and a social initiative ought to be taken to draw attention to the developing problem which would certainly be associated with increasing interoperability, effectiveness in action, and first of all, with the developing principles of the responsible behavior in space, which could lead to initiate, for example, the statutory action of the European External Action Service (EEAS) to adopt an international code of performance related to the regulation of outer space management. It turns out that, the previously promoted domain of the autonomy in outer space which might have worked properly cannot continue to function due to the intensification of technological activities as mentioned before. Additionally, the extremely active competition of military and civilian entities that compete with each other in terms of technology and financial benefits may become a real threat to international security, and thus the national security of individual European Union member states, but also for NATO or UN. The unique role of public diplomacy shall come down not only to raise awareness of the complexed issue at the European level, but also to find the possibility of presenting recommendations confirmed by the statistical data applicable to government administrations of individual member states of EU.

It is worth to mention that the autonomy of outer space has been completely disrupted after being confronted with the geopolitical competition of countries aspiring to the role of a leader in the field of the latest technologies used in traffic space management. Moreover, there are no binding legal regulations in this respect that would allow ordering this zone, not only against excessive exploration, but for the creation of rational regulations securing the sense of security of the European Union citizens. It also can give the permission for the definition of rules in conducting and common enforcement of regulations by countries such as: the United States, Japan, India, China and Russia. These countries, without waiting for the Union's decision have already taken steps in their defense doctrines to create response of outer space domains and operate in the latest space technologies and devices that are used to control the security of the region, state, sea or air space. In this spectrum the next task for the public diplomacy will be the way in which the sector of leaders of politics and the world economy will be reconciled with the theater of action for the richest investors and inventors. It will provide certain

guidelines for dealing with international security that are related only to the military sectors. In many cases is forgotten when there are financial benefits or a quick return on investment in a global scale.

Mentioned above, recent commercial flight events initiated by Robert Branson with Virgin Galactic, or Jeff Bezos who on July 20, 2021 flies on their first commercial outer space flight on the board of the New Shepard commemorating the first American-Alan Shephard in the outer space (Eudaily, 2020). The next billionaire in this race is Elon Musk, who wants to colonize Mars so that the planet is a plan to secure existence on the Earth just confirm that the history of the milestone in technological achievements and the opening of outer space for commercial flights is happening in front of our eyes (Sheetz https://twitter.com/thesheetztweetz, 2019). It is accelerating in a more unsanctioned direction, without clear regulations or recommendations faster than ever before with the message of maintaining the safety in the world. Commercial flights are recognized here as the opening of private companies to the needs of wealthy customers. It shall be projected that it is only a matter of time and possibilities until there is a greater need for investments in telecommunications and outer space infrastructure, or the use of unique minerals from asteroids and planets, which should also be regulated rationally by treating these issues as the world heritage. In the light of recent events and possible global impact in the field of civil and military security there shall be designated the unique role of public diplomacy without a doubt. In this perspective: “ESA is Europe’s gateway to space, mandated to shape the development of Europe’s space capabilities and to ensure that its investments in space deliver benefits to the citizens of Europe and the world” (Scopus Data Base, 2022).

In the structures of the European Union and social communication, in order to build the coherence and speed of transferring the rules and performance special solutions must be taken in the field of outer space management at the international level. These actions must be emphasized on cooperation with NATO, the UN, as well as, on the national scale of the individual member states. The European External Action Service (EEAS) is one of the example of institutions that could act as a mentor in building the awareness of European Union citizens and maintaining the mandate to further developed cooperation with NATO structure in the field of security with its counterpart to the European institution known as Joint Air Power Competence Center (JAPCC). There can be found the similar rhetoric in words of Lieutenant Colonel T. Vasen: “The AJP still requires more strategic guidance and currently speaks only to minor space-related subjects while other strategic documents are under development or still missing. To achieve the level of guidance that currently exists in major domains like Air, Land,

Sea and Cyber, Space will require advocacy at the highest levels within NATO" (Vasen, 2020, pp. 21-25).

Having common operation of such institutions, we can say that it is an opportunity to achieve the creation of an agreed global order aimed at, especially at this time, creating strategic conditions for maintaining safety rules, also in the air and outer space. Such solutions are also defined by General J. L. Harrigian; "We must develop new tools faster than our traditional military processes permit, in order to sustain the speed of relevance" (Harrigian, 2020).

Conclusion

Taking into consideration all potential space threats and military and non-military issues of building international security we can find straight links of complexity with the outer space environment and multilateral diplomacy. It seems to be the most efficient tool to build resilience in the environment of international institutions of strategic status to establish space situational awareness of key importance for future global defence and deterrence. Taking a huge intensity of space traffic management, especially with the example of the tensed conflict in Ukraine since 24th February 2022 we are witnessing the new era of space technological resolutions. The awareness should also concern the possibility of technical achievement, as the example done by Chinese or Russians that can destroy satellites in orbit in case of the possible conflict scenario in the space. It not only shows the possibilities of high-tech actions that are possible to perform by pressing the enter button, but also it reflects the high profiled mission of public diplomacy as the multinational tool connecting the issues of national and international security. The above technological trends that can be disastrous in global aspect if the humankind develop them in the future. These issues correspond also to the international security environment. The international diplomacy community is necessary as working platform to create the possibility to develop guidance in establishing transparent norms and voluntary measures to list the potential threats for the future. It mainly can be done be establishing bilateral and multilateral status of diplomacy in the structure of allies, military and commercial partners to elaborate multiple solution and space security dialogues. What is more, the current Security Connectivity initiative undertaken in August 2021 by EU Defence and Space Department of European Commission is a vital proof of readiness for open public consultation to keep communication safe within the strategic structures such as EU, NATO, UN.

ESA as the key leading institution in Europe opens the new era of digital security of public diplomacy in the context of space traffic management: "ESA is working with the space industry

in Europe to create innovative solutions for secure communications services. It is also working with public organisations to help them define and implement their initiatives for secure connectivity, and it strongly supports the European Commission's connectivity initiative".

Luckily, for the mission of protecting and saving the Earth and human beings some actions are finally and already taken with UN discussions of space security as the United Kingdom was supported by 21 other countries including the United States. The fall 2020 bypassed the Conference on Disarmament and sponsored UN General Assembly resolution that invited each UN member state to prepare a report specifying "existing and potential threats and security risks" to their space systems and characterizing "actions and activities that could be considered responsible, irresponsible or threatening". This report would also include "ideas on norms, rules and principles of responsible behavior" for security-related space activities, as the resolution passed on December 7, 2020, with 164 positive votes, 12 negative votes and six abstentions. Russia and China were among those opposing the resolution.

The views of the member states were submitted to the UN Secretary General during the spring and summarized in a report to the General Assembly, with individual countries' views attached, for discussion in Fall 2021. Hopefully, these efforts with help of public diplomacy and the diplomatic initiative from UN structure will work positively with EU and NATO structures to follow the path of building global awareness of space security.

Going back to European grounds focused also on climate changes, we face strongly now, we should state clearly, that: „ESA Earth Observation activities benefit the environment and society in multiple ways. By pushing the technological frontiers of manufacturing and data processing, they steer knowledge and innovation. With their precious data, they support decision-making at different levels and help advance our understanding of core Earth system processes. By providing information about the state of Earth's life-support systems, including freshwater, oceans, land, biodiversity, atmosphere, and climate, they can greatly support humanity to improve sustainability on the planet. ESA undertakes to measure and expose these benefits in a reliable way".

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