GOVSATCOM
AND THE PREMISES OF DEVELOPMENT
OF THE NATIONAL SPACE PROGRAM

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Abstract: *In December 2013, the European Council decided to address the shortcomings of critical capabilities through concrete projects supported by the European Defense Agency. In the area of satellite communications, the preparation of the next generation of governmental satellite communications-GOVSATCOM was initiated, through close cooperation between the Member States, the European Commission, the European Space Agency (ESA) and the European External Action Fund (EEAS). The objective of GOVSATCOM is to ensure in a reliable, secure and financially efficient civilian and military environment, satellite communications services for national and European public authorities responsible for the management of missions and critical security operations.*

The GOVSATCOM Pooling & Sharing Demonstration (GSC Demo) of the European Defense Agency (EDA) implies pooling together and sharing satellite segments made available by Member States, which have satellite communications capacity, unused for training and/or operational activities. This governmental capability aims to secure the SATCOM resources that cannot be procured at the moment through civilian suppliers, with a guaranteed level of access and security. The satellite services made available can be used by both the governmental structures and the armies of the Member States, the GOVSATCOM project representing a flexible solution to cover military satellite service needs for Training and Operations, EDA being the link structure between the supplier and the beneficiary.

Romania's participation in GOVSATCOM Pooling & Sharing Demonstration (GSC Demo) can be analyzed from a dual perspective: user of the services provided under the project and satellite service provider from the perspective of project implementation "Military telecommunications satellite system".

Keywords: *GOVSATCOM, communications, satellite, supplier, beneficiary*

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Romania in the European Union

The organization that became over the years the European Union was created as a necessity for economic and social reconstruction, at the beginning of the second decade after the end of the Second World War. In the first stage, emphasis was placed on strengthening economic cooperation: the countries involved in trade were becoming economically interdependent, thus avoiding the risk of a new conflict. Thus, in 1958, the European Economic Community (EEC) was born, which initially helped to intensify economic cooperation between six countries: Belgium, Germany, France, Italy, Luxembourg and the Netherlands. Since then, 22 other countries have joined, which has led to the creation of a huge single market (also called the internal market), which continues to develop in order to realize its full potential and counterbalance the economic development in the Asian area and North America. What started as a purely economic union has gradually evolved, becoming through "unity and diversity" an expansive organization with interests in the political, economic, social and security / defense spheres, which initiated and implemented numerous projects, which aimed to balance the economic development of the member states, climate change, environmental protection, health, strengthening the Union's external relations, improving intra-community security, justice and migration control. This change of strategy was profoundly reflected by the metamorphosis, in 1993, of the name of the European Economic Community (EEC), in the European Union (EU).[1]

As a political, economic and flexible continental-wide project, after the fall of the Iron Curtain in 1989, the European Union attracted states from Central and Eastern Europe, through its potential for peace, democratic principles and fundamental values, economic and social development. Considered a symbol of well-being and stability, the Union project represented a catalyst of efforts to build a united, supportive and powerful Europe in relation to global geopolitical and economic changes. At the same time, the need for stability in central and eastern European space by creating a climate of peace, prosperity and security throughout the continent opened

[1] https://europa.eu/european-union/about-eu/eu-in-brief_ro, accessed on 01.07.2019.

up new opportunities and, at the same time, the gates of the European Community towards closer cooperation with the European countries being in transition.[2]

The successive accession of the states of the former communist bloc culminated on April 13, 2005, when the European Parliament adopted the Resolution on the accession of Romania and Bulgaria to the EU starting January 1, 2007 and on April 25, 2005, the Accession Treaty of the two states was signed in Luxembourg. As a measure to guarantee compliance with the conditions of accession, the treaty, subsequently ratified by all the Member States of the Union, provided the possibility of adopting safeguard measures within up to three years after accession, in case of deficiencies in the field of transposition of the acquis into areas such as the internal market, justice and home affairs.

The accession was accompanied by a series of specific accompanying measures aiming at agricultural funds, food security, the reform of the judicial system and the fight against corruption[3]. The cooperation and verification mechanism aimed at monitoring and improving the functioning of the legislative, judicial system and supporting Romania's efforts in combating corruption was highlighted.[4]

Thus, on January 1, 2007, Romania became a member of the European Union with full rights, successfully ending an important stage of training / learning in order to complete its European path. From Romania's perspective, the European integration project remains a strategic, intrinsic one, linked to our long-term internal development project. Romania is working to strengthen European integration, the principles and values it is based on, to maintain the character of European construction, which will enable us to overcome the unprecedented challenges that the Union is facing

[2] European Institute in Romania, Report - 10 years in the European Union, p.5, http://www.ier.ro/sites/default/files/pdf/Raport-Romania-10-ani-in-UE-online_0.pdf, accessed on 01.07.2019.

[3] Site-ul RCE in Romania, http://ec.europa.eu/romania/about-us/eu_romania_ro, accessed on 01.07.2019.

[4] Report from the Commission to the European Parliament and the Council on the evolution of accompanying measures in Romania after accession, COM(2007) 378 final, Bruxelles, 27 iunie 2007, p.2, https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:-0378:FIN:RO:PDF, accessed on 01.07.2019.

through joint, consensual efforts. The fact that Romania is today a safe and predictable country in a confluence of the East with the West, characterized by multiple challenges and unknowns, requires us in the future to take decisive and proactive actions, alongside the Member States, in the continuous development of the European project. Only in this way will we be able to continue to develop and to ensure that the neighborhood of the Union is also printing a democratic path, economic and social stability and implicitly safer[5]. Considering that all regional, universal stability, development and security policies, projects and initiatives cannot be implemented only in one dimension, described as plastic or terrestrial, the vision of peaceful exploration and exploitation of the cosmic space has become an extremely important decision at EU level, which has led to the creation and financing of institutions with responsibilities in the space field and the development of advanced technologies.

The European Space Agency (ESA) is Europe's gateway to space, with the mission of shaping the development of the EU's space capacity and ensuring that space investments continue to benefit Europe's citizens and why not the entire world. ESA is an international organization with 22 member states and by coordinating the financial and intellectual resources of its members, it can carry out programs and activities that go far beyond the field of application of any European country, individually. The objective of ESA is to develop and implement the European space program.

ESA programs are designed to learn more about the Earth, its immediate space environment, our solar system and the Universe, as well as the development of satellite technologies and services and to promote European industries. In this regard, ESA works closely with space organizations outside Europe[6].

Romania's membership in the European space programs came to fruition in 1992 when the first agreement between Romania and the European Space Agency (ESA) was signed, followed in 1999 by the Romania-ESA Agreement on cooperation in the peaceful exploitation and use of space. Since 2007, Romania has contributed to the ESA budget as a

[5] European Institute in Romania, Report - 10 years in the European Union, pp.33-36, http://www.ier.ro/sites/default/files/pdf/Raport-Romania-10-ani-in-UE-online_0.pdf, accessed on 01.07.2019.

[6] https://www.esa.int/About_Us/Welcome_to_ESA/What_is_ESA

European Cooperating State (PECS), a status ratified by Law no. 1/2007, and as of December 22, 2011, Romania became the 19th member state of the European Space Agency. The ESA member state with full rights allows the access of the organizations in Romania, to the same extent as those of the ESA member countries, to all the programs carried out, this constituting an important technology transfer and the opening of a high technology market. Also, intellectual property is maintained at national level, with an important role in developing and maintaining competence in the country[7].

European Defense Agency

The moment - January 1, 2007 - Romania's accession to the European Union, confirmed the reform stage of the company converging to European standards and at the same time generating an impulse in the process of improving the process of deep reform of the company.

The accession meant reconfirming the support for a significant participation in the process of developing the European Union's defense capabilities, a process started from the pre-accession period, demonstrating that the fields of national defense and security do not make a discordant note in this context. The integration of Romania into the structure of the European Union, militarily confirmed the participation with force structures in different theaters of operations and across the spectrum of EU missions. Similar to the NATO model, the EU's desire to form its own army implies at the Member State level the spatiality of the action in the field of defense planning and proliferation, in the sense of resizing missions, increasing technical, procedural and action interoperability by protecting common interests at Union level, by implementing some common capabilities (sustainability, readiness, capacity for rapid deployment - VJTF, mobility and interoperability), which were assumed in Romania after accession. In addition, after January 1, 2007, Romania reiterated its intention to participate in the activities of the European Defense Agency (EDA)[8].

On 12.07.2004, by decision of the Council of the European Union, the European Defense Agency (EDA) was set up to support the Member States in their efforts to improve Europe's defense capabilities, playing a

[7] http://www2.rosa.ro/index.php/ro/esa, accessed on 02.07.2019.
[8] Dumea, Viorel, *Integrarea României în Uniunea Europeană şi consecinţele acesteia în domeniul securităţii şi apărării naţionale*, pp. 76-78, http://www.codrm.eu/conferences/-2006/10_Dumea_Viorel.pdf, accessed on 02.07.2019.

fundamental role in the development of capabilities that underpin the EU's Common Security and Defense Policy (CSDP).

The Agency aims to promote collaboration, launch new initiatives and propose solutions to improve defense capabilities. It also assists Member States which desire to develop their defense capabilities together and acts as a catalyst for the defense ministries which are involved in working on collaborative projects on defense capabilities. Thus, the European Defense Agency is a European center in the field of defense cooperation. Its expertise and networks enable it to cover a broad spectrum of activities in the defense sector, including:

• harmonization of the requirements regarding the assurance of operational capabilities;

• research and innovation in order to develop technological demonstrators;

• training and maintenance exercises to support operations carried out under the common security and defense policy.

The EDA is also working to strengthen the European defense industry and acts as a facilitator and interface between stakeholders in the military and EU policies that have an impact on defense. EU Member States (EU-28, with the exception of Denmark) benefit from the Agency's flexible approach, which allows them to decide whether they wish to participate according to their national defense needs, helping the European defense ministries to address their shortcomings related to skills and training[9].

On June 20, 2011, the EDA signed an administrative agreement with ESA for the cooperation regarding the benefits obtained by the combination of space infrastructures in the development of European capabilities in the field of crisis management and of the common security and defense policy. Based on their specific roles and activities, ESA and EDA cooperate on a variety of projects, the most important being Earth Observation, SSA, STM, SW, GOVSATCOM, satellite communication in support of unmanned aircraft systems, the REACH Regulation, pilotless maritime systems, CBRN sensors and electronic platforms, cyber security, research and development of new technologies. The significant cooperation established over the years is a clear demonstration of the emergence of the areas of interest of the EDA

[9] https://europa.eu/european-union/about-eu/agencies/eda_ro, accessed at 02.07.2019.

and ESA and of the increase in the success rate generated by the application of the leverage effect that results from the cooperation in specific EDA-ESA projects[10].

Current state of use of satellite communications

The persistence of frozen conflicts in the vicinity of Romania, cumulative with the multiplication of hybrid risks, increased the level of instability in the geographical area of Romania, created the need for timely communications links that would ensure the confidentiality, integrity and availability of information. Satellite communications, defined by the development of telecommunication satellites are some of the most impressive types of communications programs, subject to permanent development, due to the increasingly frequent and diversified demands.

If, during peace time, the use of the satellite has a role, usually, as a support for daily activities, and from a military point of view, a role in monitoring the cosmic space / earth and in ensuring the information exchange needs, during the crisis or war the use of the satellite gains new strengths, by reconfiguring space services for the acting force structures, for early warning of potential attacks with ballistic missile systems, increasing the resilience of critical terrestrial communications infrastructures, as well as for additional protection of their own space infrastructure.

Having a versatile use, space systems are considered critical space infrastructures in light of the fact that from the simple facilitation of communication between two remote points, telemedicine, weather forecasting, assessment of forested areas or melting of glaciers, to communication services during the deployment of military forces, early warning from space or Earth, redundancy of terrestrial communications systems, control of high-precision weapon systems, border control and cross-border piracy, reducing the effects and preventing natural disasters or technical accidents, the role of these systems is vital and contributes to development of society as a whole and not only.

In this sense, satellite communications can be the solution, these being easy to implement, flexible and unlimited in range, offering communications services where the ground infrastructures are damaged, overloaded or even non-existent. In the alternative, satellite communications

[10] https://www.eda.europa.eu/Aboutus/who-we-are/partners, accessed at 02.07.2019.

are defined as reliable, stable and secure services that are essential for the defense, surveillance or management of crises, missions or operations.

Currently, in Romania, an increasing number of satellite streams are rented and used annually from the external environment for the structures located in the areas of interest, for carrying out missions in the theaters of operations, participating in national and international exercises and commitments.

The development of a national satellite program comes with important arguments in the context of belonging to the North Atlantic Treaty Organization (NATO) and to the European Union (EU), by strengthening the position of the Romanian Army as a stability factor at the NATO and EU border, as well as by becoming a potential satellite service provider in the context of joint activities.

The need to develop a national satellite system is defined by:

• ensuring independence from external satellite service providers, regarding the provision and availability of satellite communications services;

• ensuring the protection of satellite links, as well as ensuring cyber defense measures in this area;

• elimination of contracting satellite services from external providers and implicitly the dependence on their availability, by creating the capacity of own control of the flows or of the routing areas (ground stations, land lines);

• ensuring communication capabilities, with national and international coverage, in the area of satellite coverage, telecommunication satellites providing voice and data communications services, independent of the situation of the land networks (functional, partially functional or absent);

• active involvement in geopolitical relations, a national satellite system facilitates involvement in regional defense, border control, disaster management and humanitarian missions with NATO and EU allies;

• development of national industrial and space research sectors;

• economic and strategic opportunities by renting unused bandwidth to NATO and EU partners.

Steps to GSC GOVSATCOM DEMO

Satellite communications (SATCOM) are critical elements for defense, security, humanitarian aid, emergency response or diplomatic

communications. These are a key factor for civilian and military missions / operations, especially in remote and arid environments with little or no infrastructure. Government satellite communication has been defined as one of the four capacity development programs by the European Council since December 2013. The mandate is to prepare the next generation of satellite communications (term 2025). SATCOM capacities are limited and require significant public investment by the Member States. In December 2013, the European Council decided to address critical capacity deficits through concrete projects supported by the EDA. As regards satellite communications, it has initiated the preparation of the next generation of government satellite communications (GOVSATCOM) through close cooperation between Member States, the European Commission, the European Space Agency (ESA) and the European External Action Service (EEAS).

The objective of GOVSATCOM is to provide, both in the civilian and in the military environment, secure, efficient and cost-effective satellite communications services for public authorities in the EU and national ones that manage critical security missions and operations. The aim is to increase European autonomy and overcome the fragmentation of demand by using accessible and innovative solutions in synergy with industrial actors.

Following this approval, the EDA together with the contributing Member States, has been developing since June 2017 a demonstration project of polling and sharing aimed at providing GOVSATCOM capabilities to EDA member states and European actors in the field of Security Policy and Joint Defense based on existing government SATCOM resources. This work component is closely coordinated with the European initiative GOVSATCOM and is aligned with the respective activity carried out by the European Commission and the European Space Agency to develop GOVSATCOM capacity in Europe[11].

Since 2009, the European Defense Agency[12] has undertaken a series of projects, in the field of satellite communications, prior to GOVSATCOM Pooling & Sharing Demonstration (GSC Demo), as follows:

[11] https://www.eda.europa.eu/what-we-do/activities/activities-search/governmental-satellite-communications-(govsatcom), accessed on 02.07.2019.
[12] https://www.eda.europa.eu/home, accessed on 02.07.2019.

In 2009, the European Defense Agency launched the European Procurement Cell for SATCOM - European Satellite Communications Procurement Cell, a project renamed in 2014 under the title EU SatCom Market. The purpose of the project is to pool and share commercial satellite communications services, as well as various CIS services to the Member States, contributing to their overall operational efficiency. The Agency manages the project and the framework contracts, the ad-hoc budget that finances the services, the requests for services, the invoices, offers support and advice to the contributing Member States in defining the technical requirements and creates synergy between the needs of the commercial and military users of secure satellite communications and CIS services. At present, there are 27 contributing Member States, including Romania, the project being open to all Member States to the European Defense Agency, European entities and third parties having an administrative arrangement with EDA;

in December 2013, the European Council decided to address the shortcomings of the critical capabilities through concrete projects supported by the European Defense Agency. In the field of satellite communications, the preparation of the next generation of government satellite communications - GOVSATCOM has been initiated, through close cooperation between Member States, the European Commission, the European Space Agency (ESA) and the European External Action Service (EEAS). The objective of GOVSATCOM is to provide in a reliable environment both civilian and military, secure and financially efficient satellite communications services for national and European public authorities whose tasks are the management of missions and critical security operations.

The GOVSATCOM Pooling & Sharing Demonstration (GSC Demo) project within the European Defense Agency (EDA), involves the pooling and sharing of satellite segments made available by Member States, which have government satellite communications capabilities, which are not used for training activities and / or operational. This governmental capacity aims to provide SATCOM resources that cannot be procured at present through civilian providers, with a guaranteed level of access and security. The satellite services made available may be used by both government structures and the armies of the Member States.

In 2016, the European Commission decided to strengthen the synergy between civil and secured space activities as part of the Space Strategy for Europe. As part of this strategy, the European Space Agency in cooperation with the European Commission and the European Defense Agency is preparing the next generation of government satellite communications - GOVSATCOM. This initiative was created with the purpose of pooling and sharing relevant satellite solutions, both governmental and commercial, in order to provide secure and guaranteed access to satellite communications. The GOVSATCOM PRECURSOR initiative[13] of the European Space Agency aims to develop security services and solutions in partnership with European operators and service providers. It also focuses on reaffirming European autonomy by supporting technological independence and innovation, but also with the SATCOM industry in Europe by stimulating competitiveness and innovation. ESA's GOVSATCOM PRECURSOR initiative aims to highlight how the European space industry can support the European Union's GOVSATCOM initiative to provide secure and guaranteed access to SATCOM for the public sector in Europe.

According to the information presented above, an analysis of the GOVSATCOM ESA and EDA initiatives is required for a clear delimitation of the two programs.

SWOT ANALYSIS ON EDA & ESA GOVSATCOM PROGRAMS

SWOT	ESA GOVSATCOM	EDA GOVSATCOM
	DISTINCT CHARACTERISITICS	
STRENGTHS	worthwhile space program for governmental and civil institutions belonging of EU countries which do not have space infrastructure fit for satisfying satellite coverage needs due crisis or natural disasters when purchasing, with short notice from a service provider, could not	the project addresses the military, governmental and civilian for the whole spectrum of missions and in all situations of strategic and geopolitical policies; uses a wide range of satellite communications frequencies both military and commercial; increasing the interoperability

[13]https://www.esa.int/Our_Activities/Telecommunications_Integrated_Applications/Govsatcom_Precursor_for_security, accessed on 04.07.2019.

	be honored in a timely manner; continued support for national authorities in managing crises or natural disasters.	of communications systems of EU Member States in prospect of setting up in the near future of the common EU army and participation in future joint missions within common flag.
	COMMON CHARACTERISITICS	
	offers satellite capacity for users on the governance of "pooling & sharing" principles; secure and resilient satellite communications; provides global coverage for wide satellite services; increases the resilience of the space critical infrastructure through pooling the satellite communications reassured by EU states which have developed satellite infrastructures; relatively low financial costs in procurement of satellite communication services; flexibility in sharing satellite resources according to the Member State needs of satellite coverage; possibility of Member States' participation in the development of the future joint space projects predictability of usage satellite communication services portfolio on medium and long-term missions forecasting according to the satellite services and costs catalog; increasing technical and procedural interoperability between EU Member States desired on using satellite capacity; common development of satellite fixed ground facilities, mobile and deployable capabilities.	
WEAKNESSES	**DISTINCT CHARACTERISITICS**	
	apply only to government and civil institutions; satellite frequencies use is limited only to commercial domain; usually satellite connection is used by state institution	impossible to use UHF satellite channels, given that are managed by NATO policies.

	during the crisis and natural disaster situations.	
	COMMON CHARACTERISITICS	
	lack of coherence in EU undue fragmentation of space programs such GOVSATCOM; uncertain by providing all the satellite communications services requirements to the emergence of critical situations or natural disasters on a continental scale; take over control of satellite resource only from the countries that have their own space infrastructure; lack of predictability in matter of long period of times regarding the establishment of purchasing costs, service catalogs to developing the user requirements under the service provider portfolio into operational services; in matter of business strategy, in our opinion, there is an undesirable situation by cancelling the state member opportunities in attendance of new satellite communications infrastructures in the GOVSATCOM projects.	
OPPORTUNITIES	**COMMON CHARACTERISITICS** diversifying space services by developing common capabilities such as SSA, STM and SW; increasing the interoperability of satellite systems and procedures among EU countries; initiating joint research in new space projects and the involvement of national industries to improve performance characteristics of new technical systems, compared to those are in operation; exploiting the area that can contribute to the establishment of the future EU Army, like a strong point; possibility by sharing space infrastructure from state holding or develop such capabilities as part of its own satellite resource to sell it as an element in business strategy in order to improve the amortization plan as part of their investment; improving the resilience of satellite communications systems both for the country level and for project-level default;	

THREATS	**COMMON CHARACTERISITICS** typical EU rigidity during the performing of operational procedures in "pooling & sharing" projects; intention of states that have operational space program of maintaining high costs in purchasing satellite services by the states that have not yet an operational space program; fragmentation of EU space programs by involving doctrinal, human, financial and material consuming resources for initiating, managing and developing the space domain; increasing the race of development in space infrastructure, including ASAT by the US, Russia, China, India and Iran, causing undue congestion and militarization of outer space and escalating of associated risks within collateral space projects (the loss of EU initiative in the development of common space programs, space debris, increased incidence of collisions between satellites, interference, attacks on space infrastructure, etc.).

SWOT ANALYSIS ON ROMANIA'S OWNERSHIP OF GOVSATCOM PROGRAM

SWOT	**ROMANIA &GOVSATCOM**
STRENGTHS	redundant solution on how Romania should purchase and deal with satellite communications services, according to specific needs; reducing the risk of noninsurance satellite services during calamities, natural disasters, crisis and war, when accessibility of these services may be scarce/ impossible with high costs of purchasing and providing; predictability in financial programming and technical resources on medium and long term; staying in contact with cutting edge of technical developments in space domain; satisfying their needs for the entire spectrum of missions (national defense, government and civil

	domains) by providing satellite services.
WEAKNESSES	the lack of coherence of EU policies in defining and operationalizing GOVSATCOM programs causes difficulties in accessing from national perspective a typical program at Union level; at the national level the lack of political official decision by Romania's adherence to one of GOVSATCOM programs, which limits access to the project useful information and the possibility of including our national satellite project in the service catalog, as a potential space services' provider; failure in defining a national strategy on space and therefore Romania's policy in adhering to such programs; maintaining the monopoly in determining financial costs for accessing the space services from the catalog.
OPPORTUNITIES	capitalizing quality of user & potential space service provider and increase Romania's role in the EU according to the evolution of national satellite project; potential involvement of national space industry in future research & development of EU space projects; development of personnel training, legislative harmonization and research and innovation in space domain; increased resilience both for own ground space infrastructure from users' perspective and for own space infrastructure after performing the operational process of national satellite project.
THREATS	uncertainty of Romania being able to develop an own space program, having the only guarantee of belonging to programs such as "pooling & sharing" and thus increasing the dependency on space service

	providers; limiting the development of Romania's own space program and struggle in exploitation of the space domain at national level; satellite resource management possession only in countries that have their own space infrastructure.

CLOSING REMARKS

The main objective of GOVSATCOM Pooling & Sharing Demonstration (GSC Demo) project is to ensure both the civilians and the military secure, efficient and cost-effective satellite communications services in managing missions and critical security operations for public authorities in the EU and national level. The aim is to enhance European autonomy and overcome the fragmentation of demand through the use of affordable and innovative solutions in synergy with industry players.

The need for attendance of the GOVSATCOM Project shows the quality of European member state in relations of close cooperation with European institutions representative for SATCOM and may be a flexible solution to meet the needs of military satellite services for training and operations; thus, the European Defense Agency is the structure that emerged the link between supplier and customer. Also participating in that project enables satellite service ensuring during the participating of joint international with NATO /EU missions from the same supplier in the shortest time.

Alternatively, Romania can meet future double quality – potential service provider and user by joining in the project; this finds viable arguments in the research & development of a national satellite project.