BACKGROUND REPORT

PRAGUE**PRAŽSKÝ**
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SUMMIT

NATO

NATO in Space

NATO in Space

1 General issue

When the word "Space" is mentioned in the common discourse, probably the majority of society would rather recall astronauts and Apollo. Nonetheless we must note that an endless range of activities are carried out in Outer Space nowadays. Consider for example the GPS[1] and its capability to help civilians in their cars as well as to precisely navigate the troops when conducting military operations. In context of an endless range of activities IS carried out the North Atlantic Treaty Organisation (hereinafter referred to as "NATO" or "Alliance") basically the whole strategy depends on exactitude of navigation, prediction of weather as well as communication and other valuable information that the whole system residing in Outer Space provides us with.

We witness a fragmentation of Space strategy into smaller complexes that are either national (e.g. CNSA, NASA etc.) or operating on institutional basis (e.g. EU-ESA policy described below). On the other hand, the member states cooperate within the Alliance on handful of issues; nevertheless any policy that would be jointly pursued by the whole NATO does not exist. This results in duplication of field systems, navigation and other elements which causes lower level of both interoperability as well as effectiveness.

The authorities within the Alliance declared the importance of space due to its specific features such as *"persistence (always on orbit), perspective (high altitude), penetration (no over-flight restrictions) and reachback (provides combat support without being physically located with forward forces)."*[2] For a military organisation with such a wide field of operation as NATO has, these may have crucial meaning in the future. Even the New Strategic Concept, adopted on November 19th 2010, states that: *"...technologies that impede access to space – appear poised to have major global effects that will impact on NATO military planning and operations."*[3]

This paper describes firstly legal principles that define the fundamental manner of operation as well as permissible and forbidden activities that may be conducted in Space. Secondly it shall briefly stress out the main issues of the status quo and declarations of the Alliance in relation to Space. Thirdly, as NATO Space policy lies in independent assisting Space systems, these are to be briefly stated and described in relation to NATO in the last but not least chapter.

2 Legal regime of Space

Space Law belongs to the area of Public International Law. Regulation thereof proceeds mainly through instant customary law as well as multilateral treaties. The treaty that sets the basis for the whole Space Law is "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies", usually referred to as the Outer Space Treaty signed on January 27th 1967. The Outer Space Treaty was largely based on predeceasing 1963 Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space ("Principles"). These stated the way in which states should carry out their activities in Space, followed by the Article I of the Outer Space Treaty and in the spirit thereof: *"The exploration and use of outer space, including the Moon and*

[1] Global Positioning System

[2] JOINT AIR POWER COMPETENCE CENTRE. NATO Space Operations Assessment. *Joint Air Power Competence Centre* [online]. 30. 1. 2009 [cit. 2013-07-07]. Available at: `http://www.japcc.de/108.html`.

[3] textitNew Strategic concept [online]. NORTH ATLANTIC TREATY ORGANISATION [cit. 2013-07-02]. Available at: `http://www.nato.int/strategic-concept/`.

other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind."[4]

Space itself is regarded by the law to be in the regime of *rei communis*. This means as follows: firstly, an occupation by a single state, group of states or any other subject is never permissible. Secondly, there is a right of free access to usage and research of all the States, not just those that are actually capable of conducting such research or usage. Thirdly it states, that, as firstly defined in the Principles, a State that registers an object in order to launch it into outer space *"shall retain jurisdiction and control over such object, and any personnel thereon, while in outer space"*. [5] Last but not least, the regime of rei communis guarantees an equitable share on potentially appropriated celestial resources to all the states concerned, again not only to those who for the time being own the capabilities necessary for exploitation thereof.[6]

The Outer Space Treaty[7] aims at promotion of cooperation whilst exploring and using the outer space. Concerning military undertakings, the treaty states that the moon and other celestial bodies shall be subject to exclusively peaceful usage. Also usage of the Weapons of Mass Destruction ("WMD") in the outer space is prohibited by this document. Fundamentally, relevant clauses forbid usage and experiments in Space that include the WMD. Moreover it is strictly forbidden to even place WMD or objects carrying nukes into the Space. Nevertheless the usage of nuclear energy itself is not expressly prohibited, although certain states, including the United States of America put efforts to do so in the past.[8] However, we must note that the Treaty is a product of Cold War negotiations almost fifty years ago and it is entirely unimaginable that it would have been able to cope with everything even today.

3 NATO and Space

Nowadays, NATO does not own any satellites, does not have any comprehensive policies and some ask whether NATO even needs some. The main agency orientated onto the issue of Space activities within NATO is the Joint Air Power Competence Centre ("JAPCC"). This body structurally belongs to the NATO Centres of Excellence. These focus on training and education, doctrine development, analyse and experiments in the fields of its competence. This means that JAPCC operates on advisory level whereas it mainly focuses onto efforts to develop more comprehensive and complex Space policy within NATO, without actually being a policymaker, enforcing the strategy.

The main issue is that NATO does not own any satellites or other facilities of similar kind. These are being supplemented for the needs thereof by the member states[9]. Thanks to their efforts, NATO may use the necessary technology without actually possessing one.

3.1 New possibilities - new threats

The fact that the military operations nowadays are highly dependent on Space is absolutely undisputable. And twice as much in a case of such a big organisation as NATO is. But it is also necessary to stress that

[4]United Nations. *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies.*
[5]United Nations. *Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space.*
[6]ČEPELKA, Čestmír, ŠTURMA, Pavel. *Mezinárodní právo veřejné*. Praha: Eurolex Bohemia, 2003.
[7]United Nations. *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celetial Bodies.*
[8]DAVID, Vladislav, SLADKÝ, Pavel, ZBOŘIL, František. *Mezinárodní právo veřejné s kazuistikou*. Příbram: Leges, 2008.
[9]See Table 1

dependence brings in new threats. *"The technology is relatively inexpensive and readily available for pirates to disrupt a commercial satellite and hold it for ransom."*[10]

Nevertheless it is not only so-called space terrorism[11] or piracy, conducted by more or less anonymous subjects, that endangers the efficiency and security of space operations. In 2007 China destroyed its weather satellite by a kinetic kill vehicle, meaning that the object was destroyed by a kind of weapon, usually used for anti-ballistic or anti-missile defence purposes. By such conduct, China demonstrated its own capabilities and strength, when it comes to attacks onto space objects. Only two countries have done so beforehand: the Soviet Union and the USA in the 1980s.[12] This conduct followed a wave of concerned reactions from many states and subjects.[13] Nevertheless only a year after this attack, in 2008, the United States undertook similar actions, whilst destroying a satellite for safety reasons.[14] This has not been followed by such reactions from the international scene, mainly justified by reduced amount of debris left in space afterwards.

3.2 NATO Ballistic missile defence

NATO Ballistic missile defence system was established in 2005 as NATO's Active Layered Theatre Ballistic Missile Defence ("ALTBMD"). At the Lisbon summit[15] in November 2010 as well as at the Chicago Summit[16] in May 2012 were set goals of expansion of the project in order to protect the European part of NATO. Its theatre anti ballistic missile defence technology was fielded in 2010[17], territorial defence capability is in operation since May 2012. More general information on the Allied BMD may be found on official NATO website.[18]

The system, nevertheless, includes components that are based in Space. These are exclusively provided by the United States and the U.S. Missile Defence Agency respectively. Other parts thereof are provided on a basis of international cooperation[19]. The ALTBMD is led by NATO.

[10] *JOINT AIR POWER COMPETENCE CENTRE*. NATO Space Operations Assessment. Joint Air Power Competence Centre [online] opt. cit.

[11] REMUSS, Nina-Louisa. *The Need to Counter Space Terrorism – A European Perspective*. European Space Policy Institute [online]. 17. 1. 2009 [cit. 2013-07-02]. http://www.espi.or.at/images/stories/dokumente/Perspectives/espi%20perspectives%2017.pdf.

[12] BROAD, William J., SANGER, David E. *China Tests Anti-Satellite Weapon, Unnerving U.S.* The New York Times [online]. 18. 1. 2007 [quoted. 2013-07-02]. http://www.nytimes.com/2007/01/18/world/asia/18cnd-china.html?_r=0.

[13] BBC News. Concern over China's missile test. BBC News [online]. 19. 1. 2007 [cit. 2013-7-2]. Available at: http://news.bbc.co.uk/2/hi/asia-pacific/6276543.stm.

[14] CNN.com. *Navy missile hits dying spy satellite, says Pentagon.* CNN News [online]. 21. 2. 2008 [cit. 2013-10-2]. Available at: http://edition.cnn.com/2008/TECH/space/02/20/satellite.shootdown/.

[15] North Atlantic Council. *Lisbon summit declaration*. Available at: http://www.nato.int/cps/en/natolive/official_texts_68828.htm.

[16] North Atlantic Council. *Chicago Summit Declaration.* Available at: http://www.nato.int/cps/en/natolive/official_texts_87593.htm?mode=pressrelease.

[17] NATO. *NATO achieves first step on theatre ballistic missile defence capability* [online]. North Atlantic Treaty Organisation [cit. 2013-07-11] Available at: http://www.nato.int/cps/en/natolive/news_70114.htm.

[18] NATO. *Ballistic missile defence* [online]. NATO 19. 1. 2007 [cit. 2013-7-2]. Available at: http://www.nato.int/cps/en/natolive/topics_49635.htm.

[19] Missile Defence Agency. *International Cooperation* [online]. Missile defence agency [cit. 2013-10-03]. Available at: http://www.mda.mil/system/international_cooperation.html.

3.3 Ambitions and reality

A space system consists of three parts: facility for ground command and control, satellite itself and the end-user.[20] All these are nowadays provided by the member states which enable to use the necessary research and technology. These allow the Alliance to cope with the demands of modern military (See Table 1 below).

The JAPCC proposed in 2012 a Policy Framework, whereas the core of the NATO activity in Space shall be" *to concentrate on the employment, coordination and defence of space capabilities on behalf of NATO operations and core business*." [21] The issue is also that in case of any comprehensive NATO Space Policy; such Policy would have been a subject to the demand of congruency to both EU and US Space Policies; however it should aim at avoiding duplication and redundancy. Not to mention obligation to follow the legal principles declared in the treaties signed by the member states.

Based on such principles, the JAPCC calls for negotiations concerning the establishment of joint and coherent policy. This should set new guidelines for Allied space security system as well as aim at coordination of so far developed national policies of the member states and avoid duplication of Space facilities. Also such policy should address the demands of modern Smart defence definition as defined by the NATO Secretary General Anders Fogh Rasmusen: "*Smart defence is about building security for less money by working together and being more flexible*." [22]

[20] *JOINT AIR POWER COMPETENCE CENTRE*. Filling the Vacuum: A Framework for a NATO Space Policy. Joint Air Power Competence Centre [online] opt. cit.

[21] JOINT AIR POWER COMPETENCE CENTRE. Filling the Vacuum: A Framework for a NATO Space Policy. Joint Air Power Competence Centre [online] opt. cit.

[22] *NATO Secretary General calls for "Smart Defence" at Munich Conference* [online]. North Atlantic Treaty Organisation [cit. 2013-07-11] Available at: `http://www.nato.int/cps/en/natolive/news_70327.htm`.

4 Supportive Space programmes

Table 1: NATO use of Space[23]

Space Capability	NATO Uses (not all inclusive)	Example Systems
Position, Velocity, Time and Navigation	• Precision strike • Force navigation • Support to PR/CSAR • Network timing	• Global Positioning System (US) • Galileo (EU)
Integrated Tactical Warning and Threat Assessment	• Force protection • Attribution • Missile defence	• Space Based Infrared System (US) • Spirale (FRA*)
Environmental Monitoring	• Mission planning • Munitions selection • Weather forecasting	• Defense Meteorological • EUMETSAT (EU)
Communications	• Command and Control • Unmanned Aerial Vehicle ops • Deployed communications	• Syracuse (FRA) • SICRAL (ITA) • SKYNET (UK)
Intelligence, Surveillance and Reconnaissance	• Order of battle • Battle damage assessment • Targeting	• SAR Lupe (DEU) • COSMO SKYMED (ITA) • HELIOS (FRA)

*Spirale was a tech demonstrator and is no longer operational.

[23] JOINT AIR POWER COMPETENCE CENTRE. Filling the Vacuum: A Framework for a NATO Space Policy. *Joint Air Power Competence Centre* [online] opt. cit.

4.1 Europe

Europe can serve as example of an organisation in a process of continuous harmonisation of diverse Space approach. Both fundamental key players on European level concerning the Space, European Communities (European Union) and European Space Agency, alongside with national policies, cooperate on a wider range of issues. Nonetheless this does not mean entire unification of the European activity in Space. The scope of activity varies from state to state significantly. Whereas eight NATO member countries[24] are founding members of the European Space Agency, other countries of the European region do not even dispose with their own space agencies. Nonetheless an establishment of joint approach of the Alliance would have affected even the states that remained rather reserved towards space so far. Activities supporting the possible NATO space policy would have affect the budget of the Alliance, to which every state contributes. On the other hand, regardless to economic aspects thereof, such coordination could ease the operation of the national as well as currently existing joint European systems.

European Space Agency ("ESA") is an international organisation. It was established in 1975 with seat in Paris, France. The ESA has currently 20 member states and aims at conducting research and developing such capabilities that no single European state would probably have been able to do alone.[25]

In 2004 a Framework Agreement between the European Communities and the European Space Agency[26] was signed. Hereby the concerned parties "*have encouraged the establishment of a framework for cooperation between the Parties, while maintaining their respective distinct tasks and responsibilities*." [27] The Fields of Cooperation, as defined in Article 3 thereof, may be the existing issues, such as exploration or navigation, but it also presumes the development and identification of new ones, bearing in mind the dynamics of Space.

Following this Framework Agreement, the EU has begun to work on its own holistic Joint Space doctrine, aiming at" *sector-specific industrial policy to develop critical technologies and a globally competitive space industry; international cooperation in line with the EUś wider geopolitical objectives and effective day-to-day operation of space systems; and thirdly, policy instruments for investing in programmes and ensuring their efficient management*" [28] European Union Resolution on the European Space Policy[29] was issued on 22 May 2007[30], setting guidelines for cooperation among the states in Space concerning various branches, such as Industrial policy, space stations and others. The most relevant clauses for the purpose of NATO are those dealing with Security and Defence which set a goal of development of coordinated framework among civilian and military space programmes as well as of continuous peaceful usage of systems GALILEO and Global Monitoring for Environment and Security ("GMES")[31] [32]. These technologies, although being civilian systems for civilian users for the time being, may be found useful even for military purposes as well in the future.

To conclude, Europe has developed certain policy concerning Outer Space. It is not either unified or entirely comprehensive. Nevertheless the process must take some time in its complexity. It must be,

[24] Belgium, Denmark, France, Germany, Italy, Netherlands, Spain, United Kingdom.
[25] What is ESA? [online]. European Space Agency [quoted 2013-07-10]. Available at: http://www.esa.int/About_Us/Welcome_to_ESA/What_is_ESA.
[26] EUROPEAN COUNCIL, ESA. *Framework Agreement between the European Community and the European Space Agency*. L 261/64, 6. 8. 2004.
[27] EUROPEAN COUNCIL, ESA. *Framework Agreement between the European Community and the European Space Agency*. opt. cit.
[28] EU expected to unveil space policy before summer. *EU observer* [online]. 2013 [cit. 2013-7-1]. Available at: http://euobserver.com/defence/23848.
[29] EUROPEAN COUNCIL. *Resolution on the European Space Policy*. ESA BR 269 22.05.07
[30] *Europe's Space Policy Becomes a Reality Today* [online]. European Space Agency [quoted 2013-7-1]. Available at: http://www.esa.int/For_Media/Press_Releases/Europe_s_Space_Policy_becomes_a_reality_today.
[31] Home. *Copernicus: The European Earth Observation Programme* [online]. 2013 [cit. 2013-7-1]. Available at: http://copernicus.eu/.
[32] EUROPEAN COUNCIL. *Resolution on the European Space Policy*. ESA BR 269 22.05.07

however, noted that not all NATO member states are also member states of either EU or ESA, therefore the partially joint policies do not even apply to the whole region. Secondly the efforts put into development of joint European Space doctrine are still very dependent on the willingness, research and spending of member states of both EU and ESA. Thirdly, it must be once again repeated that there are still, regardless to integration, many national separate Space undertakings, enforcing national interest and policies and these should not be overlooked either.

4.2 United States of America

"*That's one small step for a man, a giant leap for mankind.*" [33] United States of America, the first country to send a human onto the Moon, even in the hard time of economic crisis, spent in 2012 over 17 billion dollars on its national space programme. We must note that USA has mature and comprehensive space policy. The administrations have issued numerous space policies since the term of president Dwight D. Eisenhower.[34] United States also continuously spend the highest amount on Space of all the nations, despite the reversal of Bush administration space policy, when Obama stepped into office.[35]

Compared to the European doctrine, U.S. Space Policy is "*far more robust in its assertion of national rights to freedom from purposeful interference in Space*" [36]. Just as in other fields of NATO involvement, the United States declare the willingness to contribute to any Allied space programme. This is for the time being resolved by the space systems provided by the United States to the Alliance (see Table 1). The main U.S. Space authority is the well-known National Aeronautics and Space Administration ("NASA").

5 Conclusion

The question is fundamentally "*Why NATO should have a Space policy*?" [37] The aim of negotiations within the North Atlantic Council is, therefore, to discuss whether NATO should focus on developing its own facilities or to just continue with the usage of those provided by its member states. On one hand, it is the possibility of avoiding duplicity of space systems in case of united facilities. This brings hand in hand the decrease of expenses as well as bigger integration within the Alliance. On the other hand, the space systems are expensive even if not duplicated. Moreover, the issue of re-collecting the debris after the facility stops to operate has not been yet fully resolved. Not to mention the fear of militarisation of the outer space. Last but not least, the ALTBMD represents so far a partially space-based coordinated NATO facility. After the decision and efforts to build such system, is any further development in other fields needed?

In the New Strategic Concept there are recognised technologies that impede access to Space as a technology related trend that "*appear poised to have major global effects that will impact on NATO military planning and operation*" [38]. Nowadays, the Alliance solves the issue thanks to the needed technology, given at its disposal by the member states; nevertheless any such organisation should be ready to make a clear statement for the future.

[33] *July 20, 1969: One Giant Leap For Mankind* [online]. NASA [quoted 2013-07-10]. http://www.nasa.gov/mission_pages/apollo/apollo11_40th.html#.UepZjY04GSo.
[34] In office between January 20, 1953 and January 20, 1961.
[35] BROAD, William J.; CHANG Kenneth. *Obama Reverses Bush's Space Policy* [online]. The New York Times. 28. 6. 2010 [quoted 2013-10-03].
[36] JOINT AIR POWER COMPETENCE CENTRE. Filling the Vacuum: A Framework for a NATO Space Policy...
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[38] NATO Public Diplomacy Division. New Strategic Concept [online]. NATO [quoted 2013-10-02]. Available at: http://www.nato.int/strategic-concept/pdf/Strat_Concept_web_en.pdf.

6 What shall be regarded whilst conducting a research about one particular national space policy?

Firstly, all the member states are signatories of Outer Space treaty. Secondly it is crucial to determine if the member state is actually willing to put effort and money into space and contribute to eventual Allied space system. This may be told from the amount of space research spendings, foundation of national space agency, number of satellites operated, people sent onto the Moon and many other factors historic and current. Thirdly, many states have even their own national space programmes, whereas these are being used either on independent basis or as supportive framework for coordinated policies. Last but not least, some of these are members of EU or ESA, therefore it is absolutely necessary to regard, if they subject to these coordinated space doctrines.

7 Useful sources

1. **Ballistic Missile Defence – some material to enhance the knowledge about the NATO BMD with regards to its components in space.**
   http://www.nato.int/cps/en/natolive/topics_49635.htm.

2. **Shortened media factsheet thereon.**
   http://www.nato.int/nato_static/assets/pdf/pdf_2011_07/20110727_110727-MediaFactSheet-ALTBMD.pdf.

3. **Crucial source elaborated by JAPCC, posing relevant questions to be addressed by every single representative coping with the issue of NATO in space.**
   http://www.japcc.de/fileadmin/user_upload/Reports/NATO_Space_framework/Filling_the_Vacuum-A_Framework_for_a_NATO_Space_Policy.pdf

4. **Joint Air Power Competence Centre 2009 NATO Space Operations Assessment as a great starting point for further research.**
   http://www.japcc.de/108.html.

5. **Outer Space Treaty as the basic guidelines for peaceful usage of space.**
   http://en.wikisource.org/wiki/Outer_Space_Treaty_of_1967.

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