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Legal Aspects of European Satellite Navigation Systems in a Time of Change*

Aspekty prawne europejskich systemów nawigacji satelitarnej w dobie przemian

ABSTRACT

Global Navigation Satellite System (GNSS) is an important tool in supporting innovation and developing the economy. The European Union has created two systems: Galileo and EGNOS (European Geostationary Navigation Overlay Service), which enable the localisation of points on the Earth's surface and in the sky. The GNSS programme offers a range of opportunities for Central and Eastern European societies in which the existence of the E-GNNS (European Global Navigation Satellite System) is still not well known. The article is an attempt to raise awareness of the use of Galileo and EGNOS systems, as well as to present the legal framework concerning this programme and the changes introduced by Regulation (EU) 2021/696 of the European Parliament and of the Council of 28 April 2021. The main research goal is assessing changes in the most crucial areas of this regulation, such as security of the systems, access of third parties, compliance of the provisions with human rights standards, and issues related to budgetary implications which are particularly important for the continuity and stability of E-GNNS.

Keywords: satellite navigation; Galileo; EGNOS; GNNS; E-GNSS; European Union Agency for the Space Programme

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INTRODUCTION

The European satellite navigation system Galileo is the European Union's (EU) own and self-financed Global Navigation Satellite System (GNNS).[1] The Galileo programme was launched in 2001,[2] with full operational viability of on its way.[3] A European Global Navigation Satellite System (E-GNNS) allows the EU to provide the following services: a Galileo open service (GOS), a high accuracy service (HAS), a public regulated service (PRS), an emergency service (ES), and a timing service (TS).[4] It is important to note that Galileo is accompanied by the European Geostationary Navigation Overlay Service (EGNOS) which serves as its support system and improves the precision and availability of GNNS.[5]

The legal framework of Galileo and EGNOS (E-GNNS) is quite complex and currently includes three different legal instruments of the EU:

- Regulation (EU) 2021/696 of the European Parliament and of the Council of 28 April 2021 establishing the Union Space Programme and the European Union Agency for the Space Programme and repealing Regulations (EU) No. 912/2010, (EU) No. 1285/2013 and (EU) No. 377/2014 and Decision No. 541/2014/EU,
- Decision No. 1104/2011/EU of the European Parliament and of the Council of 25 October 2011 on the rules for access to the public regulated service provided by the global navigation satellite system established under the Galileo programme,[6]
- Council Decision (CFSP) 2021/698 of 30 April 2021 on the security of systems and services deployed, operated and used under the Union Space Programme which may affect the security of the Union, and repealing Decision 2014/496/CFSP.[7]

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[1] Council Regulation (EU, Euratom) No. 1311/2013 of 2 December 2013 laying down the multiannual financial framework for the years 2014–2020 (OJ L 347/884, 20.12.2013) allocates a maximum of EUR 7,071.73 million in current prices for the financing of activities relating to the Galileo and EGNOS programmes for the period from 1 January 2014 to 31 December 2020.

[2] Approved by the EU Council in its Resolution of 5 April 2001 on Galileo (2001/C 157/01) (OJ 157/1, 30.5.2001).

[3] European Space Agency, *Galileo: en route to Full Operational Capability*, 29.11.2021, https://www.youtube.com/watch?v=k5DG7HCoKVE (access: 22.2.2022).

[4] Article 45 of the Regulation (EU) 2021/696 of the European Parliament and of the Council of 28 April 2021 establishing the Union Space Programme and the European Union Agency for the Space Programme and repealing Regulations (EU) No. 912/2010, (EU) No. 1285/2013 and (EU) No. 377/2014 and Decision No. 541/2014/EU (OJ L 170/69, 12.5.2021), hereinafter: Regulation (EU) 2021/696.

[5] See more European Space Agency, *Frequently Asked Questions on Galileo*, https://www.esa.int/Applications/Navigation/Frequently_asked_questions_on_Galileo (access: 22.2.2022).

[6] OJ L 287/1, 4.11.2011, hereinafter: Decision No. 1104/2011/EU.

[7] OJ L 170/178, 12.5.2021.

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The year 2020 was crucial as it planned for the E-GNNS to achieve its operational viability. The Space Strategy for Europe, adopted in 2016, set up some important direction for the future of E-GNNS such as keeping the European Commission the only EU institution committed to maintaining the Galileo programme.[8] L. Mantl stressed that the realisation of this objective requires tabling of a proposal for a basic legal act for a period after the year 2020.[9] Such legal act replacing the Regulation (EU) No. 1285/2013 of the European Parliament and of the Council of 11 December 2013 on the implementation and exploitation of European satellite navigation systems and repealing Council Regulation (EC) No. 876/2002 and Regulation (EC) No. 683/2008 of the European Parliament and of the Council[10] was to set up the rules for the exploitation phase of Galileo and EGNOS. The realisation of this commitment was fulfilled on 6 June 2018 when the Commission presented a Proposal for a Regulation of the European Parliament and of the Council establishing the space programme of the Union and the European Union Agency for the Space Programme and repealing Regulations (EU) No. 912/2010, (EU) No. 1285/2013, (EU) No. 377/2014 and Decision 541/2014/EU[11] which shall be examined in-depth in this article.

Regulation (EU) 2021/696 was adopted on 28 April 2021 and in accordance with its Article 111 was applied retroactively from 1 January 2021. It leaves in force the other previously binding instrument: Decision No. 1104/2011/EU of the European Parliament and of the Council of 25 October 2011.

Regulation (EU) 2021/696 aims to unify the rules governing the entirety of the EU space programme: Galileo, EGNOS, Copernicus, SST (Space Surveillance and Tracking), and GOVSATCOM (Governmental Satellite Communications). In general, this unification should be welcomed. The proposed changes include some important recommendations made with regard to the functioning of the Galileo project based on the operation of erstwhile regulations.

Most of the research is based on the legal-dogmatic method analysing the international regulation, a specially by using the logical-linguistic method and teleological interpretation. Due to the research goals, the analyses included chiefly Regulation (EU) 2021/696. However, to answer the question what the dimension of E-GNNS is in Eastern Europe market, the methods used in this part of the research are based on the analyses of the various publicly available materials, including those which are officially published by the former European GNSS Supervisor

[8] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Space Strategy for Europe, Brussels, 26.10.2016, COM(2016)705 final, p. 5.

[9] L. Mantl, *Galileo Programme – New Legal Developments*, [in:] *Innovation in Outer Space: International and African Legal Perspectives*, eds. M. Hofmann, P.J. Blount, Baden-Baden 2018, p. 197.

[10] OJ L 347/1, 20.12.2013.

[11] COM/2018/447 final – 2018/0236 (COD).

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Authority (GSA, now the European Union Agency for the Space Programme) and the European Space Agency.

The aim of this article is to raise awareness in Central and Eastern European societies about Galileo and EGNOS since their existence is still not well established in their consciousness and their importance is not widely recognised.[12] The article is also an attempt to answer the main questions facing researchers: what are the changes in the legal framework concerning Galileo and EGNOS introduced by Regulation (EU) 2021/696 and does the new legal framework include some of the changes suggested by researches in the process of evaluating Regulation (EU) No. 1285/2013 of the European Parliament and of the Council of 11 December 2013 on the implementation and exploitation of European satellite navigation systems and repealing Council Regulation (EC) No. 876/2002 and Regulation (EC) No. 683/2008 of the European Parliament and of the Council.[13]

RESEARCH AND RESULTS

1. The importance of E-GNNS for Central and Eastern Europe

Starting the analysis with the first of the above-mentioned objectives, it needs to be stressed that the main aim of Galileo is to make the EU and its Member States independent from other GNNS, including GPS and Glonass.[14] In this regard one cannot disregard both the involvement of Central and Eastern European countries in constructing the Galileo system and the opportunities it presents to the space industries in those countries, facilitating their swift development.[15]

The Galileo project was operationalised together with the European Space Agency (ESA) which is an international organisation independent from the EU. The European Space Agency includes 22 members, nearly one-third of which are states form Central and Eastern Europe, including Austria, the Czech Republic, Germany, Hungary, Poland, and Romania. Many Central European states are long-standing members of ESA: Germany joined on 26 July 1976 and Austria on 30 December

[12] As in L. Orešković, S. Grgić, *The New EU Space Regulation: One Small Step or One Giant Leap for the EU*, "Croatian Yearbook of European Law and Policy" 2021, vol. 17, p. 77.

[13] OJ L 347/1, 20.12.2013, hereinafter: Regulation (EU) No. 1285/2013.

[14] European Space Agency, *Why Europe Needs Galileo*, https://www.esa.int/Applications/Navigation/Galileo/Why_Europe_needs_Galileo (access: 22.2.2022).

[15] In accordance with GNNS Market Report Issue 6, until 2029 the number of units (receivers) of GNNS signal will raise to 2.9 billion. See European Union Agency for the Space Programme, *EO & GNSS Market Report*, 2019, https://www.gsa.europa.eu/market/market-report (access: 25.2.2022), p. 10.

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1986.[16] In contrast, Eastern European states are only becoming ESA members quite recently, in the following order: the Czech Republic on 12 November 2008, Romania on 22 December 2011, Poland on 19 November 2012, and Hungary on 24 February 2015.[17] For the states joining ESA recently, Galileo was one of the programmes in which they had a chance to become actively involved right away, due to an innovative solution called "redistribution of finance", which allowed to include special provisions in the procurement procedures taking into account the geographical factor.[18] The applied procedure ensures that ESA membership fees are offered back to the paying states industry in the form of contracts.[19] For example, by the end of 2019, based on the Polish Industry Incentive Scheme, 45% of the Polish compulsory contribution became part of the tenders addressed to the Polish space sector.[20] Due to joining ESA at a later date, some of the Eastern European states did not have the chance to fully participate in the construction of Galileo and EGNOS itself. However, they do have an opportunity to take part in next phase of the programme, although, regrettably, this ground-breaking geo-return rule is not being applied any longer to the Galileo program.[21] Nevertheless, the lack of these special rules will not change the possibility for Central and Eastern European industries to participate in the tenders to win contracts related to maintaining Galileo in its operation phase.

Furthermore, there is much potential not only in participating in the construction and direct maintaining of the Galileo programme, but also in developing the downstream GNNS industry by producing chips or by integrating GNNS receivers into multifunction devices, particularly considering the fact that currently 2 of 30 largest worldwide companies engaged in this sector are based in Central and Eastern Europe (Bosh and Volkswagen).[22]

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[16] European Space Agency, *Convention for the Establishment of a European Space Agency and ESA Council Rules of Procedure*, Noordwijk 2010, https://esamultimedia.esa.int/docs/LEX-L/ESA-Convention/SP-1317_EN.pdf (access: 25.2.2022).

[17] *Ibidem*.

[18] European Space Agency, *Industrial Policy and Geographical Distribution*, https://www.esa.int/About_Us/Business_with_ESA/How_to_do/Industrial_policy_and_geographical_distribution (access: 25.2.2022).

[19] It is also called "geographical distribution".

[20] European Space Agency, *Polska utrzymuje preferencyjne warunki członkostwa w Europejskiej Agencji Kosmicznej*, 16.1.2017, http://www.esa.int/ESA_in_your_country/Poland/Polska_utrzymuje_preferencyjne_warunki_czlonkostwa_w_Europejskiej_Agencji_Kosmicznej (access: 25.2.2022); Dziennik Gazeta Prawna, *Galileo opanowany przez Polaków. Będziemy potęgą technologii satelitarnych?*, 30.9.2015, https://serwisy.gazetaprawna.pl/nowe-technologie/artykuly/896856,galileo-opanowany-przez-polakow-bedziemy-potega-technologii-satelitarnych.html (access: 25.2.2022).

[21] L. Mantl, *op. cit.*, p.192.

[22] European Union Agency for the Space Programme, *EO & GNSS Market Report…*, p. 12.

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Considering other areas where the existence of Galileo and EGNOS is important, one cannot ignore different sectors of the economy, including the transportation service, which is a significant part of the Central and Eastern European market.[23] So far, compatibility with E-GNNS is required in systems of automatic calling for assistance for vehicles involved in accidents – Emergency Call (eCall).[24] The legal requirement for this compatibility follows from Article 5 (4) of Regulation (EU) 2015/758 of the European Parliament and of the Council of 29 April 2015 concerning type-approval requirements for the deployment of the eCall in-vehicle system based on the 112 service and amending Directive 2007/46/EC.[25] The same requirements are applied in tachographs.[26] In recent years one can also observe an increased interest in autonomous cars, whose activities are strictly dependent on E-GNNS and a lack of an appropriate framework may lead to severe legal consequences.[27]

In this regard it needs to be underlined that the new legal framework for Galileo and EGNOS proposed by the Commission is crucially important in the transportation sector as it extends the EGNOS[28] infrastructure and serves as a possible incentive for developments in transportation in those Eastern European states which are currently not fully covered by EGNOS.[29] This opportunity was not fully recognised by most Central and Eastern European states, with only two national parliaments addressing it. The Romanian Senate highlighted this opportunity in its opinion regarding the proposal for Regulation of the European Parliament and of the Council establishing the space programme of the Union and the European Union Agency for the Space Programme and repealing Regulations (EU) No. 912/2010, (EU) No. 1285/2013, (EU) No. 377/2014 and Decision 541/2014/EU in

[23] J. Pucher, R. Buehler, *Transport Policies in Central and Policies in Central and Eastern Europe*, March 2018, https://www.researchgate.net/publication/324013502_TRANSPORT_TRENDS_AND_POLICIES_IN_CENTRAL_AND_EASTERN_EUROPE (access: 25.2.2022). See more European Union Agency for the Space Programme, *EO & GNSS Market Report*..., p. 37.

[24] T. Kamiski, M. Uciska, E. Kamiska, P. Filipek, *Effect Analysis on the Implementation of Automatic Emergency Call System eCALL*, "Journal of KONES Powertrain and Transport" 2011, vol. 18(4), p. 179.

[25] OJ L 123/77, 19.5.2015.

[26] Article 3 of the Commission Implementing Regulation (EU) 2016/799 of 18 March 2016 implementing Regulation (EU) No. 165/2014 of the European Parliament and of the Council laying down the requirements for the construction, testing, installation, operation and repair of tachographs and their components (OJ L 139/1, 26.5.2016).

[27] See more Z.J. Loranc-Borkowska, *Civil Liability for Damage Caused by a Physical Defect of an Autonomous Car in Polish Law*, "Studia Iuridica Lublinensia" 2020, vol. 29(5), pp. 165–180.

[28] See more about EGNOS Ground Station in A. Masutti, *Legal Problems Arising from the Installation of the Galileo and EGNOS Ground Stations in Non-EU Countries*, "Air and Space Law" 2012, vol. 37(1), pp. 65– 80.

[29] European Union Agency for the Space Programme, *EGNOS Extension to Eastern Europe*, https://www.gsa.europa.eu/egnos-extension-eastern-europe (access: 25.2.2022).

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which the proposal was received enthusiastically.[30] The Senate of the Parliament of the Czech Republic in turn particularly stressed the appreciation for the European GNSS Supervisor Authority (GSA) expressed by European Commission through the broadening of its responsibilities.[31]

The latter resolution underlined the importance of the Galileo programme in Central and Eastern Europe based on the fact that GSA has its residence in Prague (Czech Republic).[32] This location opens the door to many possibilities in this region. The GSA's work was received positively and, as a consequence, Regulation (EU) 2021/696 extends the scope of its responsibilities to the other EU space programmes, e.g. Copernicus. As such, with the adoption of the new regulation, its name was changed to the European Union Agency for the Space ("Agency") and the scope of its competences was extended. Fortunately, in accordance with Article 71 of Regulation (EU) 2021/696, it does not change it seat, remaining in Eastern Europe and creating even greater opportunities for the workers market in the region.[33]

It is also worthwhile to note other interesting opportunities presented by Galileo in this region. The population of Central and Eastern Europe is aging rapidly and in the coming couple of years it will need a special infrastructure that will allow it to keep the standard of living at a suitable level.[34] This will require many new and innovative solutions that can rely on GNNS signals. Even today there are devices available which can monitor pulse, providing valuable assistance to persons suffering from cardiac issues, or track elderly people and help identify their location in case of them going missing.[35] This need for new solutions could be a great opportunity for regional industry.

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[30] Romanian Parliament Senate, Bucharest, 26.9.2018, https://www.europarl.europa.eu/RegData/docs_autres_institutions/parlements_nationaux/com/2018/0447/RO_SENATE_CONT1-COM(2018)0447_EN.pdf (access: 25.2.2022).

[31] The Senate of the Parliament of the Czech Republic 11th term, 528th Resolution of the Senate, delivered on the 18th session held on 17 October 2018, on the Proposal for Regulation of the European Parliament and of the Council establishing the space programme of the Union and the European Union Agency for the Space Programme and repealing Regulations (EU) No. 912/2010, (EU) No. 1285/2013, (EU) No. 377/2014 and Decision 541/2014/EU (Senate Print no. N 170/11, COM(2018) 447, https://www.europarl.europa.eu/RegData/docs_autres_institutions/parlements_nationaux/com/2018/0447/CZ_SENATE_CONT1-COM(2018)0447_EN.pdf (access: 25.2.2022).

[32] European Union Agency for the Space Programme, https://www.gsa.europa.eu/contact-0 (access: 25.2.2022).

[33] European Union Agency for the Space Programme, *Careers at EUSPA*, https://www.gsa.europa.eu/gsa/jobs-opportunities (access: 25.2.2022).

[34] See more C. Batog, E. Crivelli, A. Ilyina, Z. Jakab, J. Lee, A. Musaye, I. Petrova, A. Scott, A. Shabunina, A. Tudyka, X.C. Xu, R. Zhang, *Demographic Headwinds in Central and Eastern Europe*, 15.6.2019, https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2019/07/11/Demographic-Headwinds-in-Central-and-Eastern-Europe-46992 (access: 25.2.2022).

[35] European Union Agency for the Space Programme, *EO & GNSS Market Report…*, p. 24.

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2. Regulation (EU) 2021/696 as a new framework for the European satellite navigation systems

Regulation (EU) 2021/696 has to be analysed in a number of different areas. One aspect is the legal framework concerning Galileo and its reformulation under Regulation (EU) 2021/696. The second aspect concerns related budgetary implications, which are just as important as the legal framework.

The first set of legal issues, which will be discussed in this article, concerns doubts with regard to previously binding law: security of the systems, access of third parties, compliance of the provisions with human rights standards.[36]

Any such analysis should start with the most important issue: the security of the systems, which is not only important for EU members but also for the US and NATO.[37] This aspect was referenced in the Preamble to Regulation (EU) No. 1285/2013, however its operative part does not contain a binding legal provision to this effect, in contrast to the new legal framework. Regulation (EU) 2021/696 in turn includes Article 33 which sets up principles of security, applicable not only to E-GNNS but to all EU programmes. This principle states that "the security of the Programme shall be based on the following principles: (a) to take account of the experience of the Member States in the field of security and draw inspiration from their best practices; (b) to use the security rules of the Council and of the Commission, which provide, *inter alia*, for a separation between operational functions and those associated with accreditation".[38] Those principles are elaborated upon in nine articles which set up the rules concerning security more precisely. Most of them regulate the functioning of the Security Accreditation Board (SAB), which is tasked chiefly with maintaining its previously assigned responsibilities, however the legal framework of its activities becomes more detailed.[39] It should be noted that this development of legal framework concerning the SAB is a positive one, considering in particular its powerful role as an accreditation body. However, Regulation (EU) 2021/696 did not solve the problem of independence of the SAB, which was raised in the *European Space Policy Institute Report 62*.[40] In it, A. Sitruk and S. Plattard explicitly stated that the very complicated governance structure of Galileo can be seen as a significant security risk. In the Regulation (EU) 2021/696,

[36] See more *Legal and Political Aspects of the Use of European Satellite Navigation System Galileo and EGNOS*, ed. K. Myszona-Kostrzewa, Warsaw 2019.

[37] K. Karski, K. Myszona-Kostrzewa, *Space Activities: Economic and Legal Aspects*, "Finance India: The Quarterly Journal of Finance" 2020, vol. 34(1).

[38] Article 33 of Regulation (EU) 2021/696.

[39] European Union Agency for the Space Programme, *Security*, https://www.gsa.europa.eu/security/accreditation (access: 25.2.2022).

[40] A. Sitruk, S. Plattard, *European Space Policy Institute Report 62: The Governance of Galileo*, https://espi.or.at/news/report-62-the-governance-of-galileo (access: 25.2.2022), p. 37.

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the SAB is to be a part of the European Union Agency for the Space Programme which, in accordance with Article 1 of Regulation (EU) 2021/696, will "replace and succeed the European GNSS Agency established by Regulation (EU) No. 912/2010 and lay down the rules of operation of the Agency". This means that one of the main objections raised in the above-mentioned report was not taken into account, leaving space for doubts concerning SAB autonomy.[41]

With regard to security, it needs to be noted that other legal instruments remain in force – Decision No. 1104/2011/EU, as well as Council Directive 2008/114/EC of 8 December 2008 on the identification and designation of European critical infrastructures and the assessment of the need to improve their protection.[42] The role of the latter is underlined in Article 34 (6) of Regulation (EU) 2021/696 which stipulates Member States' obligation to apply at least the same level of protection as that relating to critical infrastructure. Moreover, this framework is developed by adding a new instrument in the form of Council Decision (CFSP) 2021/698.

The second issue crucial for Galileo is of a legal nature and is related to the access to the project and possible influence by third parties, i.e. other organisations and non-Member States of the EU. This area is particularly important due to the involvement of the European Space Agency in the E-GNNS, as well as the relations with the United Kingdom after Brexit. At the time of drafting Regulation (EU) 2021/696, the UK has issued assurances that it would construct its own GNSS in the future, which means there had not been any attempts to agree upon any participation of UK in Galileo.[43] However, taking into account the experience of EU in this area, creating a separate GNSS can be very challenging due the costs required to build the necessary infrastructure, so in the future such plans may change. Currently the UK is developing different alternatives for E-GNSS[44] and is not participating in this EU space programme, however it still cooperates with and the European Union Agency for the Space Programme in its other space programme – Copernicus.[45]

In any possible scenario concerning the realisation of the UK's plans, the main issue in any discussions should concern introducing solutions to assure that the tasks delegated to the ESA will not be exposed to risk of being blocked during

[41] European Commission, *Galileo Incident of July 2019: Independent Inquiry Board Provides Final Recommendations*, 19.11.2019, https://ec.europa.eu/growth/content/galileo-incident-july-2019-independent-inquiry-board-provides-final-recommendations_en (access: 25.2.2022).

[42] OJ L 345/75, 23.12.2008. For more, see K. Myszona-Kostrzewa, *op. cit*., p. 117.

[43] J. Elgot, *UK May Never Recover £1.2bn Invested in EU Galileo Satellite System*, 30.11.2018, https://www.theguardian.com/politics/2018/nov/30/brexit-uk-may-never-recover-12bn-invested-in-eu-galileo-satellite-system (access: 25.2.2022).

[44] C. Hoare, *Galileo Rejection: UK Slams Door in EU's Face and RULES Out Return Over Security Fears*, 18.10.2021, https://www.express.co.uk/news/science/1506632/galileo-satellite-uk-rules-out-return-eu-project-security-fears-brexit-news-oneweb (access: 25.2.2022).

[45] *Guidance: UK Involvement in the EU Space Programme*, https://www.gov.uk/guidance/uk-involvement-in-the-eu-space-programme (access: 25.2.2022).

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the decision-making process by non-EU states and the question whether there is a political will to include non-EU members in the project at all. In the light of this problem, the current Regulation (EU) 2021/696 protects Galileo and EGNOS by allowing for management of the above-mentioned risks and possibilities. First of all, any cooperation with third countries and international organisations will have to be set up in accordance with Article 98 of Regulation (EU) 2021/696. Lack of cooperation by non-EU members can be managed through the introduction of Article 28 of Regulation (EU) 2021/696 which confirms the role of the Commission and interactions with the ESA are regulated in more detail in Article 30 of Regulation (EU) 2021/696 together with a trilogue process stipulated by Article 31, establishing legal framework for the financial framework partnership agreement.[46]

The third area in which there is still some uncertainty is the liability of EU in the event of the system malfunctioning. The previous Regulation (EU) No. 1285/2013 did not include any provisions on this issue, it was addressed only in recital 22 of the Preamble stating: "It is important to note that the investment and operating costs of the systems as estimated for the period 2014–2020 do not take account of unforeseen financial obligations which the Union may be obliged to assume, in particular those relating to liability arising from the performance of the services or Union ownership of the systems, especially with regard to any malfunctioning of the systems. Those obligations are the subject of a specific analysis by the Commission". In the light of this recital, some researchers, like M. Chatzipanagiotis and K. Liperi, believe that the EU explicitly recognises the possibility of its own liability.[47] However, the draft Regulation (EU) 2021/696, in its first version proposed by the Commission, aimed to fill the existing gap in this area by introducing Article 10, common for all the space programmes, in which the liability of the EU for the signal's "quality, accuracy, availability, reliability, speed and suitability for any purpose" was excluded.[48]

This first solution was not accepted by the European Parliament and was amended significantly in the trilogue. Firstly, Article 10 of the draft Regulation (EU) 2021/696 gained a new title: "Warranty" instead of "Absence of guarantee".

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[46] See Proposal for a Regulation of the European Parliament and of the Council establishing the space programme of the Union and the European Union Agency for the Space Programme and repealing Regulations (EU) No. 912/2010, (EU) No. 1285/2013, (EU) No. 377/2014 and Decision 541/2014/EU, COM/2018/447 final – 2018/0236 (COD).

[47] M. Chatzipanagiotis, K. Liperi, *Regulation of Navigational Satellites in Europe*, [in:] *Routledge Handbook of Space Law*, eds. R.S. Jakhu, P.S. Dempsey, London–New York 2017, p. 298.

[48] Article 10 "Absence of guarantee": "The services, data and information provided by the Programme's components shall be provided without any express or implied guarantee as regards their quality, accuracy, availability, reliability, speed and suitability for any purpose. To that aim, the Commission shall take the necessary steps to ensure that the users of those services, data and information are informed, in an appropriate manner, of the absence of any such guarantee".

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During the trilogue discussions it was agreed that the provision should begin with the following wording: "Without prejudice to the obligation imposed by legally binding provision (…)".[49] The proposed solution makes it impossible to unilaterally exclude any possibility liability for third party claims arising from E-GNNS from the EU in the way it was originally proposed by the Commission. That initial attempt to exclude all liability of the EU was not in line with some proposals made in the doctrine of law, for example by C.L. Gilera who suggested the establishment of a dedicated compensation fund, much in the same way as in Council Regulation (EC) No. 2012/2002 of 11 November 2002 establishing the European Union Solidarity Fund[50] with regard to natural disasters.[51] Nevertheless, the wording put forward in March 2019 raised the expectation that some of the solutions suggested by legal experts on the way how to solve this complicated issue could be still taken into account by introducing them in other legally binding provisions. The current wording of Article 10 of the Regulation (EU) 2021/696 left space for further discussions not only on the proposal to create a special compensation fund but also to reflect on the different approaches to possible solutions proposed by UNIDROIT.[52]

The liability issue needs to be seen also through the lens of a clear relation between human rights and the European satellite navigation system, including all consequences raising therefrom. It is of particular importance that the legal framework of this system is constructed with all necessary regard for human rights norms, which are binding not only on the EU itself as a whole but also on individual Member States. The question of EU liability is one of the main issues indicated as a possible infringement of human rights when the mentioned legislation was analysed in the light of human rights provisions.

[49] Article 10 "Warranty": "Without prejudice to the obligation imposed by legally binding provision the services, data and information provided by the Programme's components shall be provided without any express or implied guarantee as regards their quality, accuracy, availability, reliability, speed and suitability for any purpose. To that aim, the Commission shall take the necessary steps to ensure that the users of those services, data and information are informed, in an appropriate manner, of the absence of any such guarantee". See also Council of the European Union, Outcome of Proceedings in the subject of Proposal for a Regulation of the European Parliament and of the Council establishing the space programme of the Union and the European Union Agency for the Space Programme and repealing Regulations (EU) No. 912/2010, (EU) No. 1285/2013, (EU) No. 377/2014 and Decision 541/2014/EU, Interinstitutional File: 2018/0236(COD), Brussels, 13.3.2019, https://data.consilium.europa.eu/doc/document/ST-7481-2019-INIT/EN/pdf (access: 25.2.2022).

[50] OJ L 311/3, 14.11.2002.

[51] See C.L. Gilera, *GNSS Third Party Liability: The European Experience of Galileo*, 57th International Astronautical Congress, 2–6.10.2006, Valencia, Spain, p. 467.

[52] UNIDROIT, *An Instrument on Third Party Liability for Global Navigation Satellite System (GNSS) Services: A Preliminary Study*, March 2010, https://www.unidroit.org/english/documents/2010/study79/s-79-preliminarystudy-e.pdf (access: 25.2.2022).

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It needs to be noted the final wording of Article 10 of Regulation (EU) 2021/696[53] underwent only slight changes and in light of current human rights obligations, cannot be assessed more positively. As has already been proven, uncertainty in this area can lead to gross violations of human rights.[54]

In addition, it needs to be noted that Article 97 of Regulation (EU) 2021/696 includes provisions concerning liability of the Agency.[55] As L. Orešković and S. Grgić noted, this has to be seen as progress.[56] However, the eventual provision raised many questions in light of the Convention on International Liability for Damage Caused by Space Object and by the Outer Space Treaty. The adopted provisions provide a framework with regard to the contractual liability of the Agency and activities undertaken by Agency departments and servants in the performance of their duties, however, it does not cover all possible scenarios.[57] In this context, the high expectation to develop an internal system of liability in the aspect of shared responsibility, expressed by L. Orešković and S. Grgić, need to be shared.

The fourth aspect analysed in this article, one just as strongly related to human rights as the liability issue, is protection of privacy, in particular data protection.

The former Regulation (EU) No. 1285/2013 addressed the issue of privacy first in recital 44 of the Preamble stating: "The Union is based on respect for fundamental rights and in particular Articles 7 and 8 of the Charter of Fundamental Rights of the European Union expressly recognize the fundamental right to privacy and to the protection of personal data. Protection of personal data and private life should be ensured under the Galileo and EGNOS programmes", and established an appropriate legal framework in Article 31 " Personal data and privacy protection".[58] Unfortunately, this

[53] Article 10 "Warranty": "1. Without prejudice to the obligations imposed by legally binding provisions, the services, data and information provided by the Programme's components shall be provided without any express or implied warranty as regards their quality, accuracy, availability, reliability, speed and suitability for any purpose. 2. The Commission shall ensure that the users of those services, data and information are duly informed of paragraph 1".

[54] See more A. Ito, *Legal Aspects of Satellite Remote Sensing*, Leiden–Boston 2011, p. 287.

[55] Article 97 "Liability of the Agency": 1. The contractual liability of the Agency shall be governed by the law applicable to the contract in question. 2. The Court of Justice of the European Union shall have jurisdiction to give judgment pursuant to any arbitration clause contained in a contract concluded by the Agency. 3. In the event of non-contractual liability, the Agency shall, in accordance with the general principles common to the laws of the Member States, make good any damage caused by its departments or by its servants in the performance of their duties. 4. The Court of Justice of the European Union shall have jurisdiction in disputes over compensation for the damage referred to in paragraph 3. 5. The personal liability of its servants towards the Agency shall be governed by the provisions laid down in the Staff Regulations or Conditions of Employment applicable to them".

[56] L. Orešković, S. Grgić, *op. cit.*, p. 116.

[57] I. Baumann, *Liability for GNSS Signals and Services*, 2015, https://www.insidegnss.com/auto/novdec15-LAW.pdf (access: 25.2.2022).

[58] "1. The Commission shall ensure that personal data and privacy are protected during the design, implementation and exploitation of the systems and that the appropriate safeguards are in-

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important declaration wasn't repeated in Regulation (EU) 2021/696. This can put in question the extent to which the legislators are devoted to human rights provisions, which is particularly regrettable due to the rising recognition of relations between space and human rights.[59] With this in mind, one must appreciate that former Article 31 of Regulation (EU) No. 1285/2013 was retained.[60] It underwent slight change in its wording to accommodate the current governance structure and wider scope of application. The model adopted in Regulation (EU) No. 1285/2013 was upheld, i.e. it refers to the existing EU data protection legal framework based on Regulation (EU) 2016/679 and Regulation (EU) 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data, and repealing Regulation (EC) No. 45/2001 and Decision No. 1247/2002/EC.[61] This legislation ensures that the operator should be wary to collect any unnecessary personal data concerning location. This means that, similarly to Regulation (EU) No. 1285/2013, there is no separate instrument relating to the protection of personal data or privacy included in Regulation (EU) 2021/696. However, Article 104 of this Regulation links the activities undertaken by EU intuitions with the proper legal framework under Regulation (EU) 2018/1725. This solution can answer some of the reservations which can be best summed up in the following words: "(…) in a world where the click of a button in one country can change a person's life in another country, we must commit to coordinating a solution that universally respects the right to privacy in the face of advancing technology".[62]

In the second of above-mentioned aspects, the acceptance of Regulation (EU) 2021/696 is linked with budgetary provisions. Even the best legal framework and mechanisms alone are not able to ensure security and stability of any space programme, as this is a type of project which is particularly expensive. An impecunious budget of E-GNNS is a threat to its very existence. A lack of adequate funding sources can lead to a degradation of the infrastructure and finally to the destruction of the project. Appropriate financing is crucial to maintaining the stability and

cluded therein. 2. All personal data handled in the context of the tasks and activities provided for in this Regulation shall be processed in accordance with the applicable law on personal data protection, in particular Regulation (EC) No. 45/2001 of the European Parliament and of the Council (19) and Directive 95/46/EC of the European Parliament and of the Council".

[59] See more I. Marboe, *Human Rights Consideration for Space Activities*, [in:] *In Heaven as on Earth? The Interaction of Public International Law on the Legal Regulation of Outer Space*, eds. S. Hobe, S. Freeland, Cologne 2013, pp. 135–149; S. Freeland, R.J. Jakhu, *What's Human Rights Got to Do with Outer Space? Everything*, Proceedings of the International Institute of Space Law, 2014, pp. 365–380.

[60] Now it is Article 104 of Regulation (EU) 2021/696.

[61] OJ L 295/39, 21.11.2018.

[62] L. Rakower, *Blurred Line: Zooming in on Google Street View and the Global Right to Privacy*, "Brooklyn Journal of International Law" 2011, vol. 37(1).

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continuity of the project. The need for stability of funding was reiterated by the European Commission[63] and it is addressed to the doctrine of law.[64]

The projected budget for the EU space programme proposed in 2018 amounts to EUR 16 billion.[65] The Commission assumes that Galileo and EGNOS will consume EUR 9.7 billion in period of 2021–2027 and thus it became the most expensive space programme of the EU.[66] These numbers confirm the importance of the programme in the overall EU strategy which was expected by A. Sitruk and S. Plattard.[67] The final amounts given to space activity, including Galileo, depended on a political decision made by the Member States. The process of negotiation was delayed due to the Brexit discussions. It was also affected by the changes in the European Parliament resulting from the elections and appointment of a new Commission, which was concluded in late November 2019,[68] as well as the COVID-19 pandemic.

During the discussions in March 2019 in the European Parliament, the assessment by the Commission with regard to Galileo and EGNOS, i.e. keeping the budget at a EUR 9.7 billion level, was deemed insufficient by the MEPs who decided to raise budget for the rest of space program.[69] However, later in December 2019, the Finish Presidency proposed only EUR 7.7 billion for Galileo, which causes doubts on the ability to keep the programme in the operational phase at the same standard as foreseen by the Commission.[70]

Finally, the current budgetary framework preview is EUR 14,880 billion for the new EU Space Programme, which represents the highest amount ever but is still less than proposed by Commission in 2018.[71] The E-GNNS budget is slightly smaller than expected in March 2019, amounting to EUR 9,017 billion.[72]

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[63] European Commission, *EU Budget: A €16 Billion Space Programme to Boost EU Space Leadership Beyond 2020*, 6.6.2018, https://ec.europa.eu/commission/presscorner/detail/en/IP_18_4022 (access: 25.2.2022).

[64] L. Mantl, *op. cit.*, p.192.

[65] European Commission, *Space: EU's Satellite Navigation System Galileo Reaches 1 Billion Smartphone Users*, 9.9.2019, https://ec.europa.eu/commission/presscorner/detail/en/IP_19_5529 (access: 25.2.2022).

[66] European Commission, *EU Budget: A €16 Billion Space Programme…*

[67] A. Sitruk, S. Plattard, *op. cit.*, p. 18.

[68] European Commission, *Approval of the European Commission 2019–2024. The von der Leyen Team Voted into Office by the European Parliament*, 2019, https://ec.europa.eu/info/election-european-commission-2019-2024_en (access: 25.2.2022).

[69] European Parliament, *EU Space Programme / 2018-6*, https://www.europarl.europa.eu/legislative-train/theme-new-boost-for-jobs-growth-and-investment/file-mff-eu-space-programme (access: 25.2.2022).

[70] *Ibidem*.

[71] European Union Agency for the Space Programme, *The New European Union Space Programme a Successful European Cooperation Paradigm*, 22.6.2021, https://www.euspa.europa.eu/newsroom/news/new-european-union-space-programme-successful-european-cooperation-paradigm (access: 25.2.2022).

[72] Article 11 of Regulation (EU) 2021/696.

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DISCUSSION AND CONCLUSIONS

The EU has been involved in space activities for more than 20 years. The involvement in space activity must be seen as crucial for the development of the EU economy. The GNNS *Market Year Report* showed that this particular type of space activities is closer to the European citizens than ever before. Nevertheless, rising awareness in the society should still be seen as a priority, especially in Central and Eastern European countries because it can boost the economy and create many new opportunities for the private and public sectors.

The special role it plays in Central and Eastern Europe is describe above, however it needs to be stressed that it presents numerous possibilities for the national economies, regardless of their sizes. This is one of the reasons why spreading knowledge about Galileo is so valuable and its existence still needs to be established in the consciousness of societies.[73]

The consolidation of the legal framework for all space programmes into one, putting all the programmes under the same rules, together with establishing the European Union Agency for the Space Programme governing them all is a landmark for European space activities. This change is undoubtedly positive, especially considering the increasing number of applications that benefit from the use of GNNS signals, as well as the results of the Copernicus programme.[74]

Comparing the former regulations concerning Galileo and EGNOS with the new one, it should be noted that there are significant positive changes in the chief areas of reservations expressed in the various evaluation process and in the doctrine of law. In particular, in the area of security of the systems the proposed framework is more detailed compared to the previous regulation and it justifies expectations that these norms keep the E-GNNS more secure, if properly implemented. The above-mentioned complexity of the system indicates possible involvement of third parties in some activities. This factor was taken into consideration and included in various legal mechanisms. Paying the necessary attention to this aspect in creating the legal framework brings more stability to the entirety of space policy. On the other hand, Regulation (EU) 2021/696 still does have some outstanding issues, in particular the risk of not fulfilling certain existing human right standards, specifically concerning EU liability for an interruption of the signal.

The number of funds dedicated to E-GNNS should be seen as an investment in the future economy of the EU and its individual Members States. Decision-makers proved that they understand that any underfunding of E-GNNS could affect the main goals of the programme as a whole, i.e. the continuity and stability of this project. The benefits of E-GNNS should be recognised across the EU but the

[73] L. Orešković, S. Grgić, *op. cit.*, p. 77.

[74] European Union Agency for the Space Programme, *EO & GNSS Market Report*..., p. 7, note 14.

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Central and Eastern European countries should have consideration for this matter as it has its window of opportunity by hosting the European Union Agency for the Space Programme.

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Regulation (EU) 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data, and repealing Regulation (EC) No. 45/2001 and Decision No. 1247/2002/EC (OJ L 295/39, 21.11.2018).
Regulation (EU) 2021/696 of the European Parliament and of the Council of 28 April 2021 establishing the Union Space Programme and the European Union Agency for the Space Programme and repealing Regulations (EU) No. 912/2010, (EU) No. 1285/2013 and (EU) No. 377/2014 and Decision No. 541/2014/EU (OJ L 170/69, 12.5.2021).

ABSTRAKT

Globalny System Nawigacji Satelitarnej (*Global Navigation Satellite System*, GNSS) jest ważnym narzędziem wspierania innowacji i rozwoju gospodarki. Unia Europejska stworzyła dwa systemy: Galileo i EGNOS (*European Geostationary Navigation Overlay Service*), które umożliwiają lokalizację punktów na powierzchni Ziemi i na niebie. Program GNSS daje szereg możliwości społeczeństwom Europy Środkowo-Wschodniej, w których istnienie systemu E-GNNS (*European Global Navigation Satellite System*) wciąż nie jest spopularyzowane. Artykuł jest próbą podniesienia świadomości społecznej w zakresie wykorzystywania systemów Galileo i EGNOS, a także przybliżenia ram prawnych dotyczących tego programu oraz zmian, które zostały wprowadzone rozporządzeniem (UE) 2021/696 Parlamentu Europejskiego i Rady z dnia 28 kwietnia 2021 r. Głównym zamierzeniem badawczym jest dokonanie oceny zmian w najistotniejszych obszarach tej regulacji, takich jak bezpieczeństwo systemów, dostęp podmiotów trzecich, zgodność przepisów ze standardami praw człowieka oraz kwestie związane ze środkami budżetowymi, które są szczególnie ważne dla ciągłości i stabilności E-GNNS.

Słowa kluczowe: nawigacja satelitarna; Galileo; EGNOS; GNNS; E-GNSS; Agencja Unii Europejskiej ds. Programu Kosmicznego