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THE FUTURE OF EUROPEAN DEFENSE THROUGH BLOCKCHAIN AS A WAY TO INTEGRATE, FILL GAPS AND ADDRESS THE CRISES OF WARS IN A EUROPEAN CONTEXT

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Abstract: *This paper aims to shed light on the field of European defense policy. The final objectives are to address on the legal instruments that are in the hands of the Treaty of Lisbon relating to defense policy, as well as due to the gap in legislation where it is capable through a logistical mechanism of the blockchain to find suitable solutions to protect the European people of the member states of the European Union. In parallel, European defense through an important industry at a global level should evaluate, control the system of the blockchain even in an experimental stage and play an active role towards the approach for European armies of integration, paths that follow the defense policy not to bring greater security to the European system but as a "mandatory" necessity to address war crises and not only. The method used in the present work is based both on the doctrine in question as well as on the relevant jurisprudence of the CJEU. The doctrine is updated and makes use of the latest binding and not acts of the institutions of the European Union.*

Keywords: *European Union law, European defence, European security, blockchain, logistics, EBSI, CSDP, PESCO, European integration.*

Introduction

Talking about Common Security and Defence Policy (CSDP) we immediately think of a reorganisation of politics at a European level. The main topic for the security and defence of the Union is, according to the principles of international law, the maintenance of international security as a response to a series of factors that prevent the Union from decisively referring to the management of each European, international crisis. The unity of intentions, especially through the Treaty of Lisbon, to put an order to the European chaos of continuous crises highlights the work of the European Commission and the European Parliament to make the competences, between institutions involved in this sector, work better. A supranational governance makes the role of European defence also think about national armies. Strengthening a process of integration of armies of the Members of the Union towards a common process that rationalises the Common Foreign and Security Policy (CFSP) through a collaboration of national defence apparatuses has as a consequence the greater exploitation of technologies and mechanisms of rules in the CSDP sector, thus bringing the foreign policy of each country of the Union closer together.

The common defense is based on Art. 42, par. 2 TEU. It puts the fear of domestic states for the intergovernmental method in the CFSP context at the forefront by redefining the dedicated rules. NATO as a protagonist has played an important role for years for the foreign policy of the Union and especially the last years after Brexit[1] thus allowing to create a boundary

1 Ø. Svedsen, *"Brexit and the future of EU defence: a practice approach to differentiated defence integration",* in Journal of European integration, 2019, n. 8, 5ss.

of a secondary role of organization and interventions[2]. Through a joint Declaration between NATO and EU of 10 January 2023[3] a strengthening axis of the block of the Union was underlined as a response to the Russian-Ukrainian war and in contrast with the strategic competition of China[4] thus coordinating the Member States in the defense sector attributing to the USA to appear a greater will against an emancipation of the European defense of a common defense of the Union and contributing to the duties in the role of peacemaker that the USA has had up to the present day[5] allowing thus a new path of destination towards other resources of internal affairs[6].

Thus, the common European defense presents itself as a need for a spirit that does not deceive the creators of the Union but only the needs that are different from those of the past. A strong political will[7] has as a basis for demonstration the application in the defense sector of the blockchain[8] towards an international cooperation between armed forces of the Union favoring in such a way the coordination and proximity of individual national armies and creating a common European defense. It is a supranational integration mechanism with the intention of creating a common coal and steel market that has led to a strong complex of the union in the economic, political and representation sector of the Union towards foreign countries[9].

We need a "new" approach to defense and public order that responds to the needs and values that work as a tool for the recognition of a defensive union that creates a collateral effect of cooperation of the blockchain system that is common to European armies. The objective of the Union according to art. 42, par. 2 TEU is the favorable vote of the European Council that unanimously takes into account the body (art. 15, par. 2TEU) for the representatives of all

2 P. Cornish, *"EU and NATO: Co-operation or Competition?",* in Briefing Paper, Directorate-General for External Policies of the Union, European Parliament, p. 8.

3 According to art. 8: "NATO remains the foundation of collective defense for its Allies and is essential to Euro-Atlantic security. We recognize the value of a stronger and more capable European defense, which contributes positively to global and transatlantic security and is complementary to and interoperable with NATO".

4 A. Aktoudianakis, *"Fostering Europe's Strategic Autonomy. Digital Sovereignty for Growth, Rules and Cooperation",* EPC Analyses, December 2020, p. 4. D. Castro, M. Mclaughlin, *"Who Is Winning the Al Race: China, the EU, or the United States?- 2021 Update",* Center for Data Innovation, January 2021, J. Dobbins, H. J. Shatz, A. Wyne, *"Russia is a rogue, not a peer; China is a peer, not a rogue. Different challenges, different responses",* Rand Perspectives, October 2018. The ex President of the ECB Mario Draghi in 16 April 2024 affirmed in a conference in La Hulpe: "a strategy for how to keep pace in an increasing cutthroat race for leadership in new technologies. Today we invest less in digital and advanced technologies than the US and China, including for defence, and we only have four global European tech players among the top 50 worldwide. We are lacking a strategy for how to shield our traditional industries from an unlevel global playing field caused by asymmetries in regulations, subsidies and trade policism (…) ".

5 C. Maier, Alliance and Autonomy, in M.J. Lacey (ed.), *"The Truman Presidency",* Cambridge University Press, Cambridge, 1989, pp. 278ss. G. Lundestad, *"Empire by Invitation? The United States and Western Europe, 1945- 1952",* in Journal of Peace Research, September 1986, pp. 263-277

6 J.R. Shifrinson, *"The Dominance Dilemma: The American Approach to NATO and its future",* in Quincy Brief, 2021, n. 8, pp. 3-15, which is affirmed that: "prepare for a broader recalibration of political responsibilities in Europe. Precisely because the United States has other domestic and international obligations, and because NATO's European members are increasingly disenchanted with U.S. predominance, conditions are ripe to empower the European allies. The objective should be to strengthen intra-European solidarity and cooperation while the United States steps back from active management of European security. The United States should pivot toward becoming the pacifier of last resort rather than the manager of early squabbles".

7 The president of the European Commission Ursula von der Leyen in European Parliament in 15 September 2021 declared that: "(…) expeditionary forces, on their type and number: battle groups or EU intervention forces (…) part of the debate and I think it will also be part of the solution. But the fundamental question is why this has not worked in the past (…) you have the most advanced forces in the world, but if you are never ready to use them, what is their use? What has held us back so far is not just a lack of capabilities: it is a lack of political will. If we develop this political will, we can do a lot at EU level (...)".

8 https://eda.europa.eu/webzine/issue14/cover-story/blockchain-technology-in-defence

9 G. Majone, *"Unity in Diversity: European integration and the enlargement process",* in European Law Review, 2008, n. 4, pp. 462ss.

member states who are chosen among heads of state or government and the president of the European Council and of the European Commission try to create a common defense according to every time urgent need thus founding the distrust of the states to a transfer of supranational governance in foreign policy matters.

What does blokchain technology do and offer?

For the supply of individual European armies and in the CFSP matter the difficulty of identifying a "representative" alongside the European institutions presents itself as an important gap for the integration of military apparatuses. Exploiting and making use of blockchain technology and the related rules in the CSDP area by creating a common defense that encourages the definition of this European defense is interpreted as an important step in the redefinition of CFSP rules. The functioning of blockchain technology favors from the IT point of view, the data to be performed to the operations with a value that offers transparency, immutability and precision of a decentralized structure to a verifiable environment given the relationship between trust and users that requires intermediaries for centralized control.

The technical characteristics of the blockchain are identified as elements that try to create possible ideas for all typologies. Such a system with the presence of nodes creates a competition of a consensus formation mechanism that transforms chained blocks from alphanumeric strings to hash functions with an alphorithmic mode. Such components fill the definition of a blockchain technology that is part of the category of Distributed Ledger Technologies (DLT). It works as a system of a register that distributes devices on a network thus constituting an independent node that approves register operations. The algorithm allows the relative update and the operation is approved by a number of nodes that are sufficient. Thus the registers are distributed and used for other operations and take into account the nodes and the relative devices. A single manager cannot have a register, as well as the management of a collective decision-making process.

The blockchain thus respects the traditional DLT and its own configuration which is presented as “blocks” that are connected cryptographically through temporal mechanisms or timestamps allowing thus the distribution of information among all the nodes: “structured will contain an ordered sequence of verified and validated transactions, the truth of which has been accepted by the set of participants who have adopted the same rules of the distributed consensus protocol”[10].

The information of the blocks is unchangeable and the transactions are translated into hash[11] because they are presented as a digital fingerprint that each block contains the hash from the previous one and so the block is modified causing thus the relative shutdown of the system and the cessation of the entire blockchain. The relative consensus of mechanisms that are used are different according to the type of blockchain and are distinguished into public and private according to a prior identification of participants called "permissioned and permissionless" according to the methods that validate the consensus. The private blockchains only of the

10 See the speech of the president of the European Commission Ursula von der Leyen in European Parliament in 15 September 2021.

11 The hash has a cryptographic function where through algorithms that operate and translate each input and output constitute in a unique way even in the case that there are two identical hashes. As for the output that goes back to the input, the process is admitted where the blockchain through the SHA hashing algorithm operates on an alphanumeric system with six digits from 0 to 9 and letters from A to F where in reality they represent numbers that go from 10 to 15 and that are thus combining strings with a number that includes 64 characters each of them.

permissioned type differ from the public ones and are complex since they frequent hybrid systems.

In permissionless blockchains the relative pre-selection of participants and the trustless environment allow mechanisms for forming a consensus as well as the use of bitcoin[12], i.e. the Proof of Work (PoW) which creates a functioning related to mining as a type of competition between nodes where the reward represents a quantity of cryptocurrencies that are destined for those who cannot solve mathematical problems and blocks in the chain. Differently from the Proof of Work is the Proof of Stake (PoS) which is part of the Ethereum blockchain. In such a case the nodes chosen are screened and validated according to an algorithm that takes into account two factors related to the quantity of cryptocurrencies and the time that has passed since this deposit. Validation with a commission of validated transactions evolves from the Proof of Stake and is the Delegated Proof of Stake as validators who are elected by the participants themselves.

The permissioned blockchain is part of the mechanism relating to the proof of authority (PoA) where the subjects have the power to validate the related transactions decentralizing thus the characteristics that are distinct from the blockchain. They are represented to a development that respects the permissionless blockchains used for business and industrial purposes. The management of production chains require a control that has blockchain technology as its objective and so an exchange of cryptocurrencies is created.

This type of model is important for the creation and use of armies in the Union as a type used by logistics and the management of the market as a unique defense where the aspects also make use of smart contracts and broaden the application of the blockchain. The guarantees of transparency and technology improve the automation to smart contracts thus contributing to a process of integration of defense policy in the Union. Such techniques identify the blockchain model that seems to be abstract to the use of military logistics but highlights the points of contact between use in national armies and the policies of the Union to a high-tech military field.

Is it possible to use blockchain in domestic armies?

Yes, since blockchain is also used and applied at a national level to the armies of various member states of the Union[13]. The organizational structures and blockchain technology are limited to an efficiency of a supply chain where it is traced and that allows[14] a secure management of data as well as the identity of a high cybersecurity system[15].

12 S. Nakamoto, *"Bitcoin: A Peer-to-Peer Electronic Cash System",* in Bitcoin, 2008: https://bitcoin.org/bitcoin.pdf

13 A blockchain project is based on Virtual Logistic System (VLS) where it indicates the support service within a group of projects that are part of a logistics system that seeks to simplify, plan and manage, organize materials in transit through the Air Terminal Operations Center (ATOC), i.e. the operational centers of operations that are unloading aircraft by putting the man machine at a more efficient level through solutions for the material that should be loaded. Thus the blockchain technology integrates the VLS with the aim of autonomously creating a technical documentation to track the goods. Thus the VLS seeks to exploit the smart contracts autonomously following agreements that seek to reduce the need that minimizes the margins of error. Thus the projects are different and evolving.

14 The blockchain also puts into operation the notarization to bring to a secure archive and catalog system that begins to manage, maintain the military vehicles thus knowing the technical information of origins for each component of the vehicle where also considers the Eurofighter to have a number more than eighty thousand

15 See also in argument the Advanced Social Engineering and Vulnerability Assessment Framework. Blockchain has a technical nature and that concerns 3% of attacks and incidents related to security that have the form of human error. The computer compromises cryptographic and symmetric systems based on a blockchain project related to the development and quantum proof solutions. See in argument also: P. Swathy, D. Boscovic, *"A Survey on Quantum-safe Blockchain System"*, Conference Paper, in Arizona State University, 2022, pp. 6. From December of 2023 we have in technological development some new initiatives that are signed by twenty-three member states entitled: "European Declaration on Quantum Technologies" that have as their basis a quantum technology for the states that have signed it and that are obliged to collaborate with a

Thus, information security is renewed, which considers the logistical advantages in a collaboration of armed forces of member states with a facilitated way[16]. Blockchain technology is spread with an important way at domestic level as the basis of a transnational scale of the Union. Thus, it contributes to the creation of an experimental form of military cooperation, capable of opening the way to common defense with an official way.

The process of European defense integration, which is also foreseen by the treaties, through blockchain, blocks the distrust of the delay and the definition of the rules that are efficient in the matter of the CFSP to a continuous attack from the past of the intergovernmental method that has not taken into consideration important points for the integrative evolution of a logistical type, practical in this sector. Blockchain technology is common for armies and represents an application where it determines a step forward in a strategy for security and defense.

Especially, we refer to the Council Act 7371/2022 of 21 March 2022 which has put a further step forward in the integration process for European armies. Art. 24 TEU imposed the definition of a common defense that still has gaps but is consistent with the strategy of the European Commission which presents the gold standard for blockchain technology in Europe[17] following a European infrastructure of the related blockchain services as a body that is part of the European Blockchain Partnership (EBSI)[18]. In this way, a network is formed that has as its objective the integration and sharing of data for national authorities within a fiscal and social assistance sector, the related financing of small and medium-sized enterprises as well as the management of asylum applications in an expansion phase that involves the defensive sector

development that makes the EU according to par. 2 as: "(…) quantum valley of the world (…)". We note that already since 2018 we have the "Quantum Technologies Flagship" as a research budget that has exceeded the figure of one billion euros through a collaboration of research institutes, public financiers, industries and the relative affirmation of leadership from the Union. In this spirit we also note the "European High Performance Computing Joint Undertaking" (EuroHPC JU) which has the objective of creating a pan-European quantum infrastructure.

16 The advantages in the civil sector allows the supply chain sector to exploit blockchain technology in the management of transport documents where tracking goods and monitoring fleets are physical assets that convert digital objects to a unique representation for distributed ledgers thus creating a register that will be shared to manage data generated in the systems of an infrastructure where it provides information relating to other racking of movements to a supply chain that requires intermediation in a safe and automated way. Thus, blockchain platforms make logistics to be connected in an efficient and safe way through monitoring to a process of an asset that interacts through scanning QR codes that highlights statistics that deliver in an updated and real-time way in a transparent way a process documentation to a supply chain.

17 We speak about the EU Digital Strategy according the objectives of the Commission in its Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions "2030 Digital Compass: the European way for the Digital Decade" of 9 March 2021 COM/2021/118 final. As main objectives we have the creation of a safer digital system, respect for digital opportunities, access to data for start-ups and SMEs, creating innovation infrastructures, fair competition, online availability of public services, research and development of resource allocation that are efficient, high-level cybersecurity. It was the same communication that highlighted the profile of a vulnerability and dependence on technology for non-democratic countries that set the time limit of 2030 thus completing a digital transformation for Europe. So there are four guidelines such as the training of people through qualified digitalization and digital professionals who are qualified, the creation of digital infrastructures that are safe and also sustainable thus transforming companies in a digital way, a digital system of services not only private but also public. For further analysis see also: R. Atkinson, EU Digital Single Market: Pursuing Contradictory Goals?, in G. Xavier Bender (ed.), *"Seeing the forest for the trees: Why the Digital Single Market Matters for Transatlantic Relations",* German Marshall Fund of the United States, Washington, 2016, pp. 5-14.

18 The European Blockchain Services Infrastructure (EBSI) has had as its main objectives the advantages of blockchain related to the management of public services. The EBSI contains three main elements: API (Application programming Interfaces), smart contract and registry. It is a registry where the operation is part of one of the cases of EBSI where the application connects with the API where the information is part of a registry to add in transactions. The API puts a smart contract where the operation records the transactions. Blockchain technology is immutable to the cases related to EBSI where the application connects to the API reading the information on the registry that adds the transactions. The request to use the API via a smart contract follows changes where the EBSI services host a network of nodes that are distributed throughout Europe respecting the governance rules that guarantee integrity and stability for the networks.

relating to the spirit and organization of the European Defense Agency[19] as an important network that includes the tasks assigned according to art. 45, par. 1TEU[20].

Blockchain and the european defense market

Defense policies in the European context and the strategy of creating a single market passes to various levels of infrastructures that contribute to faster levels of integration on the one hand and on the other hand to a competitive market that realizes an institutional plan of an economic type.

Common defense outside the military industry offers a model of demands not only regional, European but also global as a result that does not organize military operations and considers the single market through national budgets in an efficient way by reducing costs and increasing the quality of the related products. In such a way the behaviors of the member states are oriented to the promotion of national producers that limit imports at an international level. The question is not to sell abroad or not but the rapprochement of European armies where through public funding trying to realize further steps of integration and harmonization of the European defense industry pursuant art. 173 TFEU[21].

19 See 2004/551/CFSP, Council Joint Action 2004/551/CFSP of 12 July 2004 on the establishment of the European Defence Agency, *OJ L 245, 17.7.2004, p. 17-28. Council Decision 2011/411/CFSP of 12 July 2011 defining the statute, seat and operational rules of the European Defence Agency and repealing Joint Action 2004/551/CFSP. OJ L 183, 13.7.2011, p. 16–26*

20 The European Defence Agency has the following tasks: "(…) (a) to contribute to the identification of the military capability objectives of the Member States and to assess compliance with the capability commitments made by the Member States; (b) to promote the harmonisation of operational requirements and the adoption of efficient and compatible acquisition methods; (c) to propose multilateral projects for the achievement of the military capability objectives and to ensure the coordination of the programmes implemented by the Member States and the management of specific cooperation programmes; (d) to support research in the field of defence technology, to coordinate and plan joint research activities and studies to outline technical solutions that meet future operational needs; (e) to contribute to the identification and, where appropriate, implementation of any useful measure to strengthen the industrial and technological base of the defence sector and to improve the effectiveness of military expenditure (…)".

21 COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE EUROPEAN COUNCIL, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS European Defence Action Plan COM/2016/0950 final. Regulation (EU) 2021/697 of the European Parliament and of the Council of 29 April 2021 establishing the European Defence Fund and repealing Regulation (EU) 2018/1092 (Text with EEA relevance), PE/11/2021/INIT, *OJ L 170, 12.5.2021, p. 149–177. Regulation (EU) 2018/1092 of the European Parliament and of the Council of 18 July 2018 establishing the European Defence Industrial Development Programme aiming at supporting the competitiveness and innovation capacity of the Union's defence industry,* PE/28/2018/REV/1, *OJ L 200, 7.8.2018, p. 30–43. Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing the European Defence Industry Programme and a framework of measures to ensure the timely availability and supply of defence products ('EDIP').* COM/2024/150 final. The above mentioned allow us to conclude that the establishment of a European Defence Fund (EDF) as well as other actions are efficient for common defensive expenditure that promote industrial development in an innovative and competitive way. Thus the EDF anticipates the Preparatory Action for Defence Research (PADR) where the actions are efficient for defensive expenditure that promote development from an industrial point of view. The EDF has anticipated for about 90 million euros for the period 2017-2019 as a European Programme for Development in the Defence Industrial Sector (EDIDP) with an endowment that reaches 500 million euros for the period 2019-2010. From March 2021 through the European Peace Facility (EPF), a budget of €5.7 billion has been created until 2027. The EPF aims to increase the capacity of the Union to prevent conflicts, build security and international peace also outside the Union. Thus the FED becomes operational with a budget that is agreed with almost 8 billion euros for the period 2021-2027. the support program for industry and defense (EDIP) as well as the introduction of a framework where it measures and guarantees defense products that reaches 1.5 billion euros within a scope that is part of the budget for seven years and for the period between 2028-2035. the main objectives are as an increase in a military equipment that is purchased collaboratively that reaches the percentage of 40% by 2030 as an increase in intra-EU trade that reaches 35% to a total market for defense by 2030 for Union.

The EDIRPA Regulation[22] is an important step that resists on the part of the member states to the application of European market rules in defense materials where economic benefits are important for the joint purchase of products in the defense sector. The reform of public procurement that began with the directive 2009/81/EC [23] has made progress towards transparency and competition for the tender procedures for the purchase of defense services and products. The Union is now capable, more mature to face the threats to the security of both its citizens within the European framework as well as its industry where from the material point of view it overcomes the divisions of the member states to a management of the defense apparatus[24].

The creation of a common market also in the defense sector according to art. 346, par. 1 TFEU allows investments for the production and trade of weapons. War material is an evolving mechanism that also shows the trend that has been cultivated for years in this sector. The European Commission has already interpreted restrictively the clause that has established with necessary way the balancing of domestic interests with general objectives that comes from the birth of the Union[25]. It was also the jurisprudence of the Court of Justice of the European Union (CJEU)[26] to make use of the derogation clauses by the states where it contributes to the blockchain the advantages of the treatment where according to the clause of art. 346 TFEU. It shares with determinable way the interests as a recourse to this clause allowed by the same Treaty of Lisbon.

The blockchain pursues the objectives of the ASAP[27]. The regulation increases, cultivates and evolves the European defense industry through technology where the tools available are the financial support capable of continuing production and supply chains thus ensuring the production of European defense products quickly, accurately and effectively. The funding leads to a logistics system that manages through blockchain technology and leads to the consolidation of the Union pursuing the creation of a defense machine with a coordinated and individual way

22 Regulation (EU) 2023/2418 of the European Parliament and of the Council of 18 October 2023 on establishing an instrument for the reinforcement of the European defence industry through common procurement (EDIRPA). PE/40/2023/REV/1. *OJ L, 2023/2418, 26.10.2023.*

23 Directive 2009/81/EC of the European Parliament and of the Council of 13 July 2009 on the coordination of procedures for the award of certain works contracts, supply contracts and service contracts by contracting authorities or entities in the fields of defence and security, and amending Directives 2004/17/EC and 2004/18/EC (Text with EEA relevance), *OJ L 216, 20.8.2009, p. 76–136. Commission Delegated Regulation (EU) 2021/1950 of 10 November 2021 amending Directive 2009/81/EC of the European Parliament and of the Council in respect of the thresholds for supply, service and works contracts (Text with EEA relevance),* C/2021/7927, *OJ L 398, 11.11.2021, p. 19–20*

24 The President of the European Commission Ursula Von der Leyen stated on 28 December 2024 in the European Parliament that: "(…) a new "European defence mindset" is needed, embracing not only institutions, but also industry and investors (…) Europe should strive to develop and produce the next generation of battle-winning operational capabilities and ensure that it has the sufficient amount of material and technological superiority that we may need in the future (...) it must be a simple principle: Europe must spend more, spend better, spend in Europe (...)": https://neighbourhood-enlargement.ec.europa.eu/news/speech-president-von-der-leyen-european-parliament-plenary-strengthening-european-defence-volatile-2024-02-28_en?prefLang=it

25 Interpretative communication on the application of Article 296 of the Treaty in the field of defence procurement {SEC(2006) 1554} {SEC(2006) 1555}, COM/2006/0779 final

26 CJEU, sentence of 15 December 2009, Commission v. Finland, C-284/05, ECLI:EU:C:2009:778, I-11705

27 Regulation (EU) 2023/1525 of the European Parliament and of the Council of 20 July 2023 on supporting ammunition production (ASAP), PE/46/2023/REV/1, *OJ L 185, 24.7.2023, p. 7–25. The regulation is linked to the development which represents a direct response to the invitation of the Council which provides ammunition to Ukraine and aids member states as well as restores stockpiles. The art. 4, par. 1 states that: "(…) instrument is to promote the efficiency and competitiveness of the European Defence Technological and Industrial Base (EDTIB) to support the enhancement of production capacity and the timely delivery of relevant defence products through industrial reinforcement (…)". Financial resources in the form of grants in types of actions through the European defence industry increases production capacity. The regulation implements industrial-type actions of a tripartite approach of ammunition according to what has been approved from March 2023. The regulation has provided approximately 500 million euros for the period between 2023 and 2025.*

that has as its objective the link with the blockchain and the digital divide phenomena through a digital ecosystem that favors and achieves similar results of an integration of European armies. Blackchain logistics shares and brings domestic armies closer considering the security costs that blockchain technology entails as an immutable type of trust engine for the data it guarantees. The individual national armies form in a mutual and trusting way the national armies thus following a cooperation between the states in the defense sector and the idea of the common defense of the Union follows the path set out by art. 42, par. 2 TEU.

Pesco

Art. 42, par. 6TEU has allowed to create in an institutionally coherent manner[28] a military capacity mechanism through the establishment of a permanent structured cooperation within the Union (PESCO)[29], as it was established by the decision CFSP 2017/2315 of 11 December 2017. This is an instrument that constitutes in a precise and peculiar manner the CSDP through the intergovernmental method of multi-speed cooperation according to art. 42, par. 3TEU making thus available to the union with civil and military capacity multinational forces inspired by international law where according to par. 5 of art. 42 the Council entrusts the performance in a disciplinary manner of the mission and pursuant to art. 44 TFEU to a specific group of states. Establishing PESCO and overcoming the limitations of instruments for the enforcement of commitments and decision-making procedure requires unanimity for the participating states of a process of integration for the European defence with formal way that represents a significant turning point.

The objectives are not only symbolic[30] but also part of the integration tool capable of defending the member states[31] where interoperability guarantees the waste of resources. Thus, the number of projects is confirmed and evaluated through PESCO decision (CFSP) 2023/995 that leads to a precise military cooperation. The projects enter a blockchain infrastructure to a treatment that adheres to a regulatory system that outlines protocol no. 10 which is attached to the treaties providing for rules that refer to PESCO. Art. 2, par. 2 of the PESCO has provided for the member states: "their defense instruments, in particular by harmonizing the

28 F. Mauro, *"La Coopération structurée permanente: la Belle au bois dormant de la défense européenne",* Note d'analyse du GRIP, 27 May 2015, pp. 8ss. C. Prieto, *"La "coopération structurée permanente", début d'un nouveau cycle pour la politique de défense",* in Revue Trimestrielle de Droit Européen, 2018, 54 (1), pp. 3-6. A system to be effective of an instrument of an elitist nature that adheres to all member states that affirms the integration of defense through the Treaty of Lisbon.

29 PESCO is differentiated from a general institution that has to do with enhanced cooperation according to art. 326 TFEU where the object for the development of European defense is based on the institution that requires unanimous votes of the council and only according to the qualified majority that requires a minimum number of participants. Thus the initiative that twenty-six states have joined puts as a system that does not influence the relative aspect. The decision based on art. 46, par. 1 after notification to the participating states and in particular to the council and the high representative as proposed by Germany, France, Italy. Denmark under the subjection of the CFSP has notified the council and the high representative of the intention to participate in PESCO according to 23 March 2023 as a party in defense matters. The accession of Denmark within the PESCO family and through the adopted projects has broadened and deepened the new avenues of cooperation. Thus the member states invest in the development, the capabilities of new military forces in the European context. The projects through PESCO are 68 and concern land training systems, training structure, maritime systems, air systems, information technology, services related to space and support.

30 M. Pengili, T. Santos, *"Knowledge Management and the Adoption of Innovation in Defence: The Case of PESCO",* Centre for Defence Management and Leadership, 2022, p. 7.

31 Council Decision (CFSP) 2018/1797 of 19 November 2018 amending and updating Decision (CFSP) 2018/340 establishing the list of projects to be developed under PESCO, ST/13939/2018/INIT, *OJ L 294, 21.11.2018, p. 18–22. Council Decision (CFSP) 2019/1909 of 12 November 2019 amending and updating Decision (CFSP) 2018/340 establishing the list of projects to be developed under PESCO,* ST/13386/2019/INIT, *OJ L 293, 14.11.2019, p. 113–118. Council Decision (CFSP) 2020/1746 of 20 November 2020 amending and updating Decision (CFSP) 2018/340 establishing the list of projects to be developed under PESCO, OJ L 393, 23.11.2020, p. 12–16*

identification of military needs, pooling and, where appropriate, specializing their defense means and capabilities, as well as promoting cooperation in the fields of training and logistics"[32].

Creating a blockchain platform that shares the individual national armies within the Union reduces over time in a coherent way the provisions that provide for a private and/or permissioned system that allocates in real time supplies suitable for the management of exercises, military operations. Thus the system facilitates cryptographic exchange where the blockchain mechanism with precise techniques represents an ideal solution in the defense sector[33]. Logistics in the defense sector introduces blockchain quickly and integrates European armies thus creating a common defense of the Union and does not constitute reasonable advantages from a practical point of view. It finds a legal basis in the EU Digital Strategy. According to the protocol n. 10 presents itself as a source that is dedicated to military policy. Thus the overall framework of the policies of the Union and in digital matters enhances blockchain to manage administrative services that are inherent to defense and improving logistics in a positive, progressive way for European armies.

Conclusions

Logistics in the defense sector through the development that enables blockchain and together with the Treaty of Lisbon make use in the military sector and gives the opportunity to create a military sector that is foreseen by EBSI as a solution that promotes to an industrial market products related to defense according to the clause of art. 346 TFEU.

PESCO has constituted a suitable legal basis for a multifunctional instrument with analogies that reach a logistical nature and contributing in a collateral way the proximity for the European armies. The European integration of defense is moving forward with stable steps and with careful mechanisms through permanent structured cooperation. The member states have in their hands technical tools to pursue objectives in the defense sector thus experimenting in a precise way and on a large scale. Thus the logistics cooperation creates a circle to a framework of trust where from the institutional point of view it effectively leads to the common defense of the Union.

The continuous crises, the global instability of security and defense requires a more schematic, disciplinary role for the defense activity thus offering at an international level greater security for international defense by taking into account the deficient legislation that also needs an amendment of the Treaty of Lisbon in the field of security and defense. Blockchain technology presents itself as a potential act that outlines, constitutes an opportunity that puts the process of integration of European defense on a basis of a future recognition that puts first of all the security of a people and the political will to be at a second level and collaborating

32 In this framework see the project: "Robust communication infrastructure and networks" (ROCOMIN) which is part of a collaborative project that was introduced by the Council. So member states such as Sweden where the coordinator such as Estonia and France. The project coordinates, facilitates activities for military capabilities in robust communication infrastructure and networks through a digitalization system for armed forces and secure interoperability.

33 R.A. Manning, "Emerging Technologies: New Challenges to Global Stability", in *Atlantic Council*, 2020, pp. 18ss. M. Drent, D. Zandee, *"More European defence cooperation: the road to a European defence industry?"*, in Clingendael Institute, 2018, pp. 12. R. Adhikari, *"Fourth Industrial Revolution: From Least Developed Countries to Knowledge Societies, in Corridors of Knowledge for Peace and Development"*, Sustainable Development Policy Institute, 2020, pp. 58ss. C. Whyte, Poison, *"Persistence, and Cascade Effects: AI and Cyber Conflict"*, in Strategic Studies Quarterly, 2020, n. 4, pp. 29ss. A. Dowse, J. Blackburn, *"Improving Supply Chain Resilience through Preparedness"*, in Security Challenges, Geo-politics in the Indo-Pacific, 2020, n. 4, pp. 82-98. A.J. Lewis, *"Implementing Supply Chain Resiliency"*, Center for Strategic and International Studies, 2021, pp. 4ss.

towards new paths of greater protection to fill national and European regulations in the European defense sector.

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