

Emerging and disruptive technologies in the Western Balkans: Do we need a new arms control regime?

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Abstract: The subject of this paper is to examine the relationship between the emerging and disruptive technologies and the sub-regional arms control regime in the Western Balkans, established by the Agreement on Sub-Regional Arms Control, signed on June 14, 1996, in Florence. The main research question is: Do the emerging and disruptive technologies that the Western Balkans countries possess or are planning to acquire influence the existing arms control equation in the Western Balkans and, if yes, do we need a new arms control regime? Authors explore this question through the analysis of emerging and disruptive technologies that have taken roots in the Western Balkans and are likely to grow significant in the future, and the sub-regional arms control regime, taking emerging and disruptive technologies as one of the variables that challenges the existing arms control regime in this region. They compare the current emerging and disruptive technology capacities that Western Balkan states possess, as well as the potential of those emerging and disruptive technologies to disrupt the balance of forces set by the Agreement. The authors conclude that, although we do not need a completely new arms control agreement in the Western Balkans, having in mind the flexibility of the existing one, a responsible approach would include an update of the current arms control regime, especially regarding the new confidence and security building measures, including increased transparency on the acquirement and the nature of potential use of emerging and disruptive technologies.

Keywords: emerging technologies, disruptive technologies, arms control, sub-regional arms control, Western Balkans.

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Introduction

In mid-June 2023, the Agreement on Sub-Regional Arms Control signed in Florence in 1996 will mark 27 years of its existence and implementation. It is a cornerstone of the arms control regime established in the Western Balkans after the dissolution of the Socialist Federal Republic of Yugoslavia and the disastrous wars that involved four of six former Yugoslav republics – Serbia, Montenegro (then together in the Federal Republic of Yugoslavia, which was an original signatory state party of the Agreement), Croatia and Bosnia and Herzegovina (hereinafter: BH).³ These federal republics became states and a peace agreement for BH concluded in Dayton (USA) in 1995 — the General Framework Agreement for BH, Annex 1-B (Agreement on Regional Stabilization) — provided for the conclusion of three separate instruments aimed at preservation of an established balance of power and stability among them. These three instruments were: 1. an agreement on confidence and security building measures (hereinafter: CSBMs) in Bosnia and Herzegovina (Article II Agreement) that was signed on 26 January 1996 in Vienna and terminated on September 2004 after BH created federal ministry of defence,⁴ 2. a sub-regional arms control agreement (Article IV Agreement) signed on 14 June 1996 in Florence, implemented in November 1997 and is still in force and, 3. a “Regional arms control agreement” with a goal to establish a regional balance “in and around the former Yugoslavia” and provided for the establishment of “regular inspections” by other parties and a “commission together with representatives of the OSCE” (Article V Agreement). The Concluding Document, which was the result of the negotiations on Article V signed on 18 July 2001 and has been in effect since 1 January 2002, is a politically binding document

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³ For the purpose of this paper, the Western Balkans refers to the states parties to the Agreement on Sub-Regional Arms Control — Republic of Serbia, Montenegro, Republic of Croatia and Bosnia and Herzegovina.

⁴ Parties to the Article II Agreement - BH, the Federation of Bosnia and Herzegovina and the Republika Srpska - concluded in the fifth and last Review Conference that the Article II Agreement has been fully implemented and signed the Agreement on the Termination of Article II on 28 September 2004 at the 44th Joint Consultative Commission (JCC) meeting in Sarajevo.

which does not contain any arms limitations or verification measures, but only CSBMs among 20 participating states (Fladeboe 2004).

During its existence, the Article IV Agreement has faced many challenges, some of them we will consider in short in the next part, but this paper deals specifically with the emerging and disruptive technologies in the Western Balkans, as a specific category of challenges to the WB arms control regime. They are challenging from at least two perspectives. One is sub-regional and considers the influence on and possible changes of the established balance of power among the states parties to the Agreement depending on their military application and another is wider and involves broader relationship between NATO and Russia/China and is primarily focused around the procurement of new armament and military equipment, including emerging and disruptive technologies (hereinafter: EDTs). The Agreement has, however, endured, not only thanks to various foreign factors, but also domestic ones, including the willingness and acting of policymakers of countries involved.

Today, the states of the Western Balkans are arming and gearing up, under the impacts of arms conflicts across the world, new polarization among the great powers, modernization of numerous armies in the region and across Europe, as well as according to the requirements of their security system, aligned with their strategically identified security threats and challenges. These armaments and gearing up include procurements and attempts to develop their own emerging and disruptive technologies, which is why one may ask whether and to what extent acquisitions of these technologies with a possible military use disrupt the current sub-regional arms control regime and should they be included in the regime, besides the ongoing, mandatory limiting elements. The answer to these questions will mostly depend on whether possession or planned acquisition of these weapons disrupts or has a potential to disrupt the balance of forces and stability achieved between the WB countries, established by the Agreement. Possible control of emerging and disruptive technologies with military use is deemed within the regional framework in this paper, but it also has a broader, European significance, since the sub-regional arms control itself is derived from the conventional arms control in Europe and the Treaty on Conventional Armed Forces in Europe (hereinafter: CFE), from 1990. This matter does not have a defined answer within the European framework, which makes this research even more important.

The primary hypothesis of this paper is that emerging and disruptive technologies that the Western Balkans countries possess, or plan to purchase, can have a disruptive impact on the current balance of forces and stability between the countries, and therefore, affect the implementation and effectiveness of the Agreement on sub-regional arms control. In order to check the hypothesis, we use methods of analysis, including content analysis of the treaties regarding conventional arms control in

Europe and WB, as well as strategic documents of the Western Balkan countries, and analysis of public statements and surrounding narrative of their respective' officials on weapons and military equipment procurements. We also use comparative method, in order to perceive the current and possible future military capacities of the Western Balkan countries, especially procurements of EDTs and their impact on the current balance of forces and stability between the state parties of the sub-regional arms control. We have concluded that EDTs, having in mind their disruptive potential, should be discussed not only within the Sub-Regional Consultative Commission, but in other forums as well, where political and military officials of the Western Balkan countries meet, since it could build trust and increase transparency over the acquisition and potential use of such technologies. Eventually, EDTs may be included in the current regime of the sub-regional arms control through amendment of the ongoing Agreement on Sub-Regional Arms Control, or a new agreement that could define confidence and security building measures in regard to possession and use of these technologies in the Western Balkans. Also, to a greater extent, if ever agreed, a conventional arms control regime that would include EDTs in the area now covered by the CFE, could be extended to the Western Balkans.

The paper starts with the definition of emerging and disruptive technologies and adaptation of that concept to the framework of this paper and analyses relations between the arms control and EDTs. It then gives an assessment of the challenges the Agreement has faced and is still facing and its flexibility to cope with them, with the final aim to explore and compare capacities in emerging and disruptive technologies that the Western Balkan countries have, deeming whether they can upset the current regime of sub-regional arms control.

What are Emerging and Disruptive Technologies?

There is no generally accepted definition of the EDTs concept at this moment and, therefore, the concept is being defined through mutual characteristics, and adapted according to a researching area in which it is used. These technologies are increasingly touching all aspects of life. This paper will narrow the focus on the concept of the EDTs in the area of security. The international security literature usually uses the term "emerging and disruptive technologies (EDTs)" as a whole to mark not only the importance of evolution of technology for international security, but its disruptiveness as well. First part of this concept – emerging – refers to the: a) new, young technologies, technologies that have just been created or developed, and b) older technologies with new fields or ways of implementation and application. Therefore, these are technologies

whose core has just recently been set or their applications discovered and tested in the new ways and fields, along with a continuous learning about their capacities and consequences – positive and negative – in their practical use. The NATO Science & Technology Organization (STO) (2020, 6) includes a specific timeline, when defining what should be considered as an emerging science and technology trend. Emerging are technologies or scientific discoveries “that are expected to reach maturity in the period 2020–2040”. Even if one does not want to accept and include this timeline in the concept of the EDTs, the aforementioned definition helps us to put these technologies and their level of development into a wider timeline and understand that they are our present and the very near future. If these emerging technologies have a potential to disrupt some previous condition, practical relationship, or, in general, any correlation or causality, they are termed disruptive technologies. According to NATO STO disruptive are “technologies or scientific discoveries that are expected to have a major, or perhaps revolutionary, effect on NATO defence, security or enterprise functions” (NATO 2020, 6). The study Persistent Forecasting of Disruptive Technologies (NRC 2010, 11), for example describe disruptive technologies as those that can disrupt or break the previous flow of events, process or activity, implicating confusion or disorder (chaos), or a significant disruption of some structure, as well as discontinuity. The same study explains that the emerging technologies reflect a rise, becoming significant and visible. In this sense, for emerging technologies it is not only important when they were created, but when they become visible and significant for a broader audience, with demonstrated potential to disrupt an existing order, environment, or capacity.

A very important question arises here: when does a technology become disruptive? Certainly, we cannot identify an exact moment, number or some specific criteria, but we can elaborate that a disruption is taking place in practice when a technology improves rapidly and is becoming a mainstream, and very competitive, challenging with other technologies. As it continues to develop, it grows a potential to displace existing technologies, or flow of events, they “upend the *status quo*”, often requiring significant adaptation and reorganization by those affected. From the arms control perspective, it is important that these technologies have applications in the security field and can have significant impacts on the stability and peace in a certain area, meaning that they have a potential to disrupt previously established balance of forces between parties, by giving a certain party a strategic military advantage, to potentially become overpowering, necessitating new approaches to warfare, defence and, of course, new approaches to the arms control. According to the European Defence Fund, a technology becomes disruptive in terms of defence when it develops as an “enhanced or completely new technology that brings about a radical change, including a paradigm shift in the

concept and conduct of defence affairs such as by replacing existing defence technologies or rendering them obsolete” (European Parliament 2022, 1).

When it comes to defining the EDTs concept in regional international security literature, especially from the Republic of Croatia, a term disruptive innovation is also often in use, invoking the definition set by the Harvard professor Clayton Christensen, in *The Innovators Dilemma*. There Christensen claims that disruptive innovations represent a product or service that initially takes root in simple applications at the bottom of a market and then relentlessly moves upmarket, eventually displacing established competitors. In this way it also emerges (Christensen 1997). Some authors give general definitions of EDTs, deeming them as technologies and technological applications that are not yet completely developed, but are in the process of development, and with a potential to disrupt a global stability and security (Favaro 2022, 2). One of the Stockholm International Peace Research Institute’s (SIPRI 2022) conclusions points out that a specific characteristic of these technologies is that not only that they can amplify each other, but can converge, interact with older technologies as well. At the same time, the term EDT can also refer to the convergence of several older technologies in an innovative way, thus creating a new product or service.⁵ When writing about nuclear security and possible implications in this area, Andrew Futter (2021, 2) defines the EDTs as weapons, systems of support and subsystems that are significantly improved, or have been recently fielded, or could be developed in recent future, having a potential to change the way by which nuclear operations are being conducted, or how order, command and control, stability, deterrence, arms control escalation and crisis management function in the area of nuclear security. When identifying possible ways to defeat the US armed forces, the four-year defence review by the Department of Defence (NRC 2010, 8) mentions disruptive strategies that are used as methods of technological surprise, such as cyberattack, or anti-satellite weapon. Even a new form of warfare – disruptive warfare – has been established.

Regarding the scope of the notion of emerging and disruptive technologies there is also no general agreement and different authors put various things into it. For example, the European Defence Agency lists six technologies: quantum-based technologies, artificial intelligence, robotics and autonomous weapons systems, big data analytics, hypersonic weapons systems and space technologies, and new advanced materials (European Parliament 2020, 1). The NATO’s strategy on the EDTs focuses on nine primary areas, such as: artificial intelligence, data, autonomy, quantum-enabled technologies, biotechnology, hypersonic technology, space, novel material and manufacturing and energy and propulsion (NATO 2022). Victor Gervais

⁵ Social networks, such as *Facebook*, can serve as an example here.

(2021, 4), for example, enlists five key military technologies in development that have a potential to play a significant role in a future warfare – robotics and autonomous systems, hypersonic weapons, directed-energy weapons, biotechnologies and quantum technologies. Jane Vaynman (2021) considers the small satellites, drones, artificial intelligence and 3D printing technology as those that renewed arms control regimes should include. Additionally, the Learning Unit on emerging technologies of the European Union’s Non-Proliferation and Disarmament Course considers visible EDTs such as unmanned aerial vehicles (hereinafter: UAVs), military robots and hypersonic vehicles, invisible such as nanotechnology and artificial intelligence and elusive threats such as non-lethal weapons, 3D-Printing, synthetic biology and cybernetic organisms (NPDC E-Learning Course LU 15).

Bearing in mind that this paper considers implications that the EDTs could have on balance of forces and arms control between the states of the Western Balkans, we will adapt the definition, to fit the framework of this paper. As stated before, we will narrow our focus on the concept of the EDTs in the area of security, primarily their military aspect. Therefore, the EDTs include completely new technologies, significantly improved old ones, or innovatively converged old technologies, able to disrupt arranged, as well as current balance of forces. These technologies can ensue these changes in at least four ways: 1. by accumulating significant strategic military advantages to a certain state party, through procurement or development of such a technology, which can, then, trigger the first strike, 2. through a significant upgrade of some of the treaty limited elements (hereinafter: TLEs), making the numerical ceilings and balance obsolete, insignificant and forcing a “weaker” side, or sides, to surpass this situation through quantitative increases of some of the TLEs, 3. by affecting a set verification regime, by, for example, improving the possible concealment of some of the TLEs and 4. by the possibility to disrupt the functioning of existing military capabilities and infrastructure.

In accordance with the previous, we will analyse what EDTs are most commonly connected to arms control regimes, what challenges do they represent to the regimes, as well as whether they could, realistically, have a potential to disrupt the agreed and present balance of forces between the Western Balkans states.

EDTs and Arms Control

Since the EDTs affect the way of preparing for war, as well as the way of waging it, we can ask how and what consequences on arms control regimes do they have. As Bauer (2020) notices, from the arms control perspective, having in mind a dual

nature of the EDTs, the focus is on the emergence of security and military applications of technologies, rather than the emergence of technology as such. From our point of view, the arms control perspective regarding the EDTs, should also include the examination of whether these technologies give a significant military advantage to some of the actors, thus challenging the existing balance of power, whether they increase the motivation of these actors for attack, and if so, in which way, do they impact the established verification mechanisms and can disrupt the functioning of military infrastructure of states. In the case of a positive answer to these questions they must be included or added to existing arms control regimes.

The ongoing conflict in Ukraine examples how important it is to retain control of conventional weapons covered by the Treaty on Conventional Armed Forces in Europe or the Agreement on Sub-Regional Arms Control, but also that the EDTs are becoming more and more important and visible, as well. That is why, these conventional arms control regimes, although they should be preserved, must also be flexible enough to include the EDTs. They could be, for example, upgraded through an annexes, or a new document, such as "The EDTs Code of Conduct". That would certainly contribute to increased trust between the states, regarding to procurements and developments of the emerging and disruptive technologies and their applications and capabilities, mitigating or removing a security dilemma. The actors today should not wait serial production and battlefield deployment to take place, ensuing enormous destruction and/or loss of human lives to negotiate agreements on arms control that include EDTs, but to act preventively, more responsibly and negotiate faster and agree more effectively, because potential consequences to strategic stability, as well as possible damage, can be severe.

Regarding the control criteria, especially those of numerical limitations, they cannot be successfully applied to many EDTs. How could we, for example, limit cyber activities since possible limitations of lines of code are simply useless? Or, how could we numerically limit artificial intelligence? Having the said in mind, one approach is noticeable in literature, according to which application of an entire technology in a certain area should be banned, for example, introducing artificial intelligence to military weapons systems and gear. Although, this approach could prevent many unwanted consequences, such as, for example, a misidentification of friendly forces as of enemy's, it would simultaneously denied many positive aspects, such as, assistance of a computer, enforced with artificial intelligence, helping surgeons in a mobile operating room. At the same time, it is unlikely for policymakers and military officials, especially of those states that have invested billions of their taxpayers' money and are, therefore, leading in development and application of a certain EDT, to easily walk away from possible advantages that the emerging and disruptive technologies offer over their adversaries.

Instead of the object-countable criteria of control, seeming unsuitable for many of the emerging technologies, some experts suggest a behaviour-based criteria of control (Bohn 2022). This approach would define an EDT use by proposing a desirable, responsible, ethical behaviour (both active and passive) when applying a certain technology. This approach would, ideally, allow positive aspects of an EDT application, whilst banning those with negative consequences.⁶ This approach is significantly better, more practical and realistic than the one with a full ban on an EDT application, but is open for an objection, for example, being not able to predict all the possible behaviours with potentially negative impacts (especially when it comes to artificial intelligence). Besides, there is a possibility to limit certain functions of developing such technologies. For example, in the EU Non-Proliferation and Disarmament Consortium's E-Learning Course Unit on emerging technologies (EU NPDC E-Learning Course LU 15, 35), it is stated that "not the autonomous system as such but its 'kill function' needs to be subject of regulation". This represents a functional approach to EDTs arms control. Therefore, what we need is a combined approach that would merge positive experiences from the conventional arms control agreements, as well as specific features and applications of every EDT. Two most significant actor categories are to be recognized in the operationalization of these combined approaches: academia and experts, already engaged in developing new, responsible, ethical approaches, as well as policymakers and military officials, whose will for effective limitations, responsible behaviour and negotiation in general, are key to coming to an agreement on arms control that would really have a practical value.

Means, or measures of verification have shown very useful in practice in building trust between state parties, and, of course, stability and security, as well. Traditional on-site inspections are much more suitable for those technologies which products are countable – drones, hypersonic missiles, autonomous weapon systems - but problematic when it comes to artificial intelligence, cyber tools, even nanotech. On the other hand, the very purpose of the present arms control agreements – post-conflict stabilization, preventing or stopping arms race, respecting (international) humanitarian law and more – are completely fit to replicate onto those agreements that would serve to control the EDTs applications in weapon systems.

A specific problem in connection to these agreements, even bilateral ones (and especially with regional, or even multilateral, global ones), regards to the negotiating process. It is very important here to underline the time-frame of negotiating, and hardships of ratification of what had previously been negotiated,

⁶ In this sense, means of cyberwarfare could be banned from using to attack non-military infrastructure, that is, the infrastructure which damage or destruction would not affect adversarie' military capacities, but would trouble civilians.

because one of the EDTs features is a very rapid and often exponential development. This could mean in practice that what was previously agreed now becomes obsolete, not applicable in the moment of ratification, which can easily serve as an excuse for state parties not to cooperate accordingly.

EDTs in the Western Balkans: Can they disrupt the present balance of forces and be included in the Agreement?

Flexibility of the Agreement on Sub-Regional Arms Control in the face of many challenges

In analysing the Agreement on Sub-Regional Arms Control in the Western Balkans in order to include EDTs, it is important to have in mind the goals for which the mentioned agreement is negotiated, as well as the most significant reasons of its successful implementation. Simultaneously, it is important to include factors such as still unresolved territorial issues and the status of Kosovo and Metohija, different defence options, strategic perception of a neighbouring country, recent military spending of the Western Balkan countries, political will for negotiating and implementing an international agreement of any kind, and nature of international relations in general. Rising conflict between great powers significantly impacts the area of the Western Balkans, affects the level of trust and balance of forces between the state parties of the sub-regional arms control agreement. This approach systematically reckons main global and regional factors, affecting presence, development and application of the EDTs, along with their eventual consequences on a present balance of forces and arms control.

First, the sheer purpose of the Florence Agreement is in setting obligations for the state parties, in order to create an environment suitable to advance post-conflict stabilization in the region, build trust and cooperation and prevent another conflict and arms race between the states parties to the Agreement. Furthermore, the successful implementation of the Agreement is not only a result of a really responsible behaviour of the state parties, but international factor is also important in many ways. First of all, the agreement was signed under the supervision of the OSCE, while the NATO forces on the ground deterred the use of force to solve disputes between the Western Balkan countries (Ejdus 2012). Moreover, given the strategic commitment of all WB countries to the European Union membership, a pressure in terms of conditionality policies is also one of the factors of the

successful implementation. Having in mind the successful implementation of the Agreement, we can conclude that the political factor is crucial.

Today, the state parties still respect numerical limitations, and conduct agreed measures of verification and information exchange (Marković and Petrović 2021). State parties to the Agreement have obliged themselves to norms to achieve a post-conflict stabilization, prevent an arms race, and build trust, stability and security in their environments. Modelled after CFE Treaty, the Agreement as well limited the number of tanks, armoured combat vehicles, artillery (calibre greater than 75mm), combat aircraft and attack helicopters of the three original states participating in the Agreement according to the 5:2:2 ratio, based on the approximate ratio of populations of the Parties. The Agreement (Annex 1-B, article IV) provided for other criteria, besides population size, such as military armament holdings, defence needs, and relative force levels in the region, but also stated that in the absence of an agreement on the exact criteria, the approximate ratio of the population size would serve as a basis for determining balance of forces. According to this ratio, the “baseline” was the determined holdings of the Federal Republic of Yugoslavia. The limit for the Federal Republic of Yugoslavia was set at 75% of the baseline, while for the Republic of Croatia and Bosnia and Herzegovina it was 30% of the baseline. The allocations for Bosnia and Herzegovina were further divided between the Entities on the basis of a ratio of two for the Federation of Bosnia and Herzegovina and one for the Republic of Srpska. The parties also agreed to voluntarily limit their military manpower: FRY 124,339, Croatia 65,000 and BH 60,000 troops. In 2007, according to the bilateral agreement between Serbia and Montenegro, the FRY limits were divided – 67% for Serbia and 8% of the FRY of the baseline for Montenegro. The Agreement also obliges states parties to hold force levels on and below the limits, annually exchange information on and allow inspections of their military holdings, and has established the Sub-Regional Consultative Commission, the main implementation body which holds its meetings twice a year. Although originally signed under the supervision of the OSCE, in 2015 it was left to the state parties to enforce the implementation of the Agreement.

The state parties are united in marking the Agreement as one of the most significant stabilization factors in the Western Balkans up to this day. During 1999 and the war with NATO, the Federal Republic of Yugoslavia suspended it, but soon after returned to its compliance. It changed parties several times due to the unification of the armed forces in BH and the further change of state structure in 2003 and dissolution of the Federal Republic of Yugoslavia in 2006. The original Agreement has been amended three times. In 2006, when the defence ministries of the two entities in Bosnia and Herzegovina were terminated and responsibilities transferred to the state level, the number of acting parties of the Agreement were reduced to three: BH,

Croatia and the State Union of Serbia and Montenegro. In 2008, after Montenegro became a party to the Agreement in January 2007 and signed a bilateral agreement with Serbia on the principles and procedures for implementing the Agreement. For the third time, the Agreement was amended in 2015, after state parties took responsibility for the implementation of the Agreement from OSCE.

Unilaterally declared independence of Kosovo⁷ in 2008 and the development of the Kosovo Protection Corps into Kosovo Security Forces and since 2018 almost an army, with significant military personnel and equipment, is posing another important challenge to the sub-regional arms control regime, since only demilitarization of Kosovo Liberation Forces was part of 1999 agreements for retreat of Serbian forces and establishment of international military presence in the province.⁸ Thus, an inclusion of some kind of “Kosovo Army” in the Sub-Regional Arms Control agreement would theoretically imply the recognition of the status of current so-called Kosovo security forces as a Kosovo’s military/Armed Forces. In such case, the same method as with Montenegro could be applied – further sharing of the FRY limit now to three parties – Serbia, Montenegro and Kosovo. After independence, Serbia’s limit was set to approximately 67% of the baseline, and Montenegro’s to 8%. In the case of inclusion of Kosovo, having in mind the population ratio, the division would be approximately between 43% of the baseline for Serbia and 14% for so-called Kosovo. The other extreme option for Serbia, in case of further non-recognition of so-called Kosovo and its Army, would be the suspension or withdrawal from the Agreement until some limits and guarantees for the development of Kosovo Security Forces are set (or complete demilitarization), which would on the other hand risk the established level of cooperation and arms control among the parties. Between the recognition of so-called Kosovo and its Army, and its inclusion in the Agreement as a signatory party, on the one hand, and Serbian withdrawal from the Treaty in search for the demilitarization of Kosovo, on the other, maybe lies a “grey area” which should be explored, if needed. The question of do we need Kosovo in the arms control agreement, and, if yes, how, certainly deserves a separate research.

One more challenge to the established balance of forces and stability among the state parties, especially from the defence options point of view, regards the NATO enlargement. Croatia has been part of NATO since 2009 and Montenegro since 2017, while Serbia and BH entity Republic of Srpska declared their military neutrality. Also,

⁷ All references to Kosovo in this document should be understood to be in the context of United Security Council resolution 1244 (1999).

⁸ The Kosovo’s Ministry of Defence was formed in 2018.

failure to reach the Article V Agreement – “Regional arms control agreement” – with the goal of establishing a regional balance “in and around the former Yugoslavia” is not of less importance. Austria, Albania, Slovenia and North Macedonia are not part of any arms control agreement (CFE or on sub-regional arms control) and arms limitation and verification measures. Austria is militarily neutral, while Albania (since 2009), North Macedonia (since 2020) and Slovenia (since 2004) are NATO members.

Regarding strategic documents on national security of the Western Balkan states, they perceive immediate security environment in a similar way, concluding that certain security challenges and threats come from the neighbourhood, as well as that the possibility of an aggression is decreased, but not entirely excluded. Through a comparative analysis of the states’ military spending for 2017-2021 timespan, increased spending for armed forces are noticeable, especially in the cases of the Republic of Croatia and the Republic of Serbia (SIPRI 2021). Also, a noticeably decreased transparency of planned spending must be pointed out. On one side, there might be some security advantages of such an approach, but this practice, especially if it intensifies in the future, could have a destabilizing potential for relationships in the region, raising doubts about the real intentions of the parties to arm themselves.

Political rhetoric is an extremely powerful factor in creating and moulding social-political processes, and can have a stabilizing, or escalating potential. Experiences from events on the area of the former Yugoslavia in the last thirty years teach us that irresponsible, populist rhetoric can trigger catastrophic consequences. In the recent years, it seems that the rhetoric between the highest policymakers in the Western Balkans is becoming increasingly irresponsible. Bearing in mind the lack of real success in creating prosperity and rule of law, political elites use an ungrounded, intolerant, often vulgar rhetoric that sometimes turns into chauvinism, all in order to gain political points in the process of obtaining and retaining power. Clearly, this practice does not contribute to building trust and cooperation, on contrary, it can surely have a destabilizing potential.

In the end, the growing conflict in relationships between great powers — especially in the light of Russia’s military campaign in Ukraine and perception of China as the main competitor to the United States — also affect the relationships between the state parties of the sub-regional arms control agreement. Having in mind the defined national interests of the Republic of Serbia and Republic of Srpska in Bosnia and Herzegovina and their procurements in armament connected to the EDTs, distrust in state’ intentions are increasing, along with the increasing conflict potential.

Summarizing the mentioned factors, ongoing on the area of the Western Balkans, we can conclude that the security environment in the area is complex, with overlapping stabilizing factors, such as the present arms control regime and

tendency to EU integration, and destabilizing ones, such as the flammable, populist political rhetoric, progressive increase in military spending, characterized by decreased transparency, and relationships fuelled with great powers competition. The shaping of this conclusion is important, because of the projections on the EDTs disruptive potentials, appearing in the Western Balkans, because no technology itself is a key factor in provoking and escalating a crisis, but rather the broader political context in which technology is used.

On this occasion, it was important for us to point to the flexibility of the Sub-Regional Arms Control Agreement, despite of many challenges, in order to get to the possibility of one more transformation - to address and include the issue of emerging and disruptive technologies for the purpose of maintaining the balance, stability and predictability among the state parties in the WB.

Who possesses what: Can the EDTs in the Western Balkans disrupt the existing balance of forces?

This part of the paper focuses on the overview of the EDTs currently present in the Western Balkans region — according to the publicly available data — as well as those which development and more intensive application, according to the current science and technology trends and capacities, could be expected in the upcoming period: unmanned aerial vehicles — drones, artificial intelligence, small satellites and tools for cyberwarfare. While analysing their potentials to disrupt the present balance of forces, their independent applications will be considered, as well as their convergence with older technologies, in order to upgrade the later ones in an innovative ways. On the other hand, application of nanotech in the area of military weapons and gear at armed forces of the Western Balkans countries does not represent a significant factor, because there is no publicly available data regarding a development or application of this technology at this moment. Situation with lethal autonomous weapon systems is similar. Operating autonomy and autonomous weapons as notions/terms are often wrongly interpreted and used in public statements given by policymakers, military officials, even experts, and analysts or commentators. No publicly available data indicates that autonomous weapon systems are present in the area of the Western Balkans at the moment, but there are those with automatized operating modes, or automatized actions. The hypersonic missiles technology currently remains out of reach for the WB states.

Drones do not represent a new technology anymore, but their development (as well as development of the connected technologies, such as the GPS and satellite communication links), increasing and diversifying application in armed conflicts of

various types, point to a significant disruptive potential in balance of forces, as well as the potential to change characteristics of modern warfare – already seen in Nagorno-Karabakh conflict, as well as in the ongoing one in Ukraine. One of the significant appealing factors to develop, procure and use aircrafts of this type is their affordable price. Namely, “... aerial vehicles of this type are, as a rule, significantly cheaper than combat aircrafts and helicopters, decreasing a damage in case of a loss, while having a potential, on the other hand, to destroy much more valuable assets” (Jevtić 2021, 41). Therefore, they allow armed forces with low budgets to engage in the so-called asymmetric conflict, in terms of conducting reconnaissance-combat activities traditionally reserved for very expensive aerial systems. Also, not only that drones are suitable for an independent use, but they are an excellent examples of how a new technology can converge with an older one in order to improve the later – for example, drones can effectively be used to mark targets or correct artillery fire. The reason why drones are included in this research – even though they are not an emerging, but already emerged technology at the moment – is that, first, the acquisition and development of this technology have gained momentum pretty recently in the region and, second, drones are being widely discussed and promoted among top military officials and policymakers in the region.

Through a comparative analysis of the publicly available and confirmed information regarding the presence of drones in the armed forces of the Sub-Regional Arms Control Agreement states parties, first of all, we can conclude that these systems appeared in the region, due to completed procurements from outer partners such as Israel, China and Turkey. Various Turkish drones are being increasingly mentioned lately as possible procurements for the armed forces of the Republic of Serbia and those of Bosnia and Herzegovina. The Croatian Ministry of Defence promoted the Israeli *Orbiter 3B* system, manufactured by *Aeronautics*, in 2019 for the first time, as a system that will significantly improve data-collecting and reconnaissance capacities⁹ (MORH 2019). The Israeli *Elbit Skylark 1* systems are in use at the Croatian armed forces for several years now, and public information regarding a total number of 4 operational pieces should be taken with reserve.¹⁰

The first armed drones of the Air Force and Air Defence (AFAD) of the Serbian Armed Forces have been fielded thanks to the military-technical cooperation between the Republic of Serbia and China. Foreign sources point out that the procurement was arranged in 2018 (New America 2022), while Serbian media

⁹ Information regarding the delivery of a total of six UAVs of this type are not publicly available.

¹⁰ Some media reported that in March 2022 one UAV of this type was taken down above the city of Kosovska Mitrovica (Novosti 2022).

released this news during 2019, and a number of six *CH-92* UAVs were promoted in July 2020 for the first time. The same source recognizes the Republic of Serbia as the only Western Balkans country in possession of armed drones. As a result of a technology transfer within the Serbian-Chinese military-technical cooperation, the Serbian arms industry project *Pegasus* has been successfully developed and the process of fielding is ongoing. The short-range *Sparrow* UAV, also one of the Serbian arms industry projects, is designed to conduct scouting and reconnaissance tasks. In connection to development of the national capacities, there is also a role of the private companies in the Republic of Serbia such as *Pink Research and Development Centre* which develops UAVs for civilian use, but also cooperates with the Ministry of Defence and Serbian Armed Forces. The *Damiba Trade Company* is a successful supplier for the needs of the Serbian Ministry of Defence and Ministry of Internal Affairs, and in August 2020, it won a tender to deliver 4 commercial aircrafts to the Montenegrin Ministry of Defence, planned to be used in search & rescue tasks, as well as in training of personnel (Tango Six 2020). The procurement of the four UAVs is by far the only publicly available information in regard to the UAV capacities of the Montenegrin Armed Forces. Starting from 2020, there is some unconfirmed information regarding interests of the Armed Forces of Bosnia and Herzegovina, to acquire Turkish drones of various types, from those reconnaissance ones, to the so-called kamikaze-drones, but there are no publicly available data on completed procurements at the moment. According to statements from the highest political and military officials, the Republic of Serbia is also interested in Turkish-made UAVs, especially those armed ones, such as *Bayraktar TB2* (OVD 2022).

Comparing the current capacities and stated interests, including possible procurements, it is clear that the capacities of the AFAD of the Serbian Armed Forces are currently the strongest, especially in terms of armed UAVs. However, publicly available information suggest that the armed forces of the state parties to the Agreement in the Western Balkans possess only a modest number of different UAVs, from several, to maybe, a dozen. Those potentials are for now not able to disrupt the balance of forces, but in future, especially if the procurements and developing capacities of the national arms industries intensify, could trigger arms race. This is where their combat fielding with its ensuing consequences comes into a spotlight. Reconnaissance and armed, combat drones are being extensively used and their effectiveness is being confirmed in ongoing conflicts, especially in Ukraine. When it comes to armed drones, the so-called kamikaze drones are being fielded more extensively (both individually and in swarms) and are proving to be effective against enemy personnel, fortified positions, as well as against much more complex and expensive systems, such as tanks, artillery pieces etc. These are among the main reasons for their increased demands on the market. Many policymakers are

literally racing against themselves to lock deals on drones at international exhibitions and introduce them to public afterwards. And, if we wrap these facts with their significantly affordable price, as well as with the fact that the technology has already taken roots in the WB, we can offer a simplified projection: drones, especially armed ones — particularly kamikaze versions — will probably grow significantly in numbers in the region. And if the AFAD of the Serbian Armed Forces is leading the way at the moment, we can also expect other actors to beef up their capacities, in order to prevent the Serbian part to overpower. This is why we believe that drones have a strong potential to disrupt the ongoing balance of forces in the WB and should be part of arms control in the region. Besides this arms race perspective, in the strained international relations, gaining such a technology from actors like China in the NATO environment pose another side of the reason why arms control and CSBMs should be endorsed in the region.

When it comes to development and application of artificial intelligence, systematic overview of the current capacities represents a much bigger challenge for an outer observer, therefore those conclusions derived from public information should be taken with reserve. This is due to several factors. First of all, it should be noted that the development of artificial intelligence is very costly, therefore, the richest countries, such as the USA and China, lead the way, as well as the multinational companies, such as *Google*, or *Facebook*. The States in the Western Balkans do not have significant developing capacities at this moment. Nevertheless, this notion is often being used in public statements given by political, military officials, experts, commentators etc, usually incorrectly. This is commonly because of misinterpretation of terms such as narrow and general artificial intelligence. In assessing the current capacities of the Western Balkans states in application of artificial intelligence, we can use the Government AI Readiness Index, created by Oxford Insights and International Development Research Centre. According to the 2020 index, Serbia was in 46th, Croatia in 58th, Montenegro in 70th and Bosnia and Herzegovina in 100th place (Oxford Insights 2020). The Report from 2021 ranked Serbia in 52nd, Croatia in 61st, Montenegro in 75th, and Bosnia and Herzegovina in 96th place (Oxford Insights 2021). Report from 2022 ranked Serbia in 61st place, Croatia in 68th, Montenegro in 78th and Bosnia and Herzegovina in 114th place (Oxford Insights 2022). The Republic of Serbia is the only among the mentioned countries to have issued a special strategic document in regard to artificial intelligence — The Strategy for the Development of Artificial Intelligence in the Republic of Serbia for the Period 2020-2025 (Official Gazette of the RS, No. 96/2019).

Artificial intelligence (hereinafter: AI) application in the area of military armament and gear has a huge potential. The technology can be implemented independently, or used for significant improvements of older technologies, for

example to beef up target recognition and acquisition in armed, or obstacle avoidance in reconnaissance drones. Or, when it comes to managing complex armed systems, an advanced AI software has an enormous potential to speed up decision making, both in attacking and defending operations, especially against multiple and/or fast-moving targets – scenarios in which human operators cannot compete in terms of effectiveness. In other words, an AI software can amplify the scale and/or intensity of a military operation much more than trained human operators and win a crucial strategic advantage. However, these capacities are not fully transparent in the world, because the development, testing and application are both very expensive and exponentially beneficial. Furthermore, given the aforementioned and considering the global and ongoing debate on whether should we move away from, or fully embrace the development and application of AI, one may argue that it will probably take some time before we witness a more extensive use of the AI powered systems on the battlefield. can conclude, therefore, that a conscience about artificial intelligence in the Western Balkans is developing, as well as that the current capacities, most likely, do not have a potential to disrupt the balance of forces, but it could be the case in the future, if, for example, a significant transfer of technology occurs, either between the NATO members, or, for example, between the Republic of Serbia and China, within the Serbian-Chinese extensive cooperation. Even though this EDT does not show a disturbing potential in the WB at the moment, a prudent and proactive approach to the existing or future arms control regimes, should take it into consideration.

When it comes to the small satellite technology, it should be pointed out that countries that do not have indigenous capacities often reach out to private sector actors, in order to acquire certain data. The current situation with a development of small satellites, that is, space programs, in the area of the Western Balkans, is especially interesting in the cases of the Republic of Croatia and the Republic of Serbia. General public is probably not familiar with the fact that the Committee for Space Programme Development, from the city of Novi Sad, actively operates and intensively cooperates with foreign partners and, among other things, participates in the Indian “75 Satellites” program. According to the words of the Committee director, the partnership with Indian colleagues is at strategic level (RTV 2022). As an NGO, the Committee is ready for a strategic partnership with the state, but that, along with the first Serbian-made satellite, are yet to come. In the Republic of Croatia, small satellite planning is set as a national *Perun* project, with experts from the Adriatic Aerospace Association at the helm, and broader academia and STEM (Science, Technology, Engineering and Mathematics) students participating as well. Development and application of the satellite technology has an exceptional potential in improving intelligence capacities and data collection in general. Bearing

in mind the importance of data collection, and on-time information distribution for the flow of modern warfare, especially when it comes to special operations, or various asymmetric conflicts, it is clear that the satellite technology can greatly aid in accumulating advantage over an adversary. In practice, the satellite technology can have a destabilizing and, interestingly, a stabilizing potential as well. Namely, if a country A launches a satellite for military purposes, country B can react with an increased development and launch of its own satellite, or with a development or acquisition of anti-satellite weapon (which could further act as a trigger for arms race), maybe even with a preemptive strike against the country's A capacities (more on military perspective of ASAT you can find in Stojanović 2021, 441-442). On the other hand, if both states should possess the satellite technology, that fact combined with mutual perceptions of each state intentions, could have a stabilizing effect, even making arms control regimes if not unnecessary, then less needed, at least. This is because, when states are able to achieve optimal transparency using their own capacities, that is, to identify violations of the previously agreed behaviours, without additional information provided by the other side, then agreements without verifications can be possible, meaning that the ability of unilateral monitoring and data collection, even classified¹¹, could be conducted without an arms control agreement (Vaynman 2021).

In 2011, the US Department of Defence defined cyberspace as one of the operational domains, aligning it with the previously defined domains of warfare — land, sea, air and space. There are several specific features in connection to cyberspace and cybercrime, important to point out. So, besides the mentioned hardships to include cyberspace and malicious cyber operations in an arms control regime, it should be stated in the beginning that notions/terms such as cyberwarfare, cyberattack, cyberspace and other, are not precisely defined, nor generally accepted at an international level. Methods through which malicious cyber operations can be conducted are almost limitless, because they actually represent lines of code. Actors who conduct such activities, state or non-state, or those sponsored by foreign states, are, usually, hard to identify and follow, which allows states to either deny involvement in any way, or to fake the source of the attack and thus involve a third, innocent state, or other actors. Deeming the previous, we can conclude that conduction of malicious cyber operations allows actors of significantly lower strength to attack significantly stronger adversaries, inflicting a significant damage on the occasion, for example, by targeting critical infrastructure, and likely to stay hidden on the occasion, or divert doubt to a third

¹¹ For example, data collection using the satellite technology above foreign military bases.

party. Weak, general legal framework at an international level also goes in favour of evading accountability for malicious consequences that can be enormous, indeed. In other words, the synergic relationship between the perpetrator's sources invested, many times bigger potential or inflicted damage, as well as the significant possibility to evade responsibility, motivates all types of actors to develop and constantly conduct such activities.

The most significant strategic documents of the Western Balkans states, such as National Security Strategy of Montenegro from 2018, Guidelines for a Strategic Cybersecurity Framework in Bosnia and Herzegovina from 2019 and others, recognize cybercrime as one of the most dangerous national security threats, which, among other things, suggest that countries and security systems agree that it really is a serious threat, potent to disrupt stability, security and balance of forces. However, it is very difficult to attain a real impression on the Western Balkans states' capacities for cyberwarfare¹² because, given the aforementioned reasons, the states are not eager to make those capacities transparent, for well equipped, trained, motivated and instructed cyberwarfare groups represent real aces in states' arsenals of powers. Therefore, it does not come as a surprise that there have been no confirmed cyberattacks in the area of Western Balkans that include any state party as a perpetrator, or actors supported by any of the state parties.

Malicious cyber operations do have an enormous potential to disrupt stability and security, as well as to disrupt the balance of forces in the Western Balkans region. Having in mind the aforementioned characteristics, we can argue that this EDT precisely, at this moment, probably has the largest potential of all the mentioned ones, to disrupt the balance of forces in the Western Balkans, because critical infrastructures of the countries in the region are exposed to these activities.

Conclusion

The complex security environment in the Western Balkan area, with all its stabilizing and destabilizing factors, affects the shaping of a broader political-security context where the emerging and disruptive technologies are appearing and developing and can significantly mould the way of their practical use. As pointed in this paper, provisions of the Sub-Regional Arms Control Agreement are

¹² Cyberwarfare capacities of the NATO member states should be perceived in connection to that fact as well, because, depending on a political context, it can be a cause for sharing and transferring of technology, or highly trained specialists.

being effectively implemented, so it is right to conclude that the Agreement still represents a factor of stability, when it comes to conventional arms and warfare. One of the factor that contributed to that fact is its flexibility. Furthermore, through comparative analysis of the Western Balkans states EDTs capacities, we can conclude that these capacities are being developed, but do not have a potential to disrupt the balance of forces set by the Florence Agreement at this moment.

However, that does not mean that the answer to the research question — do we need a new arms control regime — is negative, on contrary. A responsible approach to increase of stability, trust and transparency between the Western Balkans countries should include, at the very least, updating the existing agreement and, more optimistically, drafting additional ones. Update of the existing agreement should be carried out so that new provisions are fitting the nature of the present EDTs, as well as their applications in the area of military armament and gear, meaning the provisions could apply to the so-called asymmetric conflicts, not just the traditional warfare. In that sense, for example, the existing Agreement could be extended with numerical limitations on operational, armed unmanned aerial vehicles that state parties are allowed to possess, excluding those scouting and reconnaissance, and those of clearly civilian/commercial purpose. On the other hand, considering probably the largest disruptive potential of the malicious activities conducted in cyberspace, it would be prudent to create exceptional confidence and security building measures for this domain that would rest on the so-called behavioural criteria, in terms of banning certain malicious behaviour, for example, conducting cyber operations that target civilian critical infrastructure. One of the first actions to be undertaken in order to build confidence and security, may regard to increasing transparency of new armament and gear procurements, especially of the EDTs that can raise doubts due to their nature. In that sense, it would be responsible to create a regional EDTs Code of Conduct.

It is obvious that the operationalization of the current and/or drafting new arms control instruments would require real political will that would, in addition to a sincere desire for cooperation, include practical speed of negotiations. In connection to that, the current cooperation mechanisms, set by the Florence Agreement could be used for this kind of communication as well. Moreover, it would be very responsible and in accordance with transparency and confidence build-up, to establish expert groups at national levels that would continuously follow development and applications of the EDTs in the world and the region, and communicate in terms of information and experience exchange, with the Florence Agreement established cooperation mechanisms seeming appropriate. In addition, at the Western Balkans level, a joint centre could be established, as a base to converge information from national levels.

The centre could operate as a generator of suggestions regarding future arms control regimes, with responsible, ethical use of the emerging and disruptive technologies.

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**NOVE I OMETAJUĆE TEHNOLOGIJE NA ZAPADNOM BALKANU:
DA LI NAM JE POTREBAN REŽIM KONTROLE NAORUŽANJA?**

Apstrakt: Predmet ovog rada je istraživanje odnosa između novih i ometajućih tehnologija (EDT) i podregionalnog režima kontrole naoružanja na Zapadnom Balkanu, uspostavljenog Sporazumom o podregionalnoj kontroli naoružanja koji je potpisan 14. juna 1996. u Firenci. Da li EDT koje zemlje Zapadnog Balkana poseduju ili planiraju da steknu utiču na postojeću jednačinu kontrole naoružanja na ovom prostoru i, ako da, da li nam je potreban novi režim kontrole naoružanja? Autori istražuju ovo pitanje kroz analizu novih i ometajućih tehnologija koje su se ukorenile u državama stranam Sporazuma i verovatno će postati značajne u budućnosti, i režima podregionalne kontrole naoružanja, uzimajući EDT kao jednu od varijabli koja dovodi u pitanje postojeći režim kontrole naoružanja. Oni upoređuju trenutne EDT kapacitete koje poseduju države Zapadnog Balkana, kao i potencijal tih tehnologija da naruše ravnotežu snaga utvrđenu Sporazumom. Autori zaključuju da, iako nam nije potreban potpuno novi sporazum o kontroli naoružanja na Zapadnom Balkanu, odgovoran pristup bi uključivao ažuriranje postojećeg režima kontrole naoružanja, posebno u pogledu novih mera za izgradnju poverenja i bezbednost i povećanu transparentnost po pitanju nabavki i prirode potencijalne upotrebe novih i ometajućih tehnologija.

Ključne reči: nove tehnologije, ometajuće tehnologije, kontrola naoružanja, podregionalna kontrola naoružanja, Zapadni Balkan.