

POSSIBILITIES OF UKRAINE'S INTEGRATION INTO MILITARY-TECHNICAL COOPERATION AND DEFENSE INDUSTRY IN EUROPE

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The dynamic development of military technologies during the Russian-Ukrainian war, along with the continuous process of modernizing the Armed Forces of Ukraine (AFU) and reforming the Ukrainian defense industry, simultaneously increasing the pace of Ukraine's integration into the European Union, shapes new impulses, meanings, and paradigms for fulfilling the tasks of providing for the needs of the AFU. The emphasis is on high-tech weaponry and military equipment that provides an "asymmetric" advantage over the adversary.

In these conditions, the development of cooperation in the defense industry between Ukraine and EU countries focuses on the urgent needs of the AFU, both in basic armaments (ammunition, artillery, armored vehicles, air defense, etc.) and advanced high-tech systems used on the battlefield. However, participation in projects such as GCAP and SCAF, which have undefined technological implementation frameworks, and the expected results extending beyond the planning horizon of 2035-2040, as well as vague funding volumes, are considered impractical.

Further development of Ukraine's cooperation with the EU in the defense industry is advisable to build through the prism of the new EU Priorities for the Development of Military Capabilities – 2023 and to orientate towards projects involving the participation and coordination of the European Defense Agency. In addition, the implementation of bilateral projects between Ukrainian and European defense-industrial companies to achieve specific practical results in the shortest possible time can be effective. Furthermore, the format of the Defense Industry Alliance with regular International Defense Industry Forums (DFNC) is considered promising in both global and regional variants, including with EU countries.

SITUATION ASSESSMENT

The current course of the war between Russia and Ukraine shows signs of transitioning from armed conflict to a phase of positional warfare and attrition. Consequently, there is an urgent need to reconsider approaches and paradigms for the further implementation of Ukraine's defense tasks, taking into account the necessity of technological advantage on the battlefield and ensuring sufficient production capabilities for the continuous and prolonged increase in supplies of advanced weaponry and military equipment.

The combat experience gained during the Russian-Ukrainian war indicates the need to change priorities in the development and production of military weapons and equipment (MWE), with a focus on weapon systems that provide a technological, so-called "asymmetric" advantage for the AFU on the battlefield.

Examples of "asymmetric" weapon systems for the AFU based on combat experience include:

- Unmanned autonomous systems for various purposes (including FPV drones, tactical and operational level loitering munitions, reconnaissance UAVs, ground autonomous systems, including for demining).
- Unmanned strike and reconnaissance maritime platforms for operations in the Black Sea.
- High-precision long-range strike systems, such as long-range loitering strike systems (drones-kamikaze up to 1000 km), cruise missiles, operational-tactical missile complexes.
- Electronic warfare systems for various purposes.
- Anti-aircraft and anti-missile defense systems.

In his article for *The Economist*, published on November 1, 2023, Chief Commander of the Armed Forces of Ukraine, General Valerii Zaluzhnyi, emphasizes¹ that for success on the battlefield, the AFU must have air superiority, the ability to conduct deep breakthroughs of minefields, effective counter-battery tools, and efficient means of electronic warfare and reconnaissance.

Moreover, General Zaluzhnyi², while specifying the ways to acquire these combat capabilities, focuses not on traditional instruments of warfare of the 20th century but on "asymmetric" state-of-the-art technologies. He believes that through a suitable combination, these technologies can ensure a breakthrough on the battlefield and escape from the trap of positional warfare into which Russia is trying to draw the AFU. The Chief Commander

¹ https://infographics.economist.com/2023/ExternalContent/ZALUZHNYI_FULL_VERSION.pdf?fbclid=IwAR0Ls6yv1IsN-pbnFuLGmccBWqt2Je3u5WCjGGTRIPIE1ixw8B_RMLCxeM

² <https://www.economist.com/by-invitation/2023/11/01/the-commander-in-chief-of-ukraines-armed-forces-on-how-to-win-the-war>

highlights the importance of drones as part of the strategy to gain air superiority. Ukraine needs to launch massive attacks using decoys and strike drones to overload Russia's air defense systems. Zaluzhnyi states, "We need to hunt Russian drones with our own hunter drones equipped with nets. We must use electronic decoys to neutralize Russian glide bombs".

He emphasizes that Electronic Warfare (EW) technologies are the key to victory in modern drone warfare, just as the new technological level of counter-battery warfare aims to destroy enemy artillery. Additionally, he mentions innovative approaches to demining, incorporating modern sensors that detect mines in the ground and allow units to quickly neutralize them. Overall, the Chief Commander of the AFU underscores the necessity of combining advanced technologies to create conditions for gaining an advantage and seizing the initiative on the battlefield.

Considering the trends in the development of the Russian-Ukrainian war and the global situation, the positions outlined in Zaluzhnyi's article will remain relevant for a considerable period. Therefore, the focus of implementing weapons and military equipment development programs in the medium and long term will be directed towards the specified technological segments, such as drones, EW, control systems, communication, counter-battery warfare, demining systems, and others.

On November 14, 2024, the leadership of the European Defence Agency (EDA) adopted the 22 EU Capability Development Priorities³ for the modernization of the armed forces of EU countries, taking into account changes in the regional and global military-political environment. As highlighted by the Chairman of the EDA and the High Representative of the EU for Foreign Affairs and Security Policy, Josep Borrell⁴, "the adopted Priorities are intended to provide an effective and efficient format that will enable the management of defense planning and all EU defense initiatives. While maintaining conceptual alignment with the goals of the EU Strategic Compass for Security and Defence⁵, the new Priorities will allow EU member states and their armed forces to be better prepared for the constantly changing and deteriorating security environment. It is time to transform these priorities into concrete defense cooperation projects to ensure more resilient, flexible, and robust European armed forces ready to face current and future threats".

The new Priorities were developed based on the results of the review of the EU Capability Development Plan (CDP), taking into account changes in the EU's strategic environment and the lessons from Russia's aggressive war against Ukraine. Based on these new Priorities, the Coordinated Annual Review on Defence (CARD), projects under the Permanent Structured

³ <https://eda.europa.eu/docs/default-source/brochures/qu-03-23-421-en-n-web.pdf>

⁴ <https://eda.europa.eu/news-and-events/news/2023/11/14/eu-defence-ministers-agree-to-prioritise-22-military-capabilities-to-bolster-european-armed-forces>

⁵ https://www.eeas.europa.eu/sites/default/files/documents/strategic_compass_en3_web.pdf

Cooperation (PESCO), the functioning of the European Defence Fund (EDF), and other future EU defense instruments will be reviewed. In essence, this involves a review of the EU's defense development strategy, including joint projects in the field of defense industry development. The new Priorities are intended to drive scientific research and innovation within the EU, based on joint research and industrial programs in EU countries. According to the new approaches, EDA will manage joint activities in the development of armed forces' capabilities, coordinating multinational projects within the European Union through the mechanisms of CARD, PESCO, and bilateral dialogues with each EU member state as a forum to support implementation and potential joint activities for capacity development with others.

Overall, the adopted document includes 22 priorities grouped into main directions:

- Ground Forces – particularly, the development of ground combat systems (including autonomous ones); high-precision means of ground-based attack; "soldier of the future" systems.
- Air Forces – combat aviation systems (both manned and unmanned); airbase management and information exchange systems; integrated air defense and missile defense systems; transport aviation.
- Naval Forces – combat (both traditional and unmanned/autonomous) naval systems; underwater systems (with a focus on unmanned and autonomous systems); surface and subsurface situation awareness systems.
- Space Sphere – space operations and space services.
- Cyber Space – combat capabilities for providing full-spectrum cyber defense; systems for gaining advantage and readiness in cyber operations.
- Strategic capabilities enhancement and support systems – operations for electromagnetic spectrum dominance; resilience and robustness of C4ISR (Command and Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance); troop mobility; protection of critical infrastructure and energy security; resilient and rapid logistics; medical support; radiation, chemical, biological protection; training and preparation of professional personnel.

In general, the new priorities are intended to serve as a starting point for the development of joint defense-industrial projects within the EU, which have recently suffered from a lack of funding and motivation to achieve common goals in strengthening European defense capabilities. The existence of dozens of formats, projects, and research directions in the defense-industrial sector carried out within the activities of the EDA and the EU Common Security and Defense Policy has, in practice, achieved minimal practical results. This is partly due to the lack of unity in defining priorities for enhancing the combat capabilities of the armed forces of EU countries. Moreover, the implementation of new prospective projects

often showed signs of competition among European countries, typically oriented towards the interests of national defense industries rather than the overall European goals of the Common Security and Defense Policy. In this context, the United States, capitalizing on the absence of consolidated strategic approaches to building the combat capabilities of European armies, effectively advanced their own high-tech weaponry and military technology into the European defense market.

A vivid example of the inefficiency of joint European efforts in the defense-industrial sector is the situation with the modernization of the air forces of European countries with prospective multi-functional combat aircraft of the 5th-6th generations. Within the framework of the EDA, projects for the development of prospective aviation platforms remained at the level of conceptual discussions for many years without corresponding funding and the participation of most EU countries. Meanwhile, the United States successfully expanded the presence of their 5th-generation aircraft, the F-35 Joint Strike Fighter, in the European market. Belgium, Poland, Finland, Germany, the Czech Republic, Denmark, Italy, the Netherlands, Greece, as well as Switzerland, the United Kingdom, and Norway (non-EU members actively involved in the functioning of the European security and defense sector) are at various stages of acquiring the F-35 to replace their existing fleet of national military aircraft. According to Lockheed Martin, the manufacturer of the F-35, it is estimated that by 2030, up to 550 F-35 aircraft will be based in Europe⁶. The number of American 5th-generation aircraft in the armaments of EU countries may increase even faster, considering the further escalation of the military-political situation in Europe due to Russian aggression against Ukraine and the effective development, modernization, servicing, and support programs offered by Lockheed Martin to its European clients.

Against this backdrop, the attempts by proponents of European independence and the strategic autonomy of the EU to create conditions for the implementation of their own projects for next-generation aviation platforms appear unconvincing. Especially considering that Europeans could not consolidate efforts in a unified format and, even in the face of stiff competition from the United States, failed to reach an agreement on the joint development and financing of a prospective unified combat aircraft.

Currently, two separate projects in this field are being implemented in Europe. France, Germany, and Spain have agreed to implement the Future Combat Air System (SCAF) project (in French, Système de Combat Aérien du Futur) with an estimated cost of around 100 billion euros⁷ (although this figure is approximate, and investments in the project are likely to be much more substantial). The details of the new project are unknown at this point, as are the

⁶ <https://www.defensenews.com/global/europe/2022/09/04/how-the-f-35-swept-europe-and-the-competition-it-could-soon-face/>

⁷ <https://www.reuters.com/business/autos-transportation/france-germany-spain-agree-next-phase-fighter-jet-development-source-2022-11-18/>

expected parameters of the new combat aviation system. Meanwhile, the progress of SCAF is accompanied by discussions among participants regarding formats and mechanisms for the distribution of responsibilities and duties among French, German, and Spanish companies. France believes that Germany, by deciding on the purchase of F-35, has dealt a blow to the prospects of implementing SCAF. Spain is also assessing the feasibility of participating in SCAF or acquiring a ready-made solution, such as the American F-35, to replace the fleet of EF-18A aircraft (again, produced by the USA).

In turn, the United Kingdom, Italy, and Japan (as well as Sweden in the status of an observer) have joined the Global Combat Air Program (GCAP) to develop their own sixth-generation combat aircraft⁸. The cost of implementing GCAP is not yet determined, but the technical parameters of the project are formulated by participants quite clearly. The main idea of GCAP is to maximize the improvement of the aircraft's computing complex, as well as radar and electronic equipment, to ensure the highest level of information processing (including using artificial intelligence) from both onboard sensors and external sources. As a result, the pilot will receive integrated and prioritized information regarding the tactical situation for the fastest and most effective decision-making for the use of weapons and the execution of other tasks.

On the other hand, the parameters and specific implementation format of ideas within GCAP remain blurred and unstructured. Among the project participants, there is an agreed-upon position that by 2025, the parameters of the main aircraft equipment blocks will be defined, after which work on software development will commence. The preliminary readiness of the platform for testing is expected by 2035, and by 2040, GCAP aims to achieve combat readiness for transfer to the Air Forces of the participating countries. In other words, both GCAP and SCAF are oriented towards the "post F-35" period, when there is likely to be a need for the replacement of the fleet of American aircraft.

However, considering the remote timelines for achieving the goals of both projects, as well as the rapid development of the global military-political situation and ongoing turbulent processes in technology development (including military technology), there are significant doubts about the success of the implementation of GCAP and SCAF. The lessons from the Russian-Ukrainian war demonstrate the advancing pace of development of unmanned systems, which increasingly perform tasks on the battlefield. Although manned aviation retains its crucial role in military operations, the further distribution of functions between manned and unmanned aviation may quickly shift in favor of unmanned aviation systems. The use of artificial intelligence for integrating and prioritizing tactical information (including target designation) is already actively applied to unmanned aviation systems, and it is not excluded that by 2035-2040, the relevance of creating a conventional combat aviation

⁸ <https://www.defensenews.com/global/europe/2023/09/11/uk-italy-japan-companies-eye-novel-sensor-mix-for-gcap-warplane/>

platform will be transformed into "hybrid" projects (manned-unmanned) or entirely unmanned systems. Based on this, both European projects in the development of a prospective 6th-generation aviation platform will eventually face a sharp shift in the needs of armed forces, shaping new directions for scientific and engineering work that will differ from the current paradigm of combat aviation.

Moreover, the United States will evidently strive to retain the niche of primary combat aviation platforms for EU countries beyond 2035-2040 through the modernization of the F-35 and the development of new platforms, including "hybrid" and unmanned platforms based on them. Given the diversity of efforts among European countries in this direction, the new modifications of the F-35 will have significant advantages compared to the "raw" projects of GCAP, SCAF, and other European prospective developments.

In other words, at the moment, European projects like GCAP and SCAF are more research initiatives of individual European manufacturers attempting to maintain capabilities in developing advanced aviation technologies rather than joint projects of the European defense industry in the interest of a unified EU security and defense policy. Furthermore, these projects directly compete with each other. Since the European Defense Agency has not yet managed to coordinate European efforts in this direction, the success of GCAP and SCAF is quite doubtful. It is evident that investments in new European technologies can only be successful in competition with U.S. developments if there is consolidation, coordination, and joint participation of the majority of EU countries in their implementation. This includes coordination at the planning level of defense procurement. Otherwise, various European projects may turn into inefficient efforts with significant expenditures and minimal results. In this regard, the practical implementation of the new 22 priorities in the development of the military capabilities of EU countries is critically important, with joint realization, funding by the majority of EU countries, and coordination by the European Defense Agency.

The mechanisms of cooperation with the EU in the defense industry through the European Defense Agency can be the most effective for Ukraine. In December 2015, the Ministry of Defense of Ukraine signed an Administrative Agreement⁹ with the European Defense Agency, providing Ukraine with the opportunity to participate in defense-industrial projects implemented by EU countries under the auspices of EDA. In November 2018, the Executive Director of the European Defense Agency, Jorge Domecq, visited Ukraine, where he held negotiations with the leadership of the Ukrainian Ministry of Defense, defining the main directions of cooperation: Single European Sky, Standardization, Training, Logistics¹⁰. A year later, in October 2019, the Minister of Defense of Ukraine, Andriy Zagorodniuk, visited

⁹ <https://eda.europa.eu/docs/default-source/documents/aa---eda---ukraine-mod-07-12-15.pdf>

¹⁰ <https://eda.europa.eu/news-and-events/news/2018/11/23/eda-chief-executive-visits-ukraine>

the EDA headquarters and discussed with the agency's leadership the prospects for Ukraine's participation in projects under the PESCO initiative¹¹.

However, considering that the reform of the Ukrainian defense industry intensified only in 2020 (liquidation of the State Concern "Ukroboronprom", creation of the Ministry of Strategic Industries), practical development of cooperation between Ukraine and EDA since the signing of the Administrative Agreement has not achieved significant success. Ukrainian defense-industrial companies have also not achieved concrete results in EDA projects. At the same time, in the European Defense Agency itself, the implementation of joint projects (although their number formally kept increasing to around 40¹²), primarily involved joint scientific research and design work and rarely resulted in the creation of serial samples of weapons and military equipment.

The large-scale aggression by Russia against Ukraine has created new conditions for the functioning of the European Defense Agency and the Ukrainian defense industry, as well as for the implementation of joint defense-industrial projects. Evidence of this, among other things, is the development of a comprehensive EU support structure for Ukraine in the field of security and defense¹³. This structure includes the creation of a long-term mechanism for supplying weapons and military equipment to Ukraine, mobilizing the European defense industry. Additionally, it is planned to promote broad cooperation between the Ukrainian and European defense industries to enhance the military capabilities of both the Armed Forces of Ukraine and the armed forces of European countries.

A step forward in establishing a new mechanism of cooperation between Ukraine and Western defense-industrial companies was the organization of the first International Defense Industry Forum (DFNC1¹⁴) in Kyiv in September 2023, with the participation of 252 companies from 30 countries. The forum focused on practical cooperation and laying the foundation for specific projects for the production of armaments in the interests of the Armed Forces of Ukraine. As a result of the forum, a special format of international cooperation, the Defense Industry Alliance (along with a special Defense Fund), was established, and any manufacturer of arms and military equipment from the EU, NATO, and other partner countries of Ukraine can join. By the forum's closure, 38 companies from 19 countries had joined the Defense Industry Alliance. Additionally, within the forum, the Ukrainian side signed around 20 agreements for cooperation with foreign partners, including agreements and memoranda for the manufacture of drones, repair and production of armored vehicles and ammunition.

¹¹ <https://eda.europa.eu/news-and-events/news/2019/10/25/ukrainian-minister-at-eda-to-discuss-state-of-cooperation>

¹² https://defence-industry-space.ec.europa.eu/european-defence-fund-eu-invest-eu832-million-41-ambitious-defence-industrial-projects-2023-06-26_en

¹³ <https://www.bloomberg.com/news/articles/2023-11-21/eu-prepares-plan-to-give-ukraine-lasting-security-commitments>

¹⁴ <https://www.mil.gov.ua/news/2023/09/30/arsenal-vilnogo-svitu-pidsumki-pershogo-mizhnarodnogo-forumu-oboronnih-industrij/>

Collaboration formats included joint production, technology exchange, and component supply.

Building on the success of DFNC1, a separate Ukraine-USA Defense Forum is planned for December 2023, during which specific projects between Ukrainian and American defense-industrial companies will be initiated. Considering this experience, it appears logical to organize a similar forum, Ukraine-EU, to provide a practical impetus to defense-industrial cooperation between Ukrainian and European companies, especially since some European companies are already actively collaborating with Ukraine. Examples include the British defense company BAE Systems, which will establish a joint venture with Ukrainian producers of artillery weaponry, and the German conglomerate Rheinmetall, planning several large joint projects in Ukraine.

FORECASTS AND PROSPECTS

Taking the above into account, the prospects for Ukraine's participation in European projects such as GCAP and SCAF, which have rather undefined implementation frameworks, and where the expected results extend beyond the planning horizon of 2035-2040, as well as the blurry funding volumes, are considered unlikely. A more realistic approach could involve Ukraine's participation in projects relevant to the AFU under the auspices of the European Defense Agency, provided that the agency itself undergoes modernization. At the same time, the implementation of bilateral projects between specific Ukrainian and European companies to achieve concrete practical results in the shortest possible terms is deemed highly probable. In this regard, the effective format could be the activities of the Defense Industry Alliance with the regular organization of International Defense Industry Forums in both global and regional variants, including with EU countries.

CONCLUSIONS

Thus, the peculiarities of the development of the current military-political situation and the nature of the Russian-Ukrainian war require a rethinking of approaches to the implementation of Ukraine's defense tasks, based on the necessity of technological advantage on the battlefield and the creation of sufficient defense-industrial capabilities for the continuous and prolonged provision of the AFU with advanced weapons and military equipment.

In these conditions, defense-industrial cooperation between Ukraine and European countries, primarily, aims at achieving practical results in the shortest possible terms to meet the urgent needs of the AFU. Long-term, resource-intensive, bureaucratic projects with undefined goals

and implementation horizons, which often compete with each other, evidently cannot be a priority for Ukraine.

Projects within the framework of the European Defense Agency's activities could become promising, including within the context of Ukraine's integration into the EU. However, this direction requires efforts not only from Ukraine but also in terms of modernizing the functioning of the Agency. Considering the lessons of the Russian-Ukrainian war and focusing on concrete results to enhance the efficiency of the EU defense-industrial base can be key principles in the modernization of the EDA.

Against this background, the most optimal projects for Ukraine in terms of interests could be bilateral projects between specific Ukrainian and European companies to achieve concrete practical results in the shortest possible terms. The development of the Defense Industry Alliance format, initiated during the first International Defense Industry Forum (DFNC1) in both global and regional variants, including with EU countries, can be an effective mechanism for implementing defense-industrial projects in the interests of the AFU and the defense industry of Ukraine.

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