EUROPEAN DEFENCE AGENCY

Ground Combat Capabilities - Defence Industry Engagement

- Call for Papers –

PURPOSE

The purpose of the workshop is to share the industry views regarding the **short (until 2025) and medium term (2025 - 2035) solutions** towards the development of ground combat capabilities with an emphasis on the focus areas mentioned in the Coordinated Annual Review (CARD) Report which was made public in November 2020, Main Battle Tanks (MBT) and Soldier Systems (SoldSys).

BACKGROUND

The EU Global Strategy states that "*A solid European defence, technological and industrial base needs a fair, functioning and transparent internal market, security of supply, and a structured dialogue with defence relevant industries*." At the European Defence Agency's (EDA) Ministerial Steering Board on 18 May 2017, Defence Ministers supported EDA's revised approach towards establishing a structured dialogue and enhanced engagement with industry based on a set of priority actions. In this context, engagement with industry on capability development is understood to be outside the procurement phase and is intended to improve interaction between Industry and Member States.

In June 2019, the EDA Steering Board endorsed the first edition of the 11 Strategic Context Cases (SCC) as a guidance to implement the EU Capability Development Priorities agreed by Member States in 2018.

The EU Capability Development Priority Ground Combat Capabilities (GCC) and its related SCC (in an adapted version) have been shared also with EDA participating Member States industry through National Defence Industry Associations and the AeroSpace and Defence Industries Association in Europe (ASD) for collecting valuable inputs to be inserted.

EDA was also tasked by Member States to make use of the SCC to inform the further implementation of the EU defence initiatives, notably Coordinated Annual Review on Defence (CARD), Permanent Structured Cooperation (PESCO) and, to the extent possible, the European Defence Fund (EDF).

In the context of CARD, out of the six focus areas identified and mentioned in the 2020 CARD Report made public in November 2020, two of them belong to the EU Capability Development Priority GCC: Main Battle Tanks (MBT) and Soldier Systems (SoldSys).

OBJECTIVES OF THE WORKSHOP

The objectives are for the industry to share and discuss its views on the SCC Ground Combat Capabilities with an emphasis on the two focus areas identified through CARD, MBT and SoldSys but also to the other areas of the Ground Combat Capabilities as laid down in the SCC GCC, with the Member States' defence planners and relevant defence subject matter experts, as well as EDA representatives. A specific attention will be given on the challenges on short (until 2025) and medium term (2025 - 2035) to implement the avenues of approach mentioned in the SCC GCC.

CALL FOR PAPERS

The focus areas mentioned above can bear a significant impact on both participating Member States' (pMS') capability profiles and the coherence of overall European capability landscape. Industry would be invited to share its views on the two selected topics from the broader Ground Combat Capability perspective and present these views, including on support to capability development in the short and medium term at the system[1] as well as sub-system[2] level.

It is critical to preserve the required industrial know-how and European technological development and resilience. The collaborative development of capabilities in these focus areas requires cross-border industrial cooperation for prime contractors, mid-caps and SMEs with positive effects on the competitiveness of the European Defence Technology and Industrial Base (EDTIB).

The eligibility and evaluation criteria for the papers are detailed in the Annex. Relevant Key Strategic Activities (KSA) related to this capability domain and the avenue of approach laid down in the selected area should be considered in developing the papers.

I. MAIN BATTLE TANK

In the context of a volatile and challenging security environment in and around Europe, European countries identified the armoured combat capabilities as of fundamental importance in the context of their national defence and security strategies.
Recent technology developments generated several initiatives in and out of Europe aiming at the **upgrade, modernization and development of a new generation of MBT**s, characterized by a **higher level of mobility, lethality and protection**. In this context, European defence industry displays significant efforts and resources aiming to the development of state-of-the-art armoured combat capabilities that should be available to the MS military forces in short/medium-term perspective and that should be able to be operated for more than 20 years.

<table>
<tr><td colspan="2">The 2020 CARD Report reveals that also the European ground capability landscape (APC/IFV/MBT included) is characterised by a high level of fragmentation (high diversity of types and different levels of modernisation and interoperability) and therefore lacks coherence. This fact is negatively impacting interoperability, logistic footprint in the area-of-operation and the magnitude of the logistic chain).</td></tr>
<tr><td colspan="2">At system level</td></tr>
<tr><td rowspan="3">Questions</td><td>1. What are your views on addressing on short and medium term the challenges on reducing the level of fragmentation at European level, both from industrial and governmental sides concerning armoured land platforms (MBT/IFV/APC)?</td></tr>
<tr><td>2. What will be, from your point of view, the best way to address the interoperability and the enabling joint logistic support?</td></tr>
<tr><td>3. By having a look on the long term, how can industry, in the short and medium term, facilitate pMS efforts to achieve more 'convergence' in the long-term with the following:</td></tr>
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[1] By ***system*** it is understood in this current paper as the complete platform, namely the MBT itself or the whole System a soldier is equipped with, pending on the respective mission.
[2] By ***sub-system*** it is understood as the part of the equipment that provide a specific full function to the entire system.

	• using a modular, standardised and scalable architecture like described in the NGVA for the next generation of MBT and in relationship also with IFV/APC; • further exploit opportunities offered by digitalisation; • less costly (affordable) integrated logistic support for the entire life cycle by considering common sub-systems for different platforms, additive manufacturing, circular economy, life cycle management for ammunition, emerging virtual reality training.
	4. How do you anticipate the general evolution of the Main Battle Tank business models (e.g. traditional national procurement vs pooled acquisition or outsourced services, public private partnerships)? Please outline key benefits and drawbacks of those business models.
	5. With reference to the EU Strategic Autonomy, what are the key potential challenges (including dependencies from external suppliers) that European industries and their supply chains are facing notably with a view to MBT?
At sub-system level	
MBT is a system of systems. It entails the **main and supporting weapon systems**, the **armour**, including armour attachments, further **passive** and **active protection systems**, optronics, sensors, command and control, electrical power supply and **drivetrain system** etc. Integration of new solutions for **modern weapon systems** on the current and next generation of MBT seems to be a challenge for the industry in the upcoming planning horizon.	
Question	6. What are your views regarding the future technical requirements, power consumption, dimensions and weight for mounting new weapon solutions on the existing platforms?
	7. By taking into consideration the grown potential of digitalisation, foreseen implementation of artificial intelligence, big data and automatic systems, which is, from your point of view, the best way to address the integration of optronics, sensors and command and control system into a single system?
In the area of **protection of MBT** a technological challenge is to demonstrate the integration of detection, identification and tracking sensors and radar with sufficient computing and autonomous decision-making power with appropriate soft- and hard-kill counter-measures.	
Questions	8. What are your views regarding the development and implementation of active protection systems for the current and next generation armoured land platforms against "classical" threats like loitering munitions, smart guided ammunition and ATGM?
	9. Which technological approach do you envisage for implementing the current and foreseen innovative solutions for enhancing MBT/IFV/APC protection and ability to counter the threats within a future modern battlefield environment, like cyber-attacks, Electronic Warfare, swarm attacks etc.?
A new generation of **drivetrain systems** is under development by using **hybrid or fully-electric powertrain** technologies, which are highly efficient, resilient, lighter and smaller.	
Question	10. Which is your view regarding the use of this technology on MBTs, considering the technical challenges imposed by their specificity, such as: • the electronic devices and sensors integrated on those land platforms require a lot of energy; • batteries (cost, maintenance, weight, life cycle); • integration of the new generation powertrain on already existing platforms.
Integration and **commonality of sub-systems** with the aim of increasing the European coherence and autonomy as well as identifying more synergies to be applied at European level.	
Question	11. With a view to achieve a better commonality, can you provide a list (and prioritise from 1 to 3, 1 being the highest) of desirable common sub-systems for all the armoured platforms in a modern network-enabled operational environment?

II. SOLDIER SYSTEMS

In a future network-enabled operational environment confronted with numerous and diverse challenges, soldier systems support force protection, increase operational effectiveness, reliability and endurance of individual soldiers and formations. They should address in a modular approach the soldier agility and protection, enhance their autonomy, improve the situational awareness and communication on the battlefield with other soldiers and platforms.

At EU level, the capability development in this area is largely driven by national programmes with many pMS envisaging to acquire modern integrated soldier systems, with a focus on lethality and survivability.

Despite high competition at global level, there are several European companies working on soldier systems and providing different products, from individual components to integrated systems based on pMS' requirements and improving the performance in all related areas (e.g. survivability, C4I capabilities, sustainability, mobility, lethality).

Integration of technological innovations should be implemented in a standardised and consistent manner using an open architecture approach. It is foreseen that GOSSRA (Generic Open Soldier System Reference Architecture) will contribute to shape the standardisation of soldier systems in the EU and will have an impact on the NATO Generic Soldier Architecture (NGSA).

For an improved structure of the call for papers, the sub-systems will be addressed in 3 different areas:

- Enhanced situational awareness;
- Improved survivability;
- Improved lethality.

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<tr><td colspan="2">The 2020 CARD report recommends the need to modernise soldier systems as the core of individual force protection and operational effectiveness across all types of operations within the next decade, based on a commonly shared architecture for all related subsystems using cutting edge technology.
Some pMS have already launched modernisation programmes which entail mainly the replacement of small arms and protective equipment, while others intend to invest in this kind of capability in the coming years. As many pMS are looking for similar equipment or for modernisation of existing equipment, the collaborative opportunity could be coordinated, supported and fostered at EU level to assist pMS in sharing references and developing step by step a commonly shared architecture.</td></tr>
<tr><td colspan="2">At system level</td></tr>
<tr><td colspan="2">Soldier Systems comprise the equipment of individual military personnel having state-of-the-art systems for situational awareness, protection and lethality for conducting missions in any operational environment.</td></tr>
<tr><td rowspan="4">Questions</td><td>1. What is your view on addressing in the short and medium term the challenges on reducing the level of fragmentation at European level, both from industrial and governmental sides?</td></tr>
<tr><td>2. What will be, from your point of view, the best way to overcome the differences of various national programmes in the short term, and to develop a commonly shared architecture as a basis for an upcoming standardisation in the mid-term?</td></tr>
<tr><td>3. What are your views on the impact of the upcoming new standards (GOSSRA) on the ongoing national modernisation programmes? Could they influence these programmes in the medium term? If yes, in which areas do you expect these changes?</td></tr>
<tr><td>4. From your point of view, which are the sub-systems that will have the potentially biggest impact in the short and medium term on the interoperability between different soldier systems?</td></tr>
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	5. How do you anticipate the general evolution of the Soldier Systems business models (e.g. traditional national procurement vs pooled acquisition or outsourced services, public private partnerships)? Please outline key benefits and drawbacks of those business models.
	6. With reference to the EU Strategic Autonomy, what are the key potential challenges (including dependencies from external suppliers) that European industries and their supply chains are facing notably with a view to SoldSys?
At sub-system level	
Enhanced **situational awareness** is considered as comprising, in general, individual CBRN dosimeters, health monitoring systems, communications, night vision capabilities, navigation and other sensors etc.	
Questions	7. By taking into consideration the high-speed development of different technologies and the fact that the entire military spectrum is foreseen to become more automated, which are the main expected factors to enhance the performance of subsystems contributing to enhanced situational awareness?
	8. When we look at the importance of real time communication on the battlefield, what new solutions could be developed to improve it (e.g. secured communication, range, autonomy) on the Soldier Systems level?
Improved survivability is considered as encompassing exoskeletons, helmet, body armour, active and passive camouflage, CBRN individual protection equipment, harvesting energy for soldier systems, etc.	
Questions	9. By taking into consideration the high-speed development of different technologies and the fact that the entire military spectrum is foreseen to become more automated, which are the main foreseen factors to improve the performance of subsystems contributing to enhanced survivability?
	10. When we look at the importance of having available enough energy for all sub-systems, what new solutions could be developed to improve harvesting the energy?
Improved lethality includes, in general, firearms, ammunition, targeting systems, non-lethal systems etc. It is foreseen that the fire power will benefit from an improved accuracy of future (small arms) lethal as well as non-lethal weapons, including long distance and night vision capable targeting systems, improved reach and impact of ammunition with possible tuned-in programming or scalable effects.	
Questions	11. By taking into consideration the high-speed development of different technologies and the fact that the entire military spectrum is foreseen to become more automated, which are the main foreseen factors to improve the performance of subsystems contributing to enhanced lethality?
	12. The application of different effects scaling from non-lethal to lethal are getting more and more importance in the modern operational environment. What new solution could be developed to provide the soldiers on the ground with more and precise options.

INSTRUCTIONS ON PROVIDING ANSWERS

Answers should be limited to 1500 words (or maximum five pages), though length will not be used as an exclusionary criterion. They should not contain commercially sensitive information. One entity could send the papers for more than one topic, if wanted. Answers may be made available as supporting material for the workshop to the Member States' representatives including those from submitters that were not selected for participation, should they not have an opt out of supplying their papers formally expressed (proper attribution will be observed). Submitters should also specify whether they have any limitation in presenting their views in a panel format.

Please send your paper, clearly linking answers to questions, to the EDA by e-mail to scc4@eda.europa.eu, with copy to gabriel.ratiu@eda.europa.eu. Should you have any questions, please contact only by email **Gabriel RATIU, EDA PO Land Programmes** (gabriel.ratiu@eda.europa.eu), EDA POC for this event.

EDA will assess the papers according to the criteria below while also striving to select a broad spectrum of representatives to ensure a fair, objective and balanced discussion as much as possible. Common views coming from industry partnered with national research centres or commercial actors will also be taken into consideration.

Additional workshops could be considered to further explore these topics or to discuss additional ones.

Annex

ELIGIBILITY CRITERIA

European - Submitters must represent defence industry established in the EDA participating Member State[3] or European defence industrial interests (in the case of research institutes) and be active in the area of Ground Combat Capabilities with an emphasis on MBT and Soldier Systems.

Credibility - Lack of defence expertise will not be a criterion for exclusion but interested commercial actors must have a demonstrated track record of output and an effective market presence or knowledge of MBT and Soldier Systems.

Versatility – Submitters should be well versed in Ground Combat Capabilities technology. The submissions from SMEs are encouraged.

EVALUATION CRITERIA

Innovation - The level of innovation and originality demonstrated in the answer. Ability to propose forward-looking and concrete ideas, especially with regard to the integration of the systems within the Ground Combat Capabilities.

Comprehensiveness – Ability to include answers in a broader context and articulate different aspects with each other. Answers should address all related capability aspects (depicted in the adapted version for industry of the SCC Ground Combat Capabilities).

Lifecycle approach - Industry involvement in the process shall follow a cradle-to-grave approach: from research to decommissioning, including upgrading and modernization lifecycle aspects.

Interoperability - The end state on both topics will be at the systems level. The level of interoperability with other systems (basic to high end) is to be considered.

[3] [1] Based on the EDA Industry engagement policy, when engaging industries on matters related to EDA prioritisation tools, EDA invites only industries that are established in the EDA participating Member States and that do not have limitations in terms of intellectual property rights, security of supply, security of information or export controls, stemming from mother companies or entities outside the EDA participating Member States.