

# National and International Perspectives of the Hungarian Ground-Based Air Defence Forces, Part 3

## Potential Ways Forward in Developing Air and Missile Defence Capabilities

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*Expanding on the conclusions of the first two parts in this series, several aspects of the further capability management process are examined in this article. After having assessed that the recent procurement decisions and the first steps towards a true capability have been prudently taken by the Hungarian Defence Forces, possible options for the way forward are considered and potential future steps proposed. The path towards a solid GBAD capability has been taken; now it will be essential to stay on track and prepare consequent and reasonable steps for the short- and medium-term future.*

**Keywords:** Hungarian Defence Forces, ground-based air defence, DOTMLPFI, Army Organic Air Defence, NASAMS, interoperability

“It is not a shame to learn from those who know more, it is a shame to bind oneself in ignorance and not learn.”  
Miklós Zrínyi

The patron of the Hungarian Defence Forces’ (HDF) force development programme, Miklós Zrínyi, understood that a complex system to strengthen defence capabilities is necessary. Amongst other things, he became famous by using the terrain to his troops’ advantage.<sup>2</sup> Nowadays, this can be viewed metaphorically, when it is decisive to make use of the political and economic terrain, hence the given circumstances, to achieve one’s strategic goal.

Consequently following Zrínyi’s ideas, the complete modernisation of the HDF during recent and current years, including procurement of equipment and reshaping the force

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<sup>2</sup> PADÁNYI–ONDRÉK 2023.

structure, has been conducted in accordance with NATO requirements and with the strategic objectives of NATO and the EU.

Next to this finding, I have carved out in the first two parts of this publication series that the current modernisation measures imply that Hungary will join the group of NATO's most advanced air defence nations. However, the path from the important step of contracting a procurement towards finally achieving an adequate capability could take longer than some external, non-military observers might suspect. In this following article, I will propose options for possible ways forward in the various aspects that were closely looked at in the previous considerations. Eventually, I will recommend first thinkable steps for the near future.

## **DOTMLPFI as the most suitable methodology framework**

In establishing and managing military capabilities, the most structured way is to apply the DOTMLPFI<sup>3</sup> methodology. To analyse capability development issues comprehensively, the full spectrum of DOTMLPFI would have to be considered. A state-of-the-art weapon system without adequate infrastructure or properly trained personnel does not represent a true capability.

Due to the volume restrictions of this article, my analysis cannot and does not intend to provide a thorough analysis of all letters. Therefore, only selected aspects of DOTMLPFI in context with future options will be touched upon. For properly analysing the "P" (personnel), a holistic scrutiny of Hungary's demography and labour market would be necessary. The "M" (material) has already been reflected in detail in several other sections of this article series. The "F" (facilities/ infrastructure/logistics) always represents a big challenge in capability processes; it would be a full separate topic for analysis and depends in practical terms on the respective national planning processes. The "L" (leadership and education) will briefly be dealt with in the "implications and prerequisites" section of this text, where I will address leadership and cultural aspects as well.

## **Doctrine**

Assuming that deterrence and defence operations will always work in a multinational contingent together with allies, it will be crucial to synchronise the HDF doctrines as much as possible with those of allied nations. This will create numerous synergy effects and will increase flexibility and responsiveness if short notice action is necessary.

From a ground-based air defence (GBAD) perspective, extensive lessons learned from the Russian war in Ukraine can be drawn for almost the full spectrum of Air and Missile Defence (AMD) operations. These will have to be implemented into the next generation of doctrinal documents, harmonised amongst allied nations. The group of user nations for a modern weapon system has to establish close connections and to interact in terms of

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<sup>3</sup> DOTMLPFI: Doctrine, Organisation, Training, Material, Leadership, Personnel, Facilities, Interoperability.

doctrines for weapon employment or best practices in logistical procedures. Many modern systems that build the backbone of NATO's Integrated Air and Missile Defence System (NATINAMDS) are currently deployed in Ukraine or in the deterrence posture at NATO's Eastern flank; it is obvious that this will provide numerous valuable insights.

For the HDF it is now important to establish the doctrinal portfolio for the new capabilities. The overarching procedures for the SAMOC (Surface-to-Air Missile Operations Centre) will continuously be synchronised with Germany as an experienced user nation. But eventually, the Hungarian GBAD community will have the task to set up their internal doctrinal foundation. This includes a wide spectrum of Command and Control (C2) options and how a GBAD contingent can be composed under the SAMOC umbrella. It will also be necessary to define the options of integrating with a national or multinational higher C2 echelon.

Another vital issue will be the procedural Air Force GBAD and Land Forces' Army Organic Air Defence (AOAD) coordination. This is a direct consequence of the formal decision to develop and procure a new short range air defence (SHORAD) capability – based on the Skyranger 30 system and mounted on a Lynx KF41 – for the Hungarian land forces' units.<sup>4</sup>

The biggest challenge appears to be the NASAMS (Norwegian Advanced Surface-to-Air Missile System) doctrines. Although the user community is widespread amongst allies, albeit with different versions or system configurations, it has been difficult to find a close partner relation that could also support in establishing the main procedures. This comprises inter alia standing operating procedures (SOP), firing doctrines, training documents, technical procedures and further unit generated plans for the new weapon system.

## Organisation

Regarding the organisation, the first task has been to fill the new regiment structure in Győr with life after the arrival of the first NASAMS systems. Next to continuously reviewing if the applied hierarchy and personnel tables will match the actual needs, it is essential to efficiently distribute the valuable human resources to the variety of new tasks. Naturally, the same personnel are dealing with the very demanding transition phase from operating the Soviet-era SA-6 to the state-of-the-art NASAMS. However, the fact that modern systems such as SAMOC and NASAMS with a high degree of automation require fewer personnel than the less sophisticated legacy systems generally helps to keep the to-be-filled personnel tables lean in times of demographic decline.

Assuming that around the Skyranger system, potentially supported by man-portable air defence systems (MANPADs) and anti-aircraft artillery (AAA) elements, a real organic air defence capability will be established in the Hungarian Land Forces, one of the first steps after the final procurement decision will have to be organisational planning.

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<sup>4</sup> The procurement decision for the Skyranger 30 has been taken by the Hungarian Government in December 2023. Cf. Europäische Sicherheit & Technik 2023.

Since this capability does currently not exist within the HDF, new units and force elements will have to be set up and filled with life in terms of capable and trained soldiers.

For organisational long-term considerations, it will be useful to keep the future option of integrating Hungarian force elements into multinational structures in mind. Be it a multinational air group or a true bi- or trilateral integration of air defence units, the maximum degree of flexibility for international embedment should be maintained.

## **Training as one of the key factors**

Modern air defence systems require high training standards in technology and procedures to avoid serious unintentional incidents as the downing of civilian flights.<sup>5</sup> Thus, after finding appropriate personnel in quantity and quality from the civilian labour market, the provision of properly trained military specialists will be a major challenge as well. This applies particularly to complex topics as air defence systems. For individual training, the former experienced SA-6 workforce represents a solid basis for transferring their knowledge into modern state-of-the-art proficiencies which are mandatory for operating and maintaining SAMOC and NASAMS.

Initial training in both SAMOC and NASAMS is provided by the industry manufacturers of both systems.<sup>6</sup> But obviously, proper professional military training means much more than knowing which button to press or when and which routine maintenance to conduct in a given time interval. For the SAMOC level, just plugging in sensors and effectors is certainly not enough. The professional operating staff in the SAMOC and NASAMS systems must be able to recognise possibilities and limitations, evaluate them and act on this basis in a task-focused direction.

Internal SAMOC training – force operations, engagement operations and technical issues – will be guaranteed by the more experienced personnel within the MH Dánielfy Tibor 205<sup>th</sup> Air Defence Missile Regiment. This follows the concept of training the future trainers in the first step. However, further keeping up the good cooperation with the German Air Force's SAM Wing 1 as well as the conduct of common exercises will be crucial for ensuring professionalism in both countries and will create numerous synergies.

Ideally, the NASAMS training would follow a similar approach by first acquiring the introduction and the general training from the industry, then upskilling the future trainers by partner nations' experience and further training steps. Even though NLD is operating an older NASAMS version and LTU is also a relatively new user, continuous exchange with other user nations will help in overcoming common challenges in handling the weapon system.

Next to the individual proficiency, the unit- and formation-based training has to be intensified in the next step. After having completed all national accreditation and certification steps, further exercise participation with SAMOC and NASAMS contingent, e.g. during "Ramstein Legacy" (RALY) or "Joint Project Optic Windmill" (JPOW), should

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<sup>5</sup> Flights MH-17 in July 2020 in Ukraine and UIA 752 in January 2020 in Iran are prominent examples.

<sup>6</sup> Expert discussion in MH Dánielfy Tibor 205<sup>th</sup> Air Defence Missile Regiment, 14 November 2022.

be continuously envisaged to test interoperability and to train the GBAD specialists within a combined environment. In parallel, periodical exercises and interoperability tests should be conducted in conjunction with the Hungarian Air C2 forces to train the connection and communication with the Hungarian Control and Reporting Centre (CRC) in Veszprém and with higher echelons.

In order to prepare for expectable NATO operational evaluations a wider spectrum than pure tactical air defence training must be covered. Weapon system operations, connectivity, force protection and further skills entail connecting various individual capabilities to an overall capable mission module.

Multinational training and exercise participation can offer promising perspectives for future operations. If e.g. the German AMD forces continuously invest a part of their scarce training capacities into fostering the new Hungarian capabilities, then this will pay off in the medium term. After a certain level of proficiency with the new equipment has been achieved as well as formal and legal prerequisites have been sorted, the participation of Hungarian SAMOC specialists in NATO enhanced Vigilance Activities (eVA) mission modules like the German temporary assignments in Slovakia or in Poland<sup>7</sup> is thinkable. These capacities could be provided in return for the arranged training support and would finally lead to a classical win-win situation.

Having hopefully gained some advantages from prudent multinational air defence cooperation via formats as Modular GBAD<sup>8</sup> and ESSI,<sup>9</sup> a long-term goal could be the establishment of a true European GBAD training facility, under whose auspices common training will be conducted and air defence tactics as well as doctrines will be harmonised amongst the participating nations.

## Interoperability

As assessed in part 2 of my article series,<sup>10</sup> the future Hungarian GBAD system composition offers widespread options and provides perfect prerequisites for interoperability and interconnectivity. Based on this technological ability, the forces' capabilities to flexibly play with the C2 and system components will have to be enhanced. Interoperability checks within bilateral cooperation frameworks could serve as a starting point. However, participation in big multinational exercises as RALY or JPOW surely offers the best opportunities to explore possibilities and limitations. Continuously checking and synchronising interoperability issues and standards will be key and set the path towards future integration of the Hungarian GBAD forces into multinational contingents and formations.

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<sup>7</sup> See: <https://www.bundeswehr.de/de/auftrag/einsaetze/missionen/abgeschlossene-einsaetze-der-bundeswehr/enhanced-vigilance-activities-slowakei>; <https://www.bundeswehr.de/de/auftrag/einsaetze/missionen/abgeschlossene-einsaetze-der-bundeswehr/enhanced-vigilance-activities-eva-polen>

<sup>8</sup> NATO's Modular GBAD High Visibility Project strives for a modular GBAD solution responding to air threats along the entire very short, short and medium range spectrum.

<sup>9</sup> The European Sky Shield Initiative (ESSI) aims at creating a powerful air defence posture through joint acquisition of air defence equipment and missiles.

<sup>10</sup> PASSBACH 2024b: 57–58.

After this brief DOTMLPFI consideration, I will try to merge some thoughts and options for ways forward in the different AMD capability areas. The national foundations in Hungary were laid by procuring modern, capable state-of-the-art hardware as part of the Zrínyi Programme. Now it will be the time for the HDF to build up on this solid backbone and develop the AMD capabilities further in order to become one of the most advanced air defence nations within NATO and EU. Based on the analysis above, I will discuss selected aspects of the HDF's emerging AOAD and AMD potential in the following sections.

## **Renaissance of the Army Organic Air Defence**

The decision to swiftly build up a true AOAD capability by procuring a new SHORAD system had consequently been taken in parallel to the publication process of the first two articles of my publication series. During the negotiations of synchronising the German and Hungarian requirements and while working on a common basis to procure the Skyranger 30 system bilaterally – or even together with Denmark as the third partner – the Hungarian Government has decided to sign a direct contract with the manufacturer Rheinmetall instead of a joint procurement under the ESSI umbrella. This rather surprising move will hopefully not significantly limit the possibilities for close cooperation in logistical support and further common arrangements amongst user nations. There is still sufficient room to make use of synergies in the areas of training, maintenance and further exchange within the group of Skyranger 30 user nations.

According to the Hungarian implementation of the NATO Defence Planning Process (NDPP), currently air cover for an Infantry Brigade is provided with a stronger MISTRAL battery, provided by the Air Force units. In a few years' time, the NDPP requirements should be fulfilled with the newly procured AOAD system. The Skyranger capability development will perfectly serve this aim as well as the intended timelines.

## **Further options to upgrade the AOAD capabilities**

When examining further opportunities to enhance the AOAD capability product-wise, it becomes clear that various commercial off-the-shelf (COTS) or military off-the-shelf (MOTS)<sup>11</sup> solutions are available. With the aspiration of covering the full VSHORAD and SHORAD spectrum, including Unmanned Aerial Systems (UAS) as well as “low, slow and small” targets (LSS),<sup>12</sup> the most promising approach will always be a prudent mix of a gun, presumably applying air burst ammunition, a capable SHORAD missile and – maybe as a future perspective – a viable energy weaponisation, e.g. a High Energy

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<sup>11</sup> COTS and MOTS describe products or weapon systems that are available on the market and can be used without further adaptation or customisation.

<sup>12</sup> The so-called LSS (low, slow and small) target threat of micro drones and mini UASs are even available on the civil market and can be converted into weapons by self-construction.

Laser (HEL). Complemented by a suitable sensor solution and a fully interoperable C2 element, this would represent a true 21<sup>st</sup> century configuration. Additional effector technology based on Radio Frequency (RF) Jamming and High-Power Microwave (HPM) could be surveyed regarding the desired capability for countering UAS (C-UAS).

During the above DOTMLPFI consideration it became obvious that it takes much more to develop a capability than to acquire a technical weapon system solution only. Therefore, planning to incorporate this SHORAD/VSHORAD/C-UAS capability into the Hungarian Land Forces *inter alia* implies drafting of doctrines, pioneering work in terms of organisational structures and immense training requirements. Due to the previously outlined historical reasons,<sup>13</sup> my assumption is that the Hungarian Land Forces currently have only rudimentary air defence competency left in their brigades. Hence establishing appropriate structures and qualification build-up will have to accompany the difficult transition phase until achieving Initial Operating Capability (IOC) or FOC of the AOAD elements.

## **Cross-domain and multinational thinking as the key to success**

Based on the lessons learned from recent conflicts, instead of re-thinking an Air Force based option, the integration of a new SHORAD capability into the Hungarian Land Forces should be the preferred option. The Hungarian Air Force, with their available competence in air defence matters, will yet have to support the “training the trainers” of the land forces. Consequently, the training and competence-regaining process should also be discussed in the bi- or multinational framework, since Germany and other potential partner nations like Denmark will face similar challenges.

Not only the immediate operating staff will have to reconsider air defence thinking, but also the joint and land force commanders on various levels. Respecting the needs and specifics of organic air defence elements requires a new philosophy and demands awareness for thorough coordination with the respective air force authorities. Proper liaison elements to air force GBAD units and Air C2 will have to be established. Finally, regular training and exercise activities have to be conducted in a joint environment together with Hungarian Air Force GBAD units. Training the interfaces between the warfighting domains in peacetime is essential for understanding the specific needs and different cultures better when it comes to multi-domain NATO assignments and operations.

I deem it very important to discuss possible training and exercise approaches in the early stage of the capability development process. It has to be evaluated if a separate training institution for the Hungarian land brigades should be established or if a national air defence training element, comprising both land and air forces’ training, could be the more efficient solution.

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<sup>13</sup> PASSBACH 2024b: 59.

And, along my previous line of argumentation, these considerations should not only take place from a national perspective, but also in the multinational framework to identify medium term synergies. Eventually, the idea of a multinational AOAD training centre, preferably integrated into or connected to the above mentioned European GBAD training facility, should be pursued under the umbrella of ESSI.

## **Air and Missile Defence capabilities in the Hungarian Air Force**

Considering the AMD elements within the organisational structure of Air Force units, the SAMOC cooperation with Germany should be intensified to further enhance the experience and proficiency of the Hungarian operators. This will offer the perspective of Hungarian participation in AMD Task Force (AMD TF) contingents compared to the aforementioned eVA missions. In parallel, a solid basis for cooperation with one or more NASAMS user nations should be established. Without the support of experienced users, it will be a huge challenge to meet the NATO requirements in time. The capability development of the NASAMS units across the full DOTMLPFI spectrum must be addressed with high priority, because in the currently evolving security environment the assignment in the NDPP context could potentially have to be adopted rather earlier than later.

As previously recommended, exercise participation with SAMOC and NASAMS elements will be the central key to future interoperability, proficiency and leadership education. Due to the excellent interoperability characteristics of both systems, there is a high degree of flexibility when setting up an exercise contingent consisting of different weapon systems or even single elements of sensor-effector configurations.

The decision for setting up an AOAD capability with new SHORAD forces in the HDF will not only affect the Hungarian Land Forces units. Also from an Air Force perspective, the GBAD C2 concepts will have to be reviewed. The operational interfaces to the AOAD as well as procedures for air space management and deconfliction must be established in connection with the higher echelon of the Hungarian Air C2 elements. In all these considerations, making use of 21<sup>st</sup> century solutions – e.g. virtual training options – will facilitate a quick development of the aspired capabilities.

Taking a further future perspective, the Hungarian Air Force and the subject matter experts within the regiment in Győr will have to be prepared to integrate upper layer missile defence capabilities in the long term. This is consistent by the mere fact that the SAMOC platform serves as the central AMD C2 element. However, first steps as sensor-effector sharing in a multinational context, potentially through ESSI, are not to be expected from the HDF prior to the next decade though.

## **Implications and prerequisites – Towards a new leadership culture?**

Basically, the HDF are well suited to act as a capable partner in the multinational GBAD sector. On the other hand, the pursuit of far-reaching multinational cooperation would

require a further shift towards a new leadership style and a specific military culture in the face of not completely adapted structures and doctrines, remaining primarily from the Soviet era during the Cold War. One decisive, central postulate of the HDF transformation – as also extracted from the NMS 2021 – is to renew the organisational structure and the C2 system in a way that a faster and more flexible chain of command will provide bigger operational freedom for subordinated commanders.<sup>14</sup> Thus, the path from the outdated, but still existing leadership style to a task-orientated approach in accordance with the mission command philosophy has to be taken at all levels of command.<sup>15</sup>

Some military leaders argue that new technologies and weapon systems automatically lead to a mission command culture. I clearly disagree. From my experience, mission command is primarily about the military leader's head and heart and is therefore the catalyst within the implementation of new weapon systems. Several authors explicitly support the approach for a new leadership style in the HDF with the reduction of authority to the lowest possible level. Remarkably, this is assessed to be the “opposite trend of the last thirty years”.<sup>16</sup> Implementing a cultural change should primarily be an immediate consequence of NATO membership, which results in the associated necessity to fulfil Alliance tasks and to cooperate with allies. Undeniably, the change of the whole culture in a major organisation takes time and requires a conscious, bottom-up learning process, including all levels of command and applying values-based education and training.<sup>17</sup> Eventually though, by implementing the mission-oriented approach to leadership, the individual space for manoeuvre will increase for commanders on all levels and decision-making processes will be accelerated.

Multinational training, exercises and operations offer the opportunity of incorporating cultural experiences gained amidst the international environment into the own organisation. To process these experiences most effectively, it is vital to firstly apply a common thinking and naturally a common language to ensure effective communication.<sup>18</sup> Assessed on my multinational experience during the recent years, the English language must be the norm in the everyday work of allied militaries. When referring to NATO processes, the relevant terms should be used as standard phrases and acronyms in their original English form and not be translated unnecessarily. Presumably the reluctance to use the English language in more areas of the HDF is partly a generation issue and will automatically disperse in the medium term. Still the recommendation must be to start with this cultural change as soon as possible – and this analysis does not only apply for Hungary, but also for Germany and more European armed forces as well.

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<sup>14</sup> PASSBACH 2024a: 41.

<sup>15</sup> Presentation on the reorganisation of the HDF at Ludovika by the Commander of the Force Modernisation and Transformation Command, Major General László Sticz, 14 October 2022.

<sup>16</sup> TAKÁCS et al. 2021: 42.

<sup>17</sup> SZABÓNÉ SZABÓ 2021: 77.

<sup>18</sup> CZEGLÉDI 2021: 79.

## **Multinational military cooperation and potential spillover effects**

I have previously deduced several times in my article series that a clear commitment to more multilateralism and integration will be key to contribute to strategic convergence within NATO and EU. For Hungary, the initial steps of stating this in its central conceptual documents as well as a credible force development have been taken or initiated. The HDF with its immense material investments into an adequate modern and interoperable air defence capability can still be considered of having played a pioneering role within Eastern Europe in phasing out the old Soviet systems and swiftly replacing them with modern interoperable technology. Recently, numerous other nations were forced to take similar steps in the face of the Russian aggression against Ukraine.

But even on the highest political level, Hungary should always be seen as a trustworthy and reliable partner within its alliances. Due to the current political narratives and atmosphere at the governmental level in Budapest and Brussels, justified concerns cannot be dismissed. This would be even more unfortunate as the currently valid Hungarian strategic national documents demonstrate a clear commitment towards NATO and EU. Furthermore, all associated actions like exercise and operational contributions to both alliances clearly prove that the HDF acts as a reliable partner in the military sphere, together with its NATO and EU allies.

Closing this short political sidestep, I see two sides of the medal and two ways to draw an adequate conclusion in this matter: On the one hand, it would be regrettable if allied armed forces – in this case the HDF – would have to suffer from disputes on the highest political levels. However, it is obvious that a “relaxed normality” cannot be pretended in the field of military cooperation whilst intergovernmental relations are massively strained. On the other hand, continued fruitful collaboration in defence matters can assist in normalising the crosscutting relations between governments. It is not only my hope that the possibilities of multinational cooperation will not be too much constrained by the current political situation. On the contrary, trustful military cooperation between allied nations can ultimately create positive strategic implications and contribute to an overall political détente.

## **Conclusion**

On my path through the main questions of my article series so far, I have taken several short “intellectual sidesteps”. They would all be worth to be analysed separately and in a more comprehensive manner. All these little pieces of the big puzzle show the overall complexity of the topic. At this point, I can still confirm my central hypothesis that the HDF are on track to becoming one of the most capable GBAD nations in Europe and in NATO. The prudent procurement steps, the acquired system specifications and interoperability characteristics form solid preconditions for excellent future capabilities. The current status quo, the intended capability development and the multifaceted future perspectives in AMD matters are promising; all those elements perfectly serve both Hungarian national

security ambitions as well as the respective NATO requirements in setting up an enhanced and credible deterrence and defence capability against aerial threats.

It will be decisive from a national Hungarian perspective how successfully this “treasure hunt through the DOTMLPFI jungle of capability management” will be performed. The persistent pursuit of various opportunities for multinational integration within the field of AMD to further develop the HDF’s capabilities will play a pivotal role. It will eventually create significant synergies for future alliance operations.

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