The Known Unknowns of Romania's Defense Modernization Plans

by GEORGE VISAN

Black Sea Security Program
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The Known Unknowns of Romania’s Defense Modernization Plans

Executive Summary

This Special Report offers an up-to-date assessment of Romania’s ongoing defense modernization effort. The programs analyzed here belong to all three branches of the Romanian armed forces: Land forces, Air forces and Naval forces. All these programs aim to enhance capabilities in terms of armor, mobility (transport helicopters, 4x4 vehicles), firepower (artillery, anti-tank weapons, attack helicopters and small arms), logistics, communications, aerial reconnaissance, air defense, anti-submarine warfare (ASW), anti-surface warfare (ASuW) and maritime security. The report is structured along capabilities. It weighs the pros and cons of the acquisition programs and discusses NATO interoperability. The equipment analyzed includes: battle tanks, armored personnel carriers, infantry fighting vehicles, artillery, 4x4 armored vehicles, anti-tank capabilities, small arms, command and control systems, UAVs, helicopters, multirole fighters, advanced trainer program and ground based air defense (long range and short range systems). Romania is among the top NATO countries in terms of defense spending (almost 2%), however, poor management of some acquisition programs has resulted in serious delays (corvettes, frigates, multirole fighters, coastal defense systems, 4x4 armored vehicles, and tactical drones).

Introduction

In 2017, Romania started an ambitious military modernization plan focused on the allocation of 2% of GDP for defense until 2026. This decision represents the implementation of Romania’s commitment made at the NATO Wales Summit in 2014. The driving force behind this process has been Russia’s aggression against Ukraine and Kremlin’s military buildup in the Black Sea region.

This report looks at the modernization process of the Romanian land forces from a defense acquisition perspective. However, Romania’s military modernization process is far more complex than defense acquisitions. It involves structural changes at the command, doctrine, training and personnel levels. Nevertheless, the acquisition programs represent the most visible aspect of the entire modernization process.

The equipment acquisition programs for the Romanian land forces analyzed here have been selected based on two criteria: the capability intended to be delivered and their financial value (programs above € 100 million). Most of them have been approved by parliament in 2017, however, a number of them have begun before 2017 (the multirole fighter), or are still under evaluation by the Defense Ministry.
## Major acquisition programs (contracts above €100 million)

<table>
<thead>
<tr>
<th>Programs</th>
<th>Weapon System</th>
<th>Value</th>
<th>Quantity</th>
<th>Status</th>
<th>Start year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multirole fighter</td>
<td>F-16</td>
<td>€ 628 million for the first 12 aircraft</td>
<td>52 aircraft needed; 12 acquired; 5 more should be acquired in the near future</td>
<td>Ongoing</td>
<td>2013</td>
</tr>
<tr>
<td>Lead-in trainer midlife upgrade</td>
<td>IAR-99 Super-Saim</td>
<td>€ 124 million</td>
<td>20</td>
<td>Approved</td>
<td>2018</td>
</tr>
<tr>
<td>High altitude and long range air defense system (HSAM)</td>
<td>Patriot Air Defense System</td>
<td>€ 4 billion</td>
<td>7</td>
<td>Ongoing</td>
<td>2017</td>
</tr>
<tr>
<td>Short range air defense system (SHORAD-V/SHORAD)</td>
<td>n/a</td>
<td>€ 2.1 billion</td>
<td>21 systems</td>
<td>Approved</td>
<td>2017</td>
</tr>
<tr>
<td>Multirole corvette</td>
<td>n/a</td>
<td>€ 1.6 billion</td>
<td>4</td>
<td>Acquisition launched; later suspended</td>
<td>2018</td>
</tr>
<tr>
<td>Submarine</td>
<td>n/a</td>
<td>n/a</td>
<td>3</td>
<td>Study</td>
<td>2018</td>
</tr>
<tr>
<td>Mobile coastal defense systems</td>
<td>n/a</td>
<td>€ 137-200 million</td>
<td>3</td>
<td>Acquisition process suspended</td>
<td>2018</td>
</tr>
<tr>
<td>Long range multiple launch rocket system</td>
<td>HIMARS</td>
<td>€ 1.2 billion</td>
<td>54</td>
<td>Ongoing</td>
<td>2017</td>
</tr>
<tr>
<td>Wheeled armored personnel carrier</td>
<td>Piranha 5</td>
<td>€ 895 million</td>
<td>227</td>
<td>Ongoing</td>
<td>2018</td>
</tr>
<tr>
<td>Agilis 8x8 Armored Personnel Carrier</td>
<td>Agilis</td>
<td>€ 230 million (initial investment)</td>
<td>342+ vehicles and derivatives</td>
<td>Under development - Postponed</td>
<td>2018</td>
</tr>
<tr>
<td>Modernization of infantry fighting vehicles</td>
<td>MLI-84M</td>
<td>€ 138 million</td>
<td>48</td>
<td>Approved</td>
<td>2017</td>
</tr>
<tr>
<td>Anti-Tank Guided Missiles</td>
<td>Spike LR</td>
<td>€ 130 million</td>
<td>n/a</td>
<td>Ongoing</td>
<td>2016</td>
</tr>
<tr>
<td>Multirole transport trucks and trailers</td>
<td>n/a</td>
<td>€ 737 million</td>
<td>3,385 in the first phase of the program (2018-2027); 13,963 total requirement</td>
<td>Approved; tender suspended</td>
<td>2018</td>
</tr>
<tr>
<td>Trucks and trailers 6x6 produced by Ivec</td>
<td>€ 128 million</td>
<td>173</td>
<td>Acquired – deliveries ongoing</td>
<td>2017</td>
<td></td>
</tr>
<tr>
<td>C4 ISR Systems</td>
<td>n/a</td>
<td>€ 180 million</td>
<td>21</td>
<td>Approved</td>
<td>2017</td>
</tr>
<tr>
<td>Communication satellite</td>
<td>n/a</td>
<td>€ 400 million</td>
<td>1</td>
<td>Approved</td>
<td>2022 (first stage)</td>
</tr>
</tbody>
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**NOTE:** compiled by author
## Contracts under € 100 million and Requests for Information (RFI)

<table>
<thead>
<tr>
<th>Program</th>
<th>Weapon System</th>
<th>Value</th>
<th>Quantity</th>
<th>Status</th>
<th>Year</th>
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</thead>
<tbody>
<tr>
<td>Long Range Mobile Radars</td>
<td>TPS-77</td>
<td>€ 80 million</td>
<td>5</td>
<td>Acquired – In service</td>
<td>2016-2018</td>
</tr>
<tr>
<td>Tactical UAVs</td>
<td>n/a</td>
<td>€ 55 million</td>
<td>6</td>
<td>Cancelled</td>
<td>2016</td>
</tr>
<tr>
<td>4x4 Armored Vehicles</td>
<td>n/a</td>
<td>€ 80 million</td>
<td>286</td>
<td>Cancelled</td>
<td>2017</td>
</tr>
<tr>
<td>Self-Propelled Howitzer</td>
<td>155 mm caliber</td>
<td>n/a</td>
<td>40</td>
<td>n/a</td>
<td>2015 (RFI)</td>
</tr>
<tr>
<td>Main Battle Tank</td>
<td>n/a</td>
<td>n/a</td>
<td>276</td>
<td>Under consideration</td>
<td>2015 (RFI)</td>
</tr>
<tr>
<td>NATO Standard Assault Rifle</td>
<td>5.56 x 45 mm caliber</td>
<td>n/a</td>
<td>60,000+</td>
<td>Prototype stage</td>
<td>2011</td>
</tr>
<tr>
<td>Trucks</td>
<td>6x6 trucks produced by Roman S.A.</td>
<td>€ 2.4 million</td>
<td>23</td>
<td>Acquired – in service</td>
<td>2016</td>
</tr>
<tr>
<td>Anti-tank guided missiles (for Puma SOCAT Helicopters)</td>
<td>Spike ER missile</td>
<td>€ 60 million</td>
<td>n/a</td>
<td>Acquired</td>
<td>2019</td>
</tr>
</tbody>
</table>

**NOTE:** compiled by author

## Armor

### Main Battle Tanks

Tanks represent the main striking force of an army. Tanks form the backbone of the armored force and their main mission is to create and exploit breakthroughs, defend against enemy armored forces, destroy other tanks, armored vehicles and artillery. Without tanks, an army doesn’t provide credible deterrence and cannot defend against aggression. In the absence of tanks, the effectiveness of a country’s armored formations in terms of firepower, protection and mobility is seriously compromised.

Despite their usefulness being called into question on the battlefields of the twenty first century, tanks have been used extensively and effectively both in conventional and unconventional conflicts in the past 20 years. The invasion of Iraq (*Operation Iraqi Freedom*) was spearheaded by a tank onslaught that led to the capture of Baghdad. In Ukraine in 2014, tanks played a crucial role in the fighting in Donbass between Ukrainian forces on one hand and Russian armed forces and rebels, on the other hand.\(^1\) Tanks also played an important role in Afghanistan and Iraq in counterinsurgency operation, where the United States and Canada deployed tanks as convoy escorts or as blocking forces against insurgents.\(^2\) Furthermore, during peacekeeping operations in the Western Balkans, NATO forces used tanks to deter attacks on civilian infrastructure and to curtail sniper activity.\(^3\)

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In Europe, Belgium and the Netherlands have either given up altogether\(^4\) or partially\(^5\) on tanks for costs reasons. Romania, however, cannot afford such an option due to an unstable and unpredictable neighborhood. Furthermore, Belgium and the Netherlands may rely on larger and military more powerful neighbors such as France and Germany as a geopolitical glacis. Again, Romania, doesn’t enjoy this luxury.

At present, the Romanian Land Forces operate a plethora of Soviet built and locally manufactured derivatives of the ubiquitous T-55 tank, the most produced tank in the world. The most modern tank in Romania’s arsenal is the TR-85M1, an upgraded variant of the indigenous built TR-85 tank, a T-55 inspired vehicle. Only 56 TR-85M1 have been produced between 1995 and 2009 and only one tank battalion is equipped with them. The rest of the TR-85 tanks in Romania’s inventory have not been upgraded to the M1 standard (roughly 215) and two tank battalions are equipped with this model while the rest being kept in reserve. The original T-55s have been upgraded to T-55AM2 standard and two tank battalions are equipped with this model.

Romania has also used the T-72 Ural main battle tank but only 30 have been acquired in 1978 from the Soviet Union by the communist regime.\(^6\) It was planned to build a locally designed and improved variant of the T-72 called the TR-125.\(^7\) Nothing came about of these ambitious plans. The TR-125 prototypes did not receive type certification by the Defense Ministry and soon after 1989, with the Cold War over, the program was cancelled. After the fall of communism and the end of the Cold War tank development work in Romania concentrated on upgrading the existing stocks of TR-85s.\(^8\) In the early 2000s an attempt was made to coproduce a tank with the German company Krauss Maffei called TR-2000, but the project was abandoned before the country became a NATO member.

In 2015, the Defense Ministry issued a request for information regarding the potential acquisition of 276 main battle tanks.\(^9\) Neither a value nor a time frame for the program were made public. In late 2017 the Romanian Defense Staff was interested in joining the European Defense Agency’s Main Battle Tank Optimization Program. In October 2018, then defense minister Mihai Fifor announced that Romania is interested in acquiring new tanks, however, he did not offer any other details regarding the program.\(^10\)

Nevertheless, the interest shown in the possible acquisition of a new main battle tank is a major policy change as the acquisition of a foreign made vehicle was usually rejected by the defense establishment on the basis of maintenance costs. It was argued that, compared with the current inventory of tanks, a foreign made vehicle would cost too much to maintain over its entire life cycle. This attitude was partly driven by hopes of reviving tank production in Romania. In 2015 it was estimated that Romania still possessed the industrial capacity to produce 40-50% of the

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components necessary to build a tank. However, this assessment should be taken with a grain of salt given the state of the Romanian defense industry.

Romania’s interest in acquiring new main battle tanks has been re-kindled by the war in Ukraine and the new emphasis placed on territorial defense. In theory, the commitment to spend 2% of GDP on defense allows acquisition of main battle tanks. The RFI did not specify if Romania was interested in newly built vehicles or used ones. In the medium and long term, the Romanian government should also try to join the French and German-led efforts to create a European tank – Main Ground Combat System. This approach would ensure that some tank manufacturing will be retained in the future by Bucharest.

It appears that the Defense Ministry settled on a phased approach regarding the main battle tank program. In the first phase Romania will join EDA’s Defense Agency’s Main Battle Tank Optimization Program and in the follow up phase a new main battle tank will be acquired. This program will be initiated in the 2019-2021 period. This two phased approach signals Romania’s preference for a European MBT, either a variant of the Leopard 2 or follow on vehicle.

Armored Personnel Carriers (APCs)

Developments are a lot clearer when it comes to wheeled APCs for the Romanian Land Forces. Two programs are being developed for the acquisition and manufacturing of armored personnel carriers.

The first and most advanced program is the acquisition of Piranha V armored personnel carriers from General Dynamics European Land Systems (GDELS). Romania contracted 227 vehicles for €895 million of which 30 vehicles will be produced in Switzerland and 197 in Romania at Uzina Mecanică București (UMB). The first vehicles have been delivered in November 2018 and are undergoing type certification before being formerly accepted into service. According to former defense minister Mihai Fifor, by the end of 2018-early 2019, the first 36 vehicles should have been delivered, but the program may be facing delays due to troubles with the UT-30 Mk 2 turrets. Elbit, the manufacturer of the turrets, explained that the late delivery of 30 mm Mk 44 Bushmaster cannons by its U.S. supplier affected the performance of its product during trials. Current defense minister Gabriel Leș warned GDELS that it may

14 Victor Cozmei, “Proiectul de lege al MApN pentru achizitia transportoarelor Piranha 5 construite in Romania. Primul contract vizeaza 94 de bucati, 5 cu livrare inca din acest an”, Hotnews.ro, October 25, 2017
15 MApN, - Circumstanțele și procedura specifică aferente programului esențial de înzestrare „Transportor blindat pentru trupe 8x8”, p. 1.
impose financial penalties if it does not deliver on time the first batch of 36 vehicles. Piranha V APCs will equip the Romanian element of NATO’s Multinational Brigade South-East and the 81st Mechanized Brigade.

The technology transfer that will allow UMB to produce and assemble Piranha V APCs will positively affect its capacity to produce and maintain armored vehicles. The decision of the Romanian government to modernize UMB indicates that in the future the factory may be involved in the production of heavier armored fighting vehicles.

Starting with 2020, Romania is set to acquire and produce a second type of wheeled APC called Agilis. This project dates back to 2011 when the Defense Ministry and Automăcăna Moreni began to design and manufacture a modern armored personnel carrier in order to replace the TAB/BTR series of APCs in service with the Romanian Land Forces. The design efforts led to the manufacturing and testing of a vehicle hull, but it became evident that an engine and driveline solution were beyond the design and production capabilities of the Romanian defense industry. Consequently, an international partner was sought.

Originally, in 2017, the Romanian government selected Rheinmettal as the international partner in the program. A joint venture was created – Romanian Military Vehicle Systems – which will design and produce 342 8x8 Agilis armored personnel carriers and derivatives (ambulance, command post, self-propelled mortar, engineer vehicle). According to Rheinmettal, around 87% of the components necessary to build the Agilis APCs will be made in Romania. Although the cost of the entire program has not been made public, an initial investment of €230 million is expected from the Romanian government.

Why Romania would be building two types of wheeled armored personnel carriers? The answer to this question depends on four variables: standardization, interoperability, availability and economics.

In 2006, Romania acquired 31 Piranha IIC armored personnel carriers to be deployed in Afghanistan where it was discovered that the TAB series of APCs did not provide enough protection against improvised explosive devices (IEDs). However, the economic crisis and some trouble with the first two batches of vehicles meant that the program was delayed for a
rather long period of time. Only in 2015, all 31 vehicles were delivered\textsuperscript{30} and another 12 derivatives were contracted.\textsuperscript{31}

Meanwhile, Romania’s domestic APC program was not making any progress either and a solution was needed to bridge the gap between the short term need of replacing some of the old APCs that were in service and the long term objective of producing modern APCs in Romania. Furthermore, in response to the Russian aggression in Ukraine, the United States has been stationing armored units on NATO’s Eastern Flank. Some of these units, such as the 2\textsuperscript{nd} Cavalry Regiment, are equipped with Stryker APCs\textsuperscript{32}, which are in turn based on the Piranha IIIC vehicle. Interoperability with the American forces deployed in Romania was therefore a must for any future acquisition.

Since 2006 when Romania acquired the first Piranha APCs, the technical requirements and performance of wheeled APCs had increased and vehicles with better protection, mobility and firepower have been developed. Most modern wheeled APCs have the same degree of protection and firepower as infantry fighting vehicles. Furthermore, the Russian armed forces began an ambitious modernization program which saw the development of a new variant of the BTR-80, called BTR-82A and the development of a new type wheeled APC – Bumerang.

The Bumerang builds on the Russian experience in recent conflicts such as Chechnya, South Caucasus and Georgia. Furthermore, it partly draws inspiration from western 8x8 APCs, which the Russian armed forces got the opportunity to test before the onset of the Ukrainian crisis.\textsuperscript{33} Of particular concern for NATO mechanized infantry is the Bumerang-BM turret-module which is equipped with the 2A42 30 mm automatic cannon and four anti-tank guided missiles.\textsuperscript{34} The turret can be retrofitted to older vehicles currently in Russian service as well as to newer ones. Moreover, the BTR-82A also comes equipped with its own 2A72 30 mm automatic cannon.\textsuperscript{35} The development of a new APC along with the modernization and upgrading older models represent an increase in capability for the Russian army in terms of firepower and protection that puts them on par with the latest NATO equipment.\textsuperscript{36}

Piranha V represents the solution that bridges the gap between urgently increasing the capabilities of Romania’s mechanized forces, standardization – though somewhat imperfect in this case (Piranha V is a different vehicle than the Piranha IIIC) and interoperability with Romania’s NATO allies. The Piranha V is better protected than the American Stryker vehicles while sporting the same armament and mobility. Furthermore, in keeping with current armored vehicles trends, it comes equipped with the Orbital ATK Mk. 44 Bushmaster II 30 mm automatic cannon.

\textsuperscript{30} Ovidiu Purdea Somes, “Interviu cu general-locațion Dumitru Scarlat, la final de mandat”, Revista Forțelor Terestre, No. 2, April 1, 2017.
\textsuperscript{31} V. Cozmei, “Armația a cumpărat 12 noi vehicule blindate pe platforma transportoarelor Piranha pentru 42 de milioane de euro”, Hotnews.ro, January 31, 2017.
\textsuperscript{32} Martin Egnash, “2nd Cavalry Strykers pack added punch during Bavarian forest exercise”, Stars and Stripes, October 25, 2018.
\textsuperscript{35} Army Technology, “BTR-82A Armoured Personnel Carrier”.
\textsuperscript{36} Dan Stoutamire, “Upgunned Strykers to boost 2nd Cavalry Regiment’s firepower”, Stars and Stripes, September 8, 2017.
This type of cannon equips the latest variant of Stryker APC, the Stryker Dragoon, although in an improved variant, the XM813 that has a slightly longer barrel than the standard Mk. 44.\textsuperscript{37} The KTO Rosomak APC, which is in service with Polish troops deployed in Romania, uses the same Bushmaster II cannon as the Piranha V. The Bushmaster cannon is also superior to the Russian 2A42 and 2A72 automatic cannons that equip the Bumerang APC and the more numerous BTR-82A/AM APC, respectively. Although the Romanian Land forces have opted not to equip the Piranha V with anti-tank missiles, its turret is capable of mounting a twin launcher for Spike LR anti-tank guided missiles which are currently in service with the Romanian Army.\textsuperscript{38}

A downside to the Piranha V APC is the lack of an amphibious capability due to its increased protection, but this is an acceptable compromise considering the developments on the modern battlefield and increased threat levels to lightly protected vehicles.\textsuperscript{39} Until now, all of Romania’s armored personnel carriers and infantry fighting vehicles had an amphibious capability, in line with Soviet military practice. Here is where the Agilis project fits in, as this vehicle is planned to have an amphibious capability.\textsuperscript{40} This is one of the main reasons why this project has continued, despite the Piranha V acquisition. Furthermore, the Agilis program aims to develop a 4x4 variant of this APC which will be used for reconnaissance. The other reason has to do with maintaining an industrial capacity to design and produce wheeled APCs in Romania.

Nevertheless, Agilis and Piranha V will not share any components, even if they are produced locally. The engine, driveline, armor and the weapons are going to be different. This will raise serious logistical issues in the future when both vehicles will be in service, unless a very well thought out logistical system is put in place. Romanian planners are aware of the risk involved in this approach and, defense minister Gabriel Leș has indicated that the Agilis program may be the subject of a tender, casting doubt over the partnership with Rheinmetall.\textsuperscript{41}

Maintaining the industrial capacity to build armored vehicles and armored personnel carriers is the other main reason why Romanian authorities went for a dual type acquisition for wheeled APCs. The two projects involve two different factories which have produced in the past armored vehicles. Piranha V APC will be produced in partnership with GDELS at UMB where main battle tanks used to be produced, while Agilis will be produced in a joint venture with Rheinmetall at Automecanica Moreni.

In both cases the government is looking to integrate as much of the production as it is possible locally in order to revive the Romanian arms industry. For example, the Israeli company Elbit has opened a production facility in Măgurele near Bucharest which will manufacture and assemble turrets for Piranha V vehicles.\textsuperscript{42} Furthermore, Romania aims to become a regional arms supplier by exporting some of the weapons systems produced in Romania to its neighbors, which are also modernizing and updating their armed forces.

\textsuperscript{38} V. Cozmei, “Transportoarele Piranha V cumpărățe din România și asamblate la București nu vor fi dotate din fabrica cu sistem de rachete antitanc”, Hotnews.ro, March 16, 2018.
\textsuperscript{39} MApN – “Expunere de motive - Lege privind achiziția de către Ministerul Apărării Naționale a produselor și serviciilor cuprinse în etapa 1 a programului esențial de înzestrare “Transportor blindat pentru trupe 8x8”, p. 3.
\textsuperscript{40} George Enache, “Ministrul Apărării spune că în 2020 România ar putea avea cel mai modern transportor blindat amfibiu din Europa”, Adevărul, June 21, 2018.
\textsuperscript{42} Diță 24, “O companie israeliană de armament a deschis o fabrică lângă București. Va produce și pentru Armata Română”, November 27, 2011.
Infantry Fighting Vehicles

In the 1980s Romania license-produced locally a version of the Soviet BMP-1 infantry fighting vehicle known as the MLI-84. Around 100 of these vehicles have been modernized in the early 2000s with NATO compatible systems: 25 mm automatic cannons, Spike LR anti-tank guided missiles, modern night vision equipment, a new engine as well as modern communications systems. Initially 4 battalions or 133 vehicles were planned to be modernized but only 3 battalions have been upgraded to the MLI-84M Jder standard.

Infantry Fighting Vehicle MLI 84M Jder

It seems there has been a change of mind within the Defense Ministry and another 48 vehicles are set to be upgraded. The program is estimated to cost around € 138 million and has been approved by Parliament in 2017. The decision to further upgrade 48 vehicles underscores the shift in mindset from expeditionary missions to territorial defense for the Romanian armed forces.

However, this program raises a number of questions. First, considering that the Defense Ministry is about to embark on the production of two heavily armed and protected wheeled APCs, Piranha V and Agilis, is the MLI upgrade just a stop gap? Both Agilis and Piranha V have, on paper, more firepower and protection than the MLI-84M. Should Romania do away with tracked infantry fighting vehicles and rely exclusively on wheeled vehicles? France, for example, is retiring its tracked infantry fighting vehicle AMX-10P in favor of the wheeled VBCI APC. Nevertheless, it must be said that this is not a general trend.

Second, the first upgrade program for the MLI-84M did not include increased protection for the crew and the infantry squad it carries. The MLI-84M shares the same drawbacks as the original BMP-1 vehicle: vulnerability to mines, increased risk of fire in the troop compartment and a
rather small troop compartment. It seems that the new upgrade program will address some of these deficiencies: better protection, enhanced mobility by integration of an automatic transmission, enhanced night vision equipment and upgraded electronic early warning systems.\(^{43}\)

Third, a major drawback of the modernization program for the MLI-84M has been the lack of a self-propelled 120 mm variant to provide fire support and keep pace with the mechanized infantry. There has been some research and development work done for the manufacturing of this vehicle, but it has yet to leave the design board.\(^{44}\)

It is not clear if the modernization program for the next batch of 48 vehicles includes the self-propelled mortar variant.

4x4 armored vehicles

The Defense Ministry launched a tender in 2016 for the acquisition of 286 4x4 armored vehicles.\(^{45}\) This tender was linked with the procurement of Spike LR anti-tank guided missiles. The vehicles were supposed to provide mobility for the anti-tank teams of mechanized infantry units. However, the tender was cancelled in 2017 amid corruption allegations and it has yet to be relaunched.\(^{46}\)

4x4 vehicles are important for an army’s mobility. Unfortunately, the Romanian Land Forces suffer greatly in this respect as most if its current inventory of vehicles is quite old, while the new vehicles are few and have not been standardized. Different variants of U.S. made HMMWVs, different variants of Spanish URO VAMTACs, a small number of Land Rover Defenders, small numbers of Chevrolet trucks, and a small number of Panhard PVPs are currently in service. Moreover, Dacia Duster 4x4 vehicles are increasingly replacing old ARO 240 vehicles in auxiliary roles that do not involve front line service.

If the tender for 4x4 armored vehicles is relaunched, its aim should not only be to give mobility to infantry anti-tank teams, but also to standardize as much as possible the current inventory of 4x4 vehicles. Rather than buy a vehicle type for a specific operational requirement, the Romanian Land Forces should concentrate on acquiring a family of vehicles. Moreover, the production of the vehicles should be locally integrated as much as possible.


Artillery

At present, the artillery of the Romanian Land Forces suffers from three major drawbacks. First, the reliance on Warsaw Pact calibers: 100 mm, 122 mm and 152 mm. Despite being a NATO member for 15 years Romania has yet to transition to NATO standard calibers: 105 mm and 155 mm. Second, with the exception of the LAROM and APRA-40 multiple launch rocket systems, all of Romania’s artillery currently in service is towed. Third, and the most serious issue facing the Romanian Land Forces, is the lack of an industrial capacity to produce tube artillery. Arsenal Reșița, the state owned company which produced artillery pieces for the Romanian armed forces, has been closed since 2001.

Aside from these issues the experience of the Russian-Ukrainian war must be considered and internalized. In the war in Eastern Ukraine both rocket and tube has been used on a large scale causing 85% of losses on both sides. 47 Russia has demonstrated a sophisticated use of its artillery in this conflict using unmanned aerial vehicles (UAVs) as spotters for its guns and rockets.48 Furthermore, it has used massed artillery fires to deal with Ukrainian armored and mechanized units.49 Of particular concern for NATO and the United States is the long range at which Russian forces engaged Ukrainian targets, the use of sub-munitions and of thermobaric warheads.50

There is, however, some good news. In 2017 Romania decided to acquire 54 HIMARS systems from the United States of America for € 1.2 billion.51 This is a major acquisition program which significantly increases the firepower of the Romanian Land Forces while at the same time insure full interoperability with NATO and U.S. forces. The acquisition has been made without a tender, through the Foreign Military Sales program of the U.S. government.

A major advantage of the HIMARS system is that it brings back capabilities that Romania has given up after the end of the Cold War. The program includes 54 MGM-140 ATACMS munitions with a range of 300 km.52 This is a short range guided tactical ballistic missile used for attacking high value targets with pin-point accuracy behind enemy lines. After the Cold War, following the example of other countries in Central and Eastern Europe, Romania retired from service SCUD-B (9K72)53 and Frog-7 (Luna-M) 54 short range ballistic missiles. When the HIMARS systems will be deployed and become operational around 2020, Romania will have regained a limited tactical ballistic missile capability.

47 Philip A. Karber, ““Lessons Learned” from the Russo-Ukrainian War”, Johns Hopkins Applied Physics Laboratory and U.S. Army Capabilities Center (ARCIC), 2015, p. 17.
48 Ibid. p. 13.
50 Ibid. p. 20 and p. 26. Thermobaric weapons create an intense fireball and high overpressure blast to destroy forces using terrain or fortifications for protection.
51 MApN, “Semnarea scrisorii de ofertă și acceptare pentru achiziționarea primelor trei sisteme de rachete „HIMARS””. February 26, 2018 https://www.mapn.ro/cpresa/15825_Semnarea-scrisorii-de-oferta-C4%C8%99%2C8%99i-acceptare-pentru-achiziti%C8%99-Bionarea-primelor-trei-sisteme-de-rachete-%E2%80%9EHIMARS%E2%80%9D
54 Ibid. p. 142.
In 2016, the Defense Ministry issued a request for information for 40 self-propelled 155 mm howitzers.\textsuperscript{55} The ministry planned to have two self-propelled artillery battalions equipped with 18 self-propelled howitzers and 4 vehicles should have gone to a training center.\textsuperscript{56} However, no acquisition program has begun yet. However, the Defense Ministry budget planning indicated that an acquisition program should begin in the near term, between 2019 and 2021.\textsuperscript{57}

A positive outcome of the Agilis program would be a technology transfer to Arsenal Reșița for the manufacturing of automatic cannons. If this is the case, then Romania will regain part of its artillery building capacity. Rheinmetall Defence has expressed interest in acquiring Arsenal Reșița but the deal has yet to be approved by the government.\textsuperscript{58}

Concerning the HIMARS program, two issues need to be resolved in the short and medium term. First is the question of munitions. Although the acquisition program doesn’t include offsets, Romania should try to obtain some technology transfer in respect to manufacturing munitions or parts of the system. Second, it is unclear what will happen with the LAROM systems after HIMARS becomes operational. One of the main reasons cited by the Defense Ministry to justify the HIMARS acquisition was the limited interoperability with NATO of the LAROM system.\textsuperscript{59} Will HIMARS fully replace LAROM systems in service or some of these systems will be retained?

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\textsuperscript{56} Ibid, p. 1.


\textsuperscript{59} MApN, “Expunere de motive - Lege pentru realizarea “Capabilității de sprijin de foc indirect” aferentă programului de înzestrare ,,Sistem Lansator Multiplu de Rachete cu bătaie mare””, p. 2.
Anti-Tank Capabilities
In 2016 Romania acquired an undisclosed number of Spike LR anti-tank guided missiles for €130 million from Dielh BGT Defence to equip the anti-tank teams of infantry units. Romania was already a user of Spike missiles, being one of the countries to adopt this weapon system. MLI-84M Jder and Puma SOCAT helicopters are equipped with Spike LR and ER missiles.

The Spike missiles are replacing obsolete Soviet 9M14 Maliutka (AT-3 Sagger) and 9K111 Fagot (AT-4 Spigot) guided anti-tank missiles currently in service with the Romanian Land Forces. It is unclear if they are also replacing 9M113 Konkurs (AT-5 Spandrel) missiles. This represents a major increase in the anti-tank capability of Romanian infantry units as Spike is a third generation anti-tank missile equipped with a tandem warhead and a sophisticated guidance system (fiber optic and imaging infrared). The decision to acquire these missiles to equip the anti-tank teams of the mechanized infantry units was probably inspired by the fighting in Eastern Ukraine where Ukrainian forces equipped with Soviet era anti-tank guided missiles could not penetrate the reactive armor of Russian and rebel tanks.

Unfortunately, no program for replacing older hand-held anti-tank weapons has been announced. RPG-7/AG-7 and heavier SPG-9/AG-9 are still in service with the Romanian Land Forces. Their usefulness as anti-tank weapons on the modern battlefield is debatable given the advances in armor protection. Increasingly, both light and heavy armored fighting vehicles make use of ceramic armor, reactive armor, slat armor as well as active protection systems specifically designed to deal with hand held anti-tank weapons as well as guided missiles. Furthermore, Romania doesn’t produce tandem warheads for neither of these weapons, consequently they should be replaced with more capable systems.

In 2017, Rafael, the original Israeli manufacturer of the Spike family of missiles, introduced new variants of its Spike LR and ER missiles. The new missiles have increased range, improved warhead and improved guidance over the older types. In the medium and long term Romania should consider upgrading its stocks of Spike missiles to the latest standard, if that is possible. Furthermore, in order to increase its anti-tank capabilities the acquisition of Spike NLOS missile system should be considered. This variant of the Spike missile can engage tanks and armored vehicles up to a range of 25 km. It also has the advantage of being capable of engaging small, pin-point targets.

Small Arms
As in the case of artillery systems, the Romanian armed forces still predominantly employ small arms in Warsaw Pact calibers. Only Special Forces units employ small arms in NATO standard calibers for interoperability reasons. Nevertheless, the Defense Ministry started in 2011 a program to produce a NATO standard assault rifle.

60 V. Cozmei, “Noi achizitii militare facute de Romania: rachete antitanc de inca 20 de milioane de euro si un radar american de 33 de milioane de dolari”, Hotnews.ro, January 21, 2018.
61 Army Technology, “Spike Anti-Tank Missile”
64 Army Technology, “Spike Anti-Tank Missile”
arms for the Romanian military, is developing the new rifle. The weapon is based on the AK platform and comes in 5.56 x 45 mm NATO standard caliber.

Unfortunately, the new rifle is still in prototype stage and awaits type certification after 8 years since the program has been initiated. It should be noted that the program only aims at replacing the current assault rifles in service with the Romanian armed forces (PA-86 and AKMs). No program for NATO caliber light or medium machineguns or designated marksman rifles has been initiated by the Defense Ministry.

Due to the protracted development process of the new assault rifle, Romanian officials have reached out to foreign companies. It seems that rather than producing a new rifle, license manufacturing of an existing design to Romanian specifications is sought after. Romania has shown interest in the Croatian VHS-2 rifle and in the Beretta ARX160 rifle. Small batches of these assault rifles have been tested by elements of the Romanian armed forces.

In September 2018, an agreement between Uzina Mecanică Plopeni and Beretta was approved for the creation of a joint venture which will produce small arms. According to economics minister Nicolae Bădălău, the production of a new assault rifle by the Romanian-Italian joint venture, in all likelihood the ARX160 or a variant thereof, will start in the summer of 2019.

However, the delay in adopting a new rifle may serve Romania well in the long run. The United States would like to field a new assault rifle in 2023. Normally this would not represent a great development, however, the new rifle will be chambered for a 6.8 mm caliber round. If the United States adopts a new assault rifle caliber in the 2020s, NATO will soon follow.

Rather than go ahead and adopt a 5.56 mm caliber assault rifle, Romania should adopt a different course. Instead, as a stop-gap measure, it should modernize its existing stock of assault rifles with modern aiming devices and Picatinny rails and re-chamber its PK machineguns in 7.62 x 51 mm NATO. Furthermore, the current designated marksman rifle, the PSL, should be replaced with a new rifle chambered in 7.62 x 51 mm. Finally, if the U.S. switches to 6.8 mm caliber, then Romania should adopt a new rifle in this caliber. This seems the best course in terms of both costs and technology. Although rifles today have a modular design, which allows using different calibers on the same platform, munition manufacturing lines are not so easily adaptive.

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67 The Romanian variant of the AK-74
72 Todd Sout, “More than a rifle: How a new 6.8mm round, advanced optics will make soldiers, Marines a lot deadlier”, Military Times, December 10, 2018.
Logistics and mobility
In 2018, the Defense Ministry estimated a need for 13,964 trucks/multirole transport platforms to replace the existing inventory of old vehicles.73 The same year, a tender for 3,365 trucks and trailers was launched and, according to former defense minister Mihai Fifor, the vehicles should be delivered over the next ten years (2018-2027). This acquisition program is likely to have a positive impact on the local auto industry as most of these trucks will be built locally. The government has made no secret that it wants part of the money spent on defense reinvested into the economy through offsets. Given such a large order, local truck manufacturing will be encouraged.

Unfortunately, the tender has been suspended after Rheinmetall MAN and MHS Truck and Bus SRL have lodged a complaint citing a requirement favoring Iveco Defence Vehicles.74 The court has decided in favor of Rheinmetall MAN and MHS Truck and Bus SRL and has cancelled the acquisition process.75 However, this decision is likely to be appealed by the Defense Ministry as it is not final. Regardless, this development will delay the entire program.

Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR)
Romania plans to acquire 21 C4ISR systems to equip Land Forces units with modern and sophisticated equipment. This program has received parliamentary approval and is valued at €180 million.76 Seven brigade level systems and fourteen battalion level systems are to be acquired over a ten year period (2017-2026). However, to date, no acquisition process has been launched.

According to the Defense Ministry, Romania lacks modern C4ISR systems and the current command and control systems operated by the military fulfill emergency operational requirements, but suffer from operational limitations and have limited interoperability.77 Moreover the lack of standardization hampers maintenance efforts and makes Romania dependent on foreign suppliers.78 The Romanian Defense Ministry wants a national C4ISR capability that is less dependent on foreign suppliers and can be easily maintained and further developed.

A controversy arose when a memorandum of understanding between Circinus LLC and Romarm, the state owned Romanian defense industry holding was signed.79 Circinus LLC is a

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77 Guvernul României, “Hotărârea Guvernului privind achizitia de către Ministerul Apărării Naționale a sistemelor de comandă, control, comunicare, computere, informații (C4I), cu capabilități de integrare a informațiilor de supraveghere, indicare/localizare și cercetare (ISTAR)”, p. 1
78 Ibid., p.2.
U.S. defense contractor owned by Elliott Broidy, an American political operator that raised funds for Donald Trump’s campaign.\textsuperscript{80} Incidentally, Elliot Broidy mediated the participation of PSD leader and Romanian strongman Liviu Dragnea at the inauguration of President Donald Trump in 2017.\textsuperscript{81} Elliot Broidy is a controversial figure and is being investigated for trying to use its influence within the Trump Administration in favor of foreign governments.\textsuperscript{82}

It has been alleged (in the Romanian media) that Liviu Dragnea was trying to carry favor with the Trump Administration by awarding the C4ISR contract or parts of it to U.S. companies, so that the American Government would turn a blind eye to corruption charges made against him by Romanian anti-corruption prosecutors. Similar allegations have been made against Mr. Dragnea in connection with the corvette program. However, the signing of memorandums of understanding between two or more companies does not mean that a certain contract will be awarded to one of the parties involved and does not replace a contract. Furthermore, the acquisition procedure for C4ISR systems has not been launched yet by the Defense Ministry.

Besides C4ISR systems, the Defense Ministry wants the armed forces to have unrestrained access to satellite communications. Romania leases from its allies satellite communications access and this represents a double inconvenient: the armed forces are dependent on commercial or other country’s military satellites and it costs money. The armed forces spent € 7.5 million on satellite communications between 2009 and 2018.\textsuperscript{83} According to defense minister Gabriel Leș, Romania is ready to invest in a € 400 million dual use satellite that will serve not only the military, but also other institutions that deal with national security (Interior Ministry, intelligence services).\textsuperscript{84} The program is going to be developed and implemented with the help of the Romanian Space Agency and does not entail the building of a satellite locally. An acquisition program will probably be launched in 2022 in order to select a supplier.\textsuperscript{85}

**Unmanned Aerial Vehicles (UAVs)**

UAVs or drones have become invaluable for conducting military operations on today’s battlefield. Carrying out reconnaissance, surveillance, intelligence gathering, targeting and strikes, drones increase the awareness and lethality of any military branch. Presently, around the world, drones are being operated and developed for air forces, land forces, navies and special forces.

\textsuperscript{80} Ben Wieder and Peter Stone, “GOP leans on rainmaker who courts controversy on two continents”, *McClatchy DC Bureau*, February 7, 2018.
\textsuperscript{82} G4Media, “*Washington Post*: Elliott Broidy, omul care l-a dus pe Dragnea la Trump, ar fi investigat în SUA pentru suspiciunea că a încercat să vândă unor guverne străine influența pe lângă Casa Albă”, August 18, 2018.
\textsuperscript{84} Observator TV, “*Proiectul "Dacul"*: satelitul pe care Armata Română vrea să îl trimită în spațiu”, December 19, 2018.
Romania operates a limited number of UAVs and their operation is surrounded by secrecy. Nevertheless, Romania is known to operate Shadow 600 (RQ-7B Shadow)\textsuperscript{86}, RQ-11B Raven,\textsuperscript{87} ScanEagle (Q-27)\textsuperscript{88} and Phoenix 30\textsuperscript{89} unmanned aerial vehicles. Furthermore, Romania has joined NATO’s Alliance Ground Surveillance Program which operates U.S. made Northrop Grumman RQ-4 Global Hawk.\textsuperscript{90} To date, Romania has not acquired or developed armed UAVs.

In 2016, the Defense Ministry launched a tender for the acquisition of 6 tactical UAVs.\textsuperscript{91} The program was valued at € 55 million. In February 2017, the tender was cancelled after two companies, Ymens Teamnet and Israel Aerospace Industries, lodged complaints with the Romanian public acquisition watchdog.\textsuperscript{92} The program has not been re-tendered since.

The Romanian Defense Ministry is also developing, on its own, a mini-UAV called Boreal.\textsuperscript{93} The Boreal program started in 2011-2012 and its aim is to create a cost effective mini-UAV to be use by special forces and regular troops at small unit level. The aircraft was tested in Afghanistan, but has not been adopted by the Romanian military yet.\textsuperscript{94} This is a promising UAV, which could have a positive impact upon military operations as well as from the industrial point of view. The Defense Ministry is looking for local UAV manufacturers or aviation companies to take up production of the Boreal.

### Helicopters

Since 1968, Romania has been a producer of military and civilian helicopters. In contrast with other Warsaw Pact nations, Romania license built and later developed its own versions of western helicopters. Currently, the Romanian Air Force operates 66 IAR-330 L/M and IAR-316B helicopters.\textsuperscript{95} These are licensed produced versions of Aérospatiale SA-330 Puma and SA-316B Alouette III helicopters. However, this aircraft is approaching the end of its operational life, with most of the airframes being more than 30 years old.\textsuperscript{96} This situation...


\textsuperscript{88} General Service Administration – Federal Business Opportunities, “Scan Eagle Modifications and Repairs - FMS Romania”, March 19, 2013, https://www.fbo.gov/index?s=opportunity&mode=form&id=3897e55b5dffe8336cf08cbbd7b7813&tab=core&cview=0

\textsuperscript{89} Beth Stevenson, “Romania's army has a new quadrotor capability following the arrival of four UAV Solutions Phoenix 30 unmanned air vehicles”, Flight Global, January 11, 2016.

\textsuperscript{90} Ovidiu Poșcărcă, “Romania teams up with 13 NATO members to buy 5 surveillance drones”, Business Review, May 22, 2012.

\textsuperscript{91} V. Cozmei, “Noi achiziții în Aparare: Drone tactice de 55 de milioane de euro și 3 milioane de euro pentru sisteme de observare si reconnasterea a tîntelor pentru nave fluviale”, Hotnews.ro, August 18, 2016

\textsuperscript{92} Adrian Dumitruța. “Licitația Romtehnica pentru 6 drone de 250 milioane de lei a fost anulată, după admiterea contestatiilor Ymens Teamnet si Israel Aerospace”, Profit.ro, February 2, 2017


\textsuperscript{96} A limited upgraded is being applied to 7 aircraft by IAR Ghimbav which will be deployed to Mali and participate in the UN led MINUSMA mission.
affects not only the armed forces, but also the Ministry of Interior, which operates Russian Mi-8/17 helicopters for search and rescue and firefighting operations, as well as a small number of newer and lighter Airbus EC-135 helicopters.

In 2014-2015, Romania began exploring options for replacing its ageing military helicopter fleet. However, no acquisition program has been put forward. Romania needs to replace its transport helicopters, light helicopters (for training and other missions) and to acquire naval helicopters for its new ships. Furthermore, after almost 20 years, Romanian decision-makers have expressed interest in acquiring attack helicopters, to increase its anti-tank and close air support capabilities.

Given Romania’s experience in manufacturing this type of aircraft and the need of many of its neighbors to replace their aging military and civil helicopter fleets, the Romanian government would like the country to become a helicopter hub in the region. However, Romania is in competition with Poland and Hungary to become such a hub. Poland is better positioned in this respect hosting manufacturing facilities of three major international helicopter producers: Sikorsky Helicopters (subsidiary of Lockheed Martin), Airbus Helicopters and AgustaWestland. In Hungary, Airbus will open a manufacturing facility for helicopter components after Budapest ordered 20 H145M light helicopters and 16 H225M Caracal medium transport helicopters.

Romania has conducted talks with three helicopter manufacturers: Airbus Helicopters, Bell Helicopter and Sikorsky Helicopters. Airbus Helicopters has maintained the longest presence in the country and has been considered favorite to win orders in any modernization process because of its strong industrial relationship with Romania’s aviation industry, previous use of its products by the military and political clout. In 2016 Airbus opened at IAR Ghimbav, near Brașov, a manufacturing facility for H215M helicopters. The European giant has shifted the entire production line for both the civilian version and military of the H215 helicopter from France to Romania. Airbus has asked the government to order a minimum of 16 helicopters to start production.

Surprisingly, Romania has expressed a strong preference for acquiring U.S. made helicopters. The preference for U.S. made helicopters has to do with Romanian forces first hand operational experience in Afghanistan and Iraq while among government and military officials it is felt that the American rotorcraft are superior to European ones.

For three years Romania has conducted talks with Bell Helicopter and the U.S. government for the acquisition of 45 attack and transport helicopters. The Defense Ministry would like to acquire 24 AH-1Z Viper attack helicopters and 21 UH-1Y Venom medium combat helicopters.

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Furthermore, Romanian authorities have opened negotiations with Bell Helicopter for the production and assembly of attack helicopters at IAR Ghimbav.\textsuperscript{103} Although such a facility will not preclude the production of H215M helicopters by Airbus, it would be controlled by Romanian government which owns the majority stake in IAR Ghimbav. From a technological point of view, Bell Helicopter has the added advantage of being involved in the development of tiltrotors\textsuperscript{104} and Romania could benefit from a potential technology transfer.

Another U.S. company interested in modernizing Romania’s helicopter fleet is Lockheed Martin through its subsidiary Sikorsky Helicopters. Lockheed Martin has proposed that Romania acquire UH-60M Black Hawk helicopters to replace the current helicopter fleet, while establishing in Romania a maintenance center for all of its European customers.\textsuperscript{105} The maintenance facility will be developed with Romaero, near Bucharest, with which Lockheed Martin signed a memorandum of understanding in 2018.\textsuperscript{106} This is an ambitious proposal by the American company, but it is clear that the Romanian government wants a manufacturing facility, not just a maintenance one. However, the deployment of U.S. forces in Romania and the issue of interoperability may help the American manufacturer.

The approach chosen by the Romanian government to modernize its helicopter fleet raises a number of issues. First, the lack of an approved program and budget that will form the basis of an acquisition process. The National Defense Council (CSAT) has approved programs for transport, combat search and rescue and medevac helicopters for the armed forces for 2019-

\begin{footnotesize}
\begin{enumerate}
\item A hybrid between a helicopter and an airplane.
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2028, but this is far from an acquisition program. Currently, the total number of helicopters (attack, combat/transport, naval and light helicopters) required by Romania is unknown. There is a requirement on the table for 45 helicopters, but that in itself raises a different set of issues. Romania’s interest in attack helicopters is legitimate given the need to increase anti-tank capabilities. However, what stands out in the negotiations with Bell Helicopter is the acquisition of 21 UH-1Y Venom medium helicopters which are in the same class as the H215M. Romania is likely to operate two types of medium helicopters if the government agrees to order aircraft from both manufacturers.

The only explanation for such an outcome is that Romanian planners want to distribute helicopter operations among all three service branches. After the Air Force, the Romanian Naval Forces were the first service branch to employ helicopters in their operations and the Land Forces may follow its example. According to Romanian officials, the first class of pilots from the Land Forces was inducted into the Air Force Academy in 2017. It seems that the Romanian Land Forces will have its own light aviation service in the near future.

The second issue is more delicate and deals with the handling of negotiations by the Romanian government. Airbus has publicly expressed concerns regarding the way negotiations are handled. The Franco-German conglomerate is dissatisfied that it has built a manufacturing facility in Romania from the ground up, but no major orders are forthcoming. In addition, Romanian authorities have expressed a clear preference for the product of one of their major American competitors. Furthermore, with support from the French and German governments, Airbus has asked for a transparent acquisition process.

Finally, current negotiations regarding Romania’s helicopter “program” have been concentrated on the acquisition of attack and medium helicopters. However, Romania also needs light helicopters for training, special forces operations and battlefield observation and target acquisition. This is an issue that needs to be resolved soon, given the age of IAR-316B Alouette III helicopters used for training by the Romanian Air Force. It is likely that Romania will make a decision concerning the modernization of its helicopter fleet in the near future (2019-2020).

108 Communiqué de presse des Ambassades de France et de la République fédérale d’Allemagne, “La coopération industrielle, Airbus-IAR pour une Europe de la défense plus forte”, April 13, 2017 https://ro.ambafrance.org/Communique-de-presse-de-l-Ambassade-de-France-et-d-Allemagne
Air Defense
Multirole Fighters

In 2013, after long delays, Romania finally acquired a multirole fighter for its air forces. A squadron of used 12 F-16 AM/BM multirole was acquired from Portugal with the support of the U.S. government. A second squadron should have been acquired around 2017-2019. It is 2019 and the second F-16 squadron has yet to be acquired. According to the original schedule, the first aircraft from the second squadron of multirole fighters should have arrived by 2019 and the process of finally retiring the MiG-21 Lancer should have begun by now. Meanwhile, according to former defense minister Mihai Fifor, Russian aircraft incursions near or into Romania’s air space have multiplied in the past two years.

Instead, the Defense Ministry’s plans seem to have radically changed. In 2017, Romania decided to acquire seven Patriot air and missile defense systems, while aircraft acquisition seems to come in second place.

Unfortunately, the government’s plans concerning multirole fighters lack coherence. Two courses have been pursued simultaneously over the past two years by Romanian authorities regarding multirole fighters between 2017 and 2019. First, a short term solution of acquiring five more F-16 aircraft: four one-seaters and one double seater. This aircraft will probably

Source: Liviu Dnistran

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111 Ibid.
join the existing fighter squadron, the 53rd Warhawks. The reasons for this decision have not been fully explained by the Romanian Defense Ministry, but it indicates that there may have been problems operationalizing a 12 aircraft squadron. The 53rd Fighter Squadron has already reached its initial operation capability (IOC) and will reach full operational capability in the first half of 2019. Then it will perform air policing missions.

Second, a long term solution for modernizing the Romanian Air Force is acquiring 36 more F-16 multirole fighters. This means that Romania will have around 53 F-16 fighters. If the first 12-17 fighters are used as examples, the next 36 will be newly built fighters. This approach raises a major question mark, because since 2010 Romania’s stated goal in terms of air power modernization has been the acquisition of the F-35 Lightning II Joint Strike Fighter. In this sense, the acquisition of used F-16 represented a bridging solution until Romania can afford the F-35. However, Romania may still become an F-35 user by simply opting to divide the acquisition of 36 multirole fighters in two batches of F-16s and F-35s respectively or by replacing the F-16s acquired in 2013 with F-35s later on.

Four major issues affect the acquisition of multirole fighters at present. First, the multirole fighter suffers from delays, both in terms of acquisitions as well as in terms of capability operationalization. Originally, the first acquisition should have started in 2008 and finished in 2013. Instead, the first acquisition was made in 2013, five years later than expected due to economic difficulties and high level political disputes.

Second, the lack of a budget for the program. The government wants to acquire in the short and medium term a quantity of 40 fighters, but no figure in terms of value has been put forward.

Third, Romania wants to maintain its own fighters and to develop a maintenance center for countries in Central and South Eastern that become F-16 users. Slovakia and Bulgaria have selected F-16s to modernize their air forces and Croatia may follow suit in the near future. However, despite negotiations with Lockheed Martin, an agreement concerning long term maintenance at a Romanian facility has not been reached yet.

Fourth, the F-16 is still in production in more advanced configurations than the one Romania has bought in 2013 and is still in service with the U.S. Air Force and other allied nations, but the F-35 Lightning II Joint Strike Fighter will gradually replace it. Although used F-16s and newer models may be in high demand in the short term and cost effective from Romania’s point of view, a clear path to the F-35 must be planned for after 2025.

All these issues need to be resolved in the foreseeable future in order to make the modernization process of the Romanian Air Force credible.

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114 Mediafax, “Comandorul Cătălin Micleș, numărul 1” al escadrilei de F-16 din Forțele Aeriene Române, spune când va începe Escadrila 53 Vânătoare să facă poliție aeriană”, December 20, 2018
Advanced Trainer Program

The purchase of F-16 multirole fighters in 2013 has highlighted the operational requirement for an advanced trainer to prepare future F-16 pilots. Since 1988, Romania has produced in small numbers a lead-in jet trainer for its Air Force. The IAR-99 Șoim is an advanced trainer used for the training of future fighter pilots. A limited number of aircraft (12) have been upgraded with modern avionics in the early 2000s in order to train fighter pilots for the MiG-21 Lancer.

INCAS, the national aeronautics institute, has developed an advanced configuration for all IAR-99 in service with the Romanian Air Forces called IAR-99 Super Șoim. This version of the aircraft represents a deep upgrade of the existing airframes. According to INCAS, IAR-99 will receive a radar and advanced electronics. The program was approved by the government in 2018 and is valued at € 124 million. Avioane Craiova SA will be the main contractor for the program, as it is the original manufacturer of the IAR-99 trainer. It is hoped that the Super Șoim program will revive aircraft production at Avioane Craiova SA, which has experienced difficulties after the fall of communism. Although the program doesn’t involve new-built aircraft at the moment, it may do so after Romania purchases more multirole fighters and finds an export customer. It should be noted that Romania is the only user of IAR-99 as no foreign customer has ordered this type of aircraft.

However, the start of the program has been affected by a complaint lodged in court by Elbit Systems which challenges the selection by Avioane Craiova SA of CMC Electronics Aurora LLC, a US company, as the main supplier of avionics for the project. CMC Electronics Aurora LLC has been selected to the detriment of both Elbit Systems and Lockheed Martin, which raises questions regarding the selection process considering that IAR-99 Super Șoim is meant to facilitate the transition to the F-16 multirole fighter. Serious allegations have been recently made that the selection of the avionics has been seriously marred by the previous business relationship between the current manager of Avioane Craiova and the supplier - CMC Electronics Aurora LLC.

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122 V. Bolocan, “Programul de modernizare a avioanelor IAR-99, considerate vitale pentru pregătirea viitorilor piloți de F-16 Fighting Falcon, tergiversate”, Adevărul, September 18, 2018
123 Gazeta de Sud, “Exclusiv GdS: Israelienii „se bat” cu americanii pe bani pentru Avioane Craiova”, January 16, 2019
124 George Marinescu, “CMC Electronics, o firmă apropiată şefului de la Avioane Craiova SA”, Bursa. February 22, 2019
Ground Based Air Defense
Patriot Program

In 2017, Romania decided to procure Patriot PAC-3+ long range air and missile defense system. This is the single most expensive military program approved by Romanian authorities for the 2017-2026 period. The program is worth € 4 billion and involves the acquisition of seven air defense systems. It is also the second most important air defense modernization program carried out by Romania after the purchase of F-16 fighters in 2013. The acquisition is being run through a FMS program by the U.S. government and represents a direct award.

The first Patriot air defense system is set to arrive by the end of 2019 and it will become operational in 2020. In Romanian service, the Patriot systems will replace Soviet era SA-2 Guideline (S-75 Volkhov) air defense systems and possibly SA-6 Gainful (2K12 Kub) systems. The seven Patriot systems will be operated by the Romanian Air Forces and the Land Forces.

The choice for the Patriot air defense system (in its latest iteration) is not a surprise since Romania is hosting the AEGIS Ashore facility at Deveselu, part of the U.S. missile defense for NATO. Currently the antiballistic system is integrated with the Romanian surveillance and air defense operations. Although the Romanian authorities would never publicly acknowledge this reason, the deployment of the AEGIS Ashore system in the country made the acquisition of an interoperable and compatible system inevitable. According to the Defense Ministry, the Patriot was selected for many reasons: because its long range allows the engagement of hybrid threats at Romania’s border, it can be kept into service for a long period of time through a number of software and hardware upgrades, it allows for long term planning of the air defense strategy, it fulfills the mission and operational requirements of the Romanian armed forces, it is the only NATO interoperable system of its type that is combat proven, it is compatible with HAWK medium air defense system already in service and it’s being acquired in its latest iteration.

The first system is set to arrive in Romania by the end 2019 and achieve operational status in 2020. On December 1, 2018, the 74th Patriot Regiment was activated under the command of the Romanian Air Force Staff – this will be the first unit equipped with the Patriot air defenses system. The seven Patriot systems come equipped with 56 MIM-104E Guidance Enhanced Missile-TBM (GEM-T) and 168 Patriot PAC-3 MSE missiles. The large number of Patriot PAC-3 MSE missiles, which is optimized for missile defense, indicate Romania’s preoccupation with missile threats coming from the Crimean peninsula. Raytheon, the manufacturer of the Patriot system, has expressed interest in working with Romanian companies for the maintenance of the system and manufacturing of certain components of the system.

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126 Proiect de lege pentru realizarea ”Capabilităţii de apărare aeriană cu baza la sol” aferentă programului de înzestrare esenţial „Sistem de rachete sol-aer cu bătăie mare (HSAM)”, pp. 3-4.
127 Bogdan Aron Pantilimon, “Prima unitate Patriot din România”, Observatorul Militar, No. 48, December 5 – December 11, 2011, p.2
Short and Very Short Range Air Defense Systems

In order to be effective, an integrated air defense system must be layered. Moreover, mechanized units or air mobile units need to have their own air defense capabilities to deal low flying threats such as multirole fighters, attack helicopters and UAVs. Moreover these short range systems are effective at protecting fixed installations against aircraft, cruise missiles or even smart munitions. Romania seeks to replace its current inventory of Soviet made and locally produced inventory of short and very short range air defense with modern and NATO interoperable systems. Systems like the 9K33M3 Osa (SA-8 Gecko), CA-95 and CA-94 should be replaced by 21 short and very short range air defense systems.

The program is estimated to cost around € 2.1 billion. In the first phase of the program, only short range air defense (SHORAD) systems and missiles will be acquired.131 Five foreign companies have expressed interest in the Romanian short defense program: MBDA (which offers Mistral and VL Mica missiles), Raytheon (which offers Stinger missiles and NASAMS systems), Diehl Defence (which offers Iris-T and Iris-T SL missiles) and Rafael (which offers SPYDER air defense system that uses Python-5 and Derby missiles).132 However, no acquisition process has been started yet. As with other defense programs, Romania would like to use the opportunity of this acquisition to relaunch its defense industry and to produce missiles and components for the selected air defense solution.

Some of the existing short range air defense systems in Romanian service may be upgraded and not replaced altogether. The most modern system is the Oerlikon Contraves GDF-003 35 mm air defense cannon known locally as Viforul which has been in service with the Romanian

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armed forces since the late 1990s. These systems could easily be upgraded to the GDF-005 standard and equipped with the AHEAD proximity fused ammunition which will increase their effectiveness considerably against aerial threats. Furthermore, the Gepard self-propelled air defense systems acquired before joining NATO from Bundeswehr’s stocks should be upgraded before a suitable replacement is found as they represent the only modern and NATO interoperable systems that can protect armored formations. Programs for upgrading and modernizing or replacing Viforul and Gepard short range air defense systems should be considered in the near future.

Naval capabilities
Corvettes and Frigates
Former defense minister Mihai Fifor declared 2018 a “navy year” in terms of military acquisition programs. The flagship program of this naval armaments drive was the building in Romania of four multirole corvettes and the modernization of the two Type 22 frigates acquired in 2003 from the United Kingdom. The program was launched on February 26, 2018 and was valued at € 1.6 billion. The winner of the competitive acquisition process should have been announce by October 26, 2018, but the deadline was extended twice (first time until November 15, 2018, and then until January 12, 2019).

Originally, five companies expressed interest in the Romanian corvette program: Damen Schelde – Netherlands, Group Naval – France, Fincantieri – Italy, ThyssenKrup Marine Systems – Germany and STM – Turkey. Three companies qualified in the final stage of the acquisition program: Damen Schelde, Group Naval and Fincantieri.

On January 11, 2019 the Defense Ministry tersely announced that, following an internal audit, it suspends the acquisition process and it has lodged a complaint with military prosecutors for “reasonable suspicions regarding the legality of the acquisition process that may have compromised Romania’s national security interest.”

Furthermore, in support of this decision, the Defense Ministry cited a lawsuit launched by Group Naval and its Romanian partner, SN Constanța, calling for the cancellation of the acquisition process. On February 18, 2019, SN Constanța withdrew its complaint concerning the acquisition process – “so as not to be considered responsible for the delay of the program”. However, the court has yet to approve SN Constanța’s request since the investigation of the military prosecutor’s office has not been concluded yet.

Mobile Coastal Defense Systems
The Romanian Naval Forces operate four 4K51 Rubezh mobile coastal defense systems acquired from the Soviet Union in the late 1980s. These systems employ SS-N-2 C/D Styx (P-20/22) missiles, which are obsolete and are not capable to deal with the evolving threat in the

134 For further discussion concerning this program see George Vișan “Romania’s Naval Ambitions – An analysis of current acquisition programs”, ROEC Special Report, July 19, 2018.
Black Sea. Romania wants to acquire three new mobile coastal defense systems to protect against amphibious assaults and incursions into its territorial waters. The program is valued at € 137 million and the acquisition process was launched on October 1, 2018. Four major international manufacturers and suppliers of anti-ship missiles have showed interest for this program: MBDA, Kongsberg, Boeing and Saab.

The program was partially suspended but according to defense minister Gabriel Leș it will restarded as soon as the two preffered bidders obtain their security certifications. The minister did not say which companies remained in the competition. The decision to go ahead simultaneously with both the corvette program and the coastal defense systems may result in the selection of two different types of anti-ship missiles. Ideally, both ships and coastal defense systems should employ the same type of anti-ship missile. This has to do with both operational and logistical reasons. However, it is not unheard of navies to employ a different type of anti-ship missile on ground-based launchers than on surface ships. The Romanian government has requested that the winner should provide a maintenance facility or to integrate production as much as possible locally with a state owned enterprise or a joint venture.

One of the qualification criteria for the program is that companies that wish to bid must have produced and delivered mobile coastal defense systems in value of at least € 137 million since 2000. MBDA flagged this requirement before the start of the acquisition program as unfairly favoring Kongsberg Defense, which was the only company that met this criterion. The media also noticed this and accused the Defense Ministry of favoring Kongsberg, which in the past has faced accusations of graft in Romania, but not in connection with defense contracts. Romtehnica, which handles the acquisition process for the Defense Ministry, has issued a response to inquiries made by the participants regarding this condition by saying that all producers of anti-ship missiles that delivered orders of at least € 137 million since 2000 qualify for the initial phase of the program.


Victor Cozmei, “România vrea să cumpere lansatoare mobile de coastă cu rachete antinavă: Care sunt variantele de rachete care ar intra în cursă și de ce contractul de „doar” 137 mil. euro ar putea avea o miză mult mai mare”, Hotnews.ro, July 16, 2018.


Ibid., p. 3.


Conclusions
The modernization programs pursued by the Romanian government for its armed forces are ambitious in scope and in terms of capabilities. The systems that Romania has started or is planning to acquire are high performance and are useful in the high intensity conflict and territorial defense. Furthermore, most of the programs include provisions for local manufacturing and technological transfer aimed at reviving the country’s state owned defense industry.

However, this rearmament drive comes after more than a decade of underinvestment in defense. The low level of defense spending has left its mark on capabilities as well as on the Defense Ministry’s ability to run complex and expensive defense programs. As such, the apparatus charged with running these programs and preparing their launch is undermanned and lacks experience. A proof of this state of affairs is the number of programs that have suffered from delays or the number of “clarifications” requested by bidders during different acquisition processes. Defense minister Leș grudgingly acknowledged this issue, recognizing that there are “so many expensive programs begun at present.”145 In the short run, the Defense Ministry may re-prioritize some of the equipment requirements due to its limited capacity to manage defense programs.

Nevertheless, lack of administrative capacity is not the sole source of delays. Policy failures affect some of the most important programs aimed at creating or reviving key capabilities. The service most affected by delays is the Romanian Naval Forces, which has seen in the past decade all of its major equipment programs delayed and suspended: modernization of the Type 22 frigates, corvette acquisition and coastal defense systems acquisition. These delays happened even as both civilian and military leaders have declared the modernization of the navy a top priority. In the context of major negative security developments in the Black Sea and the age of the ships comprising Romania’s fleet, the decision to shift from direct award strategy to a competitive process in the case of the corvette program, represents the greatest policy failure in terms of defense acquisition policy by the Romanian government. This opened the door to major delays in terms of building the ships and operationalizing key capabilities.

The second service affected by program delays is the Romanian Air Force. The multirole fighter program has been seriously delayed in terms of procurement as well as operational terms. Unfortunately, these delays mean that MiG-21 Lancer will have to be kept in service beyond 2019, maybe into the early 2020s. However, the Patriot program is on schedule and will probably compensate for the delay. Nevertheless, a clear policy regarding the multirole fighter program must be enacted and put in place soon. Furthermore, the first phase of the short range and very short range air defense program (SHORAD/VSHORAD) should be initiated in the short term. The helicopter program should also be initiated in the near future, given the age of most of the airframes operated presently by the Air Force.

The Land Forces are doing a bit better, but not by a large margin. Programs like the Agilis APC, the NATO standard caliber rifle and Boreal 5 mini-UAV are seriously delayed. Originally, the production of the new APC should have started in 2020, after 9 years spent in development. It seems that the target date will be missed due to the reluctance of the

government to sing off on the € 230 million Euros necessary for Rheinmetall to begin developing and manufacturing the vehicle. Long development periods translate in expensive and obsolescent weapons systems.

Other programs have been suspended or cancelled or have to be relaunched, due to the acquisition processes being contested in courts or with the public acquisition watchdog. This is the case of the tactical UAV program, 4x4 vehicles for the anti-tank teams and trucks (multirole transport platforms). Delays may even affect the Piranha V program, the first program (of the ten approved in 2017) that has made deliveries.

The two flagship programs – Patriot (which is shared with the Air Force) and HIMARS are on schedule. Nevertheless, the Defense Ministry should initiate the tank and self-propelled howitzer programs in the near future. Moreover, the modernization of 48 MLI-84M infantry fighting vehicles has not been initiated yet.

In terms of capabilities, the modernization programs (initiated or planned) follow three visible acquisition trends:

- **Standardization** – this is best seen in the Spike missile acquisition and the acquisition of the TPS-77 radars – the mobile variant of the FPS-117 long range radar, already in service. This trend has also the advantage of making cost effective acquisitions. However, in some areas, such as 4x4 vehicles, standardization efforts must be intensified.

- **Building-on existing capabilities**, even if these are obsolescent. This is the case of MLI-84M modernization (for lack of a replacement vehicle, this is the best option), the modernization of the Type 22 frigates, the Piranha V APC program (which builds on the previous Piranha 3C program), or in the “deep” upgrade of the IAR-99 lead-in trainer aircraft. Patriot and HIMARS too, build on existing capabilities (the HAWK air defense system and LAROM multiple launch rocket system respectively).

- **Emphasis placed on interoperability with the United States and NATO (in this order)**. The acquisition of Patriot air defense systems and HIMARS long range rocket artillery systems enhance interoperability with Romania’s main ally, the United States. Poland followed the same path by acquiring Patriot and HIMARS systems. This trend further illustrates the salience of the Russian threat in Romanian defense planning.

Allegations of corruption have been made about a number of programs, but no major corruption cases have developed yet from these instances (tactical UAV acquisition, 4x4 vehicles). Nevertheless, in some cases, the courts and the acquisition watchdog have decided in favor of those bidders that have claimed foul play in the acquisition processes. This is not necessary proof of corruption and graft, but of administrative incompetence on the part of the Defense Ministry combined with incoherent public acquisition legislation. Unfortunately, high-value flagship programs such as corvette procurement have seen vicious press campaigns against some of the bidders, with accusations of corruption being made with scant evidence to support them.147

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Finally, economics remain the main threat to Romania’s ambitious defense modernization drive. The prospect of a global recession coupled with questionable economic policy decisions made by the Romanian government since 2016 – the so called “tax on greed” applicable to banks and energy companies, a generous public sector pay law, the transfer of social expenses from employer to employee and low capital investments – raise questions regarding the country’s economic development in the short and medium term. Romania’s capacity to collect taxes remains one of the lowest in the EU, with merely 25.8% of GDP, while Poland for example enjoys a 35.1% rate. Low tax collection capacity doesn’t bode well for the sustainability of the armament drive in the long term. Nevertheless, the Romanian government remains optimistic, projecting a 5.5% growth in 2019. Conversely, the European Commission estimates an economic growth of only 3.8% for Romania. To make matters worse, 2019 and 2020 are election years in Romania and the current governing coalition may choose butter over guns in the final analysis in order to stay in power.

Two years after entering into effect, Romania’s pledge to spend 2% of GDP defense remains difficult to fulfill. The main culprits for this are the lack of administrative capacity at Defense Ministry level and poor political leadership. In spite of allocating 2% of GDP on defense, Romania managed to spend 1.81% in 2017 and an estimated 1.93% in 2018. The late adoption of the state budget for 2019 raises serious questions regarding the achievement of the 2% of GDP pledge this year.

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148 Alina Botezatu, “România, cea mai redusă rată de colectare a taxelor din PIB, în UE/ Ce ţară se află la polul opus”, Mediafax, November 28, 2018
149 Iulian Anghel, “De unde vine creşterea economică de 5,5% estimată în 2019? Guvernul PSD vede o creştere puternică pe servicii şi industrie, deşi economia UE încetineşte, iar consumul intern slăbeşte”, Ziarul Financiar, February 7, 2019
150 Alina Botezatu, “CE menţine prognoza pentru economia României din acest an la 3,8%, în timp ce Guvernul şi-a construit bugetul pe o creştere de 5.5%”, Mediafax, February 7, 2019.
151 Mediafax, “MApN îi răspunde unui deputat PMP: România a cheltuit 1,81% din PIB pentru apărare în anul 2017”, July 18, 2018