

Romania: between a theoretical threat and a layered defence

A comprehensive assessment of the risk posed by Iranian and Russian missiles, the limitations of air defence, and the strategic implications for Romania

STUDY: MARITIME SECURITY FORUM

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A serious strategic analysis must do more than merely list weapon systems: it must link technical data to the strategic behaviour of the actors, the relevant geography, the logic of layered defence and the economic constraints of modern warfare.

The general premise remains as follows: Romania must be analysed simultaneously from the perspective of its exposure to ballistic, cruise and unmanned weapons originating from two distinct directions, namely the Middle East and the Russian Federation. From Iran, the issue is predominantly theoretical, though not imaginary; from Russia, the issue is closer to that of a demonstrated threat, as many of the relevant systems have already been deployed in the war against Ukraine. It is precisely this dual perspective that calls for a cautious approach. Declared capability must not be confused with demonstrated capability, and geometric range must not be confused with the strategic probability of use.¹

From a methodological point of view, the analysis consistently distinguishes between three categories of information. The first comprises publicly confirmed data, that is, information supported by official sources, NATO documents, recognised defence reports or Reuters articles with a verifiable basis. The second category consists of credible analytical assessments, often derived from specialised projects such as the CSIS's 'Missile Threat', which provide plausible figures for range, payload or operational status, without, however, claiming absolute certainty. The third category includes reported claims, particularly those originating from statements by interested parties or from conflicting information sources. This distinction is essential in security studies, as in the field of missile defence the difference between 'it has been claimed' and 'it has been demonstrated' has direct strategic consequences.

1. The Iranian dimension: between extensive capability and operational uncertainty

In assessing the risk posed by Iran, the first point to note is that, according to specialist assessments, Tehran possesses the largest and most diverse missile arsenal in the Middle East. This arsenal comprises thousands of ballistic and cruise missiles, some of which are considered capable of reaching eastern or south-eastern Europe. This does not mean that Romania faces an imminent threat or that any Iranian system can be used with the same effectiveness across its entire stated range. It does, however, mean that an analysis of the theoretical vulnerability of Romanian territory is legitimate and indeed

¹ Missile Defence Project, "Missiles of Iran", Missile Threat, Centre for Strategic and International Studies, last modified 3 March 2026.

necessary, particularly given that the distances between certain areas of Iran and south-eastern Europe fall within the range typical of medium-range ballistic missiles.²

In this regard, the systems most frequently cited are the Sejil, Emad, Ghadr and Khorramshahr. They do not share the same level of technological maturity, the same operational certainty, nor the same relevance to Romania. The Sejil is significant primarily because it uses a two-stage solid-propellant system, which, in military terms, reduces the reaction time between order and launch and makes the missile more suitable for survivability and mobility than liquid-propellant missiles. CSIS indicates that the Sejil has a range of approximately 2,000 km and a warhead of around 700 kg, but notes at the same time that the system's operational status remains uncertain. For this very reason, in a rigorous analysis, the Sejil should not be treated as a 'mass-produced' system, but rather as a delivery system of high strategic relevance and with a still significant degree of ambiguity.³

Emad and Ghadr essentially belong to the advanced Shahab-3 family. The differences between them mainly concern structural improvements, the re-entry profile and relatively better accuracy compared with previous generations. Ghadr is cited in the specialist literature as having a range of approximately 1,950 km, whilst Emad is described as a variant with improved guidance within the same general class. As far as Romanian territory is concerned, their relevance lies not in any certainty of an operational strike, but in the fact that, from a geometric and technical point of view, they fall into the category of systems that must be taken into account when discussing the ballistic defence of the south-eastern flank.⁴

The Khorramshahr occupies a special position. In official Iranian discourse, it often appears as a symbol of technological progress and the capacity to carry significant payloads. CSIS records a range of 2,000 km and a payload capacity of up to 1,800 kg, but explicitly warns that certain Iranian claims regarding 'multiple payloads' should not automatically be interpreted as indicating a mature MIRV capability—that is, the ability to launch multiple independent warheads comparable to that of the major nuclear powers. Therefore, the correct formulation is that there are Iranian claims regarding multiple warhead configurations, but the publicly available evidence does not firmly support the attribution of an operational MIRV capability.⁵

At the same time, the analysis cannot ignore the cruise missile component. The Soumar, followed by subsequent developments such as the Hoveyze, represents a different type of threat to that posed by ballistic missiles. Whilst a ballistic missile exerts pressure through its speed and exo-atmospheric trajectory, a cruise missile exerts pressure through low-altitude flight, more flexible flight paths and the difficulty of radar detection at long ranges. The methodological issue, however, is that the Soumar's range remains controversial. Although figures ranging from 2,000 to 3,000 km have frequently circulated in the public domain, the CSIS's technical analysis suggests that the variant presented to the public probably does not reach the maximum range initially claimed, and treating it as a missile definitively capable of 3,000 km is an overstatement.⁶

Added to these is the Shahed-136 drone, which should not be confused with a ballistic missile or a conventional cruise missile. Its strategic relevance lies elsewhere: its low cost, relative ease of production, the possibility of launching it in large salvos, and its ability to wear down the enemy's defences through logistical and psychological exhaustion. CSIS has convincingly demonstrated, both in its analyses dedicated to the campaign

² Ibid.

³ Missile Defence Project, 'Sejil', Missile Threat, Centre for Strategic and International Studies.

⁴ Missile Defence Project, "Emad, Ghadr (Shahab-3 Variants)", Missile Threat, Centre for Strategic and International Studies.

⁵ Missile Defence Project, "Khorramshahr", Missile Threat, Centre for Strategic and International Studies, last modified 23 April 2024.

⁶ Missile Defence Project, "Soumar (Hoveyze, Abu Mahdi)", Missile Threat, Centre for Strategic and International Studies.

Both the Shahed drones deployed by Russia and studies on the cost of air defence indicate that drones of this type have become saturation weapons, rather than mere platforms for pinpoint strikes. In relation to Romania, this means that the discussion regarding Iran concerns not only the range of a missile to a specific point on the map, but also the military economics of modern defence.

Table 1. The main Iranian systems relevant to the theoretical assessment of Romania's vulnerability

System	Type	Estimated range	Payload / observations	Level of certainty
Sejjil	MRBM, solid fuel solid, two-stage	~2,000 km	~700 kg; operational status unclear	assessed
Emad	MRBM, a variant of Shahab-3	~1,700–2,000 km	improved guidance; relevance to South-East Europe	assessed/confirmed partially
Ghadr	MRBM, variant Shahab-3	~1,700–1,950 km	superior performance to previous generations	assessed/confirmed partially
Khorramshahr	MRBM, liquid-fuelled	~2,000 km	up to ~1,800 kg; claims regarding multiple warheads remain controversial	assessed
Soumar / Hoveyzeh	land-based cruise missile	under 2,500 km in conservative estimates	flight low; range controversial in open sources	assessed
Shahed-136	UAS / loitering munition	range long, dependent on the mission profile	instrument of saturation, low cost	confirmed as a type of threat

2. Diego Garcia and the limits of strategic inference

One of the issues that needed to be clarified unequivocally in the original document concerned the so-called attack on the Diego Garcia base. In the raw version of the material, the episode was used almost as definitive proof that the major European capitals are already under direct and certain threat. Such a conclusion goes too far. What can be said with certainty is this: on 21 March 2026, Reuters reported that, according to the semi-official Iranian news agency Mehr, Iran had launched two ballistic missiles at the US-British base on Diego Garcia. The same report stated, citing the Wall Street Journal, that the base had not been hit. Two days later, Reuters also reported the position of British Prime Minister Keir Starmer, according to whom London saw no evidence that Iran was targeting the UK.⁷

The significance of this incident is considerable, but it requires interpretation. The fact that a base located at a great distance was targeted by a publicly reported launch suggests an intention to send a strategic signal and, possibly, a practical test of certain technological or operational limits. However, it does not, on its own, justify the conclusion that the whole of Europe is already exposed to a robust, reproducible and precisely demonstrated operational threat. More specifically, the incident reduces the margin of analytical comfort and necessitates a reassessment of certain scenarios, but it does not transform a risk assessment into a strategic certainty. For Romania, the useful conclusion

is not alarmism, but the need to understand that the boundary between ‘theoretical’ and ‘practically possible’ can shift relatively quickly when an actor invests heavily in long-range delivery systems and doctrines of strategic signalling.

3. The Russian dimension: demonstrated threat, propaganda and the selection of relevant criteria

Whilst the Iranian dimension calls for caution due to the discrepancy between what is declared and what is demonstrated, the Russian dimension calls for a different form of caution: distinguishing between systems of genuine military utility and those used primarily for intimidation, propaganda or political signalling. With regard to Romania, the assessment should not be based on the systems that attract the most media attention, but on those that have already produced repeated operational effects in the Ukrainian theatre.

In this respect, the Iskander-M remains the key benchmark. It is a mature, mobile system, used extensively by Russia and difficult to intercept due to the combination of its trajectory, manoeuvrability, short warning time and the flexibility of its launch platform. Although its typical range of approximately 500 km does not make it an intercontinental strategic threat, it is relevant to Romania precisely because it represents a realistic assessment of the Russian tactical ballistic threat in the vicinity of the eastern flank. In the analysis of a Black Sea littoral state, the Iskander-M carries more weight than many exotic systems which are much discussed but have been used rarely, opaquely or controversially.

The Kh-101 and Kalibr, for their part, remain key systems for analysing the cruise missile threat. Both have demonstrated long-range strike capability, but neither should be idealised. In the practice of warfare, their performance depends on the quality of production batches, maintenance, jamming, navigation and the specific manner of their integration into attack waves. Analytical reports on the Russian strike campaign have shown that the effectiveness of these systems cannot be reduced to their stated maximum range or to a theoretically optimal CEP; what matters is the rate of production, the reliability of the batches and the ability to deploy them in a protracted attrition campaign. For this reason, the comprehensive document avoids overly optimistic figures regarding the Kalibr’s accuracy and opts for more cautious phrasing, such as ‘demonstrated long-range strike capability, with performance varying according to the operational context’.⁷

With regard to hypersonic or quasi-hypersonic systems, such as the Zircon or Oreshnik, the correct approach is to maintain a critical distance from official rhetoric. Russia has an interest in projecting an image of a qualitative technological advantage that discourages Western support for Ukraine and amplifies the perception of European vulnerability. Analysis, however, must focus on what has been demonstrated, not what has been proclaimed. Some uses of the Zircon have been reported, but their scale, military impact and level of operational maturity do not justify treating it as the ‘backbone’ of the threat. All the more so, the Oreshnik missile cannot be treated as a fully understood system in the absence of robust independent verification of its parameters. To put it plainly, Russia continues to experiment with and exploit the hypersonic category for propaganda purposes; however, as far as Romania’s defence is concerned, the immediate and quantitative threats remain primarily tactical ballistic missiles, cruise missiles and drones.

⁷ Centre for Strategic and International Studies, “Russian Firepower Strike Tracker: Analysing Missile Attacks in Ukraine”, accessed March 2026.

Table 2. Russian systems relevant to the risk assessment for Romania

System	Category	Range / profile	Proven demonstrated	Analytical observation
Iskander-M	missile tactical ballistic	~500 km; manoeuvrable trajectory	extensive in Ukraine	realistic benchmark of the tactical threat
Kh-101	air-launched cruise missile	~2,500–2,800 km	proven	high strategic utility, performance dependent on production and navigation
Kalibr	naval cruise missile	~1,500–2,500 km	proven	relevant to the ; avoiding excessively optimistic figures regarding CEP
Zircon	hypersonic / anti-ship missile	parameters still disputed in open sources	limited reporting	more caution than certainty
Oreshnik	system reported / experimental	data incomp lete	controversial	analytical value inferior to official rhetoric

4. Distance arithmetic is not a strategy: why theoretical exposition must be separated from intention and effectiveness

One of the common errors in public debates about missiles is the mechanical deduction that ‘if the range extends that far, then the target is already completely vulnerable’. In reality, the threat is built up from several layers.

The first is the geometric layer: can a particular trajectory, under ideal conditions, reach a specific area of Romanian territory?

The second is the technical layer: can it do so with a relevant warhead, on a realistic flight path and with sufficient accuracy?

The third is the operational layer: are there sufficient systems available, trained personnel, launch platforms, command and control, and logistical support to turn this possibility into a repeatable option?

The fourth is the political dimension: does the actor in question have the strategic intent, freedom of action and cost-benefit analysis required for such a strike?

Applied to Romania, this framework leads to a measured conclusion. Yes, certain Iranian systems may factor into the strategic equation regarding the exposure of south-eastern Europe. Yes, Russia possesses proven systems capable of affecting the vast expanse of the eastern flank. But not every system with sufficient range automatically poses an equal and immediate operational threat. A sound analysis must resist the temptation to turn range maps into political prophecies. This is precisely why this document devotes more space to distinguishing between declared capability, assessed capability and demonstrated capability. Without this distinction, any technical table becomes a source of strategic confusion.

5. Romania's defence architecture: real capabilities, real limitations

Romania possesses a defensive architecture that is significantly more robust than the alarmist public discourse suggests, but it is neither omnipotent nor evenly distributed. The central element of the discussion is the Aegis Ashore system at Deveselu, integrated into NATO's ballistic missile defence architecture. NATO has made it clear that the site in Romania, modernised in 2019, is a defensive component designed to intercept short- to intermediate-range ballistic missiles. It is therefore necessary to explicitly correct the assertion that Aegis Ashore, in its current configuration, constitutes a general response to cruise missiles or hypersonic glide vehicles. This is not its primary function.⁸

The technical core of the system lies in intercepting ballistic threats during the mid-course phase of their trajectory, that is, in a segment where the target is still following a relatively predictable trajectory outside the atmosphere or at its edge. SM-3 interceptors employ the principle of direct kinetic impact, which explains why the system was designed for ballistic threats, not for targets that fly low, follow the terrain or manoeuvre in a manner incompatible with the engagement profile for which it was optimised. In simple terms, the 'shield' at Deveselu is indispensable to the south-eastern flank's ballistic defence equation, but it cannot be rhetorically transformed into a universal umbrella for all categories of threats.

The second pillar of the architecture is the Patriot systems. Reuters reported in September 2024 that Romania had received four Patriot systems, two of which were operational at the time, against the backdrop of the debate over the donation of a battery to Ukraine and its replacement by allies. From this perspective, the Patriot must be treated as an essential national layer, not as a miracle solution. It is effective against both tactical ballistic missiles and aerodynamic targets, but its actual effectiveness depends on deployment density, the stock of interceptors, integration with sensors, and rules of engagement. Particularly in saturation scenarios, its performance cannot be assessed in the abstract, but only in relation to the volume, rate and composition of the attack wave.⁹

The lower layer of defence has also seen significant reinforcement. In July 2025, Romania signed a framework agreement for six integrated SHORAD-VSHORAD systems supplied by Rafael, with the explicit role of defending against low- and medium-altitude air threats. In November 2025, Reuters also reported the signing of an agreement for 231 Mistral man-portable systems and 934 missiles, along with training, a dedicated simulator and logistical support. These details are important because they allow the vague discourse on 'layering' to be replaced with a factual description of an ongoing strengthening of defences. Conversely, systems such as NASAMS should not be presented as a definite part of the Romanian inventory without similar official public confirmation. Such insertions, present in the raw material, undermine precisely the accuracy that the study claims to uphold.^{10,11}

⁸NATO, "Aegis Ashore ballistic missile defence system in Romania completes scheduled update", 9 August 2019.

⁹ Reuters, "Romanian government approves draft law to give Patriot defence system to Ukraine", 2 September 2024; Reuters, "Romanian lawmakers approve donation of Patriot missile system to Ukraine", 3 September 2024.

¹⁰ Reuters, "Romania signs deal to buy French Mistral air defence systems", 27 November 2025.

¹¹ Reuters, "Romania to buy Israeli anti-aircraft systems for \$2.3 bln", 21 July 2025; Ministry of National Defence of Romania, "The Framework Agreement on the procurement of the SHORAD-VSHORAD air defence systems was signed", 21 July 2025.

Table 3. Romania's layered defence: functions and limitations

Layer	System / category	Dominant role	Main limitation
NATO BMD	Aegis Ashore Deveselu	interception of short- to intermediate-range ballistic missiles within the allied architecture	not designed as a general response to cruise missiles and HGVs
Long-range national defence	Patriot	protection against certain tactical ballistic missiles and certain aerodynamic targets	deployment density and the stockpile of interceptors are decisive factors
SHORAD/VSHORAD	systems procured from Rafael; Mistral MANPADS	low-altitude defence, protection of infrastructure and specific targets	cover territorial limited dependence on C2 integration
Air air and aviation	aviation, radar, integration NATO	detection, warning and flexible response	does not replace, but complements ground-based defence

6. Saturation attack, the cost of interception and the problem of defensive density

In reality, air and missile defence is constrained simultaneously by three factors: the ability of sensors to rapidly detect and classify targets, the ability of command to correctly prioritise engagement, and the logistical capacity to sustain the consumption of interceptors. Contemporary attacks increasingly employ a mix of ballistic missiles, cruise missiles, kamikaze drones, electronic decoys and delivery systems with vastly differing costs, precisely to create overload across all three of these dimensions.

The concept that must be explicitly introduced here is the cost-exchange ratio. An adversary does not merely seek to penetrate the defence; it seeks to force the defence to spend a disproportionate amount on each engagement. When a relatively cheap drone or a one-way attack munition forces the defender to deploy costly interceptors, the adversary's victory lies not only in the possibility of a direct hit, but also in the economic and logistical erosion of the defensive shield. In its analysis of the costs of the first hundred hours of a major conflict with Iran, the CSIS estimated that modern air defence can very quickly become a matter of financial and industrial sustainability, not merely one of technical performance.¹²

For Romania, this observation is all the more important given that the country's territory is relatively large, its critical infrastructure is dispersed, and the density of defences cannot be uniform. To say that Romania has 'layered' defence is correct in doctrinal terms, but insufficient in operational terms. What matters is where the systems are actually deployed, which sectors can be covered simultaneously, how long reloading takes, what level of redundancy exists in the sensor network, and how integration with the NATO network is achieved. A country may have several high-performance systems and yet remain exposed in other sectors if the deployment density is insufficient or if the scale of the attack exceeds its capacity to respond.

Furthermore, saturation attacks alter the nature of the discussion regarding effectiveness. Under test conditions or in one-off engagement scenarios, a system's success rate may appear very high. In wartime conditions, when multiple waves, decoys, jamming and time constraints overlap, actual operational effectiveness may differ significantly. For this reason, figures such as '97 per cent' for certain

¹² Centre for Strategic and International Studies, "\$3.7 Billion: Estimated Cost of Epic Fury's First 100 Hours", 5 March 2026.

portable systems should not be automatically carried over from marketing or testing into strategic analysis. They may be mentioned, but only as indicators of experimental performance, not as operational guarantees.

7. The air component, command and control, and the role of NATO integration

The performance of a layered defence depends equally on command and control, data fusion and the air component. A Patriot system or a high-performance SHORAD is worth far less if it is not fed with accurate and timely data. That is why Romania's integration into NATO structures represents not merely a political context, but an operational multiplier. From early warning to a recognised air picture, the added value of belonging to the allied architecture lies precisely in shortening the time between detection, classification, decision-making and engagement.

This does not mean, however, that integration automatically solves all problems. An integrated system can enhance effectiveness, but it cannot compensate for a lack of air density, a shortage of interceptors or the vulnerability of critical infrastructure. Furthermore, the air component has its limitations. Combat aviation can contribute to air policing, deterrence and a flexible response, but it cannot replace point defence nor the continuous deployment of large numbers of low-cost drones. The lessons of the war in Ukraine show precisely that the defence of the future will increasingly combine expensive, high-performance systems with cheaper, mobile and distributed solutions, ranging from modernised anti-aircraft guns to electronic warfare and systems with a low cost per strike.

8. Strategic significance for Romania: beyond the inventory of systems

The fundamental question is not, in essence, whether Romania 'has' or 'does not have' a defence capability, but how the Romanian state's strategic position should be understood in a security environment where the proliferation of long-range delivery systems, the emergence of saturation campaigns and the convergence of missiles and UAS are changing the rules of the game. From Iran's perspective, the key implication is that south-eastern Europe can no longer be treated as an area implicitly outside the equation of medium-range missiles. Even if Romania is not currently a likely target in a direct scenario, the mere fact that certain Iranian systems can fall within the relevant theoretical range changes the way in which flank ballistic defence must be conceived. From Russia's perspective, the implications are even clearer: the eastern flank is already facing a proven threat, in which missiles, drones and pressure on civilian infrastructure are commonplace instruments of coercion.

In this context, Romania should be analysed less through the static logic of inventory and more through the logic of resilience. What becomes relevant is not just the number of systems, but also the rate at which stocks are replenished, sensor redundancy, the mobility of units, the capacity for dispersion, the protection of energy infrastructure and command centres, as well as the extent to which national capabilities can be rapidly integrated into the allied operational framework. A 21st-century defence is not merely about having high-performance systems; it involves being able to sustain, deploy and coordinate these systems under the pressure of a campaign of attrition.

9. Three working scenarios for risk assessment

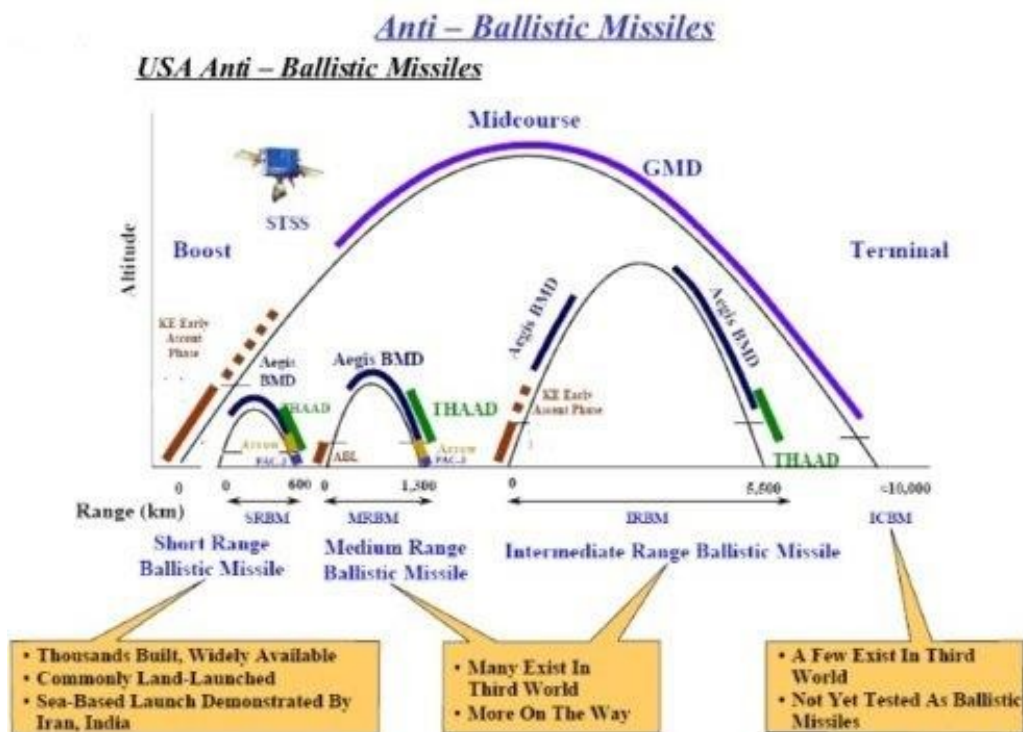
To avoid both underestimation and exaggeration, it is worth formulating three working scenarios. The first is the limited strike scenario, in which a small number of delivery systems are used to send a political signal, demonstrate reach or exert psychological pressure. In this case, Romania's existing defence architecture and its integration with its allies provide relatively favourable conditions for early warning and response, and the primary value of defence lies in deterrence and reducing the likelihood of success of such an action.

The second is the combined attack scenario, in which ballistic missiles, cruise missiles and drones are used together against specific targets or critical infrastructure. This is where the real challenges of layered defence arise: prioritisation, the differentiated and selective use of interceptors, coordination between levels and the management of tactical uncertainty. For Romania, this is perhaps the most useful analytical scenario, as it corresponds to current trends in regional warfare and in medium- to high-intensity conflicts.

The third is the prolonged saturation scenario. In this scenario, the issue is no longer merely whether a particular wave can be repelled, but whether the defence system can withstand, over time, a repetitive campaign of attrition, in which stocks, maintenance, personnel and command infrastructure become targets in their own right. Here, industrial resilience, allied cooperation and the ability to replenish stocks are almost as important as the performance of the interceptors themselves. The overarching lesson is that Romania's defence must be designed not just for the moment of the strike, but for the duration of the campaign.

Countering a ballistic missile across the three segments of its trajectory

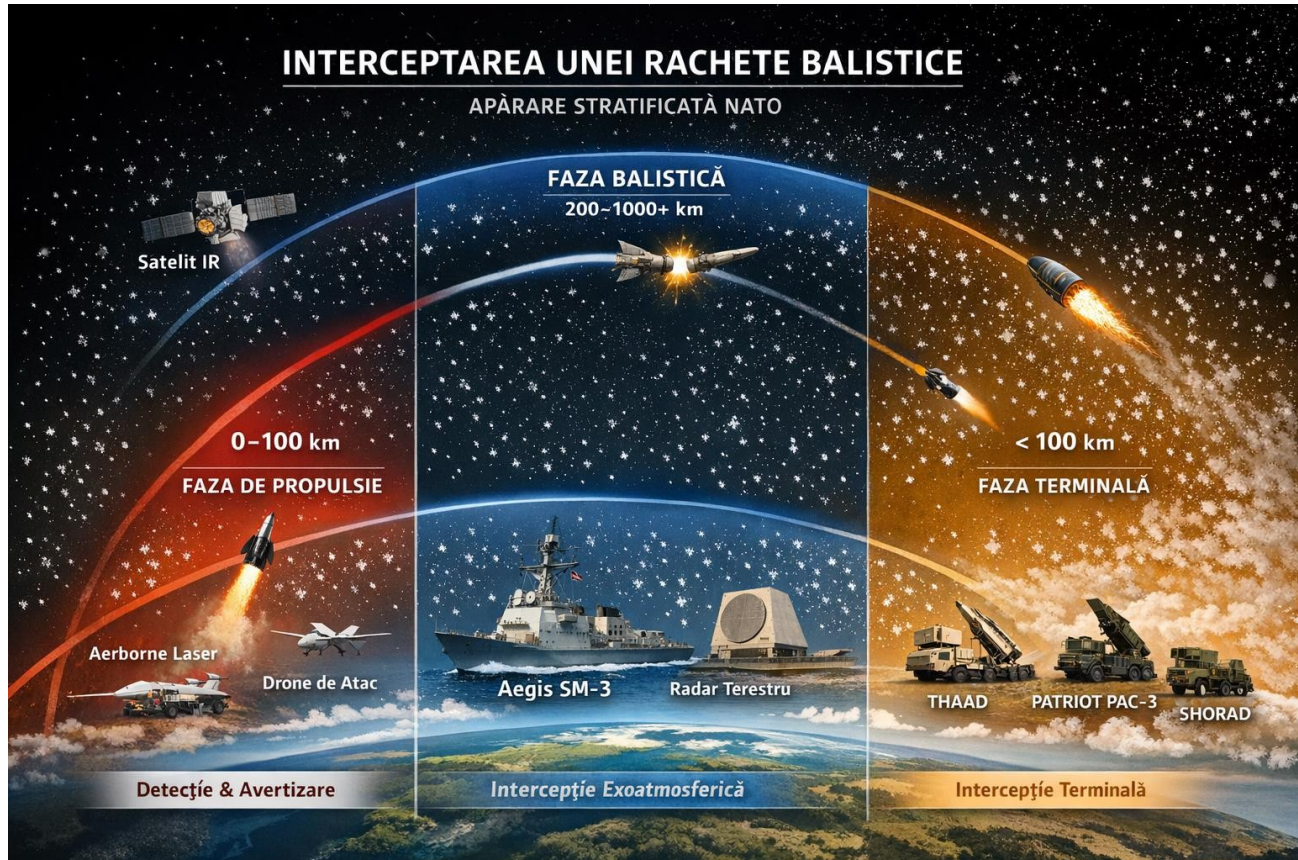
A ballistic missile is not countered by a single universal system, but by a layered defence system, in which each phase of flight presents a different window for detection and interception. In doctrine, the three relevant phases are **the boost phase**, **the midcourse phase** and **the terminal re-entry phase**. Each of these involves a different relationship between reaction time, altitude, trajectory predictability and the type of interceptor that can be used. NATO describes the European missile defence architecture precisely in terms of this layered defence logic, and the Aegis Ashore component in Romania is intended for the interception of ballistic missiles, not for general defence against all types of aerial threats.



Categories of ballistic missiles

- Tactical ballistic missiles with a range of 50–110 km, usually solid-fuelled and unguided. They may carry conventional or nuclear warheads.
- *Short-range ballistic missiles (SRBMs)* with a range of less than 1,000 km.
- *Medium-range ballistic missiles (MRBMs)* with a range of 1,000–5,500 km.
- Intercontinental ballistic missiles (ICBMs) with a range of 5,500–12,000 km.

The trajectory and its phases. Interception zones.



During **the propulsion phase**, the missile is easiest to detect, as the engine is running, the thermal signature is very intense, and the missile body is still large and relatively simple in terms of target discrimination. From a theoretical perspective, this is the optimal interception phase: early destruction prevents the mission from continuing and avoids the problem of warhead or decoy separation. However, it is precisely this window that is the most difficult to exploit in practice, as it lasts for a very short time — generally between one and a few minutes — and the interceptor or strike platform must be very close to the launch site. For this reason, **boost-phase** defence has remained more of a conceptual or experimental solution, historically associated with ideas such as space-based infrared sensors, interceptors positioned very close to the launch site, or directed-energy weapons, rather than a current and robust European solution. US doctrinal sources highlight precisely this paradox: the phase is highly favourable from a physical standpoint, but rarely accessible from a geographical and operational perspective.

In practice, a ballistic missile launched from the Middle East towards Europe would be very difficult for European states to counter during the propulsion phase, precisely because they do not normally have interception platforms positioned close enough to the launch area. However, countries in the missile's flight path, such as Greece, Turkey and others, do have systems capable of countering it. In such a scenario, the European contribution is more one of early warning and tracking, via allied radar networks and sensors, than of immediate, effective interception. Therefore, **the boost phase** should be described in the study as 'the most advantageous in theory, but the least accessible in practice' for European defence.

In the mid-course phase, once propulsion has ceased, the missile follows a ballistic trajectory at very high altitudes, often exo-atmospheric. This is the phase in which the NATO and US architectures are best suited for defence against short-, medium- and intermediate-range ballistic missiles. The central system for this stage is the Aegis Ballistic Missile Defence system, in both its naval and land-based (Aegis Ashore) versions, including the site at Deveselu. NATO explicitly states that the Aegis Ashore system in Romania forms part of the Alliance's ballistic missile defence system, whilst Reuters has summarised this same European architecture by including the Aegis Ashore sites in Romania and Poland, the Aegis destroyers permanently stationed at Rota, and the early-warning radar in Kürecik, Turkey.

The typical interceptor for this phase is **the SM-3**, which utilises the '**hit-to-kill**' principle – that is, the destruction of the target through direct kinetic impact, rather than via a conventional explosive warhead. This method is specifically optimised for intercepting ballistic missiles during their midcourse phase, prior to re-entry into the atmosphere. The major advantage of the **midcourse** phase is that the engagement window is longer than in the boost phase, and the trajectory is relatively predictable. The disadvantage is that discrimination issues arise: in space, the defence system must distinguish between the actual target to be struck and any associated objects, debris or decoys. For this reason, the midcourse phase is not merely a matter of the interceptor, but also one of **sensors, data fusion and command and control**.

For Romania, this is the most relevant phase from the perspective of the broader NATO architecture. The correct formulation for this study is that **the first real barrier against a ballistic missile launched from a great distance is midcourse defence**, where Aegis Ashore and allied sensors provide the capability for detection, tracking and, under certain conditions, interception. In other words, whilst **the boost phase** is largely beyond Europe's reach, **the midcourse phase is the central doctrinal focus of allied missile defence in Europe**.

In **the terminal phase**, the missile or re-entry vehicle re-enters the atmosphere and descends towards the target at very high speed. This is the last possible moment for defence. It is precisely for this reason that the terminal phase is considered the most dangerous for the defender: the reaction time is very short, the interception geometry is much more challenging, and any error or delay can mean the loss of the last opportunity to neutralise the threat. American strategic analysis sources describe terminal defence as 'the last shot at interception', that is, the last real chance to stop the threat. The latest technical modifications to missiles make it possible to carry out course changes, which poses a problem for fire control systems and, above all, for the interceptor's manoeuvring.

The systems associated with this phase are primarily **the Patriot PAC-3 / PAC-3 MSE and THAAD**. Lockheed Martin describes the PAC-3 and PAC-3 MSE as interceptors capable of defending against tactical ballistic missiles, cruise missiles and aircraft through direct contact ('hit-to-kill'), whilst the MSE version extends the interceptor's engagement range and performance. THAAD, in turn, is officially presented as an effective defence against short-, medium- and intermediate-range ballistic missiles in the

, at higher altitudes than Patriot. In simple terms, **THAAD covers the upper part of the terminal defence**, whilst **Patriot covers the lower part**, closer to the area being defended.

Another layer of defence is provided by NASAMS: Romania's 'drone hunter'

NASAMS (Norwegian Advanced Surface-to-Air Missile System) is a medium-range surface-to-air system developed by the Norwegian firm Kongsberg in collaboration with Raytheon. Romania acquired this system to fill the gap between Patriot (long range) and portable systems such as the Stinger or Mistral.

Features	Details
Manufacturer	Kongsberg (Norway) & Raytheon (USA)
Main missile	AIM-120 AMRAAM (the same used by F-16 aircraft)
Range	Up to 40–50 km (depending on variant)
Maximum altitude	Up to 15–20 km
Interception to intercept	Up to 72 targets simultaneously (one complete system)

NASAMS is specifically designed to counter low-flying threats with a low radar signature – precisely the category to which Shahed drones and cruise missiles belong.

1. AIM-120 AMRAAM missile: It uses the same type of missile as F-16 aircraft. It has an active radar guidance system, which means that, once launched, it 'sees' its target independently, without requiring continuous radar illumination. It is extremely accurate;
2. Modern radars: The system uses AN/MPQ-64 Sentinel or Giraffe radars, specialised in detecting small, slow-moving and low-flying targets (helicopters, drones, cruise missiles);
3. Mobility: NASAMS is a modular and mobile system. Unlike Aegis Ashore (fixed) or Patriot (more cumbersome), NASAMS can be rapidly redeployed to protect critical infrastructure depending on the threat;
4. Reaction speed: It can intercept 11 missiles in less than two minutes after detecting a threat, being optimised for rapid, saturated attacks (high volume of drones/missiles).

Romania's air defence is built on multiple layers (layered), and NASAMS occupies the 'middle' layer:

Distribution of missile defence layers

1. Layer 1 – Long-range Patriot Interception of ballistic missiles and high-altitude aircraft Up to 150 km
2. Layer 2 – Medium range NASAMS Interception of drones, cruise missiles and low-altitude aircraft Up to 40–50 km
3. Layer 3 – Short-range Mistral 3 / Stinger Point defence of critical targets (last line of defence) Up to 7–8 km

As mentioned earlier, the main challenge in defending against low-cost drones is the economics of warfare. NASAMS addresses this issue more effectively than Patriot:

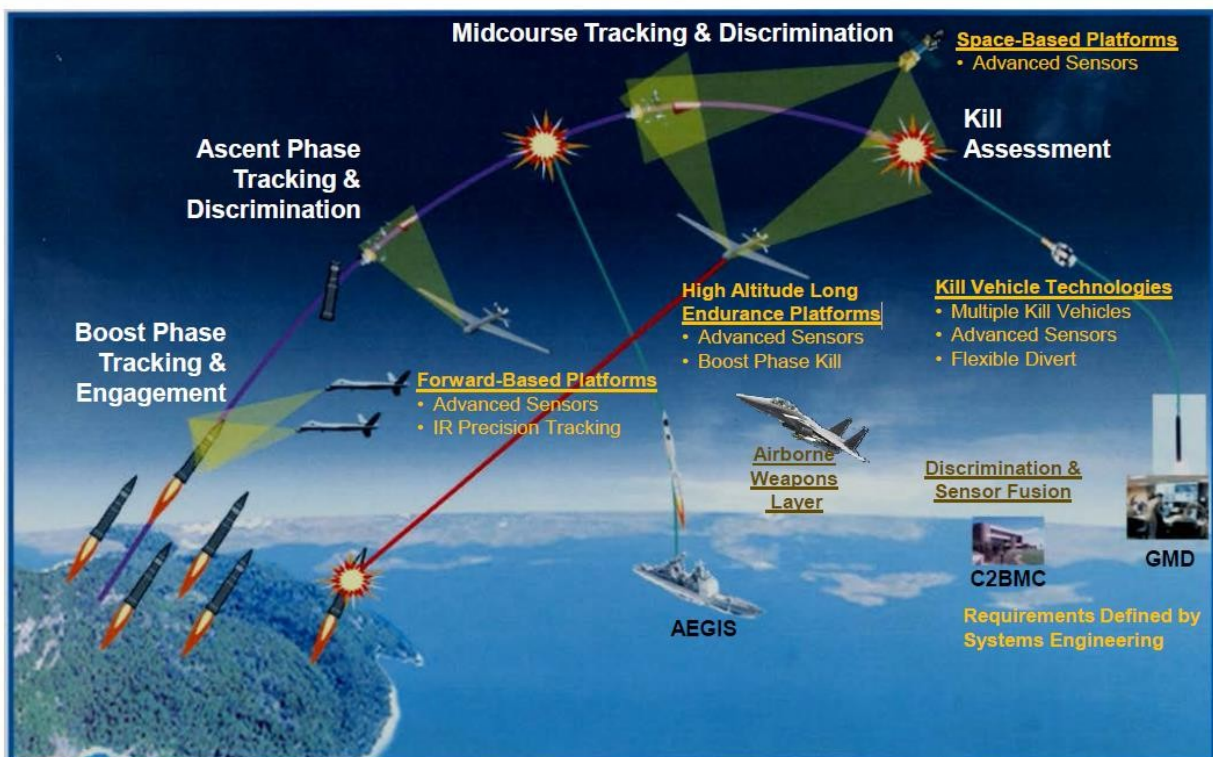
- Patriot (PAC-3): Cost per interception ~ US\$4 million. It is designed for ballistic missiles, not drones;
- NASAMS (AIM-120 AMRAAM): Cost per interception ~ USD 1–1.5 million. Although this is still expensive compared to a Shahed drone, it is 3–4 times cheaper than Patriot;
- The ideal solution: Electronic warfare (EW) and directed-energy weapons (lasers) remain the to reduce the cost to a few dollars per kill.

Until then, NASAMS represents the most effective ‘kinetic’ solution for these threats.

In conclusion, Romania has in NASAMS a specialised system for ‘shooting down’ drones and cruise missiles. It operates in coordination with the Patriot, the air force and man-portable systems.



Technology Contributions to the BMDS



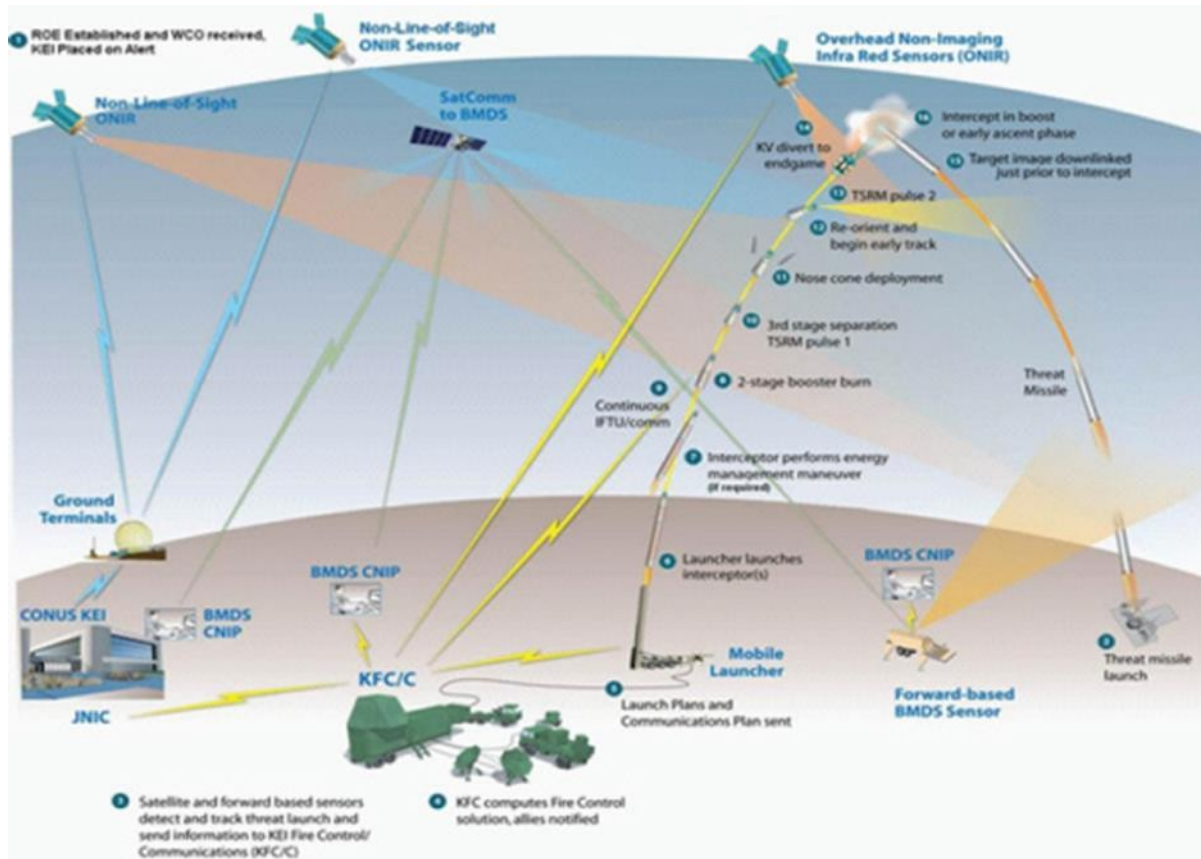
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13-MDA-7405 (14 August 13)

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For Romania, the relevant and publicly confirmed terminal defence system is **the Patriot**, not THAAD, although Turkey does have such a system. Therefore, in a scenario involving a ballistic missile that has bypassed mid-course defence or is entering the terminal interception phase, **the Patriot PAC-3 MSE represents the last major line of defence**. To put it in precise academic terms, one could say that terminal defence “does not replace mid-course defence, but complements it, providing the final interception window before impact”. This nuance is very important: a terminal system is not proof of invulnerability, but of the **defensive redundancy** required in a layered system.

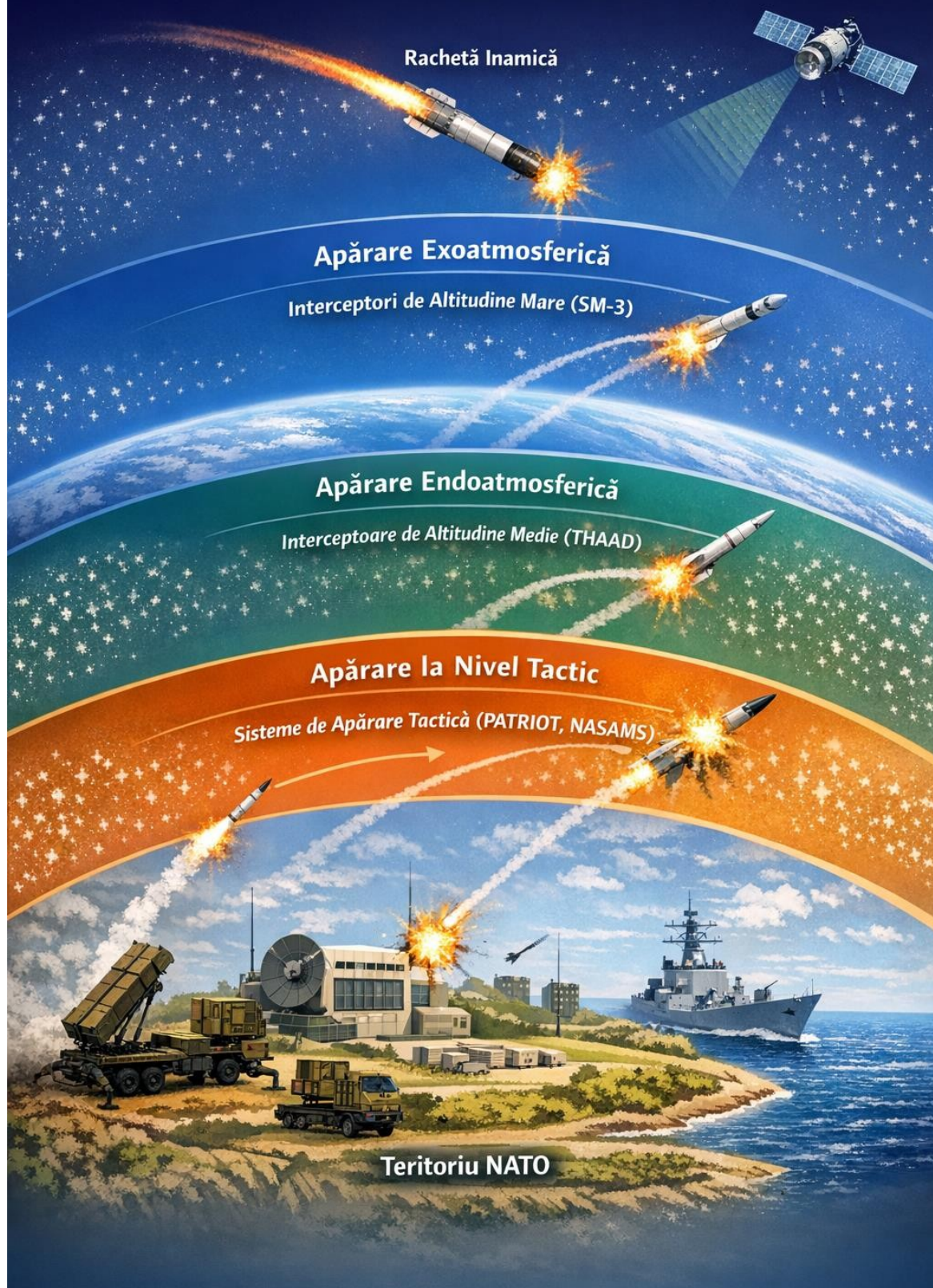
From an analytical perspective, the most accurate conclusion is that a ballistic missile can be countered in all three segments of its flight path, but **not with the same probability and not using the same means**. In the propulsion phase, countermeasures are theoretically very effective, but in practice rarely available to European defences. In the mid-course phase, interception is, both doctrinally and technologically, the most important for Europe, through Aegis BMD and SM-3 interceptors. In the terminal phase, defence is essential, but it functions as a last line of defence, through systems such as Patriot and, in other theatres, THAAD. A credible missile defence system is therefore not based on a single ‘miracle’ interceptor, but on **the overlapping of several engagement windows**, supported by sensors, command and control, and allied integration.

Integration of the ballistic trajectory and layered defence

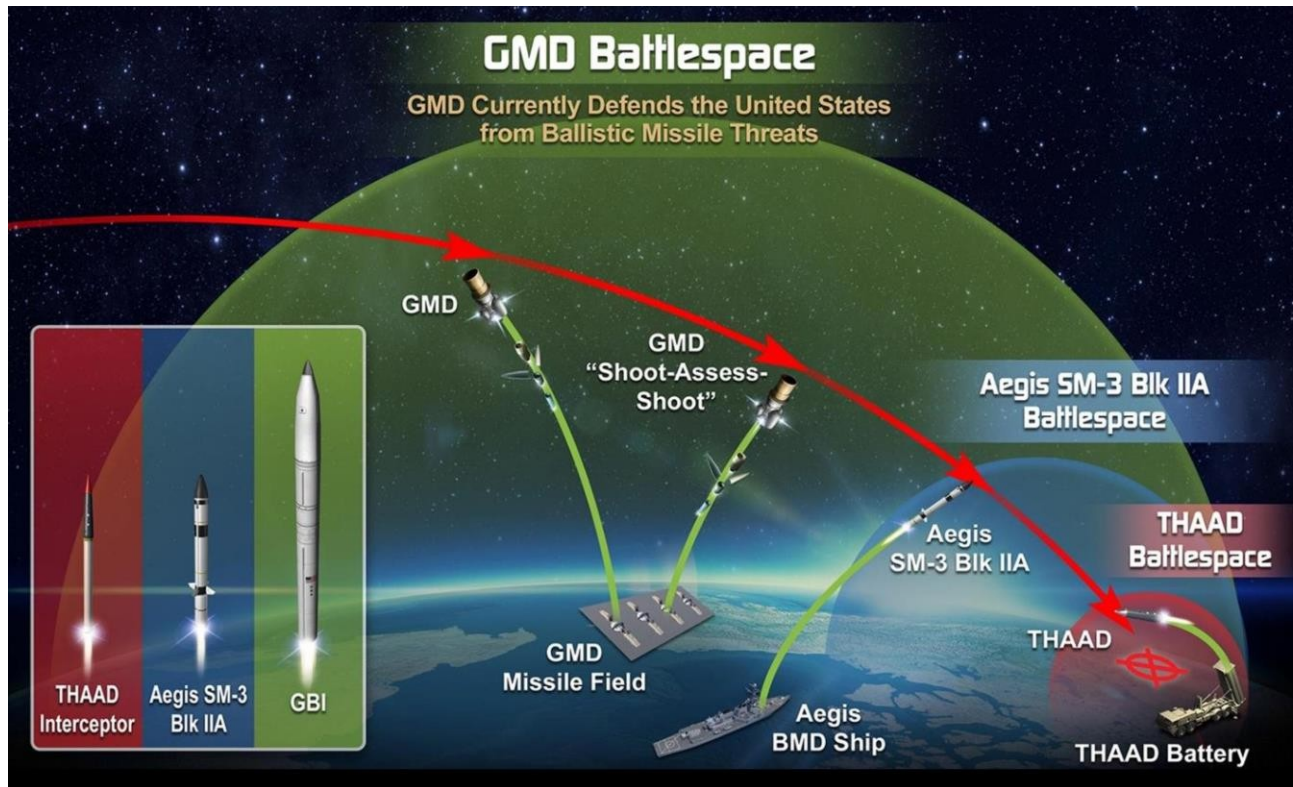


In modern missile defence analysis, the ballistic trajectory must be directly correlated with the defensive architecture. A ballistic missile passes through three distinct phases – boost, midcourse and terminal – each generating different windows for detection and interception. This structure is not merely a physical one, but defines NATO’s entire missile defence doctrine.

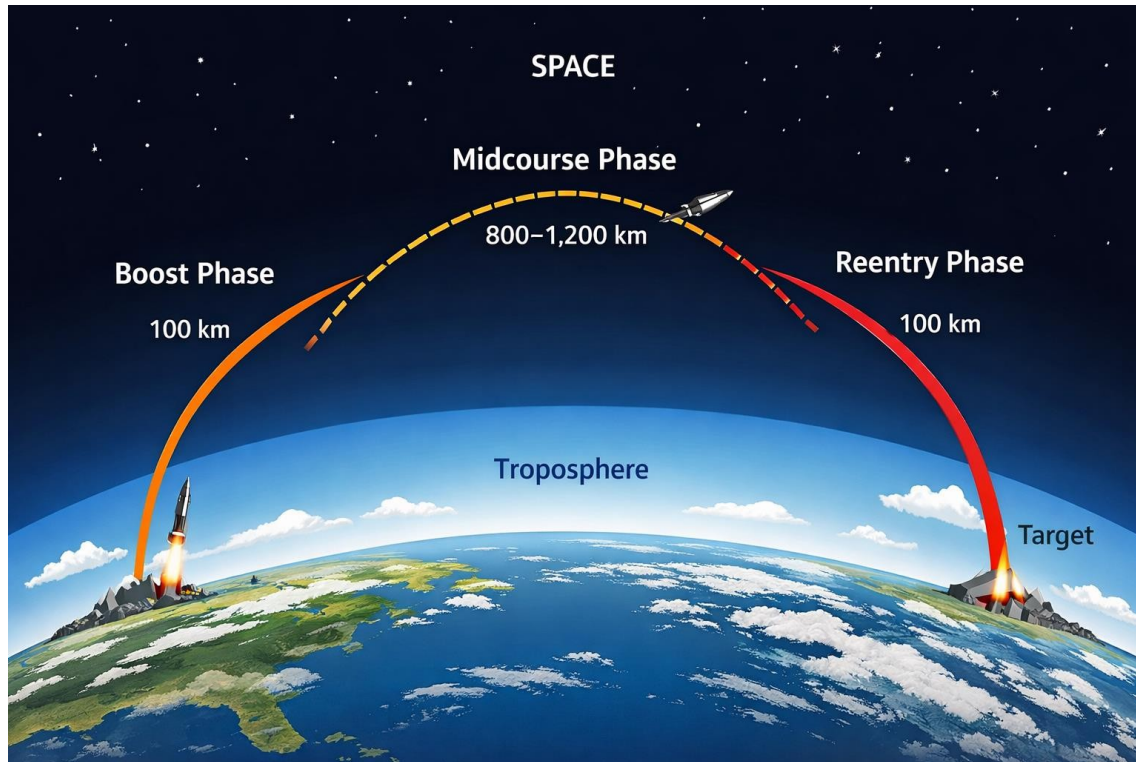
Fig. 2 – Straturi de apărare NATO



During the boost phase, interception is theoretically the most effective, but is geographically constrained. In the midcourse phase, interception becomes central to European defence, being the domain of the Aegis and SM-3 systems. In the terminal phase, interception is the last resort, dominated by systems such as Patriot.



This distribution explains Romania's role within the NATO architecture: Deveselu is optimised for the mid-course phase, whilst the Patriot systems provide the last line of defence.

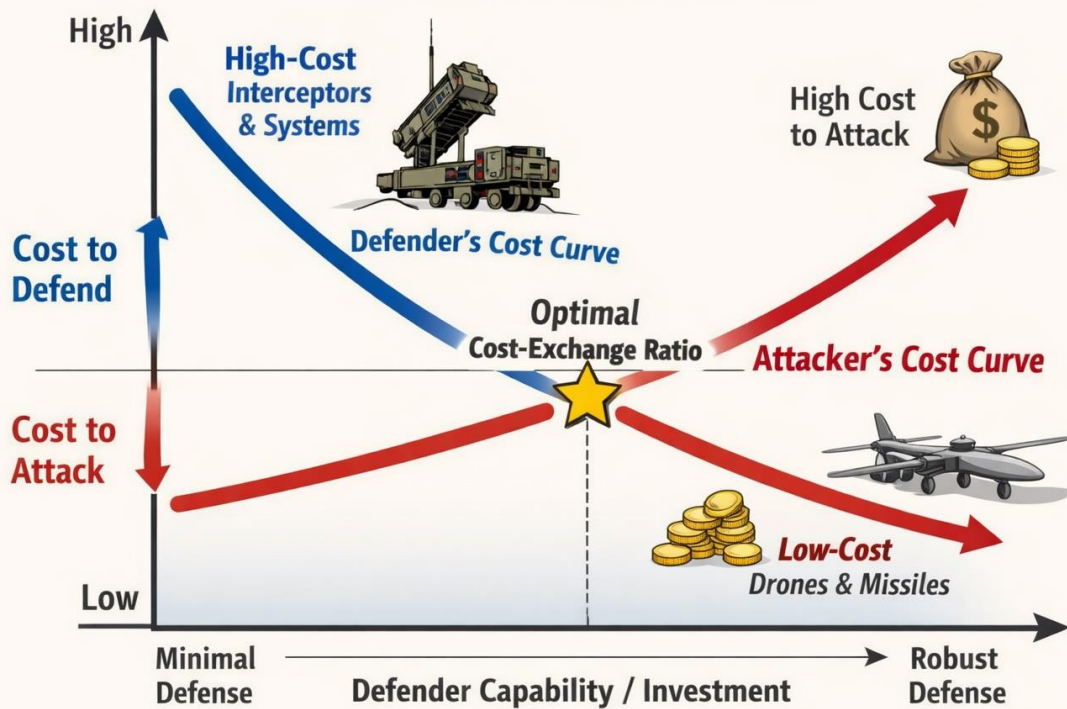


Correlating flight phases with interception systems

Correlating flight phases with defensive systems highlights a fundamental reality: there is no single defence solution. The systems are functionally distributed. Aegis Ashore operates in the midcourse phase, Patriot in the terminal phase, whilst **the boost phase** remains largely out of reach for European defence.

This distribution creates a critical dependence on the integration of sensors and command-and-control systems. Actual performance is determined not only by the interceptor, but by the entire detection–decision–engagement chain. The integration of the ballistic trajectory into strategic analysis changes the way risk is assessed. Romania is not merely a potential target, but a node within a complex defensive architecture. Vulnerabilities are not only technical, but also economic and operational, particularly in saturation scenarios. Consequently, the analysis must remain methodologically rigorous and avoid both downplaying and exaggerating the risk.

Fig. 3 - Cost-Exchange Ratio



Conclusions for Romania

A strategic analysis of the risks posed by ballistic and cruise missiles and drones originating from Iran and the Russian Federation highlights that Romania is not under an imminent threat, but its territory is theoretically exposed to systems with a range sufficient to justify the continued strengthening of its defences. From Iran, the threat remains largely conceptual, with the emphasis on declared capabilities and operational uncertainty. From Russia, the threat is demonstrated and practical, reflected in the repeated use of Iskander-M, Kh-101 and Kalibr systems, as well as saturation drones, in the conflict in Ukraine.

Romania has a layered defence architecture, comprising Aegis Ashore, Patriot and SHORAD/VSHORAD systems, complemented by its integration into NATO structures. However, challenges remain: deployment density, the consumption of interceptors and the economic cost of defence constitute structural limitations that cannot be ignored. The effectiveness of defence depends not only on the number of systems, but also on the capacity to replenish stocks, sensor redundancy, the mobility of units and the protection of critical infrastructure.

For Romania, the key lies not in technological triumphalism, but in strategic realism. A credible defence requires methodological discipline, adaptation to saturation scenarios, allied cooperation and industrial resilience. The Romanian state's strategic position must be understood not only in terms of its inventory of systems, but also in terms of its ability to coordinate and sustain these systems under the pressure of attrition campaigns. Romania must continuously strengthen its layered defence, invest in redundancy and cultivate operational vigilance, avoiding both risk minimisation and unjustified alarmism.

Thus, risk analysis becomes a useful tool for strategic reflection and public policy, providing the basis for rational decisions and for adapting to a dynamic security environment, in which threats can rapidly shift from theoretical to practical.

Final conclusions

This study leads to a more balanced and, precisely for that reason, more robust conclusion. Romania is not under an imminent and inevitable threat from Iran, but it is in a zone of serious theoretical exposure, which justifies the systematic analysis of vectors such as Sejjil, Emad, Ghadr and Khorramshahr and the implications of the emergence of extended-range cruise missiles. The Diego Garcia incident should not be exaggerated, but neither should it be ignored: it signals that certain psychological and geographical thresholds can shift.

From Russia's perspective, the conclusion is more severe. The practical threat is more immediate and better demonstrated, and the systems of greatest analytical importance to Romania are not necessarily the most spectacular in the media, but rather those that have proven their repeated use, volume and operational utility: the Iskander-M, Kh-101, Kalibr, saturation drones and combinations thereof.

On the defensive front, Romania has a solid foundation of protection: Aegis Ashore, as part of NATO's ballistic defence architecture; Patriot, as an essential national layer; and a verifiable process of strengthening SHORAD/VSHORAD. However, no honest assessment can ignore the fact that deployment density, saturation attacks, the consumption of interceptors and the cost-effectiveness ratio remain structural limitations. For this reason, the key lies not in technological triumphalism, but in strategic realism.

Finally, the main benefit of this study lies in its methodology. It shifts the focus from threat rhetoric to the discipline of formulation. Fewer certainties where public sources do not support them; greater attention to the distinction between declared, assessed and demonstrated capability; greater correlation between technical data, geography, military economics and operational logic. Only in this way can the analysis of the risks facing Romania be useful not merely as a descriptive text, but also as a serious tool for strategic and public policy reflection.

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