About the Article

This article compares asymmetries in European and Russian long-range missile arsenals and concludes that Europe has significant capability gaps in three main areas: range, platform diversity and redundancy, and, lastly, insufficient means to deliver nuclear payloads. Although important steps have been taken to tackle some of these challenges at an incredible pace, it remains to be seen, whether the actual capability output will arrive in time to deter Russia credibly.

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Introduction

One major aspect of Russia's unlawful and full-scale invasion of Ukraine is Russia's ability to conduct large-scale stand-off strikes against Ukrainian critical infrastructure from the refuge of its strategic depth. At the same time the Ukrainian Armed Forces did not have the necessary capabilities (i.e. range) to halt Russian launch platforms from their deployments effectively. Even more remarkably so, this general picture has not changed with Western-supplied ground- and air-based standoff missiles like the Army Tactical Missile System (ATACMS) short-range ballistic missile or SCALP EG/ Storm Shadow subsonic cruise missiles. This poses an enormous challenge to European policy-makers and military planners, because European states have almost no other longer-range weapons in their arsenals that reach beyond 600 kilometres, in the first place. Although these ranges may be impressive at first glance, they are not appropriate for hitting the airfields in the Russian heartland from which the Russian deep strikes originate, performed mainly by missile platforms with ranges greater than 2.000km (see for example, Kh-101 'Kalibr' cruise missile). It is both the aspect of being severely hit by a strategic air campaign and not being able to punch back; And the cognition that almost no weapon system left in the European Arsenal would be able to meet, balance, and thus deter Russia in the missile roam upwards of 600 km that has resulted in policymakers' insights across the continent to step up the development of long-range strike weapons.This report aims to use these processes to explore the role of Deep Precision Strikes in military strategy, what European Armed Forces' inventories have (not) to offer, and compare them with the Russian arsenal. Combined with a brief excursion on ongoing development and procurement projects of long-range missiles, this paper shall provide an overview of capability gaps and the current progress of closing them.

The Strategic Importance of Deep Strikes and Missile Types

When discussing aspects of deep-precision strike (DPS), this is understood as a concept that envisions the employment of precision-guided munitions at long ranges to yield effects in the enemy's operational and strategic depth[1]—thus behind the immediate combat zone (Fayet & Péria-Peigné 2024 pp. 12-14). Other frequently used terminologies surrounding the use of long-range missiles, like 'Standoff Strikes' just like DPS, broadly describe the operationalisation of weapon platforms from afar and, most importantly, outside the adversarial threat envelope (in contrast to stand-in strikes).) (Gunzinger, 2020 p. 13; Gunzinger 2024). On the other hand, 'Long-Range Precision Fires' is another close concept that includes all means of indirect fire. Therefore, it is not limited to missile platforms but includes tube and rocket artillery for example as well. Missiles may be the only choice for standoff-deep-precision strikes. However, DPS are not necessarily conducted in standoff conditions but could similarly be executed by survivable aircraft, penetrating denied environments to drop precision-guided stand-in munitions (by fifth-generation aircraft or low-altitude interdiction raids). However, as this article seeks to concentrate on capability gaps in the missile segment, for reasons of simplicity, missiles will be assumed as the prime choice for DPS mission sets. Hence missiles , more generally, assume a privileged role in every Armed Force's inventory to kinematically implement what the US Military refers to as 'Active Denial', within the enemy's heartland. Active Denial is "a defense strategy characterized by a phased approach to operations. This approach focuses on deploying resilient and primarily defensive U.S. and allied forces to blunt and disrupt attack, while preparing for focused counterattack later" (Culver, 2022 p. 3). One way to operationalise this aim is through interdiction, that is, denying and constraining the enemy's force generation, troop

[1] The strategic and operational depth covers an area the size of multiple hundred and thousands of kilometres beyond the initial frontline. This, however, according to NATO battlespace classification is to be discriminated from the more immediate enemy's tactical depth (staging and fire coordination area) that extents up to Army Corps level (roughly 500 kilometres) from the frontline (Fayet & Péria-Peigné 2024 p. 13).

deployment, and subsequent capability employment. This serves to weaken the enemy's impact on their own and allied troops and prevents them from achieving the desired strategic objectives (Joint Chiefs of Staff, 2021 p. 109). This can be obtained by disrupting the operations of the so-called enemy's 'Center of Gravity'. The Center of Gravity represents the enemy's material and cognitive structures that constitute a state's war-making ability in the first place (Joint Chiefs of Staff, 2021 p.30). Interdicting the Center of Gravity with DPS, therefore, may include hitting high-value targets in the strategic depth, like important Lines of Communication, Political Centres, Military Command and Control (C2) hubs, critical industrial sites or military assets based in the rear area. This way of imposing denial has two implications. The first is to weaken the opponent's warfighting ability in general. Secondly, in so doing, denial helps own and allied forces to shape the operational environment on their terms and create vulnerabilities to be exploited in tactical battlefield situations and the political-military strategic realm. Beyond these rather doctrinal considerations in wartime military operations, having the technical ability to reach deep into the core of the adversary's territory creates vulnerabilities in times of power competition, for example, when undermining nuclear second-strike options (Gunzinger, 2020, p. 26)[2]. At the same time, when assuming that DPS effectors (missiles) can be launched under standoff conditions, own and allied launch platforms can submit their payloads from permissive environments and are not immediately under threat (Thibert, 2024). Therefore, regarding peace-time deterrence, DPS capabilities potentially create asymmetric conditions to one's favour. Another advantageous aspect of DPS is the precision element that ensures a higher probability of desired target effects, and compliance with international law demands and moral expectations on combatant to non-combatant discrimination (Ibid). These aspects of standoff-long-range employment, however, come at a price. Not only does a successful operationalisation require extensive intelligence, surveillance, and reconnaissance (ISR) efforts to feed the missile's navigation system with accurate data, but it also presupposes close multi-domain command & control (C2) coordination and complex launch platforms. Additionally, missile technology is quite literally 'rocket science' and hence comes with relatively high development and procurement times as well as associated costs. All these characteristics mentioned before, may make missiles the primary instrument for long-range/ DPS engagements, but they are scarce resources at the same time (Thibert 2024). A missile, more generally, may be defined as "a [...] propelled weapon designed to deliver an explosive warhead with great accuracy at high speed" (Britannica 2025). Broadly speaking, there are three types of missiles. First is the cruise missile, a manoeuvrable system that travels at subsonic or supersonic (between Mach 1.2 and Mach 5) speeds at low altitudes ('sea-skimming'/ 'terrain-masking') for long ranges. Then there are ballistic missiles, which are propelled by a rocket motor on the ascent before entering into an elliptic flight trajectory. In the mid-course flight phase, they build kinematic velocity that can extend far into hypersonic speeds (Mach 5+). Ballistic Missiles usually are not manoeuvrable or only in a limited manner in the terminal phase (then 'semi-ballistic missiles'). Lastly, a relatively new technology is called 'hypersonic missiles'. They combine the speed and high altitude of ballistic missiles with the manoeuvrability of cruise missiles. Depending on the specific weapon system, they are either propelled on the ascent, before being released to the target as a hypersonic glide vehicle. Or they sustain hypersonic speeds through specific emerging propulsion systems (Total Military Insight 2024). Each missile may have different ranges, mission roles and can be launched from a variety of platforms as listed in the following chart.

Deep-Precision Strike:
A concept that involves the use of precision-guided munitions at long ranges to achieve effects in the enemy's rear area

[2] For a China case study examining the adverse effects of insufficient weapon ranges to reach the heartland see Gunzinger 2020 p. 26

Missile Type	Mission Roles	Ranges	Launch Platform
Cruise Missile	**Sea-to-Surface/ Surface-to-Sea**	**Short Range Missile (as per INF-Treaty: 500 to 1.000 km)**	**Maritime: Submarine-launched Ship-launched**
Ballistic Missile	**Surface-to-Surface**	**Medium Range Missile (1.000 to 5.500 km)**	**Ground: Silos Road-Mobile Vehicles**
Hypersonic Missile	**Air-to-Surface**	**Long-Range/ Intercontinental (5.500 km+)**	**Air: Tactical Aircraft Strategic Aircraft Unmanned Aerial Vehicles**

Figure 1: Different ways to differentiate Missile types after flight trajectory, roles, ranges and launch platforms (Own Work)

This table serves as an overview and is not exhaustive. For example, it does not reflect the emerging role of long-range drones (like the Russian licence-built Shahed-136 or Ukrainian Liutyi drone), or decoys (like the US-American AGM-160 MALD or Spear EW), which may fulfil critical standalone tasks, but bear much resemblance in their flight profile with the general understanding of cruise missiles. Other guided missiles like Anti-Tank munitions (for example, the AGM-114 Hellfire or Brimstone Mk1) with a range little further than 10km are excluded. As are Air-To-Air and Surface-to-Air Missile roles.

Current European Deep Precision Strike Inventory and Capability Gaps

With this background in mind, it is worthwhile to examine European missile inventories and compare them to the Russian arsenal in order to identify potential capability gaps. A brief word on caveats. Given this article's explicit interest in comparing the European with the Russian stockpile, and Russia's persistent threat to European security, the following considerations will revolve around the operational environment of the Russian Federation. Therefore, given the country's territorial depth, only missiles with a greater range than 200 kilometres will be included (this, for example, excludes US-sourced MGM-140A ATACMS munitions in service with the Greece and Turkish Armed Forces as well as new SPEAR-3 acquisitions made by the British Armed Forces) (IISS 2024). Moreover, intermediate-range and Intercontinental Ballistic Missiles will not be considered, as their accuracy does not meet conventional warhead-precision demands (Randorf 2000 pp. 3-5). Lastly, although their guidance systems would hypothetically allow them to engage land targets as well, anti-ship missiles (like the Long-Range Anti-Ship Missile (LRASM) or RBS-15) and surface-to-air missiles (for example, US-made SM-6 or Russian S-200) are not going to be presented. Instead, the following lineup is a compilation of dedicated Land attack missiles. A weapon system's association with a country is based on the IISS Military Balance 2024 (IISS 2024, Wright 2024); the technical data is derived from the CSIS Missile Threat database (CSIS 2025). When comparing the European and Russian tables, three kinds of disproportionality appear, which subsequently help identify European DPS capability gaps. First, are the ranges. Except for the French MdCN and US-made Tomahawk cruise missile in service with the British Navy, no system in the European inventory currently reaches beyond 1.000 kilometres. This is remarkable as six of the overall eight listed Russian missile platforms have a longer range of between 1.500 and 2.500 kilometres.

Country	Missile	Type	Platform	Range (kilometres)	Manufacturer/ Origin	Warhead type and size
Finland	AGM-158A Joint Air-to-Surface Standoff Missile (JASSM)	Air-Launched Cruise Missile	F /A-18C /D Hornet	370 (est.)	USA / Lockheed Martin	Conventional, 454 kg
France	SCALP EG	Air-Launched Cruise Missile	Mirage 2000D / Rafale	>500 (est.)	France, UK / MBDA	Conventional, 450 kg
	Missile de Croisière Naval (MdCN)	Sea-launched Cruise Missile	Aquitaine-class frigate / Suffren-class Submarine	>1.000 (est.)	France / MBDA	Conventiona, 300 kg
	Air-Sol Moyenne Portée Renouvelé (ASMP-R)	Air-Launched Cruise Missile	Rafale	>500 (est.)	France / MBDA	Nuclear, unknown
Germany	KEPD-350 Taurus	Air-Launched Cruise Missile	Tornado IDS	>500 (est.)	Germany / MBDA	Conventional, 480 kg
Greece	SCALP EG	Air-Launched Cruise Missile	Mirage 2000-5	>500 (est.)	France, UK / MBDA	Conventional, 450 kg
Italy	Storm Shadow	Air-Launched Cruise Missile	Tornado IDS / Typhoon	>500 (est.)	France, UK / MBDA	Conventional, 450 kg
Norway	Joint Strike Missile	Air-Launched Cruise Missile	F-35	555	Norway, US / Kongsberg, Raytheon	Conventional, 120 kg
Poland	AGM-158A Joint Air-to-Surface Standoff Missile	Air-Launched Cruise Missile	F-16	370 (est.)	USA / Lockheed Martin	Conventional, 454 kg
Romania	MGM-168 ATACMS	Short-range ballistic missile	Transport Erector Launcher (TEL), M142 HIMARS	300	USA / Lockheed Martin	Conventional, 227 kg
Spain	KEPD-350 Taurus	Air-Launched Cruise Missile	F /A-18A Hornet	>500 (est.)	Germany / MBDA	Conventional, 481 kg
UK	Storm Shadow	Air-Launched Cruise Missile	FGR-4	>500 (est.)	France, UK/ MBDA	Conventional, 450 kg
USA	UGM-109 Tomahawk	Sea-launched cruise missile	Trafalgar class-submarine / Astute-class submarine	1.600 (est.)	US / McDonnell Douglas, Hughes Aircraft Company, Raytheon	Conventional, 454 kg

Figure 2: Long-range missiles in European Armed Forces' inventories in comparison (Own Work)

This hampers the European deterrence effect, as it suspends the balance of mutual vulnerability: Europe is within reach, while Russia still has an inner sanctuary that Europe and its allies would not or would only insufficiently be able to hit. In a wartime scenario, this aspect can prove even more difficult when Russian strategic aviation is launching its standoff weaponry from airfields, well outside the European missile envelope. The problems coming along with this dynamic are, as mentioned in the introduction, observable with Ukraine, which to this day struggles to hamper or even halt the Russian Air Force's and Navy's strategic air campaign.Second, the European arsenal is lacking diversity and redundancy. While employing a relatively wide range of cruise-missile types, Europe – in contrast to the Russian Federation – is completely lacking ballistic missile or hypersonic capacities. So far, the only short-range ballistic missile in service with a continental European country is the US-American ATACMS. Another aspect that deserves consideration is the fact that no missile (besides ATACMS) is ground-launched. Instead, European Armed Forces resort to tactical aviation or naval vessels. Even though this may be due to the INF-Treaty that was in place until 2019, prohibiting ground-launched missiles of any type with a range between 500 and 5.500 kilometres, it gives Russia considerable advantages in rapidly and covertly generating stand-off fires (Congressional Research Service 2019). Hence, when the European Armed Forces rely on only one type of ballistic missile, the lack of platform diversity additionally becomes a challenge for capability redundancy.

Missile	Type	Range (kilometres)	Warhead type and size
3M-14 Kalibr (SS-N-30A)	Sea-launched Cruise Missile	1,500 to 2,000 km	Nuclear capable, 450kg
9K72/ 9K723 Iskander-M (SS-26 „Stone"))	Ground-launched short-range Ballistic Missile	500km	Nuclear capable, 700kg
Novator 9M729 Iskander-K (SSC-X-8 „Screwdriver")	Ground-launched Cruise Missile	2,500 km	Nuclear capable, 450 kg
9M728 (R-500) - Iskander-K (SSC-7 Southpaw)	Ground-launched Cruise Missile	490 km	Nuclear capable, unknown
KH-101/102 (AS-23 „Kodiak")	Air-Launched Cruise Missile	2,500 to 2,800km	Nuclear capable, 400kg
Kh-55 (AS-15 "Kent")	Air-Launched Cruise Missile	2,500km	Nuclear capable, unknown
Kh-47M2 („Kinzhal")	Air-Launched Ballistic Missile	1,500 to 2,000km	Nuclear capable, 480kg
3M22 „Zirkon" (SS-N-33)	Sea-launched Hypersonic Cruise Missile	450 to 1,000km	Nuclear capable, unknown

Figure 3: Russian long-range missiles (Own Work)

For example, if, in a wartime scenario, all of the few HIMARS or M270 (/MARS II) launchers in Europe are decimated, there would be no other launch platform for ATACMS in Europe. Lastly, besides the French ASMP-A and R variants as a dedicated nuclear delivery platform, neither European nor US-manufactured standoff weapons listed above can carry nuclear payloads. While this may be beneficial for more controllable risk management, it gives the Russian Federation greater leverage in nuclear ambiguity. Another side effect of this is that Russia simply has a larger amount of capable standoff systems at its disposal for all different kinds of nuclear weapons employment. This degree of nuclear versatility is something European stockpiles lack.

Growing Awareness and New Acquisitions

The reckoning of these gaps and asymmetries has only recently taken place and has been widely discussed among experts like Fabian Hinz and Ben Schreer, 2024, Timothy Wright (2024), Rafael Loss (2023) or Fabian Hoffmann (2023). However, this discourse, or at least elements of it, have reached the broad public somewhat belatedly at the 2024 NATO summit in Washington, with the announcement to deploy a US-Army Multi-Domain Task Force (MDTF) to Germany. Conceptualised to be an interim solution, it is supposed to close capability gaps with truck-launched Tomahawk cruise missiles, SM-6 semi ballistic missiles (with a range of 370km), a yet-to-be-introduced Hypersonic Glide Vehicle dubbed 'Dark Eagle' (with an estimated range of around 2.500km), as well as the short-range ballistic successor to the ATACMS - the 'Precision Strike Missile' (PrSM) (500km) (Congressional Research Service 2024). Along with the announced deployment of the MDTF, European nations (France, Germany, Poland, the UK, and Sweden) have adopted the so-called 'European Long Range Strike Approach' (ELSA). ELSA is a framework that aims to pool resources for joint development and procurement. It is speculated to field a long-range cruise missile with a range of between 1.000 and 2.000 kilometres that can be modularly launched from ground, maritime and air-based platforms (Wright 2024).These developments co-me at a time when the European missile market is already rapidly adapting its portfolio. MBDA (2024a), for example, is currently developing the so-called 'Remote Carrier Multidomain Multirole Effector' (RCM²). It projects a versatile cruise missile platform, with varying mission payloads (kinetic and electromagnetic) and cross-domain launch platforms. It may also be enabled for loitering tactics, real-time data forwarding and control of larger swarms. The supposed range remains unknown as of now. Furthermore, as the successor to the Storm Shadow/ Scalp EG and MdCN platform (among others), France, UK and Italy are developing a new generation of cruise missiles (both sub- and supersonic) within the programme of 'Future Cruise/Anti-Ship Weapon' (FC/ASW). It is expected to bring anti-ship, anti-surface (land), and limited surface-to-air capabilities (MBDA 2024b). Their ranges remain speculative, but given the current missiles' ranges and that FC/ASW will attempt an adequate replacement, the ranges will likely be between 500 and 1.000km. In parallel with these processes, Germany plans to acquire 600 Taurus Neo (modification of Taurus KEPD 350), whose technical parameters remain unknown (Hoffmann, 2024). On the other hand, the UK and Italy are integrating the British SPEAR-3 cruise missile (est. range of 140km). Additionally, Italy has announced that it will procure Kongsberg's Joint Strike Missile (Navy Lookout 2021, Jennings 2024). Whereas Sweden is set to receive the Taurus KEPD 350 by 2028, Germany, the Netherlands, Finland as well as Poland have placed orders for different types of US-made JASSMs (among them JASSM-ERs with a range of 1.000 km) (Siminski 2024, Defense Industry Europe 2024a). Most notably, the Netherlands is introducing Tomahawk missiles into the Navy's De Zeven Provinciën-class frigates (Naval News 2025). Even in the Rocket Artillery segment, some significant dynamics can be observed: the Israeli Euro PULS Multiple Rocket Launch System

European Armed Forces fail to match the Russian long-range Arsenal

(MLRS) produced by ELBIT Systems, for example, gains greater traction in the European market after Germany announced the purchase of five of these systems. Its compatibility with launch-tube sizes ranging from 122mm to 370mm makes it a scalable platform, allowing the integration of a variety of different rockets, among them the co-developed Predator Hawk Precision Missile by Elbit and KNDS with a range of 300km (Defense Mirror 2025, Geiger 2024). Lockheed Martin and Rheinmetall offer a competitive counter draft with the 'GMARS' launcher that is said to field Guided MLRS rockets (GMLRS), ATACMS, and the relatively new US-made short-range ballistic 'Precision Strike Missile' (PrSM) (over 500km range) (Rheinmetall 2025).-The attempt to acquire PrSMs and extended range versions of GMLRS by Norway for its HIMARs launchers has been turned down by the US in 2024 for publicly unknown reasons. But as presented, European Forces and armament manufacturers have recognised the one-sided capability gaps and have stepped up their game accordingly. New systems are acquired at an impressive pace, and new cooperation and development programmes are underway.

Conclusion

As this article has presented, the European Armed Forces fail to match the Russian long-range Arsenal in terms of ranges, diversity, and conventional nuclear warhead capability. This is even more dangerous, given the prominent and strategically significant role of DPS missiles, both at peace-time deterrence and wartime dominance. The European States have come to recognise this challenge and are in the process of rapidly procuring and developing new systems. Nevertheless, the capability gaps are significant and will prospectively remain regarding ballistic missiles, hypersonic missiles, and dual-capable payloads. Additionally, although it appears worthwhile to create ranges that only make the West of Russia vulnerable (as the military and the socio-economic centre of the country), it may be meaningful to consider ranges that go beyond the Ural. This implies, however, a reach that extends to 4.000 kilometres rather than 2.000. Consequently, this would also allow for conventional counterforce deterrence, relieving the deterrence effect of an otherwise small European nuclear arsenal But even with the current level of ambition, it will take precious time to develop, test, procure and subsequently integrate new DPS systems into the European arsenals. Therefore, the shifts observed herein are rather tectonic. Except for longer-standing deliveries of JASSMS, for example, new platforms like FC/ASW or ELSA will not be viable for operational use before the 2030s. This is even more dangerous, given the pace of Russia's military current and future reconstitution. In summary, European policymakers and industrials have recognised the deficits and have taken meaningful decisions. One can only hope these measures were taken early enough to dissuade Russia from its next potential war.

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