



A Tsunami of New Technologies Is Reshaping the Battlefield

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EXECUTIVE SUMMARY: RUSI's annual Military Technology Conference, held in London in October, presented a comprehensive picture of the technological revolution underway in the British Army and in other European militaries—a transformation that reflects the Russian threat and operational lessons emerging from the war in Ukraine. Future force design is transitioning sharply from hardware-centric to AI-driven and autonomous systems, with the strategic objective that by 2035, most combat platforms will be unmanned. Along with announcing massive investments and flagship programs, the conference identified key obstacles: bureaucratic delays, gaps between civilian AI and battlefield requirements, and legal and ethical challenges associated with integrating autonomous systems. The conference highlighted lessons learned from the war in Ukraine in shaping European military analysis, yet scarcely addressed the many lessons to be learned on Middle Eastern battlefields. The conclusion: Britain is undergoing a profound conceptual and operational shift, but its success will depend on overcoming structural barriers, accelerating innovation, and transforming advanced technological capabilities into effective military power within a short time frame.

The present decade is characterized by deep changes in the nature of modern warfare. Europe, including the United Kingdom, once again faces large-scale conventional threats, accompanied by an understanding that a future confrontation with Russia—direct or indirect—can no longer be dismissed as merely theoretical. This reality is driving a renewed military buildup centered on

force structures based on artificial intelligence (AI), autonomy, advanced connectivity, and multidomain digital capabilities.

At the heart of these processes stands the British *Strategic Defense Review (SDR)*, which has revealed a dramatic increase in investment, a shift in force-building concepts, and a clear vision in which a significant portion of the fighting force will be unmanned and software-driven. The document sets an ambitious goal for 2035: doubling the defense budget and fundamentally restructuring the British military.

RUSI's annual Military Technology Conference, held in London in October, focused on this transformation and presented a clear picture of a technological revolution rather than a gradual evolution. Senior speakers described the emerging change as a tsunami that will sweep the battlefield in the coming years.

1. A paradigm shift: From hardware systems to software-driven systems

A. AI as a central driver

For decades, military modernization depended on heavy platforms—tanks, aircraft, aircraft carriers—and on incremental improvements to existing systems. In recent years, influenced especially by the war in Ukraine, militaries have been shifting toward a fundamental digital upgrading: combat systems are becoming AI-based and connected.

The RUSI conference presented a unified assessment that AI is no longer an auxiliary tool but a core component of future force design. Principal military uses of AI include rapid processing of large volumes of intelligence; real-time sensor fusion; target classification and strike-cycle closure; decision support at the tactical and operational levels; GPS-denied autonomous navigation; and the management of complex fire networks.

According to the conference's keynote speaker, within only a few years AI will become an operational force multiplier and the principal engine enhancing lethality and survivability.

B. Future force composition – Changing platform ratios

The SDR sets an unprecedented target: 20% manned platforms, 40% unmanned platforms, and 40% unmanned strike systems. This implies that most of the

operational force structure will be remote-controlled or autonomous, fundamentally reshaping battalion structures, command chains, training, and operational concepts.

C. Dramatic budgetary growth

For the first time since the Cold War, defense budgets in the UK and across Europe are growing at double-digit rates annually. Simultaneously, investments in research and development of advanced weaponry are accelerating, enabling the emergence of innovative capabilities previously unavailable.

2. The influence of the war in Ukraine – A lesson in rapid adoption

The war in Ukraine is a primary source of insight for the planned European military transformations. A significant portion of the conference was dedicated to analyzing technological trends that have shaped the fighting.

A. Cheap and smart munitions

One of the most prominent lessons is the importance of small, inexpensive precision weapons: FPV drones for penetration and pinpoint strikes; *Sea Baby* unmanned surface vessels for attacking Russian naval assets; and drones with enhanced load-carrying and strike capabilities. Their shared attributes – low cost and high lethality – require a rethinking of traditional models of defense and offense.

B. Multi-channel information fusion

Ukrainian operations demonstrated how real-time sensor data processing can create a high-quality operational picture that increases responsiveness and lethality. AI systems process drone video feeds, geolocation data, armored column movements, RF transmissions, and ground-based information, resulting in significantly improved tactical situational awareness.

C. Russia as an advanced technological adversary

The conference portrayed Russia as an aggressive state but also one that has become a model of rapid technological adaptation. Russia has made notable advances in electronic warfare (EW); communications and GPS disruption; mass

drone-swarm attacks; and basic AI for data processing. While Russia lags the West in development, it is extremely effective at rapid battlefield implementation.

3. British development projects – From vision to deployed systems

One of the conference's most striking findings is that the UK is already in the advanced stages of implementing large-scale AI programs.

- **Digital Targeting Web** – An AI-driven digital network linking sensors, observers, and strike assets.

Objective: Reduce strike-cycle times from hours to minutes.

Budget: Over £1 billion.

Timeline: 2027.

- **Recce-Strike/ASGARD** – A long-range AI-based target-classification system enabling rapid strike closure.

Inspiration: Systems proving themselves in Ukraine.

Advantage: High-speed and highly precise engagement.

- **SCEPTER** – An AI infrastructure for C2 systems adapting to various domains, including computer vision, image processing, decision support, and sensor-effector connectivity. Notably, this is being promoted by small- and medium-sized enterprises to prevent monopolization by major defense industries.

- **Loyal Wingman** – An autonomous combat UAV designed to accompany manned fighter aircraft as part of the *Tempest* program.

Roles: Strike, EW, reconnaissance, and decoy operations.

This constitutes a building block toward a sixth-generation fighter system.

- **THESEUS** – An autonomous logistics system using drones and UGVs to deliver ammunition and equipment to the front.

Advantages: Reduced risk to soldiers; GPS-independent operation; logistical continuity under harsh combat conditions.

- **SPOT/V60**—AI-based quadruped robots for urban navigation, reconnaissance, penetrating hazardous spaces, and carrying sensors and communications payloads.
- **PANORAMA**—An AI system generating a synchronized operational picture for tactical headquarters.

Capabilities: Detecting armored movements, monitoring frontline breaches, producing operational forecasts, and enabling data-driven decision-making.

This system demonstrates the potential of AI integration at the operational level.

4. Implementation challenges - The “Valley of Death” of innovation

A central theme emphasized by speakers was the gap between development potential and operational implementation. This gap was repeatedly referred to as the “Valley of Death”.

A. Failure to transfer concepts into operational systems

Major slowing factors include excessive bureaucracy at the British Ministry of Defence, outdated procurement processes, institutional conservatism, and pressure from established defense companies to preserve existing products. As a result, promising concepts may be blocked in committee and never reach the field.

B. A fundamental difference from civilian innovation

In the civilian world, 10 ideas may yield five companies, and the market selects the winners. In the military world, one committee selects a single idea. Any remaining ideas are lost, even if they are superior. This discourages private investment and preserves a rigid, closed defense-industrial ecosystem.

C. AI limitations on the battlefield

Civilian AI is not tailored for combat environments. There is insufficient combat data for training; systems cannot fully explain their decisions; real-time processing is required; reliability, validation, and security are problematic; and systems often cannot withstand extreme field conditions. The gap between civilian AI giants and military needs remains significant and unresolved.

D. Law, ethics, and the regulation of autonomy

A dedicated conference panel highlighted tensions between operational approaches that seek to retain a human presence at the end of the chain and legal warnings against systems that could act “beyond human control”. Legal scholars demand to be involved from the outset of development, and that requirement might slow down innovation and complicate processes.

5. Missing perspectives: The absence of lessons from the Middle East

One of the more striking insights to be derived from the conference concerns what was *not* discussed. While there was intensive engagement with Ukraine, almost no attention was given to lessons from the Middle East—despite the importance of precision-guided missiles, multi-layered air defense, hybrid adversaries, coping with hundreds of daily launches, and extensive use of strike and interceptor UAVs.

Whether this omission stems from differing threat perceptions or political considerations, it represents a substantive gap in understanding the full spectrum of future challenges.

6. Conclusions

- Britain is undergoing a genuine military revolution, not a minor upgrade.
- Current budgets and ongoing projects indicate a long-term transformation.
- AI will stand at the center of the British battlefield, from information processing to strike-cycle closure.
- The British force will become predominantly unmanned, fundamentally reshaping force structure, training, and command processes.

- The main barrier is not technological but organizational, headed by the innovation “Valley of Death.”
- Russia and China are serving as accelerators of British military modernization due to their rapid advances in EW and autonomy.
- The absence of learning from the Middle Eastern theater leaves gaps, mainly regarding missiles, air defense, and multidomain integration.
- The future of force building will depend on the UK’s ability to adopt flexible innovation pathways, reduce bureaucracy, and increase cooperation with small civilian firms.
- The conference’s implications extend beyond the UK and reflect a broader European trend of preparing for a potential confrontation with the Russia–China axis.

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