

# How Russia Is Building a Sovereign Drone Ecosystem for AI-Driven Autonomy

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## KEY TAKEAWAYS

- Russia has likely begun deploying fully autonomous unmanned systems in combat, shifting from remotely piloted drones to AI-enabled platforms capable of independent navigation, targeting, and engagement without human approval, and of coordinated operations in contested environments.
- Russia is moving from large, centralized command-and-control systems toward task-specific tactical software to speed up battlefield decisionmaking. With drones now accounting for roughly 80 percent of fire missions, priority is on tools that connect operators directly to strike units and cut targeting-strike timelines from hours to minutes.
- Private drone schools have become key drivers of adaptation, updating training, integrating new systems, and creating feedback loops between operators and engineers. This translates new technology into operational capability far faster than traditional institutions.
- Russia is developing a nationwide, end-to-end ecosystem for AI and unmanned systems: permissive regulation, expanded civilian drone production, workforce development, and infrastructure investment. These dual-use efforts directly enable the scaling of military capabilities.
- Rather than competing at the AI frontier, Russia is pursuing a pragmatic application-layer strategy—building on open-weight foreign models while prioritizing integration, deployment, and control to field capabilities rapidly under real-world constraints.

## BACKGROUND AND CONTEXT

Russia's war in Ukraine offers one of the most analytically valuable case studies for the United States in understanding how a large, industrialized military adapts under sustained conflict. Unlike smaller or less technologically advanced actors, Russia's force structure, scale, and institutional complexity are far more comparable to those of the United States, making its lessons more directly applicable. Over the course of the war, Russia has undergone significant transformation in how it integrates technology, shifting toward rapid adoption of commercial and nontraditional vendor solutions, accelerating battlefield innovation cycles, and restructuring its approach to force employment, command-and-control, and capability development.

At the same time, the implications of Russia's adaptation extend well beyond Ukraine. Russian technologies, operational concepts, and battlefield practices are increasingly diffusing outward—often indirectly and at speed. Recent dynamics in the Middle East, including the war involving Iran, demonstrate that Russia is not only sharing intelligence but also transferring drone technologies, updates to platforms such as Shahed systems, and evolving tactics used to target U.S. assets and personnel. In parallel, Europe continues to experience periodic incursions by Russian unmanned systems, underscoring the geographic spread of these capabilities.

Against this backdrop, understanding how Russia is advancing AI-enabled autonomy, integrating unmanned systems at scale, and operationalizing these capabilities is not a theoretical exercise—it is a matter of direct relevance to U.S. national security planning, force development, and threat assessment.

## LEGISLATIVE OR POLICY IMPLICATIONS

U.S. adversaries, including Russia, are rapidly advancing toward more autonomous and unmanned forces while also deepening collaboration with one another, accelerating the spread of technologies, tactics, and operational concepts that pose a direct and evolving threat to U.S. national security.

The legislative response should not rely solely on restrictive measures or tighter controls on emerging technologies due to risk aversion or ethical concerns. It should also create space for more flexible testing and experimentation across the force even for systems that may be novel or not yet fully predictable while maintaining appropriate safeguards. This is particularly important given that U.S. adversaries are advancing quickly, often without adhering to the same ethical and procedural constraints.

The FY 2026 National Defense Authorization Act provides a critical opportunity to move beyond reactive oversight and enable faster integration of autonomous systems. Congress can align acquisition, training, and testing; require integration of unmanned systems into major exercises; and expand testing in contested environments. Complementary initiatives, such as the SkyFoundry Act and the National Drone and Advanced Air Mobility Research and Development Act, aim to accelerate development and interagency coordination, while prior funding under the One Big Beautiful Bill Act has already begun advancing autonomous strike capabilities. Together, these efforts signal growing momentum, but require further focus on readiness and scalable deployment to match the pace of adversary innovation.

## CHALLENGES AND RISKS

Several challenges could complicate effective policy action. First, institutional inertia within the Department of Defense—particularly in testing and certification processes—continues to slow the integration of unmanned and autonomous systems. Existing frameworks are not designed for rapid iteration, creating a mismatch between the speed of technological change and the pace of adoption.

Second, there are economic and industrial risks. Scaling low-cost unmanned systems and AI capabilities requires a more flexible defense industrial base, including greater reliance on nontraditional vendors. However, barriers to entry, contracting complexity, and uncertain demand signals may limit industry participation and slow innovation.

Third, security and operational risks remain significant. Expanding autonomy and accelerating deployment may introduce vulnerabilities, including system unreliability, adversarial exploitation, or unintended escalation dynamics, particularly in contested environments.

Finally, there are political and diplomatic constraints. Efforts to reduce regulatory friction or expand testing authorities may face resistance over safety, ethical concerns, and airspace management. At the same time, the global diffusion of these technologies—often driven by adversary cooperation—raises challenges for export controls, alliance coordination, and maintaining U.S. technological advantage.

## RECOMMENDATIONS

Congress should prioritize the following actions in the FY 2026 NDAA to strengthen U.S. readiness for autonomous systems:

- Establish a dedicated training and readiness framework for autonomy, including human-machine teaming, operations in denied environments, and integration into major exercises.
- Require validation of autonomous systems in contested conditions such as electronic warfare and disrupted communications.
- Adopt a tiered, risk-based certification model to accelerate fielding while maintaining safeguards for higher-risk systems.
- Expand international collaboration with partners experienced in large-scale drone integration, particularly Ukraine.
- Allocate funding and authorities for nontraditional training providers, continuous tactics development, and infrastructure that enables rapid feedback loops between industry and warfighters to support fast iteration.

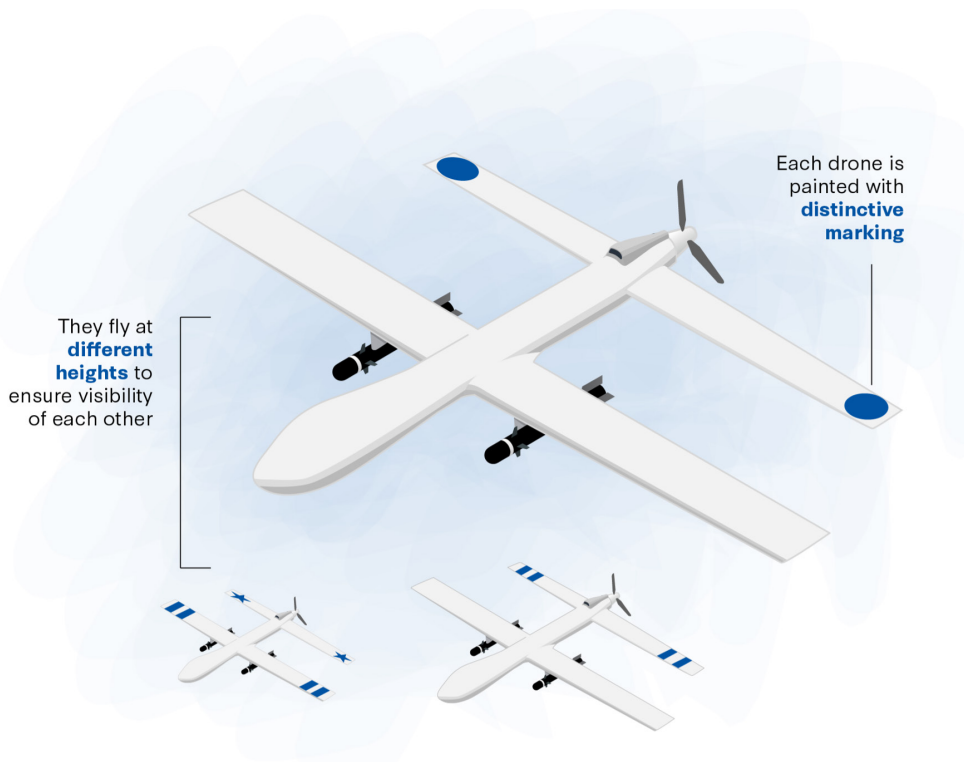
## ADDITIONAL RESOURCES

Kateryna Bondar, “How Russia Is Reshaping Command and Control for AI-Enabled Warfare,” CSIS, February 10, 2026, <https://www.csis.org/analysis/how-russia-reshaping-command-and-control-ai-enabled-warfare>.

Kateryna Bondar, “Unleashing U.S. Military Drone Dominance: What the United States Can Learn from Ukraine,” CSIS, July 18, 2025, <https://www.csis.org/analysis/unleashing-us-military-drone-dominance-what-united-states-can-learn-ukraine>.

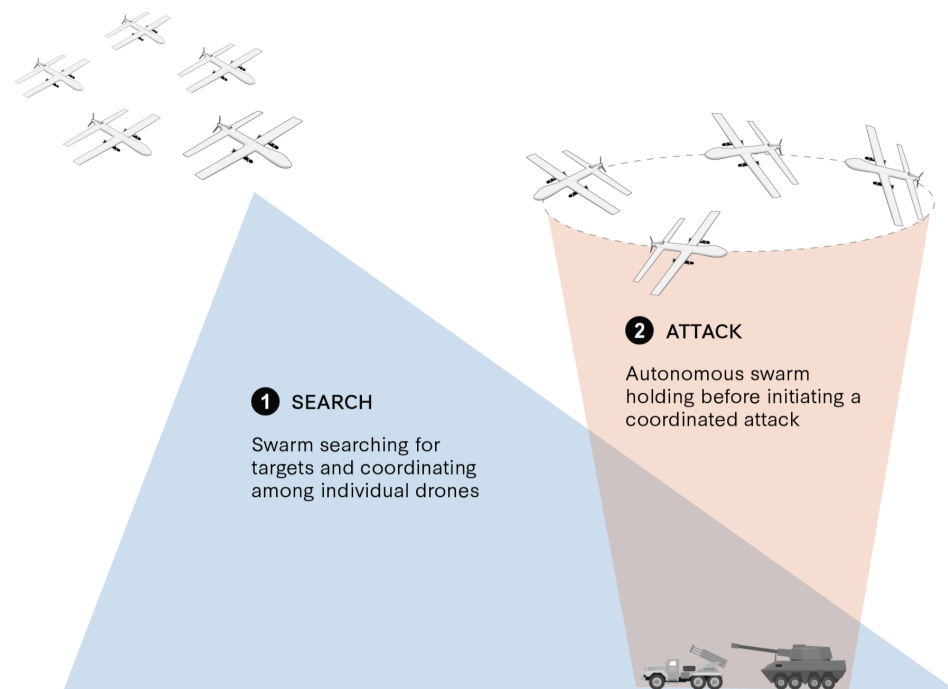
For more information, contact: **Chloe Himmel** at 202.775.3186 or [chimmel@csis.org](mailto:chimmel@csis.org).

**Figure 1: Visual Identification Markings Enabling Potential Vision-Based Swarm Coordination**



Note: Illustration not to scale.  
Source: CSIS. Illustration by Sabina Hung/CSIS.

**Figure 2: Drone Formation Collaboration Tactics**



Note: Illustration not to scale.  
Source: CSIS. Illustration by Sabina Hung/CSIS.