

Backbone of the Battle: Getting the Data Through

High-speed comms

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The Army has always relied on communication to win wars, but in today's environment, that communication is overwhelmingly digital. Every warfighting function (WfF) now depends on high-speed data to enable intelligence, mission command, sustainment, and fires.

Emerging capabilities such as Project Maven's AI-enabled analysis tools and commercial satellite constellations like Starshield are revolutionizing the battlefield by delivering unprecedented speed and fidelity of information. Yet, this transformation comes with risk.

While commanders have grown accustomed to the fiber-based connectivity of counterinsurgency operations, the realities of large-scale combat operations (LSCO) against near-peer threats present a different picture. In contested, austere environments, our ability to maintain persistent high-bandwidth connections is far from guaranteed. This gap between expectation and capability is straining the Signal Corps and could leave the force vulnerable at decisive moments.

The Rise of AI-Enabled Systems

As these new systems are coming to maturity (Maven, Starlink, etc.), they deliver significantly higher data rates compared to legacy, lower tactical internet (TI) platforms.

Warfighting exercises conducted at the National Training Center (NTC), Joint Readiness Training Center (JRTC), and Joint Multinational Readiness Center (JMRC) have consistently demonstrated that data and AI-enabled tools such as Maven greatly enhance effectiveness and efficiency of all warfighting functions. These tools rely heavily on low-latency, high-bandwidth connectivity to cloud-based services to deliver real-time insights.

The graphic "Achieving Cross-Domain Synergy" illustrates how AI-driven systems function best when integrated across land, air, maritime, space, cyberspace, and the electromagnetic spectrum to create a unified operational effect. Without reliable access to this level of connectivity, the full potential of AI-driven systems remains unrealized, reducing them to underutilized assets rather than force multipliers on

the modern battlefield. AI continues to improve battlefield decision-making by accelerating data processing, enabling faster target acquisition, and enhancing situational awareness at every echelon. However, the Army currently struggles to support due to two critical limitations: connectivity and training.

The Problem

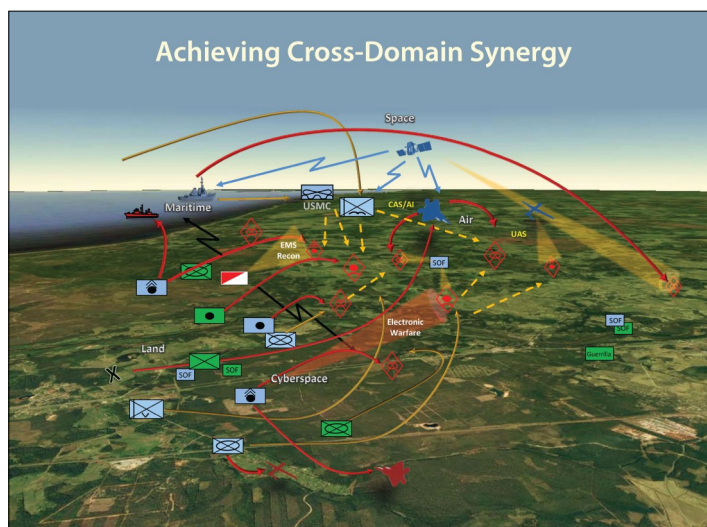
Two critical limitations currently hinder the Army's ability to fully exploit AI-enabled systems: **Connectivity.** Legacy "green" communications platforms cannot consistently deliver the bandwidth or latency needed for AI's real-time processing. During LSCO, jamming, cyberattacks, and physical destruction of infrastructure are likely, making sustained high-bandwidth connectivity difficult to achieve.

Training. No formal schoolhouse pipeline exists to train Soldiers on the operation, troubleshooting, or maintenance of AI-based systems. As a result, units often deploy with advanced technology that few can fully exploit, leaving much of its potential untapped.

Without addressing both issues, the gap between what commanders expect and what the tactical network can deliver will only widen.

Alternate Perspective

Commanders have become increasingly reliant on the speed and volume of information provided using



First published in [Military Review](#), this graphic depicts the inherent integration and convergence of the future of multi-domain battlefield. (Graphic by Gen. David G. Perkins, U.S. Army)

fiber connection to warfighting groups, often creating unrealistic signal expectations. Much like how juries began demanding more definitive evidence following the influence of shows like Crime Scene Investigation, commanders have grown increasingly dependent on immediate, high-fidelity data to drive operational decisions. This expectation is largely rooted in experiences during warfighter exercises and operational deployments throughout the Global War on Terrorism. During that time, commanders frequently operated with access to robust, fiber-based communications infrastructure, enabling instant access to intelligence, surveillance, and mission command systems.

As illustrated in Army Doctrine Publication 3-13 (2023), achieving information advantage requires more than physical connectivity; it demands synchronization of information activities such as enable, protect, inform, influence, and attack to shape decision cycles. However, during LSCO against near-peer threats, such connectivity cannot be guaranteed due to the austere environment. This leaves commanders vulnerable when decision-making processes are built around unavailable data. This growing gap between expectation and reality places immense pressure on signal elements to deliver beyond their means, often without the necessary resources, equipment, training, or infrastructure.

Recommendations for Modernization

To prevent a critical failure in future conflicts, the Army should:

1. **Modernize the tactical network.** Invest in resilient, multi-path, AI-optimized communications infrastructure that is capable of operating in degraded or denied environments.

2. **Institutionalize AI training.** Establish formal training pipelines at signal and intelligence schoolhouses to produce Soldiers capable of fully leveraging AI systems in the field.

3. **Align command expectations with reality.** Integrate degraded network scenarios into Warfighter and Combat Training Center exercises to prepare commanders for contested spectrum operations.

4. **Doctrine and policy updates.** Revise doctrine to incorporate AI employment in LSCO, including network prioritization, bandwidth allocation, and decision-making processes under degraded conditions.

Conclusion

The increasing dependence on real-time data and AI-enabled systems has shifted the burden of mission success onto the shoulders of the Signal Corps. Without proper training pipelines or modernized infrastructure, this demand risks outpacing our capacity to deliver. Our enemies are watching. A near-peer adversary will not allow us the comfort of fiber lines or unchallenged cloud access. If we fail to adapt doctrinally, technically, and culturally, we risk blinding ourselves in the next fight. The Army must proactively modernize its communications architecture, invest in AI/data system training, and temper operational expectations with battlefield realities. The choice is clear: evolve our networks and doctrine now, or face disruption when it matters most. In the end, mission success will not be defined by how much data we can demand but by how effectively we can deliver it. Until commanders break their addiction to instant data, the S6 will remain the backbone of the battlefield. So, should we curb our addiction? Or wait until a peer threat does it for us?

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