The Operational Environment 2024-2034

Large-Scale Combat Operations

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Foreword

The U.S. Army is facing new and increasingly perilous challenges compared to only a few years ago because of a rapidly modernizing pacing threat and an acute threat engaged in protracted large-scale combat operations on NATO's doorstep. During two decades of counterinsurgency and counterterrorism, these traditional adversaries have watched as our Forces faced violent extremist organizations that had limited objectives and resources and used improvised weapons and tactics. Now, many of these threats have receded while our traditional adversaries with substantial defense budgets and global ambitions have reasserted themselves. They studied us as we executed operations and are using those lessons in their defense and strategic planning. To achieve victory in the Operational Environment of the 21st century, the U.S. Army must know these enemies like it knew the Soviets in the 20th century.

China, the pacing threat, is building defense systems to attain its global ambitions. It has the largest military in the world by personnel and the ability to execute a whole-of-nation approach to conflict that can quickly galvanize its industrial base. China's modernization process has seen rapid technological transformation toward its vision of "informationized" and "intelligentized" warfare. It is also advancing an ambitious professional military education system with the aim of building a strong NCO corps.

Meanwhile, Russia, the acute threat, has been mired in an invasion of Ukraine since 2022. While not seeing the success it had hoped for initially, Russia is gaining combat experience in large-scale combat operations and proving that simply outlasting an enemy is a potentially valid military option. The war in Ukraine has shown that the next fight will prominently feature information warfare and focus on multidomain effects. Fires will be the center of gravity, making protection a priority and maneuver difficult.

In its mission to assess the Operational Environment, the U.S. Army Transformation and Training Command must distill all its observations and research into insights that the Army can apply. That is what this document endeavors to do, but it is only a first step. The information contained herein should be transmitted to, and understood by, U.S. Army Soldiers of every rank and at every echelon. Our Soldiers—our people—are our greatest strength and we must do everything we can to strengthen the profession of warfighting. Competence as an Army professional starts with understanding the threat, but it does not end there. Every Leader has the obligation of being a continuous and self-reflective learner outside of traditional professional military education and training.

Ian M. Sullivan
Staff Integration Lead for Intelligence
U.S. Army Transformation and Training Command

"To achieve victory, we must know the enemy. Knowing the enemy starts with the Operational Environment."

From Vision to Victory

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Executive Summary

The U.S. Army Transformation and Training Command (T2COM) G-2, through its continuous observation and assessment of the Operational Environment (OE), identified 12 conditions that are likely to influence how the U.S. Army trains for and operates in large-scale combat operations (LSCO) during the period of 2024-2034. Given these LSCO conditions, T2COM G-2 also identified five implications of modern LSCO that will likely affect how the U.S. Army adapts across its capabilities related to doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P). These implications are relevant, but not limited, to how the Army applies the OE to training and Leader development to establish the best conditions to succeed in LSCO. This document focuses on LSCO and does not cover the totality of Army operations in the OE over the next 10 years.

The key conditions that are likely to drive LSCO in the next 10 years include:

- LSCO will feature **all-domain competition and warfare** as competition and conflict extend beyond physical battles and increasingly involve multiple interconnected domains and dimensions.
- **Mass and precision** complement one another in LSCO, and combatants will need to identify the right mix of these factors to gain advantages.
- The increase in the production, employment, and success of **uncrewed systems** means the Army can expect to encounter these systems across the breadth and depth of LSCO.
- LSCO will require firing and sustaining massive amounts of munitions against adversaries likely to enjoy the initial advantage of interior lines, challenging the Army's **magazine depth and range.**
- LSCO will be marked by the democratization and proliferation of advanced technologies and hyperconnected global communications, creating an increasingly **transparent battlefield** that makes it difficult to hide from the enemy.
- LSCO will be **increasingly lethal** due to the intersection of sensor ubiquity, battlefield automation, precision strike, and massed fires.
- In LSCO, U.S. Forces will face adversaries' **anti-access/area denial** (A2/AD) efforts focused on denying our deployment into theater and preventing our freedom of action once deployed.
- The increased **logistics** requirements of LSCO will challenge Army sustainment operations, and adversaries will target those same operations from the Homeland to the battlefield.
- LSCO will feature **Homeland defense** requirements as adversaries will have conventional, hybrid, and irregular capabilities to conduct operations against the Homeland.
- An increasingly urban OE means LSCO will include **dense urban warfare** in environments with challenging warfighting conditions.
- The ability of adversaries to rapidly influence the information and human dimensions will challenge the Army's ability to achieve **information advantage** in LSCO.

- Adversaries view **weapons of mass destruction** (WMD) as an asymmetric advantage that has an outsized impact on U.S. operations and will likely seek to employ WMD in LSCO.

These LSCO conditions will have several likely implications for how the U.S. Army approaches a future LSCO conflict:

- LSCO is likely to require combatants to understand the dichotomy between the **art and science of war** to strike a balance that best exploits an adversary's vulnerabilities and minimizes an adversary's strengths.

- The human and materiel costs of LSCO suggest combatants will benefit from a clear understanding of how they view **annihilation vs. attrition** as a LSCO objective before hostilities commence.

- Increased transparency, lethality, and challenges to movement in LSCO may require a reassessment of our approach to **maneuver, fires, and protection.**

- **People are the advantage** in LSCO, and the U.S. Army will need to maintain its overmatch in effectively recruiting, training, and developing world-class Soldiers and Leaders.

- The combatant in LSCO that makes **rapid adaptation** a fundamental part of its approach to warfighting will be better able to exploit fleeting opportunities on the battlefield.

These conditions and implications illustrate the complexity of LSCO in a dynamic OE. They provide the U.S. Army with much to consider as it adapts its doctrine, trains its Soldiers, and develops its Leaders to execute LSCO in support of national security objectives.

The OE and LSCO in *U.S. Army FM 3-0* and *ADP 3-0*

Knowledge of the OE is the precursor to effective action.

The new OE model helps leaders visualize the five domains and understand their interrelationship through the physical, information, and human dimensions.

Army forces must accurately see themselves, the enemy, or adversary, and understand their OE before they can identify or exploit relative advantages.

The complex OE in which the U.S. Army will conduct LSCO contains conditions that are not necessarily new but may be of greater relevance to surviving and succeeding in land warfare.

Ground commanders should be mindful of these conditions as they prepare their forces and plan to execute operations.

The focus of Army readiness is on LSCO. These operations are extensive joint combat operations in terms of scope and size of forces committed, conducted as a campaign aimed at achieving operational and strategic objectives.

During LSCO, Army forces focus on the defeat and destruction of enemy ground forces as part of the joint team, and they contribute to the defeat of forces in other domains.

Introduction

In 2021, the U.S. Army published *The Operational Environment (2021-2030): Great Power Competition, Crisis, and Conflict.* At the time, China had recently emerged as the pacing threat for the United States. China's military development and transformation, along with that of other key adversaries, caused the United States to think about how it should modernize and transform to maintain its advantage. Additionally, the COVID-19 pandemic was at full strength and challenging the global status quo on government, the economy, quality of life, and warfare.

That document focused on Chinese and Russian military modernization and employment while in competition, crisis, and conflict; the impact of COVID-19 and how China and Russia could emerge from the pandemic; and how Chinese and Russian modernization was challenging the U.S. Army's dominance in delivering the best trained and equipped force to execute maneuver warfare.

In 2024, changing global conditions called for a reassessment of the U.S. Army's characterization of the OE. The result is this document, T2COM OE Threat Assessment 1.0, *The Operational Environment 2024-2034: Large-Scale Combat Operations,* which focuses on the conditions and implications of modern LSCO that the U.S. Army will have to face in the next 10 years. The objective is to inform the Army about aspects of LSCO and their impact on operations, thereby supporting Army Senior Leaders' decision making and the U.S. Army's planning and execution of training so the Army can successfully execute its contributions to national security objectives. This publication accounts for the primary threat actors identified in the *2022 National Defense Strategy of the United States of America* as well as key concepts in *U.S. Army Field Manual 3-0: Operations.* While the U.S. Army may operate in a wide array of contingencies and environments, it must retain its focus on readiness for LSCO. This document focuses on LSCO and does not cover the totality of Army operations in the OE over the next 10 years.

This document is the result of T2COM G-2 analysts' continuous study of the activities of these primary threat actors and observations from recent and ongoing conflicts. This work also stems from routine collaboration across the Army Intelligence and Security Enterprise, as well as with the Intelligence Community. T2COM G-2 would like to give special thanks to the National Ground Intelligence Center for their support in this effort.

The complex and uncertain character of LSCO and adversary capabilities require this document to rely on the following assumptions to frame the OE assessment for 2024-2034:

- Although LSCO represents the most demanding and dangerous type of operations the U.S. Army has to be ready to conduct over the next decade, the majority of its operations will occur below the threshold of armed conflict.
- The pacing, acute, and persistent threats will remain unchanged.
- Geopolitical events that fundamentally reshape U.S. adversaries' approaches to LSCO are unlikely.
- Revolutionary technological changes that impact LSCO are unlikely.

The primary U.S. adversaries all possess or are developing capabilities that increase the potential for conflict. China, our pacing threat, seeks to become a highly modern military capable of defeating the United States regionally and eventually globally in a joint, multidomain war. The Chinese People's Liberation Army (PLA) modernization is not designed for just technological overmatch. Instead, it is designed to challenge the U.S. Army and Joint Force by dominating in materiel, soldiers and leaders, and approach to warfare—three areas that have underpinned U.S. military might since 1991. Russia, our acute threat, continues its campaign of aggression against Ukraine while simultaneously presenting continuing risks in key areas.

These include threats to the Homeland; long-range cruise missiles; cyber, information, and space; nuclear, chemical, and biological weapons; and extensive gray zone campaigns. North Korea, Iran, and violent extremist organizations, remain persistent threats, creating uncertainty and underscoring the need for the U.S. Army to be ready to conduct multidomain operations across the globe at different scales. Furthermore, the emergence of increasingly frequent authoritarian collusion, whereby threat actors collaborate on a transactional basis to counter Western interests, is likely to pose new warfighting challenges. Recent collaboration between Russia and North Korea highlights the willingness and necessity of authoritarian regimes to combine forces against alliances of democratic nations. Understanding these developments and their role in the ever-evolving OE sets the basic conditions to maintain Army readiness against all enemies.

T2COM is developing the Soldiers and Leaders of the Army's future formations today. The privates and lieutenants arriving at T2COM posts this year will be the squad leaders and company commanders contending with U.S. adversaries in the future. Every Soldier and Leader needs to have a working knowledge of the OE and of our key adversaries—the pacing threat, acute threat, and persistent threats.

LSCO will feature all-domain competition and warfare as competition and conflict extend beyond physical battles and increasingly involve multiple interconnected domains and dimensions.

LSCO Conditions

All-Domain Competition and Warfare

For much of its existence, the United States was only contested in one domain—the land domain. The United States enjoyed uncontested air and maritime support, and later, uncontested space and cyber support. However, the democratization of technology and advances in robotic and cyber systems will allow adversaries to confront the U.S. Army and Joint Force in every domain—land, air, sea, space, and cyberspace—and across the physical, information, and human dimensions.

Some adversaries will employ sophisticated ground-based air-defense systems that the Army will need to defeat to create windows of opportunity for friendly air assets and enable the full application of U.S. Joint warfighting capabilities. U.S. Navy elements are likely to rely on ground-based fires and protection to enable maritime freedom of action that in turn supports Army operations. Meanwhile, our adversaries will increasingly target U.S. air defenses, ports, bases, and sustainment that contribute to U.S.

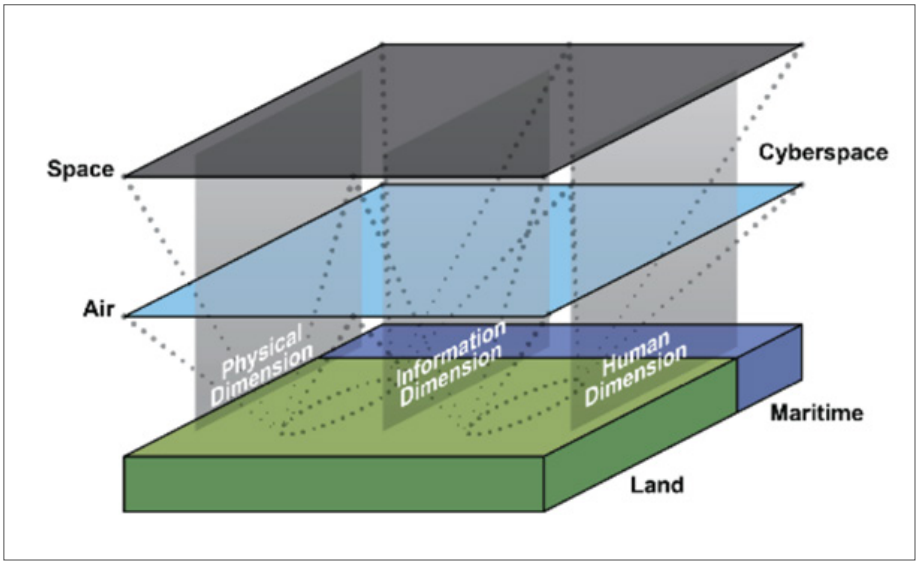


Figure 1: *FM 3-0* describes how U.S. Army forces conduct multidomain operations throughout an OE that consists of five domains and three dimensions.

Joint operations. Rapidly increasing threats to formations from unmanned systems in all domains, as seen in the Ukraine conflict, add to this complexity.

The convergence of cyber capabilities with land, air, sea, and space can produce an effect greater than the sum of its parts. Cyber weapons can deny or degrade unit readiness and cohesion while providing intelligence. For example, a cyber weapon could trigger a space-based asset to relay information to intelligence, surveillance, and reconnaissance (ISR) assets and deliver situational awareness and targets to an adversary.

For China, space is a significant, albeit congested, domain. It has nearly 300 ISR satellites in orbit and recently launched the Yaogan-41 high-orbit optical remote sensing satellite, which has an estimated 2.5 meters of resolution that allows the PLA to identify individual vehicles. By 2034, China is likely to achieve parity with, or even surpass, U.S. space capabilities.

China and Russia have the ability to deny or degrade entire domains during a LSCO conflict with the United States and its allies. These adversaries also have sophisticated cyber operations that can disrupt the United States both during LSCO and in the competition phase short of conflict. Understanding, harnessing, and deconflicting information in all domains, and from all dimensions, in real time will be a key to victory.

Mass vs. Precision

Mass and precision complement one another in LSCO, and combatants will need to identify the right mix of these factors to gain advantages.

In Ukraine, Russia continues to prefer massed fires against targets that cannot be seen rather than precision strikes against identified targets. Conversely, Ukraine has focused on analyzing sensor data, prioritizing targets, applying economy of effort, automating the assignment of targets to the nearest capable munition, and conducting precision strikes to isolate key systems and supply chains. Finding the right mix of mass and precision will provide exploitable opportunities in LSCO. Survival and success will require the flexibility to rapidly culminate, disperse, and conceal. Flexible use of existing equipment will be required, enabling cross-domain effects against a wider array of targets. In LSCO, the combatant that can field masses of low-cost precision munitions while protecting its sustainment networks will have an advantage on the battlefield.

In LSCO, combatants will offset attrition of high-end systems by employing legacy capabilities as Russia has in Ukraine, while also provisioning their militaries with overwhelming magazine depth as China has done. Adversaries will continue to invest in high-end capabilities and couple that approach with rapid innovation and adaptation cycles. The speed of innovation, acquisition, and integration of new and emerging technologies with existing equipment will be decisive.

Precision fires will remain subject to cross-domain effects. They are highly dependent on satellites for detection, position, navigation, and timing, which are vulnerable to jamming and interference. Space-based platforms are also vulnerable to kinetic attacks, directed energy attacks, interference by rendezvous or close approach by other satellites, as well as collisions with space debris or other orbiting objects.

Proliferation of Uncrewed Systems

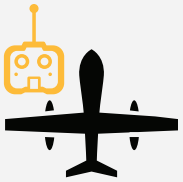
There has been an increase in the production, employment, and success of uncrewed systems on the battlefield in modern LSCO. Unmanned aerial systems (UAS) were integral to the Azerbaijani victory against Armenia in the Second Nagorno-Karabakh War in 2020. More recently, the next evolution of UAS—first-person-view (FPV) and one-way-attack systems (OWA)—are proving critical in the ongoing Russia-Ukraine and Israel-Hamas wars.

UAS are transforming target acquisition and engagement. ISR UAS are being employed to detect and report targets, while loitering munitions are reducing the latency in targeting and overcoming challenges related to flight time for longer-range strike systems. UAS also can have a potent cognitive effect because of the persistent threat they pose to ground elements. The low acquisition cost and wide availability of the technology required to build UAS means that smaller, resource-constrained state and nonstate actors may be able to build facsimile air forces to challenge powerful states with large defense budgets and robust manned air forces. China, for example, has become a global leader in the export of combat UAS. At least 17 countries own inventories of Chinese-made combat UAS, and these systems have been employed in conflicts worldwide.

Uncrewed systems that can traverse urban and subterranean areas will be advantageous in LSCO. For example, in August 2022, Russian sappers used small, unmanned ground vehicles in Ukraine to inspect buildings for explosives. Hamas created a comprehensive network of storage, logistics, and attack tunnels leading up to its 7 October 2023 attack on Israel. LSCO will involve uncrewed ground systems with sensors and communications that could traverse these areas first, keeping Soldiers out of harm's way until necessary. These uncrewed systems could provide real-time audio and video back to a command-and-control (C2) node with multispectral cameras, remote-controlled or autonomous limbs to interrogate objects, and payloads to deliver kinetic effects.

Similarly, unmanned underwater or surface vessels will play an increasingly important role in LSCO. For example, in February 2023, Russian forces may have used an unmanned surface vessel to attack a bridge between Ukraine and Moldova, judging from social media reports. Meanwhile, China is focused on developing teaming software that could be used for unmanned underwater and surface vessels under multiple configurations. It is funding research in manned-unmanned teaming, which could provide significant battlefield gains as neither a human nor machine acting on its own is as effective as both working in tandem.

U.S. Soldiers should be prepared to face the threat from widely proliferated UAS. Soldiers in every type of unit and at every level should be as familiar with employing counter-UAS technologies as they are with firing their own weapons. Counter-UAS tactics and training should address hardening and other preparation of fighting positions against weaponized drones, developing awareness of a system's abilities to surveil a Soldier



The increase in the production, employment, and success of uncrewed systems means the Army can expect to encounter these systems across the breadth and depth of LSCO.

Figure 2: The proliferation of unmanned systems increases the threat and drives protection requirements in the OE.
Source: U.S. Department of Defense Counter-Small Unmanned Aircraft Systems Strategy, https://media.defense.gov/2021/Jan/07/2002561080/-1/-1/0/DEPARTMENT-OF-DEFENSE-COUNTER-SMALL-UNMANNED-AIRCRAFT-SYSTEMS-STRATEGY.pdf.

in any spectrum—including visible, infrared, and radio frequencies—and methods to defeat them.

Magazine Depth and Range

As noted in *FM 3-0,* LSCO can consume corps and division ammunition stocks in 72-96 hours, particularly for cannons, rockets, and mortars. Massive expenditures of munitions in the Russia-Ukraine war show the potential limitations of peacetime production numbers in LSCO. Ammunition replenishment would require significant efforts, and any supply-chain issues could exacerbate an already stretched timeline. The Russia-Ukraine war is a stark reminder that having enough ammunition in reserve stocks cannot always be expected. The United States relies heavily on private industry for many key weapons systems, and many sophisticated systems have onboard computers powered by microchips—most manufactured outside of the United States in places like China and Taiwan. Conflict involving either country would potentially put a stop to microchip manufacturing and hamper munitions production.

Conflict with China or Russia will probably take place in the Indo-Pacific or European theaters of operation, respectively. Both adversaries will enjoy a distinct advantage operating with interior lines, granting them relatively quick and easy access to equipment, munitions, and personnel. In either theater, the United States will have a logistics network that spans several thousand miles from the Homeland to the theater, making it vulnerable to attack, A2/AD, or accident.

LSCO will require firing and sustaining massive amounts of munitions against adversaries likely to enjoy the initial advantage of interior lines, challenging the Army's magazine depth and range.

LSCO will be marked by the democratization and proliferation of advanced technologies and hyperconnected global communications, creating an increasingly transparent battlefield that makes it difficult to hide from the enemy.

Transparent Battlefield

The modern battlefield is growing progressively more transparent because of the proliferation of advanced technologies—smart devices, sensors, emitters, etc.—as well as the emergence of hyperconnected global communications and social media. Historically, high-quality targeting data and widespread surveillance has been limited to well-resourced state actors. However, the increasingly universal availability of emerging and disruptive technologies has allowed lesser combatants to utilize commercial technologies and data to find, fix, and finish high-value targets. For example, Ukraine has had great success finding, targeting, and destroying Russian forces based on Russian soldiers' unauthorized cell phone signals, including a rocket attack on a Russian barracks that killed 63 personnel.

While fog and friction will endure as inherent complexities of war, transparency on the battlefield will continue to increase with the growth of other technologies, such as commercial space platforms, the Internet of Things, autonomous systems, and real-time data fusion. Adversaries with previously limited command, control, computing, communications, cyber, intelligence, surveillance, reconnaissance and targeting capabilities and capacity will utilize commercial-off-the-shelf technologies, publicly available data, and open-source artificial intelligence/machine learning applications and expertise to achieve relative parity with the United States. Seemingly benign pictures, videos, and live streaming from personal devices to social media and messaging apps will alert adversaries to ongoing operations and provide troop and facility locations. These adversaries will then be able to sift through thousands of social media posts, cell phone signals, and satellite images to corroborate the data with live feeds from UAS to refine their targeting quickly and accurately.

Modern LSCO will be a competition between the hiders and the finders, with only fleeting exploitation opportunities for both. If a target can be seen, it can be killed. The ability of the Army to protect itself on this transparent battlefield will be paramount to its survival and success. The ability to hide in plain sight takes on even greater importance with the mass and precision of modern weapons systems.

Increased Lethality

The OE is increasingly lethal with a ubiquity of sensors and proliferation of battlefield automation facilitating effective precision and massed strike capabilities. The integration of ISR UAS with tube and rocket artillery enables the delivery of accurate and timely conventional massed fires from disparate firing positions as well as precise strikes against high-value targets with precision-guided munitions (PGMs). These fires deliver effects across the depth of the battlefield, facilitating the targeting of maneuver forces; defiladed forces entrenched in static defenses and urban areas; and C2, logistics nodes, and main supply routes in rear areas.

Ukrainian Armed Forces have used vast quantities of man-portable air-defense systems (MANPADS), antitank guided missiles, and FPV UAS—combined with fires—to great effect. As of July 2024, Russia has lost 3,197 main battle tanks—more than its entire active-duty inventory at the outset of conflict—and 6,160 armored fighting vehicles, forcing them to pull increasingly obsolescent systems from storage. The human cost associated with this equipment destruction speaks directly to the lethality of LSCO. Russian casualties exceed 300,000 over two years, while Ukrainian casualty estimates suggest at least 200,000 casualties. Similarly, casualty estimates from the Second Nagorno-Karabakh War in 2020 echo the lethality of LSCO in terms of personnel and equipment losses. Over a 44-day period, Armenia suffered an estimated 2,800 deaths, while Azerbaijan lost approximately 3,400 personnel. Additionally, Armenia lost up to 50 percent of its air-defense systems and 40 percent of its artillery to Azerbaijani strikes in the first day of combat.

China is watching and learning from Russia's experience in Ukraine in planning any potential Taiwan contingency. Russian battlefield losses of personnel and equipment due to UAS spotting and strikes are likely to cause the PLA to develop or improve short-range air-defense systems and provide greater protection capabilities to maneuver units. The sheer numbers of dead and wounded will also probably spur the PLA to examine how it conducts tactical medical operations and seek to improve casualty care and evacuation. Finally, the PLA will probably examine its advanced fire assault doctrine because of the ineffectiveness of Russian massed long-range fires early in the Ukraine invasion.

LSCO will be increasingly lethal due to the intersection of sensor ubiquity, battlefield automation, precision strike, and massed fires.

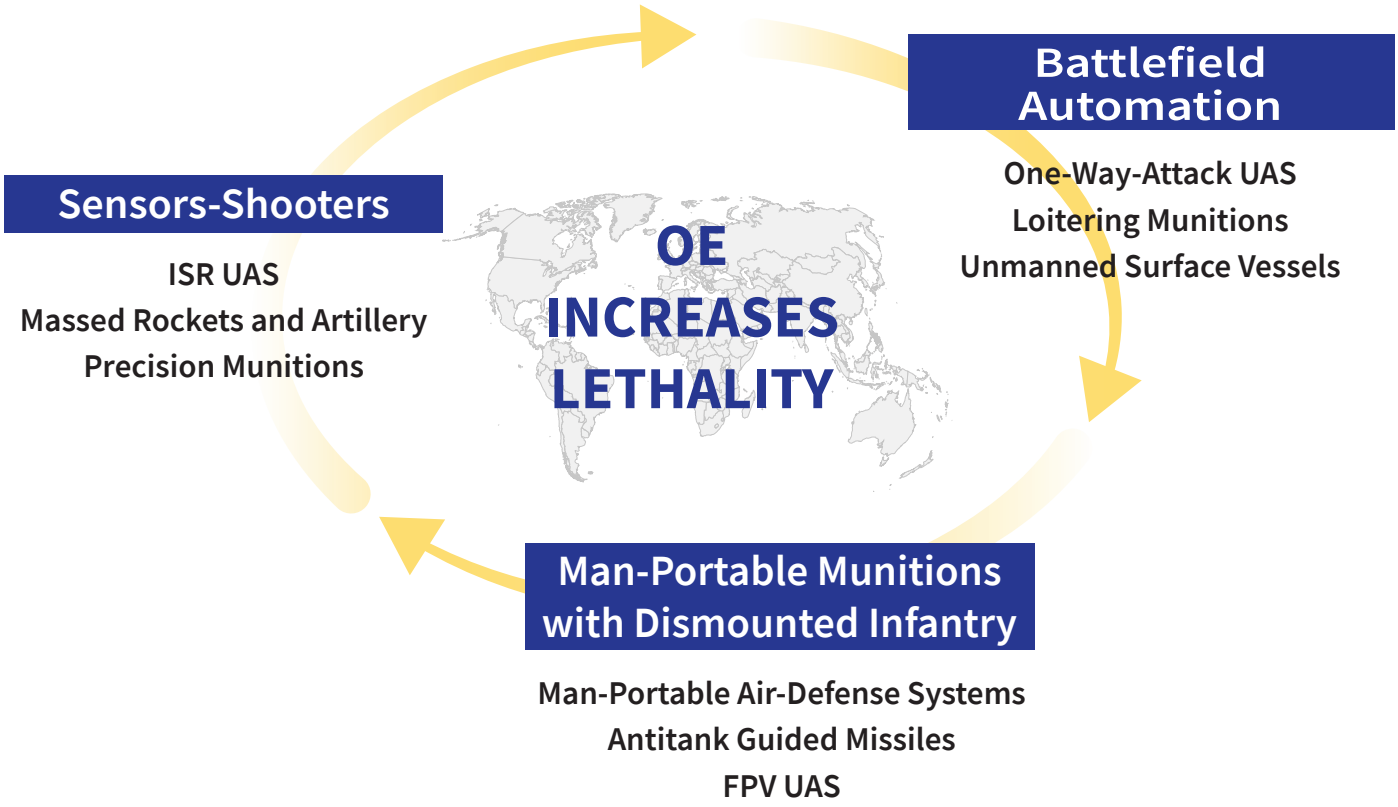


Figure 3: The intersection of sensing, automation, and strike options in LSCO increases the lethality of operations.

Anti-Access/Area Denial

U.S. Forces will face adversaries' A2/AD efforts focused on denying deployment into theater, denying freedom of action once deployed, and causing significant desynchronization of the Joint Force. The impact of A2/AD capabilities, both in the physical environment and in cyberspace, is likely to challenge the U.S. Army's ability to reach and sustain the fight. The ability to deliver the required logistics to sustain LSCO will probably be contested from the Homeland to the battlefield.

The Russia-Ukraine war reinforces the importance of A2/AD in an increasingly transparent battlefield. Significant infrastructure is required to deploy and employ modern forces—air ports of debarkation, sea ports of debarkation, road and rail networks, and communications infrastructure. Each of these presents an attack surface for A2/AD kinetic and non-kinetic systems, and the increased ability of adversaries to sense and strike accurately at depth dramatically expands the battlefield. Tactically, mine warfare best exhibits area denial efforts in the Russia-Ukraine war. Ukrainian losses trying to breach Russian prepared defenses highlight the danger posed by an adversary given time, space, and resources to prepare the battlefield with obstacles, fires, and overwatch.

Anti-access includes an adversary's activities across the diplomatic, information, military, and economic aspects of national power to prevent the United States from entering the conflict zone. Adversaries will conduct non-kinetic activities to influence, coerce, and threaten U.S. Allies and potential partners to not cooperate with the Joint Force. They will also use the threat of kinetic strikes through demonstrations, live fires, and exercises to showcase their abilities to punish support to U.S. operations.

Area denial can also disrupt or dislocate adversary capabilities, impacting the ability to support key functions. Increased targeting depth can cause adversary systems to displace more frequently or move further to the rear than optimal. Command posts will probably be forced farther to the rear, complicating communications and requiring commanders to forward deploy their command group farther from their main command post. Counterfire radars will need to displace frequently, reducing the number and density of systems tracking enemy fires at any given time. Sustainment nodes will be farther back and highly distributed, decreasing efficiency.

In LSCO, U.S. Forces will face adversaries' anti-access/area denial efforts focused on denying our deployment into theater and preventing our freedom of action once deployed.

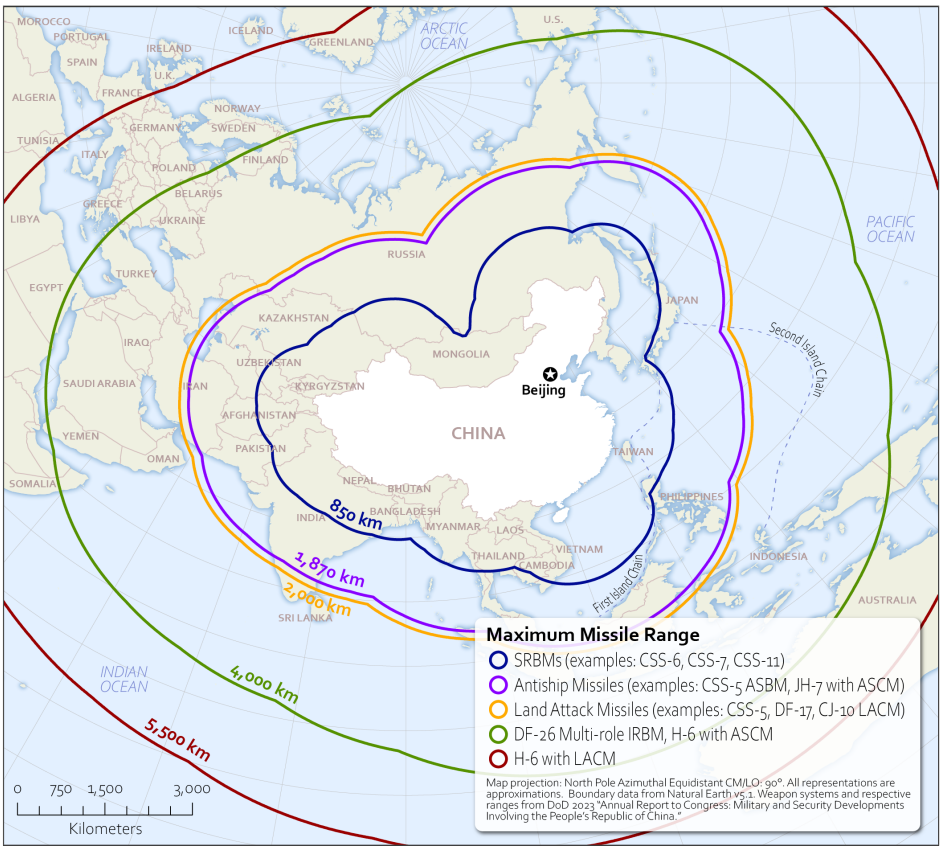


Figure 4: The PLA will try to leverage all domains and dimensions to deny the U.S. Joint Force entry to the theater and threaten operations once in theater.

Conventional Strike

Enhanced capabilities of PLA Army ground-based fires means that the PLA Rocket Force, PLA Navy, and PLA Air Force can focus on the counterintervention fight while the PLA Army shapes the close fight.

Electronic Warfare/ Cyber Strike

Electronic Warfare & cyberspace forces deter, delay, disrupt, and degrade DoD operations prior to and during a conflict.

Information Warfare

The PLA conducts cognitive domain operations to gain dominance in the information and human dimensions to have outsized impact on public opinion and military morale.

Contested Logistics

Delivering ready combat formations is a priority for Army senior leadership. This includes galvanizing the U.S. industrial base to build up the Nation's magazine depth required to support enduring LSCO. Supply chains and maintenance support to support LSCO will be high-value targets for our adversaries, suggesting they should be protected and functional. At the height of the Russia-Ukraine war in late 2022, Russia was expending 20,000 artillery rounds a day. As Russian logistics nodes and main supply routes were actively targeted by Ukrainian fires, that daily rate of fire dropped precipitously to 5,000 rounds per day. Sustained Russian rates of fire and attrition from Ukrainian fires forced Russia to expand its domestic production of ammunition to approximately 3 million rounds per year and to seek outside assistance from North Korea and Iran.

Adversaries will seek to disrupt main supply routes at key choke points such as restricted terrain, bridges, tunnels, and railway junctions. Protecting these routes will be vital to sustaining operations. Given battlefield transparency, supply vehicles and convoys will be identified and tracked to resupply points for targeting and subsequent destruction by fires, attritting both the logistics and associated means of transportation and distribution.

Adversaries maintain the capability to target logistics infrastructure in the United States, which will impact deployment processes during a build-up to conflict. Additionally, the competition phase may transition to conflict immediately, leaving no crisis period to begin force flow. Once in theater, A2/AD, cyber, information, counter-space, and sophisticated reconnaissance/strike complexes will challenge both maneuver and sustainment at all echelons.

The increased logistics requirements of LSCO will challenge Army sustainment operations, and adversaries will target those same operations from the Homeland to the battlefield.

Ukraine Finds Success Prioritizing Logistics Disruption in Winter

In the winter of 2023-2024, Ukraine's Ground Forces Command publicly stated its focus on targeting supply lines, depots, and command centers to have a psychological impact on Russian soldiers. The Ukrainians stranded Russian soldiers in the cold with inadequate provisions and then conducted strikes on their positions. Russian forces also underestimated logistics requirements, which increased casualty rates and worsened the psychological effects of Ukrainian operations.

Homeland Defense

LSCO will feature Homeland defense requirements as adversaries will have conventional, hybrid, and irregular capabilities to conduct operations against the Homeland.

The Homeland is likely to no longer be a sanctuary during a future LSCO conflict. China, Russia, and other adversaries are investing heavily in hybrid and irregular capabilities, such as information and cyber operations, to attack soft targets and systems within the territory of the United States and its Allies. These attacks can create outsized effects at relatively low cost and effort and with less risk of escalation than traditional kinetic strikes.

Russia and China believe they are already actively in conflict with the United States. They are working to establish footholds within critical networks—hardened government systems, private industry, and social media—to bolster collection capabilities against us, disrupt our critical functions, and delay our ability to project force. They will likely obfuscate their involvement and try to keep effects below the threshold of escalating to LSCO. Improved information technology capabilities enable state and nonstate actors to challenge the Army in multiple domains simultaneously.

U.S. adversaries are likely to target support functions and exploit civil-military divides. Both Russia and China have established means to seed disruptive narratives into the information space. Malign actors will be able to compile seemingly unimportant information from a variety of open sources or unwitting internet users into actionable intelligence, including targeting data on Army Senior Leaders, Soldiers, and Soldiers' family members. The U.S. Army is an enticing target for adversaries' digital influence operations because it offers a large and diverse group of highly motivated and respected individuals whose actions and beliefs can create an outsized impact on the Nation as a whole.

At the onset of LSCO, adversaries will probably shift from nonattributable cyber and information operations toward more destructive, physical effects. Adversaries are likely to escalate their actions using ultra-long-range systems with conventional payloads, asymmetric platforms, commercial-off-the-shelf UAS, and sabotage to threaten key infrastructure and operations. Refining mobilization processes will probably be necessary to respond quickly to complex threats. Increasing threat awareness across all domains and hardening military infrastructure could help improve preparedness.

Dense Urban Warfare

The United Nations projects that 68 percent of the world's population will live in an urban area by 2050, increasing the potential for U.S. Army operations to take place in dense urban environments. Urban warfare presents several challenges as seen in the Russia-Ukraine war, the Israel-Hamas conflict, and the defeat of ISIS in Iraq. The ebb and flow of the war in Ukraine, in particular, shows that simply attacking urban areas will be insufficient. Holding and defending ground will be key. Militaries that can alternate between attack and defend rapidly and without warning will have an advantage over those that cannot. Defenders can rely on existing infrastructure and population density to embed deep into buildings, subways, and other subterranean networks.

Normal warfare challenges will be exacerbated as urban and subterranean areas will make maneuver difficult. Road conditions, traffic, civilian populations, and building density will challenge freedom of movement and the ability to mass large formations. City blocks will create natural chokepoints, civilian vehicles become obstacles, and urban canyons will make it difficult to fly most aerial platforms. Searching and clearing will be obstructed by cover and concealment from skyscrapers, tunnels, and subterranean infrastructure. Population density will reduce the effectiveness of artillery as the risk of noncombatant casualties rises. The United States may need to create conditions that force battles out of urban areas to conduct effective LSCO, which will probably not be feasible in some instances.

An increasingly urban OE means LSCO will include dense urban warfare in environments with challenging warfighting conditions.

The Liberation of Mosul Underscores the Difficulty of Urban Warfare

The liberation of Mosul, Iraq's second largest city, from the Islamic State of Iraq and Syria (ISIS) in 2016 is instructive regarding the difficulty a large, well-armed, and highly trained force faces in dislodging even an inferior opponent from an urban environment. ISIS maintained a light infantry force of only 3,000-5,000 with heavy machine guns, RPGs, recoilless rifles, mortars, and rockets. However, ISIS constructed an elaborate defense inside the city by fortifying buildings, blocking avenues of approach, creating obstacles, and creating subterranean shelters and tunnels. As a result, ISIS was able to hold Mosul for nine months against superior numbers of Iraqi Security Forces—approximately 94,000 personnel—and support from coalition forces.

Information Advantage

The ability of adversaries to rapidly influence the information and human dimensions will challenge the Army's ability to achieve information advantage in LSCO.

The ability to influence in the information and human dimensions is no longer limited to powerful nations and traditional news organizations. U.S. adversaries are developing methods to utilize emerging capabilities like deepfakes or synthetic media content—photos, videos, or audio clips that have been digitally manipulated or entirely fabricated to mislead—to challenge the U.S. Army's ability to gain and maintain information and human advantage on and off the battlefield. In LSCO, information networks are likely to be critical targets where a single attack can have outsized effects on a military's ability to access information and make decisions. As adversaries pursue modern methods to increase their information and improve decision-making processes, they also are likely to find themselves increasingly vulnerable to influence.

China recognizes that information and the cognitive domain will be key in any conflict, and its pursuit of dominance in the information and human dimensions is an integral part of its approach to warfare. China's cognitive domain operations aim to harness advanced information technology and communications systems to gain operational advantages and facilitate psychological operations to manipulate how an adversary receives and processes information. The PLA seeks to evolve informationized warfare into intelligentized warfare, which aims to integrate AI and other emerging technologies to increase information processing capabilities, speed up decision making, facilitate use of swarms, and aid cognitive domain operations. China will execute these concepts by attacking centralized networks to slow or stop information flow; converging physical and psychological effects; and targeting individuals with propaganda narratives based on interests, demography, region, or nation.

Russian military thought emphasizes that information, psychological, and cognitive operations can reach across domains and are an essential aspect of hybrid warfare. Russian informational-technical operations seek to manipulate or destroy information systems and networks, while informational-psychological confrontation operations target adversary decision making and perception. During conflict, both forms of information warfare activities are used to confuse the enemy and achieve strategic advantages at minimal cost. Throughout Russia's conflict with Ukraine, it has undertaken vast influence campaigns targeting both Ukraine and its Western allies. As connectivity and technology continue to improve, Russia will probably refine its techniques for using operations to impact information systems and networks as well as for crafting narratives to impact target audiences' perceptions.

Weapons of Mass Destruction

The most likely WMD threat combatants will face in the OE is chemical weapons. Ukrainian Armed Forces have recorded thousands of instances of Russian forces using munitions containing toxic chemicals, including more than 750 cases in one month alone. The Ukrainian Armed Forces General Staff reports that Russia has most often used grenades filled with riot-control agents and dropped from UAS. In addition to riot-control agents, Russian forces have reportedly used chloropicrin, a chemical that is banned from use in war by the Chemical Weapons Convention (CWC). Russia's tactical purposes for employing these chemical agents are to degrade troop effectiveness in confined defensive positions and flush troops from defensive positions to expose them to fires.

Outside of tactical use in Ukraine, in recent years Russia has used chemical weapons at least twice in assassination attempts, retains an undeclared chemical weapons program, and is in noncompliance with its CWC obligations. Russia has also not fulfilled its obligations under the Biological Weapons Convention (BWC) to dismantle its biological warfare program. From a nuclear standpoint, Russia's arsenal includes nearly 6,000 strategic and nonstrategic nuclear warheads, three-quarters of which are likely operationally ready. Additionally, Russia has been working to modernize its nuclear forces through development of hypersonic missiles and glide vehicles, nuclear-powered cruise missiles, autonomous underwater systems, and multiple-warhead-capable inter-continental ballistic missiles (ICBMs).

Although China is a signatory to the CWC, scientists at a Chinese military research institute have expressed interest in military applications of pharmaceutical-based agents, such as fentanyl. Despite its participation in the BWC, China continues to develop its biotechnology infrastructure and pursue scientific cooperation with countries of concern. Studies conducted at Chinese military medical institutions discuss identifying, testing, and characterizing diverse families of potent toxins with dual-use applications. Additionally, China is expanding and modernizing its nuclear arsenal. By 2033, China will probably have more than 1,000 nuclear warheads, the capacity for persistent ballistic missile submarine patrols, dedicated nuclear bombers, and hundreds of hardened ICBM facilities.

Both Russia and China probably view WMD use as an asymmetric advantage to help overcome their perceived weaknesses while having an outsized impact on U.S. operations. Future LSCO conflicts are likely to involve chemical weapons on the battlefield, and the threat of biological and nuclear weapons use will probably rise.

Adversaries view WMD as an asymmetric advantage that has an outsized impact on U.S. operations and will likely seek to employ WMD in LSCO.

LSCO is likely to require combatants to understand the dichotomy between the art and science of war to strike a balance that best exploits an adversary's vulnerabilities and minimizes an adversary's strengths.

LSCO Implications

The Art vs. the Science of War

China's military modernization effort endeavors to transform its force into one that embraces the science of warfare as evidenced by the PLA's doctrine of informationized and intelligentized warfare. Informationized warfare suggests China believes that attaining information advantage is a necessary component of victory. Intelligentized warfare demonstrates the importance China places on integrating AI into its military decision making in the pursuit of decision dominance in all aspects of warfare. China's leadership is concerned about corruption within the PLA's ranks, especially at the lower levels, and to the extent possible wants to remove the individual soldier from the decision-making process in favor of machine-driven guidance.

This is in stark contrast to the U.S. Army's way of war, which relies heavily on warfare as an artform. The U.S. Army sees its Soldiers as its greatest advantage in battle and relies on their intuition, improvisation, and adaptation to lead to victory. Decision-making authority is often delegated to lower levels as exemplified by the emphasis placed on cultivating a strong NCO Corps in the U.S. Army.

For many other adversaries, the application of the art and science of war is more situational, driven by the OE. For instance, an adversary that generally emphasizes the art of war may be apt to weigh science more in an environment where there is more transparency and therefore diminished ability to perform deception, achieve surprise, or employ asymmetric tactics.

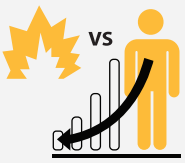
For the U.S. Army, understanding this dichotomy will help inculcate strategic empathy and avoid mirror imaging. An accurate depiction of an enemy's strengths and weaknesses coupled with a thorough understanding of their tendencies and preferred ways of war will be vital for battlefield success.

Annihilation vs. Attrition as LSCO Objectives

Throughout history, belligerents have almost always sought rapid, decisive annihilation to bring a conflict to a successful end. This has primarily been done through surprise and overwhelming application of force, which presents the opponent with a *fait accompli* and saps their will to fight. However, quick annihilation in the initial phases of a war is unlikely in a LSCO conflict with a near-peer adversary operating on their periphery. Such a scenario would lead to protracted conflict that could stress every facet of national power.

The U.S. Army's ability to repair, regenerate, or replace large amounts of materiel while actively engaged in the fight will be critical to winning a protracted, large-scale conflict. There is likely to be little time and capacity to transport large quantities of damaged materiel to rear areas or the Homeland for repair. While the ability to quickly operationalize war stores will probably offset attrition to an extent, units deployed to a forward theater could find their materiel capabilities attritted at rates far exceeding the output of the U.S. defense industrial base. Even if industry can keep pace, the Army will probably have to contend with the training requirements for new Soldiers and Leaders to learn these systems in combat.

LSCO conflicts are likely to require a return to industrial-age mobilization of the whole of society. Potential U.S. adversaries will pose unique challenges as they try to achieve quick victory. As such, different strategies may be needed to outlast and defeat them. While both Russia and Ukraine have worked to stimulate traditional defense production, each has also harnessed freelance developers, small businesses, and commercial-off-the-shelf products to act as force multipliers and offset materiel losses. Both sides have quickly incorporated systems that are low cost, simple to make, or ready to use that are increasingly able to damage or destroy high-value, exquisite platforms.



The human and materiel costs of LSCO suggest combatants will benefit from a clear understanding of how they view annihilation vs. attrition as a LSCO objective before hostilities commence.

Maneuver, Fires, and Protection

Increased transparency, lethality, and challenges to movement in LSCO may require a reassessment of our approach to maneuver, fires, and protection.

The increased lethality and transparency of the battlefield coupled with the increasingly all-domain character of war may require a reassessment of the Army's approach to warfighting functions like maneuver, fires, and protection. Contemporary LSCO examples suggest new ways to find, fix, and finish. Russia and Ukraine are providing examples of fires as the centerpiece of their armies' ability to attack and defend. In that conflict, fires have been the largest producer of casualties.

Figure 5: LSCO may require the U.S. Army to re-examine the interplay of current command and control processes.

Fires have become more lethal and effective with new systems and technology expanding their range and improving their precision. GPS has improved the accuracy of munitions and firing points. Battlefield sensing, long-range fires, and position, navigation, and timing capabilities have enabled faster strike capability with more accuracy. The counterbattery threat has also increased as a result. Fires must be able to remain mobile and quickly disperse to avoid counterfire. Constant movement is required and hide plans are necessary to avoid detection or being followed by ISR.

These current conditions of the OE are likely to affect the U.S. Army's ability to move, shoot, and survive. Maneuver formations will need to be methodical to ensure they are not discovered before reaching the fight, but they will also need to be rapid and decisive to avoid discovery by ISR. Surviving fires and counterbattery requires effective tactics, techniques, and procedures (TTPs) combined with highly trained, disciplined, and organized forces. Layered, complex obstacle belts with mixed minefields overwatched by fires greatly complicates already dangerous breeching operations. Protection will require progressing systems' capabilities to be more mobile, agile, and lethal while emitting fewer signatures.

People Are the Advantage

The U.S. Army prides itself on its ability to effectively recruit, train, and develop world-class Soldiers and Leaders to maintain a people advantage. The Army's accessions challenge is likely to test the U.S. Army's ability to generate forces and reconstitute manpower in the event of an extended, high-intensity LSCO conflict with significant human cost. To sufficiently reconstitute formations, militaries will need to rapidly ready and mobilize the full force and regenerate manpower before and during the hour of need.

Our accessions challenge is likely to endure as a national security issue. There has been a steady decline in U.S. Army accessions in recent years; by 2034, even fewer individuals will be available, eligible, and physically accessible to recruit. The newest generation uses technology at a much younger age, forming their perceptions of the U.S. Army in a segmented, virtual environment that will continue to become more immersive. U.S. Army competition for talent with private industry, offering higher compensation and other benefits, will almost certainly increase.

The Russia-Ukraine war illustrates that attrition rates in protracted conflict are likely to exceed pre-conflict casualty estimates, reducing pre-existing formations—particularly those with the most training and experience—to below combat readiness. Replacing entire units or effectively reinforcing other units based on need and function could prove critical. In LSCO, the forward-theater fight will only be one part of a conflict. Fighting and winning will probably require the capability to maintain a capable force in multiple theaters and the Homeland simultaneously.

People are the advantage in LSCO, and the U.S. Army will need to maintain its overmatch in effectively recruiting, training, and developing world-class Soldiers and Leaders.

Russia Unprepared for Scale of Troop Losses in Ukraine

At the outset of the invasion of Ukraine in 2022, the Russian Armed Forces lacked sufficient personnel depth for a prolonged, large-scale conflict. Over a one-year period, the Russian Armed Forces suffered an estimated 40,000-55,000 killed and 78,000 permanently wounded troops, averaging 400 casualties per day. Junior officers and highly trained units—including Spetsnaz and Airborne—were among the most attritted Russian forces between the spring and fall of 2022. To meet immediate manpower needs, Russian recruitment standards, requirements, and training timelines have steadily decreased since the invasion began. Russian training has also suffered because of the depletion of training cadre serving in combat units. The Russian Armed Forces, though able to continuously acquire new troops, are now a "low-quality, high-quantity mass army" in the words of the British Defense Ministry.

Figure 6: PLA cadets receiving political instruction as part of China's intent to better professionalize its military.
Source: Defense Intelligence Agency China Military Power Report 2019, https://www.dia.mil/Portals/110/Images/News/Military_Powers_Publications/China_Military_Power_FINAL_5MB_20190103.pdf

The PLA recognizes the importance of the human dimension in military operations and is professionalizing its officer and NCO corps accordingly. For officers, it is developing and reinforcing leadership traits, including political loyalty to the Chinese Communist Party, strategic awareness, skill at military affairs, adherence to military culture, adaptivity, and intangibles. To improve its NCOs, the PLA established two different types of NCOs. The first deals with traditional NCO leadership tasks, while the second are technical experts with engineering, information technology, and data science experience.

Rapid Adaptation

Gaining windows of advantage in LSCO requires rapid, ongoing adaptation of organizations, technology, and tactics to exploit fleeting opportunities. To accomplish this, Leaders must strive for organic flexibility—constantly learning and adapting, embracing innovations, and overcoming inherent institutional resistance to change. Leaders also need to time adaptations deliberately and understand that adaptation produces fleeting effects because the opponent will inevitably adapt in response.

Early in its invasion, Russia relegated UAS to supporting reconnaissance fires complexes, with a limited number of Orlan-10 ISR UAS providing targeting support. Ukrainian civilians, however, joined the Ukrainian Armed Forces in rapidly adapting commercial UAS to support combat operations—innovating ad hoc, field expedient capabilities to find and strike Russian forces. Since then, the proliferation of ISR, repeater, OWA, top-attack, and FPV UAS on both sides has resulted in constellations of drones operating over and behind the front lines.

Mounting combat losses from UAS-directed artillery fires and precision strikes by FPV UAS forced select Russian units to adapt their infantry TTPs from mounted armored assaults to dismounted Storm-Z "human wave" assaults against entrenched Ukrainian defenses. Some Russian Airborne and motorized rifle units have demonstrated a relatively accelerated rate of adaptation and tactical innovation compared to other Russian units, including a willingness to learn from best practices exhibited by the Russian private military con-

The combatant in LSCO that makes rapid adaptation a fundamental part of its approach to warfighting will be better able to exploit fleeting opportunities on the battlefield.

Rapid Adaptations of UAS Employment on Contemporary Battlefields

The Nagorno-Karabakh and Ukraine conflicts illustrate the importance of rapid adaptation, specifically concerning use of UAS, in the quest for 21st-century battlefield advantage. During the Second Nagorno-Karabakh War, Azerbaijan employed remotely controlled Soviet-era An-2 "Colt" biplanes to penetrate Armenian airspace, triggering Armenian air-defense radars to illuminate and enabling Azerbaijan's forces to rapidly locate, target, and suppress them. Ukraine integrated UAS, air-launched cruise missiles, anti-ship missiles, and unmanned surfaces vessels to saturate Russian defenses and strike key air defenses, airfields, ports, and bridges in occupied Crimea. Russia and Ukraine have incorporated additive manufacturing and augmented reality to transform commercially acquired drones into PGMs. Lacking requisite supply chains to sustain its 60-year-old equipment, Russian Materiel Technical Support units have employed 3D printers to fabricate new parts near the front lines in Ukraine, rapidly returning equipment back to the fight.

tractor Wagner Group and Ukrainian Armed Forces. These units' dismounted squads, along with their infantry fighting vehicles, maneuvered to provide mutually supporting fires and closely exploited terrain—something not seen in other Russian units. The inability of Russia to adapt and standardize TTPs across its force underscores the importance of being able to rapidly understand, disseminate, and inculcate adaptation in LSCO to capitalize on tactical opportunities.

China, watching Russia's experience in Ukraine, is incorporating lessons learned into the PLA. Endeavoring to build a superior military 'system of systems', the PLA is transforming its professional military education and culture to develop adaptable, innovative leaders. Specifically, the PLA wants its leaders to learn new military methods from other countries, incorporate future technologies, and be more creative.

Conclusion

To prepare for reemergent LSCO scenarios, the U.S. Army requires an understanding of the conditions that are most likely to drive it as well as their impact on operations. The OE of 2024-2034 is likely to be characterized by 12 key conditions that will shape LSCO and have wide-ranging implications for the Army. Understanding the complexity of these conditions and implications will drive Army decisions on doctrine, Soldier training, and Leader development to succeed in multidomain warfare.

The Army can expect that LSCO will be characterized by multidomain threats on an increasingly transparent and lethal battlefield across multiple theaters. Our adversaries will capitalize on the democratization of technology and advances in robotic and cyber systems to confront the U.S. Army in every domain—land, air, sea, space, and cyberspace. Areas the Army once considered safe or guaranteed—including the Homeland, logistics, air superiority, sea control, and theater access—will no longer be able to be taken for granted. The Army will need to fight over extended distances to provide protection, time, and resources to sustain LSCO. The increasing role of information, unmanned systems, and potential WMD employment will add to the complexity of armed conflict. U.S. adversaries will continually challenge the U.S. Army's ability to gain and maintain information advantage on and off the battlefield. Uncrewed systems that are increasingly inexpensive and widely available will provide adversaries with an array of capabilities, from ISR targeting to supporting urban and subterranean operations.

To achieve victory, the U.S. Army must know the enemy. Knowing the enemy starts with the OE. Our pacing threat, China, seeks to transform from a force focused on territorial defense to an intelligentized, joint-capable, modern military able defeat the U.S. Joint Force in LSCO. The PLA is doing this through military modernization across every part of the U.S. military's DOTMLPF-P framework. The acute threat, Russia, sees the United States and NATO as its enduring enemy, especially given the West's response to the conflict in Ukraine and the expansion of NATO along Russia's periphery. To contend with this perceived threat, and based on lessons learned in Ukraine, Russia will maintain its focus on a fires-centric, massed force able to conduct a prolonged, attritional LSCO, featuring information warfare for which it believes Western democracies are ill-suited. Persistent threats from regional actors and violent extremist organizations will continue to add complexity to Army operations, challenging our strengths and exploiting our vulnerabilities when and where they can. To remain ready for a range of operational missions, including LSCO, our Soldiers and Leaders will need to be ready to think and rapidly adapt to changing conditions to maintain overmatch. This OE sets the basic conditions to maintain readiness, train and operate against all types of enemies, and achieve victory on the battlefield.

Appendix

LSCO Conditions

All-Domain Competition and Warfare: LSCO will feature all-domain competition and warfare as competition and conflict extend beyond physical battles and increasingly involve multiple interconnected domains and dimensions.

Mass vs. Precision: Mass and precision complement one another in LSCO, and combatants will need to identify the right mix of these factors to gain advantages.

Proliferation of Uncrewed Systems: The increase in the production, employment, and success of uncrewed systems means the Army can expect to encounter these systems across the breadth and depth of LSCO.

Magazine Depth and Range: LSCO will require firing and sustaining massive amounts of munitions against adversaries likely to enjoy the initial advantage of interior lines, challenging the Army's magazine depth and range.

Transparent Battlefield: LSCO will be marked by the democratization and proliferation of advanced technologies and hyperconnected global communications, creating an increasingly transparent battlefield that makes it difficult to hide from the enemy.

Increased Lethality: LSCO will be increasingly lethal due to the intersection of sensor ubiquity, battlefield automation, precision strike, and massed fires.

Anti-Access/Area Denial: In LSCO, U.S. Forces will face adversaries' anti-access/area denial efforts focused on denying our deployment into theater and preventing our freedom of action once deployed.

Contested Logistics: The increased logistics requirements of LSCO will challenge Army sustainment operations, and adversaries will target those same operations from the Homeland to the battlefield.

Homeland Defense: LSCO will feature Homeland defense requirements as adversaries will have conventional, hybrid, and irregular capabilities to conduct operations against the Homeland.

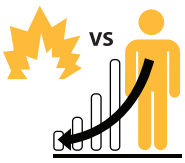
Dense Urban Warfare: An increasingly urban OE means LSCO will include dense urban warfare in environments with challenging warfighting conditions.

Information Advantage: The ability of adversaries to rapidly influence the information and human dimensions will challenge the Army's ability to achieve information advantage in LSCO.

Weapons of Mass Destruction: Adversaries view WMD as an asymmetric advantage that has an outsized impact on U.S. operations and will likely seek to employ WMD in LSCO.

LSCO Implications

The Art vs. the Science of War: LSCO is likely to require combatants to understand the dichotomy between the art and science of war to strike a balance that best exploits an adversary's vulnerabilities and minimizes an adversary's strengths.



Annihilation vs. Attrition: The human and materiel costs of LSCO suggest combatants will benefit from a clear understanding of how they view annihilation vs. attrition as a LSCO objective before hostilities commence.

Maneuver, Fires, and Protection: Increased transparency, lethality, and challenges to movement in LSCO may require a reassessment of our approach to maneuver, fires, and protection.

People Are the Advantage: People are the advantage in LSCO, and the U.S. Army will need to maintain its overmatch in effectively recruiting, training, and developing world-class Soldiers and Leaders.

Rapid Adaptation: The combatant in LSCO that makes rapid adaptation a fundamental part of its approach to warfighting will be better able to exploit fleeting opportunities on the battlefield.

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