

Dense Urban Environments

The Crucible of Multi-Domain Operations

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Multi-domain operations (MDO) and dense urban operations are two significant topics in contemporary Army research. While researchers have looked at these topics in isolation, very little research has been done to demonstrate the challenges and benefits of adopting an MDO mindset in a dense urban environment. The dense urban environment provides many of the challenges identified in MDO research in a compact and rapidly changing space. Given the importance of cities in contemporary states, it is important to look at how MDO thinking and research on dense urban areas can mutually inform and provide insights.

Dense urban areas and MDO intersect in three key areas: (1) the concepts of layers and convergence, (2) the definition of victory, and (3) the growth of the battlefield. Further, analysis of these intersections can illuminate the character of conflict in large dense urban regions.

MDO in the Contemporary Operating Environment

MDO represents the next evolution of joint operations thinking and is significant in that it views the battlespace as extending beyond traditional conceptions to include discussions of cultural, political, and economic



factors present in the region. The U.S. Army Training and Doctrine Command (TRADOC) emphasizes that MDO is a “layered standoff,” in that the operations must consider multiple spatial, political, economic, social, military, and cultural layers, amongst many others.¹ This fundamentally changes the way we view areas of operations (AO) and areas of responsibility. Gen. Robert Brown emphasizes the importance of the economic and demographic complexities of the Indo-Asia Pacific area of responsibility in his analysis of MDO.² TRADOC sums this up by emphasizing that multi-domain formations must be able to “access and employ capabilities across all domains.”³ The modern battlefield not only extends beyond the military domain into the human domain, but it also will shift scales from global to local and most layers in between. Also, these scales and domains are never fixed but are constantly changing as conditions evolve.

TRADOC identifies this continuous evolution of scales and domains as convergence, where “multi-domain formations possess the capacity, endurance and capability to access and employ capabilities across all domains to pose multiple and compounding dilemmas on the adversary.”⁴ Daniel Kull emphasizes nonlinearity as the standard of warfare.⁵ In other words, operations are constantly changing, sometimes in an unpredictable manner. Lt. Gen. Gary Volesky and Maj. Gen. Roger Noble expand on the evolution, convergence, and nonlinearity of domains and scale through their observation that “cyber and human domains are not limited by space or time.”⁶ One concept that remains constant is the need to seize the initiative; in this case, working in the domain(s) and/or scale(s) that best sets the conditions for success.

While the United States seeks to seize the domain and scale initiative in modern operations, foreign adversaries are quite adept at challenging its efforts. Based on recent U.S. superiority in combat operations, near-peer states seek to compete at a level below armed conflict, or as TRADOC terms it, “win without fighting.”⁷ Jeffrey Reilly identifies an example of this “win without fighting” concept in his discussion of Chinese authors who advocate going beyond traditional boundaries of warfare to achieve national political objectives by suggesting the

use of financial attacks or a virus to bring down the electric network.⁸ George Fust emphasizes that these layered standoffs in political, economic, and military realms seek to separate the United States from allies.⁹ Gen. Stephen Townsend, in his review of the *National Defense Strategy*, highlights the importance of winning the competition before and after conflict.¹⁰ All of these examples emphasize the importance of adopting an expanded view of conflict, one that includes various domains and scales which are constantly evolving as a result of actions on all sides of a conflict or operation.

Dense urban areas represent one of the most complex operational environments due to the coalescence of various domains and scales. Here, the contest to control scale and domain plays out in a relatively small region, with a very dense and complex population. It is in dense urban areas where the challenges of MDO reach their zenith and where complexity is fluid and rapid, both in a spatial and temporal sense.

The Wicked Complex Environment of Dense Urban Areas

Today, the majority of the world’s population live in cities. Most of the key elements of societies including economic, social, political, and cultural structures are more focused on urban areas than in any other period of history. Therefore, as we study places, it is essential to understand the key cities of the region.

What makes dense urban spaces complex? The size, density, and social elements of a city create a complex and changing environment. Cities are continuously changing and are influenced by human activities as humans strive to understand and influence activities within them. The city is a dense and diverse settlement with a dynamic population. While certain characteristics exist in many cities, the way these characteristics influence specific cities is unique. Dense urban areas are also highly interconnected internally and to the rest of the world. All this complexity creates a challenging set of problems for an urban analyst to consider. First, what are the critical factors that influence the evolution of cities? Once these factors are identified and defined,

Previous page: Soldiers from Company A, 2nd Battalion, 506th Infantry Regiment, 3rd Brigade Combat Team, 101st Airborne Division (Air Assault), quickly move to assault their objective at an urban terrain training site 15 March 2017 during Warrior Exercise 78-17-01 at Joint Base McGuire-Dix-Lakehurst, New Jersey. (Photo by Staff Sgt. George F. Gutierrez, U.S. Army Reserve)

how do analysts measure and model those factors? Finally, how do the factors interact to create a series of systems that influence how a city functions?

To identify the important factors to consider when operating in a dense urban area, a conceptual model is needed to organize analysis. Richard Wolfel, Amy Richmond, and Peter Grazaitis adopted Leonard Binder's model of political development to conceptualize functions in a city.¹¹ Binder identifies five categories of political development, and Joseph LaPalombara and William Fierman later added allocation.¹² While many other networks are also important to dense urban regions analysts, the focus here is on the sociocultural systems due to their complexity. The six categories all provide insight into TRADOC's conception of MDO and how the thinking surrounding MDO helps explain operations in dense urban terrains.

1. Production. Production refers to the manufacturing of commodities. In cities, labor can be divided into two categories, formal and informal. However, the informal and formal sectors of cities are often so intertwined that it is impossible to separate them. The formal sector of the economy is regulated, mostly through laws and taxes, by the government. Traditionally, informal activities are the dominant

forms of employment in slum settlements and are governed by informal leadership structures.

2. Allocation. Allocation is the process of distributing goods and services through society. In urban areas, there are many allocated goods including land, food, water, and medicine, among others. Allocation has an important influence on the legitimacy of a government as insurgencies and antigovernment movements often grow in regions where people struggle getting basic needs from the government and rely on other sources for the provision of those basic needs. Often, insurgent organizations use their ability to provide goods as a method of gaining loyalty and legitimacy within a dense urban region.

3. Identity. In dense urban areas, groups who share an identity based on ethnic, linguistic, religious, or other shared beliefs or attributes tend to live in organized communities in certain neighborhoods of the city.

4. Legitimacy. If a population believes that the government is legitimate, it is likely to follow the laws of society. At the most basic level, legitimacy is forged when

Soldiers conduct a fast-rope insertion onto a rooftop in urban terrain 14 June 2016 during Exercise Anakonda in Wedrzyn, Poland. (Photo by Sgt. Dennis Glass, U.S. Army)

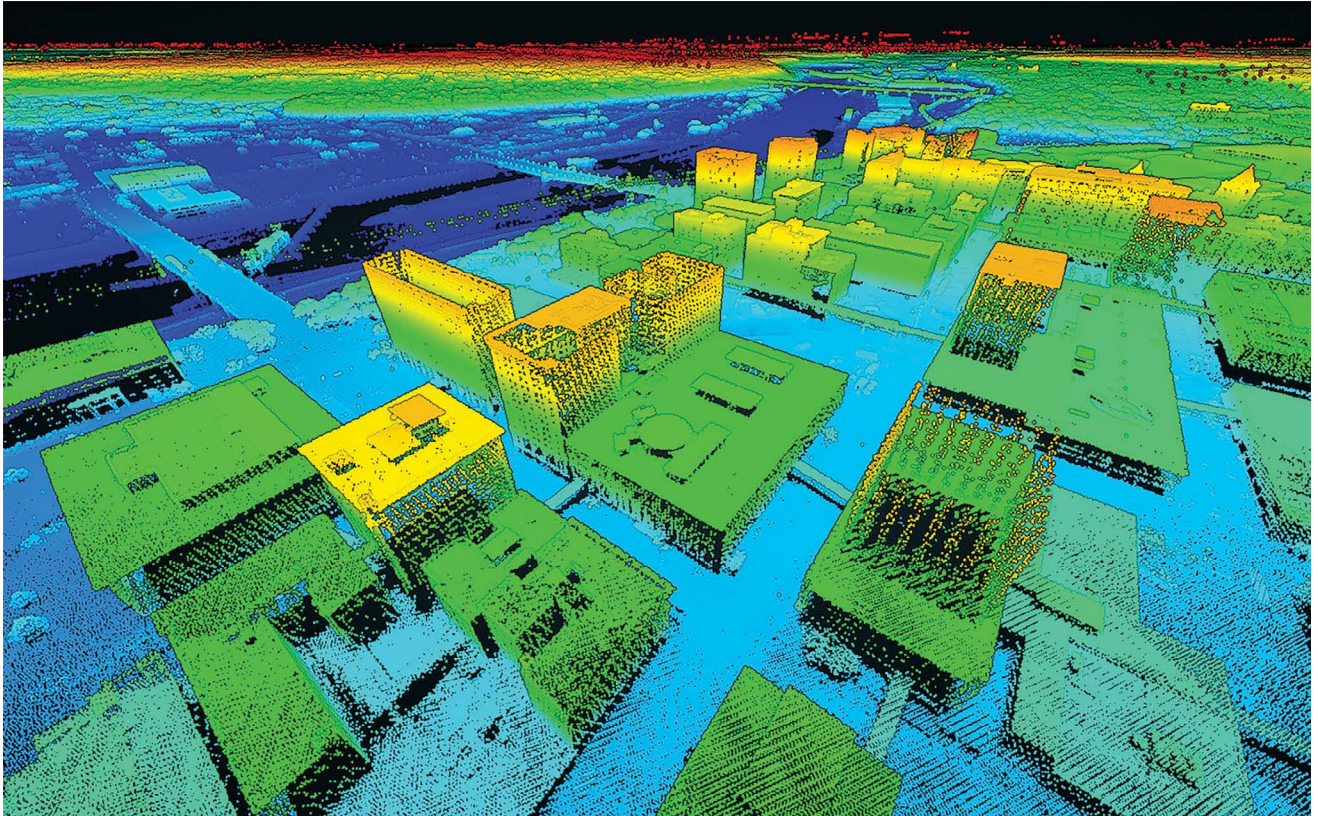


a government provides for the basic needs of its population. When those needs are not provided for, then the population will look for other leaders.

5. Political participation. Political participation can run the full spectrum from traditional methods that include voting to violent actions against the government. In many cities, the most common methods for participating

increases in many cities, slums are often the target of destruction in the name of development. This represents the most extreme method of political penetration in a slum environment. In typical slum communities, the informal leadership has the most control.

These six elements function differently depending on the characteristics of a specific city. All elements



This information architecture represents a high-density point cloud, viewed obliquely. A point cloud is a set of points on a coordinate plane. In this case, the data points are the edges of buildings and other structures in a dense urban area. Taken together, they create a 3-D visualization of a space. (Photo courtesy of the U.S. Army Acquisition Support Center)

in politics can be significantly limited. As a result, people seek to find alternative methods of political participation.

6. Political penetration. Political penetration refers to how much effective control the government exercises. This is also seen in the ability of the government to implement programs in a specific area. Examples of this include formal law enforcement activities within a region, monuments promoting the national identity of the leadership, and urban redevelopment programs that often include slum clearance. In informal urban areas, political penetration is often minimal if the slum does not gain the attention of the government. However, as development

of the framework are not exclusive but influence each other. They are multispatial and multidisciplinary. The goal is not to be reductionist but to highlight how these elements inform analysis of a city.

MDO in Dense Urban Environments: The Connections

As urban centers become more important, it is essential that doctrine is reviewed to ensure that people are prepared for operations in large cities. In concert with the rise in the importance of cities, the importance of MDO cannot be understated. With the importance

of both dense urban areas as future operating environments and MDO as a cornerstone doctrine, it is important to review linkages between the future operating environment and evolving doctrine. There are three key intersections between dense urban areas and MDO that help provide some insight on what operations would look like in large dense urban regions.

Intersection 1: Layers and convergence. First, TRADOC refers to MDO as a layered standoff. It would be difficult to find an environment with more layers than a city.¹³ Dense urban areas include multiple levels, from subterranean through the surface to above ground, and both in buildings and in aerial technology (drones, planes, etc.). Beyond the physical layers of the city, there are also significant amounts of human geography layers that exist in the city. From economic to political to cultural, cities are a complex combination of frameworks that influence the functioning of the city.

Identity is one of the key themes that begins to shed light on the complexities of the layers of the city. One example of how identity influences a dense urban region is the creation and perpetuation of migrant communities and transnational identities. Victoria Lawson describes transnationalism as “the extent to which migrants maintain plural identities and experience complex relations of incorporation and resistance to projects of globalized modernization, urban progress, national belonging.”¹⁴ This concept of transnationalism is critical as migrants navigate new influences on their sense of identity and reexamine their sense of belonging, exclusion, and affiliation.¹⁵ The process of transnationalism shows the complexity an individual faces as various networks are all intertwined to influence a person’s experience in a city.

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TRADOC also emphasizes that multi-domain formations must be able to “access and employ capabilities across all domains.”¹⁶ Traditionally, the Army has looked to multiple physical domains (e.g., subterranean, surface, and sky). However, in the modern dense urban environment, this extends to multiple layers of human geography operating in a city. This extension brings a renewed emphasis on intelligence, civil affairs, host-nation counterparts, regional experts, reach-back capabilities, and a commander who is not necessarily an expert on the specific AO but has a well-developed sense of general knowledge to ask the right questions of the right experts.

In addition to the various layers of an MDO, TRADOC stresses the convergence of these layers in a given area. TRADOC sees convergence as the “rapid and continuous integration of all domains across time space and capabilities.”¹⁷ Scale is never a given in any modern operation. Actors will attempt to shape the operational environment to function at the level where they have the greatest influence. This is especially relevant in a city where multiple scales and geographies converge on a block-by-block basis. Hostile forces might use subterranean environments to shape the battlefield due to a perceived advantage there. This

is countered by efforts to force hostile forces above ground into a

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decisive conflict on terms beneficial to friendly forces. This negotiation of space is one of the key competitions that will take place in any urban operation.

In addition to the physical convergence of scales, there is also the convergence of human geographic frameworks that influence development within a region. Whether a government is viewed as legitimate, and therefore has the ability to have its message penetrate a local region, it is strongly influenced by its ability to allocate basic services within a region or if the local population believes it shares an identity with the government. In a large city, where populations are extremely diverse and provision of basic services is a complex operation, governments struggle to remain legitimate, often for reasons that are not transparent. The reasons are often hidden by the complexities of converging scales and geographies.

Intersection 2: What does victory look like? The changing nature of modern military operations has increased the difficulties in defining objectives and, as a result, defining success or victory. Near-peer states compete below armed conflict, what TRADOC refers to as winning “without fighting” or blurring the distinctions between below conflict and conflict.¹⁸ An example of winning without fighting is identified by Reilly in his review of Chinese authors who advocate going beyond traditional boundaries of warfare to achieve national political objectives to include financial attacks or a virus to bring down an electric network.¹⁹ Anthony Clas echoes these conclusions in his review of soft power and noopolitics, which is a political science concept referring to knowledge politics using media as a vehicle for knowledge dissemination.²⁰ He emphasizes soft power and noopolitics as tools to control the attitudes, opinions, and moral values of the general population. On the strategic level, Kull sees competition at the below conflict level as a method to control population or dominate terrain without a protracted, attritional campaign.²¹ Fust sees layered standoffs in the political, economic, and military realms as a key method to separate the United States from its allies.²²

In recent years, the United States has seen leaders declare success in an operation, only to see that perceived (or misinterpreted) success devolve into instability. This is the result of an AO that is no longer solely comprised of combatants but is now more of a spectrum of combatants to noncombatants, to varying levels in between, whose definition of success and security

may differ from traditional military definitions. This mismatch of definitions is magnified in a dense urban environment, where people of differing identities, levels of participation, and goals live and act in close proximity, often overlapping. Understanding the vast differences in objectives between groups is a prudent point of departure for discussions of goals and achievement.

TRADOC raises an important question: “How does the joint force compete to enable the defeat of an adversary’s operations to destabilize a region, deter the escalation of violence, and should violence escalate, enable a rapid transition to armed conflict?”²³ Unpacking this question introduces some very complex problems that must be addressed in modern operations. In order to defeat an “adversary’s operations to destabilize a region,” one must understand how an adversary will seek to destabilize a region. This is often done with the human geography of a region.

Legitimacy is a key point of competition within a dense urban region. The lack of formal government involvement in slum communities creates a power vacuum that insurgent movements view as an opportunity to gain influence. As Conrad C. Crane emphasizes, “Based on their own definitions of legitimacy, the people of the contested region will decide the victor.”²⁴ This victor may or may not be the group that physically occupies the territory at the moment.

In an environment of insurgency, the struggle is to be recognized as legitimate. Frank Ledwidge echoes this statement in his conclusion, “Complex insurgencies are powered by injustice” and “legitimacy is the main objective ... without the host nation achieving legitimacy, COIN cannot succeed.”²⁵ When a government does not provide basic needs for a place, typically, a group outside of the government will fill the void and provide those basic needs to gain legitimacy and potentially remove the power of the standing government.

Stuart Eizenstat, John Porter, and Jeremy Weinstein emphasize the importance of legitimacy in a discussion on development. To them, the “legitimacy gap” refers to the government’s need to “protect the basic rights and freedoms of its people, enforce the rule of law, and allow broad-based participation in the political process.”²⁶ This is paired with two other gaps identified by Eizenstat, Porter, and Weinstein: the “security gap,” where states act to provide safety and security to their citizens; and the “capacity gap,” where a country



The Marine Corps Warfighting Laboratory executes Project Metropolis II, a dense urban operations limited operational experiment, 18 August 2019 at the Muscatatuck Urban Training Center in Indiana. The event aimed to effectively combine robotics, sensors, manned and unmanned vehicles, and dismounted marines with a focus on improving marines' ability to sense and locate the threat, observing their speed of decision-making and speed of action, and determining their lethality when employing traditional and surrogate equipment versus an enemy force in a dense urban environment. (Photo by Matt Lyman, Marine Corps Warfighting Laboratory/Futures Directorate)

allocates basic services.²⁷ When governments do not address these gaps, their legitimacy declines.

In a city, slum communities are often source regions for alternative sources of governance because basic needs and security of the local residents are often not met by the government; as a result, a legitimacy gap appears. In these gaps, insurgents often operate to foster volatility. In slum communities where populations are quite large and can approach one million, political legitimacy is an essential component of stability and ultimately, victory. Traditional concepts of victory, or achievement of the objectives of the operation, are clouded in cities. The physical occupation of space, which is challenging at best and more than likely impossible, may not even be the most important objective in an operation. This requires a multi-domain approach to thinking and defining objectives. While physical occupation might be important, the

provision of basic needs, or a certain need, might be more important and will create a sense of legitimacy within the region. Understanding the nature of the region will help generate a greater level of success.

Intersection 3: The growth of the battlefield. One of the primary changes in modern military operations is the growth of the battlefield and the AO. No longer can the AO be delineated as a discrete line on a map. Modern technology has enabled connections to extend beyond a single region. Kull emphasizes that nonlinearity is now the standard of warfare.²⁸ The adversary will endeavor to strike a support area using a variety of means including, but not limited to, cyberattacks, information campaigns, terrorist actions, and traditional kinetic actions. Gen. David Perkins echoes this conclusion in his observation that hackers are looking to target dependents in the homeland.²⁹ Volesky and Noble succinctly explain the



increased range of threats in their conclusion that cyber and human domains are not limited by space or time.³⁰

This increase in the size of the AO has substantial impacts on mission planning. The effect of linkages, facilitated by globalization, advances in communication technology, including social media and traditional media access, represents a shift of geographical scale that challenges the conventional concept of a distinctive operational environment (OE) that can be isolated for analysis at a local scale. Modern regions exist in multiple scales from local actions to global decisions that impact local citizens. In terms of modern military operations, actions at the smallest scale, even down to the scale of the individual soldier, have potential strategic impacts at the theater or even global level. These interactions across scales must part of any analysis of a dense urban region.

In addition, the conventional notion of the AO and the OE is also challenged by the connectivity of the modern urban center. Cities are interconnected globally by many different mediums, including economics, culture, modern communication technology, and social media. While some Army doctrine does address cross-border threats, the influence of information is vastly different than military or paramilitary forces crossing a border

The Marine Corps Warfighting Laboratory executes Project Metropolis II, a dense urban operations limited operational experiment, 25 August 2019 at Muscatatuck Urban Training Center, Indiana. Urban terrain often includes a subterranean level that must be considered during urban operations. (Photo by Lance Cpl. Quinn Hurt, Marine Corps Warfighting Laboratory/Futures Directorate)

and influencing an AO.³¹ Recent examples including the Arab Spring and the Occupy movements demonstrate that the ability to control information in the modern age is limited at best. Also, actors create virtual communities and shared ideologies using social media and modern communication/information dissemination techniques in an effort to gain influence in a region.³² These examples also show that as governments tried to restrict access to social media in an effort to slow the influence of social movements, those efforts to restrict access had the opposite effect and acted as a unifying force to bring together various disparate social movements under a common goal and created, or increased, a legitimacy gap.³³

International social movements demonstrate how political participation can impact actions in a dense urban environment, often from a great distance. In cities, where

conventional methods of political participation are limited, people often look for alternative methods of participation. Participating in social movements is often one of the most common alternative methods of participation. While movements focus on local issues, the movements often have strong local motives that link to international issues and tend to be especially influential.

Contemporary social movements developed through the rise of globalization and the embracing of new communication and social media technologies. Manuel Castells observes that the modern age of social movements is less about regime change and more about exploring the “construction of meaning in people’s minds.”³⁴ New social movement theory emphasizes that modern movements are about smaller groups coming together to establish larger networks based on shared ideologies that are typically centered on a larger societal issue. Castells identifies the Arab Spring and the Occupy movements as two examples of contemporary social movements that brought together disparate groups around a societal issue.³⁵ Modern social movements are quite adept at the use of social media as a medium to organize. Castells refers to these as “networked social movements.”³⁶ While the internet provides a virtual location for meeting and planning, the movements are still required to occupy physical space in order to be noticed by other groups and the state.³⁷ The spaces occupied by social movements are essential to the success of the movement as the places are “charged with symbolic power of invading sites of state power or financial institutions.”³⁸ These “occupied” spaces also create a space for debate and involvement in the political process.³⁹ It is in these occupied locations that social movements shift from ideology to action.

One important lesson we must learn from the Arab Spring and the Occupy movements is that traditional conceptions of boundaries no longer exclusively define political participation. These movements extend far beyond traditional definitions of the battlefield, the AO, or the OE. Therefore, as we plan for operations in dense urban areas, it is essential that we consider the impact of actions on wider communities beyond the traditional boundaries we have seen in the past. The actions in one area could embolden actors in a completely different region.

Conclusion

The sheer influence of dense urban areas in terms of demography, culture, economics, and politics requires

the Army to prepare to operate in cities. The wicked complexity of urban regions requires any operation to be multidomain. The basic tenets of MDO add insight into operations in a dense urban region. When the key notions of MDO are mapped against a framework for dense urban analysis, the intersections that result provide critical insights that commanders must address when operating in a dense urban environment.

First, cities are multiscale. This includes both physical and human geographies. Operations will occur at subterranean, surface, and above surface layers. In addition, operations will be influenced by the economics (production and allocation), politics (penetration, participation, and legitimacy), and cultural (identity) geographies that exist within a tightly packed, dense urban region.

Second, the definition of success is another challenge in modern operations, especially in cities. No longer is victory defined as defeating an adversary force on the battlefield. Modern conflict occurs at various levels, and often adversaries will seek to contest the competition at the level that serves them best. Often this becomes a competition of legitimacy in which various actors seek to influence the local population. This is commonly seen as an insurgency/counterinsurgency operation within a dense urban area. The view of legitimacy has an impact on both the ability of a government to push its message to the local population (political penetration) and the local population’s participation in local politics.

Finally, the size of the AO has substantially increased in the modern era. The rise of modern communications, especially social media, is especially significant as information flows between an urban center and regions that are not close to the city. Also, attempts to seize control of modern technologies (e.g., cell networks and the internet) often have the opposite effect as intended. Rather than bringing an oppositional force under control, it often emboldens the force and extends its influence and creates sympathetic support in formerly neutral or allied forces as its daily patterns are disrupted by the loss of connectivity. This was especially visible during the Arab Spring protests in Egypt.

The future of warfare is both multi-domain and urban. Rather than viewing these areas in isolation, urban operations need to be viewed as inherently multi-domain. The conclusions from MDO research offer important insights for planning operations in dense urban regions. ■

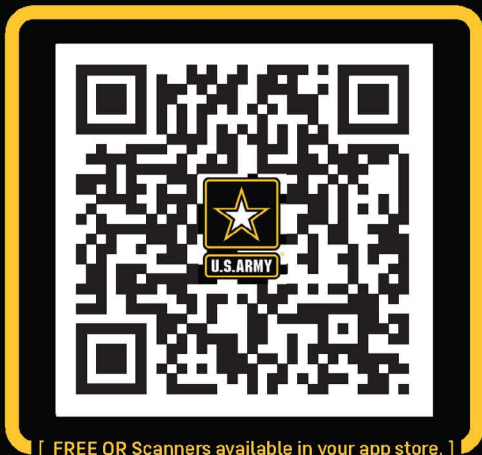
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