

INFORMATION ADVANTAGE: ORGANIZING, PROVIDING DATA TO SOLDIERS KEY TO FUTURE FIGHT

創新重整資訊技術優勢-未來多領域作戰的致勝關鍵

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The future is now, and the U.S. Army must move quickly or risk falling behind rapidly modernizing adversaries. The Army finds itself facing unprecedented global challenges. The world continues to become more competitive as near-peer adversaries such as Russia and China seek to challenge U.S. dominance throughout the world.

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立足現在、展望未來，美國陸軍必須加緊行動，否則會有被快速現代化的敵人超越之風險。陸軍本身在全球正面臨史無前例的挑戰，世局競爭日益激烈，俄羅斯及中國大陸等勁敵刻正在世界各地，試圖挑戰美國的主導地位。

Concurrently, the Army must stand ready to respond to natural disasters at home and abroad, as well as provide humanitarian relief for future pandemics and other unforeseen events outside the scope of war. The Army must transform quickly into a force capable of rapidly gaining and maintaining information advantage over adversaries to achieve decision dominance at speed and scale like never before.

陸軍必須同時在本土與海外作好天災的應變作為，以及在戰爭範圍之外，為未來大規模流行病及其他突發事件，提供人道救援。陸軍必須快速轉變成為一支能夠速戰速決的勁旅，並在獲致決策主導權上，以前所未有的速度與規模凌駕敵人，確保資訊優勢。

Historically, warfighting, in its most basic form, was defined by a maneuver force closing on an opposing force with direct fire, supported by coordinated and integrated indirect fires to both shape the battlefield and fix and/or finish enemy forces. This was informed by a robust, detailed and time-consuming intelligence preparation of the battlefield and a Military Decision Making Process supported by an integrated network of medical and logistical needs and requirements to sustain the force as it maneuvered across the battlefield.

綜觀歷來陸軍作戰，其最基本的型式係以擁有直射火力的機動部隊，協調整合曲射火力的支援下實施接敵，型塑戰場、拘束敵軍或是將其消滅。欲達此目的需在周全、詳盡與耗時的戰場情報整備及軍事決心策定程序，以及完整的醫療與後勤供需體系下，方能支持部隊馳騁沙場。

While the Army will always be required at some point to engage in this form of combat, it must begin to revisit what it defines as being in contact with an opposing force. Commanders must examine their battlespace at echelon across all domains and know and understand what adversaries are doing in these competing domains.

儘管陸軍有時總被要求從事此種型式的戰鬥，但卻必須回頭檢視所謂的與敵接戰的定義。指揮官們必須在作戰全程中審視陸、海、空域等作戰空間，並且明瞭對手在這些場域中，正從事何種行動。



Staff Sgt. Noah Straman, of the Ohio Army National Guard's 37th Infantry Brigade Combat Team, fires a DroneDefender to counter a drone attack during an exercise at the Camp Grayling Joint Maneuver Training Center, Michigan. (Credit: Ohio Army National Guard/Spc. Olivia Lauer)

俄亥俄州國民兵第 37 步兵旅戰鬥隊所屬史卓曼上士，於密西根州聯合機動訓練中心所在地格瑞林營區的演訓中發射無人機反制器，反擊無人機的攻擊。

Evolving Process

The need for leaders at echelon to be able to receive and process information to make effective and timely decisions across the breadth of the battlefield also continues to evolve. This is why Secretary of the Army Christine Wormuth stated in her February message to the force that the Army must become a more datacentric Army capable of rapidly processing information to achieve decision dominance over an adversary. The Army must do this at echelon, which leads to a fundamental transformation in warfighting.

演進過程

各級指揮官需要在作戰全程能夠接收及處理資訊，以利在戰場上下達即時而有效之決心，並且隨戰況進展而臨機應變。這也是陸軍部長沃穆思女士本年 2 月在對部隊的講話中所要表達的意涵：陸軍必須成為一支以數據為中心，能夠迅速處理資訊，並在

決策主導權上凌駕敵人的勁旅。陸軍各級部隊必須作到這一點，方能徹底脫胎換骨，並在作戰時制敵機先。

Current and future wars will be driven by decision dominance, and commanders will have to gain an information advantage over the adversary in order to fight and win. This information will come from all domains on the battlefield, starting in space, and reach down to the squad level. It will be derived from the electromagnetic spectrum, cyber and publicly available information. This will be a change that soldiers, leaders and commanders at all levels will have to acknowledge and understand. To do this, the Army must look at warfighting from “space to squad.”

目前與未來的戰爭，將是決策主導權之爭，各級指揮官必須能夠比對手享有資訊優勢，方能戰無不勝，而此種資訊來自於戰場上各種領域，從太空由下一路到達班的層級。它來自電磁頻譜、網路空間及隨手可得的公開資訊等，這是從士兵、基層領導幹部到各級指揮官，都必須明瞭及有所認知的變革。為了達成此一目標，陸軍必須注意“從太空直到班階層”的作戰方式。

This type of transformation is new. Rather than modernizing tanks and artillery, the Army is modernizing the weapon system known as information. To integrate and drive this unprecedented transformation, the Army in February 2020 created the Department of the Army Management Office-Strategic Operations (DAMO-SO). This office serves as the lead integrator for warfighting transformation and information advantage across all domains, focusing on four cross-cutting areas: a centered focus on the theater; empowerment to the warfighter; transformation of how the Army fights; and transformation of how the Army works. These focus areas center on the warfighter and represent the operationalization of information advantage across the joint staff and Army headquarters staff.

陸軍刻正進行武器系統的現代化，即眾所周知的資訊化，此種轉變是全新的，不只是戰車及砲兵的現代化而已。為了整合及推動此一史無前例的轉變，陸軍於 2020 年 2 月創立了陸軍部戰略行動管理辦公室(DAMO-SO)。此辦公室成為全領域作戰形態及資訊優勢轉型的帶頭整合者，其重點為 4 項跨領域的任務：將資訊作戰重心聚焦於戰區內；充分授權(指的是可充分獲得授權對各層級提出所必須獲得之資訊，且各層級須無條件提供，如高司情治單位、電偵單位)給執行任務之作戰人員；依資訊化優勢作為對陸軍原聯合作戰方式實施轉型；和對陸軍原分析作業模式實施轉型。上揭任務著重於陸軍參與任務執行的所有官兵，以及包含從聯合作戰參謀到陸軍司令部參謀在內，能夠將其所擁有資訊優勢訴諸於作戰化的轉型。



An Ohio Army National Guard soldier observes as UH-60 Black Hawk helicopters bring in howitzers during training at Camp Grayling. (Credit: Ohio Army National Guard/Spc. Olivia Lauer)

一名俄亥俄州所屬的國民兵士兵，在格瑞林營區的訓練中觀看 UH-60 黑鷹直升機吊掛榴彈砲。

Nontraditional Domains

As part of the joint force, the Army will fight in domains not traditionally associated with land combat. These domains will include cyber, the electromagnetic spectrum and space. These nontraditional domains require a fundamental shift in Army doctrine and will require leaders and soldiers at all echelons to examine how information is received, processed and disseminated and by the fastest means possible in order to win. Warfighting from space to squad transforms how leaders receive and process information, which will enable formations to achieve decision dominance across all fronts and allow the Army to fight and win decisively.

非傳統領域

身為聯合兵力之一部，陸軍將在網路、電磁頻譜與太空等非傳統領域上，從事陸地作戰。上揭非傳統領域需要陸軍在準則上作根本的調整，以及各級指揮官與士兵檢視他們如何以最快之方式接收、處理及傳遞資訊，以戰勝敵人。從太空到班層級的作戰，需

要徹底轉變各級指揮官接收及處理資訊的方式，以便各作戰單位能夠在作戰全程獲致決策主導權，支持陸軍以果斷堅決之方式克敵制勝。

Many scholars say operations Desert Shield and Desert Storm in 1990 and 1991 comprised the first “space war,” marking the first time that space, the electromagnetic spectrum and cyber warfare were actively employed. The U.S. military used satellite systems for navigation and communication at scale.

許多學者認為 1990 及 1991 年的“沙漠之盾”與“沙漠風暴”等行動，係第一次的“太空戰”，美國軍方全面運用衛星系統於定位及通訊上，從此揭示了太空、電磁頻譜與網路作戰，正式登上戰爭舞台。



Capt. Tucker Palmatier, a cyber electronic warfare officer with the 37th Infantry Brigade Combat Team, monitors radio equipment at Camp Grayling. (Credit: Ohio Army National Guard/Staff Sgt. Scott Fletcher)

第 37 步兵旅戰鬥隊所屬帕爾瑪帝耶上尉，於格瑞林營區監聽無線電設備操作情形。

However, these areas now are contested environments, and the Army must view them as an integrated part of any battlefield it finds itself on. The Army’s ability to rapidly integrate, protect, defend and use capabilities that gain and maintain the operational advantage within these domains will be key to success both now and in the future.

然而，這些任務刻正受到作戰環境的挑戰，陸軍必需視這些挑戰為戰場上所無法忽略的一部份，因此陸軍在這些領域擁快速整合、防護、抵禦及運用這些功能，以確保作戰優勢的能力，將是現在及未來成功遂行任務的關鍵。

To do this, the Army must link enterprise-based systems with operational capabilities that drive integrated solutions the Army will face on the modern and future battlefields. Linking space to squad both drives and redefines the concept of “sensor to shooter.” It creates a common data fabric that delivers the right data, information, tools and capabilities at the appropriate echelon at the right time. It will create and drive the integrated requirements the Army will require to fight and win, now and in the future.

為達此目的，陸軍必須聯結具作戰功能之先進資訊整合系統，並在面對現在及未來戰場環境時，啟用整體性解決方案。“太空到班階層”的聯結，促成“感應器至射手”觀念的重新界定，創立了共同數據站，將正確數據、資訊、作戰工具及功能，適時地傳遞至所需的部隊手上，促成陸軍在現在及未來，獲致克敵致勝之所需條件。

Linking all assets from space to squad in an integrated data fabric will enable true sensor to shooter capability, linking the appropriate capability to the appropriate target. It also would create a common data fabric, enable predictive logistics to commanders and allow decision-makers to integrate and implement Joint All-Domain Command and Control. This all comes with a renewed definition of who the warfighter is.

在整合的數據站內聯結太空到班階層的所有資訊，可使作戰人員能獲得真實感測戰場即時景況之能力，適切地連接至適宜的目標上。此舉亦可創立共同之數據站，將指揮官之後勤需求預作安排，並讓決策者整合與執行聯合全領域之指管作為。凡此種種皆需重新定義，誰才是執行任務的作戰人員。

Soldiers as Sensors

A warfighter-centered approach will transform how the Army fights. The Army's multidomain transformation will set conditions for the joint force to fight and win integrated campaigns over longer periods of time. It will enable faster and more accurate decision-making in all phases of competition, conflict and crisis through interoperability of all-domain capabilities. Additionally, it will enable the warfighter to make quality and comprehensive decisions rapidly by factoring in the physical, human and informational aspects of both the modern and future environments.

戰士即感測器

將重心放在執行任務的作戰人員之方式，將陸軍之作戰方式轉型。陸軍的多領域轉型，將為聯合部隊在曠時費時的整體戰役上，型塑有利條件，並在所有階段之抗爭、衝突及危機過程中，助其能夠快速而正確地下達決心。此外，亦能讓陸軍戰士在現代及未來的作戰環境中，將各種實體、人員及資訊等面向列入考量，快速下達至當而周延之決心。

Every soldier across the battlefield is a sensor. All soldiers collect data, and they do it through various means. Most, if not all, soldiers are active on multiple social media and digital platforms. These platforms deliver real-time information to soldiers through first-person accounts, news media and the open exchange of information. These platforms will continue to play a role in how warfighting develops and will transform how the warfighter processes information.\

散佈在戰場上的每一名士兵都是感測器，所有士兵藉由不同手段，即使不是全部，大多數的士兵亦會積極透過多重社交媒體及數據平台來蒐集情資。上揭平台藉由單兵依序傳遞之方式，將新聞媒體及公開的資訊交換等即時資訊傳達出去。這些平台，將繼續在戰鬥方式之發展上佔有一席之地，並改變戰場上官兵處理資訊的方法。



Soldiers from the 10th Special Forces Group (Airborne) prepare to train with crews from the 160th Special Operations Aviation Regiment (Airborne) at Fort Carson, Colorado. (Credit: U.S. Army/Sgt. Isaih Vega)

第 10 空降特戰群與第 160 空降特戰團的官兵，於柯羅拉多州卡爾森堡訓練整備情形

The Army must train and empower the warfighter to make decisions rapidly and at scale by providing operations and intelligence fusion more quickly. This will be a core component of providing the right information at the right moment to ensure that the warfighter is armed with the information needed to fight and win. It will provide greater agility and speed within hours and days, as opposed to weeks and months.

陸軍必須藉作戰與情報部門的整合，訓練及強化官兵快速下達全方位決心之能力。此舉係適時適地提供正確情資的核心要件，有助於參戰部隊獲得克敵制勝之情資需求。此種情報傳遞的靈活性與速度，相較對手需要數週或數月，我方僅需若干小時或幾天，即可達成。

Finally, focus on the warfighter will provide access to information and the ability to operate effectively in a disconnected and distributed environment through resilient and integrated Mission Command, including accessing specific authorities and command relationships. It will allow leaders, through the exercise of disciplined initiative, to measure and take prudent risk as appropriate. It will plug the right sensor into the right shooter at the right time and move rapidly toward a multidomain-capable formation equipped with the right people, talent, equipment and capabilities.

最後，聚焦於參戰部隊，藉由彈性與整合之任務式指揮，分權負責，提供獲取情資及在失聯與分散式戰場環境下，有效作戰之能力。亦讓各級指揮官，權衡風險後，果敢主動下達決心，並使正確的感測器與適切的射手得以適時而迅速地鏈結，讓配備精良、訓練有素之勁旅，在多領域戰場上縱橫制勝。

Lead Integrator

The director of DAMO-SO, Maj. Gen. Dustin Shultz, often says the office is the “cartilage in the knee” that makes all other mission areas synch. Comprising eight divisions—space, cyber, information, readiness, enterprise, network, strategic support and Mission Command—DAMO-SO integrates and synchronizes Army initiatives within the Office of the Deputy Chief of Staff for Operations, Plans and Training, G-3/5/7, and across the Army Staff, which leads efforts with all-domain transformation.

帶頭整合

陸軍部戰略行動管理辦公室(DAMO-SO)主任，達斯汀·舒茲(Dustin Shultz)少將，經常提及該辦公室的角色就像“膝蓋上的軟骨”，讓太空、網際網路、資訊、戰備、民間企業、網路系統、戰略支援與任務指揮部及 DAMO-SO 本身等八大部門，與作戰次長室

(參三)、計畫次長室(參五)與訓練次長室(參七)及陸軍所有幕僚單位，合作無間地在各任務領域中，順暢運作並獲致全方位的轉型。

The directorate strives to maintain strong relationships with the U.S. Army Futures Command and works to assess and integrate the future operational environment, emerging threats and technologies to provide warfighters with concepts and future force designs needed to win.

各單位主管努力與陸軍未來指揮部，維持緊密的合作關係，針對未來之作戰環境、不斷出現之威脅及科技進展等，進行評估與整合，以提供作戰部隊在未來克敵制勝，所需之作戰思維及編裝。



First Lt. Briana Harvey, of the Maryland Army National Guard, monitors network activity during a cyber exercise at the Laurel Readiness Center, Maryland. (Credit: Army National Guard/Sgt. Tom Lamb)

隸屬馬里蘭州陸軍國民兵的布萊娜·哈維伊(Briana Harvey)中尉，在該州勞瑞爾戰備整備中心的網際網路演習中監看網路活動情形。

The total force will transform into Army 2030, meeting its enduring responsibility as part of the joint force and retaining its position as the globally dominant land power.

As it takes the lead on this integration, DAMO-SO plays a leading role in the integration and synchronization of Army transformation by doing several tasks:

- Continually assessing and driving the delivery of a unified network.
- Developing and integrating the Global Force Information Management Objective Environment that redesigns and modernizes the multidomain-capable force and aligns it with the Regionally Aligned Readiness and Modernization Model.
- Conducting analysis and making decisions about investments for efforts that don't meet Army 2030 objectives.
- Continuing to drive a campaign of learning that provides the framework to align formal training, experimentation and exercises.

美國陸軍將轉型成為“2030 年的陸軍”，符合其身為聯合部隊的永久性軍種責任，並確保其全球性地面部隊的主宰角色。身為這波整合行動的領頭羊，陸軍部戰略行動管理辦公室在陸軍轉型的整合與協調合作行動中，佔有至關重要的角色功能，其任務計有：

- 持續評估及推動網路系統的整合。
- 研發及整合全球兵力資訊管理目標與環境，重新設計與更新具多領域作戰能力之兵力，符合區域戰備整備及現代化模式。
- 針對無法符合“2030 年的陸軍”之目標及有關的投資效益，進行研析及決心下達。
- 持續推動提供正式訓練、試驗及演習之學習架構。

All this requires a fundamental shift in culture and processes in order to enable critical capabilities.

凡此種種皆需從文化面，作基礎性的變革及按步就班地進行，以獲致關鍵性的能力。

DAMO-SO finds itself on the cusp of Army transformation and, by working by, with and through other members of the Army Staff, develops operational enablers to drive this shift. These enablers include innovation governance, capability and mission management, change management, monitoring of transformation progress and striving for a culture of change.

陸軍部戰略行動管理辦公室發現其身處陸軍轉型的風口浪尖上，藉由與陸軍各幕僚單位的共同合作，開發各種提升作戰效能的轉型變革，這些轉型效能包含了管理體系、職能及任務管理、變革管理及轉型進程的監督及組織文化變革等的創新作法。

In short, DAMO-SO serves as the Army Staff lead for warfighting transformation by integrating, prioritizing and synchronizing multidomain and data-enabled systems across the electromagnetic spectrum and the space and cyber domains. This transformation supports Army modernization, information advantage and decision dominance.

總而言之，陸軍部戰略行動管理辦公室，在電磁頻譜及太空網路等領域，藉由整合、排定優先順序及協調多領域與數據賦能系統，作為陸軍作戰模式轉型的領頭幕僚。而此種轉型支持了陸軍現代化、資訊優勢及決策主導權等的確保。

Embrace Change

As the Army transforms into Army 2030, leaders must rapidly embrace change. Future battlefields will consist of domains that will be unseen, creating a new form of rapid, violent and decisive engagements occurring over prolonged periods of time. As Wormuth stated in October 2021, “The stakes are high.” The Army must transform into a datacentric, capable force rapidly and at echelon because data will play a key role in future fights.

接納變革

隨著陸軍轉型成為“2030 年的陸軍”各級指揮官必須快速接納變革，未來的戰場將是看不見、一種曠日費時且全新的快速、殘暴而致命的交戰模式。正如陸軍部長沃穆思女士在 2021 年 10 月所說：戰爭的賭注很高昂。數據資訊將在未來戰爭中扮演關鍵角色，因此陸軍必須轉型成為以數據資訊為中心的現代化勁旅。

Furthermore, all soldiers must understand their role, and the Army must embrace new ways of viewing warfighters. Troops must enter the battlefield equipped to rapidly receive and process information and achieve decision dominance to maintain a tactical advantage over an enemy. Transformation must occur quickly. The Army’s future adversaries recognize the need for change as well. DAMO-SO will be at the forefront of Army modernization as soldiers chart the way to Army 2030 and beyond.

此外所有的官兵必須瞭解他們的角色定位，陸軍亦必需以新的方式看待所有參戰官兵。各級部隊必須配備快速接收、處理資訊及獲致決策主導權，以確保戰術優勢並凌駕敵人。陸軍未來的對手同樣意識到變革的需求，因此轉型必須要快。隨著所有官兵朝

著“2030 年的陸軍或超越它”的目標大步向前的同時，陸軍部戰略行動管理辦公室將會是陸軍現代化的最前鋒。

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Sgt. Maj. Russell Blackwell assumed duties as the senior enlisted leader of Headquarters, Office of the Deputy Chief of Staff for Operations, Plans and Training, G-3/5/7, Strategic Operations Directorate, U.S. Army, the Pentagon, in November 2021. Previously, he was the garrison command sergeant major, Fort Sill, Oklahoma. He has deployed twice during Operation Iraqi Freedom. He has a master's degree in international affairs from the University of North Georgia.

原文作者

羅社爾·布萊克威爾(Russell Blackwell)士官長於 2021 年 11 月接任美國五角大廈陸軍部作戰、計畫及訓練次長室(參三、參五及參七)、戰略行動處長室的資深士官長職務。渠曾擔任奧克拉荷馬州西爾堡基地的總士官長職務，曾 2 度參與伊拉克自由行動任務，擁有北喬治亞州大學國際事務碩士學位。