

Bridging the Engineer Gap From Tactical to Strategic

橫跨工兵鴻溝，從戰術到戰略

來源：美軍工兵期刊

作者：福雷斯契納先生、霍普金斯中校、蒙格瑪力中校

譯者：陳弘驥少校

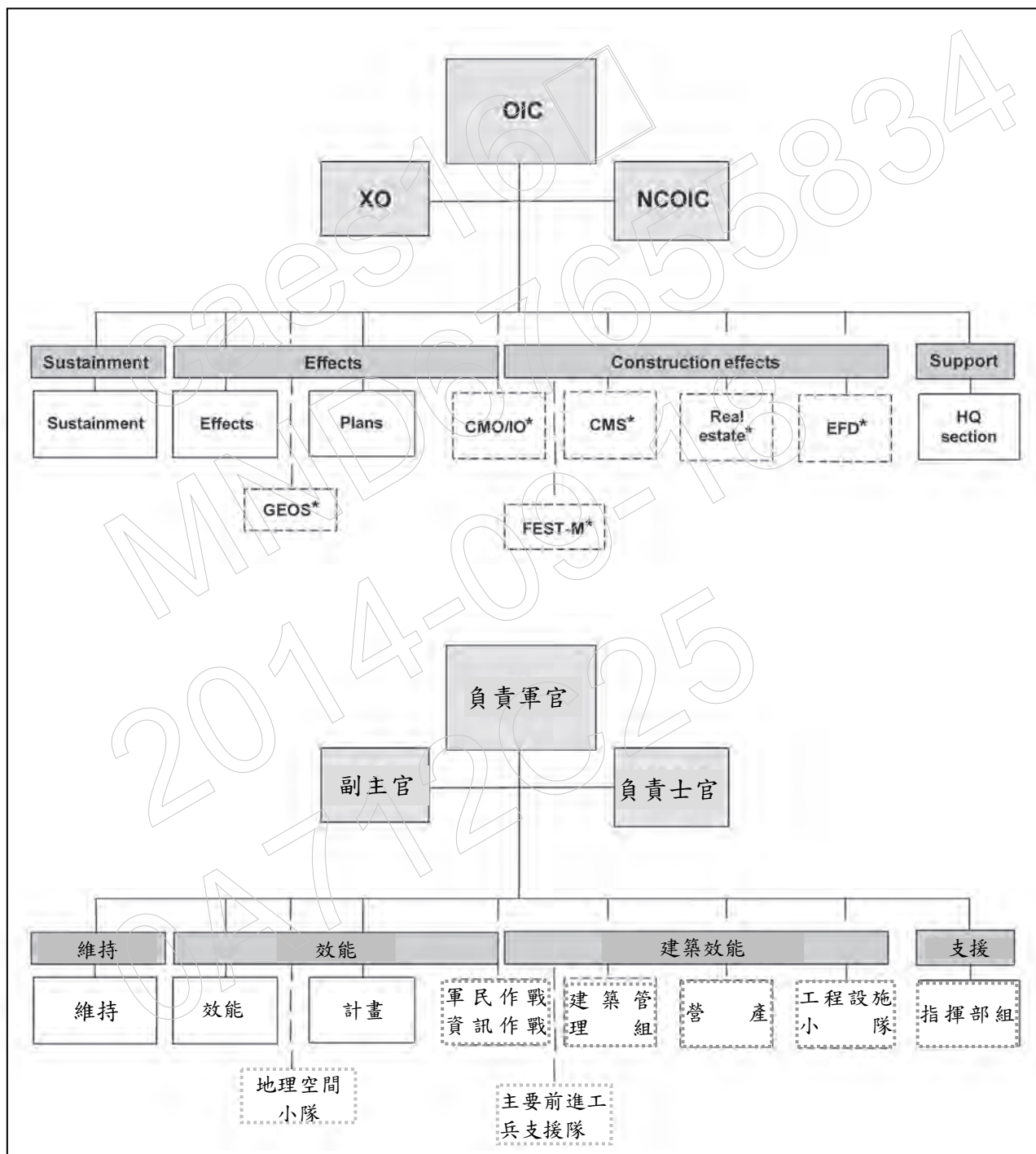
Many times, engineers are thrown into an exercise regardless of their training. The result is the placement of tactical engineers at an operational level for which they don't have the appropriate skill set. Engineers who can bridge this gap are the "Heroes of the Exercise," providing engineer planning and reachback to consistently stay ahead of the commander's decision cycle.

好幾次，工兵被丟進一個不管他們訓練的演習中，所得到的結果就是把戰術工兵部隊放在沒有適當技術設備的作戰層級。工兵可以跨越這壕溝的稱為「演習英雄」，提供工兵計畫及後方支援來貫徹指揮官的策略週期，持續前進。

In 2009, the first joint force engineer command (JFEC) was activated in Afghanistan, centralizing engineer efforts and assets across the theater to facilitate and coordinate engineer operations. In 2011, U.S. forces saw another first for the JFEC concept; the integration of this team of engineers from all services in support of U.S. European Command (USEUCOM). With help from the U.S. Army Corps of Engineers (USACE) and the U.S. Army Reserve 416th Theater Engineer Command, USEUCOM tested the JFEC ability to coordinate engineer assets outside the war zone during a training exercise. A deployable command post (DCP) (Figure 1) was established that required modifying the joint manning document to incorporate field force engineering and service component engineers to become a JFEC.

2009 年，第一個工兵聯合部隊指揮部在阿富汗編成，集中工兵兵力及資材跨越戰區來促進及協調工兵作戰。2011 年美軍意識到了另外一個工兵聯合部隊指揮部的優先構想，就是整合工兵各中隊勤務來支援美國歐洲指揮部。有了美

國工程兵團及美國陸軍後備 416 戰場工兵指揮部的幫忙，美國歐洲指揮部在某個訓練演習期間，測試了工兵聯合部隊指揮部在戰區外的工兵資材協調能力，成立機動指揮所(圖一)，修改聯合人員編配表，合併野戰工兵部隊及勤務工兵成為工兵聯合部隊指揮部。



圖一 機動指揮所

The exercise simulated major combat operations from the reception, staging, onward movement, and integration of troops and equipment through the “Phase III–Dominate” operations of the joint campaign. To support operations, the JFEC—

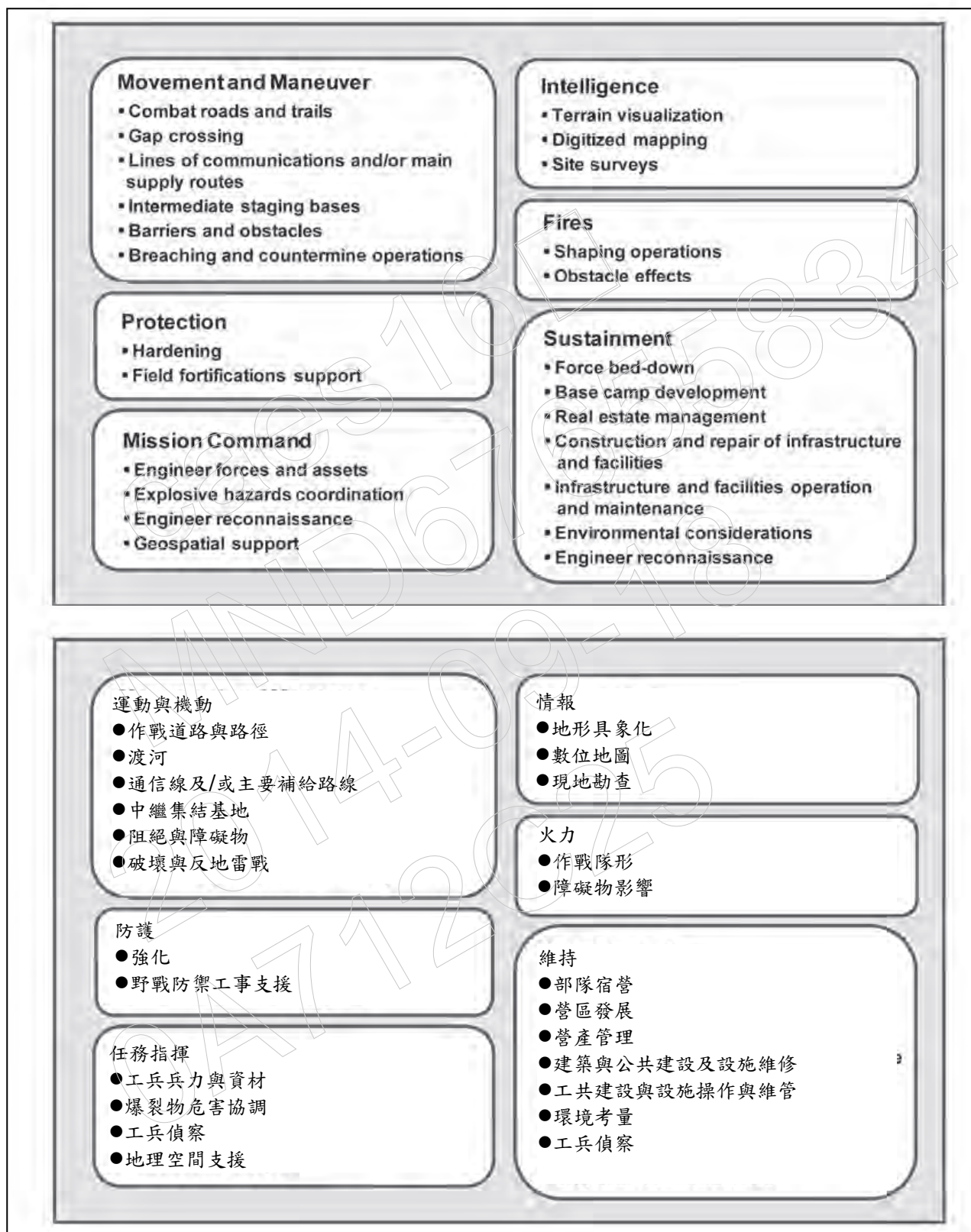
- Facilitated informative update sessions and mission planning synchronization meetings to increase the engineer unity of effort.
- Coordinated effects—tactical through strategic—of U.S. and coalition engineers.
- Established a request-for-information process for the transparency of information requirements.

USACE and the 416th Theater Engineer Command were also heavily involved in developing a master scenario events list, generating events that would provide the desired engineer support to joint functions (Figure 2).

這項演習透過「三大階段-支配」的聯合作戰行動來模擬主要作戰行動，從接收、集結、前進行動到部隊與裝備之整合。即工兵聯合部隊指揮部必須透過以下三大作戰行動來支援作戰—

- 幫助情報更新會議與任務計畫同步會議來提升工兵戰力統一。
- 協調美國與聯盟工兵在戰術與戰略上的效能。
- 建立資訊需求程序以達資訊透明化需求。

美國陸軍工程兵團及 416 戰場工兵指揮部也在發展主要想定事件列表上投注許多心力，產生出來的想定事件將提供所望工兵支援予聯合作戰(圖二)。



圖二 工兵支援予聯合作戰想定

Effective Demonstration

The exercise was an astounding success. The JFEC demonstrated the effectiveness that its structure and flexibility provided, based on the joint engineer capabilities inherent in the organization. The JFEC was a superior fit for joint task force (JTF) engineer operations. The team's efficiency was repeatedly demonstrated by its adaptive response to the scenario and its technical analysis of more than 20 situational events. Response times and communication up and down the engineer chain were exceptional. All engineer events injected were successfully analyzed, resolved, and communicated between the JFEC, the JTF, USEUCOM, and all subordinate commands via daily engineering synchronization meetings.

有效的驗證

這項演習相當成功，工兵聯合部隊指揮部根據聯合工兵本身的組織能力，驗證了它的架構及彈性所提供的效用，工兵聯合部隊指揮部是優先符合聯合特遣部隊的工兵作戰。中隊的效能一直藉由適時的反應來重複不斷地驗證想定以及超過 20 種狀況的戰術分析，反應時間及工兵系統上下通聯表現均非常卓越，所有工兵投入的事件都成功地分析、解決，並且透過每日工兵同步會議來聯繫聯合部隊工兵、聯合特遣部隊、美國歐洲指揮部及所有下級指揮部。

The USACE field force engineering cadre embedded in the exercise acted as a forward engineer support team and simulated field force engineering support from forward engineer, contingency real estate, and environmental support teams. Whenever forward engineer support team members were not working on requests for information or products, they were anticipating future missions such as conducting river crossings, restoring key infrastructure, developing infrastructure products, and researching responses. The exercise also tested the forward engineer support team's ability to establish and use teleengineering communications equipment to communicate with the USACE Reachback Operations Center in Vicksburg, Mississippi; conduct reconnaissance; develop a base camp; and test contracting and acquisition support.

美國工程兵團野戰工兵幹部，在這項演習中擔任前進工兵支援隊及模擬野戰工兵支援，從前進工兵、應急營管及環境支援隊。前進工兵支援隊成員不從事訊息或物件傳遞任務時，任務的備戰狀態，他們會就執行渡河、復原主要公共設施、發展公共建設及反應調查等。這項演習也測試了前進工兵支援隊通信建立的能力，透過建立及運用遠端工程通信裝備與位於密西西比州維克斯堡的美國工程兵團後支作戰中心聯繫，執行偵察、建立基地及測試合約及獲得支援。

During the exercise, the JFEC supported both the JTF engineer and the combatant command engineer. To do this, the staff was divided as illustrated in Figure 3, page 10. This allowed the JFEC to provide additional operational and tactical engineering capabilities not normally available during an exercise. It gave USEUCOM a powerful liaison connection to the engineers on the ground. Service engineers were integrated from the strategic level down to the tactical level, with the JFEC facilitating engineer coordination. The JFEC configuration into “effects,” “construction effects,” and “operations” functional teams created a significant force multiplier for future engineer operations and planning. The effects team focused on assured mobility in order to provide combat engineering support to enhance protection. The construction effects team focused on base and host nation infrastructure to support the JTF commander’s campaign plan. The operations team managed the functions of the JFEC.

演習期間，工兵聯合部隊指揮部支援聯合戰術部隊及戰鬥工兵指揮部，也因為如此，幕僚組被分成如圖三所示架構。這使得工兵聯合部隊指揮部可以提供在演習期間無法正常取得的額外戰鬥與戰術工兵能力，它提供美國歐洲指揮部一個有權威的連絡官來連繫地面工兵部隊，透過工兵聯合部隊指揮部調輔工兵間的協調勤務工兵可從戰略層級整合降至戰術層級，。工兵聯合部隊指揮部的形態區分為「效能」、「建築效能」及「作業」功能隊，為未來工兵作業及計畫帶來一個具意義的戰力加乘效果。效能隊著重於機動確保，提供戰鬥工兵支援來提升防護力；建築效能隊著重於基地及地主國公共建設，支援聯合戰術部隊指揮官的作戰計畫；作業隊管理工兵聯合部隊指揮部的功能運作。

In future exercises or operations, the JFEC configuration and duties for the task-organized effects and operations teams would include the usual functions of current operations, future operations, and plans, with the addition of reachback assistance for the following:

- Contract construction.
- Heavy construction.
- Theater construction management system.
- Battle tracking.
- Targeting.
- Infrastructure assessments/sewer, water, electricity, academics, trash, medical, safety, and other considerations.
- Basing and base camp development.
- Bed-down.
- Route clearance.
- Lines of communication such as roads, railways, ports, and airfields.
- Environmental baselines.
- Real estate.
- Report generation.
- Task organization.
- Power generation.
- Geospatial.

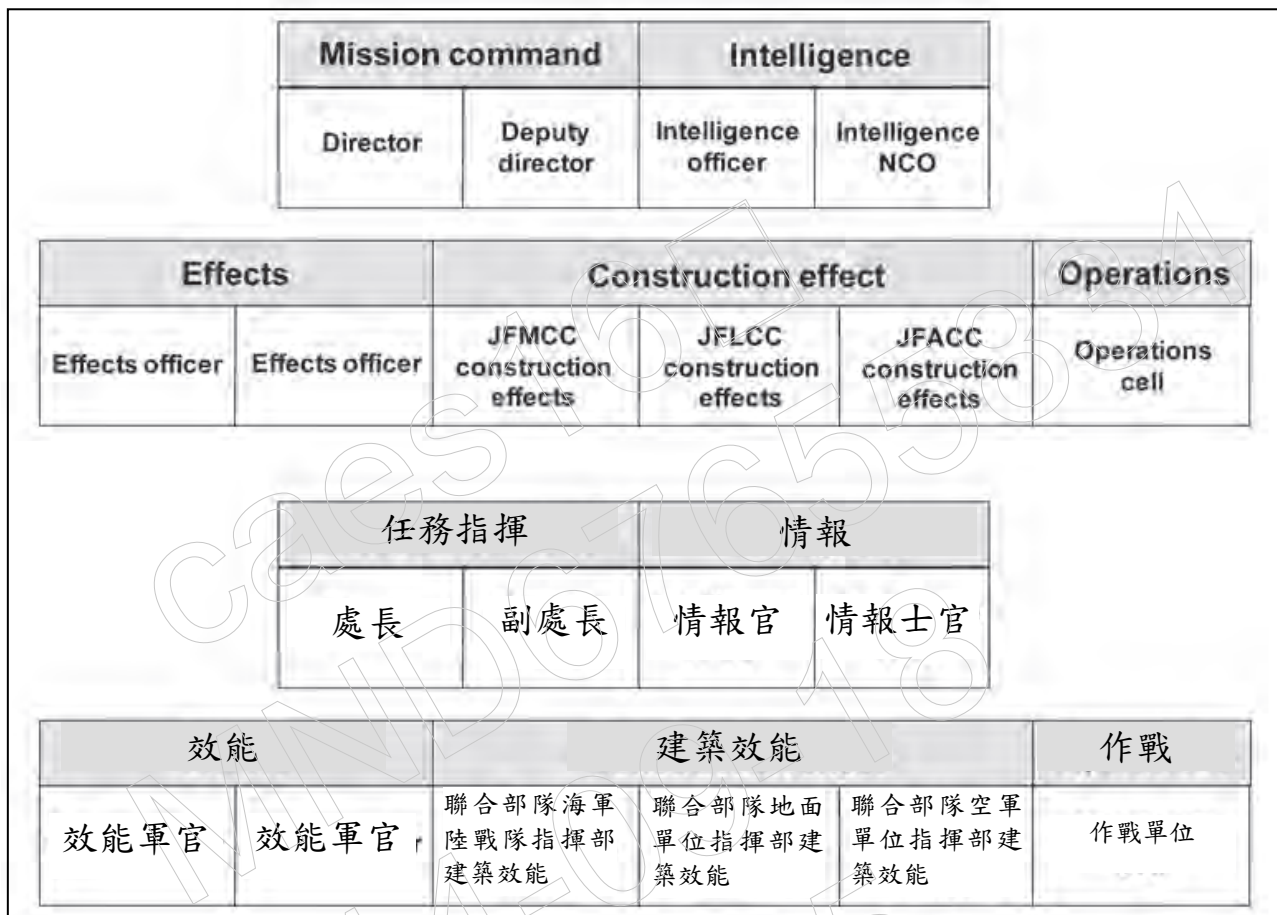
在未來的演習或作戰中，工兵聯合部隊指揮部在任務組織效用及作業隊的形態及職責將包含現代作戰、未來作戰及計畫等常態功能，以及額外的後支協助包括：

- 合約建築
- 大型建築
- 戰場建築管理系統
- 戰鬥追蹤
- 目標瞄準
- 公共建設評估、排水、給水、電力、學術、廢棄物、醫療、安全及其他考慮事項。
- 基地與營地發展

- 宿營
- 道路清除
- 通信線，例如道路、鐵路、港口、機場等
- 環境基線
- 營產
- 報告撰擬
- 任務組織.
- 發電
- 地理空間

The JFEC maintained an operational and tactical focus on engineer activities in each of the countries inside the joint operations area. This allowed USEUCOM engineers to maintain strategic focus and synchronize all engineering activities throughout the theater.

工兵聯合部隊指揮部在每個國家聯合作戰區域內的工兵行動上，維持一個作戰及戰術中心，這使得美國歐洲指揮部的工兵部隊在戰場上得以維持戰略中心及同步各項工兵行動。



圖三 演習構想

Proficient Coordinating Mechanism

The JFEC was a force multiplier, providing a proficient coordinating mechanism for exercises and real-world operational requirements, bridging the gap between the tactical and strategic levels. It provided exceptional engineer planning and reachback that allowed engineers to stay ahead of the commander's decision cycle. While the JFEC can do it all, it is not necessarily a catchall solution for every JTF. If the JTF headquarters is based around a corps or division headquarters, there would probably be sufficient engineer staff that a JFEC would not be needed. However, if the JTF engineer needs mission command, is based on an Army service component command, or is operating a stand-alone JTF that was built from scratch, the JFEC concept can correct an engineer staff shortage.

熟練的協調機制

工兵聯合部隊指揮部是戰力加乘的要素，提供熟練的協調機制予以演習及實戰作戰需求，將戰術與戰略層級相接軌，提供優秀的工兵計畫與後支，使得工兵部隊可以推展指揮官的決心週期。只要工兵聯合部隊指揮部可以將其完整做完，聯合戰術部隊就不需要籠統的解決。如果聯合戰術部隊指揮部住紮在團或師總部週邊，也許有足夠的工兵參謀，就不需要工兵聯合部隊指揮部。然而如果聯合戰術部隊的工兵需要任務指揮部(基於陸軍勤務部隊指揮部)或者新編成的獨立聯合戰術部隊，工兵聯合部隊指揮部的構想可以彌補工兵參謀的不足。

Depending on the mission and the assigned forces, the theater engineer command DCP (with joint augmentation) can transition into one of two functional roles. When there are theater level engineer forces such as forward engineer support teams or prime power, topographic, or theater construction units, the theater engineer command DCP provides mission command for these units and forms the basis of the joint force commander's engineer staff. When mission command is not needed, the theater engineer command DCP can still be an extension of the geographic combatant command engineer staff or form the base of the engineer staff and would be designated as the joint forces engineer directorate (JFED) (Figure 4).

根據任務以及編配部隊，作戰區工兵指揮部機動指揮所(含聯合擴編)可以轉換為兩個功能角色之一。當作戰區層級工兵部隊，像是前進工兵支援隊或主要電力、地形測量或作戰區建築單位，作戰區工兵指揮部機動指揮所提供任務指揮部予以這些單位，並編成聯合部隊指揮官的工兵參謀基準。當任務指揮部不需要時，作戰區工兵指揮部機動指揮所仍可作為地理作戰指揮部工兵參謀的分部或編成工兵參謀基地以及可以指定為聯合部隊工兵處(圖 4)。

Focus on Joint Operations

Sometimes staff maneuver elements have interpreted the command part of “joint force engineer command” to mean that the JFEC is a maneuver element; thus the recommendation for designation as a directorate when applicable. This would allow the geographic combatant command to use the JFED as a combatant command engineer asset, pushed forward to focus on the joint operational area while the actual combatant command engineer focuses on the entire theater. Far too often, the combatant command engineer staff assumes risks while covering down on both missions (in the real world and during exercises).

著重聯合作戰

有時候幕僚機動單位將「工兵聯合部隊指揮部」的指揮部分解釋為工兵聯合部隊指揮部是一個機動單位，因此當開始實施的時候建議命名為一「處部」，這使得地理作戰指揮部可以使用聯合部隊工兵處當成作戰指揮部的工兵資產，儘管實際戰鬥指揮工兵部隊著重於整個戰場時，工兵資產仍可以推進，將重心放在聯合作戰區域。而更常碰到的是，當戰鬥指揮工兵幕僚掩蓋掉兩個任務(在現實世界及演習期間)時必須承受風險。

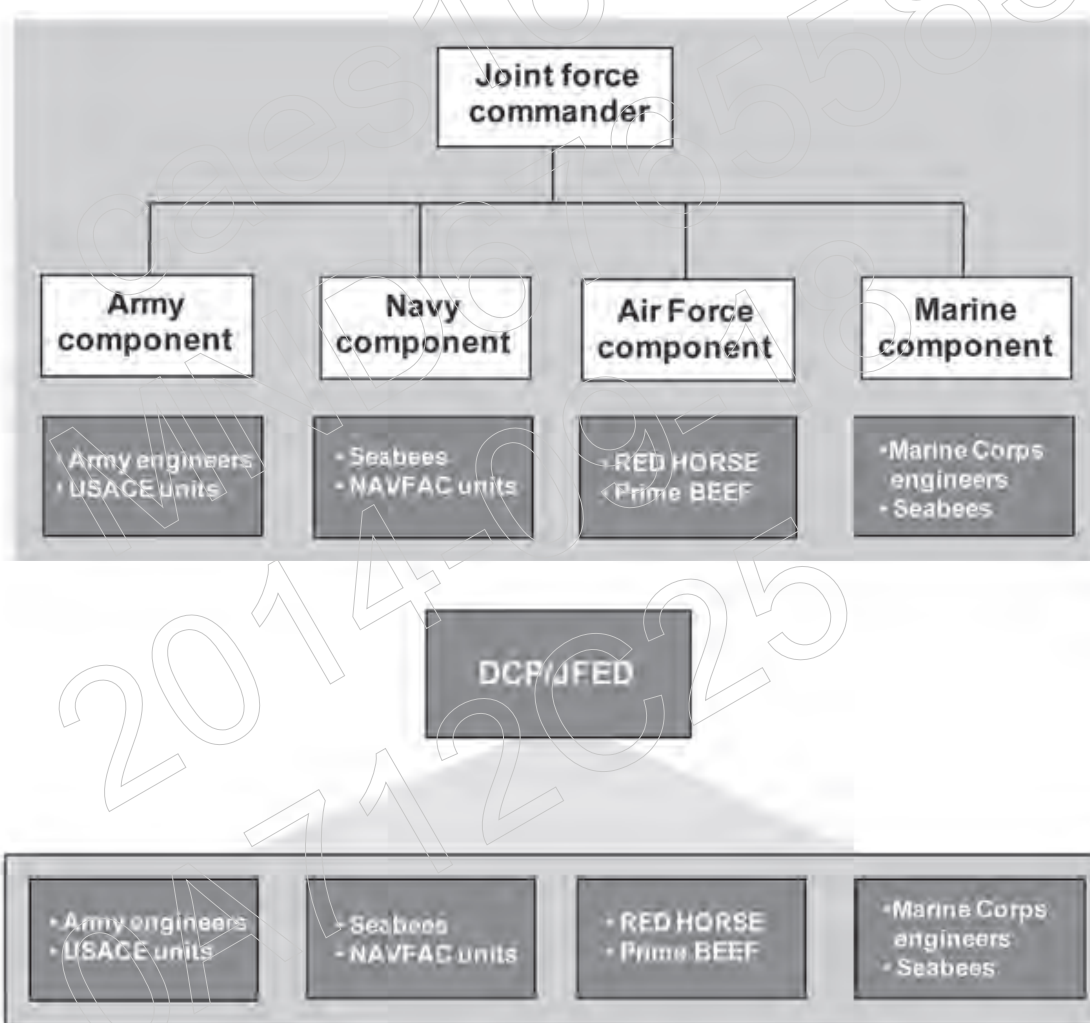
The JFED would transition from a hypothetical concept to a real capability by using Soldiers from the theater engineer command DCP, which is standard practice today. They would become the JFED once the service component engineer linkage was established. In addition to service component engineer augmentation to maximize service competency, the JFED would receive designated liaison officers from the three contract construction agencies—USACE, the Air Force Center for Environmental Excellence, and the Naval Facilities Engineering Command—as well as coalition and host nation liaison plug-ins to facilitate the best use of partner and host nation engineering and contracting capabilities. The theater engineer command DCP would still support the Army service component command theater-wide administrative control responsibilities; but in this particular case, the theater engineer command DCP would assume a joint engineer mission by incorporating service component engineers.

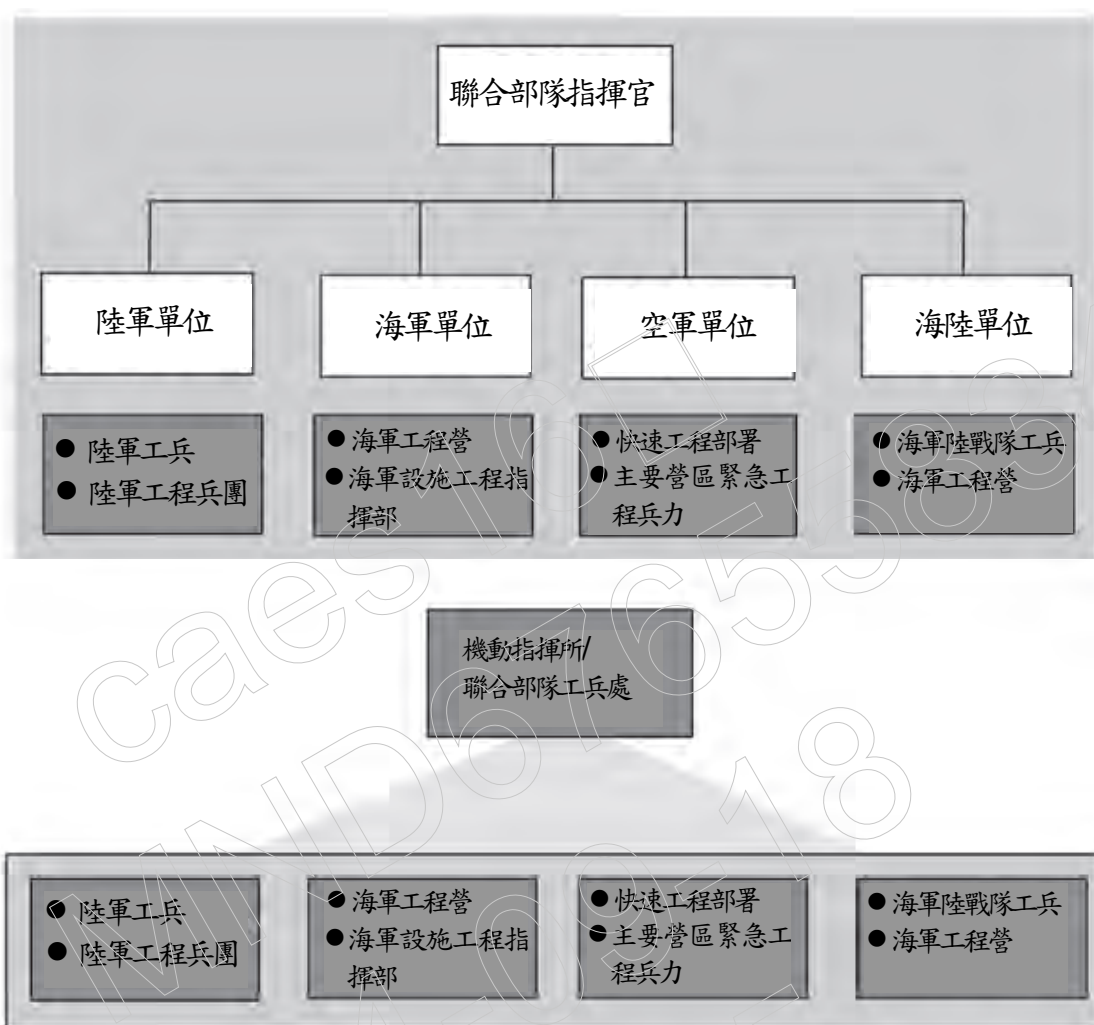
聯合部隊工兵處可藉由使用戰場工兵指揮部機動指揮所的兵力，將假設的構想轉換成真實戰力，這是現今的標準演練。只要勤務單位工兵的聯繫被建立起來，他們將會成為聯合部隊工兵處。除了勤務部門工兵擴編到最大勤務能力，聯合部隊工兵處也將接獲從三個合約建築機構委任的聯絡官-美國陸軍工程兵團、空軍環境卓越中心及海軍設施工程指揮部，以及盟軍及地主國的聯絡官參與，來促進夥伴及地主國工兵及合約能力最佳化，作戰區工兵指揮部機動指揮所仍可支援陸軍勤務單位指揮部作戰區範圍的行政管制責任，但是在這特定的案子，作戰區工兵指揮部機動指揮所將透過合併勤務單位的工兵部隊，來執行一個聯合工兵的任務。

Under the legacy engineer command structure, the 412th and 416th Engineer Commands had habitual relationships with the geographic combatant commands and their Army service component commands—the 412th Engineer Command with USEUCOM and U.S. Pacific Command and the 416th Engineer Command with U.S. Central Command and U.S. Southern Command. In 2009, the 412th and 416th Engineer Commands received permanent orders to reorganize and were redesignated the 412th and 416th Theater Engineer Commands. After this transformation, the habitual relationships ended, allowing DCPs from both theater engineer commands to support any Army service support command or geographic combatant command contingency operation. By continuing the established model of having a theater engineer command DCP on the joint manning document as the base for a JFEC or JFED, the theater engineer command DCPs can deploy small teams to the joint task force and the combined forces land component command engineer staffs. By serving as the theater engineer staff and specializing in joint engineer functions, the JFED can become a learning organization, maintaining cohesion during geographic combatant command personnel turnover.

在舊有的工兵指揮架構下，第 412 及 416 工兵指揮部與地理作戰指揮部及其陸軍勤務單位指揮部有很長久的關係：412 工兵指揮部與美國歐洲指揮部及美太平洋指揮部；416 工兵指揮部與美中心指揮部及美南部指揮部。在 2009 年，412 及 416 工兵指揮部正式接獲命令來重組並更改番號為 412 及 416 作戰區工

兵指揮部。經過這次轉換，這長久的關係就終止了，機動指揮所得以從作戰區工兵指揮部來支援任何陸軍勤務支援指揮部，或者地理作戰指揮部的應變作戰。藉由不斷地建立在聯合員額配賦表中建立擁有作戰區工兵指揮部機動指揮所的模式，作為工兵聯合部隊指揮部或聯合部隊工兵處的基準，作戰區工兵指揮部機動指揮所可以在聯合任務部隊及聯合部隊地面單位指揮部工兵幕僚中部署小隊。藉由值勤作戰區工兵幕僚及專責在聯合工兵職責，聯合部隊工兵處可以成為一個學習組織，在地理作戰指揮部人員更換時維持凝聚力。





圖四 作戰區工兵指揮部機動指揮所轉變為聯合部隊工兵處

This JFEC/JFED concept was put into practice for USEUCOM. Because of coordination between the staffs of the 416th Theater Engineer Command and the USEUCOM Directorate of Logistics and Security Assistance, the exercise made the JFEC concept a reality for geographic combatant command use. There is now a methodology to transform the concept into reality. The next steps will be to standardize the JFEC and JFED naming convention for supported maneuver units and to secure a commitment from geographic combatant commands to fill engineer joint manning document requirements with theater engineer command DCP JFEC/JFED functional capabilities.

這個工兵聯合部隊指揮部/聯合部隊工兵處的構想在美國歐洲指揮部中實踐了，因為 416 作戰區工兵指揮部及美國歐洲指揮部後勤與安全援助處幕僚間的協調，這項演習把工兵聯合部隊指揮部構想實現在地理作戰指揮部。現在有把構想轉換為實際面的方法了，下一步將會是把工兵聯合部隊指揮部及聯合部隊工兵處命名標準化，來支援的演習單位，維護地理作戰指揮部，滿足工兵聯合人員編配表需求及作戰區工兵指揮部機動指揮所的工兵聯合部隊指揮部/聯合部隊工兵處運作功能。

Mr. Fleischner is the USACE liaison officer to USEUCOM. His military education includes the U.S. Army Command and General Staff College, the Joint Engineer Operations Course, Engineer Officer Basic and Advanced Courses, and U.S. Army Airborne and Ranger Schools. He holds a master's degree in environmental engineering from the University of Florida, Gainesville.

福雷斯契納先生是美國陸軍工程兵團在美國歐洲指揮部的聯絡官，他的軍事學歷包含美國陸軍指參學院、聯合工兵作戰課程、工兵軍官基礎及進階課程以及美國陸軍空騎學校，並擁有佛羅里達大學環境工程碩士學位。

Lieutenant Colonel Hopkins is the 416th Theater Engineer Command deputy chief of staff for plans. He is a graduate of Intermediate Level Education Core and Advanced Operations Courses at the U.S. Army Command and General Staff College, the Joint Engineer Operations Course, the Engineer Captains Career Course, and Engineer Officer Basic Course. He

holds a master's degree in military arts and science from the U.S. Army Command and General Staff College.

霍普金斯中校是 416 作戰區工兵指揮部負責計畫的副參謀官，他是美國陸軍指參學院中級教育核心及進階作戰課程的研究生，同時具備聯合工兵作戰課程、工兵正規班、分科班學歷，並擁有陸軍指參學院軍事藝術與科學碩士學位。

Lieutenant Colonel Montgomery is the contingency and exercise planner for USACE–Europe District. He is a graduate of Advanced Joint Professional Military Education; Intermediate Level Education Core and Advanced Operations Courses at the U.S. Army Command and General Staff College; the Joint Engineer Operations Course; the Engineer Officer Advanced Course; the Field Artillery Officer Basic Course; the Lance Missile Officer Course; and the Cannon Battery Officer Course. He holds a master's degree in quality assurance engineering from Southern Polytechnic State University, Marietta, Georgia.

蒙格瑪力中校是美國陸軍工程兵團歐洲區的應變與演習計畫官，他是進階聯合職業軍事教育的研究生，同時具備美國陸軍指參學院中級教育核心及進階作戰班、聯合工兵作戰班、工兵軍官進階班、野戰砲兵基礎班、蘭斯飛彈軍官班、火砲軍官班等學歷，同時也擁有喬治亞州南部州立理工學院工程品管碩士學院。