THE
LAND
WARFARE
PAPERS

No. 119 JULY 2018

Army Combat Developments Command: A Way to Modernize Better and Faster than the Competition

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A National Security Affairs Paper
published on occasion by
THE INSTITUTE OF
LAND WARFARE
ASSOCIATION OF THE
UNITED STATES ARMY
Arlington, Virginia

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The Institute of Land Warfare
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Army Combat Developments Command: A Way to Modernize Better and Faster than the Competition

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Preface

The technological overmatch that the U.S. military once enjoyed over potential peer adversaries has waned since the turn of the century, and it continues to do so. Over time, the competitive advantage held by the U.S. Army over the armies of potential peer adversaries has eroded; its overmatch is being challenged in all domains. Consistent with the Army Chief of Staff's intent for a command that could effectively "combine elements of Army Futures, concept development, requirements and acquisition to ensure we remain the preeminent ground fighting force well into the future," this paper studies the potential utility of activating an Army Combat Developments Command. Drawing historic lessons and insights from the United States Army Combat Developments Command (USACDC, 1962–1974), this study highlights how activating a Combat Developments Command today could help the Army to modernize—build overmatch capabilities coupled with mission-effective operational concepts and organizational changes—better and faster than potential peer adversaries in peace and to adapt equally well for combat superiority in future war.

Army Combat Developments Command: A Way to Modernize Better and Faster than the Competition

Over time our competitive advantage has eroded. Our overmatch is being challenged in all domains. In our current system institutional organization and processes are no longer adequate for the task of modernization for an Army of the future. We are at an inflection point in our history where we must reform how we modernize our Army—the role, responsibilities, structure and organization.

General Mark A. Milley
Chief of Staff of the U.S. Army[1]

A. Introduction

The technological overmatch that the U.S. military once enjoyed over potential peer adversaries has waned since the turn of the century, and it continues to do so. Based on a comparative assessment of the U.S. and Chinese militaries from 1996–2017, a contemporary RAND study reports that "the Chinese People's Liberation Army has transformed itself from a large but antiquated force into a capable, modern military. In many areas, its technology and skill levels lag behind those of the United States, but it has narrowed the gap."[2] In the U.S. Army's case, this gap in technological superiority has narrowed largely due to agility challenges within the service's modernization enterprise. To foster clarity, this study defines agility—with respect to modernization—as the capability and capacity of the Army modernization enterprise to rapidly and cost-effectively transition concepts and ideas into high-performing fielded capabilities using nimble process mechanisms and more flexible oversight.

This study highlights and uses historic lessons from the U.S. Army Combat Developments Command (USACDC, 1962–1974) to argue that creating a present-day USACDC would significantly boost the agility of the Army's modernization enterprise in synergy with its ongoing modernization efforts—most notably the creation of Army Futures Command as announced in October 2017.[3] The study answers the following question: how could the activation of an Army Combat Developments Command—one that combines elements of Army Futures, concept development, requirements generation, acquisition (early prototyping) and field experimentation—help the Army to modernize better and faster than potential peer adversaries before a

conflict (peacetime modernization) and during a conflict (wartime adaptation)? The activation of an Army Combat Developments Command would help the Army to achieve all of this. Using the broad rubrics of peacetime modernization and wartime adaptation as units of analysis, this study shows the potential utility of a contemporary USACDC.

B. Background of USACDC

Some background on USACDC—in terms of its origins, organization, mission and functions within the Army—is essential to frame thought and promote understanding in the ensuing analysis.

I. Origins of USACDC. Though the USACDC was officially activated 20 June 1962, its genesis began as far back as 1952 with Project Vista—a study of future ground and tactical air warfare in defense of Western Europe conducted by the California Institute of Technology. According to USACDC historical record, this study recommended that the Army create a Combat Development Group "to bring to an operational state the newest tactics, ideas [concepts] and inventions [technologies] having application to the kind of warfare envisaged for Western Europe."[4] Project Vista also advised the Army's leaders that for "such a development group to be effective [it] must encompass a combat unit of sufficient size to include all elements of a working combat team, such as infantry, armor, artillery, and signal troops . . . permanent staff that includes civilian scientists, and access to specialists in all relevant fields."[5] Interestingly, Project Vista envisioned a command quite like the present-day Army Capabilities Integration Center (ARCIC). However, to develop concepts and conduct real-world troop operational experiments with these concepts using emerging technologies, Project Vista called for the command to be empowered with a dedicated combat unit and the organizational infrastructure to support prototype development and field experimentation.

Project Vista spurred changes in the Army's organization for guiding and controlling the shape and composition of Army field forces. Under this change, ". . . the development of new doctrine, organization, and material and their integration into the Army were seen as part of an interrelated system with a single goal of providing the optimum in combat effectiveness."[6] The Army Chief of Staff (CSA) directed in June 1952 that General John R. Hodge, the Chief of Army Field Forces, establish a Combat Developments organization. In 1952, General Hodge directed the establishment of a Deputy Chief of Staff for Combat Developments in his headquarters as well as combat development activities at the Command and General Staff College, the four combat arms schools and a Special Weapons Development Director at Fort Bliss, Texas. A contract with Johns Hopkins University established the Combat Operations Research Group in 1953. In July 1953, the Combat Developments Group was established as a Special Staff section directly under the Deputy Chief of Staff for Combat Developments. In May 1954, the Department of the Army directed the Chief of Army Field Forces to coordinate combat developments for the Army as whole, including U.S. Army Europe and U.S. Army Forces Far East.[7]

According to USACDC historical records, the Army's Combat Development System in the early fifties was deficient because it did not include:

- the Army's technical (research and engineering) communities;
- organic forces for field experimentation with concepts and equipment; or
- the adequate number of talented military and civilian personnel requested to viably perform various functions inherent in combat development.[8]

These deficiencies prompted the Secretary of the Army to form a committee under Dr. Leland J. Haworth, Director of Brookhaven National Laboratory, to study and offer remedies in 1954. The subcommittee's report, the Haworth Report, advised the Secretary of the Army that:

> An intensive Combat Development program is essential to the establishment and maintenance of a combat-ready Army. The focal point of this program should be a "Combat Development Organization," given broad responsibility for and wide freedom of action in the exploration and evaluation of new concepts of weapons, organization, and tactics, and their synthesis into an effective fighting system. The capabilities of this organization should include authority and means to conduct theoretical studies and to perform adequate experiments and field tests covering all aspects of land warfare. No limitations should be imposed by existing doctrine, organization, roles or missions in any of the military forces.
>
> An autonomous command at a special site possessing an adequate staff, facilities, and troops for the execution of all aspects of Combat Development would have much merit and should be considered as the ultimate goal.[9]

The Haworth Report was a seminal step in the evolution of the Army Combat Development System—and the eventual creation of USACDC—because it led to the inclusion of the Army's technical community (research and engineering), additional military and civilian technical talent, as well as active duty combat troops (for practical combat experimentation). In addition, based on the recommendations of the Davies Committee, the Office of the Chief of Army Field Forces was redesignated Headquarters, Continental Command, on 1 February 1955, with expanded responsibilities for individual and combined arms training as well as the Army's combat developments program, including the technical services.[10]

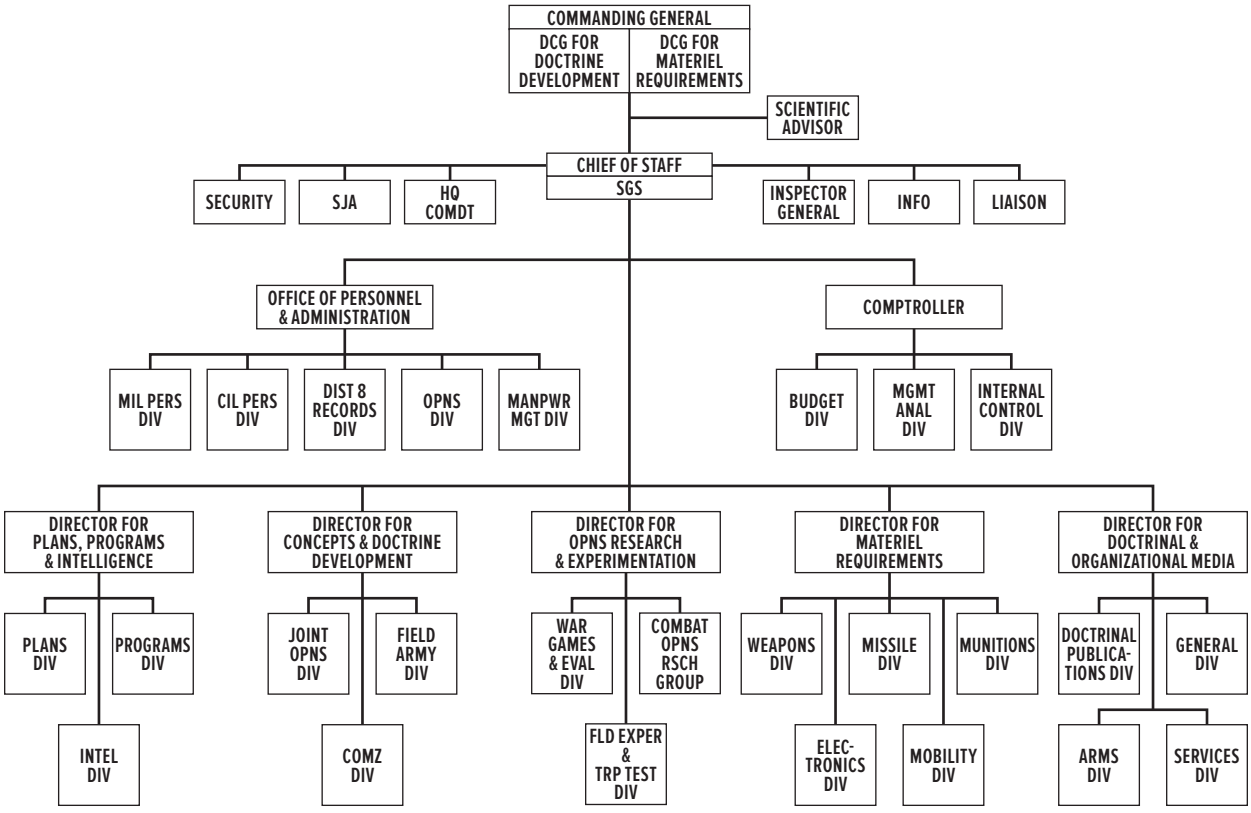
The Haworth Report also spurred the activation of the United States Combat Development Experimentation Center (USCDEC) with an experimental brigade on 1 November 1956 at Fort Ord, California, due to its emphatic demand for field experimentation with concepts and emerging technologies. USCDEC would ultimately be reorganized and subsumed into the USACDC with the 1962 Department of the Army Reorganization plan that called for "centralization of all functions and activities falling within the combat developments spectrum."[11]

II. Headquarters Organization. Relative to what can be viewed as the Army's proponency system of 1962, USACDC was responsible for studying and defining the future operating environment, concept development and early prototyping and experimentation. To fulfill these responsibilities, USACDC's Headquarters was organized with the following directorates (see Figures 1 and 2):

- Director for Plans, Programs and Intelligence, who fulfilled functions consistent with Future Operating Environment definition, analysis and wargame planning;
- Director for Concepts and Doctrine Development, who fulfilled functions consistent with concepts development, doctrinal research and development in general;
- Director for Operations Research and Experimentation, who was responsible for wargaming and evaluation, combat operations research, managing field experimentation and the troop test division;
- Director for Materiel Requirements, who was responsible for assessing, compiling and managing the materiel needs of major commands across the Army. This directorate was

Figure 1

USACDC Headquarters Organization, 1 June 1962[12]



instrumental in the development of USACDC's Command Priority Objectives—a list of Army capability development priorities compiled from critical areas of combatant commanders' needs and adversary competition (see Figure 3); and

- Director for Doctrinal and Organizational Media, who was responsible for doctrinal and training media publication and dissemination and all other media support to the USACDC's mission.

a. Strategic Engagement

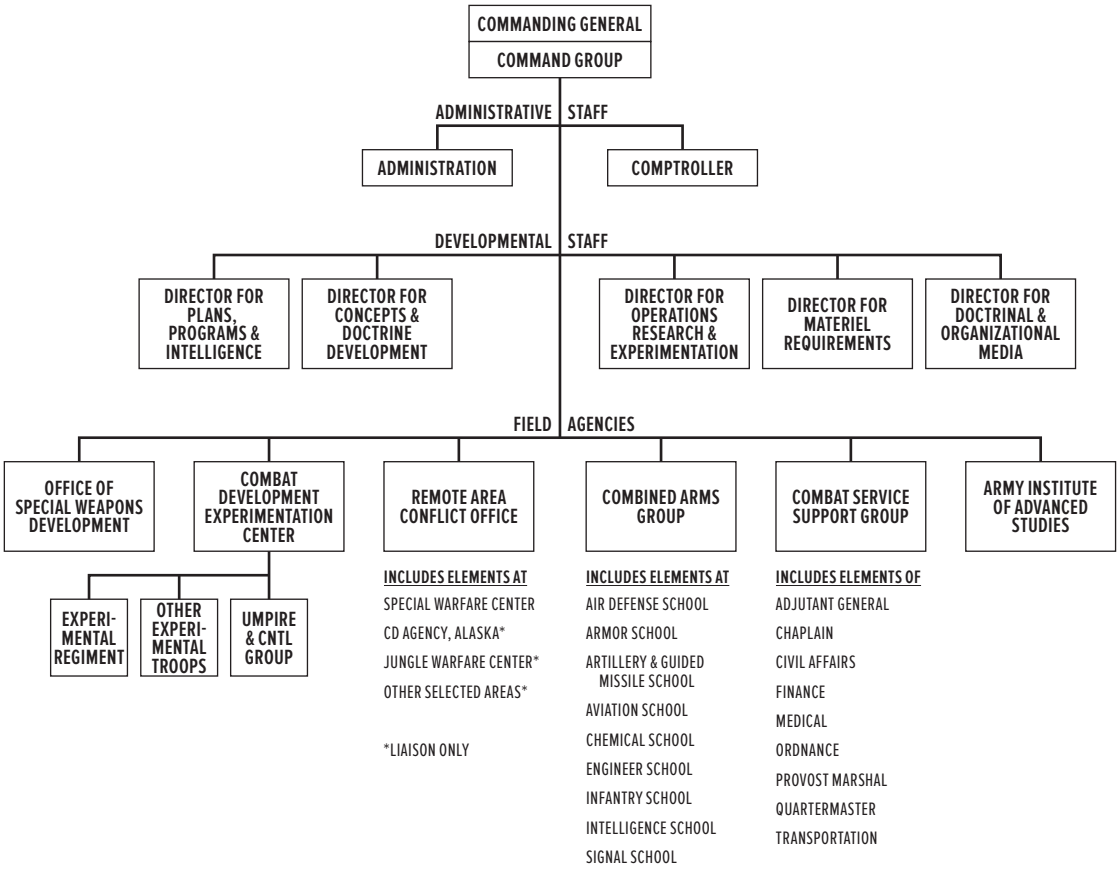
USACDC's Headquarters Command Group and special staff comprised a robust strategic engagement architecture that proved key in working with sister services, the Department of Defense and the U.S. Congress. The Commanding General had a Deputy Commanding General for Doctrine Development and another for Materiel Development, both of whom helped with strategic engagements. Moreover, in addition to the Office of the Secretary General Staff, the Headquarters (HQ) Special Staff had a liaison section and an information management section to support strategic engagements.

b. Talent Management and Financial/Resource Management

USACDC's HQ Coordinating Staff was organized into two large offices to optimize human resource/talent management and financial management (see Figure 1). The HQ Coordinating Staff was split into the Office of Personnel and Administration, which fulfilled the G1 Personnel,

Figure 2

U.S. Army Combat Developments Command, 1 June 1962[13]



G3 Training and G4 Logistics (command internal) for the Command, while the Comptroller Office fulfilled the Army Modernization Planning, Programming, Budgeting and Execution, as well as the Command's internal budgeting (the Internal Control Division).

III. Mission and Functions within the Army. A key factor in USACDC's sterling success was the relevant empowering functions consolidated under its auspices. *Army Regulation 10-12: Organization and Functions, United States Army Combat Developments Command*, indicates that the Army leaders of this era boldly empowered USACDC with the following six critical functions for modernization:

- "Formulate, develop, test, recommend and document new or improved concepts, doctrine, materiel requirements, and organizations for the Army"[14];
- "Formulate every 5 years, and update . . . a long-range strategic study for use by Headquarters, Department of the Army [HQDA] in long-range planning"[15];
- Draft annual revisions for the primary Army planning documents of the day [comparable to The Army Plan (TAP) in the present (see Figure 10)] and present them to the HQDA Staff for approval. In the 1960s, these documents included: the Army Force Development Plan; the Combat Development Objectives Guide—a planning document, used for programming and budgeting by the Army and Department of Defense, that listed the Army's

modernization objectives and the programs aligned to fulfill them; the Army Master Study Program; the Basic Army Strategic Estimate; and the Army Strategic Plan;

- Formulate, with input from across the Army, all modernization planning objectives and requirements documents and submit them to HQDA Staff for approval. In the 1960s, these included the: "Operational Capabilities Objectives, Qualitative Materiel Development Objectives, Advanced Development Objectives [guided Army Science and Technology priorities and investments], Qualitative Materiel Requirements and the Small Development Requirements"[16]; and
- Recommend and facilitate "the integration of new or improved doctrine, materiel and organizations into the Army in the field."[17]

Additionally, the Army's leadership empowered USACDC to stand up and disband Cross Functional Teams (CFT) to develop high-priority Army capabilities. The commanding general of USACDC established a CFT—the Main Battle Tank Task Force (MBTTF)—on 25 January 1972, five days after being assigned responsibility by the Vice CSA to work Materiel Need (MN) and concept development for a new main battle tank.[18] The MBTTF qualifies as a cross-functional team in part because it drew human capital (expertise) from different branch communities in the Army. This CFT was chaired by the Commandant of the Armor Center at Fort Knox and received its guidance from a Steering Group at HQDA. The MBTTF was tasked to do the following:

- prepare the MN document (engineering development);
- prepare and outline the new tank's development schedule;
- determine the proper interface of the M1 Abrams tank with the M60 series tank [integration with an existing capability];
- prepare a concept formulation package as complete as possible; and
- provide recommendations to HQDA by 1 August 1972."[19]

The MBTTF's work concluded in August of 1972 when it delivered the above requirements in a Development Concept Paper (DCP). The DCP went through an Army Systems Acquisition Review Council in October 1972 and a Defense Systems Acquisition Review Council in November 1972. The DCP was approved in January 1973, resulting in the creation of the XM-815 program, which became the XM-1.[20]

C. The Potential Utility of a Contemporary Army Combat Developments Command

Establishing a USACDC today would markedly improve the agility of the Army modernization enterprise. Based on the benefits that the Army derived from the original USACDC, it is conceivable that activating a similar command in the present would help the Army to modernize better and faster than potential peer adversaries in peace and adapt equally well for combat superiority in future war.

I. Peacetime Modernization. From the Army's perspective, this can be defined as the progressive transition of various aspects of the Army transformation framework known as the DOTMLPF (Doctrine, Organization, Training, Materiel, Leadership, Personnel and Facilities) from the present or traditional to the future, to maintain the force's superiority of arms relative to potential adversaries under relative peacetime conditions. Williamson Murray refers to

this trajectory of military change simply as innovation, and he differentiates it from the fast-paced adaptation that militaries usually have to make in war. Murray writes that "while there are similarities between the processes of innovation and adaptation, the environments in which they occur are radically different"; while peacetime innovation enjoys the luxury of time to analyze the future, define transformational objectives and challenges and so gradually evolve, wartime adaptation sees less time for transformation due to "the terrible pressures of war as well as an interactive, adaptive opponent who is trying to kill us."[22]

Figure 3

Command Priority Objectives

- Infantry and artillery weapons
- Air mobility
- Human factors—personnel systems
- Air defense
- Tactical command, control and communications
- Electronic warfare
- Suppression of enemy air defense
- Tank/anti-tank

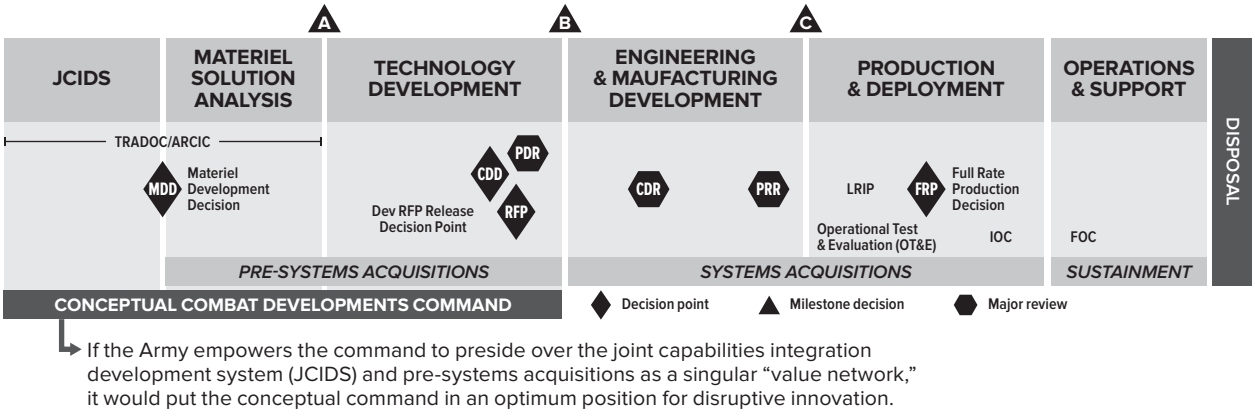
Selection of USACDC's Command Priority Objectives for capability development in 1972.[21]

a. Accelerating Concept-through-Solution Development: If organized and empowered to do early prototyping and experimentation in conjunction with Army Futures and concepts development, an Army Combat Developments Command would increase the rate at which the Army is able to test, discard or pass and integrate concepts with emerging or mature technologies for viable capability solutions. Moreover, consistent with Clayton Christensen's theory on value networks and technology S-curves (transitioning from mature to emerging/new technologies), activating a new USACDC would place a single commander in the optimum position—over both Army Futures and pre-systems acquisition—to shift flexibly from mature to emerging technologies. In other words, this command could enhance the Army's ability to pursue disruptive (paradigm-changing) concepts and capability solutions. Additionally, through constant experimentation, it would provide the Army's Training and Doctrine Command (TRADOC) viable input for doctrine management and leader development.

Activating such a command to manage combat developments in the joint capabilities integration and development system (JCIDS) and the pre-systems acquisition component of the

Figure 4

The Acquisition Process



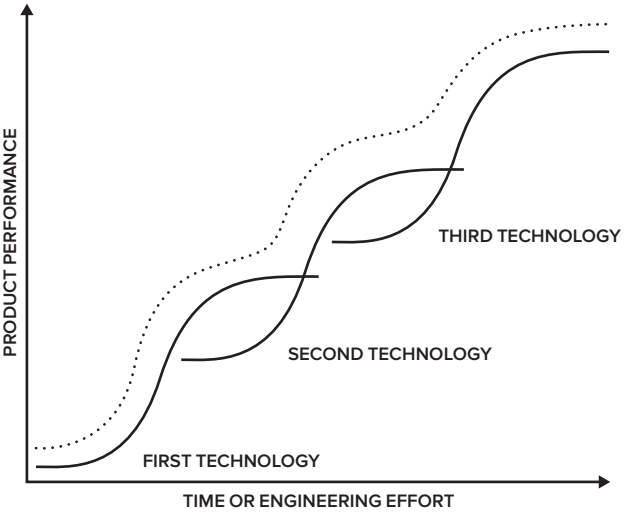
The acquisition process showing four value networks: JCIDS, pre-systems acquisitions, systems acquisitions and sustainment.[23]

lifecycle (fusing the two as a single value network) would enhance the Army's ability to expeditiously and efficiently pursue disruptive innovation.

Sustaining innovation for programs of record would still happen in the systems acquisition component of the lifecycle as shown in Figure 4. Consistent with Clayton Christensen's theory of value networks and technology S-curves, an empowered USACDC presiding over the JCIDS and pre-systems acquisition process as a single value network (futures definition and solutions development) would optimize the Army's ability to transition from mature technologies (at the inflection point of the innovation S-curve) to emerging, new technologies that are being researched and developed[24] [see Figure 5; note how the inflection point of the first (mature) technology coincides with the mid-point of the second (emerging) technology; one Army commander empowered to help define the Future Operating Environment (FOE), develop concepts and experiment with capability solutions would have the strategic agility to transition quickly from one technology S-curve to another. Splitting this continuum (i.e., from FOE to capability solutions) between two commanders (even as sub-commanders in Army Futures Command) would create a problematic line of coordination that could slow the Army's ability to transition from one technology S-curve to another].

Figure 5

The Technology S-Curve



The technology S-curve shown above forms the centerpiece of thinking about technology strategy.[25]

Being empowered with the responsibility, authority and infrastructure for Futures definition, concept development, prototyping and operational experimentation helped USACDC rapidly pioneer the airmobile concept from 1962 to 1965. From its activation in 1962, the Command rapidly matured the airmobile concept from idea to field experimentation and subsequent employment in the 1965 Battle of Ia Drang. According to Lieutenant General Harry W.O. Kinnard, who commanded USACDC and the 11th Air Assault Division (Test)—later reflagged to the 1st Cavalry Division (Airmobile)—USACDC was tasked with "following up on the findings of the 1962 Howze Board" on Army aviation.[26] Per the findings and recommendations of the 1962 Howze Board, the command began experimenting and testing the concept while fostering the research, development and engineering of future aircraft and engines.[27]

b. Compressing the Army's Acquisition Response Time. A new USACDC would help the Army to compress and shorten its acquisition response time. In a study of acquisition cycle time reduction efforts, Ross T. McNutt and the U.S. Army Center for Military History (CMH) define acquisition response time as "the time the acquisition system uses to take advantage of new technology, respond to an emerging threat, or respond to a change in military strategy."[29] Like its predecessor did with the airmobile concept and helicopter development in the

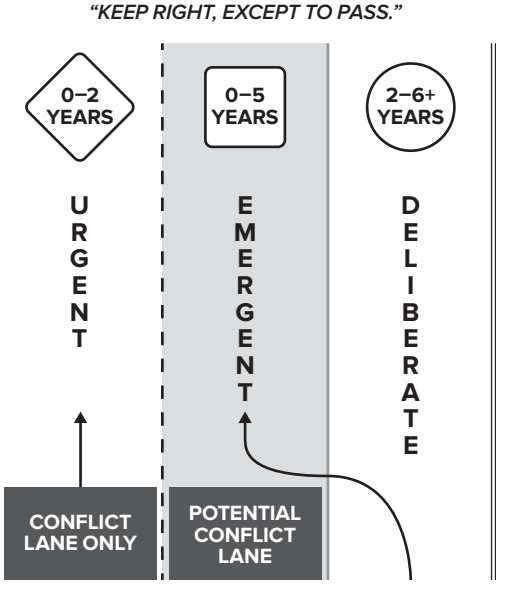
1960s, a contemporary USACDC would help shorten the Army's overall acquisition response time. Capability solutions that rely heavily on immature technology can carry significant risk for performance under-delivery, cost overrun and schedule delay in their acquisition lifecycle. However, through early prototyping and experimentation with concepts and capabilities, a contemporary USACDC would ensure that only the most buildable and technologically-viable capability solutions enter into the engineering and manufacturing (EMD) phase—post milestone B of the Army acquisition system (see Figure 7). By allowing only the most viable capability solutions to enter EMD phase, a contemporary USACDC could reduce the time and cost of programs in this phase as well as the Army's overall acquisition response time.

Image 1: Two Soldiers watch a wave of Bell UH-1 Iroquois helicopters during the Vietnam War, c. 1967.[28] Through aggressive field experimentation and engineering development, USACDC pioneered both the Air Mobile/Air Assault concept and the technologies that fostered its successful execution in Vietnam (helicopter, radios, Soldier equipment—M16s, Flak jackets, etc.).

McNutt and the CMH identify three components of acquisition response time: "recognition time, decision initiation time, and acquisition cycle time" (see Figure 7).[30] The components of acquisition response time are excellent units for analyzing the agility of the contemporary Army modernization enterprise. Recognition time covers the period from when a concept is developed to when a materiel development decision is made. McNutt and the CMH similarly define and characterize it "as the period from when either military strategy changes, a new threat emerges, or a new technology with military potential is developed. Recognition time ends when a formal acknowledgment is made that there is a need for a new system designed."[31] Recognition time overlaps with the JCIDS process. According to the Army, the JCIDS process can last anywhere from two to six years for deliberate requirements (see Figure 6).

Figure 6

Three Requirements Lanes[32]

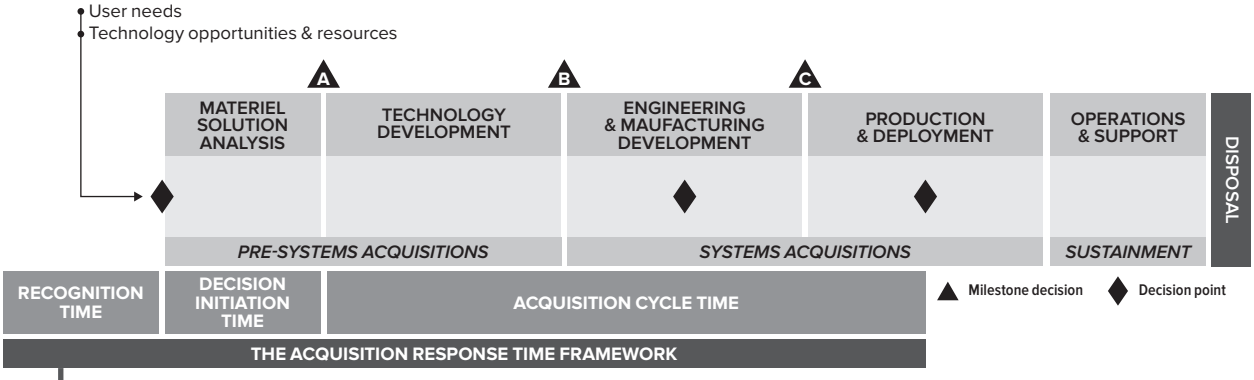


The "decision initiation time" aspect of the Army's acquisition response time covers the time from when a capability development effort obtains a materiel development decision to the time it passes Milestone A. By this time, capability requirements would have typically matured into a program with funding and an acquisition strategy to drive activities in the technology

maturation phase. McNutt and the CMH similarly define this phase as "the period from when the need for a new system is recognized until an acquisition project or program is planned, funded, and approved."[33] This aspect of the acquisition response time framework overlaps the materiel solutions analysis phase, whose main review mechanism (the analysis of alternatives—AoA) can take anywhere from a few months to years, depending on the analytical rigor applied to mitigate the risk of cost overruns and schedule slips later in the acquisition lifecycle.

Figure 7

The Acquisition Response Time Framework



The historic USACDC was responsible for Futures, concept development, experimentation and prototyping (technology development). So, a contemporary Combat Developments Command, empowered similarly to USACDC in the acquisition system, would place one commander over recognition, decision initiation and much of the acquisition cycle time component of the Army acquisition response time framework. This consolidation of responsibility and authority would be supportive of accelerated capability development and an overall shorter Army acquisition response time.

Figure 7 shows that if the Army activates a USACDC and empowers it like its predecessor in the 1960s, it would be quite possible for the command to compress the Army's overall acquisition response time, cycling faster from concept development to capability delivery to the warfighter. This is because both the recognition time and decision initiation time aspects of the acquisition response time framework would fall within the mandate of the historic USACDC. Technology Development (also referred to as Technology Maturation), which is congruent with the acquisition cycle time aspect of the framework, would also fall within the mission scope of the command, empowering it to do prototyping and experimentation as the original USACDC did. USACDC's accelerated cycling of the airmobile concept from idea stages, at the time of the 1962 Howze Board on Army Aviation, to its successful demonstration in combat in the 1965 Battle of Ia Drang underscores this point—particularly when juxtaposed with the approximately two-to-six year timeframe for requirement approval in the JCIDS (see Figure 6).

c. Increased Exploitation of Emerging Technologies in Operational Concepts: Establishing a USACDC in the contemporary period would optimize the Army's ability to systematically identify and effectively exploit emerging technology in combination with existing and new operating concepts for potential paradigm-shifts in military affairs. This could do for the contemporary multi-domain operations concept what USACDC did for the airmobile concept in the 1960s. According to Lieutenant General Kinnard, USACDC saw "the helicopter [as] the most striking example of a hardware system whose direction was doctrineless" even though "the development of turbine engines greatly improved the helicopter's lift capability, performance

and maintainability."[34] This recognition, in concert with the findings and recommendations of the 1962 Howze Board, drove USACDC to develop the airmobile concept in combination with emerging helicopter (vertical lift) technology. In other words, the Command combined emerging helicopter/vertical lift technology with changes in organization and operations for a paradigm shift in maneuver warfare in Vietnam (Airmobile/Air Assault).

Congruent with the Airmobile/Air Assault concept, USACDC also pursued armed helicopter development for improved (Army-organic) close air support. Through aggressive pre-systems acquisition prototyping and experimentation in 1963, USACDC developed requirement specifications for the deliberate Army acquisition of an Advanced Aerial Fire Support System (AAFSS). Concurrently, the Command also dynamically leveraged the industry research and development capability of Bell Helicopters to develop a prototype attack helicopter that could be produced faster in the interim period to support ongoing operations in Vietnam while the AAFSS was being developed. The rapidly produced interim solution became the Bell AH-1 Cobra gunship. According to John Bonin, the Army contracted Bell to produce 110 AH-1G Cobra helicopters for delivery to forces in Vietnam starting in 1967. The Army would ultimately acquire over a thousand Cobras, while the AAFSS, later designated the Cheyenne, would be canceled in August 1972.[35]

Evidently, according to Lieutenant General Kinnard, USACDC's efforts in pioneering helicopter technology for Army air mobility were so aggressive and effective that by 1968 they had completed initial work on the "design envelope" requirements for the Utility Tactical Transport Aircraft Systems, which was to be fielded in the 1975–1985 timeframe.[36] These requirements would ultimately materialize into one of the capabilities that make up the U.S. Army's famous "Big Five"—the UH-60 Blackhawk helicopter, which supports Army operations in ongoing conflicts.

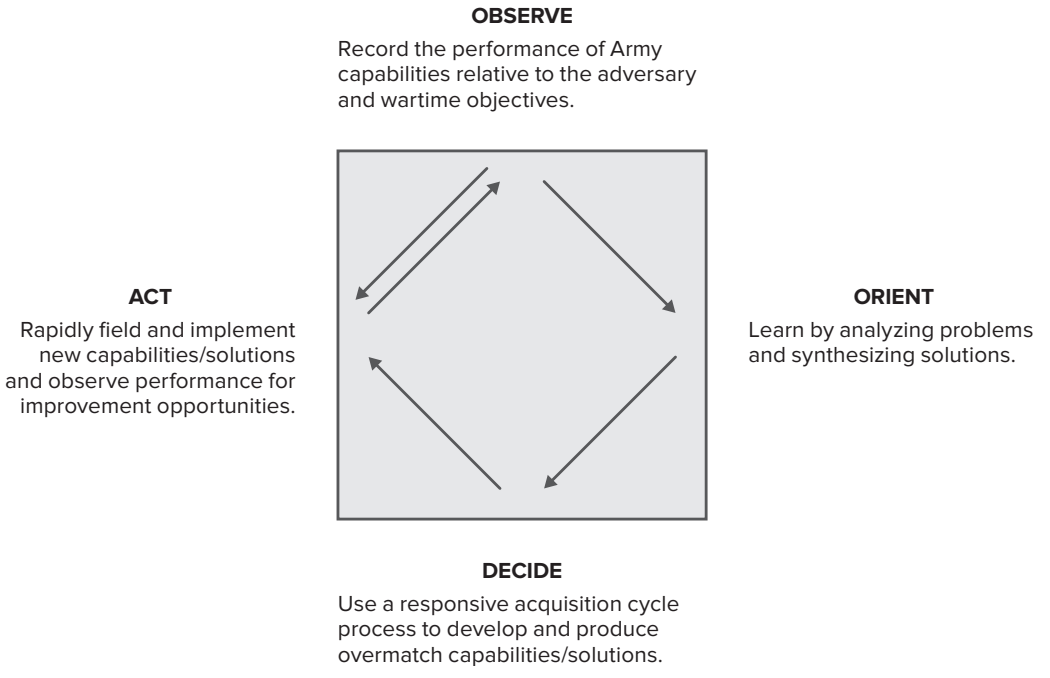
II. Wartime Adaptation. Establishing a new USACDC would significantly help the U.S. Army prepare to confront and overcome the problem of wartime adaptation by optimizing its ability to recover from the technological surprise that it could face in a possible future conflict with a peer adversary. Wartime adaptation is defined as the rapid military change that occurs in war in response to the actions and capabilities of an adversary relative to a force's tactical needs and to strategic and operational objectives. As highlighted previously, military adaptation in war differs from the generally slower-paced innovation that occurs during peacetime because it has to happen fast enough to positively impact ongoing combat operations. For example, adapting to German tanks wielding superior armor and guns, the U.S. Army in 1944 introduced a new hyper-velocity armor-piercing round (HVAP), but according to David Johnson, even by the spring of 1945 the HVAPs were still in short supply to forces in Europe, consequently delaying its benefits to ongoing operations.[37] Wartime adaptation is an enduring challenge for all militaries. According to Williamson Murray, "the problem of adaptation in war represents one of the most persistent, yet rarely examined problems that military institutions confront."[38]

This proposed command could provide the Army with the infrastructure needed to cycle the process of wartime adaptation rapidly for sustained battlefield superiority in a conflict with peer adversaries like Russia and China. Unlike the violent extremist networks that the Army has been fighting since the 9/11 attacks, peer adversaries have defense industrial complexes as mature as the United States, meaning that their armies can adapt fast enough to inflict technological surprise on the U.S. Army in future combat. Consequently, the Army has to develop the means to adapt faster in a peer adversary conflict than it has done to date in Iraq and Afghanistan. In a previous

study, *Future Conflict: Adapting Better and Faster than an Adversary*, the author framed and analyzed the wartime adaptation process within John Boyd's OODA (Observe, Orient, Decide, Act) framework for "fast transitions" to highlight how the Army can optimize its ability to rapidly cycle the adaptation process in a future conflict with peers.[39] A new USACDC could present the Army with a pre-conflict organizational architecture primed to rapidly: *observe* the performance of Army capabilities in combat; *orient* on shortcomings and challenges for analysis and subsequent synthesis of solutions; *decide* on a solution or set of solutions and develop them through a nimble acquisition process; and *act* to field and integrate the selected solutions for optimum combat-effect (see Figure 8). It is also possible that this command could have the ability to sometimes go directly from observing to acting.

Figure 8

OODA-based Wartime Adaptation Process[40]



The original USACDC helped the Army to adapt extremely quickly during the Vietnam War. Its lessons prove that establishing an organization similar to it today could help the Army to adapt better and faster than a peer adversary in a future conflict. USACDC helped the Army to develop and test the tube-launched, optically-tracked, wire-guided (TOW) missile for improved close air support in Vietnam, as well as the doctrine and amphibious capability to operate in the littoral Mekong River Delta region of Vietnam (swamps, marshlands, rivers, etc.).

USACDC developed and successfully combat-tested the Army's early anti-tank missile technology against the North Vietnamese Army during the waning days of the Vietnam war. This helped enhance the Army's close air support capability around the time of the 1972 Easter Offensive. According to John Bonin, USACDC deployed the first team of two UH-1B helicopters configured with the TOW missile to Vietnam in April 1972 after successful preliminary tests in the states. During this combat trial, the unit fired 133 TOW missiles and achieved 107

hits, 26 of which were North Vietnamese tanks. Based on the successful combat demonstration of this capability, the Army procured 290 TOW-armed AH-1Q/S helicopters in 1972.[41]

Additionally, USACDC helped the Army to adapt to the challenge of riverine operations in the Mekong Delta region, south of the city of Saigon. According to Lieutenant General Kinnard, the Command studied the problem that the Army faced with riverine warfare and developed a concept (in concert with the Navy and Marine Corps) for use in the Mekong Delta. Kinnard writes that the USACDC

> prepared a 340-page training test for use by the 9th Infantry Division. A unique unit combining a Navy river-boat force and a specially trained infantry brigade was recommended and [subsequently] organized as a mobile riverine force. The entire program from concept to combat took only 180 days. Almost continuously since the deployment of the riverine force a CDC project office has been with it to evaluate the adequacy of the doctrine and specialized equipment."[42]

Figure 9

Conceptual Army Futures Command Structure

This conceptual Army Futures Command structure depicts how an Army Combat Developments Command would fit within the new Command for greater synergy in Army modernization.

Highlighting the effectiveness of this rapid adaptation to combat operations in 1969, the CMH writes that the Army conducted operations along the many waterways in the Mekong Delta, south of Saigon. Army "mobile riverine forces penetrated areas previously thought to be inaccessible, denying the enemy important sanctuaries and helping to restore government control over an important food-producing region" (see Image 2).[43]

Image 2: Assault boats in the Mobile Riverine Force of the U.S. 9th Infantry Division glide along the My Tho River, an arm of the Mekong Delta near Dong Tam, 35 miles southwest of Saigon, on 15 March 1968.[44]

D. Key Considerations in Activating a Combat Developments Command

What are some foundational considerations that the Army should factor in if it decides to activate a new USACDC? First, the Army should identify what its mission and core competencies would be. Second, it should identify its roles and functions relative to the existing Army Proponency System as codified in *Army Regulation 5-22: The Army Force Proponent System*. Third, the Army should consider how the command would fit within the Army's ongoing

modernization reform. Fourth, the Army should consider how it would empower and entrust a new USACDC to effectively perform functions critical to the success of its mission. Finally, in the long term, the Army should consider reforming the acquisition process to optimize it for a "try-before-you-buy" approach that would encourage extensive experimentation and early prototyping before committing to materiel development. This last consideration would help the Army to maximize the utility of this proposed command.

a. Mission and Core Competencies

The mission of a present-day USACDC could be *to develop—through the synergistic management of Army Futures, Science and Technology and experimentation—viable operational concepts and superior capability solutions for the American Soldier.* This conceptual mission arguably yields the following three conceptual core competencies that could form the basis of the command's functional design and institutional proponency:

- develop and maintain a competent and dynamic work force adequately sized for its mission workload;
- conduct Futures analysis and generate concepts harnessing mature and emerging technologies for paradigm shifts in military operations;
- conduct aggressive concept and threat-influenced technology research and prototyping to generate capability requirements amenable to abbreviated, cost-effective and timely engineering and manufacturing development and production; and
- manage the Army's modernization priorities through substantive input into TAP (see Figure 10) and all Army modernization planning and programming documents.

b. Roles and Functions Relative to the Army Proponency System

The above conceptual mission and core competencies carry implications for the Army's current proponent system coded in *Army Regulation 5-22*. For example, relative to the core conceptual competencies listed above, the responsibilities of TRADOC could evolve to the following:

- develop and refine doctrine for emerging concepts validated by the new USACDC—this implies that there would be a hand-off point between a USACDC and TRADOC in the concepts-to-doctrine continuum. The hand-off point could be aligned to the transition of new capabilities into production (milestone C of the acquisition lifecycle). At this point, Army Futures Command (AFC) would hand over all conceptual materiel to TRADOC for doctrinal development and refinement consistent with the latter's responsibility for force integration. This relationship would work best if TRADOC were involved as a supporting partner in USACDC's concept development and doctrinal research (USACDC-supported, TRADOC-supporting);
- manage (update and divest) published Army doctrine;
- adapt legacy training and education models to new concepts and capabilities, supported by the new USACDC;
- recruit, train and deliver MOS (military occupational specialty)-qualified Soldiers to the force;

- access, educate and develop resilient, adaptive and ethically sound leaders; and
- leverage innovative technologies to enhance training and education.

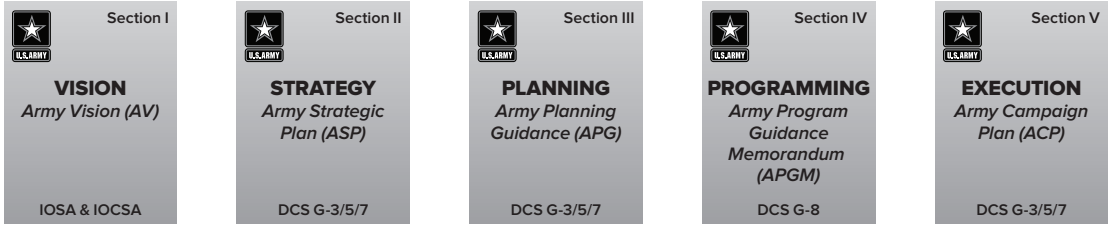
Clearly, all changes to the Army's proponent system would have to be closely analyzed for synthesis into a construct that works best for Army modernization and the institution's overall mission effectiveness. Ensuing studies and analysis by HQDA Staff with input from affected stakeholders could provide greater insights and detail for reforming the Army proponent system in the advent of a new USACDC.

c. Integration into Army Futures Command

The Army should also consider how a USACDC would synergize with ongoing modernization efforts—most notably the current development of AFC. USACDC would fit synergistically within AFC, absorbing its Futures, concepts, prototyping and experimentation functions for effective, synergized combat development (see Figure 9). USACDC could consolidate the present-day ARCIC, the Army's Research, Development and Engineering Command, the TRADOC Analysis Center, the TRADOC Futures Center and a dedicated maneuver battalion for organic field experimentation in support of rapid concept and capability development. This level of empowerment is similar to that which spurred the USACDC's aggressive development of the airmobile concept and helicopter technology in the 60s; it could potentially yield excellent outcomes for today's multi-domain operations concept.

Figure 10

The Army Plan[45]



TELL THE ARMY STORY

- Communicate Vision and Strategy;
- translate Vision and Strategy into solutions and shape program development;
- provide strategic focus and short–long term guidance and priorities to the Army; and
- synchronize fiscal year activities.

d. Empowerment (Responsibilities and Authority)

In the event it decides to establish a USACDC, the Army should consider empowering and entrusting it to do the following:

- exercise consolidated responsibility and capability to analyze and define the future, and study and develop solutions to challenges in ongoing combat operations (wartime adaptation);
- develop concepts and overmatch capabilities unrestricted by current doctrine and aided by an organic research, development and engineering infrastructure, Army program executive offices, temporarily assigned units (rotational) and the highest priority use of the facilities and resources of the Army Test and Evaluation Command and Combined Training Centers;

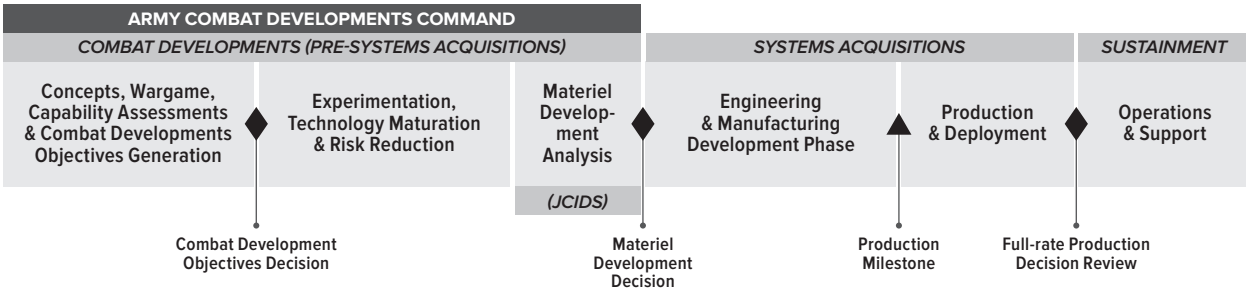
- provide substantive input (consistent with an Army modernization strategy) in the formulation and revision of all planning and programming documents in TAP (see Figure 10) and management of the Army Equipping Program Evaluation Group; and
- initiate and effect changes to the Strategic Portfolio Analysis Review (Equipping, and Science and Technology) in concert with concerned HQDA and Secretariat Staff stakeholders.

e. Reforming the Acquisition Process

Finally, if it decides to activate a USACDC, the Army (working in concert with DoD and Congress) should consider reforming the acquisition process in the long-term to optimize it for the "try-before-you-buy" approach that is congruent with the operating model of a combat developments command (concept, wargaming, experimentation and prototyping). The conceptual acquisition lifecycle in Figure 11 optimizes the Army to conduct extensive experimentation and early prototyping before committing to engineering and manufacturing development and subsequent production. This conceptual approach is characterized by a combat developments or pre-systems acquisition phase in which concepts, wargames and capability-based assessments would be used by the command to develop a list of combat development alternatives that would undergo analysis—AoA—to generate Army combat development objectives for HQDA approval. Once a combat development objectives decision is made, the command would begin maturing technologies, prototyping and experimenting as applicable. Combat development objectives that have been attained would go through a materiel development analysis (essentially the JCIDS requirements approval process) to get a materiel development decision (MDD). Upon MDD approval, the mature capability development requirements and prototypes would enter into the systems acquisition component of the lifecycle for engineering, manufacturing development and finally production and deployment. The ensuing sustainment component (operations and support phase) would complete the conceptual acquisition process.

Figure 11

Conceptual Acquisition Lifecycle



Conceptual acquisition lifecycle optimized for a "try-before-you-buy" procurement approach.

E. Conclusion

Potential peer adversaries of the United States (like Russia and China) will likely continue or increase the pace of their modernization programs, meaning that the U.S. Army's technological superiority will most likely continue to wane unless it takes bold steps to reform its modernization enterprise for greater agility. Creating a present-day USACDC at the earliest

possible time—as part of its ongoing efforts to activate a Futures Command—would significantly enhance agility in the Army's modernization enterprise by fostering the rapid development of concepts and overmatch capabilities.

This study has shown that activating a new USACDC could help the Army to modernize—build overmatch capabilities coupled with mission-effective operational concepts and organizational changes—better and faster than potential peer adversaries in peace and to adapt equally well for combat superiority in future war. The essence of such a command would be consistent with the Army leadership's vision for modernization reform. In other words, activating a new USACDC would meet the CSA's clear intent for a command that could effectively "combine elements of Army Futures, concept development, requirements and acquisition to ensure we remain the preeminent ground fighting force well into the future."[46]

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