

Army Capability Development Needs to Go Back to the Future

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Abstract

As doctrinally written, developing and acquiring a capability-based force is the basis of the current Joint Capability Integration and Development System (JCIDS). This force is one developed agnostic of a specific threat or enemy, and rather on how a future enemy may fight. The new and current threat of persistent irregular warfare, plus emerging peer global competitors is a credible justification to adopt a threat-based model of capability development. Threat-informed capability development will ensure more relevant capabilities delivered to the combatant commanders to meet global requirements. JCIDS should adopt a hybrid process blending threat and capabilities based development. By using a blended and iterative approach that bases near and mid-term capability needs on current threats that pose a danger to U.S. interests, and long-term needs on a capability-based philosophy, the joint force can rapidly develop relevant systems to counter near-term threats that hold promise for a long service life against future threats. In addition, such a process will encourage the efficient use of limited budgetary resources and discourage technological overreach on immature technologies.

Army Capability Development Needs to Go Back to the Future

Consider the following future scenario:

After months of information operations and seven days of crippling cyber operations against the Estonian government and infrastructure, as well as NATO command and control facilities, two Russian mechanized infantry divisions reinforced with armor cross the Estonian border. The U.S Army Europe (USAREUR) Commander, assuming Joint Task Force commander responsibilities deployed two squadrons of the 2d Cavalry Regiment (Stryker) into defensive positions to halt the Russian advance. NATO air assets work to degrade Russian supply lines and follow on forces to some effect. However, due to self-imposed munitions restraints, conventional high explosive artillery munitions are having little effect on the advancing Russian tanks and BMPs. Fifteen minutes after a Russian unmanned aerial vehicle (UAV) passes over U.S. units, a massive thermo-baric rocket strike fired from 70 kilometers away causes almost seventy percent casualties on the lightly armored Stryker formation. In an effort to stem the offensive, the JTF commander commits a Hellfire missile armed Apache battalion. However, like the anti-tank missiles fired by the Strykers, and the 105mm rounds fired by the Mobile Gun Systems, the Russian T-90 tanks do not stop. The T-90s are employing their Shtora anti-missile countermeasures and improved tank armor rendering U.S. fire largely ineffective. The Apaches engage with Hellfire missiles and 30mm cannon imposing some casualties. However due to the Russian Shtora system, it requires two Hellfire missiles to kill each vehicle. With missile racks empty, the Apaches break station. Since Russian long-range missile attacks destroyed many

northern European ports and reinforcements are weeks away, the defense of Estonia and a NATO member catastrophically fails in mere hours.

The Problem

This vignette is frightening, yet conceivable as America loses its technological and combat system overmatch to rising peer competitors. The U.S. Army's capability, perhaps more than others in the Joint Force, has eroded and a declining budget will make it hard to recover lost ground to competitors. The Chairman of the Joint Chiefs of Staff (CJCS) defines the term capability as "the ability to complete a task or execute a course of action under specified conditions and level of performance."¹ The Department of Defense develops capability using the Joint Capabilities Integration and Development System (JCIDS). The services mirror this process with similar processes. The Army uses the Army Capability Integration Development System (ACIDS), which is, save some small nuances, identical to JCIDS. There is considerable debate and material written about whether or not this system is truly working as intended. The intent is to develop a capabilities-based force rather than the threat-based force the nation had in the 1980's. The question is whether building a capability-based force has been effective and timely, or is it better to revert to basing future capability development on the near and long-term future threats with which the nation is likely to contend? The answer is a capability development process that takes the threat into greater account will result in exceedingly faster and more relevant combat capability that is more easily justified to Congress when seeking the necessary funding.

The purpose of this paper is to demonstrate that it is time for the Army to codify the CIDS process as one that places greater emphasis on the threat when developing capability and for the Joint Staff to implement more threat-based modifications to

JCIDS. The new and current threat of persistent irregular warfare, plus emerging peer competitors globally is a credible justification to adopt a threat-based model of capability development. The framework for this argument will begin by defining a capabilities-based force, as well as the meaning of a threat-based force. The analysis will use the Army's Future Combat System (FCS) as a case study showing how capability-based development failed. A short account of the Mine Resistant Ambush Protected (MRAP) vehicle and its development will detail a threat-based capability development success. Based on that analysis, a discussion will propose recommended changes to the Army CIDS and JCIDS processes to create a process based on relevant threats, while still considering required capabilities, in order to deliver germane capabilities to the warfighter in a more expedient manner.

The Current and Former Processes

The Army CIDS process mirrors the original JCIDS process implemented in 2003. Since then, the Army has made very few changes to the process.² Often seen as nebulous in meaning, the term "capability-based force" is a concept that engenders much debate, but is the driving idea being the JCIDS process. Joint Staff Operations Research Analyst, Michael Cochran, arguably best describes the theory of capability-based: "An assumption of the capability-based process is that one should be agnostic with respect to specific solutions – the theory being that this frees the analysis from potential bias toward a particular commercial or developmental solution."³ In order to put this concept in perspective, it is instructive to gain an understanding of the previous capability development system. Prior to JCIDS, the military services alone generated capability requirements. Often times the resulting capabilities were not commensurate with the needs or wants of the geographic combatant commanders, or those who

command joint forces conducting global military operations.⁴ Secretary of Defense Donald Rumsfeld realized that the capabilities brought forth were rarely joint in nature. It was his belief that combatant commands, which were joint in nature, should be the source of capability requirements aligned with national strategy.⁵ A 2001 quote from Mr. Rumsfeld brings clarity to the meaning of a capability-based force:

A central objective of the Quadrennial Defense Review was to shift the basis of defense planning from a 'threat-based' model that has dominated thinking in the past, to a 'capabilities-based' model for the future. This capabilities-based model focuses more on how adversaries might fight, rather than specifically who the adversary might be or where a war might occur.⁶

The result is a top-down driven capabilities development strategy that allows the combatant commander a greater voice in the process.

At the heart of the JCIDS process is the Capability Based Assessment (CBA). This primary component of the top-down JCIDS process assesses needs and analyzes materiel and non-materiel solutions. National strategic documents issued by the President (National Security Strategy), the Department of the Defense (Quadrennial Defense Review, National Defense Strategy), and the Chairman of the Joint Chiefs (National Military Strategy) provide guidance to the Combatant Commanders and the Services. The CBA analyzes these strategies and applies the concepts documents of joint and service doctrine to determine the tasks required to execute the national strategy. This is step one of the CBA and what the Army calls the Functional Area Analysis (FAA). In step two, analysis reviews the capabilities of the current force versus what capabilities are required to execute the tasks enumerated in the FAA. The resulting Functional Needs Analysis (FNA) documents the critical capability gaps that require attention. The third and final step of the CBA is the Functional Solution Analysis

(FSA). The FSA produces recommended non-materiel or materiel solutions to address the prioritized gaps identified in the FNA. The JCIDS CBA no longer uses the terms FAA, FNA, and FSA, but the analysis still executes the same steps.⁷ See Figure 1 below.

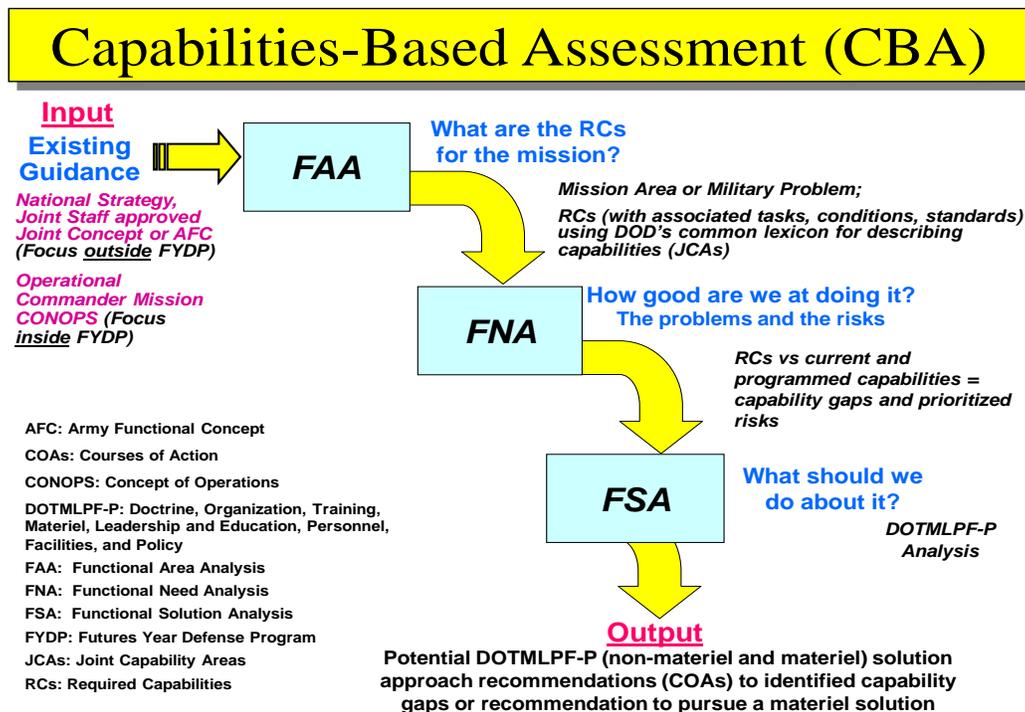


Figure 1. Capabilities Based Assessment⁸

The output of this three-step process is the Initial Capabilities Document (ICD) for a materiel solution, or the Doctrine, Organization, Training, Materiel, Leadership, Personnel, and Facilities (DOTMLPF) Change Recommendation (DCR) for a non-materiel solution or a change to an existing joint capability. The ICD addresses seven areas: the concept of operations for which the capability is employed, joint capability areas affected, the required capability description, capability gap addressed, threat and operational environment, ideas for non-materiel approaches (DOTMLPF), and final recommendations.⁹ Only tangentially addressed, is the threat. The capability gap

identified relative to task completion in support of the national strategy, not the threat, drives the recommend capability. The recommendation is not based on any specific or identified threat. The ICD template does contain a summary of "the current and projected threat capabilities to be encountered."¹⁰ However, this is a general overview of threat capabilities a new system or capability may be expected to confront. The focus is on how a generalized enemy may fight, not on a specific enemy or enemy capability.

A threat-based approach was the basis of United States capability development prior to JCIDS implementation. The threats presented by the Soviet Union and like forces were the basis for the development of the American Cold War joint force. The bipolar world of the Cold War made the Soviet Army the dominant threat to the U.S. and its allies. The prevailing belief was that U.S. forces would fight numerically superior, armor heavy formations upon the plains of central Europe, or the deserts of the Persian Gulf region. The U.S. military senior leadership studied the after-action reviews of the 1973 Yom Kippur War intently and the findings became the basis for the Joint Air/Land Battle doctrine.¹¹ Deeply attached to the threat assessment of the time, this concept described the capabilities required for future warfare such as mobile defense and deep interdiction.¹² The weapons and capabilities developed in support of Air/Land Battle were therefore based on the threat capabilities posed by the Soviet military and its allies that used similar doctrine and weapons. One only needs to look as far as the "Big Five" weapon systems developed in the 1970's and 80's: the M1 Abrams tank, M2/3 Bradley Fighting Vehicle, AH-64 Apache attack helicopter, the UH-60 Blackhawk helicopter, and the MIM-104 Patriot Missile System.¹³ There were others as well, but these five

systems have dominated the battlefield for over 35 years without peer. Threat based capability development has tangible merits.

The Department of Defense (DoD) and the services experienced a decline in budgetary resources starting in 2011 through 2014. While there was a slight increase in 2015 from 2014 amounts, the forecasted trend projects only minimal DoD budgetary increases likely in the near to mid-term future.¹⁴ Additionally, following fifteen years of persistent conflict and high operational tempo, the U.S. military must invest in recapitalization in order to rebuild or reset the battle weary force. Across the services in Fiscal Year 2016, a third of the DoD budget is dedicated to pay and benefits, leaving a smaller portion for procurement.¹⁵ Despite the recent era of increases in the overall defense budget, the Army's base budget is decreasing, and is projected to do so for the near to mid-term future.¹⁶ A logical conclusion is that procurement programs will receive intense over-sight and scrutiny from a Congress eager to reduce the U.S budget deficit. In order to win budgetary support from Congress, future capabilities must be relevant and applicable to threats the nation will face in the near-term. If future capabilities are tied to specific threats, it provides the built in relevance that senior leaders must convey to win Congressional support. Legislators are more likely to support what they can understand and visualize. Speaking to Congress in nebulous terms regarding hard-to-imagine capabilities needed to enhance our capability-based force, loses perspective and relevance, resulting in a loss of support. An example of this phenomenon was the Army's Future Combat System (FCS).

The Capability-Based Failure

The Army's FCS program, once the crown jewel of the future Army force, provides an excellent case study in failure of capability-based development. While

there were extensive failures throughout the acquisition process, many occurred during the requirement generation portion of capability development. Additionally, over time Congress became disenchanted with the lofty promises of the Army's primary acquisition project without a relevant threat to associate to FCS.

A Rand Corporation report published in 2012 detailed numerous lessons from the FCS program from concept development through the program's failures and subsequent cancellation.¹⁷ The FCS system was actually a system of systems. The intent was to field an entire combat brigade of air-transportable armored combat vehicles that maintain full situational awareness using a network-centric command and control system. The seeds for one of the most ambitious acquisition projects in Army history were sown in the early post-Cold War world, in the 1991 Gulf War and in the 1999 Operation Allied Force in Kosovo. Other sources of inspiration for FCS evolved from Army concepts such as Force XXI, The Army After Next, and 1999 Objective Force. From these concepts, four overriding ideas permeated the Army's assumptions about the future operating environment. First, that the majority of future conflicts would be high-intensity in nature. Secondly, Army forces would be required early in a crisis and that strategic deployability of a force heavier than a light brigade would be required. Thirdly, U.S forces needed to be able to dominate across the full spectrum of combat. The Army believed that if it could dominate at high-intensity, state-on-state conflict, it could dominate all other lesser forms of conflict. Fourth, the Army assumed, as did much of the DoD at the time, that it would achieve near complete levels of situational awareness in future combat. Within this key assumption was the idea of "network-centric warfare."¹⁸ This concept was important to the effort because the idea of

complete situational awareness to the lowest levels could be paired with precision strike to overwhelm enemy formations. "Lifting the fog of war" would also allow for lighter-weight vehicles that were characteristic of the FCS program.¹⁹ The "see first, decide first, engage first" mantra made many believe that vehicles would not require heavy armor if they could see and engage enemy forces first.²⁰ The key to this idea was the network, and it became the nucleus of the FCS program.

One of the dangers of capability-based solutions is the penchant for technological overreach. Technological overreach through capabilities-based development incongruent with rigorous near, mid, and long-term threat analysis can lead to system acquisition failure. Two of the highest prioritized requirements under the FCS program, C-130 transportability and real-time tactical intelligence, suffered from having the weakest technology maturity from which to develop these two key capabilities.²¹ The inability to mature rapidly the technology required to meet these two priority requirements was a stake in the heart of the FCS system. Capability developers must consider technological maturity prior to putting forth ambitious solutions to fulfill perceived capability gaps. As Rand states in their assessment: "A more cautious approach might simply ensure that revolutionary concepts remain just that, concepts, until underlying technical assumptions have a firmer basis."²²

Incongruence between the capabilities desired in the FCS systems and the ability to counter current threats to U.S. forces engaged in combat proved to be damaging to the success of FCS.²³ While Army Training and Doctrine Command's (TRADOC) organizational and operational (O&O) plan discussed the threats posed by asymmetric warfare, the system parameters and capabilities focused on state-on-state, high-

intensity conflict were not adequate to counter the current threat.²⁴ Forces engaged against insurgents in Iraq and Afghanistan were unlikely to achieve the benefits of real-time tactical intelligence and near perfect situational awareness. Therefore, the inherent protection of these capabilities, envisioned in a high-intensity conflict against a mechanized foe, would fail to be effective in the current low-intensity asymmetric warfare faced by U.S. forces. The Defense Intelligence Agency (DIA) reviewed the FCS operational requirements document (ORD) in 2005. Its assessment was damning to some degree:

UAMBL (Unit of Action Battle Lab) still appears to assume that the ability to detect, positively identify, and decisively engage modern conventional mechanized forces in an 'MCO' environment will inherently ensure ability to detect, positively identify, and decisively engage irregular/insurgent forces hiding among and fighting from among civilian populations, often in urban or rural village environments.²⁵

The point made by the DIA in their assessment was that capabilities developed for the high end of the conflict spectrum do not automatically correlate to an equally effective capability at the lower end of the conflict spectrum. This is illustrative of a failure in capability-based development that looks too far into the future, grasps at immature technology, and fails to account adequately for near-term threats. A more threat-based capability development model would likely have accounted for this, and potentially have been less likely to succumb to technological overreach. Capability developers should expose unverified concepts such as "relying on information to achieve decisive overmatch"²⁶ and eliminating the need for armor protection to analysis that is more rigorous before moving forward as a viable solution.²⁷ The program's reliance on near-perfect situational awareness and the trade-off for armor protection

was the basis for C-130 transportability. Once DIA exposed the inapplicability of FCS in the current conflicts, the program's chances of success were significantly undermined.

The last point regarding FCS relates to the failed integration of multiple systems and technologies at multiple levels to create the brigade level systems of systems that were FCS. While the UAMBL retained overall integration of the various systems, the development process lacked a strong centralized authority to moderate the specific and overly optimized capabilities stipulated by participating proponents and branches.²⁸ Many of the specific capabilities written into the ORD created additional complexities that were not adequately sub-optimized or integrated into the overall brigade program.²⁹ Promises made to Congress juxtaposed to an overly ambitious timeline created exceedingly high expectations. When the Army failed to meet expectations, Congress became increasingly skeptical as promised capabilities failed to materialize late in the acquisition process. Technological overreach and dependence on immature technologies developed in response to revolutionary, but untested concepts, trumped expectation management with Congress and the acquisition community. The program lasted approximately ten years, from its first mention by General Shinseki in 1999, until 2009.³⁰ Congress, representing the American taxpayer, grew increasingly weary of this protracted process. Timeliness and expedient development is more achievable when the capability is based on a relevant threat and mature technology. Ultimately, the Department of Defense cancelled the program when a demonstrable prototype failed to materialize.

A Threat-Based Success

Proponents of capability-based development infer numerous short-comings with the threat-based framework.³¹ One of the primary themes is that building capability

based on current, or even near-future threats provide solutions that fail to look deeper into the future. Proponents of capability-based development postulate that threat-based developed systems fail to keep pace with emerging technologies. The fear is that acquisition programs are obsolete soon after production. This is a valid concern. Acquisition systems often take several years to develop, produce, field, integrate, and consume millions or billions of taxpayer funds throughout its life cycle. Capability gap solutions must not only counter the threats of today and tomorrow, but must also stay ahead of the technologies our enemies will leverage against us well into the future. In theory, the capability-based model provides the best, if not most realistic, path to achieving and maintaining system overmatch.³²

However, a recent example of a threat-based capability development success is the Mine Resistant Ambush Protected (MRAP) vehicle. This vehicle was rapidly developed, acquired, and provided to the force after urgent requests from commanders engaged in combat in both Iraq and Afghanistan. The threat facing U.S. and coalition forces in Iraq entailed Improvised Explosive Devices (IEDs) in the form of roadside bombs and ambushes composed of rocket-propelled grenades (RPGs) and small arms fire.³³ Later, enemy tactics evolved to burying IEDs and placing them in culverts under the road.³⁴ Casualties mounted due to these enemy tactics and the Up-Armored High Mobility Multipurpose Wheeled Vehicle (UAV) with installed fragmentary kit upgrades provided inadequate protection, particularly against buried IEDs.³⁵ According to the Army Capability Integration Center (ARCIC), "63 percent of the fatalities and casualties in Iraq and 41 percent in Afghanistan [2005] were the result of IED attacks."³⁶

Fielded previously in small numbers, the MRAP family of vehicles was an integral part of the Route Clearance Unit concept fielded in 2004.³⁷ Given the MRAP's success in this role against the IED threat, commanders in theater began to submit requests for the system. The first large volume requests for MRAPs came in the form of a universal urgent need statement (UUNS) from the Commander of Multi-National Force – West in May 2006 for 185 vehicles.³⁸ Subsequent requests were consolidated into a comprehensive joint urgent operational need statement (JUONS) by U.S Central Command (CENTCOM) and submitted to the Joint Requirements Oversight Council (JROC) for decision in October of 2006.³⁹ This event marked the entrance of the MRAP into the JCIDS process.

While often criticized for being a slow and methodical process, the JCIDS process showed remarkable agility. The JROC approved the JUONS request and assigned the U.S. Marine Corps as the Joint Program Office and project lead for MRAP development on 6 December 2006.⁴⁰ The JCIDS process was established initially to develop acquisition category (ACAT) II and lower programs, with the MRAP being designated an ACAT II program.⁴¹ However, as the MRAP theater requirement grew from an initial 1,185 vehicles in November 2006 to 15,374 vehicles in September of 2007, Secretary of Defense Robert Gates directed the MRAP as the "number one unfulfilled warfighting requirement" and designated it as an ACAT ID program.⁴² Within months of JROC approval, testing was underway with seven competing manufacturers with contracts awarded to five manufactures for production of several MRAP variants.⁴³ ARCIC played a key role early in the process by developing the key performance parameters for the required capability from testing executed as early as 2005.⁴⁴ These

tests assessed how threat mines and IEDs damaged vehicles and killed occupants.⁴⁵

By the summer of 2007, MRAP variants were arriving in theater via strategic airlift and immediately fielded to forces in contact.⁴⁶

Key to this discussion is that the MRAP came to successful fruition based on the specific threat posed to forces in combat. This example shows that the JCIDS process is capable of responding quickly to the needs of the warfighter and providing an effective and relevant capability through a large ACAT I program inside of a year. Rapid equipping in this manner has proven to have some deficiencies however. Long-term life cycle management of the system in terms of logistics and maintenance are addressed inadequately, often costing additional funding after fielding the system. Additionally, the joint force faces the issue today whether the MRAP is a long-term capability for the force structure, or a niche capability that is not required in the numbers produced and fielded. Despite this shortcoming, the warfighter received a vital capability that saved lives when required. When national leadership applies public emphasis and Congress is prepared to provide the flexible funding when needed (overseas contingency funding), JCIDS can operate in a flexible, tailored, and rapid manner.

Nuanced Changes to the Process

The Army entity charged with developing combat capability is ARCIC, which is a subordinate directorate of the TRADOC at Joint Base Langley- Eustis, Virginia. The role of ARCIC is to "Develop, evaluate, and integrate concepts, requirements, and solutions for the Army - across DOTMLPF, functions and formations - to provide Soldiers and units the capabilities they need to support Combatant Commanders."⁴⁷ Over the past two years ARCIC, under the leadership of Director LTG H.R. McMasters, has made modifications to the capability development process. The result of these changes in

philosophy and process has increased the role of the threat in capability development. Many of the alterations infused into the process are modest and nuanced in scope. The one theme that is persistent when talking with ARCIC personnel is that the threat, as part of the operational environment, is an increasing factor of importance in current capability development.⁴⁸ While capability development remains a concept-based exercise, the rise of peer competitors and fifteen years of continuous conflict have brought clarity to the trends and characteristics of the nation's likely enemies.

The problem, as defined by Brigadier General (BG) Leo Quintas of ARCIC, is that "we [the U.S.] are now dealing with their [our adversary's] threat, instead of them dealing with ours."⁴⁹ In turn, the general feeling is that while the U.S. still retains overmatch, this turn of events indicates that overmatch has eroded somewhat. When FCS was in development, the United States had no defined peer military competitor. This luxury freed the United States to look deep and reach far into the future and attempt to gain a capability advantage that might have secured the elusive "Third Offset Strategy." This means achieving a capability strategy that puts the U.S. and its allies in a position ahead of competitors by checking their advantage, and giving great advantage to the U.S. military.⁵⁰ Now, with overmatch fading due to rapidly developed and fielded capabilities by China and Russia, the quest to regain the advantage moves forward with renewed vigor.⁵¹

ARCIC is utilizing iterative capability development in concert with the evolutionary approach to materiel acquisition. The focus is on "grounded analysis with an eye to the future."⁵² It is important to look to future technologies to guide capabilities of the future, but it is important not to lose to sight of current threats and the capabilities available

now to address them. The eye to the future is on the objective capability under development, while iteratively fielding available capabilities to the force en route to the objective. These iterative capabilities bring the best available capabilities forward at the time, while allowing for future technological advancement and fielding advancing evolutions to the force as they become available.

ARCIC and TRADOC have increasingly depended on concepts to guide their capability development. The Army Operating Concept (AOC) outlines first order capabilities required to "win in a complex world."⁵³ Central to the discussion of these capabilities is an examination of the operational environment and the threat facing the Army. The AOC discusses in detail the threats posed by near competitors China and Russia, as well as regional threats.⁵⁴ These threats and the characteristics therein are the basis for capabilities outlined for the Army to be successful as part of the joint force. By knowing the threat and its characteristics, leaders can develop a near, mid, and long- term strategy based on prioritized characteristics to attain an Army based on a finite number of achievable capabilities.⁵⁵ An example is the combat vehicle modernization strategy. Achieving the capability to "conduct joint combined arms maneuver" requires an evaluation of the Army's three maneuver formations in terms of lethality, mobility and firepower: infantry, Stryker, and armored brigade combat teams.⁵⁶ Based on the threat posed by a mobile enemy to a rapidly deployed infantry brigade combat team (IBCT) restricted to foot movement, the leadership is able to identify mobility as a near-term priority for capability development.⁵⁷ This clarity comes from accurately assessing the threat first.

Recommendations

Is this TRADOC approach a threat-based capability development process? No, but it is one that takes the threat into account more than we have over the last two decades. The threat must be a paramount consideration when developing capability. Some capability gaps are more acute than others are because the enemy before us brings greater clarity. An ill defined and assessed enemy threat can lead to ambiguous requirements and technological overreach. Inaccurately scoped requirements can lead to developing superfluous capabilities not germane to a relevant threat, potentially wasting millions or billions of dollars. There are three recommendations for improving threat-based considerations in capability development.

Perhaps the best solution for JCIDS and service capability developers is a hybrid line of thinking that takes the best aspects of both capability-based and threat-based development but applies each based on scale of time. In other words, develop capabilities required within the next 5-10 years based on countering present and emerging threats. Capabilities required to address warfighting concepts that describe the combat environment 15-25 years into the future should primarily be capability-based and informed of potential threats far into the future. Joint capability developers should use of an iterative approach, as used by TRADOC, that bases near and mid-term capability needs on realistic threats that pose a danger to U.S. forces, while addressing long-term needs with a capability-based philosophy. This technique fuses the best aspects of each approach.

Another recommendation for JCIDS is the integration of multiple parties early in the capability development to ensure a more holistically conceived capability. One of the problems highlighted by Rand's FCS assessment was the problem of branch

parochialism and its effect on developing a system to achieve the different unit capabilities.⁵⁸ ARCIC has developed a process that ensures early integration of all necessary stakeholders in capability development. Known as "Pizza Groups" and formed by members from various stakeholder agencies, these teams ensure early integration in the process.⁵⁹ Members may include representatives from maneuver, mission command, or logistical functions as well as industry and the Army Materiel Command. The planning teams are named "Pizza Groups" because they should be no larger than the number of people required to share a large pizza equitably.⁶⁰ Industry attends these groups to inform everyone of what is possible. The Soldier or Army representatives from the pertinent branches attend to inform everyone of required attributes.⁶¹ Industry may be able to make a communication device that weighs 75 pounds and can provide transcontinental communication, but the infantryman only requires a 15-pound radio that can communicate across a country. Early integration ensures broad stakeholder agreement.

A third recommendation is for JCIDS and the acquisition community is to coordinate better the blending of mature and emerging technologies to avoid overreach. Develop near and mid-term solutions using mature technologies while still seeking new technology solutions for long-term requirements. As recounted earlier in the discussion about FCS, a major issue leading to the system's failure was reliance upon immature technologies. Specifically, the development of armor that was light enough to fly on a C-130 aircraft, yet still provide protection to the vehicle occupants.⁶² At conception of the system, this technology was unavailable, and while capability developers were confident this technology was possible, industry was unable to deliver in time to develop

a prototype.⁶³ Early integration of industry representatives would have exposed this shortfall earlier in the process. Conversely, existing platforms were used in MRAP development, assisting rapid development and fielding. This is an important point to consider in today's financially austere environment.

Conclusion

Capability development is an imperfect science regardless of the technique applied. It depends on concepts to properly frame both the problem and the future operational environment. During the immediate post-Cold War period without a peer competitor or a predictable enemy against which to plan, concepts became the primary driver to developing future capability. The agnostic development of capability based on how an enemy may fight, as opposed to a specific enemy or threat made a cogent argument then. This was particularly rational during a time in the early part of the century when the U.S. had no true national enemy outside of Islamic based terror groups.

However, the new and current threat of persistent irregular warfare, plus emerging peer competitors globally is a credible justification to adopt a threat-based model of capability development. Threat-informed capability development will lead to more relevant capabilities delivered to the combatant commanders to achieve national strategy. Threat-based capability development is a proven technique as evidenced by the Big Five Cold-War-based systems dominance on today's battlefields. Over the past fifteen years, global competitors in Russia and China have grown into regional challengers armed with advanced weapon systems. The overmatch advantage that the America used to hold is dissipating, and at a time when funding is decreasing. Future capability development must consider threat more in order to develop relevant systems

to surpass our competition and to justify acquisition expenditures for these systems to a debt conscious Congress.

While JCIDS as a joint system still holds tightly to the ambiguity of a capability-based force, TRADOC, with ARCIC in the lead, is beginning to develop practices for Army capability development that hold promise for the joint community. TRADOC's concept development has taken into account specific global and regional threats in order to define more accurately the capability gaps that exist, and enable development of the solution to fill them. ARCIC has developed a more integrated approach to the initial stages of capability development that close the gap on what is possible, wanted, and needed early in the process. This guides capability development to rely on mature technologies and tested concepts to ensure overreach does not occur. This process will discourage pursuit of unrealistic goals and wasteful expenditure of limited resources. The question is not one of threat-based or capability-based development, but a hybrid of the two. The reality of the global situation provides very concrete scenarios on which to base future needs. By using an iterative approach that bases near and mid-term capability needs on realistic threats that pose a danger to U.S. military forces, and long-term needs on a capability-based philosophy, the joint force can rapidly develop relevant systems to counter near-term threats that hold promise for a long service life against future threats.

Endnotes

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