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**BEFORE THE**  
**TERRORISM, UNCONVENTIONAL THREATS AND CAPABILITIES**  
**SUBCOMMITTEE**  
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Mr. Chairman, and distinguished members of the Subcommittee:

Thank you for the opportunity to appear here today to discuss the critically important issue of Command, Control, Communications and Computers (C4) Systems and help explain, from the Joint Staff perspective, the processes used to meet Joint tactical C4 Information Technology (IT) needs. We welcome the opportunity to provide a better understanding of how our capabilities-based process works in identifying, assessing, prioritizing, validating and approving required joint military capabilities. Given the rapid nature of change in information technology, as well as our expansion towards a net-centric environment, we will provide a view of how we are better supporting the warfighter. Additionally, we have established processes within the last two years that are more adaptive in responding to the demands of today and provide a methodology to lay the path for tomorrow.

Before jumping into a discussion of new processes and joint systems, it is worth noting the increasingly blurred lines between the strategic, operational and tactical levels of war. Our expansion of information capabilities from strategic decision-makers all the way down to the individual rifleman, make it impossible to discuss “tactical” systems in isolation. Each system is part of a larger net-centric force dependent on the Global Information Grid, the military equivalent of the Internet.

Future major combat operations, homeland defense, stability operations and strategic deterrence depend on a secure, reliable and seamless network capable of supporting Net-Centric Operations (NCO). NCO is not about C4 networks exclusively, but rather how decisive combat power is derived from a fully connected and interoperable force. Who can forget the image of the horse-mounted special operations soldier, high in the desolate mountains of Afghanistan, using a hand-held communications device to call in close air support while simultaneously transmitting vital information to key decision makers around the world. This is a vivid demonstration of the power of information networks.

It was impossible a few years ago to conceive of the diverse connectivity between the tactical and strategic levels of war as illustrated by the Special Forces soldier described above. The Department, admittedly, has a history of developing C4 systems that were stove-piped, lacked necessary interoperability and possessed unnecessary duplication. As a nation at war, there is a need to support some legacy systems for a period of time to ensure our men and women in harm's way today have what they need to be successful in battle. However, the Department is moving quickly to ensure we are developing and fielding joint systems vice Service unique systems. Examples of joint interoperable programs include Joint Command and Control (JC2) and Joint Tactical Radio System (JTRS).

This push for interoperability is consistent with Secretary of Defense Rumsfeld's goal of transforming the Defense Department's business practices and warfighting capabilities. The most important change for the future of C4, and all system and concept development within the Department, is the implementation of a capabilities-based approach. Our new capabilities-based approach elevates the discussion of joint needs to a more strategic level, centering on desired effects rather than specific weapon systems and platforms. In this approach, strategic objectives frame the desired effects, which in turn define the needed capabilities, and ultimately the platforms and weapon systems we acquire. This reverses the old approach of building from the ground up; first starting with programs that acquired systems, then planning joint operations, and finally determining what effects could be produced given the systems available at the time. This old method was

functional in the more static-planning environment of the Cold War, but not optimized for joint warfighting today.

A capabilities-based approach creates greater flexibility, can better respond to evolving challenges, is responsive to senior leader decisions and more effectively ensures joint interoperability. We are focusing our efforts and providing the necessary guidance to ensure concepts, procedures and systems are born and fielded jointly. We are working with the OSD, the Services, the Combatant Commands and Agencies to identify and enforce net-centric attributes that support future operations.

Under the capabilities-based approach, the Services, Combatant Commands and Defense Agencies offer proposed solutions to meet joint needs. Selection of the best alternatives must be preceded by appropriate planning and analysis, and conducted with sufficient transparency that all stakeholders acknowledge the validity of the results. Teams drawn from literally all affected components of DoD provide the analytical resources to conduct and ensure these analyses reflect a realistic assessment of current and future warfighting concepts.

The concepts that evolve from top-level strategic guidance provide methodologies for identifying capabilities. The objective is to answer the questions: what does the joint warfighter value and how do we measure it? This work identifies gaps in warfighting capabilities, assesses associated risks, and establishes linkages between core capabilities common to the various concepts and other unique required capabilities. Gaps are addressed by a combination of materiel and/or non-materiel solutions. Recommended materiel solutions, once approved, lead to acquisition programs.

The Joint Capabilities Integration and Development System (JCIDS) is the process that supports this methodology. Replacing the old Requirements Generation System in June 2003, JCIDS, its procedures and associated components, support the Chairman of the Joint Chiefs of Staff (CJCS) and Joint Requirements Oversight Council (JROC), in identifying, assessing, and prioritizing joint military capabilities. The overarching goal is to define interoperable, joint capabilities that best meet future needs.

The JCIDS process creates linkages between joint concepts, the capabilities required to execute these concepts, and the systems ultimately delivering those capabilities. JCIDS forces collaboration between warfighters and materiel providers. It enhances the ability of all organizations involved to influence proposed solutions to capability shortfalls. JCIDS has expanded the list of involved organizations from the traditional Service-only involvement with the Joint Staff to now include representation from OSD, the combatant commands, defense agencies, the intelligence and acquisition communities and inter-agency where appropriate. This expanded collaboration in the formative stages of capability development marks one of the major differences between JCIDS and its predecessor. Finally, the documentation developed during the JCIDS process provides the formal communication of capability required between the warfighter and the acquisition, test and evaluation and resource management communities.

The JROC and JCIDS process are facilitated and supported by various Joint boards chaired by General and Flag level officers. The Joint Capabilities Board (JCB), chaired by the JROC Secretary, the Joint Staff J-8, is comprised of General/Flag officers from each of the Services and serves as the first decision-making venue in resolving issues brought forward. The Functional Capabilities Boards (FCBs), each chaired by a General or Flag officer, are the working arms of the process that integrates stakeholder views in enhancing capabilities integration, examining joint priorities among existing and future programs, assessing program alternatives and minimizing duplication of effort. FCBs also recommend corrective actions when failings or shortfalls are determined by their analysis.

Although JCIDS is less than two years old, we have already seen a positive impact in the C4 arena. A recent example of corrective action relates to Joint Blue Force Situational Awareness (JBFSAs) - the ability to track and precisely locate friendly force units. The JCIDS process recommended, and the JROC approved and directed an Army-Marine Corps convergence plan to achieve a single situational awareness capability replacing duplicative and incompatible Service-unique systems. The two Services are combining their software and hardware into one package that fulfills the needs of both and begins delivery in Fiscal Year 2006. This corrects a long-standing joint warfighting challenge

for our ground forces that was highlighted as recently as Operation IRAQI FREEDOM in March and April 2003. This is a good news story that is working for our ground systems and we are examining how to expand these compatible systems into aviation platforms. Another example is the transition from several Service-unique Global Command and Control System (GCCS) variants to the Joint Command and Control system (JC2).

Specifically relating to Command, Control, Communications and Computers (C4) capabilities and IT systems, the JCIDS process manages these areas in two FCBs. The Command and Control (C2) FCB, responsible for the first two “C’s” of C4, is chaired by the Joint Forces Command (JFCOM) J-8. The C2 FCB focuses on concepts, applications, and systems for command and control from the operational level down to the tactical level. Examples of this include the Deployable Joint Command and Control (DJC2) program and Combat Identification (Combat ID). The Joint Staff J-6 chairs the Net Centric (NC) FCB which addresses the second two “C’s” of C4, communications and computers as well as IT systems. The NC FCB focuses on capabilities that include data transport, information services and dissemination, as well as information assurance and information sharing – those communications systems that form the “network.” Examples of programs that fall within this capability include the Global Information Grid-Bandwidth Expansion (GIG-BE) and Teleports. The Net Centric Functional Capability Board ensures future net-centric capabilities are conceived and developed in a joint warfighting context.

In addition to examining programs and hardware, the FCBs also consider non-material issues and lead development of concepts to guide our decision-making processes. For example, our NC FCB just completed an 18-month effort to develop and publish the "Net-Centric Environment Joint Functional Concept." This concept provides a framework for future networking and also details the aspects of human factors that are vital to increased force effectiveness and efficiency. It describes how the future joint force will perform missions across the range of military operations and identifies required capabilities and attributes.

A major product of the net-centric concept is a roadmap for the development of the Global Information Grid (GIG) core infrastructure. The GIG is the bedrock of the information highway required to support all DoD missions, moving information from the source to the joint warfighter. Employing national security systems and conducting joint operations is dependent upon how well we expand, manage and protect this warfighting internet. The goal of the roadmap is to provide a unifying strategy to better integrate and synchronize joint capabilities and assist development of an investment and risk management strategy.

To support the new joint warfighting process and net-centric vision, our future warfighters require high-speed, secure, and protected terrestrial, satellite and wireless communications. The first step is to remove bandwidth as a constraint and allow the network to handle and share large amounts of information. The development and expansion of an optical cable network that greatly increases bandwidth, diversifies network routing and enhances redundancy achieves both those ends. It further enables DoD to transform the joint battlespace into a network centric environment.

The second step to increasing connectivity and providing more bandwidth to the warfighter is expanding our space-based communications capabilities. Our government-owned space-based communications capability continues to decline as requirements for more and more bandwidth drives us to a heavy dependency on commercial satellite service providers. In Desert Storm, our military to commercial satellite service ratio was 80/20 percent. During OIF, that figure was reversed. Our need to ensure protected capability and assured service drives us to reduce our reliance on commercial service providers and modernize our military satellite capacity.

While military satellite communications is essential, we also continue to rely upon commercial satellite capability. The Department is striving to identify the best long-range commercial/US government owned satellite balance for our warfighting capabilities. We are teamed with industry partners to better shape our future solutions. The goal is to maintain core military satellite capabilities while ensuring commercial services are available when and where we require them.

A critical capability is the development of a transformational software-programmable radio that provides seamless, real-time voice, data, video and networked communications for joint forces. We are doing more than replacing radios; we are providing the tactical warfighter with a networking capability that allows for an exponential growth in the ability to share information. This capability transforms today's Service-unique approach to a joint capability that networks and shares information within a common architecture. This capability will provide a significant improvement in capacity and interoperability for the warfighters, and plays a critical role in networking joint operations in 21st century forces.

The burden of how we manage, configure and operate joint systems evolves from a predominantly Service-specific solution to a Joint solution. We are transforming the way we look at these solutions and are working as a Department to look differently at the issues. We are just now beginning to better understand joint networking implications and are working diligently with the Services, the Combatant Commands and Agencies on ways to best manage the network. Our goal is to ensure we provide fully trained Soldiers, Sailors, Airmen, and Marines with supporting network systems that are configured appropriately, managed effectively and joint in nature.

Protecting information and the network is our "Center of Gravity." Our ability to defend the network and the information is paramount. Improving Information Assurance (IA) is an overarching priority called out in our Joint C4 Campaign Plan. IA must ensure our end-to-end ability to deliver secure information at the right time, to the correct recipient, in the proper format under every circumstance - across the information cycle and operational continuum. Along with the quality of our networks, IA contributes to the trust users must have in the network and the information it carries.

We recently began an expansive modernization and transformation architecture development in support of IA objectives. This effort, led by National Security Agency, provides the framework for building tomorrow's secure warfighting network. Its capabilities are transformational, and require a consistent level of investment to provide the underlying basic research and development to keep pace with evolving threats.

Along with protecting the network and the information it carries is the requirement to ensure access to the electromagnetic spectrum. No resource is probably less understood, yet so key. The Department depends on the electromagnetic spectrum for much of our net-centric strategy. This finite transmission resource is used by all military Services, as well as federal, state and local agencies to transport national security and public safety information that protects our interests worldwide. The electromagnetic spectrum is a key component for commercial use and economic growth. Dependence on wireless technology, communications and electronic commerce increases daily. As the world continues to be more dependent on this technology, global competition for electromagnetic spectrum will increase, presenting a greater challenge for our warfighters. We must make every effort to protect and efficiently use our military portion of the electromagnetic spectrum because of its importance to military operations.

All of the emerging joint capabilities discussed above are key enablers to achieve joint interoperability as a core element. If we do not support these critical C4 initiatives, we marginalize many of the other significant investments we are making in transformational systems and platforms like the Army's Future Combat System, unmanned aerial vehicles, intelligence systems and new ships like the Littoral Combat Ship just to name a few.

We are committed to achieving joint interoperability. The Department is developing joint capability roadmaps that are invaluable tools for helping to achieve this goal. These roadmaps are an integral part of the JCIDS process that tracks joint program milestones and guides capability-based analysis. This is a relatively new process in the Department, and we are seeing the positive initial effects. The capabilities-based approach requires time to fully mature across the force and spectrum of functions we perform. In order for us to accomplish this, we request the help of Congress to consistently fund all C4 programs at the levels expressed in the President's budget. Failure to do so presents the possibility for gaps in capabilities being delivered to the warfighter.

We are grateful for the Committee's continued support of our men and women serving today.

Thank you.