

**Joint Training Functional Concept
Version 1.0**



14 August 2007

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EXECUTIVE SUMMARY

Purpose: This Joint Training Functional Concept (JTFC) describes how the joint force, 8–20 years into the future, will perform training to prepare individuals and organizations to conduct operations across the full range of military operations. It identifies the capabilities required and the key attributes necessary to compare capability or solution alternatives. It aims to help revolutionize joint training. The goal is to train any individual or organization on any required skill, task, or mission.

Problem: In order to sustain operational and training superiority, the DoD must be able to effectively and efficiently prepare joint training audiences in the 2015–2027 time frame.

Solution: This functional concept envisions:

- Training and education for both analytical and intuitive decision-making.
- Linking the needs of the combatant commands and the training component of the readiness reporting system.
- Providing incentives to individuals, units, and organizations to learn. This involves rewarding successful training accomplishment as well as rewarding initiative, appropriate risk taking, and the provision of feedback on what works in training.
- Measuring the outcomes of training — learning and capability — not just the inputs.
- Emphasizing dynamic curricula and exercises that reflect evolving best practices and lessons learned.
- Persistent networks linking widely dispersed training sites to permit training events to be constructed rapidly for a wide range of scenarios and participants.
- Leveraging of private-sector practices and technology, including extensive use of online gaming to train diverse audiences in a wide variety of individual and collective skills.
- Encouragement of peer-to-peer learning as well as mentoring for units and individuals.
- Incorporation of embedded training in equipment of all types to allow individual and collective training to occur without requiring specialized training devices.
- Object-based architectures and material for individual training to allow training to be tailored to individual requirements and to allow

individual training to be quickly adapted to changing circumstances.

- Easily available simulation databases, including terrain and order of battle information, to facilitate timely training for a wide range of contingencies.
- A universal trainee database that enables full tracking, planned assignments based on matching jobs and skills, and expeditious retraining across the joint force.

Central Ideas:

1. Revising or creating new joint training processes.
2. Strengthening the Joint Training Global Environment.

Supporting Ideas and Capabilities: Table ES-1 shows the supporting ideas associated with each central idea.

Table ES-1. Central and Supporting Ideas

Central Idea: Revising or Creating New Joint Training Processes	Central Idea: Strengthening the Joint Training Global Environment
Supporting Ideas:	Supporting Ideas:
Mission-driven training requirements	Integration of live, virtual, and constructive training technologies
Appropriate focus on all echelons of the force across all organizations and all levels of war	Advanced distributed learning and gaming
Provision of incentives to individuals, units, and organizations to learn	Embedded training systems
Focus on training during concept development and acquisition	Agile mission rehearsals
Overarching Supporting Ideas:	
Career-long training and learning continuum	
A joint culture of adaptation to new situations, information, and lessons learned	
Inculcation of joint culture and habitual relationships	
Holistic approach — integration of training with other personnel actions	
Readiness assessment	
Remedial on-demand support	
Collaboration with non-DoD organizations	

There are several supporting ideas that involve both non-materiel and materiel solutions, thus spanning the two central ideas.

The capabilities that will be developed to implement the central and supporting ideas will provide individuals, units, and staffs with the general skills and knowledge they need to perform joint operations in specific circumstances — including effectively working within and across

organizations. Joint training must be designed to support all echelons of the training audience.

Risks: DoD faces a critical risk in that joint training may not adequately prepare our forces for operational missions. This may result from:

- Insufficient training time.
- Inadequate intelligence.
- Insufficient resources.
- Failure of new information technologies.
- Adversary exploitation of disruptive technologies.
- Cultural resistance to change.

Attributes: Joint training must include certain attributes to achieve the capabilities and actualize the central and supporting ideas. The JTFC outlines metrics to assess the attributes.

The joint training desired attributes include:

- Addresses right information
- Reaches all relevant audiences
- Promotes adaptability
- Is responsive
- Promotes interoperability
- Transfers desired learning
- Is persistent and reinforced
- Is networked
- Is deployable/expeditionary
- Is efficient

1. Purpose.

The Secretary of Defense has issued a challenge to the Department of Defense (DoD): “...transform not only the capabilities at our disposal, but the way we think, the way we train, the way we exercise, and the way we fight.”¹

This Joint Training Functional Concept (JTFC) describes how the joint force, 8–20 years into the future, will perform training to prepare individuals and organizations to conduct operations across the range of military operations (ROMO). It identifies the capabilities required and the key attributes necessary to compare capability or solution alternatives. It aims to help revolutionize joint training. The goal is to train any individual or organization on any required skill, task, or mission to meet DoD needs. This document will help joint force trainers identify joint learning requirements, develop the capabilities for enabling joint force training, better train the joint force, and outline ways to evaluate the transformed training system.

This concept proposes a process and environment that builds a joint culture to meet the Secretary’s challenge. This will include formal education, training, exercises, and other learning for all DoD personnel, leveraging whatever teaching methods work. The process and environment will feature continuous learning via education, training, on-the-job guidance, and life experience. Individuals, units, and learning institutions will learn to support a joint military culture that rewards adaptability and innovation at all levels. It will support the development of leaders. The key enablers of this concept are the more unconventional, innovative, or pioneering technological advancements that integrate the live-virtual-constructive (LVC) environment. This integrated system will allow any force or individual to interact and train for any mission from any location. The resulting joint force will internalize joint attitudes and reactions and fight intuitively as an integrated joint force.

Traditional military learning and attitudes will change so that an instinctively adaptive force arises out of joint warfighter attitudes, skills, knowledge, and intuition. The future force will quickly identify new problems and devise adaptive solutions. Further, this joint environment will foster attitudes that increase military empathy with, and understanding of, foreign populations and cultures — often key to mission success.

Joint training, education, and cultural awareness are key enablers to developing warfighters for future conflicts. Focusing on joint culture, training, education, and experience will yield initiative, responsibility, competence, daring, and solid decision-making at every level of the joint system. The JTFC will foster attitudes and skills that apply across the range of military

¹ 2003 Transformation Planning Guidance

operations. It will build competent and confident warfighters by improving the most effective military learning system on earth to maintain our training advantage. Throughout the history of war, training has been one of the most reliable keys to victory regardless of technology. The JTFC aims to revolutionize joint force effectiveness through training and education.

The JTFC will support all DoD actions to transform joint training, and it applies to all DoD joint training organizations. The JTFC will assist members of the Joint Training Functional Capabilities Board as they guide the development of future joint training capabilities within the Joint Capabilities Integration and Development System (JCIDS) process. It will support those who develop, advocate, and sponsor joint training initiatives as well as members of the acquisition, and the science and technology, communities involved in the areas of new weapons and training systems.² The JTFC will assist interagency, intergovernmental, multinational, and nongovernment organization (IA/IG/MN/NGO) partners to operate effectively through integrated DoD, interagency, and multinational joint training and standard coordination procedures. The key goal is outcome-oriented training that focuses on improved operational performance.

2. Scope.

The JTFC broadly describes how U.S. joint forces will train to carry out the Capstone Concept for Joint Operations (CCJO) and its subordinate concepts in the period from 2015 to 2027. The JTFC is applicable to combatant commands, the Military Services, Defense agencies, and the Joint Staff.

The scope of this concept is summarized in Figure 1. The JTFC's scope can be categorized into three areas: (1) the kinds of activities that are covered by this document — this element of scope is derived from the documents that guide the Training Transformation program;³ (2) the range of organizations involved in joint⁴ and integrated⁵ operations; and (3) the spectrum of individuals in the

² Appendix F provides guidance to members of these communities as they prepare for interactions with the Joint Training Functional Capabilities Board.

³ The Training Transformation (T2) Strategic Plan states that both training and education are covered by T2 (*Strategic Plan for Transforming DoD Training*, May 8, 2006, page ES-1). Since the JTFC seeks to facilitate T2 it is appropriate that its scope be as broad as that envisioned for T2. The T2 Implementation Plan defines training as, “Instruction and applied exercises for acquiring and retaining of skills, knowledge, and attitudes required to accomplish specific tasks” (*Training Transformation Implementation Plan FY 2006-2011*, 23 February 2006, Appendix 4). Education conveys general bodies of knowledge and develops habits of mind applicable to a broad spectrum of endeavors (CJCSI 1800.01B).

⁴ Joint operations are defined as, “Joined intellectually, operationally, organizationally, doctrinally, and technically, and employs the capabilities of the Total Force: active and reserve components, and civilian members. Joint includes the U.S. Military (active, Reserve, and civilian), and interagency, intergovernmental, and multinational organizations

training audience, through all echelons of military personnel (E-1 through O-10), covering the total force for all levels of war. These three areas identify the “what” and “who” we are addressing in this joint functional concept. How this concept will achieve its goals for this scope of activities, organizations and audiences is described throughout the document and illustrated in the vignette presented at the end. DoD Directive 1322.18, on Military Training, dated 8 September 2004, defines joint training as, “Training, including mission rehearsals, of individuals, units, and staffs using joint doctrine or joint tactics, techniques, and procedures to prepare joint forces or joint staffs to respond to strategic, operational, or tactical requirements considered necessary by combatant commanders to execute their assigned or anticipated missions.”

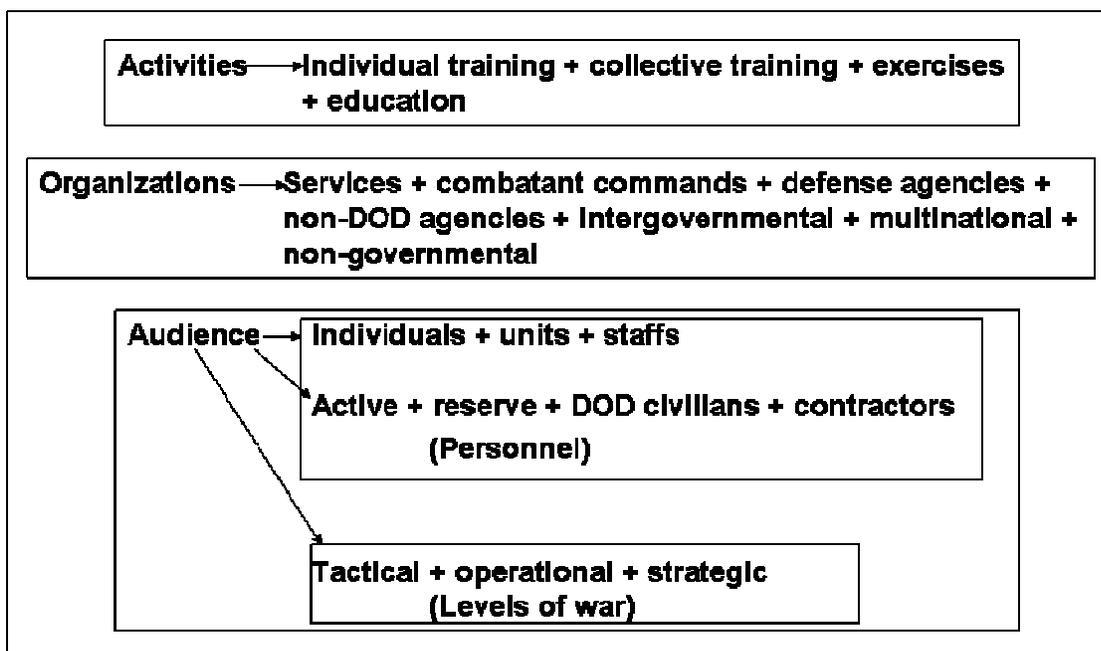


Figure 1 – Scope of the JTFC

Education, individual training, collective training, exercises, and self-development contribute to a life-long continuum of learning that the JTFC seeks to address coherently.

a. Relationship to Joint Capability Areas.

The JTFC addresses the Tier 1 Joint Capability Area (JCA) “Joint Force Generation” and the Tier 2 area “Develop Skills.” It focuses on the train and

employed in support of joint training or joint operations,” in the *Training Transformation Implementation Plan FY 2006-2011*, 23 February 2006, Appendix 4.

⁵ Integrated operations include NGOs as well as the organizations noted above.

exercise areas, integrated with education, as parts of the joint learning continuum. Doctrine provides the foundation for all skill development.

b. Relationship to Other Joint Concepts.

Joint training is an essential enabling capability that prepares the joint force to execute the entire range of activity described by the family of joint operations concepts (JOpsC). As such it is the foundation of all joint mission execution. Therefore, joint training must adapt to all possible JOpsC evolutions. The JTFC specifically aims to support such adaptation. A detailed discussion of the relationship of joint training to specific joint concepts is given in Appendix G.

c. Strategic Guidance.

The JTFC is informed by strategic guidance⁶ and the CCJO as it describes a joint force that will achieve strategic objectives by assuring allies and friends, dissuading adversaries, deterring aggression and coercion, and defeating adversaries should deterrence and dissuasion fail. To be effective, the future joint force must be adequately trained. This is the focus of the JTFC.

d. Assumptions

For the purpose of this concept, an assumption is considered appropriate if it meets the following criteria: (1) It should be a likely future condition, but not a certainty; (2) It is beyond the purview of the concept; and (3) It is necessary for the concept to be valid.⁷ The JTFC assumes the following:

- Robust networked infrastructure. DoD will continue to move forward with a robust information infrastructure that includes sufficient electronic spectrum and net-centric enterprise services.
- Recruitment and retention. DoD will continue to recruit and retain sufficient numbers of appropriate personnel with diverse experience and talents.

⁶ National Defense Strategy (2005), National Military Strategy (2005), Transformation Planning Guidance (2003), National Security Strategy (2006), Quadrennial Defense Review (2006) and Strategic Planning Guidance (2006-11), and Training Transformation Strategy (2006) and Implementation Plan (2006).

⁷ *Capstone Concept for Joint Operations*, version 2.0, August 2005, p. 4.

3. The Military Problem.

a. The Future Security Environment.

The National Defense Strategy and the CCJO outline the future security environment and challenges that future joint forces will likely face: four major challenges of global proportions further complicated by major social, economic, political, and adversary military capability uncertainties along with natural or man-made disasters. The four primary mature and emerging challenges, described in Figure 2, are traditional, catastrophic, irregular, and disruptive.⁸ The joint community must provide an effective and efficient system to meet these challenges within the future environment.



Figure 2 – The Four Primary Security Challenges

b. The Future Training Environment.

Within the future security environment, the Training community will face a unique set of challenges that complicate solutions and make current joint training inadequate to prepare tomorrow's joint force:

⁸ *Quadrennial Defense Review Report*. Washington, D.C.: Office of the Secretary of Defense, February 2006

- Mission types are increasing. The types of military operations are increasing, ranging from crisis response and limited contingency operations to major combat operations and campaigns.
- High personnel and operating tempo place considerable stress on our ability to train and the associated supporting infrastructure.
- High-demand/low-density forces are often unavailable to train. While the specifics may vary, some forces are always likely to fall into this category.
- Educational and cultural backgrounds of the joint training audience have changed in concert with the general population. Familiarity with learning through computer-based tools, including games, has improved dramatically and will continue to do so.
- Competing demands for range space, frequency spectrum, and longer range weapons are limiting our ability to train in a live environment.
- The need to balance an active engagement against a global irregular adversary, potentially with catastrophic or disruptive capabilities, while remaining prepared to address a traditional adversary, underscores the complexity of the joint training challenge.

The combination of the future environment and security challenges, combined with likely future joint training challenges, makes it imperative that we transform joint training. The first step in addressing these challenges is to clearly articulate the joint training military problem.

c. The Joint Training Military Problem.

In order to sustain operational and training superiority the DoD must be able to effectively and efficiently prepare joint training audiences in the 2015–2027 time frame:

- For a wide ROMO anywhere in the world.
- To operate with a more diverse set of coalitions and alliances.
- To operate with other federal agencies, state and local governments, and NGOs.
- From any location.
- Synchronized with new operational capabilities that rapidly incorporate tactics, techniques, procedures, and lessons learned.
- To maintain competency against a symmetric enemy while actively fighting a complex, elusive, and adaptive adversary who uses available technology, advanced weapons, WMD, and information to gain advantage.

- While engaged in a long war, with limited fiscal, material, and personnel resources.

The JTFC envisions joint training that produces an adaptive, agile, and anticipatory joint force. Joint training must adapt at every level because the future is uncertain. Throughout history, significant changes in operational requirements have made previously competent forces obsolete overnight, with catastrophic effects for the sponsoring nation. For example, World War I technologies and unprecedented battlefield firepower outpaced warfighter comprehension. As a result, traditional combat concepts and training led to wasting millions of lives.⁹ To prevent future inappropriate operational and tactical approaches, US Joint Forces must adapt to new circumstances quickly and effectively and be prepared in every sense to address unanticipated threats and react appropriately. Thus, joint training must be guided by anticipated threats and intelligence regarding the operational situations for which our forces must prepare.

4. The Solution.

This solution describes in broad terms how improved training will allow joint forces to operate across the full spectrum of military operations in pursuit of strategic objectives and thereby overcome the stated military problem. It builds on the CCJO recognition that acquiring, refining, and sharing knowledge are fundamental actions to every campaign. Joint training is clearly a central element of that action.

To successfully cope with the demanding security environment described above we must transform U.S. military training and education capabilities. How joint learning will change includes:

- Career-long training and educating of all total force individuals, units, and staffs, including active, reserve, DoD civilians, and contractors to share a joint culture that leads them to think and act not only in an intuitively joint manner, but also to perceive unprecedented situations early and innovate effective solutions rapidly.
- Effectively training a joint force that is composed of dispersed, modular, task-tailored units with elements drawn from different Services, and integrating its operations with other government and nongovernmental agencies and organizations.

⁹ John F. Guilmartin, Jr. and Daniel W. Jacobowitz, "Technology, Primary Group Cohesion, and Tactics as Determinants of Success in Weapons System Design: a Historical Analysis of an Interactive Process." Annual Meeting of the American Political Science Association (Washington, DC: August 31, 1984)

- Building advanced joint training and education systems and processes that yield a responsive joint force that is interdependent, collaborative, agile, learning, adaptive, and accustomed to applying innovative solutions to unprecedented challenges.

The solution will consist of new methods of training management delivery that allow transformed learning. Training management will facilitate and be directly oriented toward solving the joint training military problem. It will lead to revising processes and creating new processes that support joint training. These processes will yield a strengthened joint training environment that produces fully educated and trained individuals, units, and staffs assigned in the right jobs at the right place and time. This functional concept envisions:

- Training and education for both analytical and intuitive decision-making.
- Linking the needs of the combatant commands and the training component of the readiness reporting system.
- Providing incentives to individuals, units, and organizations to learn. This involves rewarding successful training accomplishment as well as rewarding initiative, appropriate risk taking, and the provision of feedback on what works in training. Training will be most effective if it incorporates an element of appropriate experimentation.
- Measuring the outcomes of training — learning and capability — not just the inputs.
- An emphasis on dynamic curricula and exercises that reflect evolving best practices and lessons learned.
- Persistent networks linking widely dispersed training sites to permit training events to be constructed rapidly for a wide range of scenarios and participants.
- Leveraging of private-sector practices and technology, including extensive use of online gaming, to train diverse audiences in a wide variety of individual and collective skills.
- Encouragement of peer-to-peer learning as well as mentoring for units and individuals.
- Incorporation of embedded training in equipment of all types to allow individual and collective training to occur without requiring specialized training devices.
- Object-based architectures and material for individual training to allow training to be tailored to individual requirements and to allow individual training to be quickly adapted to changing circumstances.
- Easily available simulation databases, including terrain and order of battle information to facilitate timely training for a wide range of contingencies.

- A universal trainee database that enables full tracking, planned assignments based on matching jobs and skills, and expeditious retraining across the joint force. The system should begin with each service's Advanced Individual Training (immediately after Basic Training) for enlisted personnel and in their basic course for officers.

This concept establishes two equally powerful and critical central ideas to achieve the envisioned solution.

a. Central Ideas.

The two central ideas that form the basis for this joint functional concept address transforming joint training processes and strengthening the Joint Training Global Environment (JTGE).

The first central idea focuses on DOTMLPF (doctrine, organization, training, materiel, leadership and education, personnel, and facilities) changes to integrate all training processes and systems in order to achieve all desired outcomes. The joint training processes will prioritize and develop training requirements and develop, record, and maintain accessible and useful assessment and feedback, in addition to maintaining lifelong personnel training records.

The second central idea focuses on materiel changes to create a truly global training domain that combines actual forces and equipment (live), simulated weapons systems (virtual), and mass force modeling (constructive). This domain will allow any individual, unit, or staff to train anywhere, anytime, on any skill, system, or mission with realism, replication, repetition, reliability, and recallable records.

The joint training processes and JTGE will be built through the JCIDS process. JCIDS will facilitate training transformation through the four-step mechanism described in Figure 3. The four steps will:

- Catalog capabilities, gaps, shortfalls, enhancements, and risk areas that will provide a path for the joint training processes and JTGE to evolve to support the needs of operational commanders.
- Plan and integrate joint training and acquisition programs to satisfy joint requirements.
- Execute joint training and learning events using new procedures and training capabilities.
- Assess joint training and adjust accordingly. A robust, active lessons-learned program will be key.

The most important skills to be mastered are those that improve the ability of individuals, units, and staffs to combine intuition, learned behavior, and reasoning to plan, collaborate, improvise, innovate, adapt, anticipate, and

successfully execute joint solutions that address the mature and emerging challenges identified above. Members of the future joint force must be trained to implement joint operational art to proactively seize and exploit the initiative, rapidly adapt to unforeseen situations, and anticipate the adversary whenever possible.

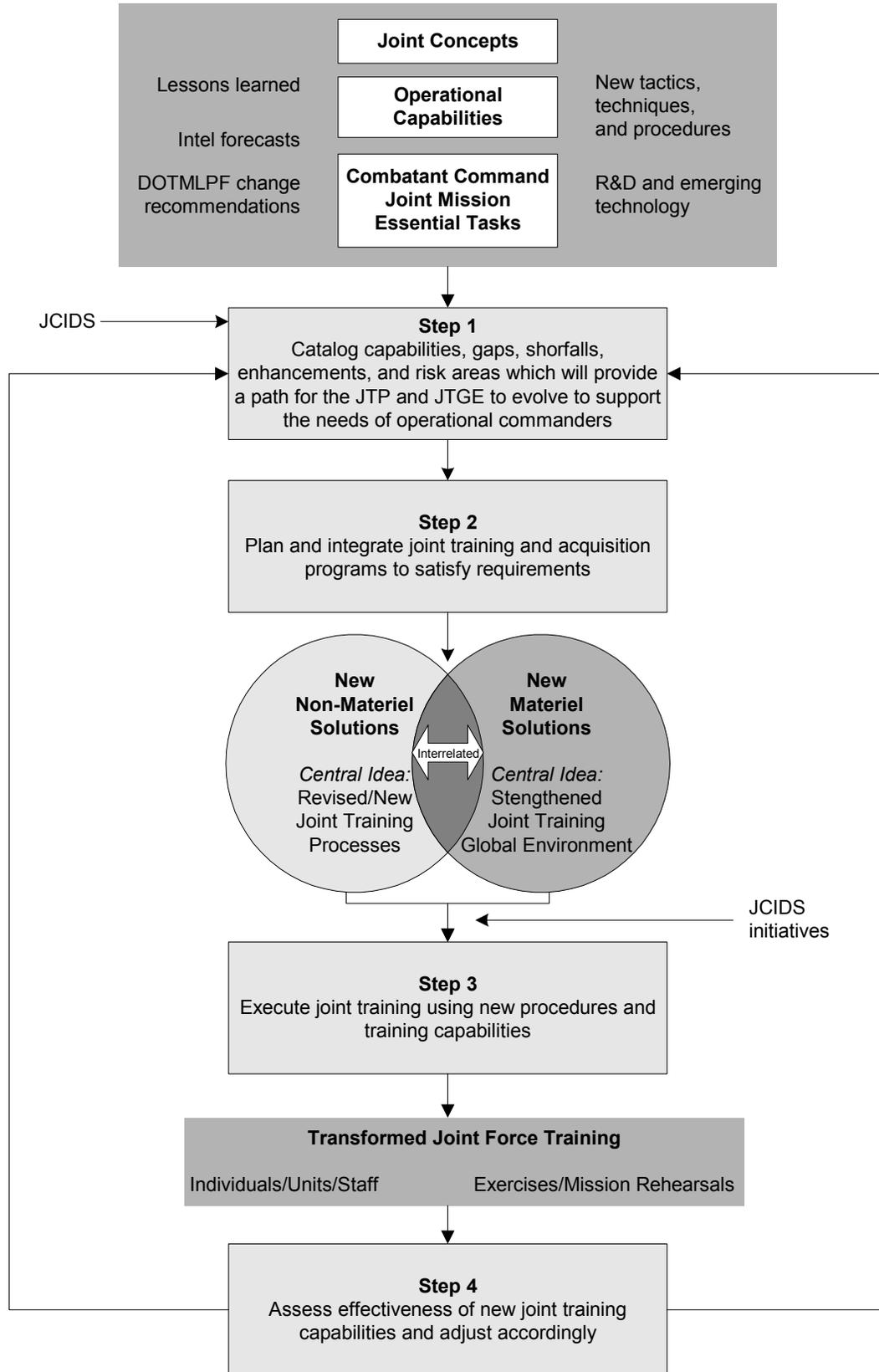


Figure 3 – The Four Steps to Transform Joint Training

b. Central Ideas, Supporting Ideas, and Capabilities.

The two central ideas will be achieved through a number of supporting ideas and associated capabilities that provide specifics to change the *joint training processes and JTGE* to solve the military problem. The supporting ideas under each central idea are listed by topic in Table 1 and discussed along with their associated capabilities in the following sections. As Table 1 indicates, there are several overarching supporting ideas that relate to both central ideas, and these are also discussed.

Table 1 – Central and Supporting Ideas

Central Idea: Revising or Creating New Joint Training Processes	Central Idea: Strengthening the Joint Training Global Environment
Supporting Ideas:	Supporting Ideas:
Mission-driven training requirements	Integration of live, virtual, and constructive training technologies
Appropriate focus on all echelons of the force across all organizations and all levels of war	Advanced distributed learning and gaming
Provision of incentives to individuals, units, and organizations to learn	Embedded training systems
Focus on training during concept development and acquisition	Agile mission rehearsals
Overarching Supporting Ideas:	
Career-long training and learning continuum	
A joint culture of adaptation to new situations, information, and lessons learned	
Inculcation of joint culture and habitual relationships	
Holistic approach — integration of training with other personnel actions	
Readiness assessment	
Remedial on-demand support	
Collaboration with non-DoD organizations	

The associated capabilities, identified below, have been drawn from the major joint training guidance documents. The supporting ideas and capabilities together will provide individuals, units and staffs with the general skills and knowledge they need to perform joint operations in specific circumstances — including effectively working within and across organizations. Joint training must be designed to support all echelons of the training audience.

1. Central Idea. Revising or Creating New Joint Training Processes.

This central idea focuses on nonmaterial changes that will transform joint training. Accomplishing these nonmateriel changes is a primary element in turning this concept into a reality. For example, the process for determining joint training requirements must be improved, and the system for managing joint training must be clearly focused on meeting those requirements. A process that provides systematic and consistent outcome-based assessment of joint training must be implemented. The acquisition process must give joint training issues proper emphasis.

Joint training will be transformed through joint training-related processes that provide required skills to individuals, units, and staffs at the right time.

a. Supporting Idea. Mission-driven training requirements. Identify and anticipate combatant command and other operational requirements in order to design effective joint training. Meet operational requirements through process changes for all individuals, units, and staffs, including the Services and agencies that support combatant command capabilities. This also includes a capabilities-based approach that drives the joint training community to adapt to new situations rapidly and produce new training materials and courses.

1. Associated Capability. The ability to determine joint training requirements by analyzing established operational requirements expressed in terms of essential tasks and skills, lessons learned, and anticipated future threats.

2. Associated Capability. The ability to identify performance objectives, conditions, and standards for joint tasks.

3. Associated Capability. The ability to train all military personnel, irrespective of rank or position, to accept a military culture of doctrinal understanding, adaptability, and personal responsibility for mission accomplishment, and one that emphasizes innovative solutions in unprecedented situations.

4. Associated Capability. The ability to certify joint headquarters, ensuring that headquarter staffs can act and function as a team, and execute current doctrine and capabilities to specified criteria.

5. Associated Capability. The ability to plan, schedule, and synchronize joint training in partnership with all COCOMs/agencies that have a role in the overall mission so that all participants receive mutual training benefits.

b. Supporting Idea. Appropriate focus on all echelons of the force across all organizations and all levels of war. Develop a comprehensive training methodology that specifies (1) the right knowledge and skills to deliver

to (2) the right individuals, teams, units, staffs, and organizations using (3) the right methods, at (4) the right times, (5) with the proper joint context.

1. Associated Capability. The ability to determine retraining intervals for relevant tasks and skills and determine personnel and organizations to be trained together. Joint training and education must determine specific skills and knowledge, as well as cultivate an innovative, problem-solving mind-set that leads to a culture of agility, adaptability, responsiveness, and innovation.

2. Associated Capability. The ability to develop and maintain persistent joint context for service, combatant command, and joint training. This includes training across the entire operational spectrum from mobilization through deployment, employment, and redeployment

c. Supporting Idea. Provision of incentives to individuals, units, and organizations to learn. This requires effective measurement of learning outcomes, but it also requires processes that reward effectiveness and promote accountability. While to an extent successful training is its own reward, processes that provide clear assessments and reinforcement based on those assessments will enhance training effectiveness. The specific incentives provided must be determined by the chain of command. They should reward demonstrated proficiency, but not punish creative initiative that does not succeed. For example, incentives could be monetary or non-monetary, possibly including citations, awards, and decorations.

1. Associated Capability. The ability to implement outcome-based processes that reward both trainees and trainers for effective training.

d. Supporting Idea. Focus on training during concept development and acquisition. Make training capability a key performance parameter in JCIDS documents as appropriate. Build and maintain training processes that are consistent with the JCIDS and DoD 5000 acquisition processes.

1. Associated Capability. The ability to ensure that appropriate joint training objectives are key performance parameters during the system acquisition process. Joint training must be considered as an integral part of the JCIDS and acquisition processes and prioritized to ensure learning and human performance factors are fully considered in materiel development. Embedded training capabilities must be fully developed. System technical performance of embedded hardware, performance of supporting modeling and simulation systems, and software training effectiveness must be considered in rating new capabilities.

2. Central Idea. Strengthening the Joint Training Global Environment.

The *JTGE* will provide globally available realistic and repeatable training. The *JTGE* represents the materiel means that will transform joint training for the Total Force. The research, development, test, and evaluation

community/resources can contribute greatly to the realization of JTGE solutions. Advances in simulation, modeling, control, and embedded systems will provide key elements of transformed training. Transformation will require a joint training infrastructure that is capabilities-based, adaptive, agile, anticipatory and persistent.

a. Supporting Idea. Integration of live, virtual, and constructive (LVC) training technologies.¹⁰ Integrate LVC training methods — live exercises, virtual simulators, and constructive simulations globally through a persistent network.

1. Associated Capability. The ability to employ the net-centric infrastructure to interconnect training ranges and other live training locations, virtual training capabilities, simulation centers, and training audience facilities to create an interoperable effective, efficient, adaptive, and responsive LVC environment.

2. Associated capability. The ability to integrate training specialists and subject matter experts to create the most effective training for joint force individuals, units, and staffs.

3. Associated Capability. Ability to integrate operational systems with embedded training capability into a joint LVC environment to allow training from tactical to strategic levels of operations.

4. Associated Capability. Ability for the LVC environment to stimulate all operational command-and-control systems.

5. Associated Capability. The ability to coordinate and conduct joint training exercises and mission rehearsals of the appropriate scale by using the LVC environment, including sufficient access to land, air, sea, and space to train widely dispersed joint forces.

b. Supporting Idea. Advanced distributed learning and gaming. Use advanced distributed learning and gaming to develop higher-order decision-making skills and attitudes, available 24/7 worldwide, and to create and adopt common technical, architectural, and operational standards that facilitate information sharing.

¹⁰ For the purposes of this JTFC, the following definitions apply:

- Live Training Domain — The training domain where live participants operate operational systems and platforms (including their full range of mobility) in the physical environment.
- Virtual Training Domain — The training domain where live participants operate simulators/emulators/operational systems in a synthetic environment.
- Constructive Training Domain — The training domain where live participants, typically command and staff trainees, conduct activities in an environment constituted by a large-scale constructive simulation. The trainees provide stimulus to simulated forces at all levels and act upon consequences generated by the simulation.

1. Associated Capability. The ability to use immersive gaming and simulation to develop decision-making skills at all force echelons, available 24/7 worldwide.

c. Supporting Idea. Embedded training systems. Embed standardized, fully interoperable training capabilities into operational systems. Eliminate seams between the training and operational environments to facilitate joint exercises as well as en-route and deployed training. This will facilitate follow-on operational test, evaluation, and experimentation throughout platform life.

1. Associated Capability. The ability to embed LVC-systems, interoperability, and compatibility into weapons, support, and training.

d. Supporting Idea. Agile mission rehearsals. Develop and field integrated, real-time, globally distributed, near-real-world mission-rehearsal capabilities to support rapid force deployment for deliberate and crisis operations, ensuring that trained forces are available for operations when the combatant commander needs them. Agile mission rehearsals will support execution of complex operations in the future by ensuring that disparate units train together through a networked simulation involving the participants, platform simulators, and the anticipated scenario. Participating units would need interoperable simulators that are networkable. Simulation databases that are readily available to all participants would enable rapid scenario development and execution of the simulation.

1. Associated Capability. The ability to provide integrated, real-time, globally distributed mission-rehearsal capabilities using realistic scenario databases, recent and forecast intelligence information, and lessons learned to support rapid deployment of forces and provide for timely training for planned as well as unanticipated operations. Ensuring that required training is available to deployed forces is an element of this capability.

2. Associated Capability. The ability to rapidly replicate the adversary force, terrain, and area culture in LVC environments.

3. Associated Capability. The ability to train with partners (e.g., coalition, IA/IG/MN/NGO).

3. Overarching Supporting Ideas and Capabilities That Support Both Central Ideas.

a. Supporting Idea. Career-long training and learning continuum. Construct a career-long joint learning continuum that supports service and joint core competencies; promotes a military culture of innovation, resourcefulness, and understanding of conflict; and offers programs to enhance performance across the joint system for both active and reserve personnel. The joint learning continuum (see Figure 4) should build on existing programs and institutions to provide a coherent, career-long program for individuals. Institutional and distributed education programs should be integrated with

individual, collective, and unit training, aided by learning, self-development, and experience. It must equip individuals with the skills and knowledge they need for joint duty and operations. Preparation for joint service requires identifying the skills and competencies required for new rank, assignment, and responsibility; assessing individual proficiencies for these roles in order to identify gaps in competency; and designing and conducting convenient refresher and remedial training.

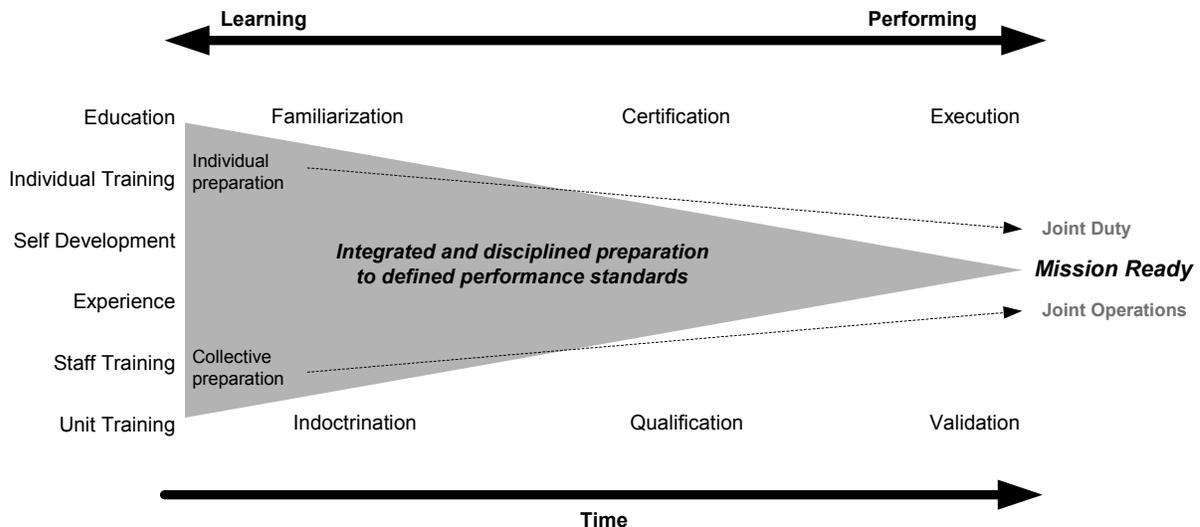


Figure 4 – Joint Training Continuum

1. Associated Capability. The ability to provide the joint force with extensive and career-long training and learning programs that are tailored to particular units and staffs, as well as practical job experience. Individually tailored, on-demand refresher training should be available to individuals. Each individual’s exposure and response to these programs should be self-recording and readily accessible.

2. Associated Capability. The ability to ensure that DoD personnel learn the empathetic, cultural, and language skills appropriate to their positions throughout their careers.

3. Associated Capability. The ability to prepare senior officers for complex decision-making at the most senior joint levels. All appropriate DoD personnel must master the three competencies required for joint command and staff responsibilities: functional core competency of fighting a joint force, strategic viewpoint, and critical thought. These joint competencies will be taught by the four supporting pillars of the joint learning continuum: joint professional military education, joint individual training, joint experience, and self-development. Joint individual training is completed, in turn, by three delivery methods: service training, “brick and mortar” joint-skill-specific

training venues, and distance learning. Since higher level decision-making requires collaboration and integration across organizations, this kind of training must also be provided to non-DoD agencies, state and local governments, coalition partners, and NGOs.

4. Associated Capability. The ability to provide educational approaches and tools that teach rapid and effective decision-making.¹¹

5. Associated Capability. The ability to provide tailored advanced distributed learning and rapidly configurable individual training tools developed from rapidly accessible knowledge collections for individual, unit, and staff training.

b. Supporting Idea. A joint culture of adaptation to new situations, information and lessons learned. Use recent and forecast intelligence, lessons learned, and new doctrine to identify joint training requirements. This involves developing both adaptable individuals and an adaptable system.

1. Associated Capability. The ability of individuals, units, and staffs to modify their behavior quickly and appropriately when circumstances change in ways for which they have not been specifically trained.

2. Associated Capability. The ability to use intelligence forecasts to quickly identify additional joint training requirements and rapidly produce effective training materials and courses. Coordinate with the combatant commands to integrate the training regimen and the operational need.

3. Associated Capability. The ability to integrate lessons learned quickly into relevant training courses, tools, and procedures.

4. Associated Capability. The ability to rapidly design, plan, prepare, execute, and analyze joint training events to meet changing needs of commanders.

5. Associated Capability. The ability to develop enhanced abilities, including language, to empathize with and understand civilians, other organizations, and social forces within an area, culture, and people involved in ongoing or potential political or military conflict.

6. Associated Capability. The ability to produce a military culture that values, rewards, and develops adaptability to unexpected circumstances. This capability is needed for all echelons of the joint force (individuals, units, and staffs) and should reinforce the need for leaders to trust subordinates who have been properly trained to be adaptive.

¹¹ The need for this capability is described in CJCS Vision for Joint Officer Development, November 2005.

7. Associated Capability. The ability to train personnel to use intelligence materials at the operational level. This capability goes beyond providing joint force commanders with intelligence estimates and intelligence preparation of the battlefield. This training prepares service, component, and JTF staffs to make the best use of available intelligence during the high tempo of combat and crisis operations.

8. Associated Capability. The ability to reward initiative and appropriate risk taking. The system must avoid insisting on rigid adherence to known solutions and to accommodate honest errors in order to encourage innovation and adaptability.

c. Supporting Idea. Emphasis on joint culture and habitual relationships. Focus all joint training on achieving jointness as a mind-set and developing habitual relationships within the joint force and between the joint force and non-DoD organizations in all relevant operating environments. Both technical solutions and mentoring of individuals and units can help ensure this result.

1. Associated Capability. The ability to develop individuals, units, and staffs that intuitively think and act as a joint force.

2. Associated Capability. The ability to create a training environment and military culture that develop live and virtual habitual relationships.

d. Supporting Idea. Holistic approach — integration of training with other personnel-related actions. Maximize personnel performance through a holistic approach to equipment acquisition and personnel management by ensuring that new equipment fully incorporates human factors principles in design and by coordinating joint training and education with service personnel actions and processes, such as recruitment; effective personnel screening; and occupational assignment, retention, and rotation. Ensure record keeping, currency, maintenance, and accessibility meet system needs to assign fully trained, educated, and capable personnel to all service and joint billets.

1. Associated Capability. The ability to coordinate and integrate joint training with service training and education to support overall force operational capability, including both the active and reserve components.

2. Associated Capability. The ability to assess, record, and maintain all individual, group, and organizational training and educational activity. Effective joint training and education requires permanent, central joint records that can easily be retrieved. The record-keeping system will provide a ready list of qualified individuals across all services and commands. Further, the record system will provide information critical to determining the overall effectiveness, reliability, validity, and completeness of joint training and education. It should address active and reserve personnel, government

civilians, and appropriate contractor personnel, including non-DoD training, education, and special experience.

3. Associated Capability. The ability to link training and education activity information directly to systems reporting readiness and assessing training effectiveness.

e. Supporting Idea. Readiness assessment. Ensure that training inputs have produced the desired outcomes. Continually assess joint training's contribution to readiness by focusing on training in required mission-essential tasks, the foundation for readiness reporting.

1. Associated Capability. The ability to ensure that the desired learning has been accomplished. This includes automatic learning feedback in computer-based training and education tools.

2. Associated Capability. The ability to translate joint operational requirements into joint training process requirements. Training must be effectively integrated into readiness reporting.

f. Supporting Idea. Remedial on-demand support. Develop a career-long remedial curriculum to provide remedial performance support on demand.

1. Associated Capability. The ability to deliver job performance aids to individuals when and where needed using libraries of common reusable training content.

2. Associated Capability. The ability to create on-demand performance support. Design and implement performance-support systems that conveniently provide job information and training at the job performance point.

g. Supporting Idea. Collaboration with non-DoD organizations. Provide a full-participation training regimen to support DoD collaboration with inter-agency, inter-governmental, multinational, and non-governmental organizations. This includes education and training of DoD and non-DoD participants on each others' roles and capabilities and the sharing of knowledge with external partners such as the Department of Homeland Security

1. Associated Capability. The ability to adapt training processes and capabilities to yield effective inter- and intra-organizational collaboration. Transformed joint forces must effectively integrate service and joint force operations with inter-agency, inter-governmental, multinational, and nongovernmental individuals, units, staffs, and organizations. Gaming and tailorable individual training can facilitate development of this capability.

2. Associated Capability. The ability to effectively share information in a training environment with the stakeholders listed above by developing compatible hardware, software, and procedures.

3. Associated Capability. The ability to educate and train foreign military personnel and organizations as authorized and directed. This will allow our partners to be effective operating on their own as well as with U.S. forces.

c. Attributes.

This section describes attributes required to transform joint training. The attributes and metrics associated with transformed training provide the means to judge training transformation progress and evaluate new initiatives. These attributes and metrics will guide the training community throughout transformation.

Every training initiative must improve at least one attribute. All training initiatives should be evaluated in terms of improvements in the attributes they intend to enhance.

1. Addresses the right information. Accurately identify tasks needed to meet future threat, and the required knowledge and skills to perform those tasks. Requirements determination identifies the tasks, including prioritizing missions and functions at the strategic, operational, and tactical levels. Defining these missions and functions requires melding joint mission-essential task lists (JMETLs) with lessons learned and intelligence to develop the knowledge and skills needed to execute crucial missions. The joint context appropriate for specific situations must be identified. The effectiveness of training may be measured by the number of combatant commander JMETs that are assessed as a “yes” in the Defense Readiness Reporting System (DRRS). For individual training and education it may be measured by the percentage of joint critical billets filled by individuals who have successfully completed the requisite joint training and education.

2. Reaches all relevant audiences. Training a force to perform a task means delivering the appropriate training to every appropriate unit and individual from entry-level soldier, sailor, airman, and marine to the combatant commander. Sponsors of JCIDS initiatives must perform the necessary analysis to determine the relevant training audience when developing their capability. The relevant training audience must be identified by job and assignment. An important element of reaching all relevant audiences is ensuring that all the parts of the audience that have to work together are able to train together enough to build habitual relationships that facilitate smooth interactions. An indicator of this attribute would be the percentage of individuals conducting operations who have received required (or appropriate) training. A networked institutional education system should be provided that affords training capabilities to individuals and units “beyond the walls” of institutional training.

3. Promotes adaptability. Training must prepare joint personnel at all levels to improvise new and innovative responses to unforeseen circumstances. This attribute can be subjectively measured by determining how much free play develops among student personnel in training, exercises, and operational activities that pose new challenges. The key is how quickly and effectively training audiences identify unexpected situations, how they solve the operational problem, and how fast.

4. Is responsive. Because of the insidious nature of disruptive, irregular, and catastrophic challenges, we may not know in advance the exact equipment, procedures, tactics, and capabilities of opposing forces. Responsive training is agile and flexible. Responsiveness is therefore a critical need in meeting new circumstances. Responsive training accomplishes the following:

- Keeps training focused on evolving knowledge, doctrine, tactics, procedures, and strategy. Training curricula must rest on military history and experience, intelligence forecasts, lessons learned from operations, exercises, training events, and training experiments.
- Increases the ability of deploying forces to be anticipatory, adaptive, and agile through training and rehearsals. Rehearsals must meet deployment schedules and accurately reflect operational conditions and indigenous culture.
- Develops agile *joint training processes* that rapidly address new threats to train deploying personnel for all needed tasks.

Responsiveness can be measured by the speed with which mission rehearsals can be delivered to combat and support units slated for deployment. Another metric is whether mission rehearsals are using relevant and timely information regarding intelligence, logistics, and other conditions listed above.

5. Promotes interoperability. Interoperability is a key to effective operations involving multiple organizations. Achieving interoperability without advanced training is highly problematic. Collaboration must be trained and practiced among DoD services and between DoD joint forces and inter-agency, inter-governmental, multinational, and NGOs.

There are two crucial types of interoperability. The first type, “tactics, techniques and procedures (TTP) interoperability,” allows different units, Services, etc. to function cohesively to prosecute a joint objective. The second type, “technical interoperability,” addresses “machine-to-machine’ interfaces and communications standards. Ensuring TTP interoperability requires joint training that fosters joint habitual training templates.¹² Technical requirements

¹² Habitual training templates or relationships are developed when units work together in a joint training environment to the point that they understand how the other joint elements

include prior development and training of secure and multilevel architectures, communication networks, data formats and standards. A measure of interoperability would be the extent to which systems, units, or forces provide services to and accept services from other systems, units, or forces and to use the services so exchanged to enable them to operate effectively together.¹³ Another might be the percentage of operationally employed units and individuals that have trained with each other in similar missions or operations.

6. Transfers the desired learning. Training is effective to the extent that knowledge and skills required to support needed operational performance are learned. Even transformed training will rely on proven pedagogical principles, very likely an improved variety of the instructional systems development methodology. Transfer of required knowledge and skills provides quality – both in the timeliness of the training and its currency and correctness. This attribute can be qualitatively assessed by testing; assessments, including those performed by trained observers/controllers; and outside review of the teaching principles and methods used. In addition, advanced distributed learning tools can incorporate built-in feedback mechanisms to identify how well material is learned. Finally, periodic interviews with operational supervisors and superiors can determine if trainees provide desired performance. Maintaining individual and collective training records that identify the trained and untrained is critical to useful knowledge transfer.

7. Is persistent and reinforced. Training needs to be persistent and reinforced for units and staffs and throughout the career of each joint force member. Frequent training counteracts normal skill erosion and personnel rotation. Reinforcement also includes forces receiving mission-rehearsal training prior to deployment, en route, and in the theater. Persistence can be measured by testing relative knowledge and skills across time. The frequency of required retraining is directly proportional to skill erosion. Other characteristics that are synonymous with this attribute are robust and redundant

8. Is networked. Network access promotes effective training. Networks support distributed, self-paced, and frequent training for individuals, units, and staffs. Networked training is integrated. Integrated training is accessible (to the extent all authorized users have the opportunity to make use of the capability). Networked computing accomplishes the following:

- Shares information globally and rapidly (using secure networks for classified information). A measure of this would be the number of

function, became familiar with how to mesh their TTPs with those of the other joint elements, and can begin to anticipate how best to function as a joint force.

¹³ | *Net-Centric Environment Joint Functional Concept*, April 2005.

networked training locations and the percentage of training audiences with access to this networked training.

- Rapidly reconfigures scenarios to meet the needs of timely rehearsal training. Open architectures; modular construction using standard specifications; industry-wide operating systems; retrievable, reusable learning content; trainee scholastic records, course curriculum records; and standardized, rapidly-interchangeable databases for differing scenarios all contribute to technological support to sophisticated training. A measure of this attribute is the amount of interchangeable or reusable databases or the speed at which databases can be interchangeable.
- Integrates training with real-world logistics; command and control and intelligence, surveillance, and reconnaissance; and other support systems. Comparisons of the characteristics of emerging contingencies; predicted warning times for relevant scenarios; the number of network-capable training locations; the capacity and number of echelons that can be accommodated; security requirements; the capacity to present varied JCAs and environments; the ability to insert updated intelligence forecasts and lessons learned; the range of enemy tactics that can be presented; and the ability to address inter-agency, inter-governmental, multinational, and nongovernmental integration will serve as criteria to evaluate training effectiveness in this segment. A measure of this attribute would be the percentage of real-world systems integrated with training systems.

9. Is deployable/expeditionary. Training methods must be deployable, rugged, easy to operate and maintain, accommodate new scenarios within scenario warning times, and reliable. The speed in which new scenarios can be developed will depend on the specific contingency. In the post-9/11 world very rapid response may be needed.

10. Is efficient. Joint training is efficient if it delivers the needed knowledge and skills not only effectively, but also in a timely fashion and as inexpensively as possible. This attribute cuts across all of the joint training capabilities mentioned previously. Efficiency accomplishes the following:

- Provides enough realism and fidelity for training without excessive investment in detail. The appropriate degree of realism balances costs and benefits of increased fidelity. Greater fidelity may lead to increased transfer of skills to actual operations but generally costs more. The ratio between fidelity and cost can only be measured on a case-by-case basis, through analyzing the knowledge and skills to be trained and the methods available to accomplish the training.

- Uses globally applicable LVC, and distributed gaming training environments. These environments should be linked whenever the cost-benefit ratio is favorable.
- Pursues applications of modern gaming technology that promise major gains in training effectiveness at low cost.
- Improves the ability of modeling, simulation, and gaming to provide distributed learning.
- Benefits from continuous experimentation to develop new training technologies that transfer knowledge and skills effectively, inexpensively, and quickly.
- Expands weapon and support system embedded training capability.
- Uses networked distributed-learning techniques. A cost-benefit/mission-requirements analysis is needed to determine the right balance of distributed and co-located education and training. For example, travel costs and other training support costs are reduced for distributed education and training, but the costs of communication backbone procurement and associated operations and maintenance expenses, as well as modeling and simulation development and sustainment etc., go up.

Most of the attributes are oriented toward ensuring that training is responsive to operational requirements. Training will support the needs of the combatant commands if it trains all appropriate individuals, units, and staffs in the right tasks; if it ensures that they are adaptable; if it is responsive to changes in missions and tactics; if it trains forces to operate together as needed; if the skills and tasks being trained are actually learned; if training is repeated often enough to allow the knowledge to be retained; and if training is available where and when it is needed. All these attributes are elements of an effective and efficient training system. Two attributes are a bit different. Networking is an enabler for both effective and efficient training. Efficiency ensures that resources are used judiciously.

Success in developing the capabilities discussed in the previous section can be assessed in terms of increases in the level of these attributes. In many cases a particular capability seeks to improve multiple attributes. Table 2 gives a summary of JTFC attributes and associated metrics. This table summarizes attributes required to transform joint training. The attributes and metrics associated with transformed training provide the means to judge training transformation progress and evaluate new initiatives. These attributes and metrics will guide the training community throughout transformation. Every training initiative should improve at least one attribute. All joint training initiatives should be evaluated in terms of improvements in the attributes they intend to enhance. These metrics or measures are meant to be relative and

used to evaluate alternative solutions that will realize the capabilities presented in the JTFC.

Table 2 – JTFC Attributes and Associated Metrics

Attribute	Description	Metrics
		<p>. These metrics or measures are meant to be relative and used to evaluate alternative solutions that will realize the capabilities presented in the JTFC.</p>
Right Information	Accurately identify tasks needed to meet future threats and the required knowledge and skills to perform those tasks.	<ul style="list-style-type: none"> • Percentage of combatant commander JMETs that are assessed • Percentage of joint critical billets filled by individuals who have successfully completed the requisite joint training and education
Right Audiences	Delivering the appropriate training to every appropriate unit and individual from entry level soldier, sailor, airman, and marine to the combatant commander	<ul style="list-style-type: none"> • Percentage of individuals conducting operations who have received required (or appropriate) training
Promotes Adaptability	Prepare joint personnel at all levels to improvise new and innovative responses to unforeseen circumstances.	<ul style="list-style-type: none"> • Percentage of free play among student personnel in training, exercises, and operational activities • How quickly and effectively training audiences identify unexpected situations and solve the operational problem presented
Responsive	<p>Responsive training accomplishes the following:</p> <ul style="list-style-type: none"> • Keeps training focused; • Increases the ability of deploying forces to be anticipatory, adaptive, and agile; • Develops agile joint training processes 	<ul style="list-style-type: none"> • Speed with which mission rehearsals can be delivered • The amount of relevant and timely information used in mission rehearsals
Promotes Interoperability	There are two crucial types of interoperability. The first type is “TTP interoperability” that allows different units, Services, etc. to function cohesively to prosecute a joint objective. Second, there is “technical interoperability” addressing “machine-to-machine’ interfaces and communications standards.	<ul style="list-style-type: none"> • The extent to which systems, units, or forces provide services to and accept services from other systems, units, or forces and to use the services so exchanged to enable them to operate effectively together. • Percentage of operationally employed units and individuals that have trained with each other in similar missions or operations

Attribute	Description	Metrics
Transfers Desired Learning	Knowledge and skills required to support needed operational performance are learned.	<ul style="list-style-type: none"> • Quantitatively assessed via learning management systems • Level of training readiness determined from individual training records • The amount of observer/trainer feedback on training effectiveness • The amount of supervisor feedback on impact of training
Persistent/ Reinforced	Training needs to be persistent and reinforced for units/staffs and throughout the career of each joint force member.	<ul style="list-style-type: none"> • Measured by testing relative knowledge and skills across time • Frequency of training compared to required frequency
Networked	Networks support distributed, self-paced, and frequent training	<ul style="list-style-type: none"> • Percentage of training audience with access to networked training • The amount of interchangeable or reusable databases or the speed at which databases can be interchangeable • Number of networked training locations • Percentage of real-world systems integrated with training systems
Expeditionary	Training methods must be deployable, rugged, easy to operate and maintain, accommodate new scenarios within scenario warning times, and reliable	<ul style="list-style-type: none"> • Percentage of training that is deployable • Relative size of maintenance and support of deployable training
Efficient	Joint training is efficient — time and resources	<ul style="list-style-type: none"> • Percentage of forces trained in a distributed environment at home station • Percent of systems with embedded training • Percentage of distance learning used or available • Percentage of training systems cost to overall lifecycle costs • Cost per member of primary training audience • Cost per task trained divided by size of primary training audience • Cost per training hour for individual training

5. Risks and Mitigation.

DoD faces a critical risk in that joint training may not adequately prepare our forces for operational missions. This may result from:

- Insufficient training time — An increasingly broad array of training tasks emerging from expanding missions for joint forces in the future range of military operations, without a corresponding increase in time available for training. Mitigation may require delaying operations until the force is ready or giving higher priority to forces needing training. It could also involve dedicated in-theater or in-transit training to prepare the force immediately prior to commencing operations.
- Inadequate intelligence — Insufficient knowledge of enemy capabilities and plans to develop relevant friendly force training. Mitigation could rely on the JTGE to support rapid training of the force after the ‘surprise’ brought about by insufficient or inadequate intelligence.
- Insufficient resources — Failure to allocate enough funds to develop and implement required joint training and education capability. Mitigation steps would fall back on traditional ways of training or selective prioritization of training audience and/or capability.
- Failure of new information technologies — The net-centric infrastructure and advanced virtual and constructive capabilities are crucial enablers of new training capabilities. If the enablers are not available as expected, transformed training will not deliver as promised. Also, access to the network and electronic spectrum may be limited in the future and training systems may have to compete with other operational priorities. If prioritization is not sufficient, mitigation may require developing/using alternate network options – i.e. wireless vs. fiber optic.
- Adversary exploitation of disruptive technologies — Adversaries may effectively counter U.S. military capabilities or produce their own disruptive capabilities faster than the United States can devise operational and training responses. Mitigation could rely on the JTGE to support rapid training of the force after the ‘surprise’ brought about exploitation of disruptive technologies. Also a responsive lessons-learned system would reduce the time required to respond successfully.
- Cultural resistance to change — Joint culture may not evolve quickly enough for the joint force to embrace new approaches to joint operations and advanced training activities for required new skills. Mitigation may be tied to how successful the department is in its

efforts to better incentivize effective training and to build a culture of adaptability.

While some mitigation options are suggested above, a thorough experimentation program can also help to mitigate these risks.

6. Experimentation.

Effective joint capability development requires robust experimentation. Joint training systems/capabilities embraced in this document can benefit from experimentation, but experimentation can also benefit from the JTGE, as this capability can allow for the same flexibility and inclusiveness for the experimentation audience as it does for the training audience. Experimentation will be critical to learn how to fully implement net-centrism. Understanding how to manage the overwhelming flow of information to develop a common operating picture or collaborative environment is required. The proper approach to training will likely depend on the nature of the implementation strategy and should also be subject to experimentation. In addition, the learning sciences may identify multiple ways to improve training. Given substantial uncertainty, the safest way to achieve long-term benefits is to pursue a vigorous experimentation program to identify different approaches and measuring their effectiveness. The development of effective experimentation before designing acculturation training will be very important. Relying on a positive military culture of internalized doctrine, mission responsibility, and innovation requires proven training methods.

Experimentation with alternative teaching, training, and other methodologies will shape an adaptive and innovative military culture. Capabilities identified in the JTFC should be guiding factors to designing and conducting experimentation of future training systems. The attributes articulated above should be used to assess experimental results.

Areas where current training is felt to be flawed are particularly appropriate for experimentation. Examples of such areas may include training for improved adaptability, training that encourages risk taking, provision of incentives to learn, and training to enhance empathy and cultural awareness. Refer to Appendix E for a list of possible areas for experimentation.

7. Vignette: A Description of How Functions Will Be Conducted.

The following vignette describes how future joint force commanders and training staffs can use or benefit from the capabilities described above in an operational environment.

This vignette hypothesizes a future joint training and education environment in which joint forces are preparing to engage across a broad spectrum of the range of military operations at multiple combatant command locations

simultaneously. *Italicized text identifies transformational capabilities discussed in this functional concept.*

The emergence of a new threat to U.S. security interests triggers a number of immediate actions by the joint force *that capitalize on the new joint training capabilities*. Over the previous few years, the capability of our joint force has been greatly enhanced by use of a *combined LVC JTGE that has produced multiple areas of improvement, enabled the development of DOTMLPF changes across a broad spectrum of joint warfighting missions, and has been instrumental in the validation of numerous solutions to joint warfighting challenges. This includes training at the individual and tactical level as well as the headquarters and strategic level.*

Combatant command staffs anticipate deployment of a *Joint Task Force (JTF) and prepare their personnel by conducting mission rehearsals using the latest constructive simulation provided by the robust joint training environment available at each combatant command, service component, JTF headquarters, service training program, unit, and individual level.*

The majority of combatant command and JTF staff personnel are well trained for the staff functions at the strategic and operational levels. *They have participated in outcome-based training and education programs that include collaboration and Web-based instruction using computer-based models generated by the joint training environment.* The JTF staff members have identified the IA/IG/MN/NGO organizations that will be involved in a coordinated response to the crisis. *This was facilitated by the peacetime joint training environment in which the various organizations learned to work together for combat and noncombat missions. Individuals take advantage of the habitual relationships they have formed with their counterparts in the joint IA/IG/MN/NGO force. Training together in peacetime has created habitual relationships (or templates) that yield familiarity, respect, and trust during high-tempo crisis planning and operations.*

Personnel newly assigned to joint billets may not have had the opportunity to participate in this comprehensive joint training. However, the *performance support system in use by the combatant commands is able to quickly construct an education, training, and experience inventory of these personnel.* This inventory identifies the performance shortfalls for each individual against the billet that individual is filling. *A tailored remedial training curriculum is quickly produced on demand using the networked joint training backbone.* These training products rapidly train up newly assigned personnel, quickly remedying individual training shortfalls.

The needed joint job performance training is provided prior to deployment, during transit, and in pre-operations in the joint operations area.

Some critical billets have not been filled due to normal rotation schedules. *The performance support system mentioned above is used to quickly identify personnel with the experience and education required to fill these billets, and these personnel are quickly added to manning rosters and integrated into the ongoing staff activities.*

Unit training has been conducted in close cooperation with the Joint Force Provider (JFP) through JFCOM or other geographic combatant commanders with assigned forces. *The JFP has been working with the combatant commands and the Joint Force Trainer (JFT) at USJFCOM to identify those forces that are most likely to deploy, what training they have undergone, and what additional training they will need. The JFP and JFT have matched those units with the most recent and appropriate joint training events.*

The JTFC's focus on cultural and empathetic skill development has prepared staff, units, and individuals to understand the customs and values of the indigenous population in the area of operations, which will enable success in the joint operations area and facilitate cooperation with noncombatants.

A transformed acquisition system brought new and enhanced weapons, support systems, and TTP to the field to confront the new threat. *Individuals in the field, at the tactical level, are able to use the performance support systems and JTGE to receive the updated training guides, program new upgrades to their weapons, and practice virtually the new TTP with members of other units, services and nations. This allows individuals to hone their new skills, iron out TTP, and improve joint TTP prior to actual operations.*

These actions have thus given our joint forces — individuals, units, and staffs — the initial training they need for the new crisis. However, as the operation proceeds, our forces find that the cunning and adaptive adversary is conducting operations in some new ways that were not anticipated.

The JTGE enables the joint force commander staff and commanders and staffs at the tactical level to cope with the new circumstances by running detailed wargames and analyses of numerous courses of action to identify how to defeat the new enemy operations. Interactive, Web-based multiplayer gaming will allow commanders in the field and subject matter experts in CONUS (including knowledgeable Red Team subject matter experts) and an automated “synthetic learning” opposing force to participate. The latest cultural lessons and TTP developed by theater forces or other U.S. government or multinational sources in daily contact with the local population will be quickly updated in leaning management systems and doctrine databases. As a result, the joint force commander's training staff is able to quickly assemble training courses for the Joint Force Commander headquarters staff to support new operations to deal with the new threat. This occurs within hours because of the availability of reusable and retrievable training content mapped to the individuals' experiences and training inventory. In like manner, unit commanders utilize similar capabilities to achieve joint tactical training objectives, including cultural

immersion and empathy-based understanding gleaned from the latest in-country information. *Individual performance support will deliver this training to the individual at his theater location without requiring the staff or units to attend special training classrooms or locations.*

The JTGE also allows for individual and unit training in place, using a realistic mission rehearsal exercise developed within days of the new operational orders. This realism and feedback provided by the JTGE also ensures that combat and support personnel are trained for operational and tactical-level tasks. This responsive and adaptive training capability allows a confident and ready joint force to successfully execute the mission.

An active and aggressive lessons-learned program and intelligence-forecasting capability informs and directs training organizations to quickly develop programs to teach units how to deal with the changing operational environment at the strategic, operational, and tactical levels of war. This allows replacement units to rotate into the theater trained and ready for the current operation.

In addition, as part of joint training, mission rehearsals, and cultural empathetic understanding, staffs and units have identified IA/IG/MN/NGO organizations that joint forces will collaborate with in the follow-on stability and reconstruction phases after major combat has been completed.

As a result, the combatant commander and the joint force are able to effectively and efficiently complete the mission.

Appendix A – References

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Appendix B – Glossary and Acronyms

Glossary

Analysis of Alternatives (AoA). The evaluation of the performance, operational effectiveness, operational suitability, and estimated costs of alternative systems to meet a mission capability. The AoA assesses the advantages and disadvantages of alternatives being considered to satisfy capabilities, including the sensitivity of each alternative to possible changes in key assumptions or variables. The AoA is one of the key inputs to defining the system capabilities in the capability development document.

Assessment. The process by which joint experimentation and/or analysis is conducted on the solutions, capabilities, or tasks identified in the concept to ascertain its value or worth.

Assumption. A supposition on the current situation or a presupposition on the future course of events, either or both assumed to be true in the absence of positive proof, necessary to enable the commander in the process of planning to complete an estimate of the situation and make a decision on the course of action.

Attribute. A quantitative or qualitative characteristic of an element or its actions, and capability. The ability to achieve a desired effect under specified standards and conditions through combinations of means and ways to perform a set of tasks.

Capstone Concept for Joint Operations (CCJO). The CCJO heads the family of joint operations concepts (JOpsC) that describe how joint forces are expected to operate across the ROMO in 2012–2025. Its purpose is to lead force development and employment primarily by providing a broad description of how the future joint force will operate. Service concepts and subordinate joint concepts will expand on the CCJO.

Characteristic. A desirable trait, quality, or property that distinguishes how the future joint force should conduct military operations.

Concept of Operations (CONOPS). A verbal or graphic statement, in broad outline, of a commander's assumptions or intent in regard to an operation or series of operations. CONOPS are frequently embodied in campaign plans and operation plans, particularly in the latter case, when the plans cover a series of connected operations to be carried out simultaneously or in succession.

Concept. A notion or statement of an idea — an expression of how something might be done.

Constructive Training Domain. The training domain where live participants, typically command and staff trainees, conduct activities in an environment constituted by a large-scale constructive simulation. The trainees provide stimulus to simulated forces at all levels and act upon consequences generated by the simulation.

Defense Readiness Reporting System (DRRS). The DRRS is designed to track detailed information on what forces, and even individuals, can do on a near-real-time basis. When complete, DRRS will be a network of applications that provides force managers at all levels with the tools and information to respond to emerging crises and the ability to assess the risks of conducting such operations.

Functional Capabilities Board (FCB). The FCB functions to assist the Joint Requirements Oversight Council in carrying out its duties and responsibilities. The FCB reviews and, if appropriate, endorses all JCIDS and DOTMLPF proposals prior to their submission to the Joint Requirements Oversight Council. The FCB is chaired by the Director, Joint Staff/J-8. It comprises general and flag officer representatives of the Services.

Habitual Training Templates. Relationships are developed when units work together in a joint training environment to the point that they understand how the other joint elements function, become familiar with how to mesh their TTPs with those of the other joint elements, and begin to anticipate how best to function as a joint force.

Integrated Operations. Operations with NGOs and other governmental organizations along with military organizations.

Joint Capabilities Integration and Development System (JCIDS). The DoD system for identifying, assessing, and prioritizing joint military capability needs.

Joint Capability Areas (JCAs). Tier 1 JCAs are collections of similar capabilities grouped at a high level in order to support decision-making, capability delegation, and analysis. Tier 2 JCAs are functional or operational capabilities with sufficient detail to support Combined Joint Task Force-level operations/missions or joint force generation/management activities. Tier 2 JCAs bound, clarify, and better define the intended mission set of their Tier 1 JCAs. They prevent duplication between Tier 1 JCAs and are not service or platform specific.

Joint Mission Essential Task Lists (JMETL). A mission task selected by a joint force commander deemed essential to mission accomplishment and defined using the common language of the universal joint task list in terms of task, condition, and standard.

Joint Operations Concepts (JOpsC). Joint concepts that describe how joint forces are expected to operate across the ROMO in 2012–2025.

Live Training Domain. The training domain where live participants operate operational systems and platforms (including their full range of mobility) in the physical environment.

Training Capabilities Analysis of Alternatives (TC AoA). “Program Decision Memorandum 1,” Joint Simulation System, 12 December 2002, directed that an AoA be conducted for joint and service training. The purpose of the TC AoA was (1) to compare current training capabilities with training requirements in order to identify gaps in our current joint training capability, (2) to identify alternatives for removing those gaps, and (3) to assess the cost and effectiveness of these alternatives. The report describes the five alternatives that were originally directed in AoA guidance and tracks how these alternatives were further defined for detailed analysis of cost and effectiveness.

Virtual Training Domain. The training domain where live participants operate simulators/emulators/operational systems in a synthetic environment.

Abbreviations and Acronyms

CCJO	Capstone Concept for Joint Operations
CJTF	Combined Joint Task Force
CTC	Combat Training Center
DOTMLPF	doctrine, organization, training, materiel, leadership and education, personnel, and facilities
DRRS	Defense Readiness Reporting System
IA/IG/MN/NGO	interagency, intergovernmental, multinational, and nongovernmental organization
JCA	joint capability area
JCIDS	Joint Capabilities Integration and Development System
JFC	joint functional concept
JFP	Joint Force Provider
JFT	Joint Force Trainer
JIC	joint integrating concept
JMET	joint mission-essential task
JMETL	joint mission-essential task list
JNTC	Joint National Training Capability
JOC	joint operating concept
JOpsC	joint operations concepts
JOD	joint officer development
JTF	joint task force
JTFC	joint training functional concept
JT FCB	Joint Training Functional Capabilities Board
JTGE	Joint Training Global Environment
L-V-C	live - virtual – constructive
NDS	National Defense Strategy
O/T	observer/trainer
PME	professional military education
R&D	research and development

SSTRO	stabilization security, transition, and reconstruction operations
T2	training transformation
TTP	tactics, techniques, and procedures
WMD	weapons of mass destruction

Appendix C – Table of Joint Training Capabilities and Key Attributes

1. **General.** The following table lists the 43 capabilities within the joint training functional area and the attributes considered most relevant to those capabilities. Relevant Tier 1 and Tier 2 JCAs are also shown for each capability listed. The JCA key is provided below.

2. **Attributes.** An “**X**” is placed under those attributes that are considered most significant to contributing to the designated capability. The attributes are fully defined starting on page 21 and summarized in Table 2 on pages 26–28. Attributes are intended to be used in evaluating the relative merits of recommendations to achieve the listed capabilities.

JCA Key
Tier 1
JFG = Joint Force Generation
JIMNC = Joint Interagency/IGO/NGO Coordination
JNO = Joint Net-Centric Ops
Tier 2
D = Doctrine
Ed = Education
T = Training
Ex = Exercise
EQUIP = Equip
MN = Multinational Coordination
KM = Knowledge Management

Table C-1 JTFC Capability Table – Part 1

Capability #			JCA Tiers		JTFC Attributes										
JFC	XXX	Type	JTFC Capabilities	Tier 1 JCA	Tier 2 JCA	Right Information	Right Audiences	Promotes Adaptability	Responsive	Promotes Inter-operability	Transfers Desired Learning	Persistent/ Reinforced	Networked	Expeditionary	Efficient
JT 1.0 XXX C															
CENTRAL IDEA: REVISING OR CREATING NEW JOINT TRAINING PROCESSES															
Mission-Driven Training Requirements															
JT 1.0	001	C	Determine joint training requirements from operational requirements	JFG	T	X	X								
JT 1.0	002	C	Identify performance objectives, conditions, and standards	JFG	T, D	X	X			X					
JT 1.0	003	C	Train all military personnel to accept appropriate military culture	JFG	T	X	X	X		X	X				
JT 1.0	004	C	Certify joint headquarters	JFG	T, EX	X	X		X	X	X				
JT 1.1	005	C	Train in partnership with all COCOMs/Agencies	JFG	T, EX	X	X	X		X	X	X			
Appropriate Focus on All Echelons of the Force Across All Organizations and All Levels of War															
JT 1.0	006	C	Determine retraining intervals and appropriate audiences to be trained together	JFG	T	X	X			X		X		X	
JT 1.0	007	C	Develop and maintain persistent joint context for service, combatant command and joint training	JFG	EX	X	X		X	X		X		X	X
Provision of Incentives to Individuals, Units, and Organizations to Learn															
JT 1.0	008	C	Implement outcome-based processes that reward both trainees and trainers for effective training	JFG	T				X	X	X	X			
Focus on Training During Concept Development and Acquisition															
JT 1.0	009	C	Ensure appropriate joint training objectives are key performance parameters during system acquisition	JFG	EQUIP	X	X		X	X	X	X	X	X	X
CENTRAL IDEA: STRENGTHENING THE JOINT TRAINING GLOBAL ENVIRONMENT															
Integration of Live, Virtual, and Constructive (LVC) Training Technologies															
JT 1.0	010	C	Employ net-centric infrastructure to create an effective, efficient LVC environment	JFG, JNCO	EX		X		X	X		X	X	X	X
JT 1.0	011	C	Integrate LVC capabilities with training specialists and subject matter experts to create most effective training for all echelons	JFG	EX	X	X	X	X	X	X		X	X	
JT 1.0	012	C	Integrate operational systems into joint LVC environment to allow vertical training	JFG	EX		X			X			X	X	
JT 1.0	013	C	Assure LVC environment can stimulate all operational command and control systems	JFG	EX	X	X		X	X			X	X	
JT 1.0	014	C	Coordinate and conduct joint training exercises and mission rehearsals of appropriate scale using the LVC environment	JFG	EX		X		X	X			X	X	
Advanced Distributed Learning and Gaming															
JT 1.0	015	C	Use immersive gaming and simulation to develop decision-making skills available at all times for all echelons	JFG	ED, T		X	X	X		X	X	X	X	X
Embedded Training Systems															
JT 1.0	016	C	Embed LVC systems interoperability and compatability into weapons, support, and training	JFG	EQUIP	X	X		X	X		X	X		X
Agile Mission Rehearsals															
JT 1.0	017	C	Provide integrated, real-time, globally-distributed mission rehearsal capability	JFG	EX	X	X		X	X	X		X	X	
JT 1.0	018	C	Rapidly replicate the adversary force, terrain, and area culture in LVC environments	JFG	EX	X		X		X			X		
JT 1.0	019	C	Train with partners (OGA, NGO, PVO)	JII/MNC	ALL tier 2+ EX	X	X	X		X			X		

Table C-1 JTFC Capability Table – Part 2

Capability #			JCA Tiers		JTFC Attributes										
JFC	XXX	Type	JTFC Capabilities	Tier 1 JCA	Tier 2 JCA	Right Information	Right Audiences	Promotes Adaptability	Responsive	Promotes Inter- operability	Transfers Desired Learning	Persistent/ Reinforced	Networked	Expedi- tionary	Efficient
JT 1.0 XXX C															
			OVERARCHING SUPPORTING IDEAS												
			Career-Long Training and Learning Continuum												
JT 1.0	020	C	provide the joint force with extensive and career-long training and learning programs	JFG	T, ED	X	X	X		X	X	X			
JT 1.0	021	C	learn the empathetic, cultural, and language skills	JFG	ED	X		X		X	X				
JT 1.0	022	C	prepare senior officers for complex decision-making at high joint levels	JFG	ED, T	X	X				X				
JT 1.0	023	C	provide educational approaches and tools that teach rapid and effective decision-making	JFG	ED	X	X	X			X				
JT 1.0	024	C	provide tailored advanced distributed learning	JFG	ED	X	X		X		X	X	X		X
			A Joint Culture of Adaptation to New Situations, Information and Lessons Learned												
JT 1.0	025	C	ability of individuals, units and staffs to modify their behavior quickly and appropriately	JFG	T	X	X	X		X	X	X			
JT 1.0	026	C	ability to use intelligence forecasts to quickly identify additional Joint Training requirements	JFG	T	X		X	X						
JT 1.0	027	C	ability to integrate lessons learned quickly into relevant training courses	JFG	T	X		X	X		X	X			
JT 1.0	028	C	ability to rapidly design, plan, prepare, execute, and analyze joint training events to meet changing needs of commanders	JFG	EX	X			X	X					
JT 1.0	029	C	ability to develop enhanced abilities, including language, to empathize with and understand civilians, other organizations, and social forces within an area, culture, and people	JFG	T, ED	X		X		X	X				
JT 1.0	030	C	ability to produce a military culture that values, rewards, and develops adaptability to unexpected circumstances	JFG	T, ED	X		X	X			X			X
JT 1.0	031	C	The ability to train personnel to use intelligence materials at the operational level	JFG	T	X	X	X	X	X					
JT 1.0	032	C	ability to reward initiative and appropriate risk taking	JFG	T	X	X	X	X		X	X			

Table C-1 JTFC Capability Table – Part 3

Capability #			JCA Tiers		JTFC Attributes										
JFC	XXX	Type	JTFC Capabilities	Tier 1 JCA	Tier 2 JCA	Right Information	Right Audiences	Promotes Adaptability	Responsive	Promotes Inter-operability	Transfers Desired Learning	Persistent/ Reinforced	Networked	Expeditionary	Efficient
JT 1.0 XXX C															
			Inculcation of Joint Culture and Habitual Relationships												
JT 1.0	033	C	ability to intuitively think and act as a joint force	JFG	ED, T	X	X	X							
JT 1.0	034	C	ability to develop habitual relationships	JFG	T	X	X			X					
			Holistic Approach -- Integration of training with Other Personnel Actions												
JT 1.0	035	C	ability to coordinate Joint Training with Service training and education	JFG	T, D	X	X			X					X
JT 1.0	036	C	ability to assess, record, and maintain all training and educational activity	JFG	T	X	X					X	X		
JT 1.0	037	C	ability to link training and education information directly to systems reporting readiness	JFG	T	X			X	X		X	X		X
			Readiness Assessment												
JT 1.0	038	C	ability to assure that the desired learning has been accomplished	JFG	EX	X					X	X			X
JT 1.0	039	C	ability to translate joint operational requirements into joint training process requirements	JFG	T	X	X		X						
			Remedial On-Demand Support												
JT 1.0	040	C	ability to deliver job performance aids to individuals when and where needed	JFG	T	X	X					X	X		X
JT 1.0	041	C	Ability to create on demand performance support	JFG	T	X	X				X	X	X	X	
			Collaboration with Non-DOD Organizations												
JT 1.0	042	C	ability to adapt training processes and capabilities to yield effective inter- and intra- organizational collaboration	JIIIMNC	ALL tier 2 + EX		X	X	X	X			X		
JT 1.0	043	C	ability to effectively share information in a training environment with non-DoD stakeholders	JIIIMNC, JNCO	KM	X	X	X		X			X		
JT 1.0	044	C	ability to educate and train foreign military personnel and organizations	JFG, JIIIMNC	MN, EX		X			X			X	X	

KEY	JCA
	Tier 1
	JFG = Joint Force Generation
	JIIIMNC = Joint Interagency, Intergovernmental, Multinational, Nongovernmental Coordination
	JNO = Joint Net-Centric Ops
	Tier 2
	D = Doctrine
	Ed = Education
	T = Training
	Ex = Exercise
	EQUIP = Equip
	MN = Multinational coordination
	KM = Knowledge management

Appendix D – Table of Joint Training Capabilities Considered Most Relevant to Generating Effects and Broad Capabilities Listed in Selected Joint Operating Concepts (JOCs)

1. **General.** The following table shows a matrix of effects and broad capabilities identified in specified JOCs that are supported by the joint training capabilities described in this concept. *Not all JOC effects/capabilities are displayed* — only those to which JTFC-described capabilities most contribute to generating. An “**X**” is placed under those capabilities that are considered most relevant to generating the listed effect or broad capability.

2. **Descriptions.** The JOC effects/broad capabilities are briefly described. The associated JTFC capabilities are numbered 1-43, summarized below, and fully described in the **Joint Training Processes Central Idea** (8 associated capabilities), the **JTGE Central Idea** (10 associated capabilities), and the **Overarching Supporting Ideas** (25 associated capabilities).

3. **Relevance.** The capabilities within the joint training functional area that have the **most relevance** to generating the effects and broad capabilities in the JOCs are highlighted in **bold print**, providing combat developers and joint experimentation and assessment agencies fruitful areas for further research and development.

4. **Summary of Capabilities.**

1. **Determine joint training requirements by analyzing established operational requirements expressed in terms of essential tasks and skills, lessons learned, and anticipated future threats**
2. **Identify performance objectives, conditions, and standards for joint tasks**
3. Train all military personnel to accept a military culture of doctrinal understanding, adaptability, and personal responsibility for mission accomplishment, all of which emphasizes innovative solutions in unprecedented situations
4. Certify joint headquarters
5. Training in partnership with all affected CoComs/agencies
6. **Determine retraining intervals for relevant tasks and skills and determine personnel and organizations to be trained together**

7. Develop and maintain persistent joint context for service, combatant command, and joint training
8. Implement outcome-based processes that reward both trainees and trainers for effective training
9. Ensure appropriate joint training objectives are key performance parameters during the system acquisition process
10. Employ net-centric infrastructure to interconnect training ranges and other live training locations, virtual training capabilities, simulation centers, and training audience facilities
11. Integrate LVC training capabilities
12. Integrate operational systems with embedded training capability into a joint LVC environment
13. LVC environment stimulates all operational command and control systems
- 14. Coordinate and conduct joint training exercises and mission rehearsals of the appropriate scale using the LVC environment**
15. Use immersive gaming and simulation to develop decision-making skills at all force echelons, available 24/7 worldwide
- 16. Embed LVC-system interoperability and compatibility into weapons, support, and training**
- 17. Provide integrated, real-time, globally-distributed mission rehearsal capabilities using realistic scenario databases, recent and forecast intelligence information, and lessons learned**
- 18. Rapidly replicate the adversary force, terrain, and area culture in LVC environments**
- 19. Train with partners (e.g., coalition, IA/IG/MN/NGO)**
20. Provide the joint force with extensive and career-long training and learning programs that are tailored to particular units and staffs, as well as practical job experience
- 21. Ensure that DoD personnel learn the empathetic, cultural, and language skills appropriate to their positions throughout their careers**
22. Prepare senior officers for complex decision-making at the most senior joint levels

23. Provide educational approaches and tools that teach rapid and effective decision-making
24. Provide tailored advanced distributed learning and rapidly configurable individual training tools developed from rapidly accessible knowledge collections for individual, unit, and staff training
25. Individuals, units, and staffs modify their behavior quickly and appropriately when circumstances change in ways for which they have not been specifically trained
26. Use intelligence forecasts to quickly identify additional joint training requirements and rapidly produce effective training materials and courses
27. Integrate lessons learned quickly into relevant training courses, tools, and procedures
28. Rapidly design, plan, prepare, execute, and analyze joint training events to meet changing needs of commanders
- 29. Develop enhanced abilities, including language, to empathize with and understand civilians, other organizations, and social forces within an area, culture, and people involved in ongoing or potential political or military conflict**
30. Produce a military culture that values, rewards, and develops adaptability to unexpected circumstances
31. Train personnel to use intelligence materials at the operational level
32. Reward initiative and appropriate risk taking
33. Develop individuals, units, and staffs that intuitively think and act as a joint force
34. Create a training environment and military culture that develop live and virtual habitual relationships
35. Coordinate and integrate joint training with service training and education, including both active and reserve components
36. Assess, record, and maintain all individual, group, and organizational training and educational activity
37. Link training and education activity information directly to systems reporting readiness and assessing training effectiveness
38. Ensure that the desired learning has been accomplished

39. Translate joint operational requirements into joint training process requirements
40. Deliver job performance aids to individuals when and where needed using libraries of common, reusable training content
41. Create on-demand performance support
- 42. Adapt training processes and capabilities to yield effective inter- and intra- organizational collaboration**
- 43. Effectively share information in a training environment with the stakeholders**
- 44. Educate and train foreign military personnel and organizations as authorized and directed**

Table D1.4 JTFC Capability Relationship to IW JOC Effects and Capabilities

JTFC Capability >>>		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44								
		JTP Central Idea									JTGE Central Idea									OVERARCHING SUPPORTING IDEAS																																	
xxx	IW Effects (IW 1.0-xxxE)																																																				
18	Armed forces and other security forces of a foreign state, organization, or group are fully mission capable.						X													X	X																										X	X	X				
020A	... conditions necessary for strategic success established. NOTE: Capability condition : ... Train FID						X													X	X																											X	X	X			
21	Supported armed groups/irregular forces gained legitimacy & support -. NOTE: Capability condition has Training in discription					X														X	X																											X	X	X			
31	Joint force is provided with fully educated and trained personnel and units to execute IW operations and	X	X		X	X						X	X		X					X	X	X								X	X	X															X	X					
32	M&S provide realistic effects of direct and indirect action in an IW campaign or operation.																																																				
											X	X	X	X	X	X	X	X	X	X																															X		
33	Lessons learned in combat are captured in TTP.	X																																																			X

Table D1.5 JTFC Capability Relationship to DO JOC Effects and Capabilities

There are no Deterrence Operations effects or capabilities where JTFC capabilities have a direct impact.

Appendix E – Plan for Assessment and Experimentation

Assessments of training over the past few years provide a basis for identifying areas where improvements are needed and where experimentation can help direct future innovations.

The Training Capabilities Analysis of Alternatives (TC AoA), completed in 2004, compared existing training capabilities with training requirements in order to identify and prioritize gaps in joint training capability.¹⁴ The best way to fill some of the highest priority gaps is not always clear, and experimentation with alternative approaches is likely to be beneficial.

High-priority areas for experimentation include:

- Training forces in integrated operations. The difficulty of assembling the appropriate training audiences that include inter-agency, inter-governmental, multinational, and nongovernmental partners means that training tools to support training of the different parts of the audience in an independent, yet coordinated way could be very valuable. Ensuring that intelligence personnel receive appropriate joint and integrated training is a particular challenge. Experimentation with alternative approaches could be very fruitful.
- Training forces on stabilization security, transition and reconstruction operations (SSTRO). Training for SSTRO at combat training centers (CTCs) has become quite sophisticated. Experimentation could assist the development of simulations and training tools that prepare forces to get the most out of their CTC experiences.
- Training individuals and units in adaptability. Improving training in this area was a major recommendation of the 2005 Training Transformation Assessment.¹⁵ While there is ongoing training that focuses on increasing how quickly and effectively training audiences identify unexpected situations and solve the operational problems presented, the best ways of improving adaptability in various circumstances have not been identified. This calls for experimentation.

¹⁴ OUSD (P&R) and JFCOM, *Training Capabilities Analysis of Alternatives Final Report*, 30 July 2004, page III-2.

¹⁵ OUSD (P&R), *2005 Training Transformation Assessment, Joint Assessment and Enabling Capability*, December 2005, page S-7.

- Other areas that could benefit from experimentation and further assessment:
 - Providing awards and incentives
 - Demonstrate JTGE on global scale
 - Demonstrate timely scenario generation for modeling and simulation capability through rapid distributed database consolidation.
 - Demonstrate integration of experimentation and exercise for timely impact to warfighter

Appendix F – Description of Initiatives

The JTFC provides guidelines for the Joint Training Functional Capabilities Board, among others, to use in assessing future training initiatives. The document informs other joint training capabilities proponents and serves as catalyst for joint training research and development initiatives. The material in the main body of the document discusses guidelines in some detail. This section provides a shorter list of key questions for analyzing initiatives:

- What central idea does it support: revising or creating new *joint training processes*, strengthening the *JTGE*, or both?
- What specific capabilities does it address?
- Does the initiative concern development of better training methods, better ways of executing current methods, or better ways of managing training?
- What skills or knowledge does it seek to impart? What JCAs or missions does it seek to improve? What mission essential tasks does it address? Initiatives involving development of better training tools (e.g., oriented toward training architecture, infrastructure, and methodology) need not be related to specific content areas.
- What joint training audience will it support?
 - What DoD echelons are involved, from individuals through lower level teams, fleets, battalions, strike groups, brigades, Squadrons, divisions, joint commanders, and their staffs? This training needs to be comprehensive — from “trigger pullers,” to staff planners, to the commander who has to decide to employ them.
 - What are the interfaces among the services, their components (active and reserve), joint commands, and non-DoD partners (inter-agency, inter-governmental, multinational organizations, and NGOs)?
- What particular attributes does it address?
- For each attribute addressed, what metrics does it seek to improve, and what change is sought for each metric? Thus, if an initiative is designed to improve responsiveness, the most relevant metric might be how much more quickly a mission-rehearsal exercise can be constructed to incorporate new information.

Appendix G – Relationship of the Joint Training Functional Concept to Other Joint Concepts

The following are examples of how joint training supports and is influenced by these other concept documents. In general, training must impart to the training audience a realistic understanding of the operational conditions it may face; competence in utilizing the tools and capabilities addressed in the other joint functional concepts; and the ability to be adaptive, agile, and anticipative across the full range of military operations:

1. Other Joint Functional Concepts.

- Battlespace Awareness — Individuals, staffs, and units must be trained to make full use of the information flows available to them in order to improve awareness of the battlespace and better understand its possibilities and limitations. To accomplish this, training must emulate or use real-world information systems.
- Joint Command and Control — Individuals, staffs, and units must be trained to contribute to, and fully use the capabilities inherent in, a collaborative information environment (e.g. common operational picture). Once again, this requires training that emulates or uses real-world systems.
- Force Application — Training must be able to depict joint operations involving the integrated use of maneuver and engagement to create the effects necessary to achieve mission objectives. Effective joint training will facilitate quick establishment of full-spectrum dominance across all domains – air, land, maritime, and space and the information environment — to seize the initiative, swiftly defeat opposing forces, and help reduce the “fog and friction of war,” thus allowing our joint forces to decisively win future conflicts.
- Focused Logistics — Training must incorporate logistics doctrine, planning considerations, automated tools, and constraints in a realistic way so that all elements of the force understand how to manage logistics and understand the implications of logistics for operational success. Real-world logistics information systems should be emulated or used.
- Protection — Train on joint force protection in expeditionary environments, including air and missile defense and security of entry air and sea ports, as well as transiting mobility assets, against a diverse variety of anti-access threats. Force protection is also a closely coordinated joint mission that requires timely

and accurate sensor data as well as human intelligence on the capabilities of adversaries and an understanding of how to use such data. Training must ensure that forces are trained to obtain, disseminate, and effectively act on such data.

- Net-Centric Environment — Training for an effective net-centric system that can provide all forces with the information they need, must lead to decentralized “decision-making” and execution; however, this must not be done at the expense of unity of command and effort. It requires emulation or use of the real-world networks that will be available to the training audience.
- Force Management — Training must support whatever new force-management concepts are adopted. For example, changes in personnel rotation patterns may affect the frequency with which retraining is needed, the availability of and type of training infrastructure, and tailorable training capability.

2. Joint Operating Concepts. For all the JOCs and JICs, training must be integrated across functional areas to effectively depict the relevant operational environment, including intelligence, logistics, and information flows. It also must address working with relevant organizations outside the DoD. In particular:

- Major Combat Operations — Be trained in conducting synergistic, high-tempo actions in multiple domains to shatter the coherence of the adversary’s plans and dispositions and render him unable or unwilling to militarily oppose the achievement of U.S. strategic objectives. Operating with coalition partners must be incorporated.
- Homeland Defense and Civil Support — Be trained in how DoD will fulfill responsibilities of securing the homeland to include how: (1) DoD detects, deters, prevents, or if necessary, defeats external threats or aggression to the homeland; (2) DoD will be prepared to respond to catastrophic incidents as appropriate or as directed; and (3) DoD will integrate and operate with non-DoD and international partners to achieve unity of effort for homeland defense and civil support.
- Deterrence Operations — Be trained in nuclear strike capabilities and use of emerging space control capabilities.
- Military Support to Stabilization Security, Transition, and Reconstruction Operations — Be trained to work with IA/IG/MN/NGO organizations. Emphasize training in language,

culture, psychological operations, civil affairs, governance, and establishing and leveraging human intelligence.

3. Joint Integrating Concepts (JIC)

- Global Strike — Train the joint force to utilize the principles of Global Strike, which call for responsive joint operations that strike enemy high-value/high-payoff targets as an integral part of overall joint force operations. Key to proper application of this JIC is impressing upon the training audience the importance of understanding the adversary's resources, operations, and decision systems in order to identify his centers of gravity and high value targets.
- Seabasing — Be trained in use of joint combat power from the sea. This includes the rapid development, assembly, command, projection, reconstitution, and reemployment of such forces. In other words, train the joint force to think of joint operations from sea in the same way that they think of joint operations on land.
- Net-Centric Operational Environment — Be trained to use knowledge-management and network-management systems to ensure rapid access to relevant, accurate, and timely information; also have the ability to create and share the knowledge required to make superior decisions in an assured environment amid unprecedented quantities of operational data.
- Command and Control — Be trained to support the need of commanders to exercise effective command and control of an interdependent joint force in rapidly changing scenarios involving complex distributed, simultaneous, or sequential operations, often with other agencies and nations.
- Joint Logistics (Distribution) — Be trained to rapidly and effectively move and sustain selected joint forces in support of major combat operations or other joint operations.
- Persistent ISR — Be trained to maintain persistence through integrated, synchronized management of planning and direction of the ISR enterprise, including all intelligence disciplines, such as human intelligence, imagery, signals, measures and signatures, and open source, as well as nontraditional ISR collection capabilities.