

# *Military Training Technology*

Insides:  
MT2 TOP 100

## Transforming Training

**Dr. Paul W. Mayberry**

Deputy Undersecretary of Defense  
for Readiness

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MOUT ★ F-15E Trainers ★ NSTC ★ DMT  
Gaming for Training ★ Distributed Learning

## Revolutionizing Warfighter Readiness

### **Dr. Paul W. Mayberry** **Deputy Undersecretary of Defense** **for Readiness**

*Dr. Paul W. Mayberry is the focal point on all issues and activities related to the readiness and training of U.S. armed forces. He develops and oversees policies and programs to ensure U.S. forces stand ready for all missions as assigned by the president and the secretary of defense. He is leading DoD-wide initiatives that include the development of a real-time readiness reporting system, a transformed training environment for joint forces, sustainable military training ranges and the implementation of the secretary of defense's 50-percent mishap reduction goal.*

*Previously, he served in several key executive roles throughout the DoD. Most recently, he was the executive director for the secretary of defense's review of military morale and quality of life. He has served as the special assistant to the undersecretary of the Army contributing to the development and implementation of the Army's transformation vision. Mayberry was the director of manpower and training in the Department of the Navy overseeing the policies and programs for the Navy and Marine Corps recruiting efforts. Prior to these assignments, he had a distinguished career with the Center for Naval Analyses. He also completed two field tours as an operations analyst with the Naval and Marine forces in the Pacific Fleet.*

*Dr. Mayberry was interviewed by Jordan Fuhr, editor.*

**Q: What are your roles and responsibilities as the deputy undersecretary of defense for readiness?**

**A:** I serve as the readiness proponent to the secretary of defense and to my direct boss, Dr. David Chu, undersecretary of defense for personnel and readiness. When I assumed office in August of 2001, the secretary of defense charged me with a transformational agenda. On the readiness side, that gets into issues related to the readiness assessment and reporting process; bringing that in line with the new military strategy of being able to address the question of "Ready for what?" as opposed to the old strategy of "We are ready for the major theater wars, and everything else is a lesser case."

Today, we have a full spectrum of military operations that our units are responsible for. So it's a much broader question: "How do we go about assessing and reporting readiness in a near real-time manner—to make sure that information is timely and supportive of senior level decision making?" Such scenario-based work is done in conjunction with the joint staff to assess our ability to conduct, not only operations that are ongoing today, but to make sure we have sufficient forces that are ready, trained and equipped to be able to address other hot spots—potentially around the world.

Also on the readiness side, I'm responsible for the Senior Readiness Oversight Council (SROC). We address the most immediate and current readiness issues for the senior leadership. As a matter



of fact, we just held an SROC session yesterday [September 24] to address the issue of rebalancing our force in terms of the active-Reserve mix of our specialties and capabilities.

I also am responsible for the oversight and policies of training to better enable joint operations. The direction that the secretary of defense gave to me was that we need to transform the way that our forces are trained. The security environment is no longer dominated by a major theater war against known enemies with large standing armies, navies and air forces. The dramatic change in the American security environment has had a major impact on the employment of our forces. And therefore, that should have a major impact on the way that we train.

Today, the emphasis has shifted away from a long deliberate planning process to be more adaptive in our plans, to be able to deliver quickly capabilities to the forefront, to be able to bring together the unique contributions and expertise and competencies of the services within a joint context. That is the way that we fight today.

We're moving away from large standing organizations to more joint, smaller organizations that are distributed around the world, to include coalitional forces. Developing standing joint task force headquarters that can integrate service capabilities is where we're pressing

the future. So this notion of being able to routinely train the way that we're going to operate has been the transformational charge.

**Q: When setting policy and conducting related responsibilities, do you work directly with Army's Training and Doctrine Command and service counterparts?**

**A:** This is a collaborative effort, and really, when I say "we," I really mean a team here.

T2 is an enabler of the Department's Transformation program. So, our efforts are in step with the Director of Force Transformation [retired Vice Admiral Arthur Cebrowski]. Other OSD staff directorates and the joint staff, because they, of course, represent the combatant commanders, also have been significant contributors. But the critical player in this is Joint Forces Command (JFCOM). This is really a triangle. Every Thursday morning, all three of us come together to discuss our ongoing efforts in the transformational arena and specifically the three capabilities—the Joint National Training Capability (JNTC), Joint Knowledge Development and Distribution Capability (JKDDC), and finally, the Joint Assessment and Enabling Capability (JAEC).

But, let me give you a little history here. The services are world-class trainers, bar none. People ask, "Why do we need to do this jointness?" About a year and a half ago, the services were somewhat skeptical. They said they already trained 24/7 and asked, "When do you want me to do this incremental joint piece?" Since that time, we have gone through two wars—Enduring Freedom and Iraqi Freedom—and three, if you include homeland security. Everyone has now seen that we fight as a joint team. Therefore, how can we best go about improving upon our already existing training to further bring in the notion and the concepts of joint? Here is our ultimate end state of training transformation: no individual, no unit, no staff would ever deploy into combat without first having experienced the rigors and the stress of their joint responsibilities in a robust and realistic training environment. The services have really "turned-to" on this.

So I have drawn a triangle that includes OSD, the joint staff, and JFCOM. But, this truly is a pyramid with the services at the top. We are building upon what was really the department's first training transformation back in the late '70s and early '80s with the creation of the services' major training centers—the National Training Center for the Army, Red Flag for the Air Force, Top Gun for the Navy and CAX [Combined-Armed Exercise] for the Marine Corps. What these transformational events brought together was the notion of realistic training conducted against a thinking, dynamic, adaptive opposing force. Instrumentation and scoring systems established ground truth.

And finally, the fourth pillar in this first transformation had to do with feedback—"How could we have done things better?"—identifying lessons learned and conducting after action reviews.

These four principles are the same principles T2 is building upon. But now, we are taking this to the joint arena. How do we now take these same concepts, these same issues, to the joint context, so that we have a realistic joint scenario, with coordinated opposing forces that are adaptive and coming at you from multiple, asymmetric means. And that we have instrumentation—not just on the ground that tells the ground forces who did what to whom—but how the ground forces can engage air units and how the air units engage the ground forces. And it means that we will have a feedback processes, so that we have joint after action reviews. These are the fundamental principles that training transformation is all about.

**Q: Would you consider T2 to be your biggest project right now?**

**A:** Certainly, I can't think of any other more valuable and immediate program, not only from the present, of how we can impact today's forces, but how we're going to train into the future. As I said earlier, the strategic environment has entirely changed. We have forces on the ground today that are having to change their mindset from warfighting skills to what I will call "diplomatic skills." So you've got a young captain on the ground in Iraq who for the first three weeks fought as a warrior. The war was over. Now, all of a sudden, he must become the mayor of that town. How do we improve the training of those individuals so they better make that transition?

I think the services have done a tremendous job of being able to address what they call COE [contemporary operating environment]. They are incorporating these COEs into their major training rotations. You have civilians on the battlefield, and news reporters interviewing the battalion and brigade commanders to get them accustomed to dealing with everything from mayors in small villages to understanding how we should interface with the local populace. So, there are some good things going on now to be able to address the shift of warfighter to diplomat.

We have high quality personnel in our forces. They are very smart, they are very adaptive, and they have very good general training that they have applied in real-world situations to bring together what are somewhat unique capabilities in the past to new problem sets. The secretary of defense's favorite example from Operation Enduring Freedom is special operations forces riding on horses working with our coalition partners, calling in airstrikes using cell phone technology and satellite technology. A 50-year old bomber aircraft delivered 21st century precision-guided munitions in CAS missions.

So, you can see that you've got very smart, high quality individuals who, when presented with a challenging problem, arose to the challenge. The question now is: "How in the future do we better prepare them to be able to routinely respond to these conditions of uncertainty, of surprise, of asymmetric threats?" That is the challenge for all of us—OSD, Joint Staff, JFCOM—working with the services to pull together what is the best way to do that. Our vehicle within the department to address not only the immediate training challenges, but also the future uncertainty, is T2. So, yes, this is a top priority that I devote a considerable amount of my time and attention to.

**Q: You mentioned three capabilities of training transformation. Could you discuss the three further?**

**A:** Probably the one that gets the greatest degree of visibility is the Joint National Training Capability, JNTC. The basic concept is that we fight as a joint team, and therefore we must routinely train within the joint context. JNTC seeks to bring together live forces, virtual forces (simulators), and constructive forces (simulations). This is probably the greatest challenge for JNTC. We need to do each one of these well.

Bringing live forces together requires the synchronization of the major training centers. The event we have planned in the January [2004] timeframe is where we're trying to bring together the rotation at NTC, the Air Warrior flying out of Nellis [AFB], the CAX coming out of Twentynine Palms [CA], and Naval forces operating out of San Diego.

In this event we will focus on close air support as the joint tacti-

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cal task to be jointly trained. There's also the issue of the virtual piece of JNTC. These are the simulators, like distributed missions trainers, where you can have simulated fighters flying out of Langley [AFB, VA] being controlled by E-3 AWACs, "flying" out of Tinker [AFB, OK].

Those are the types of investments each of the services has made in the past, and it really made tremendous advancement. The Marine Corps' DVTE [Deployable Virtual Training Environment] supports virtual training of small unit maneuvers and its organic aviation assets. It allows Marines, while on deployment, to go through realistic training scenarios and mission rehearsal exercises.

In terms of the constructive piece of JNTC, this really involves the respective services' federations of computer models and simulations. However this training environment must be addressed from the joint perspective. Each of the services has their own modeling and simulation capability. JSIMS—the Joint Simulation System—is a very complex system that required a long time and a lot of money to mature. I think that any joint program, any software development program, any integration program are all tremendously difficult barriers to overcome. Given these difficulties, we have decided to step back and better understand if there are alternative ways of being able to address this training requirement—both joint and service. We are conducting an analysis of alternatives to answer that exact question.

JNTC is predominantly focused on joint tactical and operational levels, and it will use a full combination of live, virtual and constructive capabilities to achieve these training objectives.

JKDDC is the Joint Knowledge Development and Dissemination Capability. This really is a capability focused on developing leaders. And I don't mean just officers. I mean, the full force, active and Reserve. JKDDC is the development of leaders from corporals as leaders to generals as leaders. It gets to the issue of how we go about establishing the basic axiom of being intuitively joint. How we go about becoming joint earlier in our careers. How we are born joint. And this must also be a global capability. This is not necessarily focused on bringing everyone back to a classroom. This is about thinking how we can do training more efficiently, more persistently, more routinely, so that we have an emphasis on a lifelong learning paradigm. A paradigm focused on jointness in addition to service core competency requirements.

There are multiple means of accomplishing these life long learning goals. One creative way may be advanced distributed learning. The department is putting a lot of time and effort into this, so course content can be delivered to individuals wherever they may be, to address service training and joint training requirements.

Another area that we are trying to investigate under the JKDDC is the entire notion of gaming. DARPA is working on something that they call DARWARS. This work stems out of a Defense Science Board report that basically questioned how to create an environment that in essence is a persistent war that would allow people to train?

DARWARS may be one way of getting at that. We need to understand this technology, and what value it can bring to the department from a true training benefit perspective.

There is an entire area called massively multiplayer online games that, again, industry has really been the leader, tapping into games for which individuals are given unique, not well-defined environments in which to operate. These massively multiplayer online games may be an area that would be of some benefit.

The third is JAEC—Joint Assessment and Enabling Capability. The secretary has a saying that "you can only manage what you measure," and that's what JAEC is all about. Trying to systematically

assess, adapt, experiment, be able to revise and understand what these other capabilities are bringing to bear. The department has a tremendous investment of resources, both dollars and people, and we want to know, does it make a difference?

Not everything is going to work. The joint arena is tremendously complex.

Joint urban operations are tremendously complex joint problems where you would want to bring various fires and effects in a very tight environment where you want to limit, minimize, or ideally have no collateral damage. The nature of targets in that environment comes and goes; you have to be able to quickly minimize the time between the intel sensor and the shooter to achieve that effect.

There is tremendously complex coordination and integration required to deliver effects from a multitude of sources. How do we go about assessing the impacts and result? JAEC is a primary capability that will allow us to focus in on an area. We need new ideas and concepts. Failure in this training environment, in this experimentation environment, is acceptable. Not learning from those mistakes is not acceptable. JAEC is the capability that provides for the basis for learning, to understand and to realize the value of our investment, and to also see how we can go about doing things better.

**Q: You mentioned DMT and ADL. Do you see the services heading in the right direction in those regards, or do you think they need to become more joint?**

**A:** I think that the services are marching out very smartly because they see the advantage of this. At the policy level, we have tried to provide the basic overall standards for developing content. This allows for the exchange of knowledge developed in the Marine Corps to be used in terms in the Air Force. We don't need four services developing micro-miniature repair content. But we do need a repository that everyone can reach into and pull from and have knowledge modules that can be readily adaptable and played on any platform, anywhere and anytime—these are the building blocks.

That is a tremendous advancement. The services are moving forward. In terms of jointness, this will get at issues of coalition building and training. A great demand on this content is from our NATO allies. As a matter of fact, a NATO training group—the joint service subgroup is in town this week—has ADL as one of their major initiatives. They are a very strong partner in terms of pressing this training capability within their respective countries and contributing to the NATO training environment. JFCOM is a tremendous player in the advanced distributed learning world, as they interface with coalitions on a routine basis. I see ADL continuing to advance, and gaining speed, especially now in the area of content development.

**Q: Going back to JSIMS, the program office was ordered to close its doors by October 1. Is there a particular alternative that you're looking at now?**

**A:** A JSIMS-like training capability has always been a part of our overall training transformation efforts. So, yes, this is vitally important to us being able to train properly our service and joint forces. Determining whether JSIMS is the solution to that joint constructive modeling and simulation question is the expressed purpose of the analysis of the alternatives that is ongoing. I will not try to predict what the analysis will show, but I do expect the AOA to lay out what options the department has to achieve its joint and service training

requirements.

**Q: In addition to that program, many of the live, joint training exercises have been cancelled. Will they be rescheduled and how does that effect U.S. readiness?**

**A:** I'll probably defer that to the joint staff in terms of the chairman's exercise program. I would say the types and capabilities we are seeking to develop in terms of a global JNTC, must bring coalition multinational partners into that training environment so that in the future we would not necessarily need to bring together as many troops for a Bright Star-like event [multi-national Middle East exercise]. Instead we would be able to that distributively, virtually and be able to achieve—at various levels—many of the same training objectives and outcomes.

**Q: What new technologies for training do you see on the horizon?**

**A:** One of JAEC's unique aspects is that it also must be forward looking ... sort of a leading indicator of what types of technologies can be brought to bear on our training and education challenges. We are looking toward the services and to industry to bring their ideas forward. We have not cornered the market on great ideas. Massively multiplayer online gaming is probably one example of a totally market-driven phenomenon. That may have a spillover effect to military applications and training. Its those types of advancements that we are looking for industry and the services to be forward looking as to what is on the horizon or just over the horizon that may be beneficial.

**Q: What is DoD doing to stem the tide of encroachment on training ranges and training areas?**

**A:** Secretary of Defense Donald Rumsfeld said that some of the most significant issues that will impact the readiness of the armed forces could be categorized as outside encroachment upon military resources. Forms of encroachment include increasing environmental constraints on how we use our training ranges, local community growth up to the fence line of our ranges, and in some instances, efforts to obtain military property for civilian use, airspace restrictions to accommodate civilian airliners, the transfer of radio frequency spectrum from DoD to the wireless communications industry and many others.

Last year, DoD submitted to Congress an eight-provision legislative package known as the Readiness and Range Preservation Initiative to help mitigate the effects of encroachment on our training infrastructure. Three provisions were enacted, including two that allow DoD to more effectively cooperate with local and state governments. A third provision provides an exemption from the Migratory Bird Treaty Act for the incidental taking of migratory birds during military readiness activities. The remaining five provisions were resubmitted as part of the Department's 2004 Defense Authorization Bill.

Legislation is not the whole answer, and is only being pursued where it is necessary to preserve flexibility and protect the immediate readiness of our military men and women. The DoD Range Sustainment Initiative continues to work a comprehensive solution to encroachment pressures on all our training facilities through other major thrusts including policy, organization and leadership, programming and outreach. This initiative will support our twin imperatives of producing the best-trained military force in the world and provid-

ing the best stewardship possible.

And we are seeing results from our efforts. Let me give you an example. The expansion of the Army National Training Center in Fort Irwin, CA, is necessary to satisfy transformational maneuver requirements, but still faces endangered species constraints. After 10 years at impasse due to desert tortoise habitat issues, a compromise was reached to expand the range by 131,000 acres and purchase mitigation land nearby for \$75 million. When finally implemented, this will support necessary training and protect the desert tortoise.

**Q: How will embedded training support future weapons systems and weapons platforms?**

**A:** As many of your readers know, embedded training provides resources on systems and platforms that allow our warfighters to gain and sustain full-spectrum combat proficiency at the individual, crew, leader and collective levels anytime, anywhere—often without firing a round or placing undue operational stress on system components. For example, embedded training allows a CG-47 Aegis guided-missile cruiser's combat systems team to simulate the launch sequence of a Tomahawk missile without firing a round.

In order to fully support the Army's Future Combat System, the Navy's DD(X) next-generation destroyer and other future platforms and systems through their entire life cycles, we will continue to embed training as one strategy to train the Total Force.

Because of the tremendous diversity of major weapon systems and platforms there will be no one solution. For some systems, the embedded training may co-exist on the platform and be interfaced with embedded instrumentation. Other embedded training programs will require different approaches—including making off-platform resources accessible from distributed knowledge repositories connected by numerous hubs and servers in CONUS or in theater.

There are some exciting possibilities on the technology horizon. One scenario that immediately comes to mind is using today's wireless technology to network embedded trainers to take advantage of team training and mission rehearsals.

**Q: Any final thoughts?**

**A:** I think that many individuals in our total force have now, through Operations Desert Storm, Allied Force, Noble Eagle, Enduring Freedom and Iraqi Freedom, experienced nothing but joint operations. It's hard to remember a time when our services really didn't operate as a joint team. Training transformation is truly our drive to continue to integrate the services' unique contributions and capabilities to better enable joint operations. The thing is, we now need to bring the training environment along to make sure we have a continuous basis for exercising the rigor required of these joint tasks prior to deploying in combat. And that truly is where T2 is seeking to take the department. We have the mission and the support, of both the department's and the services' leadership, we have the resources—both the dollars and people. We have a detailed DoD training transformation plan that has been worked with the services, with JFCOM, SOCOM and with the joint staff. Now is the time to deliver these transformed training capabilities to our forces—not only to ensure we maintain our dominance on the battlefield today, but also to address the future challenges of uncertainty, ambiguity and asymmetric threats. ★