

# Leveraging Training Environments to Maximize Training Value

## TRAINING MANAGEMENT DIRECTORATE, COMBINED ARMS CENTER-TRAINING

A training environment is an environment comprised of conditions, supporting resources, and time that enables training tasks to proficiency.<sup>1</sup> The conditions include aspects of operational variables such as political, military, economic, social, information, infrastructure, physical environment, and time (PMESII-PT) that may exist during the unit's execution of the training. The resources a unit needs to replicate the conditions for training, such as training areas, ammunition, role players, and time, inform leaders on which training environment to consider when planning training. The Army recognizes three basic training environments: live, virtual, and constructive; however, units can use the three basic training environments in combination with one another. Leaders need to consider the benefits and limitations of the different training environments when creating training plans to leverage Army capabilities and maximize the value of training.

### Planning Training

Commanders and their subordinate leaders design and schedule training events to achieve the desired proficiency levels in their prioritized tasks and weapons. Training events are where Soldiers and units learn to execute prioritized tasks — individual tasks, battle tasks, and collective mission-essential tasks (METs) — to achieve the commander's desired end state. Commanders need to consider the training environment in which to train their Soldiers early in the planning cycle. Resourcing the required environment may require a significant lead time to secure the needed training resources. Additionally, the different environments each have constraints or limitations the commander must consider when deter-



Infantry Soldiers assigned to 2nd Battalion, 503rd Parachute Infantry Regiment, 173rd Airborne Brigade, move toward a bunker in preparation for a live-fire exercise as part of Swift Response 23 in San Gregorio, Spain, on 16 May 2023.

(Photo by SSG John Todd)

mining his preferred environment for a training event. The methodology known as crawl-walk-run allows commanders to sequence training events from relatively simple tasks to increasingly more complex tasks. Some training environments support the crawl phase of training better than they support the run phase. At certain echelons, the desired training environment may be impractical or too expensive to resource.

Virtual and constructive training environments may help individuals and units build proficiency in a task prior to executing the task in the live environment. Leaders should consider multiple training environments when developing their training plans to build proficiency levels in their prioritized tasks and weapons. NCOs may start in the live training environment by teaching Soldiers skills such as the steady hold factors in rifle marksmanship. Once the Soldiers develop the rudimentary skills, the NCOs expand the marksmanship training by engaging simulated targets in the Engagement Skills Trainer II (a virtual training environment). Finally, the Soldiers test their marksmanship skills in the live training environment at the qualification range. Leaders modify the conditions under which a task is executed to increase realism and improve individual and unit mastery of the task.

**Other Planning Considerations.** Leaders need to think through the conditions in which an individual or unit will operate. Opposing forces, Joint and host nations forces, civilians, criminal elements, higher headquarters, and robust effects simulators (to include chemical, biological, radiological, nuclear, explosives [CBRNE] effects) are all conditions that leaders must consider and resource. In addition, the leaders must consider the standard to which the unit must train and how to evaluate the training. Instrumentation, observers, evaluators, and after action reviews need to be planned and resourced. The training environment chosen for a training event impacts the resourcing requirements needed for execution.

### **Training Environments**

**Live.** Units execute training in the live training environment in field conditions using the unit's tactical equipment in most cases. Live training involves real people operating real systems. Individual weapons qualification, situational training exercises, and field training exercises are all examples of training that take place in the live training environment. The live training environment is familiar to most Soldiers and typically is the first training environment considered by leaders when they are planning training. Depending upon the training objectives of the training event, the live environment requires greater resources than other training environments. Installations maintain weapons ranges, training areas, and training aids, devices, simulators, and simulations (TADSS) for tenant unit training requirements and manage unit access to these resources. The live training environment is usually available for training Soldiers from individual task training to battalion-level collective training. In specific instances, the Army provides opportunities to train brigade collective tasks in the live environment at combat training centers. The live environment exposes the Soldiers to the widest variety of environmental conditions (heat, cold, rain, snow, limited visibility, etc.) and creates the greatest confidence in their equipment, tactical acumen, and leadership abilities. With unlimited time and resources, units execute training in the live environment to receive the benefits of using their actual equipment, in realistic conditions, under their own leadership.

**Virtual.** The virtual training environment involves real people operating simulated or actual systems to achieve the commander's training objectives. Units use the virtual environment to exercise motor control, decision-making, and communication skills.<sup>2</sup> Commanders may use individual and platform-based weapons simulators, such as the Engagement Skills Trainer II or Close Combat Tactical Trainer, to develop basic skills in their Soldiers, teams, and crews prior to training in the live environment. Using the simulators doesn't replace training in the live environment but rather enhances the training that can occur in the live environment by bringing the Soldiers into the training at a higher proficiency level. Commanders who consider virtual training opportunities often realize more productive and efficient unit training at the range or in the field, reducing costs in time and other resources.



Paratroopers with 1st Battalion, 503rd Infantry Regiment take aim with an M4 carbine using the Engagement Skills Trainer in Vicenza, Italy, on 19 March 2020. (Photo by Davide Dalla Massara)

Gaming is a subset of the virtual training environment and is useful to help train individuals and small units. The Army continues to invest in virtual systems to train Soldiers in individual skills and collective tasks. Installations maintain virtual training devices and systems in a similar way to how they manage the resources for the live training environment. Soldiers and leaders can find simulators available for use by visiting the “TADSS at Your Local TSC” link under “Home Station Training Enablers” on the [Army Training Network \(ATN\) website \(https://atn.army.mil\)](https://atn.army.mil). The Army Training Support Center (ATSC) provides a searchable listing of TADSS by device number, nomenclature, or proponent. Viewing the device, leaders can determine if the simulator is available on their installation or a nearby installation.

**Constructive.** Constructive training uses computer models and simulations to exercise command and staff functions. It involves real people interacting with simulated units operating simulated systems.<sup>3</sup> The constructive environment supports training by providing the appropriate levels of model and simulation resolution and fidelity needed to support the commander’s training requirements. The Army has two basic constructive environments units can use: the Joint Land Component Constructive Training Capability (JLCCTC) or the Division Exercise Training and Review System (DXTRS). The Army uses JLCCTC for brigade and higher command post exercises (CPXs). DXTRS is a low-overhead simulation that is useful for brigade and below.

The constructive training environment supports training of commanders and their staffs in the control of maneuver, logistics, intelligence, air defense, and artillery units. Response cell operators control the actions of entities (or units) that represent the combined capability of personnel, weapons systems, and platforms. The entity (or unit) executes the operation in a doctrinally sound manner and generates realistic effects/damage reports. The constructive environment provides feedback to the commander and staff through the unit’s organic mission command systems in the tactical operations center (TOC). Commanders and staffs train on their normal operational functions, and the simulation processes training unit orders and training audience responses. Constructive training is available from the platoon level but is routinely used for training headquarters elements from battalion through echelons above corps. While

<i><b>Environment</b></i>	<i><b>Participants</b></i>	<i><b>Description</b></i>
<b>Live Training</b>	battalion and below	executed in field conditions using tactical equipment
<b>Virtual Training</b>	brigade and below	computer-generated battlefields in simulators
<b>Constructive Training</b>	platoon through echelons above corps	computer models and simulations
<b>Blended Training</b>	platoon through echelons above corps	two or more training environments
<b>Integrated Training</b>	platoon through echelons above corps	virtual and constructive environments, to include information systems

**Figure 1 — Training Environments (FM 7-0)**

less resource-intensive than live training, the constructive environment requires significant advanced planning and resourcing to effectively train unit command and control functions.

### **Combining Training Environments**

Blended training is conducted concurrently within two or more training environments. When planned and resourced, blended training can include information systems that enable the unit commander and other leaders to receive a common operational picture or that enable the activities in one training environment to stimulate reactions in the other environment.<sup>4</sup> Leaders may consider blending the fire and maneuver of a platoon element in the live environment with other platoons operating in the virtual environment to train a company MET if maneuver space is limited. Blending training environments increase the complexity of the training event and require careful planning and control to ensure orders for a virtual element are not transmitted into the live environment. Challenges such as these add rigor to a training event and increase the stress on unit leadership while expanding the scope of the training available to a unit.

The integrated training environment is enabled by integrating architecture to allow full interaction between the virtual and constructive environments. The integrated environment can also allow limited interaction between live forces and the virtual or constructive environments.<sup>5</sup> Integrating the virtual and constructive environments provides the opportunity to execute multi-echelon training of individuals, crews, and staffs simultaneously in locations otherwise inaccessible to the unit. The integrating architecture replicates constructive entities in the virtual environment and conversely displays virtual entities in the constructive environment. Commanders and staffs receive information on their mission command systems to stimulate command actions and respond to events in either training environment.

### **A Word About the Synthetic Training Environment (STE)**

The Army is currently investing in improving virtual and constructive training through their STE effort. STE is designed to provide training resources at the point of training need and includes a focus on seamlessly integrating live, virtual, and constructive training to meet the commander's training objectives at multiple echelons. Systems such as the Soldier Virtual Trainer and the Reconfigurable Virtual Collective Trainer are approaching initial operating capability and will soon be available to Soldiers. The simulators and simulations in the STE environment will replace many of the virtual and constructive systems currently being used by Soldiers and units. As STE and the supporting simulators and simulations come online for the Army, the Training Management Directorate (TMD) will continue to provide Soldiers access to information on the systems through ATN as well as through social media posts on the [TMD Facebook page](#).

### **Conclusion**

The Army continues to invest in quality training environments to provide Soldiers with the most realistic training possible. Leaders need to consider how specific training environments address their training objectives and resources available for their training events. The three basic training environments, along with the capability of blending or integrating them, provide commanders the opportunity to maximize the value of training using increasingly complex conditions to achieve proficiency in their prioritized tasks.

## Notes

<sup>1</sup> Field Manual (FM) 7-0, *Training*, June 2021, J-1.

<sup>2</sup> Ibid, J-4.

<sup>3</sup> Ibid, J-5.

<sup>4</sup> Ibid, J-8.

<sup>5</sup> Ibid, J-9.