

# Parallel Paths for Weapon Development and Training

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**T**here was a time when new weapon systems were developed on a completely separate track from their simulator training components. The traditional path would follow a familiar pattern: requirement approval, candidate selection, testing, type classification, and fielding. Only then would the process of developing simulation capability begin.

Soldiers from Fort Bragg, NC, conduct escalation of force training in shoot/don't shoot mode using the Engagement Skills Trainer 2000. (PEO STRI photo by Doug Schaub.)



However, this workflow often delayed the Army's ability to use simulation to assist new gunners in the operation, sighting, and familiarity of a new weapon.

In light of two ongoing conflicts, such delays are hardly acceptable, which is why Program Executive Office (PEO) Soldier and PEO Simulation, Training, and Instrumentation (STRI) sought to change the old paradigm by putting weapons development and weapons simulation on a parallel path.

Two significant benefits resulted from this effort. The concurrent fielding of a live weapon system along with its simulator counterpart provided units the flexibility to simultaneously train on both their actual weapons and the simulators without the constraints of weather or range availability. Second, the working relationship served as a model for future small-arms fieldings that synchronize with a New Equipment Training (NET) schedule and are particularly focused on achieving best-value and enhanced training results.

### A New Model for Fielding and Training

The initiative began in early 2008 when the two PEOs set out to simultaneously field the new 40mm M320 Grenade Launcher (GL) and its Engagement Skills Trainer (EST) 2000 simulation counterpart through their respective Product Manager (PM) shops: PM Individual Weapons (IW) and PM Ground Combat Tactical Trainer (GCTT). The team wanted to develop an M320 simulator that would capitalize on the EST 2000's global footprint and not require the M320 program to invest in a costly stand-alone training system. In line with the Army Modernization Strategy, the team felt that this approach would allow Soldiers and NET teams to use virtual rounds in a simulated environment, instead of real ammunition on the range, to conduct familiarization with the weapon system.

"A simulator can allow you to rapidly present a variety of different tactical challenges to the trainee to create opportunities for learning that could take years to acquire in the real world," said Charles Amburn, Lead Instructional Systems Specialist, EST 2000. "The learning opportunities extend beyond the trainee. Weapon systems designers, unit leaders, authors of the training and tactics, and those responsible for the integration and study of technology in small-arms training also benefit."

Knowing that the development time to create a new M320 simulated weapon would be unacceptably long, PM IW needed to develop a creative solution to meet its fielding goal.

"Rather than destroy the test sample M320s we had built for the development phase, we decided to put them to good use," said Robert Phung, Product Director, PM IW. "Since the test weapons could not be fielded anyway, we provided them to PM GCTT so that they could quickly re-engineer the weapons into M320 simulators. The program office saved significant time and money, since they didn't need to fabricate simulators from scratch."

PM IW and PM GCTT next prioritized their fieldings based on the modular force concept for brigade combat teams (BCTs) deploying into theater, in compliance with the Army Force Generation (ARFORGEN) phases and force pools. During the reset/train phase, a BCT would receive its new M320 equipment and conduct training using the train-the-trainer model. The Total Package Fielding team trained gunners and leaders selected by their units over a three-day period using classroom time, EST 2000 exercises, and, finally, range time. This plan allowed units to be trained on the actual system while maximizing their training time in both real and virtual environments.

As a unit was fielded its M320 GLs, a NET team moved to the unit's location to assist in the initial operator and field maintenance training. Trainers made use of the Soldiers' M320s as well as the EST 2000 M320s to cover both operator/unit-level and field support maintenance. The EST 2000 provided the NET teams the opportunity to correct deficiencies with new gunners without having to spend valuable and expensive range time to complete the

### ENGAGEMENT SKILLS TRAINER 2000

The EST 2000 is the Army's tactical weapons training system that enables Soldiers to train across three different modes: individual marksmanship, small unit (collective gunnery and tactical training), and judgmental use of force (shoot/don't shoot), which includes escalation of force and graduated response scenarios. Each EST 2000 includes small arms (M1200, M9, M16, M4, M203, and attached and stand-alone M320); crew-served weapons (M240B and M249 Squad Automatic Weapon); the AT4 anti-tank weapon; and heavy machine guns (M2 and MK19). This mix of weapon systems provides Soldiers and commanders the capability to build and sustain individual marksmanship as well as team and squad fire distribution and control, using computer-generated imagery and video. (PEO STRI photo by Doug Schaub.)



## M320 GRENADE LAUNCHER

The M320 is the Army's newest 40mm low-velocity grenade launcher. It replaces the aging M203. The M320 features a launcher, an integrated day/night sight, and a hand-held laser rangefinder. The new weapon improves upon the M203 series of weapons by demonstrating greater lethality and accuracy, firing equally well in daylight or darkness. The M320 can also fire all U.S. standard 40mm, low-velocity ammunition and has an unrestricted breech design that allows the system to fire longer 40mm low-velocity projectiles. The M320 can also be converted into a stand-alone system, enabling increased modularity and helping units to better configure their weapons based on mission requirements. Finally, by adding a more



modern double-action trigger and firing system, the M320 series is safer and more reliable than its predecessor. (U.S. Army photo courtesy of PEO Soldier.)

familiarization and record fire. This capability also allowed the units to continue to conduct marksmanship training on the EST 2000 after the NET teams departed. To further facilitate sustainment training, NET teams left the units with CD-ROMs containing operator and maintenance training materials to be used for refresher and follow-on training as needed.

“The ability to conduct familiarization and preventive maintenance inspection on the M320, using the EST 2000, has saved valuable training time for the Army’s mobilization stations,” said SFC George Floyd, Infantry Training Developer, Joint Training and Training Development Center, Fort Dix, NJ. “The Soldier throughput available with the EST 2000 has also shown a significant cost savings to the Army in ammunition consumption.”

By using this groundbreaking approach to fielding and training, the M320 Total Package Fielding teams increased the proficiency of M320 grenadiers as they transitioned from classroom to range to theater, and as they trained in compliance with the ARFORGEN structured progression model. The result of using the EST 2000 system

has been to improve gunner accuracy and lethality initially on the training range and later on the battlefield.

“Since marksmanship is a perishable skill, Soldiers can continue to perform sustainment training through the EST 2000 prior to deployment or even while in theater,” said SSG Darren Shavers, EST 2000 Training Noncommissioned-Officer-in-Charge, Maneuver Center of Excellence, Fort Benning, GA. “This frees up range time for other units in the ARFORGEN cycle while the deploying unit can continue to train in the EST 2000 with all the weapon systems in the infantry squad.”

### Syncing Solutions

Today’s environment presents significant challenges to Army acquisition programs. To cope with declining budgets, program managers need to rethink how they conduct business to maintain Soldiers’ readiness. The PEO Soldier and PEO STRI initiative provides a useful model for partnership and simulation training while maximizing the time a Soldier spends on the assigned weapon. Although applying simulation is not new, program offices should capitalize on this resource, which can be refreshed and upgraded as

new capabilities are developed. Finally, simulation can accelerate the marksmanship training process and decrease costs without taking shortcuts.

The M320 initiative marked one of the first fieldings in which new simulator weapons were fielded simultaneously with actual weapons for purposes of NET. Follow-on initiatives include the M26 12-Gauge Modular Accessory Shotgun System, the M141 Bunker Defeat Munition, and the XM806 Lightweight .50 Caliber Machine Gun. This synchronized approach could serve as a model for future weapon systems as well, allowing the combat developer to write the simulations requirement along with the weapons requirement so that both systems can be ready for fielding and training simultaneously.

In the end, Soldier effectiveness is enhanced by gear improvements only if the Soldier is trained properly. The faster superior training can be delivered to Soldiers, the sooner they will have a decisive advantage, with the capability they need to execute missions and prevail.

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