

support, check the records, check the TAMMS (Total Army Maintenance Management System) clerk and the prescribed load list. Are spare parts on order? Are they coming in? What about scheduled maintenance?

Sometimes you have to search out systemic problems. I remember one case in which my battalion always blamed the brigade legal section for the slow processing of administrative separation cases. A smart brigade XO did a thorough investigation of the process and found that the biggest delay was at company level. This led my battalion to

change the way we handled the legal business. A cursory inspection of a perceived problem may be almost worthless, but once you find the root of the problem, you have the clout to make the necessary changes.

Being an XO at any level is a challenge. Don't expect to lead that assault in the next war or to grab a lion's share of the medals. But if you perform your duties well, you will have the satisfaction of knowing you helped keep the unit going through thick and thin. By taking care of all the tough, thankless jobs the commander doesn't want to do

or doesn't have time to do—in the arms room, the supply rooms, the motor pool, and the personnel center, you free him to do his own job of commanding the unit.

Lieutenant Colonel Robert G. Boyko served as company executive officer in the 25th Infantry Division, as battalion XO in the 7th Infantry Division during Operation JUST CAUSE in Panama in 1989, and is now XO of the 193d Infantry Brigade at Fort Clayton, Panama. He is a 1975 graduate of the United States Military Academy. His previous articles have appeared in *INFANTRY* as well as other professional publications.

Enhanced Land Warrior Program

CAPTAIN MARK A. CONLEY

Our Infantry—as the centerpiece of a smaller, more lethal, and more readily deployable Army—must have the weapons, clothing, and equipment to survive in various environments and types of terrain, and against various threats. To make the most of its combat power, the Army must base its future modernization efforts for the individual soldier on an integrated system.

The Enhanced Land Warrior Program is the focal point of such a system. It includes improvements to the weapons, equipment, and clothing the soldier carries or wears in a tactical environment. These improvements are designed to make the best possible use of a unit's lethality, command and control, survivability, sustainment, and mobility. The program takes a modular approach to outfitting the infantryman. Instead of linking equipment to a particular equipment design, the subsystems in this program are mission and task-oriented, so commanders can tailor their forces for specific missions.

The overall Enhanced Land Warrior Program is intended to be a continuing

process that includes three near-term programs (Land Warrior, Air Warrior, and Mounted Warrior) and one far-term program (21st Century Land Warrior).

The genesis of research and development for an integrated soldier system was the Soldier's Integrated Protective Ensemble (SIPE), the first successful soldier-oriented advance technology demonstration (ATD). The SIPE ATD developed, fabricated, and demonstrated a modular, head-to-toe, integrated fighting system that offered better combat effectiveness while also protecting the individual soldier against numerous battlefield hazards. Instead of focusing on hardware, the SIPE program demonstrated technology that would clarify and define requirements for the Enhanced Land Warrior Program.

Land Warrior

The first of the near-term programs, Land Warrior, is scheduled for field testing in 1997. This program will be a complex of emerging technology subsystems that offer a "leap-ahead" combat capability for the dismounted

soldier. These technologies will include improvements in the soldiers' individual and collective performance at night and in obscured and chemical environments by improving lethality, command and control, survivability, sustainment, and mobility.

The development of Land Warrior will revolutionize the Army's employment doctrine, tactics, training, leader development, and force design for the dismounted combat soldier. Its benefits will include the following:

Computer. A small computer for the soldier will provide the helmet-mounted, heads-up display (HUD), semi-automated information ranging from global positioning system (GPS) information with digital maps and compass bearings to information in the form of messages, operation orders, and reports. Built-in data menus will enable the soldier to send electronic battlefield reports and intelligence data to higher headquarters. The program will enable the soldier to hand off fire control and to accurately identify and send digitized call-for-fire information to artillery, mortars, and

aircraft. Additionally, leaders using the system will be able to receive and transmit still-frame video imagery along with interactive and embedded training. Interactive training such as marksmanship will allow the soldier to use his weapon system with current weapon training devices. Electronic training manuals and field, operator, technical, and First Aid training manuals can be included for embedded training.

Thermal Weapon Sight. The thermal weapon sight will interface with the HUD and enhanced night vision capabilities to allow the soldier to scan an area to detect and engage targets more accurately through limited visibility and obscurants. This integration will also allow the soldier to see and engage targets around vehicles, buildings, and obstructions without exposing himself to fire.

Communications. Soldier-to-soldier communications will allow squad members to maintain stealth and to communicate effectively from covered and concealed positions. Squad leaders will be able to identify sectors of fire to their team leaders using the laser aiming light viewed through their image intensifiers and to communicate instructions at the same time without compromising their covered and concealed locations.

Integrated Electronic Components. Electronic components, individual equipment, weaponry, and hazard protection will be integrated into a unified system. Its modular design will allow leaders to tailor a mission without burdening their soldiers with items they don't need for a specific mission. This modular system approach provides the flexibility to achieve the best possible balance between performance and protection in responding to various mission requirements.

The Land Warrior system will offer many tactical mission improvements at various levels, of which the following are typical:

Squad Ambush. In the squad ambush (Figure 1), team leaders can use communications within the squad to maintain control on the assault line and to assign sectors of fire using aiming lights and night vision image intensi-

fiers. This means that team members can identify sectors of fire and receive mission information without leaving their covered and concealed positions along the assault line. Flank security personnel can be located at greater distances, maintain communications with leaders on the assault line, and provide their leaders with situation updates without compromising their positions. When an ambush is initiated, fire control

can be enhanced by intrasquad communication, aiming lights, and laser range finders for more accurate delivery of munitions on enemy targets. The ability of each soldier to use an integrated night vision and thermal sighting capability will significantly improve all aspects of lethality, survivability, command and control, and mobility.

Platoon Attack. GPS navigation during the platoon attack (Figure 2) will

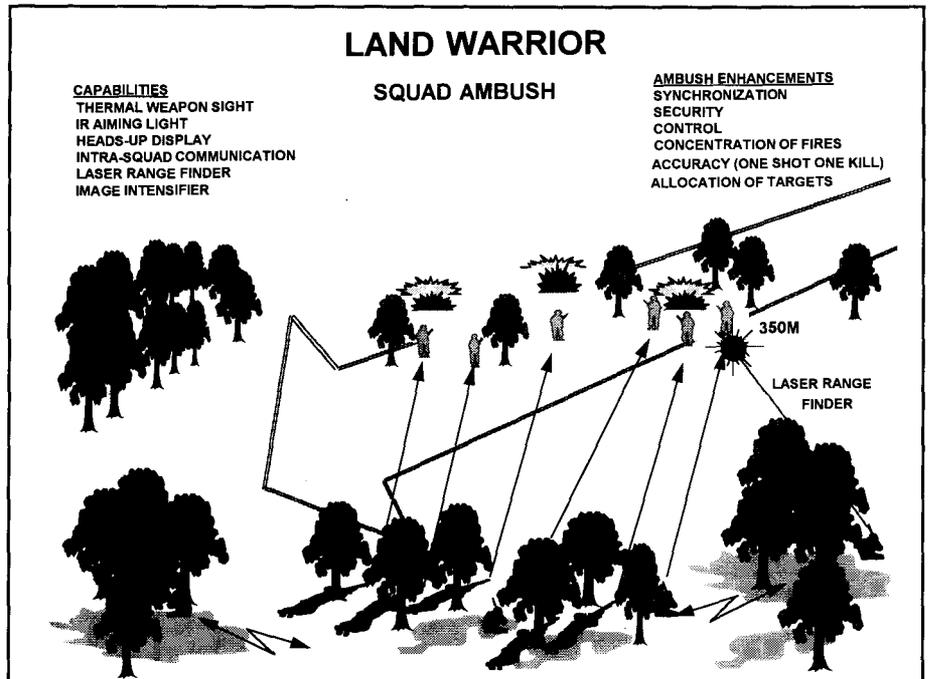


Figure 1

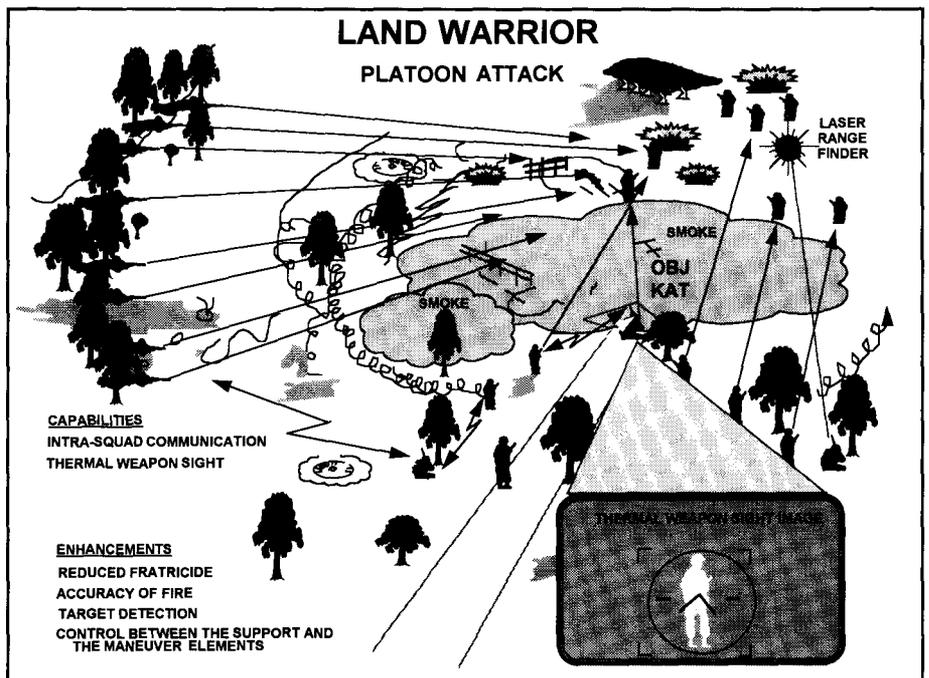


Figure 2

ensure that the attack is in the correct location. The heads-up display allows the unit leaders to see their position graphically in relation to those of other friendly units. During a possible limited visibility attack, the support element (with the team leader using thermal sights and aiming lights) will initiate fire and identify targets for their soldiers to engage. The assault elements will have a better view of the objective, at greater distances, and better command and control throughout the final assault. The attack will achieve better command and control, lethality (fire control and accuracy), mobility, and survivability, and with less probability of fratricide.

Company Attack. During movement in a company attack, situational awareness is improved through real time global positioning and digital mapping, along with the use of a digital compass. Information is continuously fed into the leaders' computers and passed from squad to platoon to company and higher headquarters. This will keep the unit oriented on the objective, verify its exact position when it arrives, and keep the leaders informed of the locations of other friendly units.

Figure 3 depicts situational awareness through the HUD (digital mapping, unit position symbols, and grid location), communications linkages, and digital data transmission. Accurate situational awareness allows for better use of fire support coordination between mounted and dismounted elements, while also informing subordinate leaders and soldiers of their roles in the overall unit effort.

21st Century Land Warrior

The overall objective of the Enhanced Land Warrior Program is a far-term system envisioned for initial fielding in the early part of the 21st Century. The 21st Century Land Warrior Program will provide improvements in several areas:

Lethality. Improved lethality will be accomplished through the interface with the objective individual combat weapon (OICW), which will eventually replace the M16 series of rifles. This weapon will have a bursting munitions capabili-

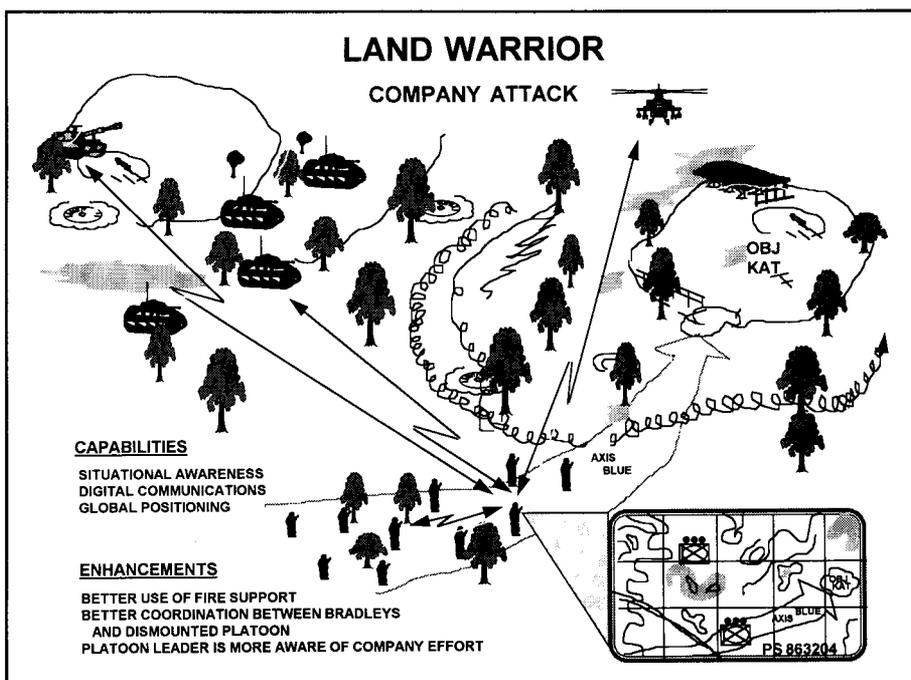


Figure 3

ty that enables soldiers to incapacitate unexposed enemy soldiers. Thermal weapon sight and laser range finding capacities will be an integral part of the weapon.

Command, Control, and Communications (C3). Improved C3 will be available through the reduced weight and size of the individual soldier's computer and radio. Better command and control will be achieved through the wireless transmission of digital reports and imagery, which will allow for rapid command and control at various unit levels. C3 will also consist of improvements in sound detection, state-of-the-art satellite navigation, and the integration of thermal, chemical, medical, combat identification, and mine sensors.

Multiple Threat Protection. Multiple-threat body armor protection will protect torso, arms, and legs against fragmentation, flechette, and assault rifle and machinegun projectiles.

Maintenance of Thermal Equilibrium. The microclimatic conditioning (MCC) subsystem will maintain the equilibrium of a soldier's body temperature for a minimum operational period of time. This system will maintain a soldier's level of performance by reducing

heat build-up and stress during missions in environments that indicate a need for it.

All of the subsystems will be modular, mutually supporting, and completely integrated with each other. The 21st Century Land Warrior system design will make the best use of current state-of-the-art materials, components, and technologies as well as those that continue to emerge.

The Enhanced Land Warrior Program uses technology to provide the overmatch capabilities required for success on the future battlefield. These improved capabilities will provide the soldier with better command and control, maneuverability, acquisition and target engagement, intelligence gathering, and survivability. The program makes a technological leap in the combat effectiveness and lethality of individual combat soldiers—the Army's most valuable asset.

Captain Mark A. Conley is assigned to the Infantry School's Directorate of Combat Developments. He previously commanded a company in the 5th Battalion, 87th Infantry, and served in platoon leader and staff assignments with the 2d Battalion, 16th Infantry. He is a 1983 ROTC graduate of Virginia State University and holds a master's degree from Howard University.