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Technology on the Battlefield

by

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In Iraq for less than 72 hours, I found myself on a convoy heading down Route Pluto with my 3d Infantry Division counterpart. We were conducting our left-seat/right-seat ride and getting a first-hand look at the lay of the land. Suddenly, without any warning, a humvee (High-Mobility Multipurpose Wheeled Vehicle, or HMMWV) one of my brigade command sergeants major was riding in was hit by a roadside bomb. I was three vehicles behind him, and I was a first-hand witness as our Soldiers, using their training and technology, responded immediately and provided aid to those riding in the devastated vehicle.

As I approached the humvee, I didn't think there was any way anyone had lived through the blast. Unfortunately, we lost the gunner, but the others were all alive. The command sergeant major (CSM) suffered shrapnel wounds to his right leg and left eye. His eye protection saved his eye, and his protective gear saved the rest of his body from serious injury. Soldiers sprang into action and saved his leg by using the new Bandage Kit from the Individual First Aid Kit to stop the flow of blood. Because of the new command and control systems, Quick Response Forces were immediately dispatched and a Medevac helicopter was waiting on the ground to whisk him to a medical treatment facility before we even made it back to the forward operating base. Our Soldiers' professionalism, training, technology and prompt response saved his life.

My name is Ron Riling, and I serve as the command sergeant major for the 4th Infantry Division, the fourth oldest division in our Army. I have the greatest job in the world—being a Soldier! I recently returned from my second deployment to Iraq, where I served as the CSM for Multi-National Division-Baghdad (MND-B). The patches from nine of the 10 divisions in the Army served under MND-B. We had a combat force of more than 32,000 U.S. and coalition forces as well as 30,000 Iraqi Security Forces (ISF). Our area of operations spread over more than 16,000 square miles, over four provinces of rural and urban terrain, and included the Greater Baghdad area, which is a city of 6.5 million Iraqis. During the year, we trained the ISF, fought the counterinsurgency and conducted a robust civic action plan.

* Adapted from CSM Riling's speech before the forum "Science & Technology On Point: Meeting the Challenges of Uncertainty and Unpredictability" at AUSA's Institute of Land Warfare Winter Symposium, 7 March 2007

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I want to let you know how technology has enhanced our Soldiers' performance on the battlefield. I'll discuss some specific technology that enhances our Soldiers' ability to remain tactically dominant. Specifically, I'll address force protection, available optics and situational awareness.

When I received my steel pot 24 years ago, I thought it was the greatest protective equipment ever devised. I could shave in it—and practically bathe in it. I could heat up water and settle down to a hot cup of joe. Heck, I could even hammer in a tent peg to build my shelter half. And on top of all of that, it deflected bullets.

A few years later, though, they took away my beloved steel pot and issued me a Kevlar helmet. I couldn't shave in it. I couldn't heat water with it. I couldn't even beat on faulty equipment with it. And to top it off, it was designed to *absorb* a bullet. Who would have ever wanted something as dumb and impractical as that? Well, the easy answer is that *I* did. Why? Because technology evolves to save lives. We must equip the man, not man the equipment. We have no peer competitor, but we're up against an adaptive enemy who wishes nothing but to disrupt our way of life. This enemy is ruthless and thinking with low-tech but high-payoff tactics, techniques and procedures (TTPs). We must continuously improve our technology because the cycle of action, reaction, counteraction is inevitable. The Soldier is the centerpiece of our formation.

Force protection is vital in everything we do. It is imperative that we do our best to protect America's most valuable commodity—our Soldiers. The strength of our formation is our Soldiers—the men and women who serve our nation. We have made great strides in improving the protective equipment for them. Many of you are very familiar with my beloved steel pot, flak jacket and pistol belt. These items pale in comparison to what we are equipping our Soldiers with today. Soldiers have the most advanced equipment and uniforms our nation can provide—without question, the best in the world.

The Rapid Fielding Initiative, or RFI, has streamlined the fielding of quality individual and unit gear to the troops by getting it into their hands quicker. Through the RFI, our Soldiers were provided with the Army Combat Uniform (ACU), which replaced the Battle Dress Uniform (BDU). Each Soldier was issued four sets and received two additional ACUs during deployment. Additionally, there is an ACU replacement system to replace damaged or worn uniforms through Program Executive Office (PEO) Soldier, which ships the replacements directly to unit supply sergeants.

The uniform is unique in that it was designed directly from input provided by Soldiers. In fact, it is a uniform designed by Soldiers for Soldiers. Among the key improvements of these uniforms over the BDUs is that all patches and pockets are secured with Velcro, and it has elbow and knee pouches for internal pad inserts. Of course, most Soldiers love the three-slot pen pocket on the bottom of the left sleeve. During the deployment, the moisture-wicking t-shirts, the double-bill patrol caps and the improved desert boot were welcome additions.

Prior to our deployment, our Soldiers were issued Combat Warrior Equipment, which replaced the load-bearing equipment and flak jackets. The key here is that this personal protective gear weighs 46.5 pounds, which is distributed throughout a well-designed harness. The old flak vest weighed in at 25 pounds. The Interceptor Body Armor System (IBAS) load is individually tailored to the Soldier based on his position in the squad or the specific gear he carries. The system includes the Outer Tactical Vest; Enhancement Small Arms Protective Inserts (ESAPI); Enhanced

Side Ballistic Insert (ESBI); Deltoid and Auxiliary Protectors (DAPS); the throat collar; the groin protector; the new Advanced Combat Helmet; the Individual First Aid Kit (IFAK); a basic load of ammunition; and the Camelback hydration system.

The bottom line is the equipment works. A Soldier with 1-66 Armor in our 1st Brigade Combat Team was shot squarely in the back by a sniper after dismounting his vehicle. The shot hit approximately an inch from the top of the rear plate—and the IBAS stopped it dead. The Soldier didn't go down. He knew something had happened but wasn't sure what it was. The IBAS saved his life because without it, the round would have hit him square in the spine.

Every Soldier leaving the forward operating base was required to wear ballistic eye protection, Nomex gloves and ear protection, and each vehicle carried a combat life-saver bag—all invaluable.

Our Soldiers received the new Advanced Combat Helmet, which replaced the Kevlar. It has the capability to mount command and control and night-vision devices. It's even 3.25 lbs lighter than the old Kevlar and cushioned on the inside, so it sits more comfortably on the head. The Soldier remains focused on his task and not on an uncomfortable fit.

The old first aid kit was grossly outdated and did not meet the Soldier's needs. We were issued the Individual First Aid Kit (IFAK), which is light-years ahead of the old bandages troops carried to stop bleeding. The IFAK was developed through lessons learned as leaders realized that trauma and blood loss were the main reasons the Army was losing Soldiers. The IFAK provides enhanced capabilities for Self-Aid and Buddy-Aid.

The IFAK's two key components are the Bandage Kit and the Combat Application Tourniquet. It is also called the emergency bandage because it can also be used as a pressure dressing to provide a tourniquet-like effect to slow blood circulation**.**

The Combat Application Tourniquet (CAT) is small and lightweight, and it completely stops arterial blood flow in an extremity. It is self-contained and does not require a separate stick to tighten the tourniquet. Instead, it uses a windlass to tighten its strap and can be applied with one hand if necessary.

In fact, one of our Soldiers put two tourniquets on himself after his vehicle was devastated by an improvised explosive device (IED). As a result of his quick thinking, he is alive and with us today. Although he lost both legs, his courage and his training saved his life. He is truly a remarkable man.

Our Soldiers were not confined to the security of the base camps. The division aggressively patrolled 24 hours a day with a fleet of more than 2,500 up-armored humvees on the battlefield. These vehicles are a far cry from the Jeeps we used back in Vietnam and the light-skinned humvees used during Operations Desert Shield and Desert Storm. Every vehicle leaving a forward operating base had Level I armor protection with Frag 5 armor kits on the doors. The vehicles greatly increased our Soldiers' ballistic, artillery and mine blast protection, with major modifications made to enhance the armor package on the doors, undercarriage and wheel wells.

The enhancements brought the total weight of the vehicle to a somewhat staggering 14,000 pounds. To compensate for the additional weight, they were fitted with high-capacity brakes, upgraded suspensions, lift points, reinforced frames and high-capacity air-conditioning units. Other improvements included a fire suppression system, a gunner's restraint system, improved seatbelts, combat locks and gunner's protective kits.

The vehicles' weapon mounts accommodated different weapon systems, such as an M240 7.62mm machine gun, a squad automatic weapon, an M2 .50-caliber machine gun or an MK-19 grenade launcher.

In all, the division performed 11 enhancements on the humvees during the deployment and had just begun fielding the new objective door, which is the next evolution over the Frag 5 kits.

The up-armor enhancements evolved as a result of the IED threat. Make no mistake about it; IEDs present the greatest dangers to our Soldiers on the battlefield. The IEDs are our biggest killer, although great headway has been made in the counter-IED fight. Patrols did not leave a forward operating or patrol base without the operational Counter Remote Controlled IED Warfare system commonly known as CREW, which we used to combat the threat of roadside bombs. This was a joint fight against the IEDs. We deployed Navy Electronic Warfare specialists—petty officers—down to the battalion level as CREW master gunners.

Our Soldiers were trained and confident in the system. It was easy to use—just turn it on or off. Functioning CREW was a simple but crucial part of the pre-combat checks.

The IED threat has evolved from primarily command-detonated devices to use of remote-control detonations. Early on, the terrorists used low-end devices, such as garage door openers or keyless entry fobs, to set the bombs off. To combat this ever-increasing threat, we've fielded counter-IED devices, such as the Warlock family of systems, on vehicles and now have some individual systems. The Warlocks are an evolution in design, or spiraling technology. The most recent versions can be programmed or reprogrammed to meet the evolving threat based on enemy TTPs. The system counters the enemy's ability to remotely detonate devices by creating an electronic bubble around vehicles, resulting in the remote-controlled IEDs exploding after patrols pass through the danger area. Many variables come into play, such as the triggerman's range and visibility to the convoy. CREW is not fool-proof and is secondary to the Soldier. It must be used in conjunction with Soldier training, situational awareness and understanding of the environment. It must be treated as a crew-served weapon and deliberately placed in the convoy.

Tied to the advances in force protection were the enhancements made in the division's optic capabilities. As many of you know, the Abrams M1A2 SEP (System Enhancement Program) is the most advanced tank in the world—and its thermal sights did not let us down. Complimenting the outstanding optics of the Abrams were the sights on the M2A3 Bradley Fighting Vehicle. An Abrams and a Brad working in tandem on Route Tampa, north of Taji, formed a lethal combined-arms team at the lowest level. Tankers and infantrymen skillfully used their thermals to observe suspected danger areas. They could find IEDs by scanning the curbs along roadways. If a portion of the curb changed colors, you knew something was wrong. Using the improved optics, the crew of one of our Abrams tanks watched from three miles away as terrorists were attempting to emplace an explosively formed projectile (EFP)—which led to the insurgents' capture. As a result, the route and the area remained free of EFPs for more than a month.

All of our Soldiers are moving from iron sights to optics. The RFI unit issue greatly enhanced our marksmanship with the fielding of the M68 scope for every rifle in the combat formations. One of our battalion commanders, who hadn't fired a rifle in 18 years, said he went out with the scope and fired expert with little effort.

Other optical improvements came through the RFI process, such as the Advanced Combat Optic Gunsight (ACOG). The ACOG, mounted on the M4 and M16 rifles, became the envy of all

infantrymen. It was issued to the designated marksmen and proved to be a lethal tool for these highly trained shooters. The scopes, which provide a 3X magnification, provided an additional benefit in that the marksmen were also able to help confirm suspected IEDs without having to get to close to the threat. Unlike many sights of the past, it doesn't use batteries and is always ready.

The urban areas in and around Baghdad create a three-dimensional battlefield, which brings unique challenges for Soldiers—such as snipers and near ambushes, all intermingled with innocent civilians. The division fielded a number of high-tech gun sights called the Common Remotely Operated Weapon System (CROWS) for M2s and MK19s. The system provided the gunners with the capability to zoom in on a potential target day or night with a laser range-finder without being exposed to the threat. The Soldiers stays inside the vehicle, views a TV screen, places the crosshairs on the target, and fires the weapon by using a joystick. Its precision fire proved effective in the urban terrain and especially in the counter-sniper role.

Perhaps one of the most significant advancements experienced across the division was the marked improvement Soldiers and leaders were afforded in situational awareness using our digital capabilities. Three important systems I'll touch on were Blue Force Tracker, the Force XXI Battle Command Brigade-and-Below (FBCB2) and the Command Post of the Future (CPOF). Together, they have significantly enhanced our battle command from division to the individual squad leader. We can truly see ourselves, see the terrain and see the enemy.

Now, the counterinsurgency (COIN) fight is being fought at the lowest level—platoons and squads. We're not maneuvering large formations. This is a decentralized fight. Those young lieutenants and sergeants are out there on patrol, in three-vehicle convoys. Although they're out there alone, they are unafraid. A majority of our vehicles were outfitted with FBCB2 or Blue Force Tracker. It provided the Soldiers with a digital map and an icon showing their exact location and proved to be a great tool when calling in reports. With the FBCB2, the tank commander was able to see his location and report it immediately. The battalion S2 was able to populate the map with Red Zones so the patrols could better anticipate danger areas and had immediate access to updated information. This was vital. It increased the commander's and platoon leader's span of control. With FBCB2, the commander could better control the fight and maneuver resources to the decisive point. In a COIN fight, it isn't uncommon for a platoon leader to have multiple contacts at once.

FBCB2 and our other army battle command systems were tied into CPOF. The CPOF proved big dividends as a combat multiplier in providing situational awareness throughout the division. Leaders used the ability to anticipate requirements and quickly push assets to Soldiers. Immediately upon receiving a contact report, the TOCs were asking "Do you need attack air? Medevac? Or a quick-reaction force?" It set battle drills into motion such as dispatching intelligence, surveillance and reconnaissance (ISR) assets over the specific location. CPOF's collaboration capability gave division, brigade and battalions the means to conduct mission planning, rehearsals and briefings—all from the tactical operations center's work station—without needlessly putting our Soldiers at risk or in jeopardy on the road. Rarely did we have to physically bring leaders together because we could conduct meetings and operational planning from our respective command posts. That saved lives. Everyone can see the common operating picture and can talk using Voice Over Internet protocols, otherwise known as VOIP. Adjacent units could communicate cross-boundary operations with relative ease. Prior to CPOF, battalions used couriers to get orders out to the companies. An example of this could be seen in a trip from Tarmiyah to Taji, which required an hour of travel time

each way along an IED-laden road with multiple threats. The ability to put a CPOF into the patrol base in Tarmiya significantly reduced planning times and took Soldiers off the road.

With this tool, real-time reports and data were immediately sent down from a battalion to a company. The actionable intelligence quickly made it into the hands of those patrol leaders, who could start detailed planning with up-to-date, accurate information and get out the gate on mission within as little as 60 minutes of the initial notification. It provided the division with the ability to have an instant understanding of a subordinate brigade's common operational picture. Not all companies had CPOFs, but in some cases, battalions were able to push them down to company level.

We have also seen tremendous advances in Army airspace command and control (A2C2), which maximizes the effects of aviation platforms in support of the Soldier on the ground. We used air extensively in Baghdad. Without situational awareness, it would have been impossible to bring affects to the Soldier on the ground. Using our A2C2, we were able to monitor the Baghdad area of operations, an area of 360 square nautical miles. The A2C2 cell at division could reach out and talk to all parties operating within the Baghdad airspace. This space is crowded with assets from the Army, Air Force, special operations forces, fixed-wing and rotary aircraft, and unmanned aerial vehicles (UAVs). The division had the capability to see the radar picture layered over the airspace coordination measures overlapped over the fire support coordination measures, overlapped over the terrain. We also took advantage of UAVs such as the Raven down to the platoon level and tactical UAVs at the battalion through the division levels. Both provided real-time video and ultimately saved lives.

What I have addressed only scratches the surface of all of the improvements we have made in the gear we issue our Soldiers and the equipment used to keep them tactically dominant. All of our Soldiers received the best force-protection equipment the Army can provide. As improvements became available, we spared no expense or time getting it into the hands of the Soldiers. Our optical capability has created more expert marksmen and lethal platoons. The Soldiers can acquire the target in any environment and effectively engage with desired effects. Counterinsurgency is usually fought in a decentralized manner, making it impossible for the commander to see his formation. Situational awareness has improved by leaps and bounds using our digital capabilities. The bottom line, though, is that it is those great Americans—our Soldiers—who accomplish our missions, not the technology. It is up to us to help get our Soldiers the equipment they need to accomplish those missions.

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for 4th Infantry Division at Fort Hood, Texas.