



GSS Develops Network Approach

Land Warrior's success is only the start as the Ground Soldier System develops network concepts

"Land Warrior was a great start and we learned tremendous lessons from that, but we also know we have to get better. That is what we are trying to do as we go forward with the Ground Soldier System (GSS)," explained Colonel Will Riggins Project Manager, Soldier Warrior, Program Executive Office (PEO) Soldier.

The GSS programme awarded three Technology Development contracts in April last year, directing General Dynamics C4 Systems, Raytheon and Rockwell Collins led teams to focus their efforts on the areas of worn displays and computers, user input devices, navigation, antennas and cables with the balance of other equipment and software being provided as Government Furnished Property. The teams are now preparing for a Limited User Test planned for later this year, in preparation for a Milestone C decision scheduled for the second quarter of FY2011 and an Initial Operational Capability due in late FY2012.

SaaS

Neither Land Warrior nor GSS exists within a conceptual vacuum. The structure being used by PEO Soldier to guide its approach to soldier modernisation is known as Soldier as a System (SaaS).

"We are just starting to get around what 'Soldier as a System' means," explained Col. Riggins. "That has a set of far reaching implications." He sees this as being based on an understanding of the commonalities and differences between soldiers, based on their mission sets, roles that they fulfil and their leadership level.

"Every soldier who signs on and raises their right hand," is by Col. Riggins' definition, the Core Soldier in the SaaS concept. That Core Soldier equipment set takes in elements such as the basic uniform, boots, and their personal gear. From that point, soldiers then diverge as

they take on specialised training to undertake a specific mission set. Simultaneously, the PEO Soldier organisation is also seeking to plot equipment and other commonalities within this divergent environment. Col. Riggins said, "M1 Abrams crew members are not the same as a truck driver but there are some commonalities there. What we are trying to do is to leverage those commonalities to figure out how we can better integrate the soldier into his platform and network."

Networks: Land Warrior to GSS

Central to the delivery of the GSS Block 1 is the network. In network terms, despite using the same radio as Land Warrior, Col. Riggins distinguishes between that programme and GSS, the former being closely linked to the Stryker platform. He commented, "When we came up with Land Warrior, we had a lot of great things working in our favour. We had a Stryker network that was very robust and so we were able to leverage that and build a network that we could extend from the platform out to the individual dismounted soldiers. We knew how to fight that, we had the Tactics Techniques and Procedures and concept of operations that would enable us to establish the networks in such a way that the right information got to the right point at the right time. We figured out where the breakdowns in communication would occur and where we could make the network more robust in those situations."

A number of the early assumptions about the network have nonetheless proved to be easier said than done and have fed into GSS. Col. Riggins commented, "We ought to be able to plug and play but I would say that our experience has proved otherwise."

To address GSS' communications needs, the PEO has been asking some fundamental questions to really get to grips with future needs. "There is information out there;

the question is how far down do we push it. One of the interesting things about GSS is determining the right level within our formation to provide this information down to, so that we have network centric information."

"My thought is that we are actually asking the wrong question. The question is not how far down we push it, but how do we determine what information soldiers need to execute their tasks. We quickly realised that [riflemen] don't need the same level of information as their leaders above them do. So, with GSS we are providing 'where am I, where are my buddies' down to the individual rifleman. We are going to continue to learn how that works and we are going to continue to learn how to fight that system and fight that network because it's not a plug and play type of operation. It really is a cultural shift and it is different way of thinking in warfare and we are still learning how we fight it."

As part of that learning process, the soldier network is being exploited in new ways today, while formations are deployed in theatre. Col. Riggins cited Land Warrior's utility in the avoidance of fratricide in Afghanistan, illustrating just how deeply Land Warrior has been integrated into the wider network. Land Warrior uses an EPLRS waveform, the same as that used in USAF aircraft equipped with the Situational Awareness Data Link. In Afghanistan, this commonality has been used to great effect in the field. Col. Riggins said, "A pilot on his SA systems has been able to see [EPLRS equipped] vehicles for some time. Now, for the first time he will be able to see dismounted troops [equipped with Land Warrior]. As a guy who has been in a situation before where Close Air Support saved my bacon, one of my biggest concerns when I was calling those guys for help, making sure they knew where I was. I know what the pilots intended but I had to help him do that. This makes all that seamless. This is not new information, it's network centric

▶ information, it's already out there, it's about taking it to the right point on the battlefield."

In a network centric environment, wider exchange of information, particular down to individual soldiers poses particular challenges, related to different levels of security classification. Col. Riggins said, "There has to be break point, somewhere on the battlefield above which certain information is important enough and has got to be retained. Below that there is still important but perishable information which has a time limit beyond which it doesn't have an impact. That is an important lesson learned as well."

Soldier Power

All the information in the world and all the capability in the world is only as good as the soldier being willing to carry it. A significant portion of the weight carried lies in the supply of power.

A layered approach to power to keeping soldier supplied with the power they need in operations is emerging, based on the austerity of the expeditionary environment they are operating in, Col. Riggins said, "In an expeditionary environment all you initially have is what you can throw in your rucksack and jump out of an airplane

with. In the area of power, we are trying to get the watt hours up and the form factor more soldier friendly. We are also trying to get something small enough for dismounted soldier to be able to recharge their capability. As the expeditionary theatre matures, we can bring in more equipment and provide more recharging capability."

Physical connections are also being examined as part of the development path for future dismounted capabilities. Col. Riggins said, "We have to figure out how to get away from cables and get to a wireless situation. When soldiers are out on patrol in Afghanistan, they are in very heavy vegetation and just about every little community is separated by a wall. If you have cables, they can get caught. It is both a mission and a safety issue."

5/2 Insights

Perhaps the most important difference between the Manchus in Iraq and the 5/2 Brigade in Afghanistan has been the scale of the deployment, increasing from a battalion to a full Brigade. That has brought insights both in pre-deployment preparation and now that the formation is in theatre. One of the primary lessons given by Col. Riggins was not new but rather reinforcing what was found in the earlier deployment of Land Warrior to Iraq, namely that training individual soldiers how to operate his new capability was absolutely essential. However other higher level lessons can also be found. Col. Riggins said, "You begin to understand the importance of the network. In this case the brigade S-6 has to be able to operate that network by themselves. When we were at battalion level, the battalion was more contained and had a specific area of operations. When you go into a brigade sector that is as big as the province of Kandahar, you have an S-6 requirement that has to cover that entire footprint."

Logistics have also changed significantly at the brigade level in ways that weren't and couldn't be fully appreciated during pre-deployment exercises. Col. Riggins said, "Having the brigade integrate power resupply operations into to their daily document of operations has proved to be really challenging. Command staff training has to happen to support that capability. The concept of resupply by the S-4 is not new but it is different and batteries take on whole new level of importance." ■

Col. Riggins was speaking at WBR's Soldier Technology US



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