



Diggerworks Update

Col. Jason Blain, Director, Diggerworks, outlines the role of the organisation, Land 125 Phase 4 developments and the contribution from the DMTC to soldier modernisation

While focus inevitably rests on Afghanistan today, a number of early lessons for soldier modernisation came from the Australian Defence Force's (ADF) deployment to East Timor in 1999. In the International Force for East Timor InterFET mission it was found that while the soldiers' training was very strong allowing them to achieve their mission but had to overcome shortcoming in other areas such as equipment. Col. Blain said, "We learnt a lot of hard lessons and that is really related to logistics and related to equipment. We can't take our eye off the ball after we withdraw from Afghanistan in particular."

The difference between the equipment on the InterFET mission in 1999 is considerable not least in cost the equipment and clothing that comprised the Australian soldier then had a total cost of A\$7000 while in 2011, the same soldier would be wearing an ensemble valued at A\$27,700.

Diggerworks

Australia's Soldier Combat System (SCS) is defined as, "The equipment used by a soldier to apply lethal or non-lethal effects, communicate and gain situational awareness, survive, sustain, move and operate as part of a team within the close combat environment." Within the SCS are five well established areas; Lethality, C2SA, Mobility, Survivability and Sustainability.

The ADF's Diggerworks has been created to support integrating the SCS, taking the very large number of equipment buys and integrating them on the soldier to avoid the Christmas Tree effect today. In parallel, Diggerworks is also tasked with shaping future procurements as new acquisitions occur to need operational needs, always seeking integration over aggregation on the soldier.

The Diggerworks organisation itself comprises combat soldiers who have recent combat experience and who liaise with soldiers and commanders in the field and elsewhere to identify the problems and then work with the organisations such as the development teams in Diggerworks, other parts of government and with industry to engineer prototypes fixes. This is supported from human factors and other specialists from the DSTO.

Col. Blain emphasises the need to, "start taking control again of what our soldiers wear and fight with to ensure they are not overburdened, also putting some direction back on what our soldiers carry. [There is also] a need to have grip on all those projects out there giving great capability to the soldier but without any recognition of configuration or integration management and therefore treating the soldier as a combat system rather than a platform for hanging things on."

There are currently 23 major projects currently in the ADF that

have interfaces with dismounted close combat. These are now being sent via Diggerworks to ensure compatibility, with Col. Blain giving the example of the Land 400 Combined Arms Fighting System programme, the replacement for wheeled Light Armoured Vehicle as one infantry-centric platform.

Col. Blain said, "Because it is all under one roof, reaching the many parts in Defence it works very quickly and very well. It is underpinned by a Memorandum of Understanding (MoU) between all Stakeholders. Without that the barriers would be put up, not allowing the facilitation of information between different projects and between different areas of Defence. If anybody is thinking of an approach like this then having an MoU which everybody signs up to agreeing to the approach has actually worked very well [for us]."

Diggerworks addresses four key areas. Development looks at solutions to support our operational requirements; Systems Integration ensures that the soldier as a systems concept is adhered to; Configuration Management means that the Army, through Diggerworks, has informed control over the SCS and finally Modernisation comprising future requirements principally through Land 125 Phase 4.

On the topic of Configuration Management, Col. Blain added, "We are establishing within the Army a configuration control plan to support the soldier as a combat system with a configuration framework that all other frameworks needed to comply with it when it comes to supporting the soldier and we are beginning some good support from organisations from industry to make that work.

A key feature in SCS thinking is discriminating between combatants based on his or her exposure to the threat and therefore he or she is given the priority of money and investment and changes to their equipment based on their role. Tier 1 are Specialists such as boarding parties or Special Forces, Tier 2 are Close Combatants and Tier 3 General Combatants. In a brigade of 3500 soldiers it would be roughly split between 2000 Tier 2 soldiers and 1500 Tier 3 soldiers. However, Col Blain emphasised, it is up to the commander on the ground to decide who gets what equipment.

Another new fixture of ADF defence planning is the Force Generation cycle where three main manoeuvre brigades over a 36 month period will for a 12 month cycle be the Ready brigade, moving to the status of a Reset brigade for a year and then to a Readying brigade. This allows us to focus our attention and our equipment to those moving to the Ready phase of that cycle and the introduction of that equipment to deliver in that Readying phase. Col. Blain cautions, "Delivering that equipment so the soldiers became proficient not just qualified in the system they are carrying. It is not good enough for example firing four rounds on a [84mm



*Diggerworks support all dismounted combatants including the specialist requirements of Australia's Special Forces.
Photo: © Commonwealth of Australia.*

- ▶ Carl Gustav] and saying a soldier is now good enough to go out on operations and fire that weapon system.”

Diggerworks Focus Areas

A recent Diggerworks output sent to troops without their request in a reversal of the usual process has been the pelvic protection systems, originally developed for the UK. Another new addition has been the Crye Assault uniform. A new ballistic plate test to replace the NIJ civilian test moving to a three shot test from a six shot one. Other areas include new body armour systems with a new Soldier Combat Ensemble 3 and Ballistic tender recently being issues for Land 125 Phase 3C with their work on Tier 2 Integrated hearing protection and Combat Hemit also underway.

Common interfaces are also being sought with NATO nations in the area of data and weapons management. Other international collaboration includes working with the US Army on gunshot detection systems as well as collecting data on head injuries under Project Cerebro for Helmet Mounted Sensor Systems.

Another Diggerworks act has been the establishment of Good Ideas Expos which allows soldier of any branch to offer suggestions for improvements to any part of the Army.

Moving away from Afghanistan-specific solutions also presents challenge and one that Diggerworks will help with as Col Blain explained, “It is back to the jungle for us. As we move out of Afghanistan [we are] looking at our near region or move to amphibious operations as we start acquiring our LHDs and having a much more amphibious focus in the near region environment. So, how are our body armour systems and soldier ensembles going to work in the jungle? We know it won't look the way it does now. We are focused on not only providing evidence for change but evidence to our political leadership on why you can't wear the same levels of protection we do in Afghanistan in our near region environments because of endurance and other issues.”

DMTC

To support future capabilities, a private business not for profit organisation called the Defence Material Technology Centre (DMTC) has been established as a means for Defence and industry to work together to bring forward new technologies for the ADF, in support of the Australian defence force coving hard armour, soft

armour systems advanced fabric technologies power generation and many new concepts.

Funding for DMTC is from the government with A\$20 million currently allocated with A\$7.5 million coming from Land 125 Phase 4. The effort has a five year life with candidate technologies delivered to soldiers within 18-24 months. One example of this is portable power generation where the DMTC is working with four bodies; tectonica, Horizon Fuel Cell Technology, VCAMM and Deakin University on developing high density battery storage, fuel cell power supply and nano-fibre power generation for low weight soldier borne applications.

Phase 4

Land 125 is currently at the Land 125 Phase 3. Phase 4 is self evidently the follow on to that work, covering enhancements across the range of NATO sub-systems. Describing its approach to command and control systems on Phase 4, Col. Blain said, “We will reduce our attention in particular on C2SA and focus our effort on the individual soldier up to the platoon level having a dismounted SA capability. An example would be something like the NORMANS Light system. Something that is very light, easy to use and doesn't drain much power.” Due to cuts in the wider defence budget, Phase 4 will now be delayed by 12 months so that its First Pass decision will take place in 2015. This will see Phase 3B focused on survivability extending its work with Australia's Force Generation Cycle. Phase 4 is now due to complete in 2023.

“Maintain the Rage”

“As Afghanistan winds down and the political interface in the combat soldier wanes and as we see the casualties decrease we need to maintaining the focus on the combat soldier so we are not doing an East Timor again and learning from mistakes. Indeed in Afghanistan 2010 we were still learning from mistake. We must maintain [constant investment and understanding of what the soldier needs and delivering it rapidly] and that is why through the FORGEN cycle and through Land 125 Phase 4 we see this approach continuing to deliver to the soldier.” ■

Col. Jason Blain was speaking at WBR's Soldier Technology 2012.