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ADM EXCLUSIVE



FROM THE SOURCE

BAE Systems Australia CEO Glynn Phillips speaks to ADM this month

TOP 40 DEFENCE CONTRACTORS



Project Review and Preview

The year that was and the year ahead for air, land, sea and joint domains

TOP 20 DEFENCE SMEs



PATRICK DURRANT | CANBERRA

Army held its second Innovation Day at the Australian Defence Force Academy on 19 October, focusing on technologies that will serve to enhance human performance.

ARMY Innovation Days were commenced in 2015 with the aim of facilitating direct engagement between Army and industry on leading technologies that can be accessed in the short term or inform major capability initiatives over the long term.

Army's Human Performance Vision is to "ensure that soldiers, as individuals or teams, outsmart, outperform and outlast a lethal, agile, adaptable and well connected adversary in an increasingly challenging and complex operational environment".

On the day, industry was represented by 25 companies, and while the crowd of officers present was overwhelmingly in green,



Enhancing Human Performance Army Innovation Day 2015

there were also white and blue uniforms present, namely Navy's Head of Capability Rear Admiral Jonathan Mead and Acting Chief Capability Development Group Air Vice Marshal Mel Hupfeld.

Event host Army's Head Modernisation and Strategic Plans Major General Gus McLachlan said while introducing the event that Army had been lacking in specific development in the area of improving human performance.

"We don't actually know enough about what that means yet. Part of today is having us understand what this human performance modernisation line of effort means. So what is out there, what are people doing, what advantages have we got?"

MAJGEN McLachlan said Army had often talked about soldiers being at the centre of its system, but more effort was necessary to make it easier for them to do their job, to make them

more resilient both mentally and physically, to make them more culturally attuned, and to give them a realistic understanding of things like the modern battlefield and battlefield inoculation through a simulated environment.

MAJGEN McLachlan is keen to streamline the process and said: "We want to get at least some of what we've seen today in the hands of our soldiers within the next 12 months.

"We did that after our similar event last year, and I hope next year to actually run more than one of these, perhaps two per year, with the aim to cut that flash to bang," he said.

The technologies arranged for display spanned the full spectrum: from immersive and adaptive training technologies, multi-spectral signature reduction and load-sharing equipment to nutritional technologies, physiological state monitoring, cultural and language trainers and neural diagnostics.

Dean Delia of Hexoskin Oceania spoke to *ADM* about the Canadian-made Hexoskin, a smart biometric shirt that gives insight into the wearer's physical training, sleep and daily activities.

"The way the USN are using Hexoskin is as a monitoring tool for sleep, fatigue and stress – not only for new recruits and existing service members, but also for returned soldiers and veterans," Delia said. "They found there were a lot of sleep-based factors in the cases they were dealing with and consider wearable body metrics such as Hexoskin a cost-effective way to monitor them."

Delia said the product was one of the few with a data solution for enhancing performance.

"Whether it be enhancing training to understand what soldiers are experiencing so you can better equip them, whether it being monitoring and assessment of soldiers on



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ARMY INNOVATION DAY INVOLVEMENT

Function	Company
Multi-spectral signature reduction	Saab
	Ready One
Ranges and targets	Marathon Robotic Targets
	ATS CCE
Load sharing	Advanced Accuracy Solutions Reaper
Physiological state monitoring	BAE Systems Equivital 'Black Ghost'
	EPE Zephyr Bioharness and Scimitar tool
	Edge1 10 with Hexoskin
	Fusion Sport Smartbase with Hexoskin
Language translator	VOXTEC Squid translator
Power management	Tectonica
Health and well being analytics	Rynal Soldier HUMS
	IBM
Cognitive injury test	Isobalance
	Neural Diagnostics
Simulation – Immersive and adaptive training technology	Zero Latency
	Rockwell Collins
	Microsoft Hololens
	Rheinmetall
	ATS HISS
	CAE TSILE, virtual paramedic and CAE/Alelo virtual role player
Nutrition	Pro4mance
Body worn video	Fijitsu

the battlefield, or whether it be monitoring of stress fatigue and sleep challenges, as with the US Navy, Hexoskin can be used across all of those functionalities," he said.

A personal shooting support system called 'The Reaper' was being demonstrated. Specifically designed to attach directly to body armour, the frame can fold out to give a shooter rifle stability, making it ideal for overwatch snipers firing from a standing position, or for shooters firing from an airborne platform.

Jason Semple from Advanced Accuracy Solutions told *ADM* he was impressed with the foresight shown by ADF in undertaking activities such as the Army Innovation Day.

"The concept of the day is innovative in itself and it is a great way for industry and military end-users to associate in a positive environment. We are super confident the Reaper system will find its place in a number of roles within the ADF and we look forward to supporting our diggers."

At the IBM stand soldiers were being wired up to EEG headsets and flying a small quadcopter – seemingly using the power of thought.

"We were getting people to wear a commercial off-the-shelf EEG scanner that we hooked up to a remote controlled quadcopter and we

taught the soldiers to think about lift," IBM client executive Scott Bradford said to *ADM*. "For the climax we turned the quadcopter on and just by using the power of their brain they could control its rise and descent."

But as IBM general manager (Defence) Andrew Bewick told *ADM*, the demonstration wasn't about getting troops to fly quadcopters via thought commands.

"The point we were making at Innovation Day was to show that your brain pattern when you do something is the same each time you do it. If you think "fly" or "up", your brain waves will form the same pattern and we can actually command a quadcopter to fly in the air when this happens," Bewick said.

IBM is building on experience on they have gained from working with NSW Rugby Union team, the Waratahs.

"Through extending the collection of different data points, both physiological as well as brain activity and psycholinguistic data points, we can have a look at the psychological state of people, with the end goal of assisting those who are making decisions to make more insightful and accurate decisions," Bewick said.

Along with the wearable sensors that are monitoring physiological condition, Bewick said there are also wearables monitoring

brain activity produced by the gaming industry – the thought being that if they can determine what the player is thinking it could be used to influence how the game is played.

"We took these EEGs and started to capture that data. IBM are very much a company that deals with information and we're always looking at different ways of using data and information to assist those that are trying to make decisions," Bewick said.

Bewick and Bradford said their reason for attending was not to pitch a product or a device, but to encourage Defence and others to become involved in a broader investigation of how this could work.

"We're on a compass bearing, but we don't have a map. We think we're going in the right direction and we have spoken to a number of organisations," Bradford said.

Bewick 'tipped his hat' to Army for holding the event and encouraged Defence as a larger organisation to commit to such engagements at more regular intervals.

"The opportunity to have a conversation turns over rocks you don't necessarily expect to turn over all of the time," he said.

The day was also a chance for companies with similar interests to network and look at innovation collaboration opportunities. *