

■ AIR 6500 - US LESSONS

# LESSONS LEARNED

Unifying the fighting force through Joint  
Battle Management: Lessons learned  
from the US experience

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If there is an enduring lesson from the long wars in Iraq, Afghanistan, and Syria, it's that sledgehammers don't always win in conflict. Rather, force expertly applied can often be the decisive factor.

As our weapons and targeting systems have grown more sophisticated, the modern way of war is more akin to an orchestra than a claxon, with each element coming together in perfect harmony to create very precise impacts on the battlefield.

Certainly, since Desert Storm, military commanders have had to take on the role of an orchestra conductor, directing virtuoso performances of increasingly multi-faceted, multi-domain operations to remarkable effect. That ongoing need to adapt to an increasingly complex battlespace will continue.

The land and air war in Syria, for instance, is emblematic of the complex and dynamic battlefield our fighting forces are likely to see going forward, even as the US equips itself to be ready for large-scale, great-power competition. In the future we are likely to see many different actors with complex allegiance, blended civil-military forces, and an array of exotic weaponry to include electromagnetic and cyber attacks.

It is with this operational context in mind that we study the evolution of the battle management and its associated elements of command, control, communications (C3), intelligence, surveillance, and reconnaissance (ISR). No longer do we operate as

individual services, forces or nations, but rather we fight together as coalitions to secure the sea, land, air, space, cyber and electromagnetic domains.

This transition to truly integrated operations has been an area of focus for the US Department of Defense for many decades now, and the results speak for themselves. Having served inside the Pentagon in three different air and missile defense roles, I can attest to the importance of joint and coalition operations in these arenas.

Regardless of the assigned acronym – operations enabled, synchronised and harmonised by a reliable, robust and resilient battle management architecture will increasingly be the key to victory on the 21st Century battlefield.

It is encouraging to see these changes taking place within the US fighting force, although there is still much progress to be made. It is also personally satisfying to see some of the US's most important allies, especially Australia, leading in this area.

Australia is proving itself to be a leader in joint, multi-domain battle management through forward-leaning initiatives like Project AIR 6500, known to many as the Joint Battle Management System (JBMS). This capability will ensure Australia's success as a 5th generation fighting force with a deployable battle management system for unified employment of air, counter-air, and electronic warfare forces.

Although more constrained in size and funding compared to US services, the Royal Australian



Navy, Australian Army, and Royal Australian Air Force have always punched above their weight. The Australian Defence Force (ADF) has maintained national sovereignty since 1901 while also playing an instrumental role in two world wars and every major military action involving the US in the 20th and 21st centuries, including conflicts in Korea, Vietnam, Iraq, Afghanistan, and Syria.

In just the past decade, Australia has incorporated some of the best military equipment the world has to offer. In the context of AIR 6500, it is important to mention the procurement of the F/A-18E/F Super Hornet, E/A-18G Growler, F-35 Lightning II, E-7A Wedgetail, P-8A Poseidon, MQ-4C Triton, ANZAC class frigate, Hobart class DDG, LAND 19 Phase 7B SRGBAD, JORN, as well as dozens of other next-generation sensors and effectors. Australia's world-class fighting force may not be the largest on the globe, but it is arguably the most modern.

In the past, such complex weaponry would operate in a less-than-efficient coordinated fashion, mostly using their organic dedicated command and control subsystems that did not always communicate effectively with one another. The prospects for improved combined lethality that could be

achieved by netting those assets of Australia and its coalition partners together through JBMS, all operating from a single integrated air picture, is indeed game-changing. The vision for AIR 6500, when realised, is indeed a true force-multiplying endeavour.

It is initiatives such as AIR 6500 and architecture-first thinking that will keep the Commonwealth, one of the US's closest allies, on the cutting edge of technological innovation and warfighting capability for decades to come. A modular open systems architecture delivers a flexible and scalable capability that does not vendor-lock Australia into a specific point solution.

This approach can stitch together today's 5th generation weapon systems and enable the adoption of future capabilities as they come online at the "speed of need". Importantly, this will also be a homegrown capability, providing the Australian industrial base with unique skill-sets that can be applied over and over again to solve gaps elsewhere, both inside and outside of defence.

After 100 years of mateship, we have learned that war is not won by a single brave soldier, nor is victory achieved by adopting any specific capability. Each soldier, airman and sailor brings a unique skill-set to his or her unit, just as individual weapons bring a specialised capability to the fight.

Bringing those individual components and skills together like the brass, percussion, wind, and string sections of an orchestra through a

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battle management system like JBMS could be the difference between winning and losing against a near-peer adversary in a future fight. This is particularly critical in the INDOPACOM theatre, where joint and coalition interoperability will be critical and as more advanced threats – like a slew of emerging hypersonic weapons – further complicate an already thorny landscape.

If there is one key takeaway from the experience of the US DoD in developing battle management networks, it's the importance of defining the architecture at the outset. That includes insisting on a modular, open system to enable new and existing capabilities from different vendors to be rapidly and affordably integrated.

Too many times the defence industry promotes their proprietary systems as being truly modular and compliant with open standards but, once on contract the reality falls short of expectations. The warfighter should not wind up 'vendor locked', ie beholden to a specific supplier for all new requirements.

The solution for AIR 6500 should rapidly integrate today's weapon systems as well as future capabilities, no matter which prime systems integrator is chosen to lead the effort. Those new capabilities should be brought online at the speed of relevance.

The threats our forces face on the battlefield are constantly evolving, and our platforms, weapons, and technologies must evolve even faster. We see the continuous introduction of newer and better aircraft, missiles, radio frequency jammers, cyber weapons and much more. Our battle management systems must be affordable, flexible and scalable to a changing threat environment lest we are caught off guard at an unthinkable cost. Interoperability with coalition partners should also be a foundational consideration.

Threats, budgets, and priorities change, yet a reliable, robust and resilient battle management architecture should be extensible and optimised for change. It must have inherent integration flexibility for new sensors, effectors and command-and-control subsystems, enabling "any sensor, best shooter" combined arms operations. Cyber resiliency should be considered from the start, with multiple layers of security built in.

The battle management architecture of the future is one with automated decision-making to enable timely, accurate decisions while reducing the risk of fratricide. It needs mission planning tools that can prepare forces for the full spectrum of threats and a wide range of enemy actions. Similarly, our defensive planning systems should know the capabilities and behaviour patterns of our adversaries and be capable of recommending optimal placement of fixed and mobile defences.

Capabilities like AIR 6500 JBMS should enable our forces to "observe, orient, decide and act" faster than any adversary. Battle management systems should not hold us back, but rather help us break down the C2 networks of our adversaries at the speed needed to gain and maintain a decision advantage. To do so will spare lives and warfighting assets from destruction in the opening stages of a future conflict.

Battle management is an under-appreciated but critical component of warfare, and Australia now has the opportunity to be a leader in this area. As the systems architecture requirements firm up over this next important year, it will be exciting to watch how AIR 6500 JBMS defines the future of the Australian armed forces.

The need to get this right from the beginning is critical, for future wars will not be won solely with this type of capability, but they could very well be lost without it. ■

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