H. WEBSTER

SPEECH FOR WILLIAMS FOUNDATION – CHECK AGAINST DELIVERY

Good afternoon everyone and thanks to the Williams Foundation for an invitation to talk about 5th Generation Manoeuvre. I'd like to start with a disclaimer, that I actually don't want to talk about 5th Generation manoeuvre, or more specifically I do want to talk about the requirements of manoeuvre, but not about 5th Generation. The reason why is that I think it distracts us from having hard discussions about future force integration, what's really stopping us from achieving that, and consequently the operational outcomes.

Let me illustrate with a pop culture reference: in 1998 a movie called "there's something about Mary" was released, starring Cameron Diaz and Ben Stiller. There's a scene where Ben Stiller picks up a hitch-hiker, and the hitch-hiker starts explaining his great business idea to him. He says that there is an exercise video called '8 minute abs', where if you follow this 8 minute exercise regime each day you wind up with washboard abs. The hitch-hiker then goes on to say that his great business idea is '7 minute abs'. His thinking is that if you have to choose between '8 minute abs' and '7 minute abs', then which one are you going to choose? '7 minute abs'. So whenever I hear '5th generation' all I think about is '7 minute abs'. In the case of '7 minute abs' the outcome is firm abs but there is no discussion about a balanced diet or healthy living. In the case of '5th generation' we talk about Force Level ISR, C2 and EW, but there is no discussion on what's really stopping us from truly doing all those things at scale. So today I'd like to talk about some of those things.

If I was charged with solving future force integration, my mental frame of reference would be a Defence-industry jointly developed roadmap, which would outline the what, how and who of this next-generation integrated force. Each part of the roadmap also gives us a frame to think about what's stopping us from great operational outcomes at scale.

The roadmap starts with the vision, which is what we want this next-gen integrated force to do in the long run to support our manoeuvre needs. There are 4 operational needs that I'd like to briefly explore.

The first is force level ISR. This starts with joint, shared, collaborative sensor networking. An easy example is the use of an air EW sensor such as the Growler in the land EW fight.

When you start doing that, then you need to figure out how to manage networked sensors. But force level ISR is more than that. Defence needs to move away from ISR stovepipes, for example find a way to fuse COMINT, MASINT and HUMINT so that we're maximising the effectiveness of the ISR platforms and techniques that we have. If we can solve that, then unfortunately force level ISR starts getting even more complex: you need to deal with information management across multiple domains, you need to do intelligent data interrogation, and more importantly data curation. This is a mix of art and technology, and requires expertise such as data scientists. This information management requires specialised systems, people and processes that the ADF doesn't have a real lot of. With all this data sloshing around, we also need to find a way to break the PED curve. The PED curve is the relationship between an ISR outcome and the number of people you need to create that ISR outcome. We need to find a way to use technology so that humans are making decisions rather than processing data. This leads to things like automation and artificial intelligence, which bring in their own complexities such as automation trust and biased learning.

The second area of operational need for manoeuvre warfare is multi-dimensional C2. I call it multi-dimensional because C2 is really complex. Yes it's multi domain C2 but its more than that. We need C2 systems, doctrine and supporting training that really enables the best decisions in complex battle spaces. We will use multi-domain ISR to provide fused, all source information but the battle outcome is delivered in terms of joint integrated effects, and this takes humans to understand a situation and make reasoned decisions. Most of you are familiar with the doctrine of 'centralised command, decentralised control', but I wonder if that is actually applicable in the next-gen environment anymore. A colleague of mine Antony Martin introduced a phrase that I prefer: 'Hierarchical Command – Agile Control'. When you think about hierarchical command, this is different than centralised command. And Agile Control is clearly not the same as decentralised control. Agile is a term found in software engineering, and is typically used to describe small, ad hoc teams, which are often self-forming, and are able to adapt to emergent needs. So I think this suits the C2 paradigm particularly well.

The third area of operational need for manoeuvre warfare is integrated effects. Regardless of what you think of the terms 'kill web', 'combat cloud' and 'mosaic warfare', integrated effects are going to be the assymetric tool that is going to allow the ADF to succeed.

Integrated effects will be built on a network of complex weapons systems. They will use adaptable architectures to connect across these multiple platforms and weapons systems, but interestingly there won't be a single glue to tie them all together, it will be a complex mesh that will evolve over time. And from a weapons perspective, we will need engage capabilities that trade range, lethality and most importantly affordability. There will need to be a mix of capabilities to penetrate as well as deliver effects from stand-off ranges, and we will need to think harder about 'left-of-launch' effectors. The US experience in NIFC-CA gives us some clues about how to deliver these integrated effects. They didn't wait to design a perfect architecture up front before they started connecting platforms across their kill web. And so can we: we can develop our own integrated effects incrementally by networking existing and incoming systems: we can link Wedgetail, the Army Currawong meshed network, the Air Warfare Destroyer. And not only do we have these platforms in service in Australia, we also have the industrial support base to do something about knitting them together.

The fourth area of operational need for manoeuvre warfare is EM Battle Management. A previous Williams event explored Force Level EW, and most of the speakers talked about the need to build extensive spectrum awareness, and support agile EM planning & operations. But here the problem is not so much about technical systems, as it is about integration in multiple dimensions. For example, we need extensive spectrum awareness not only about our frequency use, our adversary's frequency use, but also NGO and civilian needs. And the latter two aren't well documented or technically integrated, and collateral damage estimation of non-kinetic effects is an order of magnitude harder than for kinetic effects. And finally we need them to be integrated with elements such as pschyops and information warfare, and this is really a creative arts activity.

With this operational vision about manoeuvre warfare, the next step on our roadmap is the 'detailed what' - what are we going to build and how is it all going to be connected together. This is about Architectures. From the outset I want to be clear that its essential that the ADF doesn't wait for perfect architectures to be analysed in detail before we start implementing. There are 3 reasons for that. Firstly Defence has been playing with architecture for years. Consider the raft of analytic thought that has been applied to C4ISR 2025, net-centric warfare architectures, and integrating conops. There's nothing wrong with those things themselves, but contrast all that work to the implementing programs such as JP9111, 2089

and 9347, all of which are really struggling for traction. And they're not struggling because of a lack of architectures work. The second reason is that Defence and industry don't have the intellectual capital to solve it all at once – it's too complex to solve all the simultaneous acquisition and technical challenges in some sort of 'grand design'. The third reason is that even if we did, it would take too long, and by the time we did it the adversary technical landscape would have overtaken us. So the right approach is to make some key foundational decisions, like JICD 4.2, OMS and Future Air Networks and then get on with building them. Whichever architecture you choose it is going to change, you will need to evolve and you might pick a wrong path – accept this and be prepared through agile processes to be able to change. More detail in the architectures will follow. Where the ADF does do architectural thinking, I think Defence needs to lean on industry more to help. Both large OEMs and small SMEs are a vast untapped experience base. When we start doing the work, some decisions will fall to one prime or another, whereas some decisions will require some sort of collaborative work. If Defence just focuses on above-the-line resources from industry because probity is hard, you're missing out on key intellectual capital.

And now the 'how' part of the roadmap, and the one area that I believe is most inhibiting our progress towards really fielding a next-generation integrated force. This is the area of Acquisition. Integrated Force Level capability development requires adaptable, affordable and agile processes. We can't solely use linear acquisition and development timelines with traditional approaches, but instead there needs to be increased collaboration between Scientists, acquirers, operators and industry professionals. When Defence talks about Acquisition, the focus shouldn't just be about platforms, it also needs to address system of systems, training and the workforce who will operate them. But most importantly, Defence needs to look hard at the acquisition machinery itself. Note here that I'm not criticising people – they have the greatest integrity, are hard working, and are making what they think are the right decisions for Defence. But I think that CASG sometimes applies risk-conservative, probity-driven linear processes to its detriment. If we reverted back to our generational language, its like we're trying to acquire a 5th Gen force using, at best, a 3rd Gen acquisition process. Now there is no single silver bullet here, but I think there needs to be thought applied to matching technology development cycles with acquisition cycles. So for example, if you're buying industrial age tech such as radars, engines and fire trucks, then it's ok to use fairly linear, well templated processes. But if you're buying 'Information

Age' tech such as software, or doing complex systems integration, then you need to use modern, best practice acquisition processes.

So I think we need some acquisition machinery reform. We need to encourage flexible and innovative procurement approaches, with reformed probity processes. We need to develop and allow novel execution and commercial strategies. There needs to be greater industry engagement during requirements phases, and by that I mean industry OEM participation at up to SAP level, and not just with MSPs or 'above the line' contractors. We need to be looking more at the asynchronous development of capabilities: we need to prototype, then experiment, then field, and then use, rinse and repeat. We need to do more force level integration in labs prior to operations in the field. Several companies have labs here in Australia such as NG's SIL, Boeing's Joint Battle Management Development Environment, Raytheon's CAVE environment or Lockheed's Endeavour Labs. We need to connect these labs and do some risk-retiring integration work first, such as how might a Wedgetail operate with a JSF more effectively. To be fair, industry will need to work hard to resolve Intellectual Property issues. Defence and Industry have to solve Inter-Industry collaboration, so that instead of Company A vs Company B, we have Company A + Company B + CoA to drive a best for warfighter outcome for the ADF.

The next part of the roadmap that I think we need to explore, that is potentially holding us back, is how do we actually use this next-gen integrated force. I'm not talking about our airborne tactics, but more about how we operate, organise and train. At the moment much of our operations training is force element group, or FEG, oriented. Is there a need to think about training as we fight, and building this into our organisational constructs: at the moment I think there's a disconnect between how we organise and plan for "raise-train-sustain" back at home bases, and then how we "fight" as part of a task group. If we're serious about Multi-domain planning & tasking, should we organise differently? In previous Williams events we've talked about the need to "plan to fight hurt", but with the exception of a few days in Talisman Sabre where satellite degradation was introduced, how often do we really train that way? Fuel, power, ICT, water and armaments are critical Defence infrastructure needs, but we don't seem to be doing anything to think about the sustainability of these enablers for a long-term conflict. And then lastly how much do we exercise the 'strategic art' element of planning. By that I mean the creative development of courses of action, whether it's at a lower tactical level or when we're thinking about force deployment

options. The Military Appreciation Process seems to drive some fairly standardised course of action development, and I wonder how we embed creativity into our military processes.

The final part of the roadmap for our integrated future force for manoeuvre needs to think about 'who', and by this I mean the People, and our workforce, and what we need to change to better suit the nature of future warfare. I think that Defence training & education programs need some additional elements that will help us better use these next gen integrated weapon systems. When we think about preparing our future commanders, we need to lift their operational lens to more of a national & strategic focus, think about how military effects contribute to national outcomes, and in that context discuss how to counter enemy 'left of launch' efforts in multi-domains, and particularly in what is recently referred to as 'the grey zone'. Our military training and education needs to be focussed on multi-domain from the outset, and introduce whole of Government effects as early as possible. I've spoken a few times about strategic art, and creative processes, and this is not just an homage to all those Air Force officers who did an Arts degree at the Academy. All of our training processes need to "teach" – if I can use that word – a greater, broader appreciation of options, and how to apply creative thinking to military processes. Secondly, if Defence's partnership with industry is going to succeed, our education processes also need to broaden Defence personnel awareness of commercial issues: when I left Air Force for an industry job many years ago, I thought I knew everything about the commercial world, but the reality was far different: I knew precisely nothing about the realities of liabilities, margins, overheads, and long range business plans. On the personnel front, Defence's security infrastructure needs overhauling: PV clearances need to take a few months, not a few years, they need to be sponsored well before a project's contract is signed, and Defence needs to find a way for Multi-SAP access to be broadened to include industry. And finally, DSN, DTSN and DTEN infrastructure needs to be systemically and pro-actively driven out to industry to overcome adhoc inefficiencies: call it a "Defence NBN" if you will.

So some final thoughts. NextGen integrated operations requires a different approach not only to warfighting but also to acquisition, operations and training as well. We need to balance 'information age' and 'industrial age' capabilities, and recognise that NextGen manoeuvre is not just about platforms, but rather the entire ecosystem from acquisition through to operations. An Integrated Force Level approach is required for all of these things.

Now these concepts are not new. Jericho established some of these vectors, but what really needs to change is how we prosecute them. We need laser like clarity on what's stopping us, and these fundamental blockers need to be unstuck. With our architectures, we need to make key decisions and develop roadmaps, but don't wait for perfection. And we must unstick our acquisition processes, or we'll be forever talking about '7 minute abs' or '5th generation', and not actually benefiting from these things. It will be expensive and pathfinding, but operationally we can't afford not to.

Thankyou.