PLAN JERICHO

The Royal Australian Air Force Shapes a Transformation Strategy

By Robbin F. Laird

Overview

Early last year, the then Chief of Staff of the Royal Australian Air Force, Geoff Brown, announced a transformation strategy called Plan Jericho.

As Air Marshal Brown noted on May 29, 2014:

I intend to release Plan Jericho, the RAAF transformation plan, in early 2015. It will guide our force transformation, enabled by our new 5th Gen capabilities, over the next decade.

I will also be engaging closely with industry in the development of the plan.

It is the technology that is being developed by industry that affords us the opportunity to transform our force. It is essential that we partner with industry to explore how we can maximize the opportunity offered by 5th Gen systems. I ask you to consider how you can work with us, not just at the platform level … but in helping us think through and design our overall future force using the 5th Gen capabilities you develop and will help us sustain in the future."

And in an interview at the end of 2014, John Blackburn, the former Air Vice Marshall of the RAAF highlighted the nature of the transformation effort:

The RAAF are now looking at how not just to modernize the force; but to transform it. They are looking at the F-35 as a key to that effort. It is not a replacement airplane; it is a force for transformation. The focus is not just the airplane or its systems but the impact upon, and the transformation of, the whole force. This transformation will be guided by the RAAF's Plan JERICHO. The Air Force is anticipating already some of these transformatonal changes as a result of the radar and systems in the Wedgetail AEW&C aircraft; however, the F-35 is a whole new concept and level.

The launch of the project was announced at the Avalon Air Show in Australia in 2015.

According to a story on the RAAF website published on February 23, 2015:

The Chief of Air Force, Air Marshal Geoff Brown AO, today released a strategy to transform Air Force for the future.

Releasing Plan Jericho in Melbourne ahead of tomorrow's Australian International Airshow at Avalon, he said that the much-anticipated plan will set Air Force on a path of transformation for the future.

"In the next ten years, the Royal Australian Air Force will have one of the most advanced aircraft fleets in the world.

This will make our Air Force operations fundamentally different.

"We cannot be complacent, by thinking that simply having the next generation of aircraft technology, will create an advanced Air Force.

The E-7A Wedgetail is already in service, and the F-35A Lightning II, P-8A Poseidon and EA-18G Growler are only a few years away.

"These aircraft will bring more data and situation awareness than ever before.

We need to be able to share this information across aircraft platforms through networking, and enable good decisions without being overwhelmed by the high volumes of data.

"We need to work across Defence, to create integration with Army and Navy's technologies to deliver the best possible options for Government from these advanced aircraft.

"We need to transform ourselves into a truly integrated, networked force that can realise the potential of this technology, and maintain our position as masters of the air domain," Air Marshal Brown said.

Plan Jericho is not the 'final plan' for the future.

Plan Jericho is the first step for Air Force to meet the challenges of the future.

More work will continue in 2015, to further develop the three themes – Harness the combat potential of an integrated force; Develop an innovative and empowered workforce and change the way we acquire and sustain capability.

Some of the outcomes that will flow from pursuing these themes will be the creation of an air warfare centre, development of new operational concepts and tactics and a greater focus on experimentation and testing.

"We cannot ignore the need to transform the Air Force to maintain our position at the leading edge of air power.

The changes we make under Plan Jericho will allow us to maintain our ability to deliver air power for Government, when and where it is needed."

But what is Plan Jericho?

What is the RAAF about?

And how significant is their effort for other air-enabled combat forces among the industrial democracies?

The baseline point is that the RAAF believes that the coming of the F-35 will drive significant change, but Australian defense forces will get the full impact of what an F-35 enabled force *only* by transforming itself into a better connected, more integrated and transformed JOINT force.

Plan Jericho is really about transforming jointness, away from the ground dominated variant which has prevailed for the past ten years.

Slow motion war dominated by ground forces and support for those forces in such conditions has become the virtual definition of jointness. Simply supporting ground forces with lift, tanking, firepower and related capabilities is what some in the Army think is joint; but clearly it is not and certainly does not shift the focus to more rapid and expeditionary operations where support is generated on the fly, so to speak.

What the Aussies have in mind is con-ops design driven innovation. It is enabled by new platforms and new technologies but such capabilities are necessary but not sufficient conditions for transformation. Cultural change is envisaged in which the force becomes much more interactive within force packages which can be ground-air-maritime or air-ground-maritime or maritime-air ground.

An example of con-ops driven innovation was seen in the RAF leadership preparing for the Battle of Britain. Air Marshal Dowding's vision saved Britain but generated many enemies, including Prime Minister Churchill. In effect, Dowding developed what he believed what be a concept of operations for the defense of Britain and then looked at the bits of technology which could be forged into that con-ops.

The fighters by themselves would not succeed; as the British fighters chewed up on the continent in the defense of France demonstrated when facing the Luftwaffe.

According to Michael Korda's account of the Battle of Britain: "The French had no radar, no central fighter command, no strategy for using the fighters they had in abundance; even the far superior British Hurricanes sent to France to support them were wasted, just as Dowding had grimly predicted they would be, since without ground-based radar and fighter control, their pilots were no better equipped to find the German aircraft or concentrate against them than fliers had been during World War I. (Michael Korda, *With Wings Like Eagles,* New York, Harper Collins, 2009, page 43).

What he had in mind is what one might consider distributed operations, whereby distributed airfields, with fighters sent up to operate only when radar systems and spotters identified bombers to be killed and then engage and return.

Many of his fighter pilots hated his con-ops for they wanted to do World War I style dogfights with fighters rather than simply hit the bombers and then deal with fighters as a necessary evil.

But for Dowding the attrition of the bombers was the goal; and the preservation of as many fighters as he could through vectoring them at the last moment against the enemy was the concept of operations.

And as he worked through this concept of operations, he identified problems that would simply not have been seen without this concept of operations, namely, working the relationship between the fighter pilots and the female ground controllers in his control center (a first) and in the distributed data stations working with radar.

A core problem emerged from shaping the con-ops: how would the male fighter force work effectively with the female force which would staff the ground elements providing data and direction to the fighter pilots?

Dowding's con-ops identified this challenge in advance of the Battle of Britain and led him to get the two sides of the equation for success working together so that the data would be accepted by the fighter pilots as valid data, and clearly that is a core reality of the flow of information in a 21st century battle space.

The Aussies have in mind a process not dissimilar to what Dowding achieved in thinking through a concept of operations for the defense of Britain. It is not a perfect parallel, but thinking through the extended defense of Australia, given the challenges in the neighborhood is not a reach.

The Aussies are prepared for the Plan Jericho opportunity by several key drivers of change.

First, they introduced their air battle management system and their tanker as the lead nation. This meant they could turn to no one else as a guide to making these new systems work. There is a very large and critical public press on the problems; there is much less ink on the success and its impact on the way ahead for the RAAF and its working partners.

Second, the RAAF is battle hardened and has experience now with self-deployment. It can think through the challenges of working at a distance, with a more integrated force and one, which is designed to work with coalition and joint partners.

Third, they have bought a number of new platforms, all introduced within a compressed time scale of the past few years, including Super Hornets, C-27Js, KC-30As, and Wedgetail. The compression in time provides an opportunity to break out of stover-pipe thinking.

Fourth, they do not have a long and deep "tanking" and "AWACS" culture to get in the way of innovation. They do not know what they are not supposed to do. This has been evident in innovations already seen in the Middle East operations with the tankers operating differently from the operational approach of U.S. tankers.

They have committed to the F-35 and believe it is a very different type of aircraft. They have flown with the F-22 and are learning from doing so, in anticipation of the F-35 but view the F-35 as a more revolutionary aircraft in terms of force multiplying their joint force.

The goal was well articulated by the Air Commander of Australia, Air Vice Marshal Turnbull.

Question: The current deployment of the RAAF to the Middle East is the first time that you have taken a full expeditionary package into combat.

How do you view this experience in light of the transformation approach of the RAAF?

Air Vice Marshal Turnbull: It is an important step forward and gaining operational experience with a combination of forces and lays down the preconditions for moving forward.

But, we have deployed as fighters, lifters, air battle management, and tanker platforms.

We are evolving the roles of these platforms in light of the operational relationships among them.

Nevertheless, they are not that integrated.

We are learning the lessons of integrated forces and understanding we want Jericho to produce for us.

That ability of each of those platforms to participate in an equal and redundant manner in the sensing, targeting, engagement cycles doesn't exist yet.

We're part way there in some areas, but we're a long way from where we want to be.

Although clearly a work in progress, the RAAF has made this a public discussion not just a black box transformation effort. Leadership of a public discussion and shaping a fifth generation narrative is sadly lacking in the United States and highlights that one impact of the global F-35 coalition may well be found in the allied nations who are getting on with transformation.

Coalitions need to be built from those who can work together for common strategic purpose, not simply forged by those who wish to show up or as part of the list to generate the largest number of possible of participants.

With the coming of the F-35 global coalition, change will be driven more effectively by the edge forces, the USMC and smaller coalition airpowers. There will be more integration, and less stovepipes getting in the way of the change which a fleet of flying combat systems able to operate in 360 combat space can deliver throughout an entire combat force.

The RAAF like the USMC is an F-18 fleet, which is moving from the F-18 to the F-35. The RAAF does not see the F-35 as simply a day-one aircraft; but sees it very much as the USMC as a flying combat system to enables the entire force. The Royal Australian Air Force has made it very clear that the F-35 is the baseline aircraft for 21st century operations; the Super Hornet will be a contributing and complimentary asset for the RAAF.

The global enterprise of F-35s will not only generate pilots, maintainers, but also parts and upgrades amortized by the investments of multiple nations. And weapons revolution will be a key dynamic as well, and the F-35 global fleet will receive regular focus of attention from the entire gamut of U.S. and allied weapons manufacturers for a simple reason: there will be so many of them and in the hands of multiple users world wide.

And the global intelligence impact of the F-35 fleet will be significant for all users – the worldwide fleet will be major signals intelligence assets as part of its normal operation as tron warfare aircraft.

The (then) Chief of Air Force, Air Marshal Geoff Brown, is enthusiastic about the F-35's capabilities.

He was on the receiving end of fifth-generation stealth technology when he flew an F-15 "aggressor" against F-22 Raptors on Exercise Red Flag in the United States several years ago.

"We were never in a situation where we saw them at any time on radar or infrared," Air Marshal Brown said.

"We never knew where they were or where we were killed from, so we had no situational awareness.

Then to go back and look at the situational awareness the F-22 had, it was quite a dramatic difference.

It the same sort of technology we're getting but a little bit more advanced in some respects with the F-35."

He said the jump between a fourth- and fifth-generation fighter was dramatic.

"It's the difference between being in a biplane against a monoplane pre-World War II, the difference between a piston engine and a jet – it's one of those game-changing events," he said.

Air Marshal Brown said the announcement of an additional 58 Joint Strike Fighters allowed Air Force to plan for the full withdrawal of the 71 F/A-18A/B Hornets.

"The Hornet's been the mainstay of our air combat fleet for nearly 30 years.

To be signed up to the future means we can go forward and plan how we're going to transition," he said.

"The transition will be quite a difficult thing to do because we need to move people from that era of technology into a completely different generation."

Air Marshal Brown said the F-35As would need upgrades to maintain their combat edge but the Joint Strike Fighter program was designed for easier improvements than the F/A-18s.

http://www.airforce.gov.au/News/F-35A-a-major-boost-to-air-combat-capability/?RAAF-MW8dkxniaSMbURjt-b6yHcb+wZwb0xp1o

And as the then Air Marshal Brown put it at the Williams Foundation Conference in early 2014:

With so much capability inherent in generation 4.5 fighters, it has been often asked why do we need 5th generation?

The answer to this is simple: we need to ensure we conduct tomorrow's air combat operations with tomorrow's capabilities.

Historical examples highlight loud and clear that today's technology won't be suitable in 2025, and certainly not in 2035.

And his discussion of the F-35 focused on a key element which will become evident as the F-35s in the Pacific becomes a fleet of enablers for deterrence in the depth: decision making superiority.

To achieve decision superiority in 2025 and beyond, Air Combat Operators will need to be able to see who and what is in the area of operations, with very few limits to arcs of coverage.

The fusing of multi-spectral sensors and electronic support must enable targets to be detected without the knowledge they are being tracked.

The cueing of capabilities must not be limited to on-board sensors; they must be available from multiple off-platform sources.

The networking capabilities of these future air combat assets must be a force multiplier.

They must be able to feed, and be fed from, multiple sources.

The end result is that the pilot must be able to focus solely on the fight, not allocating time and effort to managing data that supports the fight.

As the F-35 systems become realities, concepts of operations will change significantly and here the Air Marshall sounded a bit like Admiral Halsey who focused constantly on the importance of what he called, "training, training, and training."

New capabilities breed new methods, and how a 5th generation fighter undertakes these missions in 2025 and beyond are unlikely to resemble yesterday's air combat operations. In future, as it is now, the ability to integrate all the fundamental inputs to capability will still be what determines relative combat effectiveness.

The ability to fly an aircraft does not mean you have the ability to fight the aircraft.

This is never more so than in 5th generation fighters.

http://www.sldinfo.com/the-chief-of-staff-of-the-australian-air-force-on-the-future-of-air-power-the-impact-of-the-f-35-on-the-raaf/

This is where training will be so important to success in future air combat operations and where the F-35 countries will work closely together in shaping fifth generation concepts of operations. As General "Hawk" Carlisle, former head of PACAF and now the Commander of the Air Combat Command put it in a recent interview:

"Training for the concepts, which enabled the legacy aircraft, is simply not what we need to do going forward….It is not about improving the techniques of what we used to do; it is about rethinking fundamentally how we shape and execute information dominance in a fluid battlespace."

And Carlisle added about the RAAF approach and its significance:

"The F-35 is a global aircraft and will provide significant opportunities for cross-cutting learning.

The RAAF is at the cutting edge of rethinking warfare, under the influence of fifth generation capabilities.

I think the RAAF because their size comes with a relative lack of bureaucracy and a more open approach are actually leaning further forward in some areas than we are.

But I think the joint aspect of the F-35 will be a powerful engine of change for the air services in the U.S. as the Marines, the USAF and the USN work through lessons learned going forward from using their F-35s and reshaping on joint concepts of operations.

In this sense really the F-35 is a central part of our broader effort to transformation jointness."

The Williams Foundation and the RAAF are to be congratulated for publicly discussing the way ahead in airpower under the impact of the F-35. With the majority of F-35s being bought by foreign air forces over the next five years, the opportunity to cross-learn presents itself.

The Williams Foundation Workshop on Plan Jericho: Shaping Design-Led Innovation.

The Williams Foundation held a one-day seminar/workshop in Canberra on RAAF Plan Jericho: Design-Led Innovation on August 6, 2015.

What was evident during the workshop was the clear commitment of the new RAAF leadership team of Air Marshal Davies and Air Vice-Marshal McDonald as well as the enthusiastic participation of a wide range of leadership in the RAAF with other service and defense officials participating.

Seminar Program

➢ **Seminar / Workshop Context –**	AVM John Blackburn AO (Retd), *Deputy Chair, Williams Foundation*
➢ **Opening Address -**	AIRMSHL Leo Davies AO CSC *Chief of Air Force*
➢ **Keynote Address -**	Lt Gen Jeff Lofgren USAF *Deputy Chief of Staff Capability Development Headquarters Allied Command Transformation*
Morning tea – 1030 - 1100	
➢ **Lockheed Martin –**	Mr Stephen Justice – Skunk Works *Director for Advanced Systems Development*
➢ **Boeing –**	Mr Paul Geery - Phantom Works *VP – Advanced Network and Space Systems* Mr Shane Arnott - Phantom Works *Director International*
End of Morning Seminar at 1230	

There was significant industrial financial and intellectual support as well, and the dialogue in the afternoon session among the various subgroups where industry, the RAAF and other defense officials discussed how to make the Plan Jericho approach work, was wide ranging and spirited.

The morning session was an opened by former Air Vice-Marshal John Blackburn, the Deputy Chairman of the Williams Foundation Board, who introduced the goals for the seminar/workshop. Blackburn hammered home really the most significant and challenging point – Plan Jericho is also about design-led innovation, not simply R and D, technology or experimentation. As the Plan Jericho overview states – "We must achieve the future Air Force by design."

Rather than piece-meal application of technologies to platform modernization Plan Jericho aimed at a different goal – design driven innovation starting at the CONOPS level.

Blackburn contrasted the network-centric efforts of the 1990s with what Plan Jericho had in mind. In the network centric effort of the past, the plan was to essentially perform after-market integration of capabilities that were acquired in stovepipes.

In contrast, Plan Jericho looks to design-led innovation as a way ahead where connectivity could be driven from the design of the CONOPS to achieve the delivery of capability; the operators will look at the effect which the force needs to deliver, not just that of their own platform set and design the future force accordingly.

Blackburn postulated that even a small force such as the RAAF could be innovative at multiple layers.

The RAAF could innovate:

- At the "applications" layer, if an open systems architecture was adopted for both new and legacy capabilities;
- In the adaptation of existing capabilities; for example, the KC-30 tankers could, if equipped with MADL-like links and on board processing capabilities; performing the role of a C2 node in the Air Battle Management system, providing additional capability beyond that of the E-7 Wedgetail and also providing a greater degree of C2 resilience;
- At the CONOPS level, by developing innovative and potentially disruptive options for how the force will fight; and
- At the Force design level by working in partnership with key allies to influence the design of future force capabilities with a whole of force "effect" focus.

Air Marshal Leo Davies providing the opening address at the Plan Jericho Conference held by the Williams Foundation in Canberra, Australia, August 6, 2015. Credit Photo: Second Line of Defense

The new head of the RAAF, Air Marshal Leo Davies, made the opening presentation.

Davies focused on the central role of the human element making an across the board transformation effort possible.

Through sound force planning and sustained support from successive Australian Governments, we are in the process of modernizing our fleet. By 2025 the RAAF will be one of the most potent and balanced Air Forces in the world.

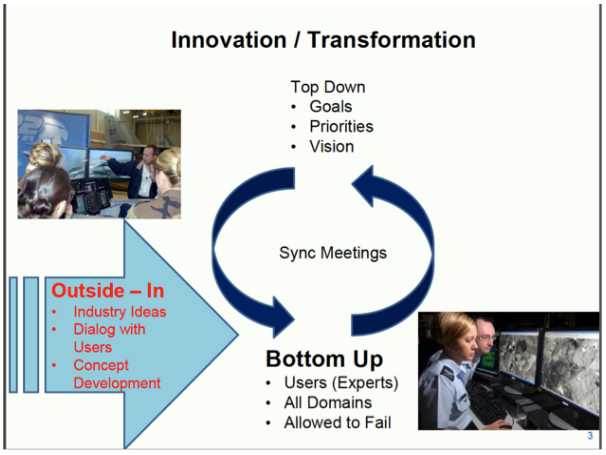
Jericho is designed to ensure that we achieve the synergies offered by that sophisticated array of platforms. But if we are to match the rhetoric about being a 'force by design' and a 'system of systems' then we really must be innovative and adaptive in key areas.

We need to truly empower our work force. Real innovation depends on people. And I mean airmen and women – not just industry research and development partners and DSTO scientists. We must encourage 'bottom up' innovation.

To enable this we must become an employer of choice in a very tough employment market where it will be difficult to match the salaries and conditions available to the highly skilled people we will need.

That is especially so in the areas of space and cyber; where revolutionary change is occurring in cycles of months not years. And I intend to stand up a distinct squadron that supports the joint approach to cyber.

The next presentation was by Lt. General Jeff Lofgren, who is now the Deputy Chief of Staff at the Transformation Command in Norfolk, but spoke to the group on the basis of his time as well as head of the Warfare Center at Nellis. He emphasized the centrality of leadership providing a vision and shaping an approach but opening up the organization to innovation from below and dialog with relevant outside forces helping shape concept development. He discussed as well a major dynamic of change, namely the need to prepare to fight in an extended battlespace and the importance of training with new systems like Live Virtual Constructive Training to prepare for the con-ops necessary to do so.



Lofgren underscored the need for change to become comprehensive, where operators, logisticians and those looking to modernize the force interact significantly with one another in shaping a way ahead.

One could argue though that the crucial missing piece is the need to inform the public and to drive the debate or the attempt to innovate can easily get sidetracked by cubical commandos and asserted facts journalists. Public perceptions abhor a vacuum and in the twitter age, it is not long range planning which drives debates, but bits of "information" which area put into play by critics or are elements of information war from strategic adversaries.

The perceptual space is a contested one. If those working to reshape forces to fit tomorrow's threats do not do a more effective job of presenting the way ahead, we will be left with those seeking to perpetuate legacy systems way behind their time.

The next two presentations came from industry.

Steve Justice from Lockheed Martin's skunk works discussed what he called the DNA of innovation, and how to shape successful paths to innovation.

Then Paul Geery and Shane Arnott from Boeing Defense, Space and Security provide a perspective from the Phantom Works perspective on ways to meet the challenge of innovation.

The afternoon closed workshop, which was governed by Chatham House rules, was introduced by Air Vice-Marshal Warren McDonald who focused on the importance of design-driven innovation to shape the concepts of operations anticipating ways to operate more effectively.

The Plan Jericho team reports directly to him and to Air Vice-Marshal Gavin Turnbull, Air Commander Australia. The co-heads of Plan Jericho, Group Captain Rob Chipman and Group Captain Jake Campbell then briefed the group on key elements of what they saw as necessary for Plan Jericho success and focused particularly on the industrial partnering part of the effort.

They asked sequentially four questions, which the various subgroups then discussed, and were then reported back to the full working group.

1. What do you think Australia does really well when it comes to innovation? Where should defense industries and academics focus their innovation efforts?

2. Where and when can we bring defend together with industry and academics to innovate?

3. What would a "first principles" system fostering innovation into defense capability look like?

4. How do we change behavior between defense, industry and science and academia to enable best practices?

In short, the workshop took some hard looks at how to maximize success in shaping a more capable integrated and better-enabled 21st century combat force.

And the public side of discussing the way ahead is a key piece for shaping change. One can shape in secret new technologies and step changes in technologies; but to get the kind of changes in mental furniture, training and CONOPS necessary for the RAAF and the Australian Defense Force it was crucial to engage in a broader public discussion, to inform, to engage, and to open up the aperture of the hierarchical nature of military organizations.

And if the military breaks the code of innovation, but the politicians, bureaucracies and public continued to think in the old way, the kind of change in CONOPS envisaged by Plan Jericho will not easily happen.

Here the Williams Foundation has played a unique role among organizations in industrial democracies. Australia is demonstrating thought leadership, evidenced at the Williams Foundation seminars and workshops, a core element for change, otherwise the Greek chorus of critics of airpower or those living in the Platonic cave interpreting the shadows of 20th century air operations as if they were guiding principles to light the path to 21st century concepts of operations will continue to dominate the debate.

The Williams Foundation hosted a seminar early in 2014, which focused on air combat operations through 2025 and identified key impacts which the new platforms of the RAAF and the coming of the F-35 would enable in transforming the force.

http://www.sldinfo.com/australian-defense-modernization-shaping-capabilities-for-21st-century-operations/

Then earlier this year, the Williams Foundation co-sponsored a seminar in Denmark to discuss the evolution of airpower. This was not US-led, but Australian-led which is a statement all by itself.

http://www.sldinfo.com/integrating-innovative-airpower-a-report-from-the-copenhagen-airpower-symposium/

The latest workshop continued the public discussion and the focus on the need for design-led innovation.

In conclusion, it is important to underscore the impact informed discussion of combat innovation can have on informing the way ahead. I remember well a long discussion I had with Herman Kahn when I was a graduate student about his relationship with the USAF in thinking about the way ahead, and the challenges to innovate but the importance of leadership in the USAF to break glass to shape a way ahead.

In an article entitled *In Defense of Thinking,* Kahn underscored the importance of innovative thinking to shaping a way ahead:

In 1960 I published a book that attempted to direct attention to the possibility of a thermonuclear war, to ways of reducing the likelihood of such a war, and to methods for coping with the consequences should war occur despite our efforts to avoid it.

The book was greeted by a large range of responses some of them sharply critical.

Some of this criticism was substantive, touching on greater or smaller questions of strategy, policy, or research techniques.

But much of the criticism was not concerned with the correctness or incorrectness of the views I expressed.

It was concerned with whether any book should have been written on this subject at all.

It is characteristic of our times that many intelligent and sincere people are willing to argue that it is immoral to think and even more immoral to write in detail about having to fight a thermonuclear war.

http://www.hudson.org/research/2211-in-defense-of-thinking

As Kahn went on to note:

But emotionalism and sentimentality, as opposed to morality and concern, only confuse debates.

Nor can experts be expected to repeat, "If, heaven forbid. ….," before every sentence.

Responsible decision makers and researchers cannot afford the luxury of denying the existence of agonizing questions.

The public, whose lives and freedom are at stake, expects them to face such questions squarely and, where necessary, the expert should expect little less of the public.

The importance of a Foundation and an Air Force shaping a public debate about transformation under the influence of the F-35 is significant.

With the coming of a global fleet, and almost dead silence from the Air Forces acquiring the aircraft, it is refreshing to have a public force countering the Greek chorus undercutting the evolution of airpower and air-enabled operations.

Air Marshal Davies Discusses Iraq, Plan Jericho and the Way Ahead

When then Air Vice Marshal Davies was in Washington DC earlier this year, I had a chance to discuss with him his thinking about the way ahead for the RAAF and defense transformation.

Air Vice-Marshal Davies highlighted that a key trajectory for force transformation was to be able to combine kinetic with non-kinetic capabilities to deliver the kind of combat effects, which are needed for a wide variety of combat tasks and situations.

He comes from an F-111 background, and the ability to project lethality at a distance was built into the F-111 approach.

But this approach is not the most relevant to the way ahead, for it is about combined capabilities delivering a multiplicity of effects appropriate to the task which is required.

"What we've had trouble appreciating, and this is somewhat tough for an F111 man, is that that concept is no longer valid.

We need to take the fighting force, not just the kinetic effect, to battle, and so our requirement for air lift, our requirement for anywhere refueling, became part of a fighter support package, but really the fighter support package now includes electronic warfare, it includes ISR, and it includes the ability to update the battle second by second, minute by minute, whereas what and we have been reliant upon ISR updates of day by day up until this point.

If we don't have all the elements as we go forward into a particular series of events, I don't believe we will prevail.

We will not be able to have the response that we need and for a force as small as the ADF is, that's simply not going to be effective"

The force integration piece is the goal for Plan Jericho.

He mentioned that the Royal Australian Navy leadership was shaping a convergent approach to innovation and looking at naval and air integration as a key element of moving forward as well for their platforms.

"We already see manifestations of this in Operation Okra, where we have navy controllers on the Wedgetail and we will have Air Force controllers onboard Navy ships as well.

Two days prior to his presentation to the Williams Foundation conference on Plan Jericho, I had a chance to sit down with the Chief in his office and to discuss further his thinking about the operations in the Middle East and their impact as well how Plan Jericho is in many ways empowered by the RAAF's operational experience and the need to shape their concepts of operations as new equipment comes into the force.

Question: What has been the impact of the operations in the Middle East on the RAAF?

Air Marshal Davies; We certainly have deployed fighters and air lifters in exercises and operations.

But this is the first time we have taken an integrated air package to an operation. It is the first operational experience for both the KC-30A and the Wedgetail and the first time the Super Hornets operated (outside of Red Flag) with F-22s.

The Wedgetail operating with the tanker affected the scope of operation of each as well.

Historically, we operate tankers in assigned tanker tracks. With the communications and other links inside the tanker and with the ability of the Wedgetail to clear the way for the flexible operations, the tanker could move closer to where fighters in operation were most likely to move for refueling.

This means that you move yourself 60 nautical miles further north because the fighters you're about to get next need to travel 100 miles to get to you. You could make it 40 miles and stay on station for another ten minutes.

This meant getting the job done more rapidly; and reduced the fuel burn on the fighters as well.

This operational shift was facilitated by the tanker not simply acting as a flying gas can in a pre-positioned location but able to operate as a mobile combat asset to support the strike force.

Something as simple as air-to-air refueling has been simple because it's a track at a time at an altitude with a frequency and an upload. We're saying we can make it more complicated with the right information and be much more effective in the battle space because of situational awareness.

Question: And this would not have happened if the RAAF leadership had not decided to put the assets in the hands of the warfighter rather than waiting for some procurement official to declare IOC?

KC-30A MRTT and E-7A Wedgetail conduct Air to Air refueling testing in the airspace near RAAF Williamtown. Credit: Australian Ministry of Defence

Air Marshal Davies: That is exactly right. We put these assets in the hands of the warfighter to use and to determine what systems needed to be further developed in order to achieve the operational readiness, which the warfighters actually sought.

Both platforms took time to evolve to the point where we could effectively use them; but we put them into the hands of the warfighters more rapidly than traditional procurements approaches would allow.

This is certainly part of what we mean by Plan Jericho – let the warfighters have a decisive say on what is needed from an operational standpoint, in terms of what the fleet can deliver rather than simply upgrading individual platforms organically.

And getting into operations is crucial in terms of operator confidence and coalition capabilities.

With the Wedgetail deployed, allies got use to it and considered it a very reliable asset and the radar performance to be extraordinary.

Without that operational confidence, the asset will not be used as often or as effectively.

We see this as part of the Plan Jericho approach – get into the hands of the operators to determine what capabilities are best next and from which platform?

What does a .02DB Delta on a radar range mean for an operator?

I don't know.

Let's give it to the operators and find out.

And that's what we've done.

Question: Your Super Hornets flew for the first time in combat with F-22s.

What was the experience and what did you learn from that?

Air Marshal Davies; We have flown in Red Flag with F-22s and that training was crucial to operations in the Middle East. The pilots came back and said "it was just like in Red Flag."

For us, at the moment the F-22 is a surrogate for the F-35, although with regard to combat systems and roles, the F-35 will be superior to the F-22.

But the point is to get the operational experience.

What we discussed at last year's Williams Seminar with the Marines present is our basic point: What does a Super Hornet bring to 5th generation and what does the 5th generation bring to the 4.5 generation aircraft?

And to be clear, the F-35 brings significant knowledge about the battlespace and how to more effectively operate in the battlespace, manage the battlespace and dominate in the battlespace.

All of this will be an evolving work in progress, and that is inherent in our Plan Jericho approach where discovery is expected and then the implications of discovery for evolving concepts of operations and prioritizing technological needs will follow.

Question: There is a general lack of focus on the impact of software upgradeability on force structure modernization to come,

Your Plan Jericho approach fits very well a software upgradeability approach to modernization. Which platforms should be upgraded? And with what software code rewrites to do which tasks?

Air Marshal Davies: This point is generally missed, I was in London at RUSI a few weeks ago and made a similar point. And I got more up and down head movements than I did side to side. And I think there are folk who are beginning to understand this.

But sometimes folk like me are part of the problem. What the leadership I believe needs to do now is just open up the aperture a little bit. And let folk from industry and from defense and I think there's a really important piece here about what does army, what does navy, and in the United States case, what do the marines, and the coast guard do. What are these folk thinking are options to try and explore, including leveraging the data stream from the F-35.

If we do not open the aperture and change the thought processes, we will be flying the F-35 as if it is a classic fourship formation fighter and totally miss the point.

It is about culture change.

And the evolution we are discussing will clearly affect coalitions and who we work with.

What I would contend has been unacceptable in the future is coalition partners who don't know what the coalition partners are flying with and what their ability to contribute is.

The Impact of New Platforms on the Way Ahead: Air Vice Marshal Warren McDonald Focuses on Shaping Air Force Transformation

The Plan Jericho approach which the Royal Australian Air Force (RAAF) has put in motion to shape a con-ops driven transformation process is built around the acquisition of new platforms, but then crafting ways for these platforms to operate and together in a joint manner to achieve the desired mission effects.

Plan Jericho really is about the transformation of jointness and finding ways for the integration of the new platforms into a more effective force.

It is about looking carefully at which platforms should do what in the joint battlespace and then to modernize those aspects of the platforms most appropriate for the desired combat effect.

Air Vice Marshal McDonald opens the afternoon session at the Williams Foundation seminar/workshop on Plan Jericho. Credit Photo: Second Line of Defense.

It is about training the RAAF team, and reshaping the work force as new platforms become operational, and learning how best to adapt the maintenance culture to what new platforms bring to operations.

Prior to the Plan Jericho workshop at Williams Foundation, I had a chance to discuss some of these aspects of force transformation with Air Vice Marshal Warren McDonald in his office in Canberra on August 3, 2015.

I last had a chance to talk earlier this year with then Air Commodore McDonald, who was then in charge of the Air Mobility Group, about the impact of Operation Okra on the transformation of the force.

We started by picking up some of our earlier discussion to focus on the impact of the KC-30A on RAAF and allied operations.

McDonald underscored that because the KC-30A was a new platform, the RAAF was learning new ways to support the aircraft.

The RAAF has deployed a single KC-30A to the Middle East operation but that single aircraft has delivered close to 30 million pounds of fuel since its arrival in late Fall 2014.

The aircraft has only needed a small technical footprint, some 10 technicians to deliver a mission success rate of around 95%.

When you introduce a new platform like the KC-30A, you need to make sure you are not doing so under a legacy mindset.

You need to test your mindset in real operations and then draw your conclusions as to the best way to maintain that aircraft.

Once tested and verified you then need to shift your older maintenance approach to a new one, and subsequently reshape your workforce.

This does not happen right away; it is a process that will take five to seven years see fully mature.

Nothing in the personnel space happens quickly, particularly when you must adapt to such a change.

The technical workforce changes we see happening in the KC-30A will be seen in the workforces of any capability we introduce, the P-8A and F-35 are other examples.

In other words, we need to reshape our workforce to optimize the new capabilities that we are introducing, so that we aren't stuck with a legacy of the past.

It's not that we don't value our maintenance personnel, they are key to our success on any operation.

However, we must acknowledge the significant advances in engineering that have occurred, and therefore reshape the balance of air maintenance personnel inside air force.

Question: You are adding to your tanker fleet as well?

Air Vice Marshal McDonald: "Yes, we are adding two additional aircraft to our current fleet of five.

The two aircraft were purchased from the Qantas 330 fleet.

One of the two is already in Spain being modified."

Question: You are part of the global sustainment approach of the C-17, do you see something akin to this for the KC-30A fleet?

Air Vice Marshal McDonald: Yes we are a part of the very successful C-17 sustainment system and I would like to see a similar model bought in for the KC-30A.

But what first needs to be worked out is how to tap into the commercial parts pool for the global commercial A330 fleet.

Right now the military certification of the KC-30A does not readily translate into the commercial certification of a A330 so that even though the parts are often the same we cannot tap into the commercial parts pool.

Obviously, this makes little sense.

It's blindingly obvious, but sometimes you have to be quite innovative to make that blinding obvious come into an executable outcome.

We can have a KC-30A parked on the tarmac next to a group of A330s and know they have the parts we need in their repair and support bays but we cannot access them.

We need to solve this one.

Question: Australia has been the lead nation on the KC-30A, how has this impacted on others who are looking to buy a tanker or are introducing the tanker?

Air Vice Marshal McDonald: It was a challenge getting the KC-30A into service, but the results are there for all to see, particularly in the Middle East.

The Singaporeans talked with us at length about the aircraft and we provided them with our experiences associated with the program and aircraft. I am aware that the success of the Australian program fed into their own decision as it did in South Korea.

The thing that's sometimes missed with being a lead customer on the KC30 means you must also forge a path for air to air refueling clearances.

Without them it is just a transport aircraft and useless to the fight.

Clearances are about enabling the tanker fleet to operate in a global context and thereby contributinge meaningfully to coalition operations.

We are well underway with clearances, which then other global users can simply draw upon.

For example, Singapore is obviously watching us closely as we move into F-35 clearances the latter part of this year, because for Singapore when their tanker is delivered there will be a JSF clearance already taken care of.

We are working very hard to get as many clearances for the KC30A as possible, as such we're working towards at the C-17 in the second quarter of 2016.

And then in the third, fourth quarter we're looking at P8.

With Singapore and South Korea operating the KC-30A as well, means that we can mass capabilities in an area.

Operating in the Middle East also allows us to become more and more comfortable and flexible working with other countries using our platform.

Question: An example of your transformation approach has been what you are doing with your C-130Js. Could you describe the process and how you are addressing the future of this platform as a joint asset?

Air Vice Marshal McDonald: With the KC-30A and the C-17, we really do not need to use the C-130J as a transport aircraft.

And we are adding the C-27J to do that mission with a wider variety of austere locations in the region where we might need to operate.

What then with regard to the C-130J?

A clear path is to make it a combat asset integrated with the ground forces to inert them into areas of interest.

But to do this effectively we need to add SATCOM and ISR capabilities, which we have done, are doing.

By doing so this triggers a change in Army whereby they can look to link digitally with RAAF assets to create a more effective joint combat package.

By enabling them to have all that decision authority, and full understanding of situational awareness aboard the C-130J, you then have a very good joint blade to spearhead an operation.

And we are doing similar things with the C-17 whereby we have added broadband communication to the aircraft along with Air View 360 to the back of the aircraft to provide situational awareness and communications tools for our troops onboard.

This is Plan Jericho in action, which is a con-ops driven approach.

One looks for the appropriate technology for the appropriate platform to shape the effect which you need to create in the battlespace, rather than having simply a technological driven approach.

About Plan Jericho:

As Air Vice-Marshal Warren McDonald, Deputy Chief of the Air Force, and Air Vice-Marshal Gavin Turnbull, Air Commander Australia, put it in their forward to the Plan Jericho work program:

The Royal Australian Air Force has an outstanding record of achievement across the spectrum of conflict from high-end warfighting to counter insurgency operations to humanitarian support in the wake of natural disasters. In the future, responding to global and regional events will be more difficult, as the proliferation of technology and the advancement in potential adversaries' capabilities pose new challenges to the Australian Defence Force.

To rise to this challenge, Air Force needs to extract every last bit of mission effectiveness from our capabilities by investing in our education and training, and the development of integrated tactics and networks. Air Force must embrace innovative thinking and be prepared to rapidly harness the potential of emerging technology.

Developing an integrated, networked force will be the difference between simply owning fifth generation aircraft and being a truly fifth generation Air Force. We will work collaboratively with Navy, Army, other Defence groups and our industry partners to ensure Air Force contributes seamlessly to, and enhances, joint operational outcomes.

Plan JERICHO is the key to delivering the future force, and the enclosed Program of Work outlines the integration activities that will transform Air Force over the next ten years.

This transformation will allow us to maintain mastery of a changing air and space domain whilst remaining responsive to whatever the future may bring. All of us in Air Force, the broader Defence organization and industry will need to work together if we are to deliver this program. We look forward to the journey.

The Air Commander Australia Discusses Plan Jericho and the Way Ahead

The role of the Air Commander Australia, Air Vice Marshal Turnbull, is to command and manage the RAAF's raise, train and sustain activities across various force element groups, which provide for the operational capability for assignment to operations. Air Command represents the bulk of the RAAF.

Obviously, he is looking at the transformation approach of the RAAF from the standpoint of current operations and his ability to meet the operational demands and needs of the RAAF and Joint Commanders.

Question: The current deployment of the RAAF to the Middle East is the first time that you have taken a full expeditionary package into combat.

How do you view this experience in light of the transformation approach of the RAAF?

Air Vice Marshal Turnbull: It is an important step forward and gaining operational experience with a combination of forces and lays down the preconditions for moving forward.

But, we have deployed as fighters, lifters, air battle management, and tanker platforms.

We are evolving the roles of these platforms in light of the operational relationships among them.

Nevertheless, they are not that integrated.

We are learning the lessons of integrated forces and understanding we want Jericho to produce for us.

That ability of each of those platforms to participate in an equal and redundant manner in the sensing, targeting, engagement cycles doesn't exist yet.

We're part way there in some areas, but we're a long way from where we want to be.

Question: Your chief of staff has described in his interview how the tankers are adjusting their operations to the fighters and that these adjustments are driven by increased connectivity in the battlespace and cited this as an interesting step forward.

How would you describe this evolution?

Air Vice Marshal Turnbull: It is important.

The way that we're using the tankers is very much an innovation generated by our tanker pilots.

They are driving that change, not so much being driven.

That was the really pleasing part about how they are operating in the battle space; they saw a need and worked with the E7 (Wedgetail AEW&C) to get situational awareness that allowed them to put themselves in the right place at the right time.

Knowing that someone was going to need them shortly, they weren't waiting to be asked.

Indeed, the KC-30A will be a key contributor to our transformation approach.

We are thinking outside of the box with regard to the tanker for there is a lot of unused real estate on the aircraft and we will work on what should be on the plane and what can be off-boarded via links to extend the operational capabilities of the platform.

Question: When I interviewed 2nd Squadron last year, the Wedgetail team discussed the role of software upgradeability built into the aircraft, and made the point that whatever they were doing now would be enhanced and different in the future as the code was re-written, much like what is coming with the F-35.

In a certain sense what you are doing with your Plan Jericho approach working is positioning yourself to determine what upgrades you actually want to build into the software on the Wedgetail that won't be done by some other platform and what should be done elsewhere.

And so in a certain sense what you're trying to do is find the best platform to do appropriate modernization on rather than essentially having everybody do the same thing.

Is it fair to say you're trying to come up with an intelligent division of labor that can also drive the software refresh on a particular platform?

Air Vice Marshal Turnbull: It is.

The issue with software upgradeable platforms is that there's often an unwieldy infrastructure around that software.

The process and time it takes to upgrade some of our platforms or to develop some of our platforms in the software space is quite often much easier done maybe on another platform that has a smaller development cycle and where AF can attain greater innovation control.

The key here is open source architecture and a different relationship with industry.

A Royal Australian Air Force E-7A Wedgetail Airborne Early Warning and Control aircraft in the skies of the Middle East. Credit: RAAF

And having those platforms operate as a team or as an integrated set of platforms rather than concentrate everything into the one is a good way ahead.

In the case of the E7 it has enormous potential.

Even the potential of the radar is largely unexplored.

And the potential of software or the potential of other platforms to use that same capability in different ways is unexplored.

Question: So another way to put this is that rather than thinking about the platform simply organically, you want to be looking at your modernization strategy not platform by platform organic upgrades, but interactive modernization.

Is that the underlying approach?

Air Vice Marshal Turnbull: That is a fair way to characterize the approach.

Each of these aircraft is not so much a platform as they are nodes in a system.

And it can enter and leave the network seamlessly.

And the capabilities that these platforms bring should not be in the systems specific to an individual platform, but should be part of a whole as far as a self-healing or a self-sensing network goes.

Question: And with regard to cyber security, cyber warfare or tron warfare, shaping resilient capabilities is crucial.

This means in effect that you are building a honeycomb approach where force packages can work off of one another independently or when able can connect with other force packages to deliver greater effect, but disruption will not take down the force package cells of the honeycomb.

Air Vice Marshal Turnbull: Exactly.

I like the honeycomb analogy for it gets at the capability we are shaping; which is to empower the separate platforms to operate in an equal and redundant manner in the sensing, targeting, engagement cycles we see necessary for operations.

It'll be one of the foundations of anything we do in Jericho is that there is resilience by default.

Question: The challenge of introducing Wedgetail and KC-30A, which has been done almost, concurrently clearly pushed your program and engineering skills.

What role did the challenge of introducing these complex platforms play in shaping skill sets you view as crucial to the way ahead?

Air Vice Marshal Turnbull: What did occur was that to get these platforms into operations we saw engineers step up who are excited about innovating.

We have seen the emergence of energized staffs that are not afraid to leap into the unknown and find a solution. But also a system that is tolerant of the occasional failure.

We can't be afraid to fail.

And we can't be afraid to manage those risks knowing that we may fail occasionally.

And we can't punish those that fail in trying to innovate.

We have to move on, learn from the failure, and continue to generate innovative ideas across our fleets.

And I now have a small cadre of engineers and operators who can see the benefits of trailblazing.

Question: You are clearly shaping a 21st century expeditionary force, how do you deal with the challenge of shaping a logistics system, which can enable it?

Air Vice Marshal Turnbull: Logistics is not an exciting subject but it is essential to any operational success.

We must make sure that it's not so much a specific force, but it's our ability to project a force within an appropriate timeframe wherever we may want it effectively.

As we develop capability we have to maintain a keen eye on the fact it needs to be designed to be moved quickly and efficiently from wherever we garrison to wherever we operate.

A deployable mindset is the key to keep people innovating in the right way.

For our logistics to be able to service our requirements anywhere in the world in a reasonable timeframe is a key focus for our transformation efforts.

Question: The RAAF is creating a new Warfare Center as an anchor for the Plan Jericho effort.

How do you envisage this Center operating?

Air Vice Marshal Turnbull: The Air Warfare Center will work for me within air command.

It will be a prime driver for integrating across my force element groups; operationalizing innovation and generating rapid, cogent and integrated capability solutions in response to current and future capability gaps.

Air Force is about to steer our entire raise train and sustain system toward a Jericho outcome whereby we are training as an integrated force and we are producing professional integrated forces for assignment to joint operations.

The warfare center will have a big part to play in that.

Question: Too often integration means shooting for the lowest common denominator, and combat is not a place where the lowest common denominator is where you want to go.

Assimilation often passes for integration, but obviously you have in mind a much higher target for integration.

How would you characterize your target goal?

Air Vice Marshal Turnbull: Assimilation I think is a word that we don't need to even have in our vocabulary because it's implies vanilla and gray.

Lethal is the world we live in and people need to keep their eye on that fact.

We don't play games and we're here for a reason.

The Co-Directors of Plan Jericho Discuss the Way Ahead for the RAAF

Prior to the Williams Foundation Workshop on Plan Jericho, I had a chance to sit down with the two co-directors of Plan Jericho in the Royal Australian Air Force (RAAF) in their offices in the Ministry of Defence.

The co-directors led the afternoon session of the Workshop on August 6th where several RAAF officers, members of industry and other Australian services participated in the discussion of ways to shape the way ahead for Plan Jericho.

The way the project has been set up and the background of the co-directors are key elements of shaping a path to success.

Group Captain Rob Chipman is a fighter pilot with C2 experience and his last assignment was as Commander Air Task Unit 630.1 in the Middle East.

Group Captain Jake Campbell is a P-3 operator by background and has experience in the ISR and intelligence communities.

In effect, the blending of strike with situational awareness within a distributed C2 environment is one of the key targets of the Plan Jericho effort.

And reshaping the template for operations in light of the coming of the F-35 makes sense as a C2/ISR fighter comes into the force, playing a catalytic role for further change, notably in a force which is being reconfigured to a more effective 21st century combat force.

The two report directly to the two key Air Vice Marshal's Warren McDonald and Gavin Turnbull.

Question: How does the structure reflect the Plan Jericho Approach?

Group Captains: The concept of having two co-directors was born out of a seminar at the end of last year.

We held a workshop to understand what Jericho should be about. RAAF leadership participated and there was a clear recognition that for this to work, it could not be led by starboards in the Air Force.

The time frame for them is too short.

Group Captain Jake Campbell presenting at the Williams Foundation Workshop on Plan Jericho, August 6, 2015. Credit: Credit Photo: Second Line of Defense

This has to be an enduring cultural change.

The idea was to reach further down into the organization.

And they also wanted cross-cultures in terms of the implementation of Jericho, which is why they have tasked us, one from the ISR culture and the other from the air combat culture.

The idea was to cut through the bureaucracy as well so we report directly for the Air Commander and the Deputy Chief of the Air Force.

There is no one star between us and them.

Question: What is the fifth generation mindset you are bringing to this effort?

Group Captains: For us the fifth generation mindset is one where sensor information across all our capabilities is integrated to deliver a more effective combat force.

We recognize this capability within the JSF fleet, where F-35s are able to collaborate within a formation to dramatically improve their effectiveness.

We are looking to re-shape our entire force with this mindset and create a more effective sensor enabled force which can operate in a distributed manner to deliver the desired combat effect.

We are also bringing an operational mentality to Plan Jericho.

In operations, we make changes relatively quickly, which does not happen at the program level.

We've got to find ways to work together. It's not all about widgets and technology.

It can be just about working together to develop our understanding and advance combined TTPs (Tactics, Techniques and Procedures) and practice what we can do together.

And all of those things contribute to us improving our innovative war fighting effectiveness.

If we would characterize the mantra of Plan Jericho, it is about changing the way we fight.

We're incremental, we're about war fighting effectiveness, and we're about changing combat approaches driven by rethinking concepts of operations.

Question: A key element of the shift is in terms of decision-making or pushing decision making to the level of activity where the decision is most appropriate. It is about shaping the commander's intent and really unleashing the combat packages to get the job done at the forward point of operations.

How do you view this shift?

Group Captains: The shift you have described is a key one. We are doing it for two reasons.

The first is to get information to the person that needs it in the battle space and to achieve the best tactical effect.

The second is to have enhanced organizational resilience.

We want to be able to operate effectively when we lose connectivity back to mother ship.

We need to be able to get information into the battle space so that we can continue the fight no matter what the status of the network is.

This means that we need to think differently about information control in the battle space.

Question: The tanker and Wedgetail are two programs whereby you began to see the shift towards working differently with industry to get the platform into the hands of the warfighter to allow the combat driven innovation process accelerated.

How do you view these case studies, so to speak?

Group Captains: If we take the case of the tanker, we put the platform into operation prior to what was envisaged as the original IOC.

It was supposed to be able to do tanking via a boom as well as probe and drogue.

It went to the Middle East with only the later capability.

But it has made a tremendous contribution and we are now getting close to achieving operational capability with the boom as well.

The tanker experience sends a really strong message.

Part of being innovative and developing capability is getting it into the hands of the operators and working in partnership with industry to improve it.

We can't simply wait until industry has complied with the complete list of requirements set out at the outset of the program.

In other words, we are bringing that operational mindset that we spoke about before back home. That's really what Jericho's about.

It's empowering people, it's giving them permission to innovate and I think that's what we see working great on operations. So let's get that mindset back home because we can't afford the luxury of time anymore.

We don't have ten years at home to turn out new capabilities and then deploy.

Our adversaries are not waiting until we meet the requirements list for a new program.

Question: The RAAF held a workshop to broaden understanding of Plan Jericho in the RAAF last March.

Can you describe what happened there?

Group Captains: We took representatives from all the capabilities across the air force.

Group Captain Rob Chipman presenting at the Williams Foundation Workshop on Plan Jericho, August 6, 2015. Credit: Credit Photo: Second Line of Defense

It was the first time in our 25 years of service I've sat in a room where we've had people from all different capabilities talking about how we want to work together. And so that was great.

The inspiration for that came from the US.

That happens at the air warfare center every other day in the US.

And it happens in the UK at their air warfare center.

It will happen in Australia at our warfare center.

We're also encouraging experimentation through a series of exercises called Jericho Dawn as well.

Question: Clearly, the approach requires working differently with defense industry

How do you view that change?

Group Captains: Right from the outset we need to have a better discussion with industry at the needs phase in the capability acquisition life cycle.

Better discussion in the needs phase would allow us to introduce capability more rapidly into service.

And putting systems into service with operators to sort out the path to further requirements which need to be met, rather than having a roadmap for requirements set for a decade is crucial as well.

Behavioral change is needed on both sides of the fence.

We as an air force need to change the way we behave in terms of our engagement with industry.

And how much we expose them to our thinking about the way ahead.

The context for industry in Australia is much different to the US.

So I think they have the agility to be able to adapt to that new paradigm. Instead of getting big peaks in expenditure, we need a more incremental approach where there is relatively a modest, but smooth revenue stream over time.

If we can change our working relationship with industry in Australia, we can set in motion a more operationally driven and fifth generation transformation process.

Question: Obviously, the Plan Jericho effort contributes to the First Principles review and will be informed by it, so that the RAAF stimulating innovation can have an important impact on the transformation of jointness itself.

How are you addressing the broader joint transformation?

Group Captains: The Army is changing as it addresses questions about its expeditionary future, such as operation of the Canberra amphibious ship.

The Navy is in the throes of change as it leverages the new air combat frigate, works towards new submarines and shapes an approach towards the new modular frigate.

We need to focus on cross-domain transformation.

For example, we had a meeting with army and navy the other day and one of the comments that came out of that group was we can no longer just have our own self-protection bubble. We have to have a joint self-protection bubble.

We can no longer say that we are going to go as an air package, protect ourselves, get to a target, do the business, come home.

We now have to think about that in joint terms.

We've got to have a mutual role in force protection because doing it ourselves is not going to be enough.

That is the kind of conversation we are having with them.

There is some open thinking in the other services providing an opportunity for us to work together to transform jointness, as you suggest.

What excites us about Jericho is that in many ways we've got the major platforms for air force modernization; we've now got an opportunity to change the culture of innovation in the air force and the way we think about doing business and acquiring and sustaining capabilities.

By the time we get to the next round of major investments hopefully we'll have had a cultural shift that can capitalize on better ways of buying platforms and keeping them sustained in moving forward.

Looking Back and Looking Forward in 21st Century Warfare: Air Marshal (Retired) Geoff Brown

Air Marshal Geoff Brown retired on July 3, 2015 when Leo Davies became the new Air Marshal for the Royal Australian Air Force (RAAF).

Although retired, no one would consider Geoff Brown retiring in any sense of the word.

After having interviewed the current Air Marshal and the two Vice Air Marshals and attended the Plan Jericho workshop held by Williams Foundation, I had a chance to sit down with Brown and look back at his time in the RAAF and forward to the evolving challenges.

The overall perspective Brown provided was that the RAAF had gone through significant change prior to his time as Air Marshal and because the tanker and Wedgetail came into operations during his time as the Chief, change accelerated.

He launched the Plan Jericho and sees the RAAF and the Australian Defense Force in a very good position to innovate as a con-ops driven redesign of the RAAF and with it the transformation of the joint force is underway.

He sees the evolving template as the foundation for thinking through any future acquisitions, and the clear need to enhance the ability to acquire to support the new Plan Jericho template.

Question: What started the process of fundamental change in the RAAF?

Air Marshal (Retired) Brown: The key driver was the shortfalls demonstrated in the East Timor operation in 1999 where we succeeded but we clearly did not have the equipment to support a long range effort.

In many respects the C-17 was our first global platform and allowed us to reach places that we could never reach before.

With the C-17 we were freed from the limits of our C-130 force.

But we've always been constrained before by our C130 force as our basic transport.

And in my mind one of the transformational capabilities for the Australian air force actually started with the C17.

Question: Your recent deployment to the Middle East has shown as well the shift in capabilities for the RAAF. How do you view that shift?

Air Marshal (Retired) Brown: In 2003, when we went to Iraq it took a long time and we got there only by leveraging USAF assets.

This time we had a week to organize and a week later we had self-deployed to the Middle East. The pleasant thing for me was we just did it all with our assets.

Question: As Chief, you were a key player in the decision to bring the F-35 to the RAAF. What do you see that fifth generation brings to the RAAF and the joint force?

Air Marshal (Retired) Brown: The USAF provided the RAAF with a slot for an Australian exchange pilot to fly the F-22, so that gave us direct access to seeing what the initial fifth generation platform brought to air operations.

We have evolved our own capabilities within our classic Hornet force and five years ago added the Super Hornet, all of which has been a significant evolutionary experience.

Fifth generation is not evolutionary; it is about disruptive change.

If you approach it as a step grade improvement you will miss the point of the shift.

I flew in a Red Flag in a F-15 D aggressor and after having gotten killed five different times by the F-22s, we went back and looked at the tapes and it was clear that the situational awareness in the two cockpits was night and day different.

I will take the F-22 and you can take the F-15 if you want; but I clearly want the new definer of air combat, the fifth generation asset.

And as good as the F-22 is, the F-35 represents a significant shift in fifth gen capability.

And the capability of the fleet to operate in an integrated manner and to share unprecedented data over the MADL system is not just business is usual; it is the baseline for redesigning our 21st century force.

And this clearly triggers a need to shape new concepts of operations in redesigning and integrated sensor enabled force.

Question: As Chief you decided to push your new aircraft – Wedgetail and the KC-30A – out to the force rather than waiting for the long list of tests to be complete.

Why?

Air Marshal (Retired) Brown: Testers can only do so much.

Once an aircraft is functional you need to get in the hand of the operators, pilots, crews and maintainers.

Chief of Air Force, Air Marshal Geoff Brown, AO, (right) after his last flight in an F/A-18 Hornet. Credit Photo: Australian Ministry of Defence

They will determine what they think the real priorities for the evolution of the aircraft, rather than a test engineer or pilot.

And you get the benefit of a superior platform from day one.

When I became Deputy Chief of Air Force, the Wedgetail was being slowed down by the Kabuki effort to arrange specification lines for the aircraft. There was much hand-wringing amongst the program staff as to how it didn't meet the specifications that we had put out.

I said, "Let's just give it to the operators."

And the advantage of basically giving the aircraft to the operators was what the test community and the engineers thought were real limitations the operators did not.

Sometimes it took the operators two days to figure a work around. And the real advantage of the development was that they would prioritize what was really needed to be fixed from the operational point of view, not the testing point of view.

In other words, you can spend a lot of time trying to get back to the original specifications.

But when you actually give it to the operators they actually figure out what's important or what isn't important and then use the aircraft in real world operations.

Question: Clearly, when you launched Plan Jericho, you were focused on tapping into the operational community and unleashing creativity inherent within that community.

Could you discuss your thinking in that regard?

Air Marshal (Retired) Brown: I think the KC-30A operators are a good case in point.

It is about changing what you call the mental furniture.

Here the KC-30A operators were looking at their role in the battlespace and working out new ways to execute the mission rather than the traditional way of flying around in tanker tracks and operating as a flying gas station.

They understand that they were not simply flying gas stations but a key asset in the battlespace enabling the fighters and all air assets for that matter.

The crew looked at their operational situation and determined ways to move closer to those fighter assets and anticipated when the fighters would need to be refueled BEFORE those fighters even asked for fuel.

When I was onboard the KC-30A over Iraq, and saw the operators determine that Marine Corps F-18s engaged over an area of interest, and the tanker crew then determined when they thought the Marines would need fuel and moved closer to them and picked a refueling spot and put out the hoses to get ready to tank the USMC Hornets BEFORE the Marines even had requested refueling. That is the kind of change which we want to encourage in the RAAF.

The Marines were expecting to need 112,000 pounds of fuel for the mission but because of the repositioning of the tanker, they only needed 84,000 pounds.

You clearly are not always going to operate the tanker that way, but the point is that our tanking crew is involved and integrated into the battlespace and are thinking in terms of dynamic operations, not in any static sense.

The tanker case also shows the impact of flying new systems on maintenance as well, which will require changes in how we think about maintenance modernization and evolution as well. We only need 15 maintainers to maintain the KC-30A in the Middle East operations.

Question: You have argued as well for significant change in the acquisition process to empower the kind of transformation envisaged in Plan Jericho.

How would you describe those changes?

Air Marshal (Retired) Brown: We still are following industrial age acquisition processes whereby we generate a 10 year map with a long list of requirements and then put out an RFP which then puts that map and requirements into concrete.

The information age does not work like that. We can identify the direction we want to go, and buy an initial platform to engage in the journey. But technology is evolving so fast, and the input from operators is so important, we need to build modernization approaches which encompass the fleet and then allow for discrete evolutions of the core platforms.

I find the analogy that I think is such a powerful one for the F35 is that somebody's giving you an iPhone, and yet you ignore the ecosystem.

The iPhone in itself while it's a spectacular device is so because of its ability to tap into the evolving ecosystem. The F-35 is clearly like this in character in tapping into and generating a 21st century combat eco system; it is not about the plane being incomplete; it will always evolve in interaction with the ecosystem, and that is what Plan Jericho is all about.

Who knows where we'll end up with the F-35 fleet and what its really capable of until we work through its interactive modernization with the other key pieces in our transforming combat capability.

With regard to thinking about future dynamics, we discussed two cases. The first involved how he saw the Super Hornet/Growler fleet evolving in the period ahead and the second is the possible acquisition of a long range strike/ISR aircraft.

With regard to Super Hornet and Growler, Brown highlighted the potential use of the aircraft as the unmanned aircraft evolves.

"With regard to the Growler, it is not about flying with the F-35 as far as the Growler is concerned, for the F-35 clearly does not need it; but the Growler can be and will be used in many other situations. Also a two seat aircraft has the advantage of being able to evolve it's roles to take far more advantage of second seat.

We do not need pricey UAVs, which look like manned aircraft; we need cheap expendable assets.

And the Super Hornet as a two seat aircraft can evolve into a good asset to launch and control such assets, or to command assets launched by other aircraft as well."

And if the USAF can shape a cost effective long range strike platform, particularly one which is modular so that it can be cost contained and configured for Australian needs and the area of interest for Australia.

"Clearly, the USAF innovations in long range strike and ISR are of clear interest to us, and we can build on our F-111 experience.

Range in the Pacific area is critical to successful air operations.

A long range strike asset is something we might well want to add to our core capability, notably with the F-35 sensor enabled and data rich belt available to it."

The Evolution of the RAAF's Air Mobility Group: Its Contribution to Plan Jericho

Earlier, I interviewed the two most recent Commanders, first of the Air Lift Group, and then the Air Mobility Group. The shift in name was largely under the impact of the KC-30A tanker but reflected the Group's expanded capabilities to provide for extended combat reach for the Australian Defense Force (ADF).

http://www.sldinfo.com/the-raaf-and-culture-change-building-sustainable-reach/

http://www.sldinfo.com/transforming-the-royal-australian-air-forces-sustainable-reach-the-key-role-of-the-raafs-air-mobility-group/

During my visit to Australia in August 2015, I had a chance to talk with Air Commodore Lennon, the newly appointed AMG commander.

Lennon has an extensive background in lift and tanking, and has spent significant time working with the Australian Army as well.

As such, his appointment comes at a good time for the launch of Plan Jericho and the RAAF's focus on the transformation of jointness.

As Air Commodore Lennon put it with regard to his background:

"I started out flying helicopters – Chinooks – before we gave them to the Army.

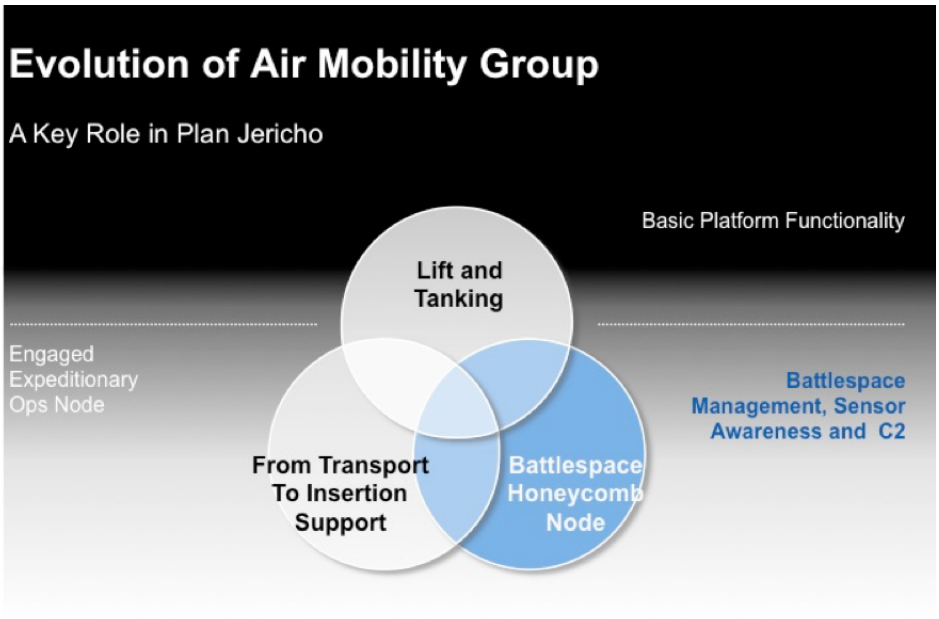
Then I had two tours on C-130s and then on the 707 tanker.

Having flown helicopters in support of the Army gives me an inside understanding of how the Army thinks about air support.

I have served also as an air liaison officer. I spent two and a half years trekking around the bush with the army.

I had the task of calling in fast jet support to the ground forces, so I have worked both the fast jet and helicopter sides of air support for the Army."

A way to conceive of the shift underway can be seen in the graphic below.



Here the basic shift is one where Air Mobility Group functions largely as a garage storing tanking and lift assets which transport and fuel assets to its engagement in a much broader role in the battlespace and with it its ability to engage with and support ground, air and naval forces.

In particular, there is a concerted effort to augment the ability of the RAAF to go with ground forces to support operations, rather than just take them to operations.

In part this is about technology – adding comms and ISR links – but much broadly a change in the concepts of operations and training, about which my meetings at Richmond with the C-130J squadron provided more details.

It is also about changing the role of the lifters and tankers in terms of how they will be equipped and operate in the battlespace.

They can function as nodes, IT transit elements, C2 enablers or repositories, but more generally, the question is how to use the real estate on the tanker – both outside and inside – to expand its role in the battlespace?

With regard to the shift from transport to force insertion support, this is a RAAF and Australian Army/Special Forces joint effort.

It is about adding SATCOM, ISR, and C2 assets to RAAF C-130Js, and C-17s.

As Air Commodore Lennon put it: "a key change going forward is the challenge of providing support to the ground forces in an amphibious assault operation.

And we are changing our concept of operations with the Special Forces so that we can provide situational awareness into the objective area and can stay behind to provide C2 and ISR assets for the expeditionary force as well, until it is determined whether, if and when such support should or could be offloaded to follow-on forces.

What support do the ground forces need in terms of support on the battlefield from airlift other than the direct kinetic effects?"

Clearly, this must be a two way street.

The RAAF can broaden its support to the Army, but the Army must work its digital interoperability with the RAAF.

For example, the Tiger assault helicopters need to connect to the AMG assets as well as the RAAF simply supporting ground forces which themselves are not being transformed.

Transforming jointness is a cross cutting effort.

An example of the change has been modernizing the C-17.

One of the first Jericho Dawn efforts revolved around changing the communication system of the C-17.

A new advanced satellite communication and digital display system for crew and passengers has been installed on the Aussie C-17.

This is a tool which can allow for the kind of con-ops changes which Air Commodore Lennon described in the interview – the technology is a necessary but not sufficient condition for the kind of change envisaged in the Plan Jericho approach to the transformation of jointness.

As Air Commodore Lennon described the process:

This all came about when a commander got in the back of the C17 several years ago now, and noticed a satellite antenna patch panel on the side of the cargo compartment.

He asked, "I can plug my sat radio into this?"

I said, "Well, that's the theory if you had the compatible equipment."

And then the whole thinking process exploded in terms of, "Well, you could deploy us to somewhere, and then we could use the back of the aircraft as a command and control station instead of going out and putting a tent up on the side of the air field."

"Yeah, we could do that."

And then creative thought processes started.

If you have an IP-based communication system you can plug anything you like into it. If it's wirelessly enabled you don't even have to worry about a physical connection.

All you need is that communications pipeline.

And so there's a lot of potential in the support we can provide in the communication space especially to both ground and air force elements.

The second trajectory for change is evolving the role of AMG assets in transforming the battlespace.

Here the concept is that lifters and tankers are not simply transportation and fuel off loaders, but are operating in the battlespace and their role can expand as the concept of operations is shifted via additions of appropriate technology to allow them to shape greater capability within the integrated battlespace.

As Air Commodore Lennon put it:

There is a lot of real estate inside and outside of the KC-30A.

How we use that real estate needs to be determined by evolving concept of operations, not simply applying a technology solution set offered by a prime contractor.

From a support perspective, software-enabled systems of the sort prevalent in today's C2 and ISR systems, are almost throw away systems within five years.

We need to build in cost effective systems which do not go on forever and are not expected to be repaired beyond a certain period but simply replaced by new, better and cost effective technologies.

The Changing Role for Australia's C-130Js: Transforming Jointness

The USMC is as integrated a force as exits as a 21st century combat force. They use their KC-130Js in a very flexible role supporting their air-ground-sea combat team. They have seen a major transformation with the coming of the Osprey, whereby they are the paired asset, and with the range and speed of the Osprey, have become the core interactive element in reshaping ow the Marines can insert force.

Additionally, with Harvest hawk, the Marines have pushed the boundaries of how a C-130J can operate in the battlespace. The Harvest Hawk is a modified KC-130J which brings ISR, C2 and weapons into the battlespace as part of the Marine Corps force. Its changing role has brought with it changes in how the aircraft is operated and how pilots and crews are trained.

http://www.sldinfo.com/operating-the-harvest-hawk-shifting-the-operational-context-and-next-steps/

The Royal Australian Air Force is undergoing changes with regard to its own C-130Js equivalent to the USMC. But how the change has come about and its trajectory is different from that of the USMC.

But clearly, the RAAF C-130J community working with the Australian Army in the throes of transforming jointness would be a good partner with the Marines in thinking through evolving concepts of operations for 21st century operations. And perhaps we might see that unfold in future engagements by the Marines during their Darwin rotation.

One impact of the Plan Jericho approach will be to expand the range of collaboration in which the RAAF engages in as it works its approach to transforming jointness. Clearly, the USMC would be a good partner in this journey, and not the least of which the Darwin rotation provides a rich soil within which an expanded aperture is clearly possible.

During my visit to Australia in August 2015, I had a chance to visit the C-130J community in Australia located at Richmond Air base. I discussed the changes underway with Group Captain Carl Newman, CO of 84 Wing and Wing Commander Nick Hogan, CO of 285 Squadron.

With the coming of the C-17 and the KC-30A, the role of the C-130Js changed fundamentally. Strategic reach is provided by the new aircraft with the lift role of the C-130J significantly reduced. And with the coming of the C-27J, the regional lift role is reduced as well.

This means that the C-130J has been and is being modified to play a different role, one closely connected with the transformation of the working relationship between the Australian Army and the RAAF. This can be done to provide a specialized insertion package, or as part of a rapid mobility tool to start the process of rolling in a ground force, along the lines envisaged with the coming of HMAS Canberra.

The new LHD is being shaped for its future role in the Australian Defence Force, and the evolving working relationship between the Army and the RAAF is clearly part of that shaping process.

Air Mobiity Group, Air Commodore Richard Lennon, highlighted the basic shift fromAir Mobility Group functioning largely as a garage storing tanking and lift assets which transport and fuel assets to its broader engagement in a much broader role in the battlespace and with it its ability to engage with and support ground, air and naval forces.

In particular, there is a concerted effort to augment the ability of the RAAF to go with ground forces to support operations, rather than just take them to operations.

In part this is about technology – adding comms and ISR links – but much more broadly a change in the concepts of operations and training, about which my meetings at Richmond with the C-130J squadron provided more details.

It is also about changing the role of the lifters and tankers in terms of how they will be equipped and operate in the battlespace.

They can function as nodes, IT transit elements, C2 enablers or repositories, but more generally, the question is how to use the real estate on the tanker – both outside and inside – to expand its role in the battlespace?

http://www.sldinfo.com/the-evolution-of-the-raafs-air-mobility-group-its-contribution-to-plan-jericho/

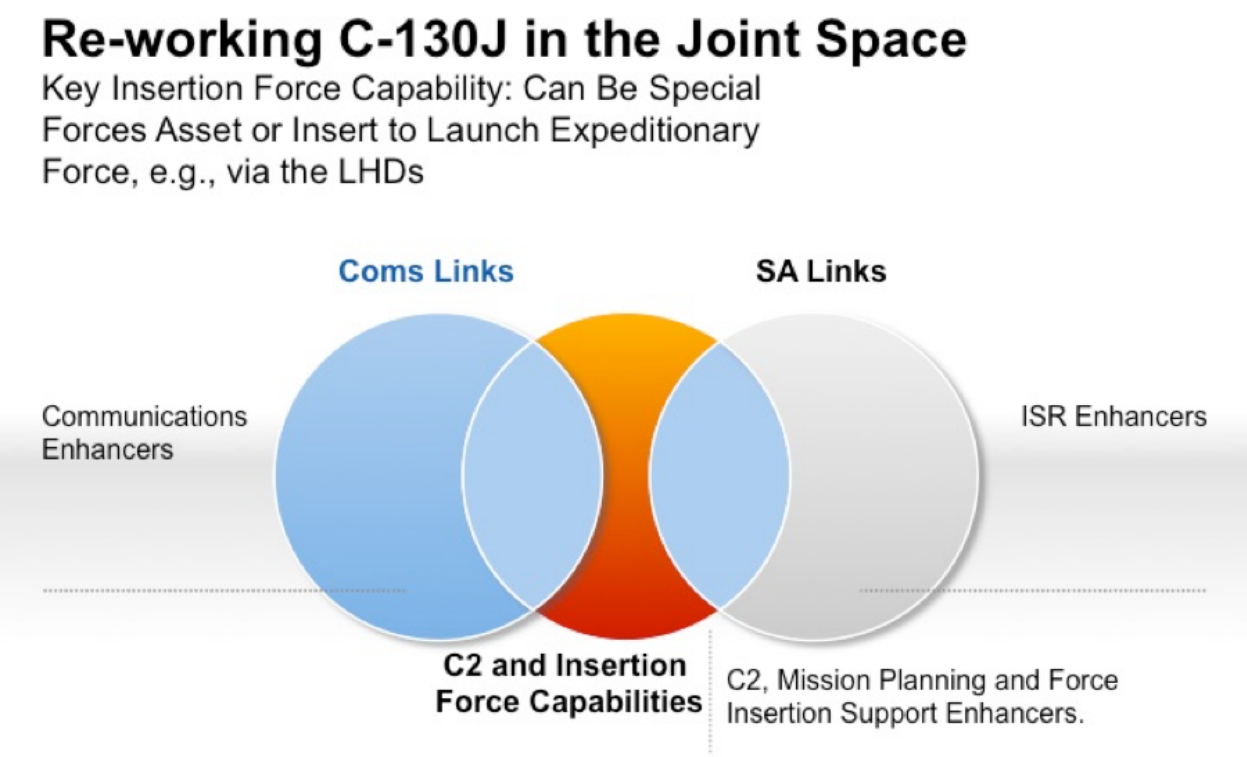
In the case of he C-130J, the plane is being modified with command and control, ISR, and other equipment to provide a means to take ground forces – special forces or the Australian Army – into an area of interest and then continue to support those forces.

The graphic below (on the next page) provides a broad look at how the transformation of the aircraft is being done.

A number of communication and ISR links have been or are being put into the plane to allow for multiple interactions with forces so that the C-130J can perform in a lead force insertion package. At the same time, new techniques are being learned by the crews to perform force insertion or expeditionary missions.

Among the key changes underway are the ones which can be seen in the accompanying table.

The transformation of the C-130J role clearly requires a shift in how the crew operates the aircraft and thinks about its operational role. And operational experiences fold into the thinking about how to re-shape capabilities of the platform to reshape its role as well.



As Group Captain Newman noted with regard to operations to support the humanitarian mission in Iraq during Operation Okra, the performance of the C-130J in the mission was hampered by an absence of organic ISR. If the plane had been able to identify more effectively in the drop space the nature of the threat and the where the desired recipients were, then the team could have been more effectively and more valuable to the rest of the force working the humanitarian mission.

As a result, the RAAF is thinking through possible requirements that may demand organic ISR for the aircraft, in addition to the new ISR linkages enabled by communications upgrades on the aircraft as well.

Group Captain Newman also focused on ways the new capability might be used to provide a variety of specialized force insertion packages.

"As we shape the capability of the C-130J to operate as an insertion package, we can then provide a variety of specialized tool sets in effect to the commander. In effect we are becoming a swiss army knife working with the embarked forces, which provides a broader range of options to the commander."

Group Captain Newman underscored that the changing role for the C-130J meant changing the training approach for the crews as well as developing enhanced training opportunities with the Australian Army as well.

Wing Commander Nick Hogan is in charge of the RAAF's C-130J training squadron and he focused on how the shift was from a largely rigid training system to a flexible one. In effect, when the C-130J was used predominately as a lifter, training took several months and delivered pilots and crew to support transport similar to airline practices.

As the new capabilities began to roll into the aircraft, bolt-on training modules were added which simply extended training time. But starting in 2012 a fundamental reworking was set in place whereby integration of the various ele-

ments into a baseline training system was shaped. The crew required appropriate training to allow them to approach the aircraft as if it were a swiss army knife with the ability to use every blade.

This has also meant changes to the simulators supporting the program. The main shift has been from training with the core CAE-operated simulator, to shaping a variety of innovative simulator tools adjacent to the core simulator, which can reduce the time needed in the training program to be operating the core simulator.

Capability	Description
Beyond Line of Sight	BLOS Sat Communication Capability
GPS Retransmission	Provides embarked Army and Special Forces current SPS Situational Data
AirView 360	En-route Mission Briefing capability for embarked Forces
Forward Arming and Refueling Points	FARP allows AMG aircraft to conduct engine running defuel from the platforms's internal fuel tanks to other fuel storage systems in areas where supply is low,
Dynamic Retasking Capability (DRC)	Provide global secure tactical data link communications with situational awareness of the platforms anywhere in the world. Provides crew situational awareness of the battle space.
External Fuel Tanks	Enhanced aircraft range and lessened dependence on refueling stops during missions.
Augmented Crew Station	Enable en-route mission planning for C-130J crew in conjunction with embarked elements
Live Virtual Constructive Simulation	Updates to C-130J Full Flight Mission simulator Operating System, database, security infrastructure and communication nodes to enable secure LVC C-130J collective training
Secure BLOS	Enable en-route mission planning, situational awareness and global communications. Enhanced to basic BLOS upgrade.
Joint Precision Air Drop System (JPADS)	Provides support for flexible insertion forces.

This not only saves money, but also expands training time available to work through various key Swiss army knife tool sets, which need to be learned.

A key aspect of the way forward was expanding the exercise regime with their joint and coalition partners. Obviously, working with the Australian Army is a key part of the way ahead. This month, the RAAF and the Australian Army exercising together to work through how best to leverage the new capabilities of the C-130J to work with the Army as an insertion and supporting force. This activity, Exercise IRON MOON, is one of a series of Navy, Army and Air Force exercises employing a range of maritime, land and air surveillance and response capabilities where, clearly, the evolving capabilities of the C-130J provide an important force multiplier to this community.

With regard to coalition partners, the RAAF worked its first Live Virtual Constructive Training Exercise in a full flight mission simulator with the USAF. Richmond and Williamtown were connected to Nellis and the Wedgetail and the C-130Js were linked into a Nellis Red Flag exercise along with the Canadians who brought their own C-130J into the exercise. To do this required setting up new security procedures, data and comms links, but this is simply the beginning of reshaping coalition training capability going forward

Clearly, in thinking through operations in the expanded battlespace which the Pacific represents, LVCT is a key tool set. My visits to Fallon and Nellis have underscored how important LVCT is to the US forces; and clearly for the coalition forces as well.

At the Williams Foundation seminar, the former head of Nellis, Lt. General Lofgren had highlighted the importance of LVCT to shaping the way ahead to transform the forces; my visit to Richmond demonstrated that steps are clearly being taken down this path.

But transforming jointness is not a one-direction effort.

The RAAF is changing its capabilities to expand ways to work with the Army. The Army needs to reshape how its various assets connect with and operate with the RAAF. Nowhere is this more the case than with Army Aviation. The Tigers, and MRH90s need to clearly work with the RAAF as those assets operate off of the HMAS Canberra, for example.

According to Group Captain Newman, these steps are starting to be taken. There is a long way to go down this path of transforming jointness however and clearly Plan Jericho will enhance the RAAF's ability to contribute to this process.

The Commander of Air Combat Group: Operation Okra and the Way Ahead for the Royal Australian Air Force

During my visit to Australia in August 2015, I had a chance to talk with an experienced fighter pilot and squadron commander, and now commander of Air Combat Group about his time in Operation Okra and the way ahead for the Royal Australian Air Force (RAAF).

Air Commodore Steven P. Roberton is Commander of Air Combat Group (ACG), responsible for force generation and command of Australia's air combat operations. ACG comprises the three wings encompassing Hawk Lead-In Fighter training and maintenance training; F/A-18A/B 'Classic Hornet' training and operations; and F/A-18F 'Super Hornet' operations; and Joint Terminal Attack Controllers and Combat Controllers.

Air Commodore Roberton led the transition team that brought the Super Hornet into the RAAF which declared its IOC in 2012. This is the first combat aircraft which the RAAF has flown with an AESA radar, and the size and two man crew have provided important benefits for the RAAF as well which Air Marshal (Retired) Brown discusses in his interview.

Question: Operation Okra is the first time that the RAAF took an integrated lift-tanker-reconnaissance and strike package to a long distance operation.

You were the initial Commander of the Australian Air Task Group 630 in the Middle East in September 2014 and what has been the impact of your ability to self-deploy?

Air Commodore Roberton: This would be the first time ever that we've been able to self-deploy. We were able to do that well inside our normal preparedness timelines., simply because we weren't having to rely on that critical tanker resource that the US would normally provide.

From the government saying go, we were ready for combat ops in 12 days. We've never been able to do that before

The bigger issue with theater though was I think there's yet to be a modern air war of any type where the air component commander sits around and says, "I've just got too many tankers."

Question: The RAAF arrived at the outset and brought its new tanker and what was the impact of both, coming early and bringing your new tanker?

Air Commodore Roberton: By coming early, we were able to play a more important coalition role. And with the tanker, we early on not only established a lead position with regard to the other three nations using the new tanker but also with regard to the non-US side of the tanking force. We became, in effect, the lead coalition nation for tanking with regard to non-US assets.

When we came into theater we were cleared only to tank our Hornets and Super Hornets. But rapidly we were cleared to tank 12 different aircraft from seven different nations, and certainly the USMC and USN became major users.

This meant that we were a net contributor to the operation rather than having to rely on US assets only.

And our tanker crews became highly valued because they were able to listen on the JTAC frequencies and able to anticipate fighter fuel demand and to move closer to where the fighters would then move to get refueled.

The flexibility to anticipate fighter demand – which clearly happened in both the US and Canadian cases – meant the difference between getting weapons away on several occasions or not.

Question: You also introduced the Wedgetail as well as your Super Hornets flying for the first time in combat with the F-22s.

How would you describe those experiences?

Air Commodore Roberton: With regard to Wedgetail, it really is a new aircraft with an incredible radar. And as such is clearly something new in the air battle management world, and we experienced US AWACS personnel seeking us out to discuss the Wedgetail and its capabilities as part of their thinking about the future as well.

We have practiced the working relationship between our Super Hornets and the Wedgetail but in the operation we worked out various combinations of how best to work the two aircraft in combat. The sensing capability shared by the two aircraft really allowed us to enhance the lethality of the Super Hornet in the operations. We were able to deliver weapons very rapidly and in late December during the air campaign I was able to authorize seven different weapons releases inside of an hour as they rapidly rolled into the target area.

F/A-18F Super Hornets from No.1 Squadron bank away from the tanker over Iraq. Credit: Australian Ministry of Defence

The Wedgetail was able to handle a very complex combat situation. There were really three quite separate and distinct conflicts in Syria, Northern Iraq and Central Anbar Province, with a very different shape and feel to them. The ability of the Wedgetail to handle a high volume of information and to shape it into effective decision making packages for three very different air operations going on at the same time was impressive.

For the fighters, the fidelity of the data generated by the Wedgetail was a key to the kind of combat confidence one needs to make decisions in a complex combat environment.

And given the age of the AWACS, there were breakdowns and challenges to keep them operating. The result was that Wedgetail was extended in its operational time on station to fill the gap.

Question: And your F-22 experience?

Air Commodore Roberton: In broad terms they have the fifth generation sensor package which can help provide information you wouldn't otherwise get from something standing off.

We've got great capabilities in Wedgetail, but sometimes you really need a penetrating capability that can use the full spectrum and pass on information closer to the target.

Operating the Super Hornet with the F-22 and then receiving their data allowed us to operate more effectively. Our training with the F-22s in exercises like Red Flag has been crucial not only to prepare ourselves for combat but also to rethink how we operate our own fighter fleet.

We have adapted a lot of our tactics and procedures to do that same sort of leverage that the F22 practices with the Eagle community but clearly at lower levels between our Super Hornet to Hornet. That becomes pretty important for us to get the most out of our classic Hornets.

In other words, we are adapting our concepts of operations anticipating the entry into service of the F-35 and the readjustment of the role of the Super Hornet. We are preparing ourselves thereby for the transition to the F-35 enabled force. The Super Hornets and Growlers are enhancing our current capabilities, and we can work through how the F-35 will redefine their roles in the evolving force. We know we've got a lot to learn.

One problem with how people interpret the F-35 is thinking fifth generation is only about stealth; it is about data fusion and the capability to make the other air combat assets more viable and effective. It is a significant force multiplier, rather than commentators who want to see it as some kind of silver bullet.

Question: Do you have anything else to add about the impact of Operation Okra on the way ahead?

Air Commodore Roberton: As we work to transform the force, we have a combat experienced force. We have an entire generation of combat hardened crews. That's going to position us pretty well for this transition to a next generation air force we're trying to build, which is centered around the F-35.

We are focusing on a transition in which the force packages are the critical combat enabler. We really only ever think in packages now. And we need to get the best information available as fast as possible to the package. What platform we've decided to deliver the final effect, which may or may not be kinetic, is not as important as how we get the most out of the assets that are up there.

More About ACG Commander Roberton:

Air Commodore Roberton is a Category A Fighter Pilot with over 3000 total hours, mostly in F/A-18A, B, C, D, E and F fighters. He entered the Royal Australian Air Force in 1989 as a direct entry pilot trainee having completed a Bachelor of Science degree in Chemistry and Mathematics at the University of Queensland. He graduated from Number 153 Pilots Course in 1990 and F/A-18 conversion in 1993 He flew fighter tours at Number 3 Squadron RAAF Williamtown; an exchange flying F/A-18s with the United States Marine Corps at Beaufort, South Carolina; and at Number 3 Squadron as the A Flight Commander until 2000.

Roberton completed a joint staff tour in Capability Development Group in Canberra and Australian Command and Staff College. He commanded Number 75 Squadron at RAAF Tindal from November 2003 before returning to Canberra to stand up the Air Combat Transition Office and lead the transition to F/A-18F Super Hornet. He commanded Number 82 Wing at RAAF Amberley and then completed the UK's Higher Command and Staff College in 2012 before returning on promotion as Director General Aerospace Development. He was the initial Commander of the Australian Air Task Group 630 in the Middle East in September 2014 prior to returning to RAAF Williamtown to command Air Combat Group from January 2015.

About Air Combat Group

Air Combat Group commands all the Royal Australian Air Force's fast-jet combat aircraft to deliver Australia's capability to control the air and conduct precision strike.

Headquarters Air Combat Group (HQ ACG) commands three operational wings:

- No 78 Wing conducts operational training (ground and air) on the F/A-18B Hornet and Hawk at Nos 76 and 79 Squadrons
- No 81 Wing controls the air with Nos 3, 75 and 77 Squadrons (all F/A-18 Hornet squadrons) and No 2 Operational Conversion Unit
- No 82 Wing strikes designated targets and conducts reconnaissance with Nos 1 and 6 Squadrons (Hornets) and Forward Air Combat Development Unit (PC-9/A)

Air Combat Group is one of the largest Force Element Groups in the Air Force with 145 aircraft, 163 aircrew and 2000 support personnel based across Australia. It is responsible for all of the Air Force 's F/A-18 Hornet and Hawk squadrons, plus PC-9/A Forward Air Control aircraft. Units that make up Air Combat Group are based at:

- RAAF Base Amberley, near Brisbane, Queensland

- RAAF Base Williamtown, near Newcastle, New South Wales
- RAAF Base Pearce, near Perth, Western Australia
- RAAF Base Tindal, near Katherine, Northern Territory

Air Combat Group was formed in January 2002 by merging the Tactical Fighter Group and Strike Reconnaissance Group. The merger enhanced our ability to deploy combat air power in a prompt, effective and highly integrated manner.

HQ Air Combat Group is at RAAF Base Williamtown.

Since its formation, Air Combat Group squadrons have experienced a level of operational activity not seen in many years. F/A-18 Hornets were deployed to provide air defence as part of Operation Slipper (international coalition against terror) in Diego Garcia and again during Operation Guardian II to protect the Commonwealth Heads of Government Meeting (CHOGM) in south-east Queensland. Air Combat Group personnel, including a F/A-18 Hornet squadron, also deployed to Iraq in 2003 as part of Operation Falconer, providing air defence for high-value assets such as Airborne Early Warning and Control Aircraft, close air support for ground troops and striking enemy targets.

Air Combat Group also maintains a busy training schedule for both air and ground crew on the F/A-18 Hornet and Hawk. Highlights have been providing support to Operation Acolyte (Melbourne Commonwealth Games 2006) and participation in high-end exercises such as Exercise Pitch Black in Australia and Exercise Red Flag in the United States.

https://www.airforce.gov.au/About-us/Structure-of-the-RAAF/Air-Command/Air-Combat-Group/?RAAF-Th7/dmZ8ZawokQX9rRZAsg8DPrUaes/r

Current Ops and Preparing the Transition in Airpower: The Challenge Facing the Air Combat Group

In this interview, the discussion continues with Group Captain Robert Denney, Chief of Staff, for the Air Combat Group. In an interview conducted at Williamtown Air base on August 12, 2015, Denney discussed the challenges of current operations and working the transition whereby Super Hornets have come into operation, and the ACG is preparing for Growlers next year, and F-35s thereafter.

Group Captain Denney has an F-111 background, and then was involved in the Super Hornet transition, became a Super Hornet squadron commander (6th Squadron), was involved in the CAOC during Operation Okra in the last part of 2014, and now has assumed his current position at Williamtown.

Both Roberton and Denney have recent combat experience associated with Operation Okra and the ACG is supporting and force generating for the continued Middle East operations as well as other current demands. This means that meeting the current operational needs is the priority but at the same time, the ACG is involved in the transition whereby Growlers and then F-35s are coming to Williamtown and Amberley air bases.

"A major challenge we are facing is managing the double transition, the first with the Growlers in 2017 and thereafter the F-35s. We already have folks training at Luke AFB and our initial F-35s are there. But they will be based at Williamtown."

Question: How do you see the impact of the Growler on the ADF?

Group Captain Denney: Many are looking at this as just another new airplane. But when the force starts using it they will grasp quickly what this electronic warfare asset can bring to the joint operational combat space. And once that happens, the appetite for this kind of capability will grow.

Question: You have only fairly recently introduced the Super Hornets, you have modernized your Hornets, are adding the Growler and the F-35 is coming to the force, how does that affect your thinking about the way ahead?

Group Captain Denney: With the compressed introduction of combat capabilities, this allows us to expand our thinking about how to use the various platforms in a diversity of ways. The rules are, there are no rules. We get to make the rules over the next five years, We can shape how we will employ these platforms and we do not have to be constrained by how we used them in the past, because there is no past literally speaking.

First RAAF Royal Australian Air Force EA-18G Growler - Rollout Ceremony; Governor Jay Nixon, Honorable Kim Beazley, Air Marshal Geoff Brown, Rear Admiral Donald Gaddis, Chris Chadwick, Dan Gillian - Bldg 75, St. Louis. 7/29/2015

When we first did the F-111 to Super Hornet transition we tried to hold on to some F-111 isms but then as we got smart we kept the relevant ones and threw the rest of those isms away. Having done that, we understand that a transition is not about replicating past approaches and concepts of operations. It is about shaping new ones.

When we got the Super Hornet we understood the goal was not simply to make it an above average Hornet, but really a very different asset. We understand with the coming of the F-35 it is not even in the Hornet family and we will work how to leverage it to rework the entire strike force.

We have adjusted our entire fighter tactics to what the Super Hornet has brought to the force rather than simply extending our previous Hornet tactics. We expect the same with the coming of the F-35. It's normal to be different.

Question: You have modernized the Hornet and have leveraged the Super Hornet to change tactic. How would you describe that process?

Group Captain Denney: We have focused not just on optimizing what the Super Hornet can do but how it improves the capability of the classic Hornet.

How do we integrate a package of classic hornets with Super Hornets to create a more significant effect in the battlespace?

How can we augment what Hornets can do? How can we leverage what Super Hornets can do and be reconfigured to do to expand the effects in the battlespace?

We are already developing a leapfrog approach to the introduction of new platforms, and this is preparing us to think about the coming of the F-35. How do we leverage the F-35 to get greater effect from the Super Hornets and Growlers? How do we use our air warfare packages with out naval assets such as the Air Warfare destroyer to get better effects in the battlespace?

It is not just about your platform; it's about the capability you can bring to bear in that joint and coalition arena.

Question: Australia faces a large air and space extended area for defense. How does this impact on the evolution you are describing?

Group Captain Denney: In a way, there is a moat surrounding Australia, but to defend the area and to work with allies requires extended reach. What we can do, if we do a good job integrating capabilities, is to shape an air-ground-naval force with reach and capability to shape the kind of effects we need to have in the extended defense area surrounding Australia. And new platforms coming into service, such as the LHD, can provide an important impetus to shaping how we will support from an integrated air-sea-ground space point of view.

Australian F-35A flying out of Luke Air Force Base, USA (credit Lockheed Martin) The first squadron of ten F-35B Joint Strike Fighters (JSF) are operational after the United States Marine Corps (USMC) declared Initial Operating Capability (IOC) on 31 July 2015.

RAAF personnel working with JSF will be tapped into an international support network and will have the opportunity to work alongside Defence industry to sustain the JSF fleet.

Australia is scheduled to achieve IOC for its first Squadron of F-35s to be based at Williamtown in 2020.

Question: Australia has done significant modernization of its classic Hornet force.

What unique modernizations has the RAAF done?

Group Captain Denney: The basic modernization path has been from a classic fighter platform to one able to be integrated into the IT combat space and to deliver precision weapons on moving targets; and to do so when informed by other air and ground assets of where the targets are and when to hit them.

That is a big change over the 30-year life of the classic Hornet. Over the past 15 years we have moved the classic hornet into the network-centric pilot warfare world.

There are unique Hornet adaptations, such as using ASRAAM, and adopting onto it kit we had on the F-111s such as the ALE-47, which provides for self-protection. We have adopted US Navy modifications as well as our own to evolve our classic Hornets.

And integrated with the new helmet and sighting system we can fire ASRAMM over the shoulder. With today's systems, you can kill the adversary from where he is not expecting it; it is not a dogfight world anymore.

Question: So for you Plan Jericho underscores the legitimacy of how you see the transition challenge and reinforces the legitimacy of rewriting the rules of concepts of operations with the new capabilities coming into the force?

Group Captain Denney: That is a good way to look at it.

What Jericho provides for is that opportunity to rewrite the rules.

It really is a great opportunity to push the boundaries that we previously had on ourselves and to start thinking about better ways to operate across platforms, and to break out of the single stove piped platform-centric type of thinking.

We are only just starting the journey.

Shaping Collaborative ISR and C2: The Perspective of the Commander of the RAAF's Surveillance and Response Group Air Commodore Chris Westwood

My last visit to a Royal Australian Air Force base during my visit to Australia in August 2015 was to Williamtown Air Base, which is the home for the Surveillance and Response Group (SRG) as well as the key fighter squadrons.

Prior to a round table with the 4 Wings in the SRG, I had a chance to discuss the role of the SRG and the way ahead for Plan Jericho as viewed by the Commander of SRG, Air Commodore "Shorty" Westwood.

For Air Commodore Westwood, Plan Jericho was a leadership vision about innovation, which was coming at the right time.

The RAAF has undergone a significant re-capitalization effort, but to get best combat effect from the force, the key was to shape effect integration, which would transform the effects, which the force could deliver.

Air Commodore Westwood: "I'm sure you've noticed there's a real degree of excitement in the Air Force about Jericho.

It's come on the back of a very successful capital improvement program over 20 years.

The Air Force that we see today is fundamentally a really good mid-sized air force.

When you pull those platforms together, the next logical step is to ask where is the next bang for the buck?

It's not buying necessarily more platforms; it's getting more out of them.

There's a general feeling around the Air Force that the Jericho Plan just arrived at the right time.

And we are taking the Jericho mentality into the joint and coalition environment.

We are not just looking to reshape the RAAF; it is about working with our joint and coalition partners and shaping more effective forces.

We're looking for Jericho-like activities and trusted relationships throughout the joint and coalition environment."

He characterized SRG as a "pre-Jericho" force in the sense that the various ISR and C2 assets within the SRG were focused on collaborative ISR and C2 to provide both protection for Australia and to enable the expeditionary force to operate more effectively.

The force consists of four wings, each of which plays a particular role within the overall ISR/C2 effort.

Surveillance and Response Group has over 2100 personnel spread across Australia working in the following areas:

- No 41 Wing (Air Defence / Air Battle Management)

- No 42 Wing (Airborne Early Warning and Control)
- No 44 Wing (Joint Battlefield Airspace Control)
- No 92 Wing (Maritime Operations).

The foundation force is the over the horizon ground based radar, which provides the core information to assess threats and challenges in the area surrounding Australia. Space-based ISR is now integrated as well with the ground based radar data. This is completed by truck-based radar that can be moved to deal with a particular challenge.

It is combined with the P-3 and now the P-8 (coming next year) to provide effective maritime surveillance data and positional targeting capabilities.

The Royal Australian Air Force (RAAF) and Airservices Australia entered into a Memorandum of Agreement (MoA) on 29 May 2015 for the operation of the Heron remotely piloted Unmanned Aircraft System (UAS). Airservices Australia Executive General Manager Air Traffic Control, Mr Greg Hood (right), talks about the partnership between Airservices Australia and Air Force at a Memorandum of Agreement ceremony held at Defence Establishment Fairbairn. He was accompanied by the Commander of Surveillance and Response Group, Air Commodore Chris Westwood. Credit: Australian Minsitry of Defence

The Wedgetail can operate over the areas of interest and provide the air-sea-land C2 most effective for the joint force.

And the Air Traffic Control system provides for an integrated military and civilian air space, within which UAVs such as the newly acquired Heron can operate throughout Australian airspace as well. 44 Wing provides a significant capability which is captured by the concept of Joint Battlefield Aerospace Control or JBAC.

The 44 Wing concept of air traffic control encompasses the tactical role of the JBACs as well.

Air Commodore Westwood: "The goal is seamless integration which is always a work in progress, but that is why I think we are key part of the shaping of an effective Jericho policy."

Australia has a large front yard and backyard.

The SRG's primary task is to provide information about the dynamic environment around Australia to enable the defense force to provide for effective means to operate in the defense of Australia.

Air Commodore Westwood: "When you focus on all of Australia and the approaches to Australia, you are talking about a very large front and backyard.

And we are working US and allied forces in providing for defense of the region, which expands the challenge of shaping collaborative ISR/C2 capability information and enabling the force.

That is our challenge and our task.

We have multiple tools at our disposal.

And every part of that ISR family brings something different.

Every part of the ISR puzzle has strengths and it has weaknesses.

The secret in managing your front and backyard is to be persistent.

You need to know what happens in your, in your front and back yards on a timely, accurate and persistent basis."

Editor's Note: The Royal Australian Air Force's Surveillance and Response Group is responsible for:

- All of the Air Forces traditional air surveillance assets
- Maritime warfare
- Aerospace, surveillance and battle space management
- Developing intelligence, surveillance and reconnaissance (ISR) and electronic warfare (EW) capabilities.

Surveillance and Response Group (SRG) was formed on 30 March 2004 by merging the former Surveillance and Control and Maritime Patrol Groups. Its motto is 'Foremost Sentinel', which encapsulates the group's contribution as the early warning and response capability of the Australian Defence Force.

Headquarters Surveillance and Response Group is at RAAF Base Williamtown, NSW. Its personnel are responsible for personnel management, capability management and development, technical capability and business management.

No 41 Wing (41WG) based at RAAF Base Williamtown, commands all of the Air Defence operational and training units.

Spanning across Australia, these units include 3 Control and Reporting Unit (3CRU) and Surveillance and Control Training Unit (SACTU) located in Williamtown; 114 Mobile Control and Reporting Unit (114 MCRU) in Darwin and 1 Radar and Surveillance Unit (1 RSU) in Adelaide. SACTU provides the training for Air Combat Officers and Air Surveillance Operators to enable them to perform effective air battle management and surveillance operations.

41 Wing headquarters is chiefly responsible for tasking of its subordinate units in order to provide continuous wide-area surveillance, airspace control and execution of air battle management operations.

No 42 Wing (42WG) reformed on 1 January 2006 and is located at RAAF Base Williamtown. The Wing delivers the 'Wedgetail' Airborne Early Warning and Control (AEW&C) capability for the Air Force.

This capability incorporates independent air and support operations in the maritime and land environments, with 2SQN supporting the aircraft and project at Williamtown. The AEW&C aircraft represents an entirely new capability for the ADF, providing a platform that will gather information from a wide variety of sources, analyse it and distribute it to all friendly air and surface assets.

AEW&C will control the tactical battle space, providing direction for fighter aircraft, surface combatants and land based elements, as well as supporting aircraft such as tankers and intelligence platforms.

No 44 Wing (44WG), headquartered at RAAF Base Williamtown, commands all of the Air Traffic Control (ATC) detachments of which there are eleven across Australia. 44WG also commands the ATC Technical Ground Electronic Services (GES) workforce.

44WG through its detachments is responsible for the delivery of fixed and remote air traffic control services to Army, Navy and Air Force and also for the provision of tactical control of forward airfields, battlefield aviation and other airspace activity, both within Australia and for operational deployments.

44WG personnel have been actively involved in a number of recent operations including Sudan, East Timor, Iraq/Middle East, Solomon Islands and Indonesia. Their roles have ranged from active operational duties to training, peacekeeping and humanitarian missions.

Headquartered at RAAF Base Edinburgh, No 92 Wing (92WG) has long been established as the first Maritime Wing in the history of the Royal Australian Air Force. 92 WG commands two flying squadrons, Nos 10 and 11 Squadrons, a training unit, No 292 Squadron; an operational detachment, 92WG Detachment A at Butterworth, Malaysia; and a number of operational support and development elements.

Operating AP-3C Orion aircraft, 92WG's combat roles include anti submarine and anti surface surveillance maritime warfare for which the aircraft are equipped with torpedoes and Harpoon anti shipping missiles.

The Wing is also responsible for conducting long range intelligence, surveillance and reconnaissance missions in support of Australia's national interests worldwide. 92 WG is also responsible for search and survivor supply missions throughout Australia's region of responsibility.

https://www.airforce.gov.au/About-us/Structure-of-the-RAAF/Air-Command/Surveillance-and-Response-Group/?RAAF-Em/lTbOjboHa5jhkS926exeF05x7rnKL

The P-8 is coming to the RAAF as well and the RAAF website described the aircraft and its role as follows:

The P-8A Poseidon will provide Air Force with an advanced maritime intelligence, surveillance, reconnaissance and response aircraft.

The P-8A Poseidon uses advanced sensors and mission systems, including an advanced multi-role radar, high definition cameras, and an acoustic system with four times the processing capacity of Air Force's current AP-3C Orions.

Together with the MQ-4C Triton Unmanned Aerial Vehicles, the P-8A aircraft will replace the AP-3C Orions.

Planned for RAAF Base Edinburgh, the P-8A has an extensive communications suite that includes radios and data links across VHF, UHF, HF and SATCOM spectrums. An internal fuel capacity of almost 34 tonnes, gives the P-8A the ability to remain on station conducting low level anti-submarine warfare missions at a distance of greater than 2,000 kilometres from base.

The P-8A will be compatible for air-to-air refuelling with the KC-30A MRTT.

Air Force will acquire eight P-8As, with the option for a further four subject to the outcomes of the Defence White Paper review.

The first aircraft will be delivered in 2017, with all eight aircraft fully operational by 2021.

The acquisition of the eight P-8A aircraft will cost approximately $4 billion, including support facilities.

The P-8A is built from the ground up as a military aircraft. It is based on the proven commercial designs of Boeing's 737-800 fuselage, but is substantially structurally modified to include a bomb bay, under wing and under fuselage hard points for weapons, as well as increased strengthening to allow for continued low level (down to 200 ft) operations and 60° angle of bank turns.

Initial Operational Capability (IOC) for the P-8A is scheduled for the period 2017 – 2020.

http://www.airforce.gov.au/Technology/Future-Acquisitions/Boeing-P8-A-Poseidon/?RAAF-Z4PUOpGXH/eLtWmc6qxYl9xYycb+rKng

And the MQ-4C Triton aircraft is described on the RAAF website as follows:

The MQ-4C Triton Unmanned Aircraft System (UAS), is a high altitude, long endurance (HALE) aircraft that will be used for maritime patrol and other surveillance roles.

Supporting missions up to 24 hours, the MQ-4C Triton is equipped with a sensor suite that provides a 360-degree view of its surroundings, for over 2,000 nautical miles.

Up to seven MQ-4C Tritons will be based at RAAF Base Edinburgh (SA) and will operate from the runway alongside the P-8A Poseidon when it enters RAAF service.

The MQ-4C Triton will operate alongside the P-8A to replace the ageing AP-3C Orion capability. The endurance of the MQ-4C Triton means it can stay airborne for longer than a traditional aircraft where the pilot is in the aircraft.

Like other Air Force aircraft, the Triton will be flown by a qualified RAAF pilots, experienced in complex airspace. However the Triton will be flown a ground station where pilots are supported by a co-pilot while the information gathered is analysed and disseminated by up to operational staff.

Operational staff may include aircrew, intelligence, operations and administration officers, engineers and logisticians, depending on the training or mission requirements.

Whilst building on elements of the Global Hawk UAS, the Triton incorporates reinforcements to the airframe and wing, along with de-icing and lightning protection systems. These capabilities allow the aircraft to descend through cloud layers to gain a closer view of ships and other targets at sea when needed and will complement theP-8A Poseidon.

The Triton platform has been under development by the United States Navy since 2008.

http://www.airforce.gov.au/Technology/Aircraft/MQ-4C-Triton-Unmanned-Aircraft-System/?RAAF-BYjCaU6eH-ptQ3E2EiHw9jKOLJvauES8Y

According to a May 29, 2015 article on the RAAF website, the evolving role of unmanned systems within Australian airspace was described as follows:

Airservices Australia and the Royal Australian Air Force (RAAF) entered into a Memorandum of Agreement (MoA) today for the operation of the Heron remotely piloted Unmanned Aircraft System (UAS) in Australian civil airspace.

Commander of Surveillance and Response Group Air Commodore Chris Westwood and Airservices Australia's Executive General Manager Air Traffic Control Greg Hood signed the MoA at a ceremony in Canberra.

Air Commodore Chris Westwood said the MoA formalises the partnership between Airservices Australia and Air Force and enhances Australia's position on UAS.

"The purpose of the MoA is to set out procedures for Airservices Australia and Air Force to work within, and allows the Heron to be safely flown in civil airspace without any significant impact on civil air traffic," Air Commodore Westwood said.

"The MoA aids both Airservices and Air Force by facilitating the initial operation and integration of remotely piloted aircraft into civil airspace, based on Air Force's mature and thorough airworthiness and aviation safety system."

The Civil Aviation Safety Authority, the regulator of all Australian airspace, will also work with Airservices and Air Force to monitor the arrangements from a civil aviation safety perspective.

Airservices Australia Executive General Manager Greg Hood said that the agreement further reinforces the close working relationship between Airservices and the Royal Australian Air Force and ensures that UAS are operated safely in civilian airspace.

"This MoA is recognition of the changing way that airspace is being used to embrace new technologies," Mr Hood said.

"We look forward to continuing to work collaboratively with Defence on the use of this type of technology safely in Australian airspace."

The Heron is planned to fly in civilian airspace from Rockhampton Airport in late June, as part of Exercise Talisman Sabre 2015. This will be the first time the aircraft has flown outside of restricted military airspace in Australia.

Air Force currently operates two Heron aircraft from RAAF Base Woomera in South Australia, as part of a plan to ensure that Australia remains at the forefront of advancing aviation technology and that Air Force pilots maintain the skills to operate UAS until the introduction of the MQ-4C Triton.

http://www.airforce.gov.au/News/Airservices-Australia-and-Defence-strengthen-collaboration-on-Unmanned-Aircraft-Systems/?RAAF-5LGw602zJSNGCoOzDjqsKvqpPnDmvIWf

The Surveillance and Response Group: The RAAF shapes its C2 and ISR Capabilities

As Air Commodore Westwood, the Commander the Surveillance and Response (SRG) put it: "The goal is seamless integration which is always a work in progress, but that is why I think we are a key part of the shaping of an effective Jericho policy."

Clearly, working the ISR and C2 pieces of the evolving 21st century approach to combat operations is a key part of the overall effort.

It is not an end in and of itself, but part of the tool sets for working a more integrated and effective force.

After the discussion with Air Commodore Westwood, I had a chance to sit down with representatives of the four wings, which make up SRG to learn about their approach and the way ahead.

For an American, it was interesting to see elements in the SRG, which would belong to the USAF or the USN separately in the US forces, but are placed under a common command in the RAAF. SRG conducts its operations 24/7 365 days a year and, with the advent of new capabilities, will be delivering to the Australian Defence Force an integrated surveillance picture across surface, subsurface, air and space.

The roundtable was held with:

- Wing Commander des Jardins, XO 41 Wing
- Wing Commander Robson, CO No1 Remote Sensor Unit (Over the Horizon Radar and Space Surveillance)
- Group Captain Martin, OC 42 Wing
- Group Captain Edgeley, OC 44 Wing
- Group Captain Champion, OC 92 Wing

- Group Captain Hombsch, HQSRG Chief of Staff.

The discussion began with regard to 41 Wing. The Wing looks after battle management and is located throughout the Australian continent.

According to Wing Commander Lou des Jardins, "we are responsible for producing the recognized air picture for Australia and the surrounding areas of interest and to our north, in particular."

A clear way ahead for SRG is working the relationship with the Navy to shape a more effective air-sea common operating picture.

According to Wing Commander des Jardins, "the air battle managers at Williamtown are complemented by a deployable unit that is currently based in Darwin but can be deployed wherever we need it . It is designed to fit in the back of C-17s or C-130s. It was deployed to Kandahar for two years, and did the job over there before we handed the task back to the USAF."

Question: The impact of combat experience was important for your thinking about the way ahead as well, I would assume?

During its operations in Afghanistan during Operation Slipper, the ADF provided a RAAF Control and Reporting Centre (CRC) which consisted of 75 personnel and based at Kandahar Airfield. While the CRC used a variety of equipment and sources to plot the movement of coalition aircraft over Afghanistan, the most visible system is the massive AN/TPS-77 radar unit that sits adjacent to Kandahar Airfield on a man-made hill. Credit: Australian Ministry of Defence.

Wing Commander des Jardins: "It is very much so. When the team returned, the cabins were refurbished and they were redesigned along the needs that were shown through that experience. The importance of redesign to shape a slightly bigger system with more workstations, and an increased flexibility in how we operate the mobile system overall was highlighted by our combat experience in Afghanistan."

The discussion then turned to shaping the way ahead and the shaping of the evolving exercise regime.

Clearly, with the threat evolving, working ways to more effectively deal with high tempo operations is important for the C2 side of the house. And to do so with a more joint approach

One of the participants highlighted that "the Jericho policy incentive is to develop a much more integrated exercise program and we are rewriting our campaign plan for 41 wing to create more joint efforts in our training at home and to support our presence overseas."

Group Captain Antony Martin, Officer Commanding No 42 Wing which includes the Wedgetail squadron, provided an update on the Wedgetail and discussed the thinking about the way ahead.

"We have been in the Middle East for almost 12 months. We have flown about 1300 hours on station. The plane has performed well from a serviceability point of view, which is due in part to having a new airplane. The minor problems we have had have been aircraft issues, not mission systems issues. We have a small footprint of around 35 people for ops, and maintenance.

We are flying regularly with about 12 sorties per month. And the USAF has shown clear interest in our experience, as the AWACS is getting old and E-7 could be part of the post-AWACs transition."

The Wedgetail is doing the traditional fighter control but has encompassed a broader approach to management of combat assets within the battlespace, including ground elements as well.

The Wedgetail is working with the F-22s and in so doing is shaping tactics to work the relationship between fifth generation aircraft and a non-fighter battle management system.

"We are starting to draft a new E-7 con-ops to work with fifth generation aircraft, notably with the coming of the F-35, and shaping IP chat as a tool within the battlespace is part of the Jericho approach as well."

And the Wedgetail team was recently in Baltimore to meet with Northrop Grumman to shape ongoing work on upgrading technologies for improving the radar and mission system performance. Wedgetail is largely a software upgradeable platform so ongoing spiral development with regular interaction namely from users to application engineers will be key for the future development of the capability.

The head of No. 44 wing, Group Captain Edgeley, then discussed the approach to air traffic management The core point is that a high level of integration is required between civil and military operations. This integration enables the operational flexibility required to meet the increasing complexity of military operations, but also reduces the requirement to exclude civil operators from military airspace and airfields.

"We are trying to integrate military and civil traffic in a way that no one else tries to do."

This also provides an advantage in leveraging new unmanned technologies, which are being worked into Australian airspace as part of normal operations.

As the need to work an expanded battlespace is met, the challenge for Joint Battlefield Airspace Controllers (military air traffic controllers) will be to handle a much more complex deconfliction effort within the battlespace. In a way, this is part of the controller's effort towards Plan Jericho, and the transformation of jointness.

A clear challenge is to ensure that No. 44 wing can recruit and retain the kind of qualified personnel necessary to shape capabilities going forward.

"We probably cannot compete with the civil sector in terms of salaries, so we are creating a job opportunity which is much broader than what a civil air traffic controller does. Our personnel get the opportunity to do more than just air traffic control."

The 44 Wing concept of air traffic control encompasses the tactical role of the JBACs or Joint Battlefield Aerospace Control as well.

With 92 Wing, the discussion turned to the P-3 and preparing for the entry into service of the P-8 in Australia in 2016.

As Group Captain Champion put it: "The P-3 has served us well but we are transitioning to the P-8 which has a much greater set of sensor capabilities which we will become part of our overall enhanced capabilities to see and defend the approaches around Australia."

With the F-35, the P-8 and the Triton operating in the waters surrounding Australia, in addition to the ground based assets providing core data, the challenge will be to integrate data in a timely manner and ensure it is delivered to the

appropriate actors in the broad defense belt surrounding Australia. And doing so will require an ability to work closely with allies shaping their own common operating pictures.

SRG clearly faces challenges, but is at a critical vortex of the Plan Jericho effort.

Shaping capabilities to inform the joint force in an effective manner to enhance their lethality and survivability will be the challenge; but Australia is investing in new systems to provide for new tool sets; and with Plan Jericho, the mind-set is being reshaped to look to draw the best from what each platform can provide, to shape a more effective joint force effort.

Opening Remarks at Williams Foundation Plan Jericho Workshop, August 6, 2015 By Air Marshal Davies

I am delighted to address this event. This is my first opportunity to speak to an event hosted by the Williams Foundation, since assuming the leadership of the Air Force on the 4th of July. Today I intend to speak briefly. I will explain my intent for the implementation of Plan Jericho during my term as Chief of Air Force. But I also wish to hear more about the innovative programs of the United States Air Force as well as Boeing and Lockheed Martin.

At the outset, I would like to state that both the substance and the format of today's event reflect my priorities. We are going to hear about innovation from two of our key industry partners. It is not just 'marketing spin' to describe our relationship with industry as a partnership.

Rather, that is simply reality in this so-called 'age of austerity', in which government budgets are under pressure. More than ever, vital research and development relevant to air power is being conducted in the private sector.

We cannot afford to be mere passive customers dealing with suppliers. Many of the deficiencies in the way we have responded to technological change were held up to scrutiny in the First Principles Review released earlier this year. Our lack of agility in responding to changes in an increasingly fluid, dynamic environment was identified as a major concern.

Other issues, to which Plan Jericho is our considered response, were also identified in the First Principles Review.

My predecessor, Geoff Brown, explained how Plan Jericho would enhance our exploitation of 5th Generation technology, especially through the entry to operational service of the Joint Strike Fighter (JSF).

However, as the FPR made clear, Defence is simply not innovative enough. The recommendations of too many past reviews were still- born. In an era of rapid technological developments, we cannot continue doing business the way we have been.

The most glaring deficiencies it identified were:

Reliance on arid compliance rather than prudent governance;

Organizational stove pipes;

A platform replacement rather than a 'system of systems' approach to joint force design procurement and sustainment

Plan Jericho is our institutional response to meet these challenges. We need to be more innovative and every element of the Plan is directed at making us so. I am committed to the implementation of Jericho, and will build on the work already done.

However, my own emphasis will be shaped both by who I am, and my own distinct perspectives and priorities as a leader. I believe that my approach is well suited to the next phase of our transformation journey.

At the handover of command parade, on 3 July, I made the comment that my office walls are adorned with more photos of people than of aircraft. I believe that says something important about me, and it will inform my priorities as Chief of Air Force.

Through sound force planning and sustained support from successive Australian Governments, we are in the process of modernizing our fleet. By 2025 the RAAF will be one of the most potent and balanced Air Forces in the world.

Jericho is designed to ensure that we achieve the synergies offered by that sophisticated array of platforms. But if we are to match the rhetoric about being a 'force by design' and a 'system of systems' then we really must be innovative and adaptive in key areas.

Firstly, we need to truly empower our work force. Real innovation depends on people. And I mean airmen and women – not just industry research and development partners and DSTO scientists. We must encourage 'bottom up' innovation.

To enable this we must become an employer of choice in a very tough employment market where it will be difficult to match the salaries and conditions available to the highly skilled people we will need.

That is especially so in the areas of space and cyber; where revolutionary change is occurring in cycles of months not years. And I intend to stand up a distinct squadron that supports the joint approach to cyber.

The model of life long employment with a single employer no longer holds sway. Yet much of our training, education and promotion systems still reflect that assumption. We must change.

We must engage people, especially those with vital skills, like cyber skills, where they are-not where we want them to be. We must understand the expectations and norms of a modern generation. Like me, many of you joined the Air Force young and you stayed.

I hope that many young Australians continue to do so. But we are going to need to be very innovative in devising conditions of employment to make better use of part time members and those working remotely.

Diversity and flexibility are not merely nice slogans designed to win Equity awards for the ADF. We must make them part of who we truly are. I am encouraged by the progress we have already made in implementing Plan Suakin, which offers some exciting options to enhance the integration and contribution of our reserve members. I intend to take up its recommendations. I also wish to push our New Horizons program harder and explain to Air Force how it enhances every element of our force. It is not about being politically correct. It is about being more effective in combat.

I believe that we also have much to learn from our international counterparts by exchanging personnel seamlessly between the Air Force and business and academic organizations. Our airmen and women can learn so much from our business partners who support our capability. I would like to see some of our best and brightest seconded to you and to effectively return to apply the knowledge and experience they acquire within Air Force.

We need each other to make this work. Defence needs unprecedented access to the deep research and development capacity of private industry. I am reminded daily that private industry has driven advancement in communication technology and big data management. It frustrates me that our war-fighters are not able to exploit this technology in their work environments to the same extent they do in their private lives. And it alarms me when I see that our adversaries are not similarly constrained.

Likewise, men and women from our industry partners can apply their skills inside Air Force and mentor and develop our people. We must make this easier and ultimately routine.

The same commitment to diversity, and flexibility must inform our approach to recruitment, retention and whole of working life learning and personal development. We are excellent at training aircrew and those who support them. But we must enhance the broader professional mastery of our people.

The world is increasingly complex and we must educate to understand the social and political context in which our technical skills are being applied. This is an area I feel passionately about.

The 5th Generation environment will be transformational. Some trade sets may vanish while others will emerge. Our people will need to be innovative to cope with this, but we must foster a learning environment in which they can do their current jobs as well as acquire new skills rapidly – not just via traditional courses.

Significantly, the context in which our airmen and women will be operating in future will be joint and as a coalition. Increasingly, we are integrated into space and cyber networks that no single power can develop and sustain. Even the USAF accepts that coalitions will be essential to its operations in the future. Again, flexible, adaptable people, who are comfortable in a diverse environment, will be critical to making coalitions work effectively.

My third priority is to ensure that everything Air Force does enhances the joint combat power of the ADF. The previous White Paper directed the ADF to be capable of joint operations within the context of a maritime strategy both to deter and defeat attacks against Australia, but also to secure our wider interests. I have no doubt the next White Paper will reaffirm that guidance.

The continuous operations, which all three services have undertaken since 1999, have improved our joint concepts and developed a generation of men and women who routinely expect to operate in a joint and coalition environment. But there is more to be done.

For Jericho to succeed- indeed for Jericho to be relevant- it must become inherently joint. We all know that there are stovepipes inside Air Force that must come down. But the same is true of the wider ADF.

I am encouraged by the collaboration of both the Army and Navy in the inaugural Jericho Dawn demonstrations. But to maximize the effects generated by our modern platforms and systems through their extraordinary array of sensors, we must keep our joint partners in the loop. If this means sometimes dialing it back to 300knots rather than 600 knots, so that we stay aligned with our partners, then so be it.

The Commander of Army's First Brigade aspires to a future where his soldiers are capable of "dialing a bomb"; that is nominate a target to a joint fires system that can take advantage of all capabilities in our arsenal to deliver the most efficient and effective target effect. It is a worthy goal and its achievable using today's technology.

However, this will require a change in mindset within both Army and Air Force. But to match our boast about becoming a 'system of systems', linking sensors and shooters, we will all have to work hard to break down cultural obstacles. The hardware is not the issue. Rather the generation of air, space and Cyber effects across the land and sea domains will depend on skilled people with an innovative mindset and the development of trust.

I will have more to say about these elements of my approach in the coming months. I hope events like this can create an ongoing dialogue with our industry partners as well. Thank you to the Williams Foundation for providing such an excellent vehicle for Air Force to engage our partners.