Speech to ASPI Surface Fleet Conference
Wednesday 1 April 2015
‘The future of industry defence cooperation for SEA 5000’

Mr Chairman, officers and members of the Australian Defence Force and fellow defence industry colleagues, I am grateful for the opportunity to speak to you and to give my perspective on the future of defence industry cooperation for the future surface combatant fleet.

From the outset, I would like to say that we should recognise that Australia’s defence industry today is a highly capable product of twenty years of government policy.

During this period, the defence industry sector has grown from being little more than a provider of commodity goods and services into an integral element of Australia’s defence capability.

This means that our relationship with Defence has become interdependent – at our best, we are trusted partners of Defence, sharing our combined intellectual, technological and human capital to ensure the Australian Defence Force can deliver on its operational outputs and contribute to mission success.
With this in mind, I would encourage each of us to view Australian industry as an integral element of Defence capability, especially as it applies to the future surface combatant fleet.

That means we need to accept that defence industry is a fundamental input to capability. In turn we need to mature the relationship between Defence and industry from purely transactional and arms-length to a more strategic partnering arrangement.

If we don’t make this fundamental change then we will collectively struggle to meet the challenges of delivering on programs that are increasingly complex, of higher value and higher risk - in an environment of dynamic tension between a greater drive for innovation and continuing need for cost improvement.

A more strategic partnering arrangement involves a greater emphasis on fostering better longer term relationships between Defence and industry and the use of innovative commercial tools to best leverage those relationships to deliver the desired outcomes.

This must be underpinned by greater openness and transparency, with a common and more explicit understanding of how to achieve best value for money for Defence and a fair return on investment for industry. It is this win-win approach
that will drive improved outcomes for the Warfighter and better value for money for the Australian taxpayer.

From the earliest stages of the project lifecycle, we should establish relationships, with any necessary commercial frameworks, which are based on a mutual understanding of where the motivations and interests of each party lie - to acknowledge and manage the areas of difference and tension.

This willingness to share information with industry in a spirit of openness and transparency is key to the successful delivery of capability. Transparency must include engaging industry early to harness its collective knowledge and experiential learning to better inform Defence procurement and more effectively facilitate the desired capability outcomes.

An example of how industry, in partnership with Defence, is providing long-term capability to Australia is the NULKA program. Here a strategically cooperative approach has produced capability and cost benefits while receiving a world-class active decoy system.

Another was realised on the AWD Program where it is widely recognised that early teaming and collaboration between the Defence and the Mission System Integrator helped to refine the early AWD concepts, aligning required capability with available technologies, budgets, year of delivery targets and other
program constraints. This early collaboration has mitigated the risk of the delivered mission capability falling short of capability expectations.

I believe the next opportunity lies in the approach to be taken for the delivery of the Navy’s future surface combatant capability. We can no longer afford to re-invent the wheel every time we embark on a new naval program. Rather, we must move away from the old stovepipes of a platform-centric view and take a system of systems view.

This would see a transition to a new paradigm which takes a surface fleet view - where the sum of capabilities of the fleet are greater than the capability contributions of individual fleet units alone. Instead of taking a constrained, platform by platform, view, it would be elevated to one focused on system-of-systems view. The aim would be to achieve, at a minimum, an implicit fleet interoperability with maximum commonality across mission systems.

This approach implies the need for high levels of commonality, interoperability and interchangeability between fleet units to better realise the benefits of emerging capabilities and to build on existing capability investments. Such an approach will be especially important if we are to grasp the benefits of network-centric warfare alongside our allies and, in particular the US Navy, to deliver operational advantage.
The first step in this system-of-systems view is to adopt a common mission systems architecture where we can take advantage of existing investment to reduce cost of ownership for the future surface combatant fleet whilst maximising its capability.

When it comes to Australia’s Future Frigate program the publically declared requirement is for a ‘multi-purpose surface combatant capable of operating across the full spectrum of maritime operations’. ‘This includes low level constabulary operations through to high end war-fighting, with an emphasis on anti-submarine warfare’. These missions will necessitate a considerable step-change from today’s Anzac-class ship capability.

In the current budget constrained environment, Defence is also looking to achieve this capability outcome in a cost-effective and low-risk way. Equally there is a requirement to ensure that all of Navy’s surface combatants are able to cost effectively and incrementally evolve in order to counter emerging threats over the life of the various platforms.

These requirements – both the life-of-type capability requirements and those of cost and effectiveness – present a considerable challenge. But they also present a significant
opportunity to take a whole-of-surface-combatant approach and to deliver such through a strategic collaboration between Defence and industry.

Such a strategic collaboration should leverage existing in-country capabilities across the entire surface combatant enterprise and build on the considerable investment already made by all stakeholders. This should not be done to support a rent-seeking industry but rather to continue the development of more efficient and cost effective ways to deliver and maintain such a sovereign capability throughout the life-of-type.

Let me now move away from the concept of a common mission system architecture for the future surface combatant fleet and address some specific examples.

A fleet-level, common mission system architecture approach that is implemented through platform-specific design changes managed at the system-of-systems level would allow us to leverage off historical investment and facilitate the full exploitation of innovation programs. Examples would include building on programs, such as the successful ASMD program and the Australia-United States Phased Array Radar project (AUSPAR), to realise benefits to Defence including:

- reduced costs through avoidance of non-recurring engineering effort;
• reduced integration risk associated with evolving mission system capabilities customised for each platform’s individual role; and
• lowering the whole-of-life costs through commonality and economies of scale and operational efficiency.

The other important example is the AWD program which has represented a major undertaking in naval mission systems design and integration since first pass approval of that project in 2005.

The fact that this Mission System integration activity has been successfully undertaken to date is evidenced not simply by the achievement of metrics for cost and schedule performance but by the fact that risk has been significantly reduced by the rigorous shore based testing of some 87 per cent of combat system interfaces.

Over four years a team of dedicated engineers and technicians from multiple organisations, government bodies and global equipment suppliers have worked towards this outcome.

In this circumstance there is a genuine interest involved in reaping the full dividend from the substantial investment in the AWD mission system architecture.

It is our combined experience drawn from the investments we have made in the AWD, AUSPAR and ASMD projects that
gives us the best opportunity to reduce time, risk and budget for Future Frigate.

In terms of reducing the up-front engineering and verification effort for Future Frigate this translates to shaving years from the schedule and potentially hundreds of millions of dollars of cost.

This is particularly important when the next generation of capabilities are considered as there will invariably be the need to introduce off the shelf US based weapons or technology to the fleet to counter emerging threats or for customising a platform or system for a particular mission.

Our combined experience can, therefore, future proof us as we traverse this growth path.

For example, the current AWD mission system architecture was developed to facilitate long-term capability growth and for the management of obsolescence.

One of the key architectural principles employed in the development of its mission system architecture is to facilitate interoperability with ADF and allied, particularly the Unites States Navy (USN) task groups.

In future task groups, a key technological force multiplier will be the expanded use of secure sensor netting technologies, for example, the Cooperative Engagement Capability (CEC). This
will enhance situational awareness between each fleet unit and enable the fleet assets and their long-range munitions to be utilised in a networked force.

These technologies will also become key capability discriminators for the RAN’s future surface combatants.

Re-use of the common threads of the AWD architecture and the associated USN technology roadmaps will also be essential to maximise the capability advantage afforded to the RAN through the USN coalition. A common mission system thread in command, control and decision support systems enabled by open standards will be critical for the RAN.

This will not only allow the continued deployment of the current inventory of weapons but maintain a route to evolve the mission system to the next generation of long range weapons and potentially the assignment of a ballistic missile defence mission. Alignment with USN weapon roadmaps (including torpedos and potentially strike missiles) promises not only advanced capabilities and improved interoperability, but also delivers economies of scale, shared certification costs and in-theatre sustainment advantages.

Consistent with the Defence Minister’s announcement in June last year, the mission system architecture of the Future Frigate will be required to incorporate the leading edge, locally
developed, radar technology proven by CEA Technologies in the ANZAC ASMD upgrade.

In addition, the mission system may incorporate a further evolution of the radar suite for longer range surveillance and for fire control support of the Standard Missile family of weapons. The system performance requirements and the insertion of Australian capabilities, such as the CEA radar, are all requirements that can be satisfied with relatively low risk and in a cost-effective way by re-using common threads of the AWD mission system architecture.

In order to develop the common mission system architecture, it will be appropriate for early engagement between Defence and industry on mission systems integration.

By developing common mission system architecture and expediting the Future Frigate-specific mission system, it will be possible to rapidly bring together the design options for the SEA 5000 program.

The challenge for Defence in delivering a common fleet mission system architecture will be met through strategic partnering with the industry’s mission systems engineering capability, which would be responsible for:

- designing systems for efficient upkeep, update and upgrade through-life;
• integrating systems of systems to deliver operational and capability advantage; and
• integrating indigenous sub-systems or software applications into foreign-supplied systems such as those often sought from the US.

The mission system integrator will understand that individual mission system designs will evolve with new technology and new capability needs over the life of the platform. A system-of-systems approach is used to manage this change by leveraging off concepts used in commercial industries, such as using stable reference architecture.

New design instances can then be managed as separately controlled changes without undertaking any change to the baseline architecture. This approach has already been used in the evolution design of the AWD, where equipment selections were made possible within the constructs of the same reference architecture.

Once a common architecture is adopted across the surface combatant fleet, the next challenge will be to achieve further cost savings and advantages by developing a focused fleet-wide baseline management approach through collaboration between Defence and industry.
The sophisticated nature of the Future Frigate mission system will require a broad spectrum of in-country capability from both Defence and industry. These skills range from the procurement and integration of navigation and communications systems through to the more complex integration of command and control systems, sensors and effectors.

This should come as no surprise that Australia needs to have such capabilities – retaining a mission system integration capability is a matter of national sovereignty.

Developing and growing our industrial self-reliance, especially in mission systems integration will be critical to mission success, particularly during times of tension when the Australian surface combatant fleet will need interoperability at the core of its operations.

Further, the protection of the intellectual property of US-supplied defence technologies, such as naval weapons and sensors, is a matter the United States will reasonably expect of Australia.

All this places a high value upon maintaining an Australian industrial capability in mission system integration and system level sustainment.

In this very important phase of the White Paper’s development when we may assume key decisions are being made before the
finishing touches are applied, Defence has an opportunity to recognise the important contribution that our defence industry makes to delivering naval capability.

The upcoming policy statements in the Force Structure Review and the new Defence Capability Plan, will, I hope, promote a sustainable and globally competitive naval industrial capability to support not only the Future Frigate Program but the wider surface combatant fleet.

This capability should be able to deliver a common systems architecture across the Navy’s future surface combatant force of AWDs and Future Frigates.

Through this implementation, the RAN would achieve a range of benefits culminating in reduced whole of life costs for the fleet and reduced risk of managing the evolution of Navy’s mission system capabilities.

There will also be the obvious industry workforce benefits by leveraging existing industry skills, capabilities and experience, applying them to the Future Frigate project, and avoiding potential degradation of this sovereign capability.

This industrial capability, which Australian defence industry can provide through missions system integration, especially for a future fleet, are therefore of national importance.
By using industry more strategically, especially in early engagement and leveraging our experience and capacity for innovation, the future surface fleet will reap the benefits of a common mission system architecture, including:

- an unbiased and agnostic approach to the concept design of the frigate and its systems;
- the ability to deliver greater efficiency and performance in systems integration during the construction phase; and
- managing schedule risk and costs, including planning for the ongoing whole-of-life sustainment for the frigates.

The successful delivery and commissioning during the next decade of the interoperable, next-generation, networked Future Frigates, when the Anzac-class end their long and meritorious service, will have demonstrated defence industry cooperation at its best in serving the national interest.

Thank you.