



Building a 21st Century Australian Navy



July 12, 2018

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UK Defense and Brexit: The Impact of the Australian Frigate Decision

With Britain sorting out Brexit and the European states facing an uncertain future over the way ahead with regard to the structure of Europe itself, defense becomes a vortex for both continuity and change.

On the one hand, President Macron has been reaching out to include Britain in the future of European defense through his proposal on a European crisis force.

Nine EU nations will on Monday (25 June) formalise a plan to create a European military intervention force, a French minister said, with Britain backing the measure as a way to maintain strong defence ties with the bloc after Brexit.

The force, known as the European Intervention Initiative and championed by French President Emmanuel Macron, is intended to be able to deploy rapidly to deal with crises.

A letter of intent is due to be signed in Luxembourg on Monday by France, Germany, Belgium, Britain, Denmark, the Netherlands, Estonia, Spain and Portugal, French defence minister Florence Parly told the newspaper Le Figaro.

The initiative involves “joint planning work on crisis scenarios that could potentially threaten European security”, according to a source close to the minister, including natural disasters, intervention in a crisis or evacuation of nationals.

It would be separate from other EU defence cooperation, meaning there would be no obstacle to Britain taking part after it leaves the bloc.

<https://www.euractiv.com/section/defence-and-security/news/nine-european-countries-to-formalise-eu-defence-force-plan/>

Not to be too cynical, President Macron is doing this as well because Britain is really a key European defense nation, is undergoing fundamental defense modernization and will almost certainly be a key player in working Northern European defense with the Nordics who are clearly focused on defense modernization and deterrence.

Staying within a classic EU engagement on defense will only go so far to meet French interests.

At the same time, it is not really clear that excluding UK defense industry from continental European defense industrial cooperation will really get the desired outcomes which some European policy makers have indicated with regard to developing new capabilities.

According to Andrew Chuter in a recent Defense News story, the proposed new European fighter will exclude British industry as participants.

Left out in the cold by a joint Franco-German plan to develop a new fighter, Ministry of Defence officials — supported by industry — have been working for months on a combat air strategy to sustain Britain’s capabilities beyond the Eurofighter Typhoon, and they are determined to figure out a way forward this summer.

With more than 50 air force chiefs from around the world expected to attend the Royal International Air Tattoo at Fairford, southern England, as part of the Royal Air Force's centenary celebrations, it is likely the British will use the event to kick-start plans to develop an eventual replacement for the Typhoons, which form the backbone of the country's fighter fleet.

"We are definitely hoping that between the NATO summit, the Royal International Air Tattoo and the Farnborough air show in mid-July, something gets announced to get the combat air strategy underway," said Paul Everitt, the CEO at ADS, a U.K. defense and aerospace trade organization.

Consultant Howard Wheeldon, of Wheeldon Strategic, who is very much plugged into MoD and industry circles, said nothing was set in stone yet, but he expects some kind of announcement, possibly at the Royal International Air Tattoo, which starts July 13.

"I do get the impression they will go for something big in the way of an announcement. It could be something along the lines of 'this is what we would like to do, and we want to do it with partners.' In part it's meant to be a bit of a shock to France and Germany," Wheeldon said.

And of course with a 15% stake in the F-35, and a 30% plus stake in Eurofighter, Britain is well positioned to sort out a way ahead, albeit with partners.

But two recent developments suggest divergent outcomes to how Britain will work out its defense industrial future,

The first is how Britain and the European Union have dealt with the UK's engagement in Galileo, which is not a robust cooperative engagement outcome to say the least.

In an article by Sophia Beach of the London-based Centre for European Reform published on June 28, 2018, the challenge posed by the impact of the very negative approach to UK engagement in Galileo was highlighted.

The EU and the UK have not been able to come to an agreement over Britain's participation in the Galileo programme. This could either set a dangerous precedent for Brexit defence negotiations in the future – or it could serve as a wake-up call for EU and UK negotiators.

Galileo is Europe's own global navigation satellite system, planned to be up and running by 2020. While Galileo's basic positioning services will be open to all, the EU is also developing the 'Public Regulated Service' (PRS), an encrypted capability reserved for EU member-states' militaries and governments. The encrypted signals of the PRS will ensure that the navigation service remains functional even if an adversary jams all other Galileo transmissions.

The European Commission has proposed a highly restricted role for the UK in Galileo. Like any other third country, the UK will be given observer status in agencies responsible for the EU's space programme, but will have no power to make decisions.

The UK will be able to negotiate access to PRS.

As a third country, however, it will not be involved in any 'upstream' PRS activity, which means the UK will play no part in generating or encrypting the PRS signal. Finally, UK defence firms will be allowed to bid for some of the Galileo-related contracts, but cannot be involved in the design or development of security-related and PRS elements.

The UK is rejecting the EU's offer for two main reasons.

First, the government is not prepared to simply be a user of PRS. UK companies have been heavily involved in the development of Galileo: Surrey Satellite Technology, a British subsidiary of Airbus, makes Galileo's navigation electronics.

And a UK subsidiary of the Canadian firm CGI is developing the encryption technology for PRS. The government has argued that, if the UK is shut out of the development of PRS technology, and has no say over the future development of the service or its governance, Galileo will no longer fulfil the UK's security needs.

Second, the British government says that if UK-based companies were no longer able to bid for Galileo contracts, this would weaken the business case for UK participation in Galileo altogether.

Because Britain considers the EU's offer insufficient both in terms of PRS access and industry contracts, the UK is looking into building its own satellite network, potentially in co-operation with Japan or Australia, the latter one of Britain's partner countries in the 'Five Eyes' international intelligence alliance.

It is not in the interest of Britain or the EU for the UK to pull out of Galileo. The loss of British expertise in space science and technology would be a loss to the entire EU project. Paul Verhoef, the European Space Agency's (ESA) director of satellite navigation, has cautioned that shutting the UK out could lead to delays in getting to full operational capacity for Galileo.

An independent British system would also make industrial co-operation with Britain's European partners harder, because all technology relying on navigation satellite signals would have to be equipped with receivers compatible with Galileo, its American counterpart Global Positioning System (GPS) and the UK system. This could cause trouble for projects like the Franco-British missile development programme.

A separate British system would also be expensive.

Galileo is projected to cost €10 billion by the time it becomes operational in 2020. Estimates suggest a British system would cost at least £3 billion to £5 billion – less than Galileo, because the UK already has the expertise to develop a new programme, and because the new system would only have to fulfil the requirements of Britain and potentially its Five Eyes partners, and not those of 28 EU member-states.

But for context, the UK space budget is £370 million; the defence budget is £35 billion. The UK government has publicly contemplated asking the EU to give back its past Galileo contributions. But there is little chance that the EU would agree, and the UK is understandably wary of re-opening the Brexit divorce bill negotiations.

Finally, the UK leaving Galileo also has implications for military co-operation between the UK and EU. If both sides use different encryption services, they will have trouble jointly developing operating procedures.

It would make sense to keep the UK close on Galileo – this type of positive-sum game was what many had in mind when they predicted that negotiating UK involvement in European defence co-operation after Brexit would be relatively smooth. The EU, however, was unwilling to offer the UK better access than other third countries receive.

The second is the growing outreach of British industry to other global partners.

And the crosscutting focus of both Australia and Britain in new shipbuilding approaches is a key case in point.

We have highlighted ways in which we see a natural convergence of approach and interest between Britain and Australia in building a new generation of combat surface ships.

And Australia has indeed selected a UK design for its next surface combatant.

As Rob Taylor highlighted in a recent Wall Street Journal article about the Aussie decision:

BAE Systems has won a \$26 billion contest to build nine anti-submarine frigates for Australia's navy, as the U.S. ally seeks to bolster its navy against an Asian arms race and more assertive China.

Australian Prime Minister Malcolm Turnbull will announce Friday that a variation of the British arms maker's Type 26 frigate has been chosen over competitors from Italy's Fincantieri and Spain's Navantia SA. The frigates will be built in Australia by local state-owned ASC Shipbuilding, which will become a BAE subsidiary for the duration. They will begin entering service in the late 2020s.

"BAE's Global Combat Ship will provide our nation with one of the most advanced anti-submarine warships in the world, a maritime combat capability that will underpin our security for decades to come," Mr. Turnbull said in a statement to The Wall Street Journal.

Winning the 35 billion Australian dollar contract could boost BAE's chances of being tapped later this year to supply Canada with 15 frigates, defense experts say. The Australian win is the second this month for the British arms maker: Last week the Pentagon selected BAE to build amphibious assault vehicles for the Marine Corps, a deal that could be worth \$1.2 billion.

Putting the post-Brexit political spin and perhaps lessons learned for dealing with Europe as well on the announcement was the British Prime Minister.

British Prime Minister Theresa May hailed the announcement and said it was the 'perfect illustration' of the deals Brexit Britain will be striking.

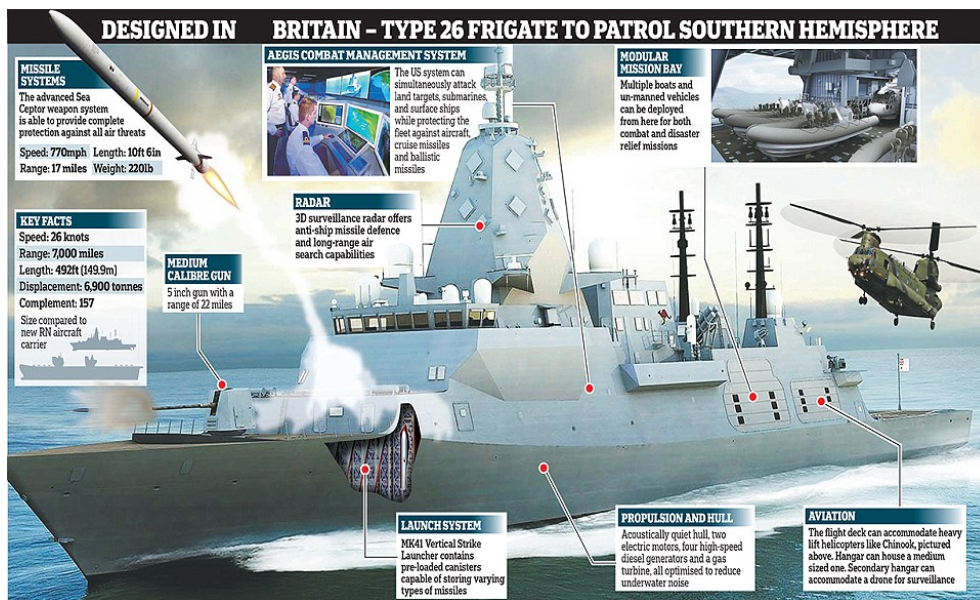
She said: 'The sheer scale and nature of this contract puts the UK at the very forefront of maritime design and engineering and demonstrates what can be achieved by UK industry and Government working hand-in-hand.

'We have always been clear that as we leave the EU we have an opportunity to build on our close relationships with allies like Australia. This deal is a perfect illustration that the Government is doing exactly that.

'And while this is an enormous boost for the UK economy, it will also cement our strategic partnership with one of our oldest and closest friends for decades to come.'

It would make a great deal of sense for Britain and Continental Europe to sort out ways to shape a collaborative future.

But if they cannot, the UK will reach out into a broader global market and work to find other partners to shape its defense future.



CEA, the New Australian Frigate and a Role for the UK?

The new Australian frigate built by BAE Systems in Australia will feature a CEA radar.

Will the UK and Australia work a deal to put that radar on the British variant of the new frigate for the Royal Navy?

That possibility was raised in a November 2017 visit by the UK Minister for Defence Procurement to Australia.

Amongst the discussions was a meeting with her Australian counterpart, Minister Christopher Pyne, who is responsible for procurement for the country's military.

Australia is the UK's 13th biggest export market, with £8.6bn of goods and services sold in 2015 and the Type 26 Global Combat Ship has been shortlisted for Australia's Future Frigate programme.

The Type 26 is an advanced Anti-Submarine Warfare frigate that will provide essential protection to Britain's nuclear deterrent and new aircraft carriers.

Defence Minister Harriett Baldwin said:

From the first world war to defeating Daesh in the Middle East right now, the UK and Australia continue to fight side-by-side for the values we both share.

In the face of mutual intensifying threats, the strong relationship between our countries allows vital discussions over how best to protect ourselves. As the Australian Navy looks for a new frigate, the Type 26 is a very strong candidate and I hope to see it form the backbone of our Five Eyes partners' navies for decades to come.

The visit to Australia comes shortly after Minister Pyne came to London and met Minister Harriett Baldwin earlier this month.

During his visit, BAE Systems announced that they had awarded a further 15 manufacturing contracts to suppliers of the Type 26 programme. Not only did that increase the number of UK maritime jobs supported by the programme to over 4,500, but it also included contracts with two Australian companies, showing the deepening co-operation between the British and Australian defence industries.

On the flipside of the countries' export relationship, the UK was Australia's fifth largest export destination in 2016, valued at almost A\$15bn. Whilst in the country, the Defence Minister viewed a Bushmaster Protected Mobility Vehicle demonstration.

The Bushmaster protected vehicle, already in service with the Australian Army, is manufactured by Thales Australia and is one of two potential solutions under consideration as the UK looks for another troop-carrying vehicle and protected battlefield ambulance. A decision on the procurement, package two of the UK 'Multi-Role Vehicle-Protected programme' (MRV-P), is anticipated next year.

Alongside Australian Defence Minister Pyne the Defence Minister announced the intention to look at the feasibility of fitting a cutting-edge Australian radar on future British warships. The pair announced that a capability study to fit CEA Technologies' 'CEAFAR' radar to British ships will begin early next year at the second Australia/UK Defence Industry Dialogue in Adelaide. The radar is already in-service with the Australian Navy.

CEA Technologies: An Australian Industry at the Cutting Edge

By Robbin Laird

During a visit to Australia in August 2017, I had a chance to visit CEA technologies and take a look first hand at this key Australian industry involved in the build out of the Australian Navy.

The story published on August 23, 2017 follows:

I have been writing for some time about the strategic shift or one could call revolution to building software upgradeable systems.

The new multi-mission platforms on sea or in the air such as the Australian ANZAC Class frigates or the Wedgetail are simply different from legacy platforms for they are modernized differently.

A key challenge for the acquisition and policy community is to adjust their thinking to the new reality and to understand how radically different the new "platforms" are compared to the legacy ones.

Recently, the head of Air Force Materiel Command highlighted how significant the challenge of changing the mental furniture and acquisition procedures to get out of the way of technology, and rather than retarding progress, accelerate it.

Recently, General Ellen Pawlikowski, Commander of Air Force Materiel Command, provided a hard-hitting overview on how important and necessary she believes a breakthrough is on the management of software upgradeability.

At a Mitchell Institute breakfast meeting on July 14, 2017, she focused on the barriers and the need to shape a combat force that is empowered by agile software development.

Her presentation focused on what she referred to as the cultural barriers to change. She bluntly asserted that the current acquisition approach guarantees that unnecessary review and control layers in the bureaucracy will persist and continue to slow software upgradeability.

One could easily ask how many acquisition officials can even read let alone write code, but the broader point is that the so-called oversight system needs to be radically changed.

The General was kinder and gentler than I am being here.

The General was kinder and gentler than I am being here.

But she was certainly direct enough in her outstanding presentation on the challenge and how to meet it.

The acquisition system has been built around a 20th century systems engineering model, one which sets requirements and designs the way ahead in a manner in an iterative requirements process which is simply inappropriate for a software driven force.

“We are very much enamored with our systems engineering processes in the Department of Defense.

“We have processes that drive us to start with requirements and continue to work those requirements through rigorous testing.

“When I was on the job at SMC I learned that OCS had failed their preliminary design review.

“But preliminary design reviews don’t make any sense when you are doing software development.

“Agile Software development is all about getting capability out there.

“The systems engineers approach drive you to a detailed requirements slow down.”

She highlighted that this cultural barrier, namely reliance on the historical systems engineering approach, needed to be removed.

“We have to change the way we think about requirements definition if we’re going to really adopt Agile Software Development.

“Maybe the answer isn’t this detailed requirements’ slow down.”

“By the way, once you put it in the hands of the operator maybe some of those requirements you had in the beginning, maybe they don’t make any sense anymore because the operator sees how they can actually use this and they change it.”

She went on to highlight what the Aussies are doing in Williamstown with Wedgetail without mentioning them at all.

“You need to put the coder and the user together...

“We have to empower at the right level, and that has to be at the level of the person that’s going to use the software, and we have to stop thinking about independent OT.”

She then went after the way sustainment is thought about for the software enterprise.

“The other thing that we have is this idea that software is developed and then sustained.

“What the heck does that mean?

“Software doesn’t break.

“You may find something that doesn’t work the way you thought it was, but it doesn’t break.

“You don’t bring it in for corrosion mitigation or overhaul on the engines.

“When you’re look at what we do in software sustainment a lot of it is continually improving the software.”

<http://sldinfo.com/software-upgradeability-and-combat-dominance-general-ellen-pawlikowski-looks-at-the-challenge/>

During this visit to Canberra had a chance to visit a leading center on developing software based radar technologies for the Australian Defence Force, and to view how the company builds its radars and evolves its technologies.

CEA Technologies was founded in 1983, and specializes in the design, development and manufacture of advanced radar and communications solutions for civil and military applications.

I had a chance during this visit to Canberra to discuss CEA and its approach with Ian Croser, Technical Director, CEA, with more than 30 years of experience in the radar business, a period in which radar technology has been transformed into a multi-function, multi-mission software enabled even defined combat capability.

Question: What is CEA Technologies?

Ian Croser: It’s a private Australian company, but it has a significant shareholding from Northrop Grumman. It is an Australian controlled company. CEA works closely with Defence to achieve National strategic outcomes.

Question: During the tour of the facility, it was clear that you tightly control the development and manufacturing process, in part certainly to enhance the security of the product and the process. Could you describe your approach?

Ian Croser: It’s hugely important to control the development and manufacturing processes because, the design and the development of individual modules and subsystems don’t all come together at the same time. And that brings with it some real issues when you subcontract out design to subcontractors.

Because the moment you subcontract them out, you’ve effectively lost daily control over them.

Having the ability for our teams to be co-resident, and all talking to each other, solves so many problems for us. In time, in quality, in functionality, you end up with a better, lower cost and more secure solution.

Question: When you viewed the racks and the boards, you noted that none of these boards was COTS and that they all are built internally.

How important is it to control that board, from a security and also a performance point of view?

Ian Croser: From both points of view it's extraordinarily important because, if you are buying a board, you don't necessarily have all the controls over where the components come from, how they got to you, and how they're treated, before they actually get embedded in the board.

And they're all points at which somebody may do something that you don't desire.

From a performance point of view, COTS boards are all things for all people. Our boards are formed to fit into our space and weight and technology requirements, and we can better fit them into a smaller space.

For example, in the array digital backend area, if we had used COTS boards, it'd be many times larger than it is now, and it wouldn't actually fit into our design baseline.

You wouldn't be able to implement our approach.

There's really no choice but to build our own boards and embed them in the system.

Question: Let us turn to the radar revolution in which we have moved from building a largely single purpose commodity into a multi-mission, multi-function upgradeable system.

How would you describe the shift?

Ian Croser: A conventional, mechanically-scanned radar, for example, is comprised of a large number of configuration items, all of them different and very few are used in multiple positions.

That means that in design and in build there is a lot of effort to mature those different elements.

These separate pieces have to be integrated and failures in just one subpart, generally impacts availability of the whole system. Integration requires significant time and effort to bring together the separate parts to form the whole.

It is completely different with active phased array radars.

The high density functional modularity has suddenly become available and implementable. As a result we are building a very small number of unique configuration items, but building lots of them.

When we put them together, we get the resilience of parallelism, so if one module fails, it's just one of a large number operating in parallel.

The functional and physical modularity along with the independence of modules means that the resilience to damage and the resilience to occasional failures, is very high.

This has enormous beneficial impact on the sustainment process. Individual failures no longer force repairs before or during a mission; you can just carry on with a small proportion of the array that might have failed or have been damaged.

The repair can then be scheduled at a time and place of convenience.

It shapes a whole new way of sustaining capability at sea, for example.

Question: This new generation of radars is software defined and software rich. How does the software approach change the nature of the development and modernization game?

Ian Croser: The modularity of the hardware has to be matched by the modularity of the software and the firmware.

If you can isolate the application specific personality of the radar from the software base, then the software and the firmware becomes similar to an operating system.

It supports the rapid application change process without itself needing to change.

It's sitting there underneath, and interfacing into the hardware, and when you tell it to do something, it does it. So if you tell it to point a beam in a given direction, then all of the distributed functionality that is across the array will do that, without needing to be 'hard programmed' to achieve new outcomes.

The radar personality, the application specific functionality is built into a small dataset that informs the system how it should operate under a given circumstance.

All of the software/firmware functions are just waiting to be organized in different directions and different sequences and with different parameters to be able to do their desired functions.

It is that small dataset running in an organizational set of boards that tell the system what to do, when to do it, how to do it, without changing the software and firmware.

Question: This provides for inherent transferability across radars operating in air, sea or land and can allow for enhanced efficiency in joint capabilities and joint investment.

How would you describe this process or approach?

Ian Croser: The objective is to reduce the number of software baselines being maintained across multiple platforms and operating domains.

This approach frees up a lot of development capability, and it means that the commonality and the interoperability is inherent and enhanced.

Even if you haven't brought forward a particular function in a particular application and platform, if it's in the common software base, then it's a really simple thing to bring forward and use.

It's more about integration with the rest of the platform capability than it is about the radar itself.

Implementation of a 'Task Based Interface' and control methodology has effectively insulated the Combat Management System from major change cycles in response to new applications.

This software baseline, when combined with the modularity of the hardware, allows the design and build of scalable radar, which can readily fit into different platforms across land, sea and air domains.

There is not a lot of work to bring a new application online.

It changes the whole way in which you think about multi-function capabilities, different applications, and how those applications interact with one another.

Question: The US Navy is starting to move forward with procuring a new frigate. I have written about the significant opportunity for the US forces to leverage allied investments and capabilities in accelerating the modernization of US forces as well.

It would seem to me that the frigate is an ideal case not only in terms of taking a foreign design but most certainly with the outstanding and combat tested frigate equipment already deployed on the frigates of our allies.

It would seem to be a no brainer to look seriously at your radar for this program so that the US Navy can ramp up the time when they could get a functioning frigate at sea.

After all, powerpoint slides for potential systems kill audiences, not adversaries.

What are your thoughts along these lines?

Ian Croser: It could make sense for the US Navy on several grounds.

Cost is a clear advantage and risk is contained by having operational systems already in place.

Shared investments with a core ally can also accelerate joint capabilities.

Interoperability is built in and the Australian Navy is already shaping the Conops of the system at sea.

It is only in the past decade that navies have looked beyond the organic role of radars onboard ships to think of fleet interactivity among radars at sea.

CEAFAR certainly is designed to do this and with the inbuilt multifunction capability and commonality there is significant enhancement to distributed lethality.

Question: With the shift in focus towards, high tempo and high intensity operations, mobilization becomes as important as modernization to combat success.

It is clear in walking around the plant and looking at your approach, mobilization capabilities are built in.

Could you highlight this aspect of the inherent potential of your manufacturing process?

Ian Croser: The key to ramp up is to embed high functionality and high performance at printed circuit board level.

Because now, component reliability has far outstripped system availability, it is possible to provide programmable and function rich systems with wide and inexpensive growth factors.

If you put all the effort into embedding rich functionality into the board itself, the flow on sustainment costs also benefit, that's the really key process.

Now once you've got the board, if you've designed it right, it can be manufactured on standard automated production lines at very low cost.

Because of the modularity and building lots of a small number of configuration items, you can now build the synergy in manufacturing to push through large volumes of work, very quickly.

And of course, all of the test jigs and all of the capability to manage those few items also benefit from the modularity.

So you end up with a whole different way of manufacturing, testing, integrating, and delivering high capability at low cost.

Appendix: CEA Company Profile

CEA Technologies was established in 1983 by two former Naval Officers with a goal of creating a centre of excellence for the design and support of systems for the Australian Defence Force. From the outset, CEA Technologies was based on the provision of uncompromising design principles and robust through life system support, this philosophy became an enduring driver of CEA's business.

"Solutions with Commitment" was established as a pivotal tenet of CEA practices and remains the company's primary driver in business conduct ensuring that the company continues to be at the forefront of innovation. Throughout its brief history CEA's achievements have continued to accumulate resulting in the company growing to become an internationally recognized, world-leading radar and communication systems supplier.

The company continually endeavors to expand its reach into the international market and successfully exports to the USA, Europe, the Middle East and Pacific countries. A steady and continuous corporate growth has resulted in a corporate staff exceeding 270 people located across its four facilities in Australia (Adelaide, Canberra [HQ], Melbourne and Perth) and in the USA.

One of the company's greatest achievements came about in November 2010 when CEA delivered to the Royal Australian Navy (RAN) a world first – the first fourth generation Active Phased Array Radar (PAR) System to be brought into service.

<http://www.cea.com.au/!Global/Directory.php?Location=Home:Home>

The Perspective of Chief of Navy on the Australian Shipbuilding Program

By Robbin Laird

The shipbuilding program is more than simply a defense program.

It is conceived as part of the commitment of the nation to building out defense capabilities.

In an article published first on May 21, 2017, the perspective of the Chief of Navy on the ambitious shipbuilding program launched in Australia was discussed based on an interview with him.

As a key part of shaping its enhanced defense capabilities, the Australian government has launched a comprehensive and long term shipbuilding program.

The plan was officially launched on May 16 at a ceremony held in Adelaide.

According to text and a video released by the Australian Department of Defence:

Prime Minister of Australia, the Honourable Malcolm Turnbull, Minister for Defence, Senator the Honourable Marise Payne and Minister for Defence Industry, the Honourable Christopher Pyne MP, announced the release of the Naval Shipbuilding Plan at the Osborne Naval Shipyard in Adelaide on 16 May 2017.

The Naval Shipbuilding Plan provides the strategic direction for a significant national endeavour to secure Australia's naval shipbuilding and sustainment industry.

It outlines the Government's vision, significant investment and expectations of long-term partnerships and collaboration with key stakeholders to achieve this nation-building project.

During a visit to Australia in April 2017, there was a chance to discuss with the Australian Chief of Navy, the way ahead in light of the commitment to a significant build of a new fleet.

2017-05-02 By Robbin Laird

During my most recent trip to Australia, the focus was upon how to shape an integrated ADF moving forward.

During my interviews surrounding the Williams Foundation seminar on that theme, I have had the chance to talk to key decision makers in shaping a way ahead.

Last August, I had a chance to talk with the Chief of the Australian Navy, Vice Admiral Tim Barrett.

A key speaker at the Williams Foundation seminar on air-land integration was the Chief of the Australian Navy, Vice Admiral Tim Barrett.

Barrett's speech focused on the opportunities and challenges of the largest recapitalisation of the Australian Navy since World War II.

New submarines, destroyers and amphibious ships and associated fleet assets are being built in Australia to shape a new maritime capability for Australia.

But this force is being built in the time of significant innovation in the Pacific whereby new force concepts are being shaped, such as kill webs, distributed lethality, and fifth generation airpower.

Barrett made it very clear that what was crucial for the Navy was to design from the ground up any new ships to be core participants in the force transformation process underway.

<http://sldinfo.com/vice-admiral-barrett-on-the-way-ahead-of-the-australian-navy-design-the-force-for-decisive-and-distributed-lethality/>

We picked up where we left off from our August meeting.

Question: How do fight with the fleet you have and prepare at the same time for tomorrow's fleet, especially when you have several new programs in the pipeline?

Vice Admiral Tim Barrett: You have to fight with the fleet you have now.

That is not an option; it is a necessity.

My focus to do that better and to lay the groundwork for the future fleet is to focus upon availability of assets.

How to we get our availability rates higher?

How do we get ships to sea more effectively and more often?

They are not going to make much difference sitting in drydocks.

One can provide for enhanced deterrence through enhanced availability.

Question: You certainly don't win with Power Point slides, do you?

Vice Admiral Tim Barrett: You certainly don't nor with a connected force in those slides, represented by lightening bolts but not realized in practice.

For example, we have a small submarine fleet of six submarines; they are not going to deter anybody if they are not available and capable of going to sea.

As we discussed last time, we have put a major effort in getting much greater availability from our Collins class submarines, and the ways we have done so will shape our approach, our expectations and our template for the operation of the new class of submarines.

We have seen a dramatic improvement in our Collins Class boats.

Question: In other words, by learning how to ramp up availability with today's fleet you are preparing the template for future operations?

Vice Admiral Tim Barrett: That is clearly our approach going forward.

We should be building our sense of availability in the design right now, so that when the future frigates arrive in place, we have maximized availability, and through that deterrence given their contribution to a distributed lethal force capability.

And this clearly is a key challenge for the workforce to shape enhanced availability.

We are reworking our work force to do so today, but must prepare for the transition in the workforce to do so in the future, recognizing that tomorrow's platforms will be different, and different skill sets required ensuring enhanced availability.

Government has committed to a future navy in terms of key new platforms.

I have that as a target goal so can work from here to there rather than simply fighting for the need to have a future fleet.

This certainty is crucial in allowing me to work the transition.

As we shape task force concepts for the current fleet, we are working connectors to make the fleet more effective in our task force approach.

As we work those connectors we are also anticipating how to build those into the design of the new fleet, rather than having to work the problem after we have acquired the platforms.

Question: And this is not simply about Navy, you focus is broader?

Vice Admiral Tim Barrett: It is; it is about working with industry; it is about working with the ADF; it is about working with government; in essence it is about the commitment of the nation.

We are a small force; smaller than the New South Wales Police Force.

We can not do this without a national commitment.

Question: One aspect of change clearly is building 21st century defense structure.

I have just returned from the UK and witnessed their significant efforts at Lossiemouth, Waddington, Marham and at Lakenheath to have a new infrastructure built.

And certainly have seen that at RAAF Williamtown with the F-35 and at RAAF Edinburgh with the P-8/Triton.

How important in your view is building a new infrastructure to support a 21st century combat force?

Vice Admiral Tim Barrett: Crucial.

And that is in part what I am referring to as an industrial and national set of commitments to shaping a 21st century combat fleet.

We spoke last time about the Ship Zero concept.

This is how we are focusing upon shaping a 21st century support structure for the combat fleet.

I want the Systems Program Office, the Group that manages the ship, as well as the contracted services to work together on site.

I want the trainers there, as well, so that when we're maintaining one part of the system at sea, it's the same people in the same building maintaining those things that will allow us to make future decisions about obsolescence or training requirements, or to just manage today's fleet.

I want these people sitting next to each other and learning together.

It's a mindset.

It puts as much more effort into infrastructure design as it does into combat readiness, which is about numbers today.

You want to shape infrastructure that is all about availability of assets you need for mission success, and not just readiness in a numerical sense.

Getting the right infrastructure to generate fleet innovation on a sustained basis is what is crucial for mission success.

And when I speak of a continuous build process this is what I mean.

We will build new frigates in a new yard but it is not a fire and forget missile.

We need a sustained enterprise that will innovate through the life of those frigates operating in an integrated ADF force.

That is what I am looking for us to shape going forward.

Question: An example of your approach to the future is clearly the new submarine.

A French design house and an American combat systems company will be working together really for the first time.

And they are building a submarine which has never been built before.

This provides an opportunity for you to shape a new support structure along the lines you have described going forward.

How do you see this process?

Vice Admiral Tim Barrett: It is something new and allows us to shape the outcome we want in terms of an upgradeable sustainable submarine with high availability rates built in. We intend to see this built that way from the ground up.

It is not simply about acquiring a platform.

We will not be a recipient of someone else's design and thought.

This will be something that we do, and we will work with those that have a capacity to deliver what we say we need.

I think the way you characterize the process makes sense.

The experiences we've had through Collins have taught us a lot.

With 12 of these future submarines in a theater anti-submarine role we think we can make an effective contribution to our defense and to working with core allies in the region, notably the US Navy.

In a piece published by Andrew Greener of ABC news with regard to the challenge of generating and sustaining the workforce with regard to the program, a number of key points were underscored.

The Naval Shipbuilding Plan outlines over \$1 billion in infrastructure upgrades at the Osborne shipbuilding facilities and Western Australia's Henderson shipyards, while confirming construction is scheduled to begin on Australia's Future Frigates by 2020.

According to the plan the existing infrastructure at Osborne is "sufficient" to continue block assembly of Australia's three air warfare destroyers, but "inadequate" for "high productivity construction" of major surface combatants such as the future frigate.

Design for the Osborne South facilities will continue to be refined by Defence "in coming months", with construction of new surface ship infrastructure to commence in the "second half of 2017".

Completion of the infrastructure development is expected to be completed by the "second half of 2019", but the report warned "this is the most time-critical component of the Government's planned infrastructure works to enable the future frigate construction program to commence in 2020".

"This is the largest single Commonwealth investment in any single state ... it is going to create another 5,000 jobs in shipbuilding directly again, almost all of which will be in South Australia, and another 10,000 in sustainment," Mr Turnbull told ABC Radio Adelaide this morning.

"This is a massive commitment to South Australia and the proposition that the Federal Government is neglecting South Australia is frankly nonsense and it defies the reality of this incredibly substantial nation-building commitment.

"As the naval shipbuilding plan says with our shipbuilding in the past we have had a boom and bust cycle ... it's coming to an end.

“And it is coming to an end because of my Government , my leadership, my commitment.”

The document predicted by 2026 more than 5,200 workers would be needed in South Australia, but acknowledged foreigners would be “essential” to “fill middle management and supervisory roles”.

“It is expected that over time the number of skilled workers from international shipyards will decline as the Australian workforce becomes familiar with construction requirements and develops more specialised skills,” the document stated.

“This will be an important area of discussion with selected shipbuilders as projects develop.”

The document also flagged a future taxpayer-funded advertising campaign to attract workers to Adelaide.

“The Government will explore the potential for skilled workers to relocate from interstate to South Australia,” the shipbuilding plan said.

“A public communications strategy will be important to raise awareness of the long-term and sustainable careers which will become available in naval shipbuilding as a result of the Government’s investments.”

Defence Teaming Centre chief executive Margot Forster said the vast majority of the construction workforce would be sourced locally.

But she said the inconsistent nature of Defence projects has led to a shortage of workers for supervisory and middle management roles.

“Australia ... has not had a continuous shipbuilding program,” Ms Forster said.

“So what we have suffered from is coming into these programs, learning the skills, delivering quality products and then having to dismantle the workforce because there isn’t a follow-on project.”

The Network as a Weapon: A Multi-Domain Perspective on the Future of the Australian Navy

By Robbin Laird

During a visit to Australia in August 2016, I had a chance to discuss the way ahead for the Royal Australian Navy with the Commander of the Australian fleet.

This article was first published on September 10, 2016.

2016-09-10 By Robbin Laird

During the Williams Foundation seminar on evolving approaches to air-sea integration, Rear Admiral Mayer, the Commander of the Australian Fleet, focused on the concrete and specific challenges facing the evolution of the Royal Australian Navy as a key element of the joint force.

He argued that the Army, Navy and Air forces were evolving in the context of tapping shared networks to empower their platforms to form an extended battlespace.

But the challenge, he observed, was to work through how to most effectively shape, coordinate and execute effects from the networked force while retaining decision authorities at the lowest practical level to achieve speed of decision.

He highlighted that the Navy was returning to a task force concept but one, which was 21st century in character, whereby Navy was tapping into ground and air assets as “part” of the task force, rather than simply focusing on Navy operated assets.

This evolution of the task force effect and the networked approach, clearly in the mode of what the US Navy is referring to as the “kill web,” will require the evolution of capabilities, both in terms of connectivity, and training.

During the seminar he characterized the network as a weapon system with “no single master” and that one of the ADFs challenges was to shape the evolving network in order to effectively operate in a distributed multi domain task force.

“Each service is designing its platforms and enabling their potential through the elements of a common network.

“There is increased overlap thereby for the air and sea forces, at the very least through the access and synergy provided in the network.

“A fundamental question presents itself; how should we best develop, certify and deploy our joint network that must be cross domain in nature?”

He argued that the Australian Defence Force was on a good track but needed to enhance its capability to work in a joint domain that recognized tactical effects were generated by Services, but operational outcomes were inherently Joint.

In effect, the Services provided the muscle behind the Joint intent.

If the ADF were to achieve its potential it would need to design forces from the ground up that were interconnected to a single reference standard, rather than simply connecting assets after the fact.

But to do so required an open architecture approach to building a joint network that recognized the different needs of the participants.

The role of the network as a weapon system required that it had to be designed, deployed and certified like any other weapon system.

I had a chance to sit down with Rear Admiral Mayer and discuss further some of his thinking about the way ahead.

“We are joint by necessity.

“Unlike the US Navy, we do not have our own air force or our own army. Joint is not a theological choice, it’s an operational necessity.”

It was clear both from his presentation and our discussion during the interview that Rear Admiral Mayer was focused on how the build out of the Navy in the period ahead would be highly correlated with the evolution of the joint network.

“The network is a weapons system.

“Lethality and survivability have to be realized through a networked effect.”

Rear Admiral Manazir at the seminar focused on the kill web as a weapon system; it was very clear that Rear Admiral Mayer had in mind a similar thought when he discussed the network as a weapon system.

A key element of change for the Australian Navy was evolving a 21st century concept of task force operations.

He noted that the development of the new amphibious ships had come within a decade of work on shaping an amphibious warfare system.

The importance of the LHDs was not just the capability they offered, but the elevation in thinking they drove in Navy over the decade, thinking that moved operational concepts from the platform to the Task Group and affected all of Navy’s force elements.

He emphasized throughout the interview that not enough work has yet been done to prioritize the evolving C2 and network systems empowering the platforms in the force, including but not limited to the amphibious force.

He sees this area of development as a crucial one in creating a more interactive joint force able to deliver lethal effect.

“The potential of each of the individual platforms in a network is such that we’ve actually got to preset the limits of the fight before we get to it.

“The decisions on what we’ll do, how much we’ll share, and what sovereign rights we will retain have to be preset into each one of the combat systems before you switch it on and join a network.

“There is no point designing a combat system capable of defeating supersonic threats and throttling it with a slow network or cumbersome C2 decision architecture.

“Achieving an effective network topology is so much more complex in a coalition context in which the potential for divergence is higher.

“The paradox is that a coalition network is much more likely a requirement than a national network, and yet what investment we do make is based on national systems first.

“If we don’t achieve the open architecture design that enables the synergy of a networked coalition force, then the effectiveness of the coalition itself will be put at risk.

“The moment we insert excess command and hierarchical decision authority into the loop we will slow down the lethality of the platforms in the network.

“Before we even get in the battlespace we have to agree the decision rights and pre set these decisions into the combat system and network design; the fight for a lethal effect starts at the policy level before we even engage in combat operations.

“The network and C2 rather than the platforms can become the critical vulnerability.”

“This is why the decision making process needs to be designed as much as the network or the platforms.

“If the C2 matrix slows the network, it will dumb down the platform and the capability of the system to deliver a full effect.”

“The nature of the force we are shaping is analogous to a biological system in which the elements flourish based on their natural relationship within the environment.

“We have an opportunity to shape both the platforms and the network, but we will only achieve the flourishing ecosystem we seek if each harmonise with the other, and the overall effectiveness is considered on the health of the ecosystem overall.

“For example, an ASW network will leverage the potential of the individual constituent platforms and that in turn will determine the lethality of the system.

“A discordant network connection will, at least, limit the overall Force level effect of the network and at worst break the network down to discordant elements.”

Clearly, a key part of the evolution is about shaping a weapons revolution whereby weapons can operate throughout the battlespace hosted by platforms that are empowered by networks tailored to the battlespace.

And that revolution will have its proper impact only if the network and C2 dynamics discussed by Rear Admiral Mayer unfold in the national and coalition forces.

“The limiting factor now is not our platforms; it’s the networks and C2 that hold the potential of those platforms down.

“When the individual platforms actually go into a fight they’re part of an interdependent system, the thing that will dumb down the system will be a network that is not tailored to leverage the potential of the elements, or a network that holds decision authority at a level that is a constraint on timely decision making.

“The network will determine the lethality of our combined system.”

Building a New Class of Submarines for the Royal Australian Navy

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After an extensive competition, the Australian government downselected the French firm DCNS to build a new class of advanced-capability conventional (diesel/electric-powered) submarines.

The decision was announced on 26 April 2016, in a press release that stated: “The decision was driven by DCNS’ ability to best meet all of the Australian Government’s requirements.

These included superior sensor performance and stealth characteristics, as well as range and endurance similar to the Collins-class submarine. The Government’s considerations also included cost, schedule, program execution, through-life support and Australian industry involvement.”

Less obvious in the press coverage around the decision was the innovative nature of the program and the significant opportunity to leverage evolving technologies that will be utilized in shaping the largest conventional submarine to date.

In many ways, it is a “hybrid” submarine in the sense that it leverages the innovative technologies of the new nuclear-powered Barracuda SSN being put to sea next year by the French Navy.

It also leverages extensive experience that French shipbuilder DCNS has in working with other countries. A good example is the Scorpene-class of conventional attack submarines (SSK). To speed up delivery for the Chilean Navy, initially one boat was built in France by DCNS and a second in Spain by Navantia – these were delivered to Chile in January and December 2006.

The same scenario transpired for the contract for two Malaysian submarines. Orders for India and Brazil are being built at shipyards in those countries with technical assistance and equipment from DCNS and, in Brazil’s case, a joint venture between DCNS and Odebrecht.

The Australian contract takes advantage of the extensive working relationship between DCNS and the French Navy along with the extensive experience between the French, U.S. and UK navies.

Australia’s new conventional boats will, for the first time, include a U.S. combat system, which will be shaped to operate at range, speed and distance in the challenging waters of the Pacific.

The experience DCNS has in working in a variety of infrastructure situations in other countries, means there is a clear capability to leverage the already extensive industrial experience in Australia.

Transformation and upgrade of the Osborne Naval shipyard and maintenance facility at Adelaide is clearly a key part of building a 21st century weapon system.

“DCNS will build a new mega submarine construction facility in Adelaide which will rival any other in the world,” said a document used in the winning bid.

Australia has existing capabilities that can be tapped for the infrastructure upgrades as well as for building the new submarines. New capabilities will clearly be stood up as well, as the program takes shape and construction with life-cycle support is put in place.

or example, Thales (a 35% stakeholder of DCNS) has worked closely with France and the UK for many years on common sonar technologies.

In an interview I did in Australia in early 2014, the CEO of Thales Australia, Chris Jenkins, highlighted the sonar business as an example of the Thales approach in Australia. The business started with the transfer of French technology to Australia in the early 1980s.

The technology was used by the Australians to support their submarine program and, as the sonar systems were integrated into Aussie platforms, a team was created to support the technology, which basically meant an ability to upgrade the system and develop new intellectual property along the way to shape the modernization of that capability.

As indigenous capability was forged, the evolving technology was Australian and available for export – resulting in use by the UK Astute submarine program as well as oil and gas platform support systems.

In another example, DCNS recently signed an agreement with Quickstep.

The Australian company typically manufactures advanced composite technologies for the aerospace and automotive industries, but will now collaborate on elements that can be introduced in the production of naval vessel components and assemblies for the future submarines.

Quickstep is a key player in other high technology programs, such as the F-35. During the same visit to Australia, I interviewed its CEO, Philippe Odouard.

In discussing the company's path towards this innovative approach, he noted that "the Australian government, in its approach to defense products, recognizes that it does might not have a large domestic infrastructure for defense production, and is looking for companies that can position themselves for a global engagement."

He went on to explain that "the approach is to amortize cost by not simply building up a domestic industry, which needs to be fed by domestic acquisition, but rather one that can work effectively abroad and help the Australian government amortize the cost of its core acquisitions.

"The business model is very different here from what Brazil has done with SAAB. After the Gripen acquisition is over, it is over. You are not going to get exports and your growth abilities are limited. In the F-35 case, our investment allows us to participate in a global supply chain for a global aircraft," he said.

DCNS will follow a similar approach whereby the Australian program will be able to leverage the global partners and experience for conventional submarines, and the upgrade programs shaped.

The new American combat system, conjoined with the new DCNS submarine, will also provide extensive upgrading capability.

As the transformation of the force is shaped and with regard to submarines, the Australian MoD is very interested in shaping cross-cutting convergence among the services.

There is a clear interest that the submarine can leverage the extensive air modernization strategy being put in place by the Royal Australian Air Force (RAAF).

This means that DCNS and the winning American provider for the combat system can partner with the overall transformation of the Australian forces.

The track record and approach of DCNS is a crucial part of why they were selected by the Australian government.

To get a better sense of that track record and approach, I had a chance to discuss leveraging capabilities with Xavier Mesnet, Marketing Director for submarines and surface ships international sales at DCNS.

Mesnet served for 30 years in the French navy, mainly in the operational domain. He has been a commanding officer of nuclear attack submarines Perle and Amethyste, of the nuclear ballistic submarine Le Temeraire, and of the command center of the French nuclear submarine force in Brest.

He spent some time as the Head of Planning for Middle East operations in the Command Center of the French joint forces in Paris, and as vice-director of the Center for Shaping Doctrine for the French joint forces, particularly in charge of evolving new approaches to deal with conflicts.

Mesnet underscored the long-range commitment of the French government and Navy to building both a nuclear and conventional submarine force. This means not simply technology, but a large group of users with many years of operational experience who drive innovations over time.

It also means benefiting from the French upgrade approach and cycle. The 30-year operational cycle of any particular class of submarines is complemented by ongoing efforts to shape the next class of submarines. This is an evolving process whereby long-range submarines are built for the nuclear class, which has its impacts on the evolution of the conventional class.

The French navy has “vast experience in operations, in maintainability and sustainability for the force,” says Mesnet, who notes that “80% of the nuclear and conventional classes have convergent parts and underwater technologies. This means that the new SSN-class Barracuda which goes to sea trials next year is a driver for change for the conventional class as well.”

He discussed at some length their global experience in building conventional submarines.

What was most interesting in the discussion was how each client has different indigenous capabilities and infrastructure, and yet DCNS has been able to shape a customized solution for each of them.

The Scorpène submarine program mentioned earlier is the perfect example. Purchased by Chile, Malaysia, Brazil, and India, the existing workforce, infrastructure and upgrade requirements were different in each case.

Chile had a mature structure, and DCNS worked with them to insert the Scorpene into their extant infrastructure and then build out to support the new vessel. “After 10 years, the Chileans were very independent in terms of sustaining the submarine.”

With Malaysia, they had to standup a completely new capability on a relatively isolated facility on Borneo Island. “They really started from scratch and we stood up the infrastructure with national companies. Nowadays, the Malaysia Navy caught up with the highest standards of the region.”

The contract for India required a standup of new infrastructure, skills and training. The first Indian submarine is now undergoing sea trials. “The first one has been about standing up new capabilities in India, but with the next five their involvement is growing in the build and maintenance processes.”

In Brazil, “we went one step further. We helped them design their new submarine base. We assisted them with the construction of the base; and in process, they have stood up their own design and maintenance capabilities.”

It is obvious that the global domain knowledge base being shaped and developed by DCNS is a key asset.

And also new with the Australian opportunity, there is an opportunity to work with the US Navy in a new and innovative way.

The combat system will be American. “The French Navy has worked extensively with the UK and US Navies, and it will be a major positive milestone and collaborative work to interface with a US combat system onboard a French submarine.”

In short, DCNS has brought a variety of historical experiences, and evolving technological capabilities seen in the new variants of both the nuclear and conventional submarines, which can be leveraged by Australia.

It makes a great deal of sense for Australia to have chosen DCNS and to shape a new conventional submarine capability which will blend new technologies into an advanced submarine able to operate throughout such a challenging ocean as the Pacific.

As my colleague Ed Timperlake has put it: “Naming the Pacific Ocean as Pacific is one of the great branding mistakes of all time.”

And adding new conventional submarine capabilities to the evolution of the US Navy in the Pacific will enhance coalition capabilities in a challenging strategic environment.

This article first appeared in Front Line Defence Issue 4 (2016) and is republished with their permission.

<http://defence.frontline.online/article/2016/4/5205-Australia's-new-class-of-Conventional-Submarines>

The Australian Navy, the Nation and a New Generation Frigate

In 2017, Vice Admiral Barrett, Chief of the Royal Australian Navy, published a book entitled *The Navy and the Nation: Australia's Maritime Power in the 21st Century*.

In this book, Barrett underscored how important maritime power was to the future of Australia, and the importance of reinforcing the bond with the nation in building out the new Australian navy in the decade to come.

MOST PEOPLE THINK that Navy is something else.

They know it exists, they may even have a rough idea of what it is for, but they don't think it's got much to do with them.

They're wrong.

The Navy is a national enterprise in which everyone is involved and which delivers peace and security to everyone in the country.

This enterprise is a two-way street, and must be a two-way street.

He then underscored the challenge of rebuilding the Navy.

The RAN is on the cusp of major reinvestment, and the institutional and organisational changes that will inevitably follow in consequence.

The Defence White Paper issued in February 2016 charts a new course for the Navy as it re-equips itself with new offshore patrol boats, a new class of frigate, a new and expanded submarine force, and continues the acquisition of the new Hobart class Air Warfare Destroyer.

So, the question is: how does the Navy prepare for the shape of things to come?

Frankly, renewal on this scale is daunting.

Its management demands clarity of purpose, effective communication to ensure that everyone knows what the task is and what they are expected to do, and leadership at all levels that encourages, empowers and rewards.

We need to think differently.

In other words, by reviewing our basic operating concepts, reimagining the way that Navy should view itself in the twenty-first century, re-examining our assumptions and, most importantly, re-engineering our modus operandi—especially the way we manage domestic and international relationships—and our professional behaviours, Navy will be better positioned to take advantage of the promise of things to come.

The building of a new class frigates is part of this overall effort to engage the nation in its defense.

In a piece published by the [Royal Australian Navy](#) on June 29, 2018, this linkage was underscored.

Navy's future frigates will be known as 'Hunter Class' with the Chief of Navy confirming the first of the Hunter Class Guided Missile Frigates (FFG) to be commissioned in the late 2020s.

In a signal to all Navy personnel, Vice Admiral Barrett said class name was chosen to reflect the tradition of naming RAN ships that promote Navy's bond with the Nation. In this case, the first three ships of the Hunter class will proudly carry the names of three major Australian regions, all with strong historical maritime and naval ties.

The first batch of three will be named HMA Ships Flinders (II) (SA region named for explorer Captain Matthew Flinders – first circumnavigation of Australia and identified it as a continent); Hunter (NSW region named for Vice-Admiral John Hunter – first fleet Captain and 2nd Governor of NSW); and Tasman (state and sea named for explorer Abel Tasman – first known European explorer to reach Tasmania, New Zealand and Fiji).

The class name was specifically chosen for the alternate interpretation of a 'hunter' personifying the role of the frigates as a submarine hunter, with the term embodying the pursuit of prey.

"The replacement of our eight Anzac Class Frigates with nine frigates optimised for anti-submarine warfare...will significantly enhance the lethality of our surface combatant capabilities," CN said.

"These ships will incorporate world class design factors and integrated systems...that will change the way we conduct anti-submarine warfare operations. Our interoperability as a joint force and with our allies will improve."

As a result of the construction and delivery drumbeat, the Anzac Class frigates currently in operation will be in service through to the early 2040s. CN said the future frigate announcement is a game changer for Navy, the ADF and defence industry. "Beyond the frigate design, this decision demonstrates that Navy is an intrinsic national capability that connects the private and public sectors to deliver a fundamental national objective – security above, on and under the sea."

And in a piece also published by the Royal Australian Navy on June 30, 2018, the impact of the new ship on the Navy itself was underscored.

Navy people were taking in the news on Friday that UK firm BAE Systems had been selected as the preferred tenderer for the largest peacetime naval shipping construction project in Australia's history.

BAE's Global Combat Ship – Australia has been assessed as the capability best suited for our nation, providing the Australian Defence Force with the highest levels of lethality and deterrence our major surface combatants need in periods of global uncertainty.

Lieutenant Commander Luke Bogan watched the big announcement from his workplace, at the Osborne Naval Shipyard in South Australia. Luke has himself recently been assigned as Marine Engineering Officer (MEO) to another high tech capability – the Air Warfare Destroyer NUSHIP Brisbane, which has recently completed sea trials.

He said news of who will build the new frigates had been met with great interest among his shipmates.

"It's obviously very early days, but this will be a game changer for Navy.

"As we watched the announcement, I think we all understood that we were witnessing something pretty historic."

The Future Frigates will be more capable than the Anzac Class frigates they will replace. Their primary mission is anti-submarine warfare, and they will have sufficient range and endurance to operate effectively throughout maritime South East Asia and will be able to be deployed globally.

"The capabilities the Hunter Class will have are very impressive," Lieutenant Commander Bogan said.

"There are junior sailors and officers reading this now who might well be serving in HMAS Flinders when it rolls off the production line.

Building a New Australian Frigate: The Next Step in Building a New National Shipbuilding Enterprise

Australia's just selected a new build BAE Systems frigate to provide a new capability for the Royal Australian Navy.

The projected cost is \$35 billion to build nine high-tech, anti-submarine frigates.

According to [ABC Australia](#):

The contract is a key building block in the Federal Government's defence industry plan, which Malcolm Turnbull says will form a "truly sovereign national Australian shipbuilding industry" ensuring the country's security and prosperity.

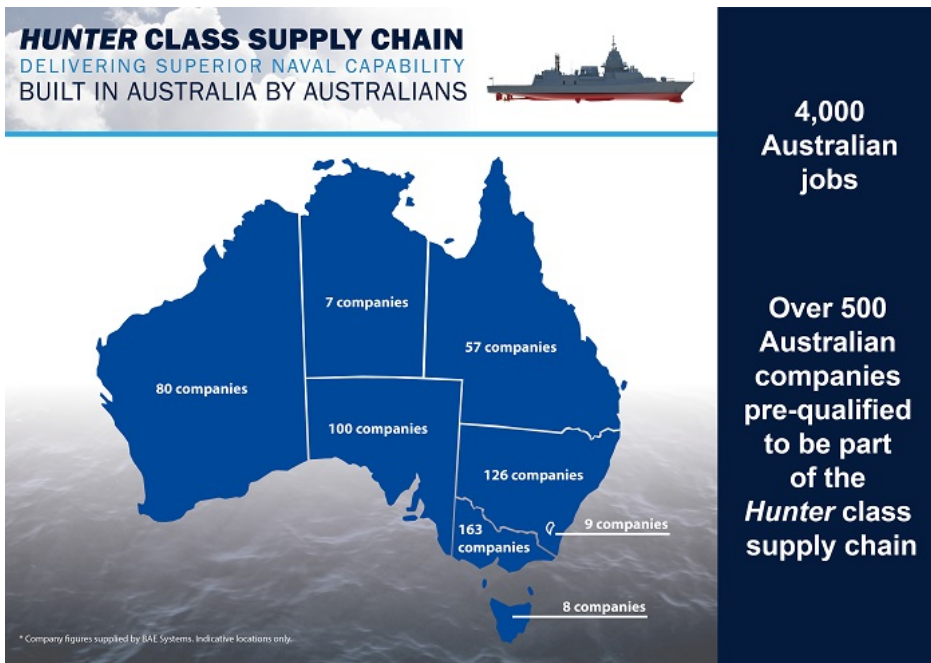
ASC Shipbuilding, which is owned by the Australian Government, will become a subsidiary of BAE during the build.

Its shipyard in the Adelaide suburb of Osborne will be the hub once production starts in 2020.

The Hunter class frigates are expected to enter service in the late 2020s and will eventually replace the current Anzac class frigates, which have been in service since 1996.

However, the UK Royal Navy is also buying the Type 26, the first two of which are currently under construction. That fleet is not expected to be operational until 2027, which has some questioning whether the Australian frigates will be delayed.

At the end of the building program Australia will resume complete ownership of ASC Shipbuilding, meaning intellectual property of the Australian type 26 will be retained by the Commonwealth.



In a story published on June 28, 2018 by George Allison and published in the UK Defence Journal, the role of Australian defense industry in the build out of the frigate was discussed.

Australia has a long history of building ships domestically, usually from foreign designs modified to the RAN's requirements.

As is the story in many other countries however, the Australian shipbuilding industry's fortunes have waxed and waned with the cycle between major navy projects.

The only export or civilian shipbuilding of any significance in the country being confined to fast ferry specialists Austal of Henderson, Western Australia and Tasmania's InCat.

As in the UK, local political sensitivities are also a factor.

Under project SEA4000 modules for the Hobart class destroyers were built by yards around the country, being consolidated at ASC's yard at Osborne, near Adelaide in South Australia. Under SEA5000 however it is expected all major fabrication and certainly all assembly will be done at Osborne.

The terms of the competition do not compel bidders to work with ASC, but they are obliged to locate the work at Osborne.

The decline of manufacturing in South Australia, recently punctuated by the exit of all major car manufacturers, has put immense pressure on all sides of politics to be conspicuous in their support the state's other remaining major manufacturing industry.

And a BBC news story published on June 29, 2018 highlighted the advantages of the British design.

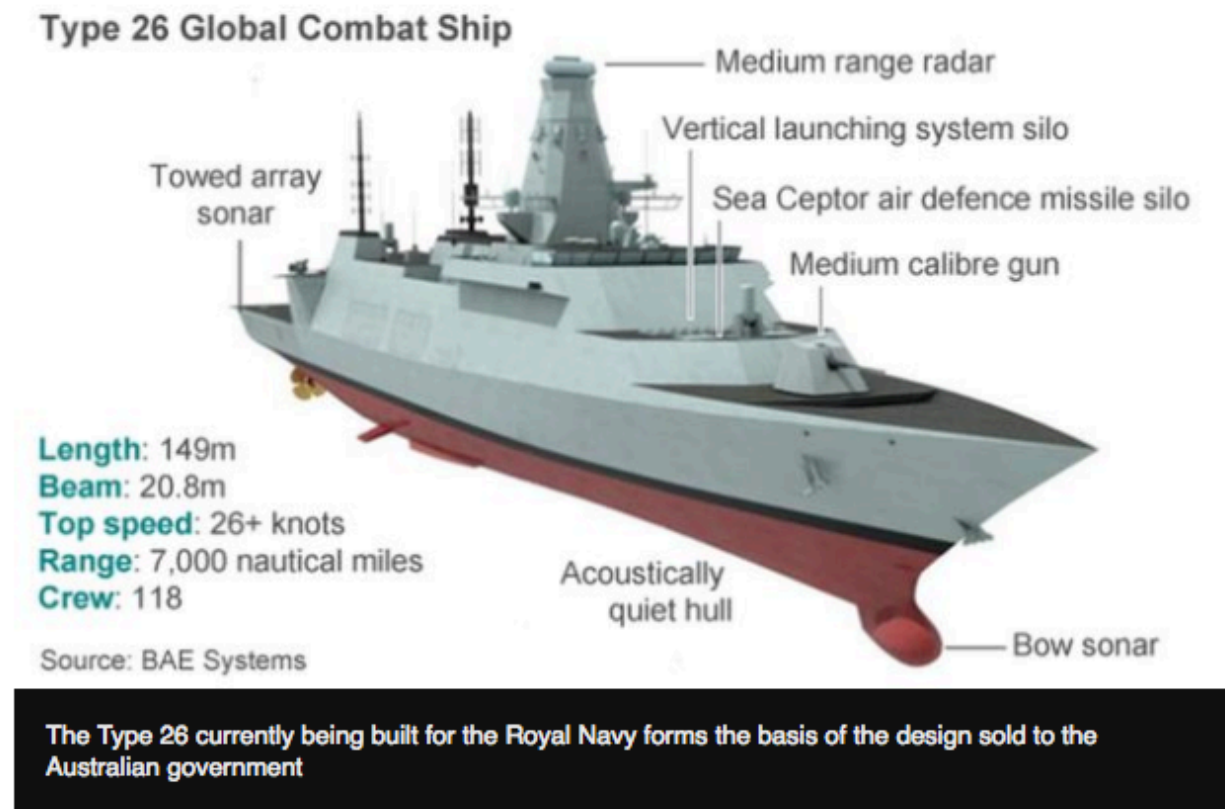
Independent defence analyst Paul Beaver said the appeal of the Type 26 design is that it is modular.

“We are supplying the technology behind the hull, other nations will put their engines, their weapons systems into it. It’s designed in a way that it can cope with that.

“You don’t have to buy a certain type of missile or gun.

You can buy a raft of different ones which will be very attractive.”

He said he believed the agreement would turn out to be part of a wider deal on defence procurement between the UK and Australia.



Vice Admiral Tim Barrett on the Future of the Australian Navy

By Robbin Laird

During my most recent visit to Australia in March 2018, with a clear focus on supporting the Williams Foundation effort to look at strategic transition facing the allied militaries, I had a chance to continue my discussions with Vice Admiral Tim Barrett, Chief of the Royal Australian Navy.

The Vice Admiral was very visible during my week in Canberra as he presented at both the RAAF Airpower 2018 Conference as well as at the Williams Foundation Conference.

Prior to those presentations, I had a chance to meet with him in his office to get his perspective on the way ahead.

The challenge for the Australian Navy is that it is starting a significant recapitalization effort in the wake of the modernization of the RAAF, but Vice Admiral Barrett and his team have clearly focused on Naval recapitalization which leverages and aligns itself with the fifth generation warfighting transition being spearheaded by RAAF modernization.

It was clear from his presentation at the Williams Foundation that the threat of high tempo ops and high intensity conflict could emerge from either deliberate or inadvertent actions in the region.

As he put with regard to the future: 50% of all submarines and advanced aircraft will operate in the region, and the challenge from the illiberal states building up capability or deliberately subverting the global peace is a clear one.

And one for which Australia must be prepared.

In the discussion we had in his office, he highlighted the challenge of being prepared and reshaping the Navy in the context of a modernized Australian Defense Force (ADF).

The broad point is simply gaining public understanding and appreciation for how important the maritime domain is for Australian national interests, indeed for the Australian way of life.

“We sing about Australia being a sea nation. It’s in the fourth line of our national anthem. But most people don’t look beyond the breakers.

“They don’t realize the significance of maritime trade.

“But more importantly they don’t understand the significance of what, not just Navy, but Air Force is doing at the moment in terms of representing the national in keeping the sea lanes open in our region.”

He emphasized in his presentation at the RAAF Airpower Conference and in our discussion the importance of standing up a significant industrial capability in Australia to generate the modernization necessary for the navy.

This was true on several levels for the Vice Admiral.

The first is the need to shape an industrial base that is not building a current ship, but evolving the skill sets to design, support and build the next ship.

It is about continuous shipbuilding; not simply building a ship.

“I like to think that our regeneration is not just around platforms for today, but it is around recognition of where we will need to adapt and evolve over the next 30 to 50 years.

“The ship building model that we’re bringing into place now needs to be a catalyst for our future figures and future submarines.

The second is clearly related to the changes in the strategic environment whereby Australia clearly will need to sustain its force in a time of crisis.

It is about mobilization and support or what one might call sustainment in the context of a contested environment.

The Vice Admiral noted in his comments at the Williams Foundation that high intensity conflict is not about separate services showing up and doing their best; it is a test of the capabilities of conflicting military systems.

The third point flows from that realization, namely that building out of navy clearly needs to be done in broader multi-domain systems approach.

He argued that the decisions being taken with regard to the battle management systems onboard the fleet were being taken from the standpoint of enhancing collaboration across the fleet and across the ADF, more generally.

“We made a significant decision last year concerning our future combat management system and we did not take this with just regard to the new Frigate, but with regard to the current Air Warfare Destroyer and we are focused on our ability to combine the efforts in a distributed sense.

“This will need to encompass our offshore patrol vessels, our supply vessels, but also our LHDs, in terms of how we will provide a domain awareness across the battle space.

“We centered on Aegis with the view that that will be part of an engaged battle space awareness with Air Force. You spoke earlier about the U.S. Navy and the approach of JSF and where they will go with Aegis. We have that same view.

“This not just this piece of equipment, it’s a lineage.”

In earlier discussions with Vice Admiral Barrett, he underscored the importance of shaping maritime capabilities, which can operate at the national task force level, rather than simply providing a ship to a larger ally’s task force.

He argued in our discussion this time that Australia is focused on shaping a “meaningful contribution” of its allies in the region.

He used the example of the way ahead with theater ASW.

“Our 12 new submarines will provide better deterrent capabilities for us but it should be seen as building a meaningful contribution for the US and our allies in the region.

“And by participating in a broader information-sharing framework, we can deploy our submarines to have an appropriate effect.

“In other words, we are focused on making meaningful, not a trophy, contribution to an alliance effort.”

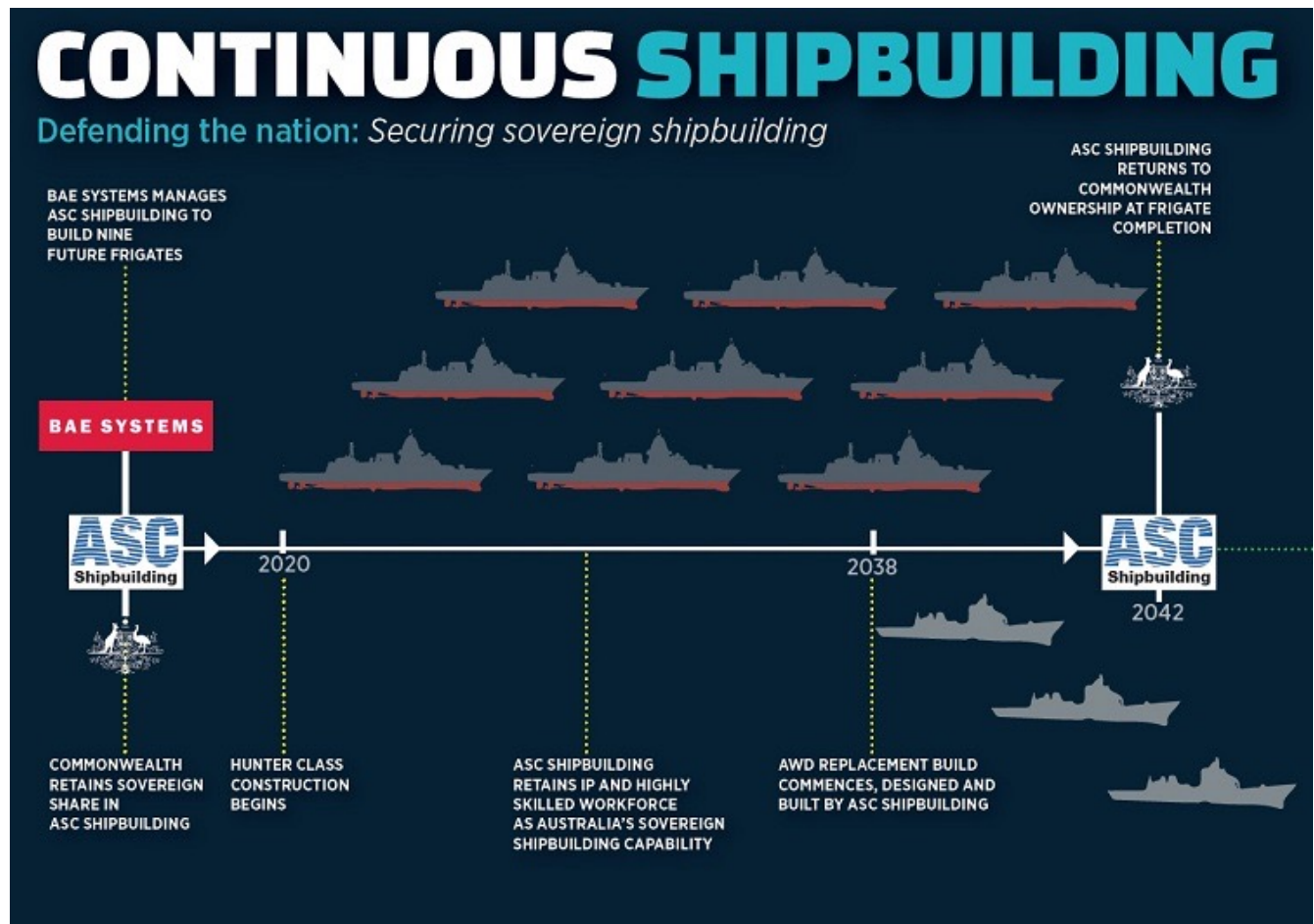
BAE Type 26 selected for SEA 5000

By Andrew McLaughlin

Prime Minister Malcolm Turnbull has announced that the BAE Systems Type 26 Global Combat Ship – Australia design has been selected as the preferred solution for the Royal Australian Navy's Project SEA5000 Future Frigate requirement.

The announcement was made with Defence Minister Marise Payne, Minister for Defence Industry Christopher Pyne, Finance Minister Mathias Cormann, Chief of Defence Force ACM Mark Binskin, Chief of Navy VADM Tim Barrett, Deputy Secretary of CASG Kim Gillis, and BAE Systems Australia CEO Gabby Costigan.

To be called the 'Hunter' class in service, the nine vessels will be built by ASC Shipbuilding at the Osbourne Naval Yard in Adelaide starting in 2020. The first vessel will enter service in 2027 to start replacing the eight-ship 'Anzac' class, with the final vessel due to be delivered to the RAN in 2042.



During the Hunter class build, the Commonwealth-owned ASC Shipbuilding will become a subsidiary of BAE Systems, making the company fully responsible and accountable for the vessels' delivery.

“At the end of the program the Commonwealth will resume complete ownership of ASC Shipbuilding, thereby ensuring the retention in Australia of intellectual property, a highly skilled workforce and the associated equipment,” a joint Prime Ministerial and ministerial release reads. “By the conclusion of the frigate build, ASC Shipbuilding will be a strategic national asset capable of independently designing, developing and leading the construction of complex, large naval warships.”

Australian content on the vessels is expected to exceed 65 percent. To this end, BAE has pre-qualified more than 500 Australian companies located in every Australian state and territory as part of its proposed supply chain for the build program.

“The Future Frigates... will be built in Australia, by Australians, using Australian steel,” the release says. “This \$35 billion program will create 4,000 Australian jobs right around the country and create unprecedented local and global opportunities for businesses large and small.”

In a separate release, BAE Systems Australia Gabby Costigan said, “Construction of the Global Combat Ship – Australia is expected to make a significant contribution to the nation’s economy, creating thousands of jobs, supporting new industries and boosting the national supply chain for decades to come. We are committed to creating a strong, sustainable and innovative naval shipbuilding industry that will see highly skilled Australians building and sustaining warships for the Royal Australian Navy.

“We are proud to have been selected as preferred tenderer to provide the Royal Australian Navy with a world-class ship, equipped with the latest technologies and designed specifically to meet its needs. The Global Combat Ship – Australia will help protect our shipping lanes and regional trade routes, serve humanitarian missions and provide the nation with a formidable naval capability.”

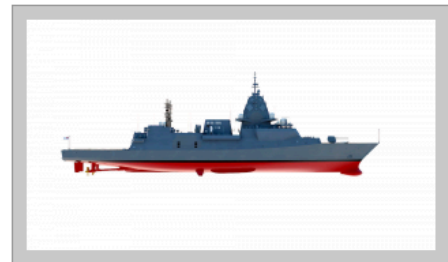
Hunter Class FFG

BAE System's Global Combat Ship – Australia will be one of the most advanced anti-submarine warships in the world. The Hunter class FFGs will be built in Australia by ASC Shipbuilding at the Osborne Naval Shipyard in South Australia.

The Hunter class will provide the Australian Defence Force with the highest levels of lethality and deterrence our major surface combatants need in periods of global uncertainty. They will have the capability to conduct a variety of missions independently, or as part of a task group, with sufficient range and endurance to operate effectively throughout the region. The frigates will also have the flexibility to support non-warfare roles such as humanitarian assistance and disaster relief.

Incorporating the leading edge Australian-developed CEA Phased-Array Radar and the US Navy's Aegis combat management system, with an Australian interface developed by Saab Australia, the Hunter class will be one of the most capable warships in the world.

The Hunter class will begin entering service in the late 2020s replacing the eight Anzac class frigates, which have been in service since 1996.



Type	Frigate, Guided Missile (FFG)
Roles	<ul style="list-style-type: none"> Anti-submarine Warfare Air Defence Surface Warfare Surveillance & Intelligence Interdiction Humanitarian Assistance and Disaster Relief
Builder	BAE Systems/ASC Shipbuilding
Displacement	8,800 tonnes (full load)
Length	149.9 metres
Beam	20.8 metres
Propulsion	Combined Diesel Electric or Gas (CODLOG)
Speed	27+ knots (top speed)
Range	7,000nm (electric motor drive)
Weapons	<ul style="list-style-type: none"> MU90 torpedos Mk45 Mod 4 5" gun SM2 & ESSM missiles Advanced anti-ship missiles Mk41 Vertical Launch System Nulka Decoy System
Aircraft	1 x MH-60R helicopter
Company	180 crew including embarked flight. Accommodation for up to 208.
Fact Sheet	Hunter Class FFG (PDF, 3.4MB)
News Articles	Navy Daily

The Hunter class will specialise in anti-submarine warfare and will be equipped with an S2150 hull mounted sonar and an S2087 towed array. It will also incorporate a four-faced CEA Phased Array Radar that will be integrated with the Lockheed Martin Aegis combat management systems and a Saab 9LV interface.

The Type 26 is 150m long, displaces 8,800 tonnes full load, and has an approximate complement of 180. It can embark an MH-60R Romeo Seahawk helicopter in the hangar and an additional helicopter or an unmanned aerial system in the mission bay forward of the hangar.

The vessel will be armed with MU90 torpedos and a Mk45 Mod4 5in gun, and the Mk41 vertical launch system will be able to employ SM2 and ESSM surface-to-air missiles, new generation anti-ship missiles, and the BAE Nulka active decoy system.

The Type 26 beat out rival bids from Navantia with the F5000, and Fincantieri's FREMM design. The UK Royal Navy is also buying the Type 26, the first two of which are currently under construction. The first RAN vessel is currently scheduled to be the fourth Type 26 built.

A graphic showing the government's continuous shipbuilding plan, with the SEA4000 Hobart class DDG replacement program getting underway from 2038

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