



**CANADIAN GLOBAL AFFAIRS INSTITUTE
INSTITUT CANADIEN DES AFFAIRES MONDIALES**

An In-Service Support Opportunity

by Ian Mack
May 2020

POLICY PERSPECTIVE

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Prepared for the Canadian Global Affairs Institute
1800, 421 – 7th Avenue S.W., Calgary, AB T2P 4K9
www.cgai.ca

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ISBN: 978-1-77397-122-3



In the autumn of 2019, the federal government announced on www.buyandsell.gc.ca the creation of a discussion group to address in-service support for the Canadian Surface Combatants (CSCs). The objective of Canada's procurement is 15 warships and the project is in the early stages of modifying the design of the U.K.'s global combat ship (GCS), with the first Canadian ship delivery anticipated after 2025. It must be assumed that this discussion group formation is the first stage of industry consultation.

The City-class Type 26 frigate design has been in development for over a decade and the first of eight U.K. Type 26 warships is now in production. BAE Systems won the contract for the design and construction work in the U.K. This design has been available for export under the moniker global combat ship, and both Canada and Australia have selected it – the latter intending to build nine Hunter-class frigates.

While neither the Australian nor Canadian designs have been completed, the combat systems will apparently be quite different across the three nations. However, it is unlikely that the major platform design will change dramatically. If this assumption is correct, it could mean that the major equipment of the platforms of some 32 hulls would likely be substantially the same.

And from an in-service support point of view, this clearly creates an opportunity for international co-operation wherever it makes sense.

Conventional Wisdom – International Programs

There are indications that three-nation government-to-government meetings have taken place to exchange views on creating a user group during the acquisition activity. It would make sense to also explore a related arrangement for in-service support.

Clearly, with the potential to support 32 equipment sets across the marine platforms, there are many opportunities for economies of scale which could reduce the costs for all three nations – for common design modifications, for spares through bulk buys, for depot-level maintenance with many more units, for common training of potentially two to four times individual nations' throughput/requirements and the like. Such synergies could be worth hundreds of millions of dollars in savings over the extended lives of these warships.

But international programs are not always easy to establish and implement, for many reasons.

Nations are very different. They place different priorities on defence matters so the simple co-ordination required to achieve timely agreements can be difficult. Governments also change and a falling-out between two nations can lead to reversals. Nations lose some of their autonomy in decision-making when they join such programs, which can be a major deterrent. And governments have approaches to contracting which are very different, so negotiations on behalf



of multiple governments can become bogged down in disagreements as to what approaches nations will support.

In a perfect world, Canadian and Australian officials might have included an option during the design selection competitions so that such international in-service support programs could have been enabled by adopting a number of mandatory attributes. Unfortunately, the variability in schedules driving Canada's and Australia's frigate programs, as well as the built-in challenges of running competitions, conspired against any detailed discussion of "what ifs".

Work share (or industrial benefits) is important – to the domestic industries and thus to governments that always care about high-value jobs of the sort one finds in defence-related work. Without doubt, companies in all three countries are already seeing dollar signs and/or may already have won certain rights during the competitions for selection. Hence, Australia and Canada would be unlikely to sign up if all the work is being done, say, in Europe because the bar to agree to collaborate for other reasons could be so high as to be a non-starter. And there could be a number of other challenging commercial issues related to such things as intellectual property that could affect the shape of work-share agreements.

There are also many tactical issues. The three time zones are not conducive to ongoing dialogue; one should never underestimate the challenges of working across large distances. As simple as international meeting arrangements should be, one of the partners will not be able to make it at the 11th hour more often than one expects – much less the travel budget involved and/or the cost of personnel liaison/exchange programs between the countries. Canada's Treasury Board is frequently much more involved in expensive and long-term international contracts, routinely requiring the tedious achievement of annual approvals. Nations and organizations have different laws/regulations and standards respectively which must be synchronized upfront and as changes occur.

And so it goes. One can conclude that, aside from international information exchange forums, complex business arrangements involving both governments and industries in international programs detrimentally impact a nation's autonomy in decision-making and often offer fewer economic benefits. They are not for the faint of heart.

Conventional Wisdom - The Opportunity

If one were to consider an international three-party in-service support (ISS) program for common platform major equipment/systems which would leverage BAE Systems as the common ISS agent, wouldn't there be potentially significant benefits to Canada? On the face of it, one must assume that the answer is "maybe" and this is worth exploring.

In reviewing this option from a Canadian perspective, it would be appropriate to assess the ISS outcomes against the four sustainment pillars as now mandated for inclusion in the business cases driving Department of National Defence (DND) ISS procurement decisions: performance



(operational readiness), value for money (price at or below the market rate), flexibility (adaptable and scalable to accommodate change in operational tempo and available budgets) and economic benefits (jobs and economic growth for Canadian companies).

As mentioned earlier, international programs often render economic benefits much more elusive. However, in terms of performance, flexibility and value for money, there is no doubt that the potential exists to see maximum return on investment. In the case under review, BAE Systems is reported to be the second largest Western defence contractor and therefore should be able to wield the clout that comes with it when dealing with major equipment system manufacturers (OEMs). And of course, the supplemental impact must also be understood and catered to – BAE Systems can choose to be difficult in any business arrangement without significantly affecting its bottom line.

With respect to contractual response to major equipment and systems performance (which contributes to technical readiness), a client with a large work share is more likely to get attention for initiatives to maintain and improve performance than will smaller clients. This would be important in this case because the three navies operate in significantly different environments around the world with the concomitant variations in some performance requirements. As well as OEMs' failure to address the concerns of three allied navies could result in being blacklisted by BAE Systems when procuring equipment/systems for new ship designs, while timely and effective contractual response could lead to future opportunities. Low performance achievement could also deliver a much more significant blow to an OEM's reputation if more than one navy is impacted detrimentally – witness the Boeing scenario with the 737 Max. This can be important, as select foreign OEMs have essentially ignored Canada before when Canadian Armed Forces (CAF) equipment has suffered performance shortfalls. From a performance perspective, an international ISS program with BAE Systems at the centre could be a plus.

In terms of providing adaptability and scalability, the presence of a number of clients can allow reductions in the demand for various services by one client (e.g., facing a budget downturn) to be picked up by another on an interim basis. Alternatively, the need for a surge in support by one navy (e.g., facing major unforeseen operations) may be easier to address by diverting some degree of effort from other clients. Only in the case where all clients are experiencing a similar variation in demand will such flexibility be jeopardized; but such a challenge can equally accrue whether in an international support program or not. Therefore, on balance, there can be greater flexibility in traditional circumstances for an international program, but there are limits.

Value for money should be a strong argument for an international collaboration, if only because of economies of scale when considering, in this case, a fleet of 32 ship sets instead of eight, nine or 15 – and that is as-fitted, with spares increasing the overall numbers of common units of equipment. As an ISS client agent with much more maintenance, repair work and spares demand for an OEM, there would be greater interest in keeping multiple navies happy with the prices paid and the requirement over time to see support costs reduced. International programs frequently benefit by pooling spare units and ownership by OEMs, such that the number required (and hence the costs) are lower and risks to availability can be somewhat mitigated. Instead of each nation



addressing emerging technical issues separately, sharing the costs should make it cheaper for all. So too are there potential benefits for OEM infrastructure, as top-notch physical plant and software assurance against cyber-attack are much more affordable to all concerned.

Hence, the conventional wisdom is that such an international in-service support program should offer a better return on investment in terms of greater performance at lower costs, as well as the possibility for greater scalability to adapt to variations in demand for services. But as mentioned earlier, this comes typically with the potential for fewer economic benefits for Canada – clearly an important consideration.

Unique Considerations of the Case at Hand

In exploring a possible international program for the U.K., Australia and Canada to leverage their selection of the same basic platform design and designer (BAE Systems), it is useful to accept the conventional wisdom but explore additional factors that should be weighed in a sustainment business case. What follows is a potpourri of additional considerations worthy of study.

It is useful to address what could be included in the term “in-service support”. Based on common equipments and systems, it could include design agent services, maintenance, spares, training and documentation within an integrated data environment, to name the most important few. Nations could also select from among these options for hybrid arrangements.

Near the top of the list for CSC is the fact that it is under the umbrella of the National Shipbuilding Strategy (NSS). The strategy specifically prevents the NSS shipyards from providing a single day of in-service support once they are delivered to the Royal Canadian Navy (RCN) unless such shipyards win those rights through a competitive procurement process. This is unique – a departure from past approaches in Canadian government shipbuilding – and quite frankly considered to be imprudent. In the very early days of a new class of complex ships, the prime contractor (often the build shipyard and/or designer) usually provides as a minimum a number of years of ISS. The shipbuilder typically has the best expert knowledge that exists for the initial years of services, along with the relationships and a degree of leverage with the major equipment/systems’ OEMs. Normally, an in-service support bridging contract is awarded concurrent with the ship construction contract. Often, the prime contractor is then awarded a long-term ISS contract. There is a story as to why ship maintenance support for vessels delivered under NSS departed from the norm (there is always a story), and confirmation should be obtained as soon as possible that the earlier decision is reversible, to allow the business case to include all options.

Related to the former paragraph, Canada has relatively recently awarded a contract to Thales for support services for the Arctic offshore patrol ships and the joint support ships. Although these ships have yet to be turned over to the RCN, one would expect that even at this early stage many lessons have been learned which should be taken into account when conducting the business case, such as whether the knowledge was/is available to support first-day-under-power with the RCN.



BAE Systems is at the heart of the potential international program. From the internet alone, one observes that, among other classes of Royal Navy (RN) ships, BAE Systems manages design, equipment maintenance and ship modifications for the RN's Type 45 destroyers. It therefore would be important to ask the RN how well their approach is working and to explore the details of the existing contract, infrastructure arrangements, innovations introduced and performance to date. This would be a bellwether to the likelihood that the RN would be at least interested in an international support program for their Type 26 frigates in terms of capability and customer-focused cultural flexibility at BAE Systems. And if they have misgivings and/or if Australia is not interested, the international program option may be eliminated from the business case. One would expect that all three nations would support the generation of their own business cases and compare conclusions before making decisions.

Earlier, I offered the assumption that the platform systems are likely to employ the same major equipment systems, but that the combat systems are unlikely to be common. But to overstate the obvious, warships are not like layer cakes – they do not have separate top and bottom halves. The three naval variants being procured are exceptionally integrated and complex super-systems. Therefore, in-service support must address both sets of major equipment/systems – platform and combat systems. BAE Systems is the overall combat systems integrator for the Type 26 frigates destined for the RN and an obvious choice to deliver in-service support. Lockheed Martin Canada is the equivalent for the CSC. And BAE Systems Australia is partnered with Lockheed Martin Australia and Saab Australia to deliver the combat system integration for the Hunter-class frigates. Therefore, an international – almost-whole-of-ship – ISS solution might even offer significant economic benefits to all three nations. This could create challenges based on the proverbial “too many eggs in one basket”, and certain safeguards would be required.

It is worthwhile to note an anomaly in Canada's case regarding the construction of these warships. BAE Systems is responsible for building all of the ships in question in the U.K. and Australia, but Irving Shipbuilding is responsible under NSS to construct the CSCs. One should never underestimate the shipbuilder's knowledge when dealing with a complex seagoing vessel, and a sole platform-related focus on BAE Systems alone would, in the Canadian case, be a deficit in any international program. Irving Shipbuilding's contribution should therefore be considered in the business case for Canada. Should the business case be strong, there is an argument that a directed contract to an Irving-BAE partnership for in-country platform in-service support would make sense and be in the public's interest. As mentioned earlier, although this was prohibited under the original terms of the National Shipbuilding Procurement Strategy, it could be waived in this instance for those warships that will be the backbone of Canada's maritime defence for 30 years. It would provide significant economic benefits as well.

There is clearly the significant potential of operational value to such an arrangement, in addition to strong performance supporting day-to-day readiness. The three nations are on three different continents, and all three navies pursue global deployments. The availability of full ISS in or within the reach of Canada, the U.K. and Australia provides significant benefits to all three navies over their 30-year lives when breakdowns occur far from home port.



The business case should take into account the fact that the U.K. may export the global combat ship design more broadly in the world. If an international consortium delivering in-service support were in place, it could become an important selling feature for potential buyers of the GCS. This undoubtedly could enhance value for money, flexibility and performance for the three plank owner nations. And from a Canadian perspective, as the nation with the largest stake in the game at 15 warships, we should be able to significantly influence the contractual arrangements with current and future parties to the international program.

A typical and expensive part of the life cycle of warships is midlife conversions. Combat systems in particular require modernization to employ new technologies designed to address new threats. These are extremely complex endeavours. Once again, the degree of value for money through life could be even greater, depending on the degree of commonality of the equipment upgrade options selected. And the very fact that Canada would see opportunities worth considering as fully developed options would in itself offer potential cost benefits that would otherwise be unlikely to occur.

As part of the business case analysis, it would be useful to study the commercial marine industry examples of international in-service support. Large ship operators and OEMs are very experienced in working across national and client boundaries to deliver economical services. Any business case should capture the pros and cons more broadly in the commercial business sector as well.

There could be a benefit as part of an international program in terms of the people required. As the proverb goes, many hands make light work. Since the launch of what was then termed the National Shipbuilding Procurement Strategy, Canada's marine HR challenges within government have become more pronounced. An international program could lighten the load while expanding the experience base for involved government and naval personnel in tackling the demands of supporting as complex a platform as the CSC.

It would be important to understand the challenges surrounding the governance in the broadest sense. Though not at all unique, governance would likely need to be structured to address three separate functions – the integrated supplier-client engagement, the clients' government-to-government activity and industry-to-industry supplier co-ordination. While not uncommon when contracting for goods and services for complex systems, the international aspects, length of the arrangement and the ever-increasing volatility in the marketplace are noteworthy. With such complexity and the constantly changing stakeholders involved over 30 years, the mechanisms for a strong and appropriate relationship alignment would be critical to long-term success. When dealing with a high degree of complexity in an international program such as this, the business case needs to assess the likelihood that the collaboration can be created and maintained in terms of the critical enabling relationships.

In the factors highlighted here and as with any business case, the importance of comparing the international program solution with what seems to be the more recent and typical Canadian in-service solution resulting from a competitive procurement cannot be underestimated. Arctic and



Offshore Patrol Ships and Joint Support Ships In-Service Support (AJISS) is the latest Canadian example and must be carefully analyzed even at this early stage to determine the prognosis for achieving the desired outcomes. Again, engagement with allies to assess their experience with single-nation support scenarios would be important in establishing the right comparators to enable coherent business case recommendations.

It would be prudent to consider the long view as part of the business case – including such things as the likelihood that nations would retire their warships at different times or even opt out of the international ISS program long before end-of life. While much can change, an early appreciation and understanding of various scenarios and the related risks would be important.

As a final point, such complicated business case assessments are never easy. After assembling the assumption set and the criteria analysis, and after negotiating “les grandes lignes” of a contractual agreement, it would be important to avoid the common pitfall of allowing one or two pros or cons to dominate the decision-making. Too often, the complexity that defies the “kiss principle” leads to rejection of otherwise optimum solutions. But at the end of the day, one must accept that it will be a judgment call.

Concluding Material

Under the five-year-old Defence Procurement Strategy, Public Services and Procurement Canada (PSPC) is responsible for leading the industry engagement that launches defence procurement processes. More recently, the ISS procurement strategies have been based on the results of the sustainment initiative business case led by DND.

At virtually every opportunity over the past decade, I have emphasized the importance of managing expectations. In every discussion with industry, it behooves those leading the CSC in-service support exploration activity to include the possibility of an international program solution. To eliminate that option without study would be both shortsighted and inexcusable. Also, failing to repeatedly ensure that all stakeholders are aware of the potential for such an outcome would lack transparency and be disingenuous.

When the RCN’s readiness to deliver operational capability is at stake, along with billions of Canadian taxpayers’ dollars for CSC in-service support over 30 years, it matters. And an international in-service support program for the new frigates of Canada, the U.K. and Australia is an important option worth considering.

► About the Author

*After a 38 year career with the Royal Canadian Navy, **Ian Mack** (Rear-Admiral Retired) served for a decade (2007-2017) as the Director-General in the Department of National Defence responsible for the conception, shaping and support of the launch and subsequent implementation of the National Shipbuilding Strategy, and for guiding the DND project managers for the Arctic Offshore Patrol Ships, the Joint Support Ships and the Canadian Surface Combatants. He also had responsibility for four vehicle projects for the Canadian Army until 2015. Since leaving the government, he has offered his shipbuilding and project management perspectives internationally. Ian is a longstanding Fellow of the International Centre for Complex Project Management. He also is allied with Strategic Relationships Solutions Inc. He is married to Alex, and has three grown children. With few accommodations for impaired mobility, he remains active. Upon retirement, he founded a small business, Xi Complexity Consulting Inc. in Ottawa Canada.*

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