The Case for a Defense Industrial Strategy

Executive Summary

The defense industrial base is a national strategic asset that has provided the United States with a marked advantage in defense technology for more than six decades. But that asset — the intellectual capital and production capacity of aerospace and defense manufacturing — is at risk of atrophying to a point where it will not be able to provide the weapons systems this country needs in the future.

In aggregate, there are simply not enough viable modernization programs and platforms — in shipbuilding, manned aircraft, combat vehicles, and more — in or near production to meet the warfighter needs based on our global national security strategy. Furthermore, in an era of flattening and declining defense budgets, industry leaders receive little useful guidance from the Pentagon that would allow them to best target investments in people, facilities, and technology based on our military’s future needs. Continuing along this path portends several risks:

■ A growing number of corporations may shed their defense business because their management will conclude that the growing risk and declining returns associated with defense programs are fundamentally incompatible with their fiduciary responsibilities.

■ The defense workforce will continue to erode as a generation of technicians, engineers, and scientists retires and the dearth of new programs makes it difficult to attract a new generation of engineering and scientific talent.

■ Thousands of high-skilled, middle-class jobs will be lost to an industry that is one of the few manufacturing sectors left where the U.S. is globally competitive.

Consequently, if a shift in the global security dynamic requires the production of new weapons, industry would have a difficult time reconstituting much of its skilled work force and production capacity, with a potentially steep cost in time and resources.
The health and viability of the U.S. aerospace and defense sector should not be considered the exclusive concern of certain private corporations, their employees, or shareholders. This sector is, in fact, a public concern and a strategic national asset. Yet the U.S., alone among major nations, does not have a national strategy and plan for sustaining its defense industrial base.

During the Cold War, the lack of such a real industrial strategy was overcome by the sheer scale of U.S. defense spending and the number of programs and companies sustained by that level of investment. Looking ahead, it is widely assumed that defense budgets will be targeted by the Congress and administration for significant cuts. Under these circumstances, modernization programs have traditionally represented a simpler and more politically expedient source of savings than tackling personnel, operations, and overhead.

Taking this approach again would be dangerously shortsighted given the circumstances industry and the military face today. The Reagan buildup of the 1980s — primarily a procurement buildup that introduced large numbers of new weapons and technology into the force — was followed, with good reason at the time, by a “procurement holiday” during the 1990s. Over the past decade, substantial increases in budgets for procurement, research, development, testing and evaluation have nonetheless led to a relatively modest number of new programs and platforms. A number of those major weapons systems have already been cancelled over the past two years. What remains in the development and procurement pipeline are programs that will allow the U.S. military to continue to deploy, move, and strike quickly over great distances in defense of our core security interests — capabilities most needed in light of prevailing threat and risk assessments.

The defense industry has gotten the message about costs and has already begun streamlining business processes and reducing head counts and layers of management. But industry needs a real partner in this complex process. The United States urgently needs a well-planned and considered strategy — with supporting structural, personnel, and procedural changes — that ensures the viability of the defense industrial base. Elements of that strategy should include:

- Elevating the seniority, size and role of the OSD office responsible for sustaining the industrial base.
- Making industrial base considerations — including work force retention, production capacity, and exportability — a major component of defense strategy reviews, the requirements process, and contract awards.
- Improving oversight and accountability for program results while scaling back costly and counterproductive compliance mechanisms.
- Maintaining a regular, strategic dialogue between top DoD and industry leadership.
- Protecting the share of the defense budget allocated to modernization and sustaining these levels of investment for the next decade.

A formal industrial base strategy — accompanied by a new spirit of partnership, trust and engagement between the military and the people who produce its weapons and equipment — would accrue significant benefits not just to industry, but to the Armed Forces and American taxpayers as well. These benefits include:
The Case for a Defense Industrial Strategy

- More industry resources going towards developing, improving, and where necessary, fixing programs — as opposed to bureaucratic processes and paperwork.

- More programs providing the core capabilities needed by the military — on time, in sufficient quantity, and at an affordable cost.

- Fewer programs requiring curtailment or cancellation because of cost-growth, technological obstacles, and unreasonable and unrealistic requirements.

Over the past two decades there has been a raft of studies and calls by experts for such a strategy. There is no shortage of analysis and data available to inform the tough decisions needed to protect this country and sustain its defense industry for the future. All it takes now is bold leadership and willingness to work together as partners.
WHY A DEFENSE INDUSTRIAL STRATEGY?

The current industrial base is too small to sustain itself as a competitive market

Today’s defense and aerospace industry is a far cry from the “military-industrial complex” of the Eisenhower Era, when it represented the largest single segment of the American economy and fluctuations in the DoD procurement budget had clear macro-economic implications.

In the twenty years since the end of the Cold War, nearly 150 significant defense companies have consolidated to six. From the mid-1980s to 2007, a number of big companies left the defense market altogether, while nearly none entered it. The post-Cold War consolidation has created a situation where the top firms — Lockheed Martin, Boeing, Northrop Grumman, BAE Systems, Raytheon, and General Dynamics — have grown individually via mergers and entry into other markets, but collectively the industry has shrunk significantly.

Today, the combined revenues of the top aerospace/defense firms at most add up to about half of Wal-Mart’s annual sales. It is also important to remember that as Under Secretary of Defense Ashton Carter pointed out in a speech last year, perhaps two-thirds to three-quarters of every dollar awarded by DoD at the prime level is spent for subcontracted goods and services at the so-called “lower tier” of the industry — smaller companies with typically less capacity to absorb drastic shifts in funding and priorities.

In reality, over the past 20 years, the defense and aerospace sector has grown ever more remote from being a “free market” in any classical sense. It has devolved into a niche industry servicing a highly narrow and technical market:

- A market of one buyer, that is also the regulator and a handful of major sellers that in many cases are required to collaborate with one another;

- A market with many barriers to entry and little in the way of usable and timely, much less “perfect” information;

- A market where a product considered an urgent “must have” requirement for one administration, one service chief, or one year’s budget request, can rapidly become an excessive and exquisite “nice to have” for another.

The defense sector is similar to a typical market in one important sense: firms seeking higher profits and more stable conditions can go elsewhere. Many already have, and more may yet follow.

Other nations, including our closest allies, comprehend these realities and thus they have adopted systematic, comprehensive policies to sustain what they consider to be strategic national assets.
The industry risks losing its most valuable human capital

For generations, some of the most brilliant and ambitious technicians, engineers, and scientists sought out work in the aerospace and defense industry — inspired by the opportunity to work on the most cutting-edge, innovative technology projects. Today, in an economic marketplace infused with technology, the defense industry has to compete with many more sectors for top talent. The combination of fewer programs, shrinking funding, and growing uncertainty about the future call into question our ability to attract and retain a workforce of this caliber in the future.

A cohort of scientist, technicians, and engineers with unique expertise in military systems is leaving the workforce — up to 50 percent in some companies — and is not being replaced with talent in the numbers or quality needed to allow the U.S. to maintain our critical technology edge. In its 2010 Industrial Base Report, DoD noted an immediate risk from the atrophy of key design and development capability unique to military needs. Such critical areas include low-observable technology, sophisticated radars, electronic warfare, precision weapons, and complex systems integration — expertise not found in the commercial market, existing largely within the large defense firms.

The U.S. Government has recognized in other areas — most notably, the nuclear weapons infrastructure — that rare and perishable skill sets within a particular work force are strategic assets that should be preserved as a matter of strategy. But the Defense Department has yet to systematically address the urgency of retaining the human capital of its industrial base.

We need sustainable programs with stable funding and requirements

The shrinking and consolidation of the U.S. defense industrial base has coincided with a conscious shift in procurement approaches by the military over the past two decades, a shift towards a smaller number of “mega-programs” expected to last decades and produce a single new system that combines the functions of several legacy platforms. Competitions for the dwindling number of major programs spaced decades apart have taken on a life-or-death quality, as the absence of any certainty over future work means that a losing bid could force a defense firm out of that business altogether.

Correspondingly, in recent decades the military has sought to replace quantity with capability, intending to produce leap-ahead technology advantage while saving money in supply chains, maintenance, and personnel costs. Over time this approach will bear results. But in the interim, the high-degree of technological complexity needed to produce a single tactical aircraft, ship, or ground combat vehicle that can be “all things to all people” has led to inevitable schedule slips and cost overruns. Industry, to be sure, shares some of the blame, as manufacturers sometimes have been too optimistic with initial estimates and then too accommodating in response to the evolving requirements of the military services.

For the U.S. industrial base, these procurement trends mean that a handful of major programs — in particular the F-35 fighter, the KC-45 aerial refueling tanker, the DDG 51 (Arleigh Burke) destroyer, the Littoral Combat Ship, and the Virginia-class submarines — should keep the largest firms and their sub-contractors employed for the next decade or so. But after a series of major program
cancellations over the last two years — the combat search and rescue helicopter, the Navy’s next
generation destroyer and cruiser, the Air Force’s follow-on bomber, the Army’s Future Combat
Systems, the Marine Corps’ Expeditionary Fighting Vehicle — what remains will not sustain the
industry collectively at its current size and form.

Consider the predicament facing manned combat aircraft. There were seven manned aircraft
programs in the 1980s and three in the 1990s. Today, for the first time in nearly a century, there
are no new programs in the development pipeline. The follow-on bomber program of record was
cancelled in 2009, then reintroduced as a research/development project in 2011. But as late as this
summer the outgoing Vice Chairman of the Joint Chiefs of Staff was questioning publicly the need
for a new bomber. The Marines’ F-35 Short Take-Off Vertical Landing (STOVL) variant was put
on “probation” by Secretary Gates. While the Marine Corps leadership asserts that the program is
back on track and critical to their future as a maritime expeditionary force, the STOVL is frequently
cited as a likely target of future defense cuts, along with the size of the V-22 Osprey fleet.

Challenges for industry also extend to space, land and sea platforms. For example:

■ In 2000, DoD decided to allow a sole source for the F-35’s ejection seat to a foreign
manufacturer, essentially dooming the U.S. industrial base for this critical item. A Commerce
Department report later concluded that the U.S. risks losing its domestic capacity for
manufacturing fighter ejection seats, thus making the U.S. military reliant for the foreseeable
future on foreign sources.

■ DoD’s funding plan to modify the Bradley Fighting Vehicle goes from more than $250 million
in FY12 to less than $25 million FY13, then back up again to more than $533 million and $850
million in the next two fiscal years. This kind of trajectory — plummeting to a near shutdown
of production and then rising nearly 20-fold the following year — is extremely harmful to
the industrial base. It will be difficult for some suppliers to come back to the work in FY14
after going away in FY13, creating a huge challenge for both BAE Systems, which does the
modification work, and the soldiers counting on using a fully modernized Bradley in the future.

■ After initially pitching and positioning the Littoral Combat Ship as a no-frills adaptation of
a commercial vessel, the Navy subsequently instructed manufacturers that the LCS must
meet the Naval Vessel Rules specifications. This requirement significantly changed LCS from
a commercial ship with war-fighting capabilities to a warship with commercial origins. Cost
increases and delays followed, along with inevitable criticism and calls to scale back the program.

■ The Army has recently awarded contracts to design its new Ground Combat Vehicle while at the
same time OSD has instructed the Army to seek alternatives to purchasing a new system —
this after investing several years and billions of dollars in the cancelled FCS program.

■ The current poor condition of the U.S. liquid rocket engine propulsion industry is the result of
significant consolidation of production programs, the general lack of new opportunities for engine
development and a variety of starts and stops on liquid engine programs. AIA is encouraged
that authorization bills for both NASA and the Defense Department budgets have required a
comprehensive study of the U.S. liquid propulsion industry and a plan to sustain U.S. industrial
capability. But such a plan is only beneficial to industry if it addresses current conditions, develops
the requirements for future U.S. propulsion needs and is committed to the long term. It is critical that the sustainment plan exercise both the production and design capabilities of the industrial base. We must restore and sustain the supplier base, leverage the common requirements of the Air Force and NASA and, where possible, the commercial launch customers.

Solid fuel rocket motors (SRMs) are critical for any U.S. space capability and for national security. They are utilized for launch of large defense and scientific satellites, as well as for small satellites and missile defense. According to the 2009 Defense Department Solid Rocket Motor Industrial Capabilities Report, “Inadequate investments are being made in large and small SRM research and development (R&D), reducing the reliability and cost-effectiveness of the SRM industrial base.” The report goes on to say that, “If there are no new development programs, the SRM industry will continue to lose its ability to design and produce new-generation SRMs.” AIA believes a plan to sustain a healthy and competitive SRM industry base is critical to national security. In addition, commercially-produced small launch systems are needed to ensure continued investment in the propulsion and SRM industrial base.

Defense and aerospace firms, as a matter of fiduciary duty, cannot continue to invest huge sums in skilled workers, technology, and facilities for programs that are being dramatically scaled back, delayed to fit budget limits, or may never come to fruition. Unless there is a dramatic improvement in the way DoD plans, funds, and manages military procurement, more firms could follow the path of Northrop, which divested its shipbuilding business earlier this year.

To some extent, all of the procurement trends described here were present to varying degrees for much of the past two decades. As a shrinking DoD budget top line inevitably cut into modernization accounts, what has been a difficult but manageable challenge in the past — fewer companies competing for fewer programs with fewer active production lines — will rise to the level of crisis.

Industry must have a more constructive relationship with DoD

Ever since the McNamara-era introduced a centralized, top-down acquisition apparatus, industry has accepted the fact that doing business with DoD entails substantive amount of paperwork, process, supervision, and regulation from government employees and military personnel. However, for most of the Cold War, these were seen as the cost of doing business, made up for by the quantity and quality of defense work available.

The number and variety of programs has since declined sharply, while the amount of regulation and day-to-day supervision has increased, often as a result of new laws from Congress or DoD-driven cost initiatives. While intended to save the taxpayers’ money, the effect is to add extra layers of delay on top of a procurement process in which a major driver of cost-growth is time. Concurrently, industry’s interlocutors in government have become more aloof, more litigious, and sometimes more punitive — with a chilling effect on initiative and openness on both sides of the contract relationship.

Ben Rich, the former president of Lockheed’s Skunk Works division, reflected on how much had changed in the DoD-industry relationship since his division, with minimal supervision from its corporate or military overseers, developed the U-2, SR-71, and F-117 stealth fighter. He wrote:
"Oversight is vitally important, but we are being managed to death and constantly putting more funds and resources into the big end of the funnel to get an ever smaller trickle of useful output from the small end." Rich wrote those words in 1994, and since then, the compliance processes and paperwork have only grown more onerous. For the major aerospace firms, this dynamic — more bureaucratic red-tape for less return on investment — is making it more difficult to justify remaining in the defense sector given the opportunities in other markets that offer more profit and less adversarial interaction with government.

Fortunately, the program management troubles described so far are not inevitable. One need not resurrect an MRAP-style special task force or invoke the “arsenal of democracy” days of World War II for examples of constructive partnerships between the military and industry produced the right capability in sufficient quantity when it was needed:

- The lightweight fighter program of the early 1970s, initially inspired by reform-minded Air Force officers and OSD experts, went from initial RFP to operational service within eight years. Since then, more than 4,000 F-16s have been produced and are being used by some 25 countries around the world.

- The price of Virginia-class attack submarines was brought down substantially (to less than $2 billion each) as a result of DoD’s agreement to purchase two per year and to pay for Electric Boat’s cost-reduction initiative, which allowed Electric Boat to squeeze out excess costs.

- The Battlefield Airborne Communications Node (BACN), which links disparate data and voice networks for theater forces, became operational just three years after the contract was issued, and recently completed its 2,000th mission in support of troops in Afghanistan.

- Other examples include the rapid development and deployment of the Reaper UAV, the Navy’s multi-year F-18 buy, and many others.

What these and other successful programs had in common was some mix of the following characteristics:

- The military provided broad parameters for the capability sought then allowed industry experts the leeway to come up with the most effective solution.

- There was relatively little day-to-day supervision and modest paperwork, reporting and compliance requirements compared to the norm today.

- There was regular communication, collaboration and other forms of constructive interaction between program managers and responsible officials at every level — the kind of relationships often shied away from today because of DoD employees fear of being investigated or accused of favoritism.

There is no reason why these characteristics should not apply to every major procurement program going forward. Under a new partnership with industry, DoD would concentrate monitoring and management around a few critical areas such as safety, security, reliability — “more eyes on
fewer things” to paraphrase the export control reform mantra — and focus on holding industry accountable for the ultimate results of its work.

Secretary Gates made it a point to remind military audiences at every level — from cadets to newly minted three-stars — that congress and the press were “not the enemy.” Neither, we would add, is the defense industry.

Substantial institutional, budgeting and strategy changes are needed at DoD to deal with industry and protect investment for the future

Creating a new partnership rooted in a comprehensive industrial strategy will require major cultural and institutional shifts at DoD going forward, as for nearly a decade there has been little focus on or sense of responsibility for the industrial base within the E-Ring. Last year, former Deputy Defense Secretary John Hamre lamented that the industrial base was treated like “the neglected stepson that gets the least amount of attention” when it comes to resource decisions, despite the fact that industry is, in effect, the “fifth service” of the Defense Department.

It is encouraging that a major OSD review is under way to analyze each sector of the industrial base. In many cases, DoD leaders are saying the right things, yet the operational-level reality does not match the rhetoric. Some in the OSD Acquisitions, Technology and Logistics (AT&L) division understand industry’s challenges, but they have neither the resources nor the bureaucratic clout to influence outcomes at the highest level. Consider that the senior official responsible for industrial base strategy is but one of more than 40 Deputy Assistant Secretary positions in OSD.

The same shortcomings apply to DoD’s intellectual and strategic products. The multitude of strategies and reviews issued by DoD are long on goals and generalities but short on specific plans and guidance that can be used by industry leaders to make investment decisions about the future. Consider, for example, that the 2006 QDR contained four paragraphs about strategic communications, but not a sentence about the defense industrial base. The 2010 QDR contained such a section that said many constructive things, yet did not specifically call for an industrial base strategy and instead stated that DoD would rely primarily on market forces. It was also telling that industry was not consulted during the drafting of the 2010 industrial base language — an effort akin to writing a section on sea-power without involving the U.S. Navy.

This disconnect is exacerbated by the absence of formal, regular channels of communications between the most senior levels of industry and DoD. Between 2001 and 2008 defense secretaries broke with past practice by declining to meet with the AIA Executive Committee (EXCOM), a group comprised of the major defense company CEOs. Industry is encouraged that the annual EXCOM meetings with the defense secretary have resumed in the Obama Administration, but continues to believe that more frequent and substantive strategic-level dialogue is needed.

The key objectives for industry are clarity, communication, and a plan for what comes next. For example, while there are steep defense cuts being made to the British military, long our most capable ally, we would point to the U.K. as a model for engaging industry during a difficult period
of contraction. The UK Ministry of Defense brought the British defense industry into the process, explained the implications of force cuts and program terminations for that industry, and then pledged as a matter of national strategy to sustain as much as the British defense industrial base as possible through foreign exports. UK defense firms are now, despite a much smaller and sharply declining defense budget, on a more solid footing with respect to being able to plan and invest for the future than their U.S. counterparts.

All the issues discussed in this paper have been a source of concern and study ever since the end of the Cold War. One commission, which included a former deputy defense secretary and Air Force secretary, assessed the state of the U.S. aerospace industry. It concluded that:

■ The nation needed a national aerospace strategy.

■ A government-wide framework was required to implement that strategy.

■ The administration and congress should level the international playing field for the export market and remove prohibitive legal and regulatory barriers — such as dated export control restrictions — that impeded the sector's growth.

■ U.S. leadership in aerospace could be achieved only by investments in the future — the industrial base, workforce, long-range research and national infrastructure.

The commission warned: “We stand dangerously close to squandering the advantage bequeathed to us by prior generations of aerospace leaders.” That report was written nearly a decade ago. And even after the post-9/11 spending increases, all of these conclusions, which would apply to the defense industrial sector as a whole beyond aerospace, are as valid today, and addressing them is even more urgent. Further study and analysis are not needed. What is required is a willingness to cooperate, communicate and make tough choices in a collaborative way about the future.

A real industrial base strategy and partnership should include several specific, substantive institutional changes within DoD, such as:

■ Elevating the senior OSD official responsible for industrial base issues to at minimum the assistant secretary level, with deputies assigned to air, land, maritime, and space/cyber systems. This ASD should be made part of the Joint Requirements Oversight Council.

■ Establish an Industrial Base Contact Group consisting of (at minimum) the Deputy Secretary, the Undersecretary for AT&L, Vice Chair of the Joint Chiefs, and Service Vice-Chiefs that would meet quarterly with equivalent level leadership from major defense firms. SecDef-AIA EXCOM meetings should become semi-annual.

■ Establish new acquisition regulations and standards — by statute, if necessary — that embed industrial base considerations in the requirements and contract awards process along with criteria such as capability and cost. Considerations would include impacts on the workforce, program stability via more use of multi-year procurement, and maintenance of key production lines and facilities.
The Case for a Defense Industrial Strategy

- Allow more industry participation in logistical support and sustainment programs, which would entail reconsidering in-sourcing efforts that will drive up costs over the long-term while depleting an important component of the defense industrial base.

- Improve the efficiency of the defense contract and management agencies in ways that reduce costly and counterproductive compliance mechanisms while enhancing accountability for performance and results. For example, reducing the number of audits, establishing a no-later-than date for audits, and focusing audits on materiality — the things that really matter — thus reducing program costs.

- Attract more companies to participate in the defense sector by protecting their intellectual property, rewarding good performance, and achieving a more fair balance of risks and rewards.

- Introduce exportability of U.S. made systems as a major program and strategy objective by enforcement of requirements discipline to keep platforms affordable for other nations and aggressive advocacy for American systems abroad through Foreign Military Sales to keep pace with the support other government provide to their industry.

- Accelerate and implement fully the current export control reforms announced last year.

To be clear, industry is NOT calling for:

- Subsidies for U.S. industry, though many of our main international competitors are supported by their governments.

- Always choosing U.S. firms over foreign firms.

- Guaranteeing U.S. firms a certain profit level or margin.

The urgency of the predicament we face today presents an opportunity to fundamentally reshape the defense and aerospace sector’s relationship with DoD in a way that will produce great benefits for industry, the military, and the American taxpayer.

With respect to broader budgeting priorities and strategy, DoD should set a minimum benchmark for spending on procurement, research, development, testing and evaluation; industry recommends 35 percent of the total defense budget. Otherwise, spiraling overhead, operations, maintenance and personnel costs — if not decisively addressed in the Comprehensive Review and next budget request — will crowd out investments in the future.

These investments are so critical because the emerging security challenges that most threaten America’s ability to project power, defend our allies, and protect our trade routes and energy supplies all call for the kind of technologically advanced capabilities that require sustained and stable levels of modernization funding. Following the major program cancellations of the last two years, there is wide agreement within the military on the necessity of what remains in the pipeline, especially programs to recapitalize America’s ageing fleets of fighters, tankers, satellites, trainers, helicopters, submarines and warships.
When faced with tough choices and declining budgets in the 1990s, DoD’s senior leadership made a conscious, considered decision to de-emphasize acquisitions and elevate other priorities (readiness, personnel, science and technology). It was a reasonable choice in light of the fact that after the procurement build-up of the 1980s, most of the U.S. weapons inventory was new and best-in-class while America’s major global adversary had just disintegrated. Twenty years later, America’s major global competitor is aggressively modernizing its military while key parts of our weapons inventory are reaching the end of their service life, are worn out by a decade of war, and are losing their margin of technological superiority. Given these dramatically different circumstances today, the prudent choice is to elevate procurement as the top defense budget priority. Otherwise, further reductions will cause more erosion of industry’s research, development and production capacity and U.S. troops will be forced to make do with ageing weapons and equipment that, in some cases, may no longer be superior to those fielded by their potential adversaries.

Given the recent showdown over the debt ceiling, industry leaders are contemplating how many more programs might be cancelled, stretched out, or cancelled to fit a budget cap imposed at the end of a chaotic and politically charged process. In the absence of a clear strategy and productive partnership, industry will struggle to maintain its current production capacity, much less develop the capabilities needed for the future.

Consequently, it is imperative that DoD to determine what U.S. military forces with what attributes and capabilities are envisioned in the near- and mid-term. Having made that determination, DoD should then make clear, focused decisions about what kinds of weapons and technologies are central to the long term security of this country, and then do what is necessary to develop these capabilities. Industry hopes the Comprehensive Review launched earlier this year will provide answers to these questions.

Defense and aerospace corporations, like other private companies, must make a profit and meet fiduciary responsibilities to their shareholders and investors. But what inspires the passion and creativity of the American defense industrial base is the pride and sense of accomplishment that comes from producing the best equipment in the world for the best military in the world. We look forward to working with this department’s leadership to ensure that a 21st Century Arsenal of Democracy is there for America’s warriors in these dangerous and uncertain years ahead.