

Why the Defense Industrial Base Matters

Since warfare evolved to an industrial scale in the 19th century, protecting and nurturing the underlying industrial base has preoccupied the nations



By **William Schneider**, former U.S. undersecretary of state for security assistance, science and technology, and currently chairman of the Defense Science Board.

that depend upon military power to safeguard their security. The statute books of the trans-Atlantic community are replete with restrictions that limit foreign access to national defense markets to preserve the government's ability to develop and produce its own military capabilities when needed.

Steps can be taken now to ensure that a healthy defense industrial base will continue to thrive and be able to respond to emergencies as needed, while simultaneously helping the overall econo-

my survive the current downturn.

Government arsenals could no longer provide the defense technology, innovation and support needed to address the vast changes imposed by the scale and intensity of 20th-century warfare, so the focus of the defense industrial base shifted to the private sector, which was more successful in adapting to the changing environment.

The shift of the defense industrial base to the private sector was firmly established during World War II. Indeed, the Defense Science Board was established in 1956 because the Hoover Commission identified a need for the secretary of defense to have access to an independent source of advice when selecting from alternative sources of technology.

Today, the underlying technologies that produce advanced military capabilities are created in a worldwide competitive environment, and often have a host of applications, both military and civil. Defense, instead of being the dominant user of advanced technology, is a minor user, and as a result is unable to control its supply chain as it did in the past.

Moreover, the networking of

military forces has substantially reduced the requirement for large numbers of military platforms due to the tactical and strategic efficiencies arising from networked systems of systems. Hence, the defense industrial sector needs far fewer, but more highly and often uniquely specialized, defense market suppliers.

In the 1990s, the number of major U.S. defense suppliers was reduced from 32 to eight despite a significant increase in defense expenditure since the end of the Cold War. Only 20 percent of this was spent on acquisition because an ever-larger share of the value-added in defense has come from suppliers outside of the defense industrial sector.

Still, the defense sector is among the healthiest components of the U.S. manufacturing sector despite the severe economic and financial downturn. Because the unique skill sets of the defense sector in systems engineering and integration — and its capacity for converting a nearly universal technology base into superior military capabilities — are not otherwise available from the U.S. or allied manufacturing sector, acquisition policies emanating from the statu-

tory monopsony buyer of defense products and services — the Department of Defense — ultimately will determine whether the industry will thrive long term and be able to respond to national needs in a timely manner.

The defense sector can quickly ramp up existing production lines if needed, so it is in a unique position to sustain and create more employment in the manufacturing sector while meeting planned long-term defense modernization and recapitalization.

The long-term demand for mainstream defense equipment is well-established. Long-lived defense assets such as military airlift (C-17, C-130J and V-22), air defense equipment (Patriot Advanced Capability 3, THAAD), naval systems (Littoral Combat Ship, SSN-774 class submarines), land warfare systems (GMLRS), and modern aircraft (F/A-18 and F-35) are on a planned schedule to slowly replace over-aged or obsolete systems over the next two decades, often at a rate that is far below what the industrial base can supply without an increase in its production base.

By accelerating the rate at which the replacement of exist-

ing systems would be undertaken, a nearly immediate impact on manufacturing employment could be achieved. For example, a \$4 billion investment in manufacturing spread over five of the mainstream military systems mentioned here would create or save 30,000 jobs in the defense industry over the next eight years.

The cost effectiveness of such an investment compares very favorably to the tens of billions now being invested in a yet-to-be successful effort to slow the rate of loss of employment in the automobile manufacturing sector.

At the same time, by accelerating the rate of modernization in the defense sector, associated savings can be captured as a result of the replacement of equipment that is less productive and more costly to operate and maintain. These savings include lower unit acquisition and operating costs, reduced maintenance and increased operational availability, lower training costs, etc.

The defense industrial base is a decisive contributor to U.S. foreign policy purposes, but it is no longer your grandfather's defense industrial base — it cannot be created only when needed. ■

Improvised Environment Challenges Acquisition

The recently announced cuts in weapon systems, coupled with the announced Quadrennial Defense Review themes of irregular warfare and improved business processes, leave little doubt the U.S. Defense Department is

threat, an "improvised everything" environment, which is forcing the DoD to rethink modern warfare and take the first steps toward acquisition reform.

This opportunity must be grasped. Today's procurement system, a legacy of the Cold War, lacks the flexibility and responsiveness to optimally meet the challenges of this new environment, directly impacting troops on the ground.

Our adversaries' ability to quickly innovate and rapidly leverage disruptive technologies, including commercial off-the-shelf (COTS) components, has challenged our military forces throughout Iraq and Afghanistan. Whereas our weapon programs can take years or decades before the first roll-out, the enemy's arsenal, such as improvised explosive devices (IEDs), can be rapidly modified.

In an "improvised everything" environment, credible threats can be developed in nearly all traditional military mission areas. Our adversaries summon improvised armies using cell phones, text messages, blogs and networking sites like Twitter. Improvised special forces of suicidal terrorists have attacked in Mumbai, India,

and in Afghanistan, leveraging Google Maps and GPS devices, and exploiting the worldwide reach of television.

Hizbollah and Hamas have developed improvised artillery, firing lethal rockets remotely using cheap digital watches as timers. Improvised navies made of speed boats can threaten to swarm U.S. warships or threaten vital shipping lanes through piracy. And increasingly realistic open-source software games enable improvised training.

It is the ability of our asymmetric adversaries to use these emerging technologies to develop new threats and update old ones that stresses the U.S. defense acquisition system. Their developmental agility is a militarily relevant capability in its own right. It puts a premium on our ability to develop flexible, easily upgradeable systems, to "repurpose" existing ones to meet new threats, and to reform training of acquisition personnel as well as that of the war fighter:

Flexibility: The acquisition system needs to ensure that new system designs are fungible against rapidly changing, improvised threat environments. DoD has

moved in this direction by embracing modular mission packages, but more needs to be done at the systemic level. Indeed, nothing short of a procurement culture change will suffice, one in which the risk of technology-change-induced obsolescence, irrelevance and wasting assets is pondered as rigorously and prominently as conventional technical performance objectives.

Repurposing: Terrorists are exceptionally talented at using COTS systems for unintended uses. We must exceed their skill to win this war. Nowhere is this repurposing more dramatically evident than in information technology. Indeed, software can be changed more rapidly than hardware, arguably at the speed of light.

Embracing today's new "mash-up" philosophy, where 90 percent of the software is already proven and developed and 10 percent of the code is written to specialize it, can bring results reliably and rapidly. Where possible, in both software and hardware, our development programs should look to truly open standards and interoperability. Then systems developed for Cold War threats can be rapidly transformed into vital, inter-

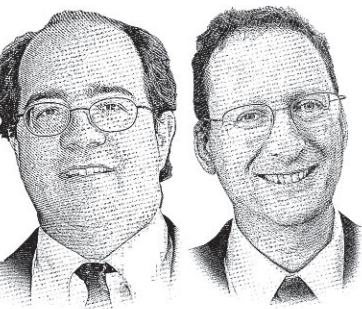
changeable and enduring assets for an uncertain and dangerous 21st century.

Training: Our adversaries can often innovate inside of the development cycles for new DoD weapon systems. Enhanced training, however, can deliver operational capabilities much more rapidly.

Already, troops preparing to deploy are leveraging lessons learned in theater, including insights regarding the changing technologies our forces will face. In addition, one could well imagine extending the concept of embedded journalism to embedded acquisition, to enable these lessons to immediately affect procurement staff as well as deploying troops.

To its credit, the Pentagon has already begun to respond to this new asymmetric environment and to speed new capabilities to the war fighter. But more needs to be done.

As the nation considers significant reforms to the defense acquisition process to increase accountability and align to new fiscal realities, we must not forget to consider how to increase responsiveness as well. The "improvised everything" world demands it. ■



By **David Smith**, a defense and homeland security consultant for Booz Allen Hamilton, a strategy and technology consulting firm, and **Allan Steinhardt**, former scientist and program manager at the Defense Advanced Research Projects Agency and now a principal at Booz Allen Hamilton.

looking to change the way it does business.

At the forefront of these changes is the rise of a technology-enabled 21st century asymmetric warfare