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# Defense Primer: U.S. Defense Industrial Base

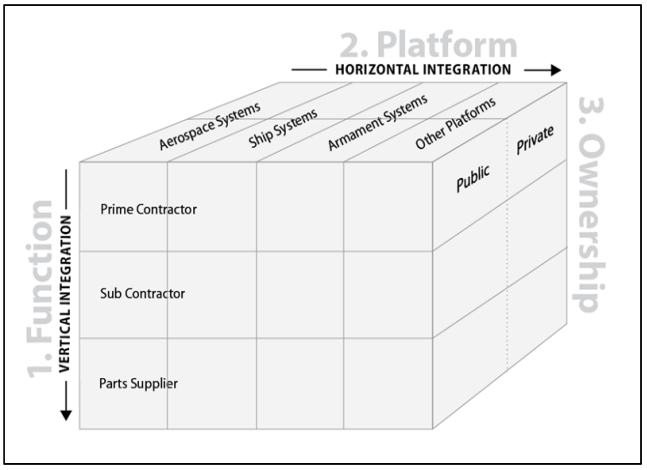
## What is the U.S. Defense Industrial Base?

The working legal definition for the U.S. defense industrial base is found in armed forces law. Title 10 U.S.C. §2500(1) defines the "national technology and industrial base" as "persons and organizations that are engaged in research, development, production, integration, services, or information technology activities conducted within the United States and Canada." This includes commercial firms across different sectors of the U.S. economy. Commercial firms that contract with DOD include manufacturing, service, and advanced technology firms from every U.S. state. In a highly open economy, the defense industry can incorporate both domestically owned firms and foreign owned firms that engage in direct investment, hire U.S. workers, and abide by U.S. laws.

## What is the Structure of the Defense Industry?

The structure of the U.S. defense industrial base can be imagined as a collection of firms placed in a matrix of three dimensions: function, platform, and ownership**.** In the first dimension of function, private enterprises are categorized as *prime contractors*, *subcontractors*, and *parts suppliers*.

**Figure 1. Structure of Defense Firms**




**Source:** CRS Report RL30720, *The U.S. Defense Industrial Base: Trends and Current Issues*, by Daniel H. Else (2000).

### Function of Defense Contractors

*Prime contractors* (also known as primes) deal directly with the DOD and hold responsibility for creating final products. Primes have traditionally produced platforms such as aerospace systems and ships. *Subcontractors* provide some portion of the final product to the prime. These components can range from engines for an aircraft to an electronics suite for a ship to a computer algorithm. *Suppliers* provide more generic parts such as castings, forgings, and semi-conductors to the subcontractors and prime contractors. Because these parts often have both military and civilian uses, these suppliers are referred to as the "dual-use" sector (see 10 U.S.C. §2500(2)).

Products in the dual use sector are listed on the Commerce Control List (CCL) and are regulated by Export Administration Regulations (EAR). The Bureau of Industry and Security (BIS) administers these regulations under the authority established by the Export Administration Act of 1979 (P.L. 96-72). Products with military uses are listed on the U.S. munitions list (USML). The Department of State regulates their transfer through the International Traffic in Arms Regulations (ITAR) under the authority of the Arms Export Control Act (AECA) of 1976 (P.L. 94-329).

### Manufacturing Platforms

*Platform*s are the weapons systems that DOD purchases. These can include aircraft, ships, and armaments. Each type of weapon system constitutes a sector of the defense industry which exhibits unique and specific production characteristics. For example, an aircraft carrier is built over a number of years as a unique unit while uniforms and rifles are mass produced. Defense contractors can operate in more than one sector. General Dynamics, for instance, builds both aircraft and tanks, simultaneously operating in both aircraft and land vehicle defense sectors.

### Ownership and Labor Force

*Ownership* shows production facilities that are either in the private sector or in the public domain. *Public ownership* exists at one end of this spectrum in the form of federally owned and operated arsenals and shipyards. At the other end of the spectrum, there is *private ownership* where production facilities are privately owned and operated. A significant portion of the facilities and production equipment used to manufacture defense material can be government-owned but staffed by private contractors. These are referred to as public-private partnerships (PPPs).

## Consolidation of Primary Contractors

The defense industry is adapting to shrinking appropriations following the end of U.S. combat operations in Iraq and Afghanistan. It also faces strictures imposed by the Budget Control Act (BCA) of 2011 (P.L. 112-25). The enactment of the BCA has forced a more rapid reduction in defense spending than would have otherwise been the case. This has imposed additional stress on the defense industry.

Cyclical changes in defense spending are not new. Historically, defense spending tends to rise during an active military operation and tends to fall as combat operations wind down. However, the defense industry underwent a significant change during the last defense drawdown after the end of the Cold War. In 1993, the DOD announced a

policy of not obstructing defense firms from consolidating through voluntary mergers and acquisitions.

This unique decision resulted in a period of rapid *vertical integration* and *horizontal integration* among U.S. defense firms. *Vertical integration* occurs when a prime contractor buys out a subcontractor or a parts supplier. For example, vertical integration occurred when a defense contractor like Boeing acquired Jeppesen Sandersen (aviation services) to enhance its existing aerospace platforms. *Horizontal integration* occurs when primary contractors in the same production sector merge to reduce the number of companies producing a product. For example, horizontal integration occurred when Boeing bought out its rival firms McDonnell Douglass and Rockwell. *Horizontal integration* also occurs when a firm expands into a new type of product. For instance, this occurred when Boeing bought Hughes Electronics to expand into commercial satellite technology.

Since the 1990s, the U.S. government has generally not prevented the acquisition of small firms that specialize in advanced technologies or information electronics firms with supportive capabilities. Nevertheless, concerns about competition have prevented the merger of core defense firms that possess defense-unique industrial capabilities. For example, in 1998, the DOD and DOJ blocked the $11.6 billion proposed merger of Lockheed Martin and Northrop Grumman on grounds that it would reduce innovation in radar, sonar, and electronic warfare systems.

## The Rise of Defense Services

Although the U.S. defense industrial base has traditionally been thought of as relying heavily on manufacturing defense equipment, it now contains a substantial service sector. Private firms may offer services to the DOD in the form of construction, logistics and base support, maintenance, food service, laundry, sewage and hazardous material disposal, mail services, water and fuel supply, and equipment transportation. Information, intelligence, and cyber technology also count as defense services. In this regard, service contracts often complement the overall manufacturing process by providing advanced systems and complex subcomponents that are integrated into a final product platform (such as an aircraft or a ship).

Trends in DOD contracting dollars reflect a shift toward defense services. From FY1985 to FY2015, DOD spending on service contracts rose from 24% to 44% of DOD's total contracting dollars. By contrast, DOD's spending on manufactured products has risen more slowly, from 44% to 47% of DOD's total contracting dollars. This has led many analysts, such as former Undersecretary of Defense for Acquisition, Technology, and Logistics (AT&L) Jacques Gansler, to expand their profile of the typical defense industrial base worker:

> In the past, [the defense industry] was a heavily blue collar, manufacturing industry. It was technology based, with engineers doing significant design and prototype work, but the overwhelming share of dollars went into the manufacturing and maintenance of equipment... Equipment became more complex and expensive, fewer systems were built and large amounts of contract dollars were shifted into professional services... Today, a highly skilled workforce performs preliminary design work, prototype construction, systems engineering, SOS architecture and implementation, extensive software, and significant professional services.

## How Does Globalization Impact the U.S. Defense Industry?

A major issue confronting the defense industrial base is the world-spanning economic openness brought about by globalization. *Globalization* is generally understood to be an increased integration of economic activities previously thought to be more geographically and nationally separated. Commercially, this means that U.S. firms can produce final products domestically while outsourcing the production of subcomponents and parts supplies. On one hand, this has led to the integration of foreign countries into global supply chains. It has also spread access to advanced commercial technology. On the other hand, foreign primary defense contractors (such as BAE) have been able to enter U.S. defense markets by setting up U.S. subsidiaries and hiring U.S. workers. This global dynamic makes it more difficult to distinguish between domestic and foreign defense firms.

Analysts debate the acceptable level to which commercial and defense industries should be integrated into global supply chains. Should a primary defense contractor be allowed to use foreign subcomponents and parts suppliers, or, should a primary contractor use only domestic sources of subcomponents and parts supplies? Some analysts support efforts to leverage global supply chains and to benefit from the U.S. position in a globalized economy. Critics of this approach emphasize traditional concerns of national security and the risk that comes from embracing interconnected supply chains (especially as they relate to dual use products). One issue linked to the globalization of supply chains is the potential for counterfeit products to make their way into defense products.

### Relevant Statute

Title 10, U.S. Code, Chapters 148 and 149

### CRS Products

CRS Report RL30720, *The U.S. Defense Industrial Base: Trends and Current Issues*, by Daniel H. Else.

### Other Resources

Department of Defense, *Manufacturing and Industrial Base Policy* (MIBP), http://www.acq.osd.mil/mibp/releases.html/.

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