

This piece was published before the May 2007 rebranding of Mercer Management Consulting, Mercer Oliver Wyman, and Mercer Delta Consulting as **Oliver Wyman**.

Oliver Wyman

Oliver Wyman is building the leading global management consultancy, combining deep industry knowledge with specialized expertise in strategy, operations, risk management, organizational transformation, and leadership development. The firm works with clients across a range of industries to deliver sustained shareholder value growth. We help managers to anticipate changes in customer priorities and the competitive environment, and then design their businesses, improve their operations and risk profile, and accelerate their organizational performance to seize the most attractive opportunities.

www.oliverwyman.com



MARSH MERCER KROLL
GUY CARPENTER OLIVER WYMAN

Mission Success in the Field, Struggling at Home

Defense firms need to reinvent their business designs

By Bill Lay, Randy Love, and Peter Walsh

The U.S. defense industry has helped build the most advantaged military in modern history. But the business future is more uncertain than ever. Can defense firms shift their focus from product features to demand innovation?

The U.S. defense industry has an enviable record on the battlefield. Its products helped win the Cold War and, more recently, it helped build the most advantaged military in history.

What made the difference over the past decade is not the development of new weapons platforms. In fact, defense contractors produced only a few new ones, and these did not take center stage in the latest war. Instead, the key development is that almost all of those weapons systems became more networked, wireless, and informed, leading to battlefield moves that are more timely, accurate, and effective.

Down in the businesses, by contrast, the picture is grim. As one senior finance executive at a major defense firm told us recently, “It’s Pompeii over here.” Despite a market structure in which only a couple of major firms compete for each warfare platform (ships, tanks, aircraft, and so on), and despite federal outlays on defense being the highest in 20 years, it’s increasingly tough to grow value for shareholders. Even public electric utilities have operating margins roughly three times the level of the defense industry. Most defense businesses find themselves locked into a single customer with a set of legacy products for which they are now producing incremental innovation at low profit margins, hoping that the political process will keep them whole.

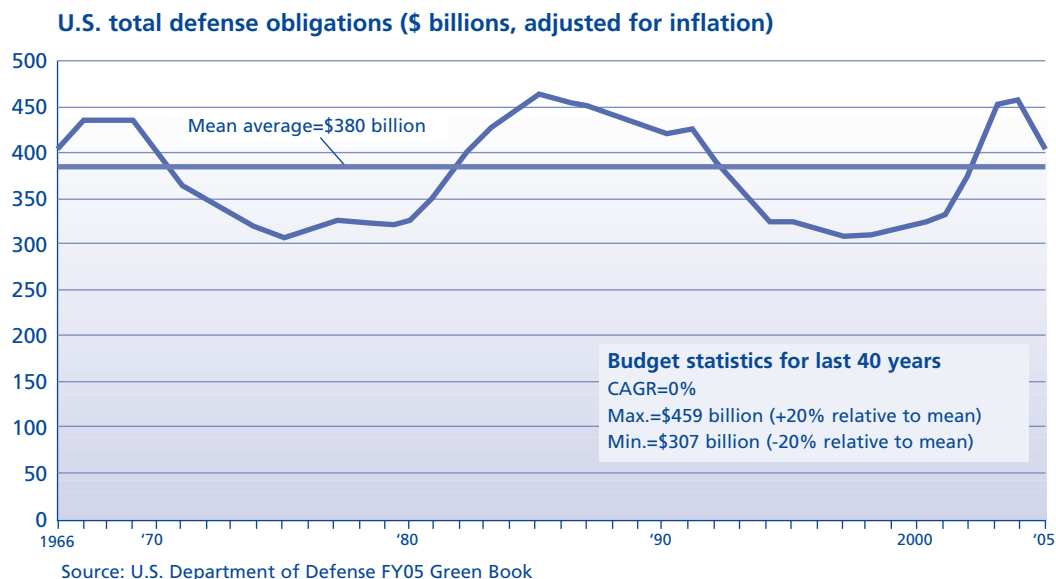
This brewing crisis in a vital industry stems from political and macroeconomic factors, as well as from the shifting priorities of customers—in this case, the armed forces and their overseers. Defense firms may be able to adopt strategies that have succeeded in commercial and industrial sectors, but they’re running out of time.

A long cycle

To understand the predicament of defense firms, it’s useful to briefly describe their environment. Defense is a highly cyclical business with peak-to-peak cycles of roughly 20 years (Exhibit 1). The last cyclical decline, in the early 1990s, occurred because the Cold War had ended, the ballistic nuclear threat had receded, and no new threat had emerged.

Bill Lay and Randy Love are directors, and Peter Walsh is a managing director of Mercer Management Consulting. They can be reached at bill.lay@mercermc.com, randy.love@mercermc.com, and peter.walsh@mercermc.com. Mike Higgins and John Niehaus, both principals of Mercer, contributed to this article.

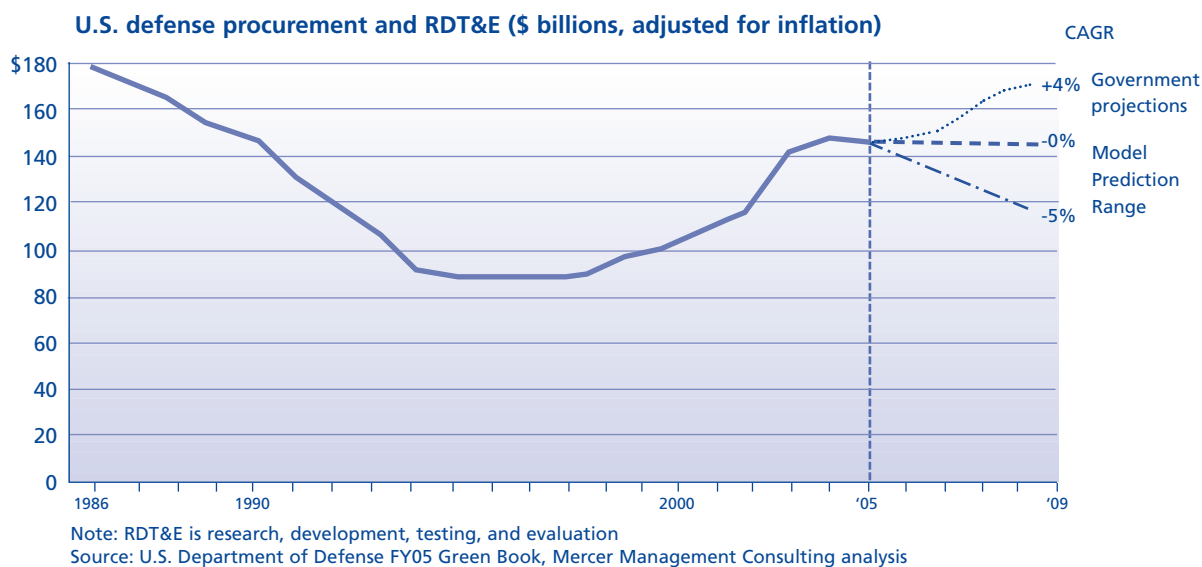
Exhibit 1 Regular waves of spending



Note that the industry is subject to chronic volatility. Although the average annual U.S. defense budget has changed $\pm 8\%$ over the past 60 years, in some years it changed $\pm 20\%$, and volatility is much higher for individual weapons platforms. Some metrics show that defense industry volatility equals that of biotechnology.

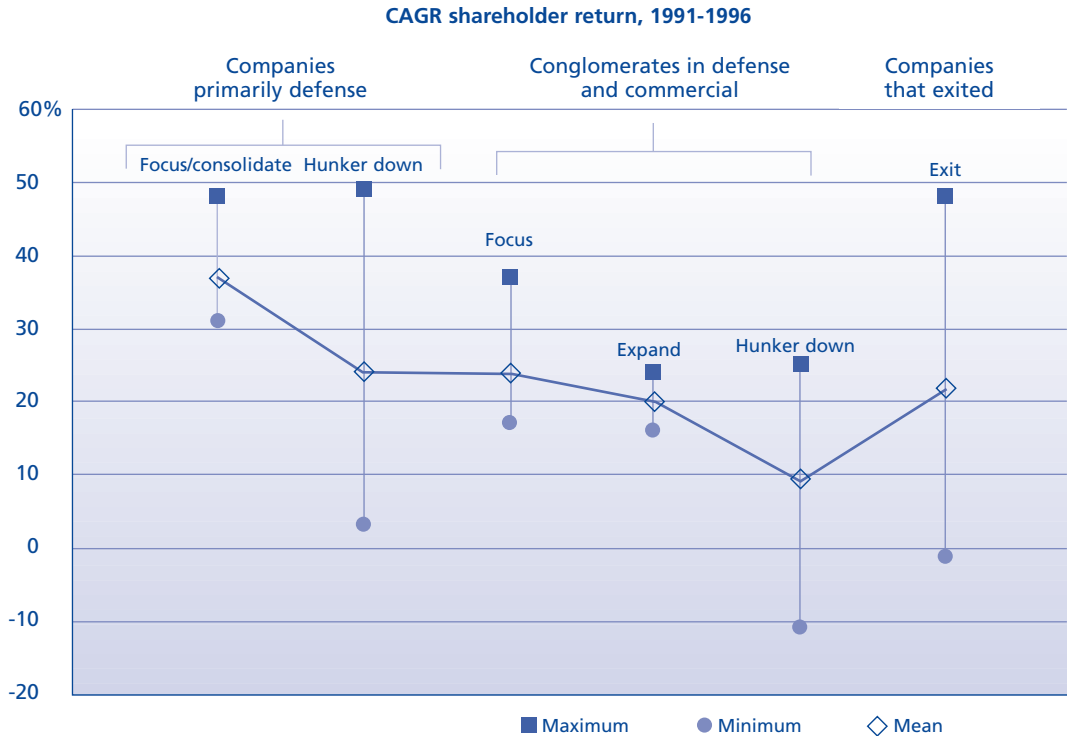
We are now likely entering a decline in defense and procurement budgets. Since the end of the war in Vietnam, the model that best predicts the defense budget expenditures is one that measures the hawkishness of the country, using as a proxy which political party controls the Executive Branch of the U.S. government and what share the party commands of the U.S. Senate and House of Representatives. Using our model, we project either a soft or hard landing depending on the November elections; whatever the outcome, the result will be lower than the government's projection (Exhibit 2). At any rate, the management teams now in place will probably not see the next rising part of the cycle.

Exhibit 2 Moving down



In the last spending downturn, defense firms responded in different ways with varying results (Exhibit 3). Many that hunkered down and concentrated strictly on costs fared poorly in terms of return to shareholders. Those that chose to consolidate and focus on defense earned better returns. General Dynamics, for example, earned a total return of 450% from 1991 through 1993 compared with 50% for the industry, which placed the company at the top of the S&P 500. Mixed commercial/defense firms had inferior performance, and many left the industry during this period. General Electric appeared prescient when it sold GE Aerospace in late 1992; dabbling in defense was not the best way to drive shareholder returns. Those that exited completely had widely varying returns based on the price negotiated and the market position they occupied when it came time to sell.

Exhibit 3 The shareholder’s perspective on U.S. defense companies



Source: Compustat data, Mercer Management Consulting analysis

One lesson from the last downturn, then, is that simply hunkering down with a cost-cutting axe is not a viable strategy. It was necessary but not sufficient. So what can defense firms do to create growth in an increasingly difficult macro-environment?

Consolidation won't be any salvation either, as the easy acquisitions have been made. While acquisitions are at the top of executives' minds in order to gain market share and access to customers, particularly acquisitions of firms skilled in information management, the supply of such firms is diminishing rapidly.

Government regulators, moreover, will resist having a nationalized defense industry by platform, with one missile maker, one tank maker, one surface ship maker, and one aircraft maker. The government sent a strong signal against business consolidation when it stepped in to stop the merger of Northrop Grumman and Lockheed Martin in 1998 and then stopped consolidation at the platform level with General Dynamics and Newport News Shipbuilding in 2001.

Diminishing returns from product features

Most warfare platforms now have two large competitors battling for a winner-take-all position for the next program. Traditionally, companies have built their business designs around product-focused growth with the goal of owning the role of prime contractor or systems integrator. That role allowed firms to design programs in a way that would be advantageous in owning the customer relationship.

But large programs in these basic platforms, which occur in 10- to 20-year cycles, have been in decline in numbers for decades, because of the demise of the Soviet Union and the rise of asymmetric warfare. The number of submarine ship classes in production has declined from three 30 years ago to one today; only three Seawolf submarines have been built, compared to 20 or 25 submarines built per class prior to the 1970s.

More fundamentally, there is a weakness in the product-centric nature of most defense business designs, one that marks commercial and industrial sectors as well. Mature goods no longer create value through added functionality or features. For example, consumers who lease cars on two- to four-year cycles rarely need to buy a replacement set of tires, and they resist paying more for tires that last an additional 25,000 miles. Similarly in defense, increased functionality on the next gun sight or the next radio offers limited benefits to the customer at exceedingly high design and production costs.

By contrast, the gains from interconnecting various parts of a weapon system via a network can be substantial. Network-centric weaponry has shown huge gains in lethal effectiveness, as measured by the time from initial intelligence to destruction—down to 45 minutes for major events. In the first Gulf War, the time from a satellite detecting a SCUD missile launch until an F-15 aircraft could knock it out was measured in hours. Advanced networking is moving toward reducing this delay to a few minutes.

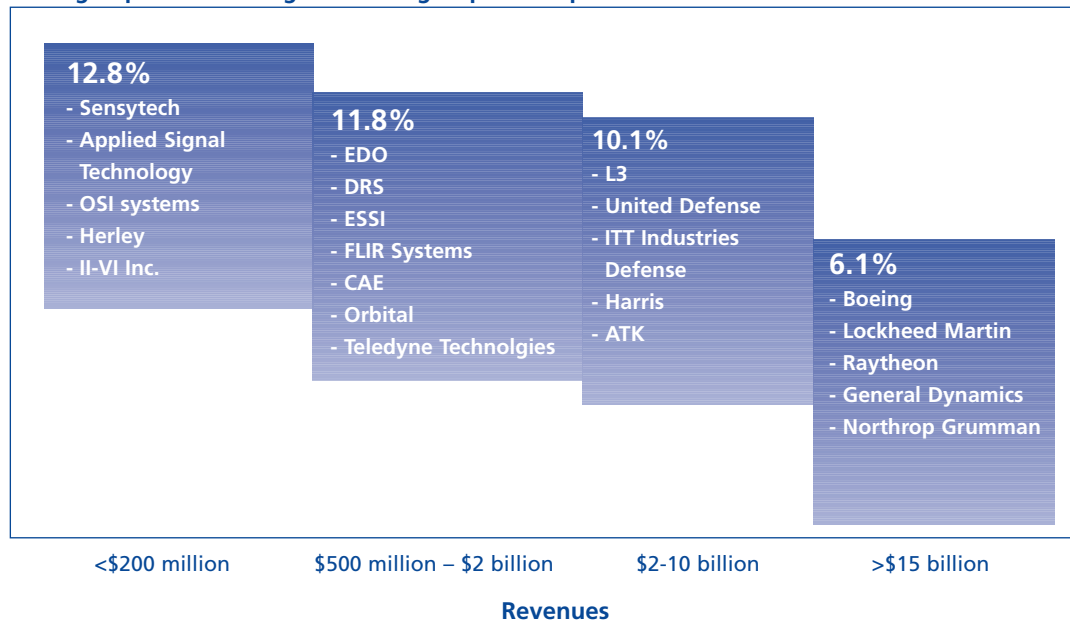
Most of the new networking technologies borrow from commercial computing, software, wireless telephony, and semiconductors—technologies not available in government labs. The government's share of R&D funding has declined from two-thirds in 1970 to one-third today, and it is lower in these key networking technologies. As a result, we are seeing non-traditional competitors grow their defense business in segments that offer the greatest military return on investment. Accenture and IBM are moving into defense software technologies, while Booz Allen Hamilton, which began as a commercial strategy consultancy, has now become the 20th largest defense contractor based on systems design.

Even mid-size defense companies, as long as they have a differentiated capability, can plug into the value chain and rapidly contribute to a weapons program. This trend is powering companies like L-3 Communications, a \$6 billion defense electronics and services company posting revenue growth of 25% a year.

Indeed, smaller defense companies are more profitable than larger ones (Exhibit 4) for several reasons. Prime contracts for broad areas have high total dollars, more cost-plus contracts, and lower levels of risk, but often low profit margins as well. A decade of acquisitions to gain scale distracted large defense firms from focusing on profitability or from managing their portfolio of businesses. Many platforms and technologies also have become more modular with well-defined interfaces. So platforms have been increasingly unbundled, with value

Exhibit 4 Small but tough

Average operations margin of each group of companies



Source: Reuters, 2004

flowing to the component level. Many of the smaller independent firms that have survived have done so by dominating a niche.

Value, then, is migrating away from a product-centric business design. Companies with no innate product connections are becoming prime contractors or assuming lead integrator roles. Boeing assumed the lead integrator role in the Army's Future Combat System for armored vehicles. The firm was chosen not because of expertise in armored platforms, but because of its integration and networking skills.

The convergence of these trends—a cyclical spending decline, unbundled products, nontraditional competitors entering the market, and a new focus on networking capabilities—raises the real possibility of value collapse for defense firms.

Profit in the spaces surrounding the product

To address the changes under way in defense markets, it is useful to look at how some forward-thinking commercial and industrial companies have mastered the art of *demand innovation*. Today most products, even complex ones such as PCs or airplanes, are largely undifferentiated in terms of performance and have exceeded functional requirements for the vast majority of customers. Thus, improved product functionality offers little to excite customers.

Fortunately, in most industries there is abundant next-generation demand, because a wide range of higher-order customer needs are going unmet. These needs involve the broader economic issues *surrounding* the product rather than the strictly functional needs met by the product itself. Business customers want help with things such as improving their operating efficiency or reducing their risk. Consumers want to save time, reduce hassle, or feel more secure.

General Electric, for instance, has pursued demand innovation in several mature industrial businesses, including locomotives and power generation, which are dominated by a few large customers. Locomotives represent just a small part of the value in rail operations (Exhibit 5), so customers will not pay a premium for a new locomotive that offers a few percentage points improvement in fuel economy. The value lies in downstream services such as maintenance, spare parts, and financing, where GE has a powerful position.

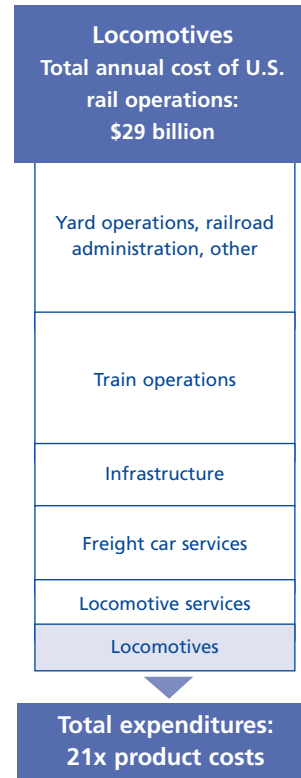
Likewise in power generation, GE sells its initial turbine equipment at close to breakeven, making up for that price by having seven times the downstream sales of its nearest competitor and relatively higher margins in other areas wrapped around the generator. GE is particularly adept at leveraging its internal know-how to support thriving downstream businesses. Take GE's capability of remote diagnostics. The company's engineers can track and tweak a turbine anywhere in the world at any time. This digital system reduces maintenance visits and improves fuel efficiency—and it ties customers more tightly to GE's spare parts and services businesses.

Another way that GE enhances its downstream offerings is by leveraging its unique breadth of skills. The company combines expertise in financing, operations, and maintenance to provide “power by the hour” options for airlines and railroads. For airlines using GE jet engines, the company charges a fee based on hours of engine use, while retaining most of the responsibility for engine maintenance. The major airlines have signed up for this program because it offers them predictable maintenance costs, eliminates their engine parts inventory management, and improves their use of assets. GE, in turn, maintains control of the aftermarket for its engines. When competitors haven't addressed next-generation demand and try to match those that have by lowering prices on the product, the results can be disastrous. For example, Westinghouse Power tried this against GE Power in the 1990s, faced rapidly deteriorating financials, and quickly was sold off.

Many other companies in supposedly mature industries have found new growth through demand innovation:

- Johnson Controls shifted its focus from assembling automobile seats, a commodity product, to providing automakers with integrated interior modules and, more recently, with complete cockpits. Thus, it moved from simply providing a high-quality product to addressing auto manufacturers' needs to reduce the risk and complexity of vehicle design and improve efficiency in vehicle assembly.
- Air Liquide expanded from its core commodity industrial gases to offer a set of new services ranging from gas management contracts to performance guarantees, supply chain management, and environmental consulting. By seizing these new opportunities, Air Liquide has expanded its potential markets, gained a greater share of customers' wallets, and improved customer loyalty.

Exhibit 5 **Where the money is**



Source: Association of American Railroads, Federal Highway Administration Office of Highway Information Management

- John Deere moved into landscaping dealerships and services in order to offer one-stop shopping for its existing contractor customers who had been buying landscape equipment.

Defense markets offer the same opportunities, as at least \$4 are spent on sustaining, modifying, and upgrading weapon systems for every \$1 spent fielding the initial system. One example is Lockheed Martin's Owego systems integration group. Lockheed Martin surprised the defense industry in the late 1990s by moving into downstream services for helicopters that they had never produced or serviced before, as well as postal automation systems for the U.S. Postal Service. Owego opened a larger set of opportunities for Lockheed Martin, while the revenues are relatively high margin and countercyclical to the company's other revenue streams.

Just as a thoughtful and creative focus on solutions has led demand innovation in many industrial companies, the right solutions approach can drive investment choices for aerospace and defense firms. But defense managers cannot afford to wait much longer before embarking on such moves. The experiences of companies such as GE, Johnson Controls, and others suggest that it takes at least a couple of years to open new streams of growth through demand innovation.

Most defense managers have spent years learning to build advanced products and gaining market share. They have spent much less time thinking about how to create new value for customers in the economic spaces surrounding the product. This shift in mindset—at the individual or the organizational level—won't be achieved overnight. But defense firms that make the shift will be well positioned to create meaningful new value for their customers and higher revenue and earnings growth for investors during the coming decade. ❖