Battling against technology firms, tight budgets, and uncertain military needs
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The aerospace and defense (A&D) industry finds itself in an increasingly challenging predicament. In recent years, military spending globally has been under immense pressure, governments around the world haven’t started many significant new weapons programs, and few are on the horizon. Moreover, for the past decade departments and ministries of defense have shifted some of their attention to vendors that aren’t part of the core defense industry, particularly technology firms that leaders believe can deliver products within shorter time frames with more agility than legacy A&D companies. In this way, defense departments are broadening their procurement activities away from pure-play defense contractors.

In the U.S., the Pentagon has highlighted this shift — which has not resulted in new spending on commercial technology — with its recent decision to create an innovation department at Moffett Field in California. That is just a few miles from nondefense companies such as Apple, Google, and Facebook. Much of the activity in this initiative is linked to developing lower-cost digital solutions for core military functions such as communications, intelligence gathering, surveillance, and training. Direct competition from Silicon Valley would be difficult for the defense industry to counter. A&D companies are used to a development landscape in which product improvements occur in a linear fashion, not exponentially and continually. Technology companies prefer the latter.

The combination of unexpected competitive pressures and a more frugal customer base is a one-two punch that the defense industry has never quite faced before. And it has prompted many A&D companies to pull in their horns, conserving their capital and returning cash to shareholders in the form of dividends and buybacks — rather than pursuing aggressive innovation or embarking on improving internal capabilities to better navigate shifting industry conditions. These tactics have led to criticism from industry analysts and the U.S. Department of Defense (DoD) itself, which has said that aerospace and defense companies should be plowing more cash into R&D, not share repurchases.

The U.S. DoD itself has said that A&D companies should be plowing more cash into R&D.
If you are an executive in an incumbent A&D company facing these somewhat atypical challenges, you have a handful of options to consider. One, you can maintain your current role as a builder of defense platforms, and hope that the U.S. and global markets for military spending bounce back. Two, you can build a growth plan around product lines adjacent to your primary markets involving digital technologies, such as cybersecurity. Or three, you can move fully into the so-called information value chain, including the parts that are dominated by Silicon Valley companies.

As things stand, you might want to think twice before pursuing the third strategy. Many A&D companies, in fact, are rejecting direct competition with high-tech behemoths. In part that’s the reason some are spinning off or selling some of their information technology development, integration, and services businesses. At the moment, many defense companies lack the necessary breadth and depth of talent to support the consistent technological advances required in the information value chain. U.S. A&D companies employ fewer than one in every 150 engineers with expertise in autonomous systems, secure communications, artificial intelligence, and machine learning. And defense companies spend far less on R&D (2.2 percent of revenues on average) than do most U.S. technology companies (7.6 percent of revenues on average). Defense companies are not going to out-hire Amazon in cloud services or Google, LinkedIn, or Facebook in data science and analytics.

However, that doesn’t mean that legacy players should ignore the lucrative possibilities that technological advances offer. Electing the second option, A&D companies can focus on enhancing existing products and product categories with additional information technology–based features and simultaneously opening up new channels for equipment sales in weaponry markets related to high tech. In other words, they can be selective about the commercial technologies with which they choose to upgrade their products or that they feature in new equipment, while avoiding head-to-head clashes with the pure-play technology companies. To illustrate a possible approach to this strategy,
Airbus Group SE, Europe’s largest aerospace outfit, hopes to tap into technological advances through a side operation in Silicon Valley to provide venture capital for, in the company’s words, “promising, disruptive, and innovative business opportunities.”

The era of big weapons programs may be a thing of the past for now, but A&D companies maintain a special relationship with global defense departments. After years of doing business with the military, defense contractors have learned well the secrets of navigating the halls of, for example, the Pentagon and have become fluent in the language and expectations of the top brass. That’s a significant advantage enjoyed by A&D firms over less experienced technology enterprises, which may excel at expanding the boundaries of technical capabilities, but which are more inclined to sell off-the-shelf commercial products to the Pentagon than to tolerate the lead times, delays, intellectual property rules, and elbow rubbing that are typical of a long-term defense contract.

A&D contractors can use this advantage over Silicon Valley to take the lead in adding externally developed technologies — even off-the-shelf items — to improve the performance and capacity of military equipment and systems. An obvious example of this is the effort to build an advanced tanker from basic civilian aircraft, but there are numerous other, smaller possibilities as well. For example, the U.S. DoD has made no secret of its enthusiasm for autonomous weapons and systems that rely on human–machine combat learning and cognitive computing. That presents a substantial opportunity for a defense contractor to develop partnerships with companies that specialize in sensors, artificial intelligence, and machine automation, aiming to use these advances in novel ways to build innovative combat devices based on proven designs.

In addition, A&D companies can branch out even further into new military sectors that are driven by information technology but are just new theaters for traditional conflicts, such as cyber-defense. In particular, retrofitting big weapons platforms with offensive and defensive encryption and electronic warfare solutions is a logical technology extension of A&D companies’ existing portfolios.

The first option — waiting for defense departments to provide complete clarity as to their future needs and spending plans — is not completely illogical, but it has a serious downside. Historically, the defense industry has been cyclical, and if it continues to be so, spending should rebound in the near future. But when? That’s not clear. The U.S. military is struggling with a considerable amount of uncertainty, in terms of both the global threats it must address and the technologies it will use to address those threats. If defense companies don’t find a way to innovate
during this period of uncertainty, they may find themselves increasingly sidelined and bypassed now and not prepared to satisfy Pentagon needs when or if budgetary constraints are lifted.

A caveat, though: In general, companies need to significantly alter their organizations, personnel, and business models to survive a period of exponential change. Just think of the acquisitions that the few surviving telecommunications companies had to execute and integrate in order to stay on top after the breakup of the 100-year-old Bell System. Or consider IBM’s reinvention as a service company after the mainframe market collapsed in the 1990s. Operating in a relatively orderly industry — at least, until recently — A&D companies have limited experience with this kind of sweeping internal or cultural change.
To deal with this shortcoming, aerospace and defense companies might need to take their cue from the pharmaceuticals industry. To a great degree, the biggest global drug-making companies have maintained high levels of new product development in simmering disease areas by acquiring smaller firms whose research has targeted these patient populations. In these deals, along with pharmaceuticals aimed at promising markets, drugmakers imported aggressive, collaborative, and creative attitudes that had begun to wane in the larger organization. In similar fashion, A&D companies should consider taking full advantage of partnerships they develop with commercial technology firms by also assimilating critical aspects of their innovation culture, an essential capability for A&D firms facing a period of flux.

Defense companies, particularly those in the U.S., have a few extremely important things going for them. The first is the bedrock support that they have from their core customers, their governments. The second is their history of technology innovation and engineering prowess. The third is the reliability of their cash flows. Although the “change curve” is starting to slope up more quickly, defense is not a market where a one-for-one replacement product is available that can crumble the economic foundation of incumbents overnight. The disruption that lies ahead, gradual as it may be, will leave the market for traditional defense companies intact for the foreseeable future.

But there is a risk for defense companies in becoming complacent, and more importantly, there is an opportunity cost. Looking out a decade, we suspect that A&D firms will be in a leadership position only if they have demonstrated the clear ability to innovate amid uncertainty. Now is the time to find ways to get into a race that’s already begun.
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