Managing affordability to avoid the A&D industry death spiral
Randy Starr is a partner with Strategy& based in Florham Park, N.J. He leads the firm’s global aerospace and defense practice and focuses on enterprise strategy and strategy-based transformations.

Joseph Martin is a partner with Strategy& based in Los Angeles. He heads up the firm’s West Coast aerospace and defense practice and specializes in driving operational improvement.

Kevin Dehoff was formerly a partner with Strategy&.

Thomas Mayor was formerly a senior executive advisor with Strategy&.

This report was originally published by Booz & Company in 2009.

Jim Adams and Steven Beckey also contributed to this report.
The economic crisis and the new U.S. administration will have an adverse impact on spending in the aerospace and defense sector for the foreseeable future. It’s critically important that A&D companies be acutely aware of these events and the implications for their business: They must position themselves to make substantial changes if they are to avoid the “death spiral” of rising costs and decreasing demand. Expensive defense programs that face large cost overruns and schedule delays are at risk. Contractors must develop a demonstrable “affordability” strategy not only to survive but also to find opportunity amid new defense spending priorities. Getting on a path to affordability, however, requires a fundamental rethinking of operating models and economics to successfully operate at lower production rates. All elements of cost — direct labor, material, and overhead — must be addressed in a comprehensive manner to create more affordable alternatives for customers.

This strategy lets players get out in front of the problem of declining demand by reshaping the customer’s acquisition strategy and requirements using affordability as the lever. Achieving affordability is not trivial, but a well-executed plan can reshape demand and influence market requirements in a way that creates substantial competitive advantage.
Perilous times for traditional defense platform providers

The current economic crisis shows no signs of abating — we are deep in a recession — and the new administration's defense posture is one of increased reliance on “soft” power and diplomacy, resulting in less appetite for “hard” power and its attendant Department of Defense spending. Spending on soft power initiatives — including diplomatic channels, direct investment and economic aid, and cultural, health, and sovereignty investment — is expected to grow by 5 percent per year through 2013, while DoD investment accounts in aggregate are expected to decrease by approximately 12 percent per year.

This adjustment in defense spending priorities will force a shift away from expensive, high-end systems perceived as unaffordable relative to their current utility. The 12 percent decline in investment accounts (procurement and RDT&E) is consistent with prior downturns in that these accounts get hit hardest, while operations and maintenance spending tends to remain relatively flat. These decreases won’t be seen immediately, for supplemental spending will mask the cuts for a year or two, but they are coming nevertheless. These changes are emerging from increased pressure to spend procurement money on sustaining or upgrading the existing systems necessary to maintain current operations, such as networks and systems supporting C4ISR requirements.

The new administration has already signaled that these trade-offs will result in fewer high-end near-peer-oriented systems. In his first major speech after taking office, President Obama made clear his plans to reform the defense budget so that

the U.S. is not “paying for Cold War–era weapons systems we don’t use.” In January 2009, Defense Secretary Robert Gates also gave a sense of changing priorities when he said “the spigot of defense funding opened by 9/11 is closing. With two major campaigns ongoing, the economic crisis and resulting budget pressures will force hard choices on this department.” Clearly, there is less appetite to absorb the escalating costs of traditional hardware platforms that have little immediate relevance or pose current and future affordability challenges.
Currently, this trend is compounded by the fact that many traditional hardware programs face cost or execution issues, while others are experiencing reductions in production volumes. Such circumstances can seriously threaten a business’s competitiveness, even putting in peril a company’s future viability and potentially leading to the end of an at-risk business when current production diminishes. Understanding these challenges and their implications is a priority for players facing uncertainty in future demand and the increasing level of competition in the high-stakes defense market. Otherwise, defense contractors run the risk of falling into a death spiral in which declining demand results in increasing costs, which in turn further decreases demand, and so on. This vicious cycle is caused by the nature of many contractors’ overhead costs, which tend to be fixed, or “sticky,” when business is declining but variable when it’s increasing. Therefore, a one-time restructuring is required, with continued attention on overhead to ensure that costs do not creep back in over time. This approach puts a company on a new path to affordability.
The roots of affordability

While defense spending is likely to decline, war-fighting capability requirements remain. Therefore, there is opportunity for more affordable systems and solutions that offer both value and an acceptable level of utility at lower cost. Demonstrated affordability has, in the past, played a role in extending the life of incumbent programs and is likely to play an even more important role in today’s constrained spending environment. In other cases, in which affordability has not been maintained, the field is open for existing systems, those in development, and disruptive new technologies to demonstrate their value proposition to the customer.

The U.S. military has significant gaps in its current hardware capabilities and has yet to recapitalize after the spending holiday of the 1990s, or to reset after the grinding down of assets caused by seven years of the global war on terror. For example, the Navy has unfunded gaps in both shipbuilding and aviation plans: To meet the requirement of a 313-ship fleet, it would need to spend more than US$20 billion per year on ship construction. Even before the economic downturn, however, its most recent spending levels were $10 billion to $13 billion. The Navy also projects a gap of between 50 and 90 aircraft in its fighter-bomber capabilities by fiscal year 2017. The Army faces similar challenges with conflicting budget requirements for future combat systems, force restructuring, continual funding of current operations, and reset.

Given the capability gaps, contractors can find opportunities to extend the life of current products by improving the affordability of the product late in its life cycle — especially if the next-generation technology is facing cost overruns and schedule challenges. If there is a long interval between the production of current and future programs, taking an affordable approach can serve to bridge that time by enabling customers to fund current needs while simultaneously developing the next-generation product. This strategy requires demonstrating affordability in realized cost reductions for the customer. The need to do so is understandable, given the poor track record of many contractors that promised the military they would reduce costs in exchange for
increased orders; those cost reductions were seldom realized. There have been a few successful cases in which affordability was an important criterion in extending the life of a program.

Boeing’s CH-47 Chinook helicopter is a good example. In the early 2000s, Boeing engaged in an affordability program to address customer concerns about escalating costs. This comprehensive effort is paying off with increased foreign sales and a recent multiyear award from the Army. In the most recent contract, the Army anticipates savings of more than $500 million over a five-year period — all around a platform originally designed in 1962.

Another such instance is the DDG-51, which has proven affordability, giving it an advantage over the next-generation surface combatant, the DDG-1000. As the expected cost of the DDG-1000 has ballooned to more than $3 billion per ship, the Navy is considering continuing production and extending the life of the DDG-51. To grasp this opportunity, shipyards have gone on the offensive, proposing design changes to the DDG-51 that would make its annual operating costs less than those of the DDG-1000 — while keeping its acquisition cost substantially lower.

Such advantages are not limited to incumbent programs; affordability often creates an equal opportunity for incumbent and in-development programs. Take the case of naval strike: According to the GAO, the F/A-18E/F is 65 percent as capable as the Navy’s Joint Strike Fighter, the F-35C. The F/A-18’s current unit cost is about 60 percent that of the F-35. Here, the affordability advantage is not clear for the incumbent F/A-18, and it may become even more problematic in the face of declining volume. However, should either program materially lower its cost, it could take share away from the other on the basis of affordability, thus helping to close the Navy’s fighter-bomber gap. Then there’s the disruptive technology UCAS, which has a unit cost similar to that of the F/A-18, but markedly lower life-cycle costs than either of the manned alternatives. The field is wide open for the incumbent, the technology in development, and new technology platforms.

When there is a near-term, affordable alternative — such as a major program for which upgrades and sustainment of existing systems are viable — the customer will likely choose that option. In short, the desire for fewer exquisite systems is being supplanted by an emphasis on budget realism designed to rein in the tendency to keep unaffordable programs afloat. High-end near-peer-oriented systems, with little near-term relevance, will be subject to intense scrutiny regarding their cost, schedule, and requirements.
Achieving real change in the era of affordability

Players must use affordability to avoid entering the death spiral and to reshape the customer’s strategy and expectations. Getting on the path to affordability requires cost-effective, incremental innovation of the product and a fundamental rethinking of the operating models and attendant economics that are likely to lower production rates. While a good affordability strategy revisits all elements of cost, it comprehensively focuses on shrinking critical “fixed” costs to a minimum level to support realistic demand scenarios. As such, achieving a more affordable cost structure hinges on rightsizing overhead throughout the supply chain. Quickly establishing the appropriate economic structure and applying actionable best practices will help start the hard journey and generate immediate cost savings that make a positive impact on estimates at completion (EACs).

So what must be done?

First, players with maturing programs need to determine how product enhancements and IR&D investment can help close capability gaps with newer programs. The B-52, CH-47, F-16, and M1 Abrams are all examples of programs extending capabilities over long periods. For example, the F-16, which has been in production since the mid-1970s, remains an affordable multi-role fighter for the Air Force and international defense customers. Lockheed Martin’s ability to maintain aircraft affordability while continually upgrading technology (currently Block 50/52 and Block 60/E/F variants) to meet customer requirements has driven demand both in the United States and around the world, with production expected until 2018.

The key to success is a process called design for affordability, which addresses fundamental design questions: Can system designs be simplified while maintaining state-of-the-art capability? Can components be standardized across the platform? Can less costly alternatives be substituted for expensive parts without sacrificing quality? Addressing questions like these offers the greatest opportunity for cost reduction.

Achieving a more affordable cost structure hinges on rightsizing overhead throughout the supply chain.
At the same time, technological innovation to extend platform capabilities remains crucial. Otherwise, contractors may see their solutions dislodged by new disruptive technologies — such as the RQ-1/9 Predator UAV supplanting manned combat aircraft or the GBU-32 JDAM replacing the cruise missile.

Second, contractors must understand the realistic demand picture in light of the likelihood of program extensions or contractions. This is done by projecting demand over a range of scenarios and then identifying a reasonable size of the business so overhead can be conservatively estimated (see Exhibit 1, next page). The contractor can more quickly and easily add resources and labor if business outpaces the estimate than it can subtract them if base business comes in lower than expected — as noted earlier, these costs are sticky during a down cycle.

Third, supply chain costs need to be addressed. This is an increasingly common area of cost growth, as prime contractors have increased their level of outsourcing. Today, for many large A&D companies, as much as 70 percent of total costs are in the supply chain as material cost (see Exhibit 2, page 11). But what appears to be material cost at the OEM level actually breaks down into labor, material, and overhead at the first-tier and subsequent suppliers. Thus, viewed at the enterprise level, overhead is the dominant cost. Overhead costs are often driven by the frequent changes incorporated into defense platforms. Should these changes be eliminated or bundled into major blocks, opportunities for cost reduction become numerous. By working closely with customers and major suppliers, contractors can drive down change and its associated cost.

Fourth, consistent with both realistic demand forecasts and the appropriate level of outsourcing, contractors must reduce footprint costs. This requires difficult decisions about fixed assets, buildings, engineering labs, and often entire sites that were never sized for efficiency at today’s lower production volumes.

Fifth, an affordability initiative must begin reducing costs within its first few months to establish the operational and structural foundation for sustainable cost competitiveness.

Demonstrating tangible success quickly is essential to building buy-in among the management team and the broader stakeholder community of suppliers, employees, and, most important, customers. Within this period, contractors need to establish financial commitments, develop a clear blueprint of the solutions they are planning, and launch the transformation initiatives. Benchmarks can help establish the proper frame of reference.
Exhibit 1
Long-range business plan scenarios

Annual direct labor hours (millions)

Source: Strategy&
Exhibit 2
Cost structure views across the supply chain

Breakdown of product costs
Viewed from different perspectives across the supply chain
(Across the whole supply chain, overhead & support costs exceed 50%)

Source: Strategy&
The impact of these affordability transformations is real. EACs will start to come down almost immediately, and it is not uncommon to see positive changes in forward pricing rate proposals (FPRPs) within the first 60 days. Influencing demand takes longer because it is constrained by a wide range of political, technological, and competitive factors, but the potential impact exists. For incumbent players, affordability is a major strategic lever that can protect the base business in the short run but also extend existing programs and, eventually, create long-lived businesses.
Lessons learned

The path to affordability is not easy: It is difficult for a contractor to manage such a transformational effort with the same processes and structures that are used to manage its day-to-day operations. At the same time, it is imperative for the line organizations to own and drive the cost transformation. Without adequate leadership and resource commitment, program execution demands will hinder transformation progress.

Companies that have already traveled this path offer a number of lessons. The biggest challenge is achieving sustainable results over the long term: While it may be relatively easy to issue near-term reduction targets in areas such as discretionary overhead spend, truly transforming a cost structure requires a dedicated effort at all levels of the organization. Cost transformation cannot be a one-time project — it must become embedded in the way the business operates, much as continuous improvement is a fundamental element of lean methodology. To achieve long-term success, companies that start down the path to affordability must focus on these primary objectives:

• Embrace the strategic vision and purpose of the cost transformation.

• Actively engage the entire organization to execute the cost transformation initiatives and drive real change.

• Institutionalize cultural change through actionable initiatives, cross-functional resource commitment, and measured progress.

• Make a commitment to innovation and design for affordability — that is, providing sufficient capability at lower prices — thereby allowing incumbents to fend off exquisite high-end systems in development and new entrants offering disruptive technologies and solutions.

The biggest challenge is implementing the necessary changes to fulfill the strategic vision while maintaining a direct link between the tangible changes and the financial performance of the business. Furthermore,
A successful cost transformation can occur only when the right metrics are in place. The changes made during this transformation must be measured and understood. Metrics already in place — such as wrap rates, EACs, and forward pricing rates — should be incorporated and potentially adapted as part of the drive toward achieving affordability.

Well-defined targets, the leadership assigned accountability for those targets, and a link between the targets and the incentives of the leadership team must be established to enable enduring success. Clear communication and commitment from leadership are critical to the success of any affordability strategy.
Demonstrating the ability to produce affordable systems creates an advanced position for some contractors as a way to reshape customer requirements and capture future demand. Improving program affordability requires companies to thoroughly analyze their strategic direction, operating model, and cost structure to determine the best path forward. While it is one thing to develop an affordability strategy, it is only through the demonstration of tangible results that the customer will take notice. If existing platforms are viable, contractors must make them more affordable, stressing that it might be possible to find systems that are not necessarily perfect but are good enough — and at a lower price. They can suggest that trade-offs are acceptable: The better choice might not be the exquisite system that was originally desired, but an existing system that provides 80 percent of the performance at a lower price.

With its customers emphasizing budget realism and displaying less tolerance for expensive programs and exquisite systems, the A&D industry must focus on managing risk, reducing fixed costs, and — most important — offering customers the solutions they need for a new era. Those companies that ignore pleas for more affordable solutions, or struggle to remove fixed costs, will face a certain death spiral: rising costs and declining demand.

Achieving affordability is not easy or quick. It can often take many years. But a well-executed affordability strategy can reshape demand and influence market requirements in a way that helps to create a sustainable competitive advantage.

The new administration is under substantial pressure to maintain its international defense commitments during these difficult economic times. Contractors that can show a comprehensive understanding of that pressure and a commitment to helping the customer — while offering more affordable solutions — will make themselves valuable partners rather than merely suppliers of programs that place additional burden on the government’s increasingly limited resources.
Strategy& is a global team of practical strategists committed to helping you seize essential advantage.

We do that by working alongside you to solve your toughest problems and helping you capture your greatest opportunities.

These are complex and high-stakes undertakings — often game-changing transformations. We bring 100 years of strategy consulting experience and the unrivaled industry and functional capabilities of the PwC network to the task. Whether you’re charting your corporate strategy, transforming a function or business unit, or building critical capabilities, we’ll help you create the value you’re looking for with speed, confidence, and impact.

We are part of the PwC network of firms in 157 countries with more than 195,000 people committed to delivering quality in assurance, tax, and advisory services. Tell us what matters to you and find out more by visiting us at strategyand.pwc.com.

This report was originally published by Booz & Company in 2009.

www.strategyand.pwc.com