Think Portfolios, Not Programs

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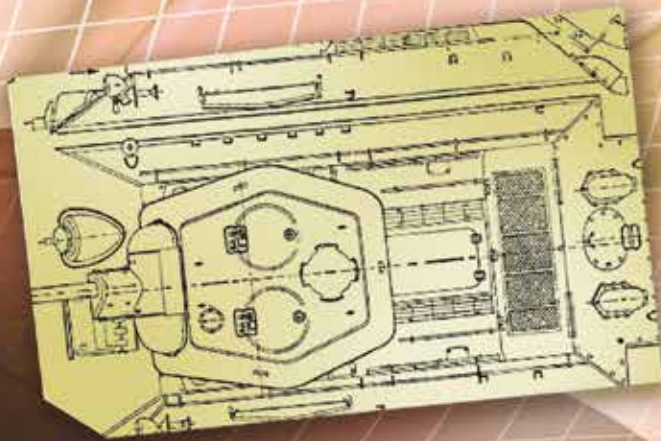
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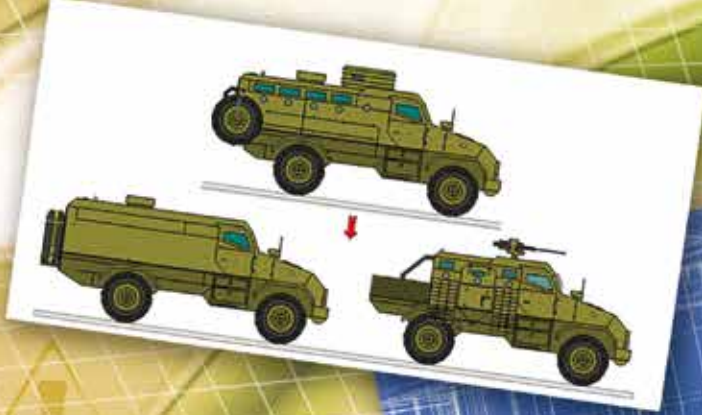
The Department of Defense (DoD) can foster dynamic and innovative solutions for tomorrow's warfighter by designing acquisition portfolios that deliver an integrated suite of capabilities. Program executive officers (PEOs) today often focus on executing a dozen similar, but independent, programs. In contrast, large commercial businesses manage integrated product lines for items ranging from automobiles and electronics to software and health services. The DoD could leverage this model as a basis for constructing portfolios of similar programs that deliver enhanced capabilities in shorter timeframes.

Commercial Product Lines

Many large corporations organize their profit centers along product lines based on a successful product and fill out the line with associated spinoff products. For instance, Microsoft's well-known Xbox product line includes game machines, individual games and online services and apps. This linkage adds value for the customer and encourages further adoption of the full suite of products.

Companies designate a product line manager to maximize revenue and/or profit from the company's investment. To achieve this, executives provide significant latitude to product line managers to shape the product lines they manage—and that latitude includes marketing, new product development, forming corporate partnerships, research and development. Critical to the success of a product line is the ability to track the market closely and react swiftly to emerging trends and changes in consumer tastes before competitors do. Product line managers who perform these tasks effectively receive handsome rewards; those who do not do so quickly find themselves in a new line of business.

Breaking From the Program-Centric Model

In today's Defense Acquisition System, each program navigates the acquisition life cycle independently. Initial conceptual requirements drive program budgets, scope and solution space. Acquisition programs design, develop, test and produce individual systems that meet a defined set of requirements within an allocated budget.

However, today's complex and ever-changing defense environment requires integrated systems and services to produce capabilities greater than the sum of the individual parts. Analyzing alternatives and making trade-off decisions

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at the broader enterprise level rather than the program level would provide an opportunity to optimize performance, costs and/or risks. Guiding large systems independently through the acquisition life cycle over a period of 10 to 20 years has proven inefficient. The DoD can vastly improve the performance and outcomes of its acquisition system by incrementally delivering integrated capabilities via acquisition portfolios that feature tailored processes.

Just as industry constructs product lines, the DoD can structure acquisition portfolios around the system-of-systems concept. Each portfolio may include some or all of the programs in the current PEO portfolios or may be structured around another logical grouping of capabilities. As shown in Figure 1, a portfolio could decompose large systems into multiple smaller programs, projects or increments, and group those that contain similar capabilities, commercial off-the-shelf products, and services. For example, an IT portfolio for command and control or logistics could develop a suite of applications and services that run on a common infrastructure platform. Aircraft portfolios could be based on a common airframe (e.g., C-130) with different payloads, or on different airframes using common subsystems such as engines, communication suites or avionics software (e.g., Special Operations helicopters). This approach would not require a new top-down-driven structure; PEOs could start today by grouping a few related programs and tailoring a structure and process for increased efficiencies. The DoD could scale up these initial efforts after demonstrated success.

Solutions Analysis, Program Design

Conventional acquisition processes demand that programs develop and approve system requirements documents to meet the acquisition milestones. Under the recommended construct, the Initial Capabilities Document (ICD) should cover a broader mission or capability area and align with the scope of a portfolio rather than a program. Rather than
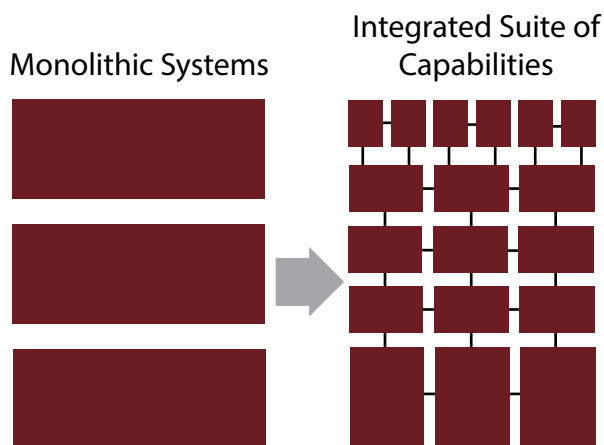
function purely as a milestone deliverable, the ICD should be a living document that operational sponsors could use to capture their current concepts of operations and prioritize a list of requirements in a database. An analysis of alternatives would no longer be a one-time event for a single system but would instead become a robust, continual process for optimizing the performance and/or efficiency of a portfolio of programs. These analyses would continuously monitor and evaluate a variety of technologies, systems, services and nonmaterial considerations such as doctrine, training or procedures. Advances in technologies could drive requirements changes and the resulting system capabilities.

According to current policies, the technology maturity phase focuses on prototyping and then perfecting the technology for the upcoming engineering and manufacturing development phase. The DoD increasingly relies on commercial technologies, and establishing a portfolio-level environment for technology development would enable a broader focus across increments and programs. It also would enable industry and government research and development (R&D) labs, centers and agencies to collaborate on an ongoing basis, conducting R&D funded by both government and industry. They could demonstrate capabilities, prototype emerging technologies, integrate existing capabilities and even compete in challenges. This would expand upon the development environments managed by the Service and agency R&D commands. As former Defense Acquisition Executive Dr. Jacques Gansler notes, "Military advantage will flow to those nations who can incorporate [commercial] technologies and practices rapidly into new systems and operations."
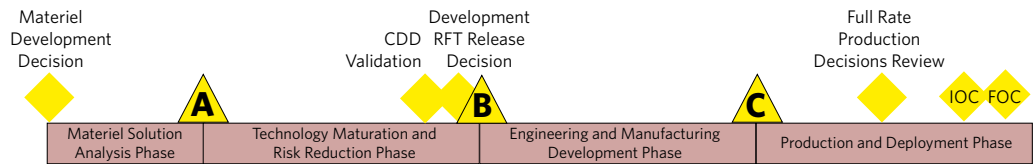
Portfolios could more effectively design the modular open systems strongly advocated by Congress, the Government Accountability Office, and DoD's Better Buying Power initiative. Collaboratively developed and proven standards, interfaces and processes would guide each program's development. Portfolio systems engineers would develop notional designs for each acquisition program using mature technologies from its development environment to address the top capability gaps identified in the relevant ICD. Robust portfolio enterprise architectures and notional designs would outline how each capability fits within the portfolio suite. Designing enterprise-level technical and business architectures would optimize portfolio performance over the program-centric designs used today. Portfolios should resist overengineering complex architectures by driving simplicity and making maximum use of commercial technologies.

The early phases of a traditional program could instead have a broader aperture in a portfolio approach, opening up the potential solution space (see Figure 2). As envisioned, acquisition programs would be smaller than the programs used for today's major systems, scoped in three- to five-year development increments. Smaller programs carry lower risk, as they simplify design, cost and schedule estimates—and ultimately delivery. Once managers effectively scope

Figure 1. Decomposed Monolithic Systems Managed as an Integrated Portfolio

Monolithic Systems
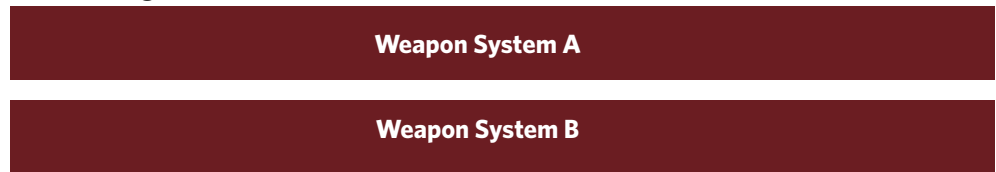
Integrated Suite of Capabilities

a program, operational and acquisition stakeholders develop and approve a subordinate set of requirements and acquisition documents. For example, the IT Box concept in Joint Staff requirements policies features streamlined processes that focus on reducing the time taken to deliver software programs.
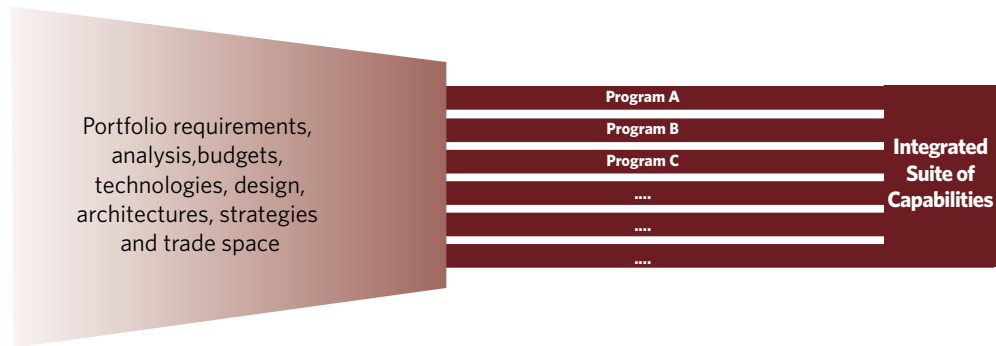
Portfolio Contracting

Contracting today involves a set of lengthy processes, with source selections that too often take a year or more to complete. The contractor or contractor team selected for the design and development of a new system often achieves monopolistic power over the govern-

Figure 2. Current vs. Potential Structures

ment for a majority of a program's life span. As the DoD has moved toward acquiring larger and fewer major systems, this has changed the dynamics of the defense industry. Instead of creating a steady pipeline of potential work through periodic competitions, many of these large contracts become all-or-nothing, make-or-break outcomes that shape a major market segment for a decade or longer.

Competition remains the best way to drive down costs and increase innovation in defense programs. Therefore, a portfolio strategy should actively foster continuous competition over a program's life cycle via broad industry participation. Decomposing large systems into a smaller set of programs would increase opportunities for industry, especially small businesses, to compete for DoD work. A potential portfolio contract strategy could use multiple-award, Indefinite Delivery/Indefinite Quantity (IDIQ) contracts to establish targeted pools of large and small businesses with key technological and domain expertise.

The DoD could streamline contract timelines by establishing portfolio contracts with standardized business practices and precompeted contract vehicles to enable rapid generation of task orders for programs and program increments. These standardized business practices would include pricing, terms and conditions, templates and selection criteria. Continuous competition would be maintained by restricting the size of the contract vehicles with on and off ramps to

refresh the vendor pools. Past performance on task orders within the portfolio also would represent a valuable selection criterion for future work as it would reward superior performance by contractors.

Portfolio Execution

A portfolio, once fully operational, would incorporate a robust suite of fielded capabilities, technologies in development and programs in the pipeline. A portfolio roadmap would provide strategic planning of the individual elements. Portfolio managers, like commercial product-line managers, could explore multiple alternatives to meet portfolio requirements by funding design and possibly development of a few small programs. The program demonstrating the best value in performance, capabilities, costs, schedule and risk management would receive funds for production. Those not selected could return to the portfolio development environment. Competition among programs would incentivize contractors to deliver their best performance on each program and spur government personnel to devise innovative strategies and solutions.

Portfolio strategies would focus on enterprise-level aspects, including defense industry considerations and major capital investments that resemble production lines. Portfolios could drive their programs to employ consistent, rigorous systems engineering and test processes detailed in sets of portfolio documents. Software for managing project portfolios would

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integrate program schedules to show dependencies and impacts of schedule slips, budget cuts or other scenario planning events. Programs would report a common set of metrics to give managers a holistic view of portfolio health.

Dynamic Resource Allocation

One of the biggest challenges in implementing a portfolio structure concerns the allocation of program budgets. Most programs today are funded via accounts called program elements (PEs). Transferring funds between PEs requires lengthy approvals by senior DoD officials and possibly by Congress. However, some PEs include multiple programs, with each broken out at a subaccount level called a budget program activity code (BPAC). Transferring funds between BPACs requires lower approval thresholds. Thus, allocating a portfolio budget at the PE level would offer funding flexibility and agility, while also providing sufficient transparency to oversight officials.

This funding approach would increase the effective use of constrained resources and direct funds toward the highest-priority capabilities with the greatest enterprise impact. Pentagon executives would focus on strategic budget allocations at the portfolio level. Portfolio stakeholders would allocate program funding following key milestone reviews. Portfolio managers would establish funding lines for technology development, enterprise platforms and personnel for enterprise efficiencies. Fortunately, such a change would not require a wholesale restructuring of the planning, programming, budgeting and execution process but simply would call for shaping a few PEs for an initial set of portfolios.

Portfolios also would provide an opportunity to make better use of staff by developing subject matter experts and dynamically assigning them across the portfolio programs. Experience is critical for complex system acquisition, yet today roughly half of DoD's acquisition workforce has less than five years of experience. Sharing staff across multiple programs in a portfolio would help junior staff gain a deeper knowledge base across a diverse set of programs.

Designing Acquisition Portfolios

The principles of authority, simplicity, commonality and agility should guide all acquisition portfolios. By adopting the commercial product-line approach, the DoD would address long-standing issues associated with acquisition speed, agility and system interoperability. Elevating the time-consuming acquisition processes to the portfolio level would reduce program

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workload, allowing each program to deliver products faster.

In a complex, integrated environment, the Defense Acquisition System can no longer rely on a structure based on individual systems but rather should embrace a capability-focused, portfolio-centric structure modeled on the commercial sector. Managing requirements, budgets and staffs at the portfolio level would enable dynamic allocation to high-priority programs. Portfolio strategies, roadmaps and architectures would guide program development.

An active government and industry portfolio community would collaboratively develop technologies and designs and employ continuous competition to develop and produce the individual programs. Portfolios would design and optimize acquisition processes to deliver a suite of smaller programs rapidly, ensuring that warfighters regularly receive incremental capabilities that incorporate the latest technologies designed to achieve their operational missions.

Apple did not revolutionize consumer electronics because the iPod outperformed MP3 players. Instead, integrating the iPod with iTunes proved the critical differentiator and led to the iPhone and iPad. Toyota does not design, develop and produce the Camry without considering the Corolla, Prius and other models but creates technologies for hybrids and electric vehicles and integrates the innovations across the product line. Similarly, the DoD and its industry partners can organize around portfolios of capabilities that extend beyond a single system, while regularly delivering smaller increments of functionality—equivalent to a particular car model that shares many features of the broader product line. In this way, portfolios would enable strategic cost efficiencies in budget-constrained environments while improving effective tactical response for current operations.