Recommendation 16: Combine authority for requirements, resources, and acquisition in a single, empowered entity to govern DBS portfolios separate from the existing acquisition chain of command.

Problem

Responsibility for acquisition of DBSs is diffused across DoD, with no single entity accountable for results. Consequently, DBS programs take too long and cost too much to implement. Extended implementation timelines prolong use of legacy systems at a substantial cost and delay migration to more modern business capabilities to support the warfighting mission.[1] Second-order effects include managing a large, burdensome portfolio of aging systems and interfaces—reducing DoD's ability to become financially auditable and increasing cyber risk. Billions of dollars have been spent to modernize DoD's business operations with only limited success to date.[2]

Background

Nearly 20 years ago, the challenge of modernizing DoD's business systems and processes was formally recognized, and since then Congress and department leadership have established a progressively more complex set of acquisition rules and oversight bodies. Today, the cumulative effect is that DBS programs fail to operate with the speed and agility needed to keep pace with commercial technology advances.

The initial catalyst for a major DoD business modernization effort was the 2001 Quadrennial Defense Review (QDR), which stated, "While America's business[es] have streamlined and adopted new business models to react to fast-moving changes in markets and technologies, the Defense Department has lagged behind without an overarching strategy to improve its business practices."[3] A key theme from the 2001 QDR was to "Modernize DoD business processes and infrastructure," which led to the creation of the Financial Management Modernization Program (FMMP). Recognizing that financial management overhauls alone would not resolve broader business challenges, in May 2003 DoD expanded FMMP and renamed it the Business Management Modernization Program (BMMP). One of the key concepts that came from BMMP was the DoD BEA. BEA was intended "to provide a blueprint for the end state of successful business transformation—the 'to-be' environment for business systems."[4]

It was in these early stages of BMMP that Congress enacted the first legislation specific to defense business modernization. The FY 2005 NDAA created a new section in Title 10—Defense Business Systems: Architecture, Accountability and Modernization.[5] This new legislation (10 U.S.C. § 2222) did the following:

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[1] GAO testimony before the House Committee on Oversight and Government Reform, May 25, 2016. The testimony stated: "The federal government spent more than 75 percent of the total amount budgeted for information technology (IT) for fiscal year 2015 on operations and maintenance (O&M) investments. Such spending has increased over the past 7 fiscal years, which has resulted in a $7.3 billion decline from fiscal years 2010 to 2017 in development, modernization, and enhancement activities."

[2] GAO, *DOD Business Systems Modernization: Additional Action Needed to Achieve Intended Outcomes, GAO-15-627*, accessed November 9, 2017, https://www.gao.gov/products/GAO-15-627.

[3] DoD, *Quadrennial Defense Review Report, September 30, 2001*, 49, accessed November 9, 2017, https://www.documentcloud.org/documents/2695397-2001-Quadrennial-Defense-Review.html.

[4] "History," Deputy Chief Management Officer, accessed August 11, 2017, http://dcmo.defense.gov/About/History.

[5] FY 2005 NDAA, Pub. L. No. 108–375, 118 Stat. 1851, Section 332 (2004).

- Defined the term *defense business system modernization*.

- Set forth conditions for certification and approval of funds for any DBS modernization with a cost exceeding $1 million.

- Established the Defense Business Systems Management Committee (DBSMC)—chaired by the Deputy Secretary of Defense—as the entity responsible for certification and approval of funds for DBS investments, among other duties.

- Required (a) development of an enterprise architecture to cover all DBSs and the functions and activities supported by DBSs and (b) development of a transition plan for implementing the enterprise architecture for DBSs.

- Required DoD to establish an investment review process consistent with 40 U.S.C. § 11312, Capital Planning and Investment Control.

- Required DoD to submit specific DBS budget information and reports to Congress.

As BMMP progressed, the program's leadership was realigned from the USD(Comptroller) to the USD(AT&L) in March 2005. In October of the same year, the Deputy Secretary of Defense established the DoD Business Transformation Agency (BTA) with the mission to reengineer and integrate the core business activities of the department. DoD submitted the first enterprise transition plan to Congress in September 2005. The plan provided an overview of business transformation at the DoD and component levels, and established a set of priorities for new systems and capabilities to guide further development of the enterprise architecture.[6]

BMMP eventually dissolved primarily due to a focus on building an enterprise architecture rather than delivering business capabilities.[7] The broader business system modernization effort continued under numerous separate DBS programs. Many, but not all, of these programs were under the purview of the Defense Business Systems Acquisition Executive (DBSAE), a newly created acquisition executive position within BTA. According to the DoD DCMO:

> *In May 2007, the Secretary of Defense used his discretionary authority to designate the Deputy Secretary of Defense as the CMO of the Department of Defense. Subsequently, Congress codified the department's action in the FY 2008 NDAA, formally acknowledging the deputy secretary of defense as DoD CMO, establishing a new Principal Staff Assistant position, the Deputy Chief Management Officer (DCMO), to assist the Deputy Secretary, and naming the Under Secretaries of the Military Departments as CMOs of their respective organizations.[8]*

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[6] Defense Business Board, *Report to the Secretary of Defense, Business Management Modernization Program Task Group*, accessed November 9, 2017, http://dbb.defense.gov/Portals/35/Documents/Reports/2005/FY05-2_Business_Management_Modernization_Program_2005-5.pdf.

[7] Jacques S. Gansler and William Lucyshyn, *Defense Business Transformation*, 4, accessed November 9, 2017, http://www.cpppe.umd.edu/publications/defense-business-transformation.

[8] "History," Deputy Chief Management Officer, accessed August 11, 2017, http://dcmo.defense.gov/About/History.

In March 2009, BTA released BEA version 6.0 and DoD decided that updates to BEA would only be released on an annual basis (as opposed to semiannual). At the same time, BTA released its required *Congressional Report on Defense Business Operations* and the department continued to invest in DBS modernization but demonstrated limited progress in modernizing DBS and business capabilities.[9]

Congress continued to monitor the department's progress with DBS in particular, and with IT acquisition in general. Section 804 of the FY 2010 NDAA required the Secretary of Defense to

> *develop and implement a new acquisition process for information technology systems…based on the recommendations in chapter 6 of the March 2009 report of the Defense Science Board Task Force on Department of Defense Policies and Procedures for the Acquisition of Information Technology…and Report to Congress…on the new acquisition process developed.[10]*

The department submitted the required report to Congress in November 2010, titled *A New Approach for Delivering Information Technology Capabilities in the Department of Defense*. Although the 2010 DoD report was consistent with the IT acquisition reforms from the Defense Science Board report, many of these concepts were never fully implemented (see details in *Findings* below).

Congress continued to update 10 U.S.C. § 2222 through NDAAs. For example, the FY 2010 NDAA requires DoD to ensure appropriate business process reengineering (BPR) occurs for each DBS investment, and the BPR must be certified as a condition of funds certification and approval.[11]

In August 2010 the Secretary of Defense announced elimination of BTA and the transfer of its functions to the DCMO and USD(AT&L), which occurred in October 2011.[12] Since 2010, the department has continued its multibillion-dollar annual investment in DBSs, and after years of difficulties, some of the larger DBS programs are now fully deployed and operational. These programs include Defense Logistics Agency's Enterprise Business System (EBS) and Defense Agencies Initiative (DAI), Navy ERP, and Army's LMP and General Fund Enterprise Business System (GFEBS). Despite this progress, criticism from Congress and the GAO continue, making it clear that more needs to be done to realize the benefits of the department's substantial investment in business transformation and DBSs.[13]

In February 2017, DoD published DoDI 5000.75, which established the business capability acquisition cycle (BCAC) for DBSs with the intent to streamline decision-making, allow for flexibility in the upfront requirements process, and use an information-centric instead of a document-centric approach for evaluating programs.[14] DoDI 5000.75 superseded DoDI 5000.02 for DBSs. Although this new regulation for DBSs moves the process in the right direction, it is not as far-reaching as the recommendations from the 2010 Report to Congress, *A New Approach for Delivering Information Technology Capabilities in the*

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[9] Jacques S. Gansler and William Lucyshyn, D*efense Business Transformation*, 33, accessed November 9, 2017, http://www.cpppe.umd.edu/publications/defense-business-transformation. Between 2004 and 2009 a total of 581 new DBSs were registered in the DoD Information Technology (IT) Portfolio Repository database. GAO, *DOD Business Systems Modernization: Recent Slowdown in Institutionalizing Key Management Controls Needs to Be Addressed, GAO-09-586*, accessed November 9, 2017, http://www.gao.gov/products/GAO-09-586.

[10] FY 2010 NDAA, Pub. L. No. 111–84, 123 Stat. 2402, Section 804 (b) (2009).

[11] FY 2010 NDAA, Pub. L. No. 111–84, 123 Stat. 2470, Section 1072 (a) (2009).

[12] "History," Deputy Chief Management Officer, accessed August 11, 2017, http://dcmo.defense.gov/About/History.

[13] GAO, *DoD Business Systems Modernization, GAO-15-627*, accessed June 15, 2017, http://www.gao.gov/assets/680/671452.pdf

[14] Business Systems Requirements and Acquisition, DoDI 5000.75 (2017).

Department of Defense.[15] The Section 809 Panel intends to revive and enhance some of the 2010 report's more ambitious ideas that were never fully implemented.

Findings

In its research and analysis, the Section 809 Panel found the following, discussed in detail below:

- Fragmented and overlapping oversight processes create a burdensome parallel acquisition system that hinders flexibility for the programs needing it most.

- The defense acquisition system's linear lifecycle inhibits use of modern commercial IT acquisition and implementation practices.[16]

- Previous recommendations to substantially change the DoD IT acquisition process, including acquisition of DBSs, were not implemented.

Oversight Processes

Fragmented and overlapping oversight processes create a burdensome, parallel acquisition system that hinders flexibility for programs needing it most. DBS programs are implementing fast-changing technology solutions and changing business processes (i.e., the way people do their jobs) as a result. To be successful, such projects require maximum flexibility to adjust as new information or new technology solutions become available. The current system, however, saddles DBS programs with additional oversight beyond that of a traditional DoD acquisition program (see Figure 3-2 below).

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[15] DoD, A *New Approach for Delivering Information Technology Capabilities in the Department of Defense: Report to Congress Pursuant to Section 804 of the National Defense Authorization Act for Fiscal Year 2010*, accessed November 9, 2017, https://www.dau.mil/policy/PolicyDocuments/the849OSD13744-10-804ReportToCongress.pdf.

[16] "What is DevOps?" Amazon Web Services, accessed June 6, 2017, https://aws.amazon.com/devops/what-is-devops.

Figure 3-2. Comparison of Compliance and Oversight Effort
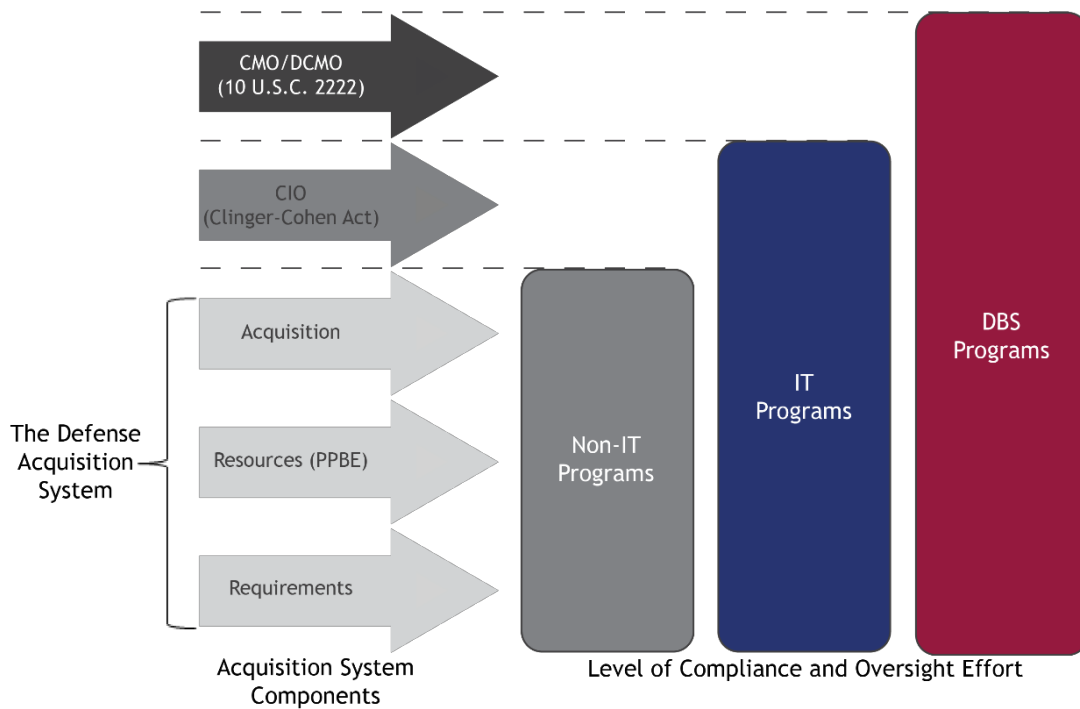
In 2012, the DoD Director of Acquisition Resources and Analysis studied the average number of *touchpoints* (e.g., document reviews, preparation meetings, formal briefings) during the typical lifecycle of an MDAP. The average number of touchpoints between the materiel development decision (MDD) and Milestone C (initial production) was 893.[17] This analysis was for non-IT programs. Referring back to Figure 3-2, it is evident the additional oversight prescribed in the Clinger–Cohen Act (CCA) and 10 U.S.C. § 2222 add more touchpoints. Additional compliance and oversight requirements to which DBS programs are subject as reported by GAO in May 2014, beyond the standard defense acquisition system, include the following:

- CCA compliance to the CIO based on a checklist of 11 major items
- BEA compliance[18]
- BPR certification
- Funding certification (in addition to normal planning, programming, budgeting, and execution [PPBE] activities)
- Authorization to Operate (Cyber Security/Risk Management Framework)

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[17] Nancy Spruill, Defense Acquisition Executive Summary (DAES) briefing, April 4, 2012.

[18] Some DBS practitioners interviewed by the Section 809 Panel posit that BEA has become a rubber stamp that consumes substantial time and resources but does not have a noticeable effect on the outcome of the program. In extreme cases, the myriad BEA products produced do not represent the actual system being implemented. GAO, *DoD Business Systems Modernization: Further Actions Needed to Address Challenges and Improve Accountability, GAO-13-557,* accessed November 9, 2017, http://www.gao.gov/assets/660/654733.pdf. The report states: "even though DoD has spent more than 10 years and at least $379 million on its business enterprise architecture, its ability to use the architecture to guide and constrain investments has been limited."

These requirements create additional touchpoints that impede speed and agility in adopting commercial technology and business capabilities.

The results these activities produce are not always commensurate with the effort they require. The current system places little value on time, yet in the technology world, as in warfighting and business, time is a key factor that can affect outcomes. Satisfying the compliance-heavy, process-oriented requirements described above can add years to program schedules and comes at a substantial cost. This financial burden includes both the direct cost of labor to conduct the activities and opportunity cost of a solution that may be obsolete by the time it is deployed. When acquiring technology, DoD must take reasonable risks, move quickly, and stop performing double and triple checks before it takes action.

To obtain results faster, DoD needs to empower decision-makers and simplify acquisition processes, not create committees, or worse yet, layers upon layers of committees.[19] A recent study commissioned by the Deputy Assistant Secretary of Defense, Command, Control, and Communication (C3), Cyber, and Business Systems (DASD[C3CB]) acknowledged that the existence of a separate acquisition organization poses one of the major systemic challenges in DoD business transformation:

> *Business System modernizations tend to be more successful when led by a business leader and supported by IT. For instance, a human resource management system led by the head of HR and supported by the CIO organization. The business unit best understands the processes and requirements that the technology must support.[20]*

Industry typically has a business (user) organization and an IT organization (CIO) and must decide which one will lead a project, whereas DoD has three different entities: a business organization, an IT organization, and an acquisition organization. Involving more entities is inefficient and precludes the common commercial industry practice of business-led projects.[21] In the current DBS acquisition system, industry standard practice for project leadership and organization is *not even an option.*

This constraint is another symptom of applying concepts originally intended for weapon system programs to IT and business capabilities. One of the objectives of the Goldwater–Nichols Act was to separate the military-oriented requirements generation process from the acquisition process and put acquisition under separate, civilian leadership.[22] There are arguments for and against this separation, but in the case of IT and business systems, it has clearly diminished DoD's ability to operate in a manner resembling commercial industry. As stated above, to increase the likelihood of success for business systems projects, the business owner must lead the project, not a separate acquisition organization.

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[19] Navy PEO EIS, *Enterprise IT Acquisition Efficiency Study*. The study states: "Industry favors a decentralized core competence as opposed to centralized governance and oversight."

[20] DASD(C3CB) Study of Commercial Practices, Focus Area 5: Cost, Schedule and Performance, Acquisition Baselines, Variance Analysis, and IT Governance, September 23, 2016, 12.

[21] Ibid, 15. The study states: "BPR and requirements development are more successful at the commercial organizations where the individuals that own the process are directly involved in the re-engineering and requirements development, since they should understand the process better than the IT organization."

[22] Goldwater–Nichols Department of Defense Reorganization Act of 1986, Pub. L. No. 99-433 (1986). Civilian Management of the Defense Acquisition System, 10 U.S.C., Subtitle A, Part IV, Chapter 149, § 2546.

In developing this concept, business leaders need to be responsible not only for individual projects but also for the entire portfolio of projects supporting their business areas (e.g., finance, logistics, HR). Empowered business owners or *portfolio leaders* would then be able to make the important trade-off decisions required when modernizing business practices. Use of portfolio leaders closely resembles recommendations in previous studies on IT acquisition, and in current and proposed legislation.[23] To be efficient and fully effective, DoD needs to formalize this approach with authority *outside* of the current acquisition chain of command.[24] The *2010 DoD Report to Congress* stated:

> *A major change in the new process will be moving from large multi-year programs to portfolios of short-duration projects. This requires a new approach to project oversight. This approach will place more accountability on timely coordination, quicker decision-making, and increased stakeholder involvement through more frequent performance-based in-process reviews. Oversight will be conducted by integrated and empowered governance bodies that have ownership of a capability roadmap.*[25]

In the current system, portfolio governance is an interim step in a complex funds-certification process instead of being an empowered function to make critical trade-off decisions.

Modern Commercial IT Acquisition and Implementation

The defense acquisition system's linear lifecycle inhibits use of modern commercial IT acquisition and implementation practices. The lifecycle models in the DoD 5000 Series are generally linear because they are based on the waterfall approach to systems development.[26] Although appropriate in some situations, the waterfall approach has numerous limitations, especially when it comes to acquiring IT at the speed of commercial innovation.[27] The *Defense Acquisition Guidebook* states that for large and complex projects using the waterfall approach, a single incomplete task can grind an entire project to a halt and often the "underlying technology is obsolete before delivery."[28] Current DoD policy includes some variations of the waterfall approach, such as spirals and increments; however, DoD's acquisition system typically treats increments as separate programs that take years, not weeks or months, as one

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[23] Senate Armed Services Committee, Report No. 115-125, FY 18 NDAA Mark, Section 884, Review and Realignment of Defense Business Systems to Emphasize Agile Methods.

[24] Recent changes to Defense Business Systems: Business Process Reengineering; Enterprise Architecture; Management, 10 U.S.C. § 2222, that increased the threshold for covered DBS from $1 million to $50 million help reduce some of the bureaucracy associated with DBS acquisitions, but also make some investments *invisible* to a certain extent. An empowered portfolio leader would have visibility (and trade off authority) for *all* of the DBS investments in their portfolio.

[25] DoD, A *New Approach for Delivering Information Technology Capabilities in the Department of Defense: Report to Congress Pursuant to Section 804 of the National Defense Authorization Act for Fiscal Year 2010*, 6, accessed November 9, 2017, https://www.dau.mil/policy/PolicyDocuments/the849OSD13744-10-804ReportToCongress.pdf.

[26] According to the Defense Acquisition Guidebook Chapter 6-3.4.1, the waterfall software development method is defined as follows: The waterfall method is a classical software development method for which tasks are arranged to fall sequentially. One phase is completed before the next phase is started. Several software builds are completed before deployment. In its purest form, all requirements are known before IT is developed and the finished product is not delivered until all tasks are completed.

[27] House Armed Services Committee Panel on Defense Acquisition Reform, DAR Interim Report, 17, accessed November 9, 2017, http://www.govexec.com/pdfs/031110rb1.pdf. The report states: "As a result, the Department is unable to keep pace with the rate of IT innovation in the commercial market place, cannot fully capitalize on IT-based opportunities, and seldom delivers IT-based capabilities rapidly. By way of example, the private sector is able to deliver capabilities and incrementally improve on those initial deliveries on a 12 to 18 month cycle; defense IT systems typically take 48-60 months to deliver. In an environment where technology is obsolete after 18 months, defense IT systems are typically two to three generations out of date by the time they are delivered."

[28] Defense Acquisition University, *Defense Acquisition Guidebook*, Chapter 6, Section 3.4.1., accessed November 9, 2017, https://www.dau.mil/tools/dag.

would expect.[29] The current DoD lifecycle models are out of step with modern commercial IT practices, which heavily rely on Agile principles that are markedly different from the waterfall approach.

The concept of Agile development stems from the Agile Manifesto, published in 2001 by software developers who wanted a more efficient and responsive way to address user needs. The Agile Manifesto includes many guiding principles. Some of the well-known principles are listed in Table 3-1 below along with the Section 809 Panel's assessment of their adoption status within DoD.

Table 3-1. DoD Status of Adopting Selected Agile Principles

Agile Manifesto	DoD Status
"Focus on customer satisfaction through continuous software delivery."[30]	DoD does not continuously deliver software to customers under most existing programs, but rather engages in deployments once an acquisition process is completed. During these procurements and subsequent deployments, customer satisfaction is arguably not the principal metric with which DoD aligns performance incentives for requirements staff, program staff, contracting staff, testing staff, or vendors.
"Deliver working products on a rapid-turnaround timeframe of a few weeks or months." [31]	DoD's acquisition apparatus does not usually abide by this principle. Most business systems require several years to progress from conceptualization to delivery of usable functionality.
"Accept that requirements will change, even late in the development process."[32]	DoDI 5000.75 includes flexibility that may, in some cases, allow for adoption of this principle in DoD IT acquisition programs: "Functional requirements will include enough detail to inform definition of potential business system solutions and evaluation criteria, but without including too much detail that would overly constrain solution selection."[33]
"The metric by which success is primarily measured should be whether software is built and works well."[34]	The primary metrics by which DoD, the Military Services, and Congress measure success tend to be growth in cost and schedule, as well as compliance with predetermined technical requirements. These technical requirements may in some cases be obsolete by the time the software is built.
"Acquisition professionals and system architects should pursue simplicity in programs, or 'the art of maximizing the amount of work not done'."[35]	The current approach to DBS programs, with its myriad compliance and oversight requirements and layers of committees, is arguably the opposite of simple. A great amount of work occurs, and much of it to satisfy a process metric or regulation, not to produce an outcome or capability.

One particular problem area in the current linear acquisition model for DBSs is the requirements process. Agile principles are based on the assumption that requirements will not be complete upfront

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[29] Operation of the Defense Acquisition System, DoDI 5000.02 (2017).
[30] Adapted from "Principles behind the Agile Manifesto," AgileManifesto.org, accessed November 9, 2017, http://agilemanifesto.org/principles.html.
[31] Ibid.
[32] Ibid.
[33] See Business Systems Requirements and Acquisition, DoDI 5000.75, section 4.2(c)(3)(a), (2017 update).
[34] Adapted from "Principles behind the Agile Manifesto," AgileManifesto.org, accessed November 9, 2017, http://agilemanifesto.org/principles.html.
[35] Ibid.

and will change over the course of a project. The current DoD requirements process for DBSs is the opposite; it entails an exhaustive analysis of requirements, BPR, and even a return on investment (ROI) analysis prior to approval of requirements. These activities typically rely on not just requirements, but also on the selection of a specific solution (usually a COTS product in the case of DBSs). Attempting to complete BPR and ROI analysis prior to selection of a solution is not just difficult; some argue it is impossible.[36] Reengineering of DoD's business processes has not happened to the extent envisioned and needed. Consequently, the department contends with many customized systems that are costly to sustain and limit the ability to take advantage of innovations and new capabilities developed by software vendors.

The DBS requirements document, until recently referred to as a *problem statement*, has several parts addressing a wide range of topics and can take years to complete and approve, even for small projects.[37] The Army Materiel Command's (AMC's) price-and-credit tool project described in Figure 3-3 below illustrates this challenge.[38]

The price-and-credit tool illustration shows how DoD's current DBS requirements process is not only out of step with, but explicitly inhibits, use of modern commercial IT implementation practices such as Agile. It is impractical for users to define requirements up front, lock them down, and subsequently hand them off to an acquisition organization that takes years to deploy the capability. This approach ignores the reality that IT solutions change at a dizzying pace. To have anything resembling modern business capabilities, DoD must fundamentally change its expectations about the requirements process and lifecycle for DBS acquisitions.[39] The budget cycle exacerbates the challenges of the requirements process by further limiting flexibility to quickly adopt new technologies and solutions—a problem resulting from the expectation that requirements will be known years in advance of when they are needed.[40]

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[36] DASD(C3CB) Study of Commercial Practices, Focus Area 1: Business Process Re-engineering and Requirements, September 23, 2016, p. 4 "Only so much BPR can be done prior to tool selection and implementation."
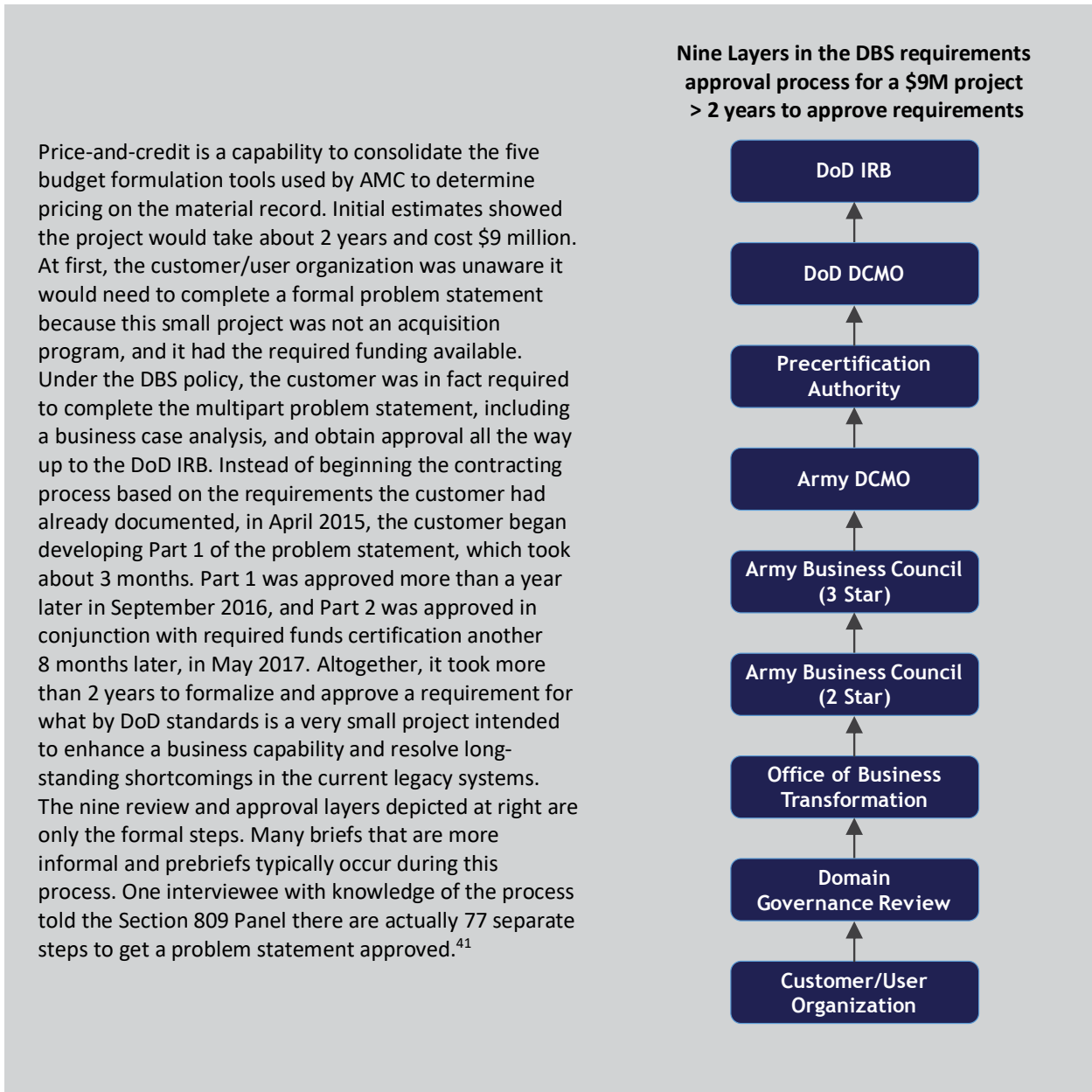
[37] The *Problem Statement* terminology was changed with the issuance of DoDI 5000.75 in February 2017. It is now split between *Capability Requirements* (former Problem Statement Part 1) and *Business Processes / BPR Changes* (some of which was in Problem Statement Part 2, some of which is new with the 5000.75).

[38] Project Manager Army Enterprise Systems Integration Program (PM AESIP) personnel, information for AMC price-and-credit tool case study provided to the Section 809 Panel staff, from July 31 to August 7, 2017.

[39] DASD(C3CB) Study of Commercial Practices, Focus Area 1: Business Process Re-engineering and Requirements, September 23, 2016.

[40] One DoD official told the Section 809 Panel staff, "There is also the linear and lengthy budget cycle that makes it hard to get funds for IT following the process. It would take over a year to get funds...to just get started on getting the system procured."

Figure 3-3. Requirements Process Example

Price-and-credit is a capability to consolidate the five budget formulation tools used by AMC to determine pricing on the material record. Initial estimates showed the project would take about 2 years and cost $9 million. At first, the customer/user organization was unaware it would need to complete a formal problem statement because this small project was not an acquisition program, and it had the required funding available. Under the DBS policy, the customer was in fact required to complete the multipart problem statement, including a business case analysis, and obtain approval all the way up to the DoD IRB. Instead of beginning the contracting process based on the requirements the customer had already documented, in April 2015, the customer began developing Part 1 of the problem statement, which took about 3 months. Part 1 was approved more than a year later in September 2016, and Part 2 was approved in conjunction with required funds certification another 8 months later, in May 2017. Altogether, it took more than 2 years to formalize and approve a requirement for what by DoD standards is a very small project intended to enhance a business capability and resolve long-standing shortcomings in the current legacy systems. The nine review and approval layers depicted at right are only the formal steps. Many briefs that are more informal and prebriefs typically occur during this process. One interviewee with knowledge of the process told the Section 809 Panel there are actually 77 separate steps to get a problem statement approved.[41]

Nine Layers in the DBS requirements approval process for a $9M project > 2 years to approve requirements

DoD IRB
↑
DoD DCMO
↑
Precertification Authority
↑
Army DCMO
↑
Army Business Council (3 Star)
↑
Army Business Council (2 Star)
↑
Office of Business Transformation
↑
Domain Governance Review
↑
Customer/User Organization

Another aspect of the current lifecycle model that suboptimizes defense business capabilities is the concept of system sustainment (formally referred to as *capability support* in DoDI 5000.75).[42] The linear lifecycle model is based on a program executing predetermined phases and milestones, and eventually declaring a full deployment (FD) milestone, which signifies the capability is in sustainment. At sustainment, DoD cannot add new, related capabilities or enhancements to the baseline quickly. Instead, any changes must go through the time-consuming problem statement process as described

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[41] Data collection interviews, conducted by Section 809 Panel Team 6: IT Acquisition, from March to July 2017.
[42] Business Systems Requirements and Acquisition, DoDI 5000.75, 18 (2017).

above and are essentially treated as a separate program (often referred to as an increment). Even in the best circumstances, these subsequent increments can take years to fully implement.[43] This model is starkly different than the one used by most commercial organizations. In common commercial approaches, IT projects do not have a defined point at which they transition to sustainment. Instead, commercial entities recognize that business capabilities and their supporting technology require ongoing enhancements and cannot wait for a lengthy requirements approval process to feed a waterfall development approach. Delayed implementation of capabilities, which are often outdated by the time they are deployed, is simply unacceptable to commercial companies, as it should be to DoD.

Serial test events in the current lifecycle process constitute yet another inhibitor to the speed and agility needed in modern DBS implementations. A 2010 House Armed Services Committee Panel on Defense Acquisition Reform report indicated,

> *Testing is integrated too late and serially in current IT systems acquisition practices, with testing in realistic operational environments deferred until the mandated operational test. The acquisition community has been reluctant to embrace virtualized testing or is overtly precluded from reusing or accessing operationally-relevant test data and environments.*[44]

DoD struggles to use Agile concepts under the rigid rules of its current acquisition system, yet many commercial entities are moving beyond Agile to Development Operations (DevOps). DevOps breaks down the traditional barriers and hand-offs between IT development and operations with the goal of getting functionality into production more quickly and more frequently. When using DevOps, technical staff may work at each phase of the process; little distinction may exist between developers, testers, and sustainment staff who work on the same product over the course of its lifecycle.[45] This model integrates capabilities more quickly and seamlessly.

The flexibility inherent in Agile and DevOps cannot be achieved with the existing DBS acquisition process. Advocates of the current DoD process argue that every requirement must be reviewed in the context of the DoD BEA to ensure there is no duplication of effort. Advocates also contend layers of governance committees are needed to ensure proper oversight and stewardship of taxpayer dollars. Although there is a need for enterprisewide oversight, the reality is that the current process cannot deliver the kind of agility and results desired. The system requires change to provide more flexibility and autonomy, along with requisite accountability.

Congress and DoD acquisition leadership have clearly expressed a desire to inject more flexibility and agility into IT acquisition.[46] For this transition to happen, the current system must be radically changed

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[43] The Logistics Modernization Program Increment 2 is considered a successful example of a subsequent increment of a DBS, but still took nearly 4 years from initiation through full deployment.

[44] House Armed Services Committee Panel on Defense Acquisition Reform, *DAR Interim Report*, 17, accessed November 9, 2017, http://www.govexec.com/pdfs/031110rb1.pdf.

[45] "What is DevOps?" Amazon Web Services, accessed June 6, 2017, https://aws.amazon.com/devops/what-is-devops.

[46] James MacStravic, acting in the capacity of USD(AT&L), noted, "Right now, to make a Milestone B decision on a major acquisition program, I have to sign up to 20 waivers in order to not conform to a statutory requirement that may or may not be relevant to the actual problem I was facing. A best practice on a hardware system has migrated into a statutory requirement on every system. I need those relieved, and the more I can pull those down so we can make contextually appropriate decisions that relate to the technical and operational changes we're actually facing, the more we'll see acquisition agility." "DoD's acting acquisition chief looks to purge 'the

from a serial, process-oriented model to a dynamic, outcome-oriented one in which individuals are empowered to make decisions and obtain results without layers of committees expecting analysis of every possible scenario before rendering a decision.[47] Agile methods change the frame of reference from measuring processes to measuring the outcomes, usually by observing the working software (e.g., does this transaction work the way the user expected? by how many days does it reduce cycle time?). Continuous feedback from business users is one of the hallmarks of Agile, and in conjunction with frequent releases, it allows for adjusting the project more quickly and ultimately solving the business problem better and faster.

A recurring theme in the Section 809 Panel's interviews in particular, and in IT research in general, is that smaller projects are more likely to succeed. The Standish Group's 2015 CHAOS Report, based on surveying more than 10,000 software projects, concluded that small projects using Agile had a 58 percent success rate compared to 44 percent when the project used the waterfall process. Large projects experience an even more pronounced gap, with the success rate for Agile 18 percent and a mere 3 percent for waterfall. [48] A case study by the software development estimation company Quantitative Software Management (QSM) showed that although Agile was less efficient when first adopted, by the second year, software deliveries were 34 percent faster and used 27 percent less effort than waterfall methods.[49] The takeaway is clear: DBS projects should be kept small and use Agile methods as much as possible.

A comparison of DoD and commercial industry enterprise resource planning (ERP) systems supports the argument that projects should remain small. ERPs are major COTS business systems that run functions such as finance and human resources. A 2009 study by the DoD BTA, cited in a report by the Center for Public Policy and Private Enterprise, revealed that several Fortune 100 companies have more ERP systems than DoD, even though DoD is a much larger organization. For example, General Electric, with an annual revenue of approximately $150 billion, had 15 ERP systems, yet DoD had more than three times that budget/revenue and only nine ERP systems.[50] The implication is that commercial industry determined that breaking up its business systems based on product line, geography, or other factors was the optimal strategy, and DoD has tried to implement massive systems with a much higher likelihood of failure.[51] Numerous GAO reports from 2012 to 2017 document these results.[52]

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stupid' from IT procurement," by Jared Serbu, Federal News Radio, June 6, 2017, https://federalnewsradio.com/dod-reporters-notebook-jared-serbu/2017/06/dods-acting-acquisition-chief-looks-to-purge-the-stupid-from-it-procurement/.

[47] House Armed Services Committee hearing on the initial findings of the Section 809 Panel, May 17, 2017, Representative Duncan Hunter, "Because people screw up…we're going to take…the personal responsibility element out of acquisition and create so many steps and milestones that no one has to take responsibility for anything…Talk about putting just somebody in charge, because that's—in the past 50 years that's one way that we've done a lot of our great stuff is by putting one person in charge and saying, 'You—you just do it.' And you can fail and try again and fail and try again, but we're going to put it on—on you to get it right."

[48] Standish Group, *CHAOS Report*, accessed November 9, 2017, https://www.projectsmart.co.uk/white-papers/chaos-report.pdf.

[49] Taylor Putnam, *Quantitative Software Management*, *A Case Study in Implementing Agile,* accessed August 11, 2017, file:///D:/User/My%20Documents/Downloads/A_Case_Study_in_Implementing_Agile.pdf.

[50] Jacques S. Gansler and William Lucyshyn, *Implementing the U.S. Army's Logistics Modernization Program*, 28–29, accessed November 9, 2017, http://www.cpppe.umd.edu/publications/implementing-us-army%E2%80%99s-logistics-modernization-program.

[51] U.S. Senate Permanent Subcommittee on Investigations, The Air Force's Expeditionary Combat Support System (ECSS): A Cautionary Tale on the Need for Business Process Reengineering and Complying with Acquisition Best Practices, accessed November 9, 2017, file:///D:/User/My%20Documents/Downloads/PSI%20REPORT%20-%20The%20Air%20Force's%20ECSS%20(July%207%202014).pdf.

[52] GAO, *DoD Business Systems Modernization, GAO-15-627*, accessed June 15, 2017, http://www.gao.gov/assets/680/671452.pdf.

IT Recommendations Not Implemented

Previous recommendations for substantial change to the DoD IT acquisition process, including acquisition of DBSs, were not implemented. The FY 2010 NDAA required the Secretary of Defense to "develop and implement a new acquisition process for information technology systems…and Report to Congress…on the new acquisition process developed."[53] The department submitted the required report to Congress in November 2010 titled *A New Approach for Delivering Information Technology Capabilities in the Department of Defense;* however, many of the reforms described in the report were not fully implemented or not implemented at all. Data from a 2016 GAO report and information collected through Section 809 Panel interviews suggest one of the main reasons for failure to implement these reforms was frequent turnover of senior leaders whose strong and consistent sponsorship would have been necessary to bring sweeping changes to fruition.[54] Prominent examples of specific reforms not fully implemented are listed in Table 3-2 below.

Table 3-2. Implementation Status of Selected Section 804 IT Acquisition Recommendations

Section 804 Recommendation	Implementation Status
Eliminate service and department-level oversight redundancy.[55]	The majority of DBS programs' milestone decision authority (MDA) was delegated to the Military Service level, which was positive. Other parts of the process, especially requirements approval, are still redundant. Reviews by interim bodies without decision-making authority remain a challenge. BCL was an attempt to address some of these issues, but was rescinded before it could be institutionalized. DBS programs have a unique and ongoing challenge in terms of oversight redundancy among the acquisition, CMO/DCMO, and CIO roles.
Realign traditional DoD 5000 milestone reviews for major program phases to frequent decision points more appropriate for the dynamics of IT acquisition.[56]	The latest model for DBS in DoDI 5000.75 appears similar to traditional DoD 5000 milestone reviews, although tailoring is encouraged. Substantial tailoring is not yet common, and likely more of a cultural challenge than a policy issue.
Change institutional processes with separate acquisition and sustainment phases to a model that allows for continuous IT capability development.[57]	A separate sustainment phase remains in all DoD 5000 lifecycle models, including the model in the DoDI 5000.75 designed specifically for DBSs. Continuous IT development is difficult to achieve under the current models.
Shorten the lengthy project initiation timeline to be responsive to the dynamic IT environment.[58]	No progress has occurred on this recommendation. By some accounts, initiating a project takes longer than it ever has (see case study in Figure 3-3).

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[53] FY 2010 NDAA, Pub. L. No. 111–84, 123 Stat. 2402, Section 804 (b) (2009).

[54] Between 2009 and 2017, five different individuals held or acted in the position of DoD CIO (four of the five in only an acting capacity). This represents an average tenure of approximately 1.5 years per individual, and acting officials rarely make major policy changes. The DoD CMO and DCMO positions were each held by four different individuals between 2010 and 2016 (GAO, *Defense Business Transformation: DoD Should Improve Its Planning with and Performance Monitoring of the Military Departments, GAO-17-*9, accessed November 9, 2017, https://www.gao.gov/products/GAO-17-9.)

[55] Adapted from DoD, A *New Approach for Delivering Information Technology Capabilities in the Department of Defense: Report to Congress Pursuant to Section 804 of the National Defense Authorization Act for Fiscal Year 2010*, accessed November 9, 2017, https://www.dau.mil/policy/PolicyDocuments/the849OSD13744-10-804ReportToCongress.pdf.

[56] Ibid.

[57] Ibid.

[58] Ibid.

Section 804 Recommendation	Implementation Status
Move from large multiyear programs to portfolios of short-duration projects governed by empowered bodies that can make trade-offs across a portfolio to deliver valued mission capabilities.[59]	Portfolio governance bodies are but one step in the current DBS Investment Management process, and they are simply an interim review as opposed to being the final decision makers (i.e., not empowered).[60] Additionally, trade-off decisions are slow to be implemented due to the cumbersome governance and budgeting processes.
Change the Planning, Programming, Budgeting, and Execution (PPBE) system to more accurately reflect the nature of IT capability investment (e.g., a single appropriation type for IT projects, establishing an IT revolving fund, defining a new funding element).[61]	No substantial progress has been made on this recommendation, although as of the writing of this report DASD(C3CB) has a study in progress with the intent of making more specific recommendations related to funding flexibility for IT acquisitions.
Incorporate continuous user engagement into the process of delivering IT.[62]	Progress varies by functional customer, but typically the process includes hand-off of a requirement from a user (*capability developer* in DoD acquisition speak) to a project manager as opposed to continuous user engagement. Intensity of user engagement needs to be increased to ensure the right users with appropriate knowledge and skills are participating in delivery of new IT solutions.
Acknowledge the requirements uncertainty associated with the dynamic IT environment and incorporate the flexibility to responsively manage changing needs.[63]	No substantial progress has been made on this recommendation. Based on current DBS guidance, the expectation is that requirements are exhaustively defined upfront and approved at the Office of the Secretary of Defense (OSD) level, even for a Service-specific program/system. Changing requirements once a program has commenced is extremely difficult and not timely.
Supplant the deliberate and time-consuming *waterfall* process.[64]	Limited progress has occurred on this recommendation. Waterfall is still the dominant and default lifecycle methodology.

Conclusions

Some progress has been made in terms of deployed DBSs, but it was achieved through the brute force approach of expending vast amounts of financial and personnel resources. These successes occurred despite the acquisition process and culture, rather than because of them, often resulting in slipped schedules and cost overruns.[65] DoD has not adopted the majority of the reforms identified in the 2010 Section 804 report, yet those recommendations remain relevant today, and more needed than ever as the rate of IT change continues to outpace DoD's ability to adopt technology and improve its

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[59] Ibid.

[60] DCMO, *Defense Business Systems Investment Management Guidance, Version 4.0*, accessed August 11, 2017, http://dcmo.defense.gov/Portals/47/Documents/Governance/DBS%20Investment%20Management%20Guidance%20Version%204.0%20-%20April%202017.pdf?ver=2017-05-30-110052-673.

[61] Adapted from Department of Defense, A *New Approach for Delivering Information Technology Capabilities in the Department of Defense: Report to Congress Pursuant to Section 804 of the National Defense Authorization Act for Fiscal Year 2010*, accessed November 9, 2017, https://www.dau.mil/policy/PolicyDocuments/the849OSD13744-10-804ReportToCongress.pdf.

[62] Ibid.

[63] Ibid.

[64] Ibid.

[65] GAO, *DOD Financial Management: Reported Status of Department of Defense's Enterprise Resource Planning Systems, GAO-12-565R*, accessed November 9, 2017, https://www.gao.gov/products/GAO-17-9.

business operations.[66] Recommendations from the 2010 Section 804 report also closely align to the conclusions of more recent studies by Navy PEO EIS and DASD (C3CB).[67]

The greatest shortcomings in the current DBS acquisition process include the following:

- Requirements are still expected to be fully known and *locked down* at the outset of a project using the lengthy and onerous problem statement process, compromising DoD's ability to keep up with the technology innovation cycle.[68]

- It is too difficult to change policies and regulations to conform to commercially available, innovative functionality or business processes provided by COTS solutions. Customization persists because DoD acquisition professionals perceive it as less difficult than changing policies and regulations.[69]

- The linear program lifecycle and associated milestones/authority to proceed (ATP) that inhibit flexibility and agility persist in DoD regulations, including lengthy separate test events.[70] Continuous IT development is not a viable option. Tailoring is officially encouraged, but in practice is widely discouraged in the current system. The level of tailoring required to truly use Agile concepts breaks most of the paradigms in the current lifecycle, representing too much of a perceived risk for most decision-makers.

- The overlapping compliance and oversight processes of the CCA and 10 U.S.C. § 2222 layered on the defense acquisition system represent an additional burden on programs most needing the flexibility.

- Lack of funding flexibility limits the ability of DBS programs to quickly adopt the latest technologies and take advantage of opportunities for business operations improvement.[71]

In preparing this report, the Section 809 Panel reviewed Section 901 of the FY 2017 NDAA and DoD's report to Congress in response to Section 901. The Section 809 Panel also interviewed several individuals involved in producing the Section 901 report, with a specific focus on "Part 2: Restructuring

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[66] House Armed Services Committee Panel on Defense Acquisition Reform, Findings and Recommendations, March 23, 2010, 17.

[67] Enterprise IT Acquisition Efficiency Study, Navy PEO EIS, July 2016. DASD(C3CB) Study on Commercial Practices, September 2016.

[68] DASD(C3CB) Study on Commercial Practices, Acquisition of Technology, July 7, 2017, 25. As stated in the study, in the current DoD IT acquisition process "3.5 Year Period Between Identifying User Needs and Executing the Contract" while "6+ Technology Innovation Cycles passed between identifying the user need and executing the contract." The "Problem Statement" terminology was changed with the issuance of DoDI 5000.75 in February 2017. It is now split between "Capability Requirements" (former Problem Statement Part 1) and "Business Processes / BPR Changes" (some of which was in Problem Statement Part 2, some of which is new with the 5000.75).

[69] Logistics Modernization Program System Procure-to-Pay Process Did Not Correct Material Weaknesses, DoD Inspector General Report No. DODIG-2012-087, 19, May 29, 2012. The report states, "Army managers did not perform sufficient business process reengineering to implement the BEA's P2P business process within LMP successfully. Instead, the Army recreated most of the legacy business processes within LMP, which did not correct the long-standing material weaknesses within the P2P business process."

[70] "DoD's acting acquisition chief looks to purge 'the stupid' from IT procurement," by Jared Serbu, Federal News Radio, June 6, 2017, https://federalnewsradio.com/dod-reporters-notebook-jared-serbu/2017/06/dods-acting-acquisition-chief-looks-to-purge-the-stupid-from-it-procurement/. Quoted in the piece, Acting USD(AT&L) James MacStravic states, "By using modern software development and automation tools, it's possible to build in and validate the functionality and information assurance as you're doing the software, and our whole procurement model didn't reflect that."

[71] See Recommendation 18 on funding flexibility.

the Chief Management Officer Organization." Although the scope of the Section 901 report is broader than the Section 809 Panel's acquisition reform mandate, many of the CMO themes in the Section 901 report are consistent with the Section 809 Panel's DBS recommendations.[72] The general structure of the CMO organization is consistent, with some variations in terminology (e.g., the *reform leader* role in the Section 901 report is the *enterprise business process owner* in the Section 809 Panel's recommendations).

The Section 901 report identifies a new PEO for IT Business Systems within the CMO organization and states this PEO "will plan and execute the transformation of all business systems affecting support areas within the Department."[73] The Section 809 Panel agrees with the concept of the CMO planning and executing transformation of business systems; however, acquisition authority for the CMO is not explicitly stated in the Section 901 report. The CMO must have authority sufficient to accomplish this responsibility; therefore, the CMO should have consolidated authority for requirements, resources, and acquisition.

The other notable difference between the CMO structure in the Section 901 report and the Section 809 Panel's DBS recommendations is the Military Services supporting the *enterprise business process owners*. The Section 901 report is silent on the Military Services' role; the Section 809 Panel's recommendations specify empowered *portfolio leads* with responsibility for all DBS projects/programs within the Military Services' business process (e.g., financial management, supply chain, and logistics). The need exists to transition to enterprise services, and the Military Services must be empowered to transform their own DBS portfolios while supporting the larger departmentwide transition to enterprise services.

Implementation

Legislative Branch

- Provide consolidated acquisition authority to the CMO, including requirements, resources, and acquisition (see Figure 3-4 and the corresponding explanation below the figure for proposed governance structure).[74]

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[72] DoD's Section 901 report Part 2 addresses DoD's business operations as a whole; the Section 809 Panel recommendations are specific to acquisition of DBSs enabling those business operations.

[73] DoD, *Report to Congress, Restructuring the Department of Defense Acquisition, Technology and Logistics Organization and Chief Management Officer Organization In Response to Section 901 of the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114-328),* 18, accessed November 9, 2017, https://www.defense.gov/Portals/1/Documents/pubs/Section-901-FY-2017-NDAA-Report.pdf.

[74] Follow a similar approach to the one that provided acquisition authority to U.S. Special Operations Command. See Unified Combatant Command for Special Operations Forces, 10 U.S.C. §167(e)(4).

Figure 3-4. Recommended DBS Governance Structure
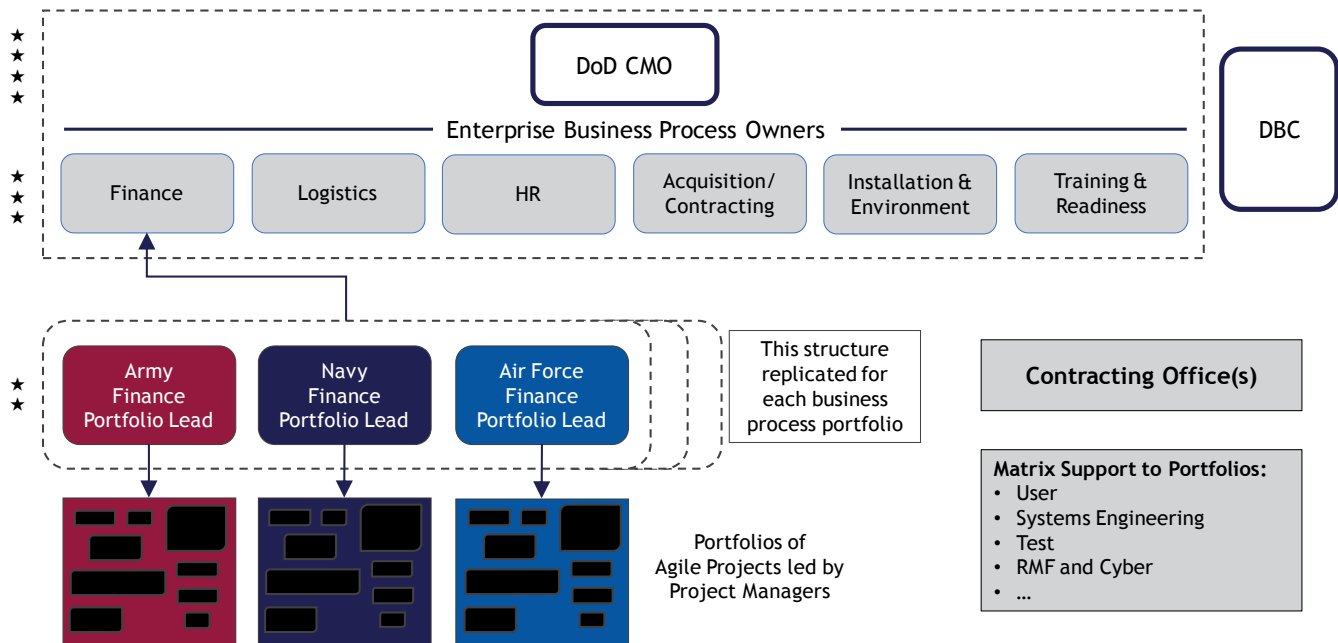
Roles and responsibilities of entities depicted in Figure 3-4:

DoD Chief Management Officer (CMO)

- As stated in the FY 2018 NDAA, becomes the third most senior official in the department by precedence and is responsible for all enterprise business operations including the CIO functions for DBSs.
- Maintain a simplified DoD BEA described in 10 U.S.C. § 2222 (e) as "a blueprint to guide the development of integrated business processes within the Department of Defense."
- Change policies and regulations that prevent the use of commercial software solutions, and advocate for changes to statute when necessary.
- Approve budget requests for business system portfolios as part of the PPBE/POM process.

Defense Business Council (DBC)

- As currently specified in 10 U.S.C. § 2222 (f) except now chaired by the DoD CMO instead of being cochaired by the Under Secretary of Defense for Business Management and Information and the DoD CIO.

Enterprise Business Process Owners

- Recommend approval of budget requests for business system portfolios.
- Identify and advocate for enterprise (cross-Service) DBS solutions.
- Provide oversight of, and adjudicate issues among, the Service DBS portfolios.

Service Portfolio Leads

– Provide business process leadership and expertise to projects and project managers within the portfolio.

– Identify, select, prioritize, and resource projects within the portfolio based on desired business outcome measures and support to the mission via the Portfolio Execution Plan (a replacement for the current Organizational Execution Plan [OEP]) which according to current DBS Investment Management Guidance (p. 8) "articulates an organization's approach to align with the Functional Strategies and produce business results."

– Ensure appropriate matrix support from necessary disciplines to enable successful project execution.

– Advocate for changes to laws, regulations, and policies (LRPs) when such changes will enable more efficient business processes or better outcome measures.

– Assume the responsibilities previously fulfilled by the Service Chief Management Officer/Pre-Certification Authority (CMO/PCA): "the senior accountable official that is responsible for ensuring compliance with investment review policies…including BPR and BEA assertions."

▪ Amend 10 U.S.C. § 2222 to be the sole statute applicable to acquisition of DBSs and do the following:

– Eliminate the separate funding certification process (see Recommendation 17).

– Define a new empowered role (*portfolio lead*) to lead business capability portfolios with accountability for business metrics and outcomes, and authority sufficient to affect those outcomes.

– Change basis of oversight from *covered defense business systems* to portfolios of business processes. Remove *priority defense business systems*.

– Remove *responsibility of milestone decision authority* paragraph to provide authority for project decisions to the new empowered portfolio lead.

– Remove the requirement for the CIO's information technology enterprise architecture to address "each of the major business processes conducted by the Department of Defense." Empower the CMO to address business processes.

Executive Branch

▪ Revise DoD's DBS Investment Management Guidance to reflect the following:

– The new empowered and accountable role of portfolio lead.

– A simplified governance process that includes only the CMO, enterprise business process owners, and portfolio leads in the chain of command, with the DBC continuing in its current capacity as an advisory body.

– Elimination of the separate funding certification process that is now integrated into the PPBE process (see Recommendation 17).

– New funding structure based on portfolios of projects instead of individual programs.

- Rescind the *DoD requirements validation and IT business case analysis template for business systems* and empower portfolio leads to determine the optimal requirements definition process for their business areas with concurrence of the CMO.

- Revise DoDI 5000.75 to reflect the following:

    – A simplified and iterative requirements-identification and documentation process that acknowledges exhaustive requirements and BPR cannot be completed prior to initiation of a project and selection of a specific vendor or technology solution.
    – Replacement of the single linear lifecycle and milestone (ATP) decision points with multiple lifecycle models, including both Agile and waterfall. Portfolio leads should establish lifecycles and decision points based on the attributes of the specific project, and not be bound by a set of predetermined decision points. Projects should not be required to have a defined point at which they transition to sustainment. Business capabilities and their supporting technology will require ongoing development and enhancements.
    – New structure of portfolios reflecting a preference for smaller, shorter projects instead of large, individual programs; elimination of business system categories and thresholds.
    – Responsibility of empowered portfolio leads to change policies and regulations whenever possible to enable BPR and adopt commercial processes and technology instead of customizing COTS products/solutions.
    – Elimination of the hand-off of requirements from a functional sponsor to a project manager in favor of continuous partnership with end users.
    – Prioritization of working software (business capabilities) and improvement of business outcome metrics as the definition of success.
    – Inclusion of a reference table summarizing all statutory and regulatory information requirements applicable to DBSs.

- Instruct CMO to publish new BEA guidance reducing the burden on programs to the minimum necessary as required by 10 U.S.C. § 2222(e).

Implications for Other Agencies

- There are no cross-agency implications for this recommendation.