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Thoughts on Agility Through Appropriations

or, “If BA-8 Is Successful, What Next?”

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Acronyms and Abbreviations

BA	budget activity
Congr.	Congress
CR	continuing resolution
DIB	Defense Innovation Board
DoD	Department of Defense
DSB	Defense Science Board
Med.	Medium
FY	fiscal year
FYDP	Future Years Defense Program
O&E	obligations and expenditures
O&M	Operation and Maintenance
PB	President's Budget
PE	program element
PEO	program executive officer
POR	program of record
PORs	programs of record
PPBE	Planning, Programming, Budgeting, and Execution
RDT&E	Research, Development, Test, and Evaluation

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Background

The U.S. Department of Defense (DoD) seeks sufficient funds from the U.S. Congress to meet critical national security missions. However, predicting, budgeting, authorizing, and appropriating the type and amount of needed funding can be challenging, especially when threats and technologies are changing faster than Planning, Programming, Budgeting, and Execution (PPBE) process timelines, which run over two years given that the DoD starts planning 19 months before the programming and budgeting stage begins (e.g., see McGarry, 2021b). Threats and needs can even change after budgets are authorized and appropriated by Congress, and reprogramming of those funds are limited.

Federal funds are budgeted and appropriated into types—such as research, development, test, and evaluation (RDT&E); procurement; and operation and maintenance (O&M). These so-called “colors of money” constrain the purpose for which the appropriation is made (i.e., how the funds can be used). These appropriation types also have life cycles—periods of time within which the funds can be obligated (ranging from 1–5 years, by type) and expended (normally 1–10 years, by type).¹ Within each appropriation type, there are usually budget activities (BAs) that further characterize and constrain how the funds can be used.

In response to “recommendations from numerous reports, studies, and DoD Programs”² and with Congressional approval,³ the DoD created a Budget Activity (BA) 8 Pilot to experiment with a single (“colorless”) appropriation to seamlessly use fund for what would otherwise be RDT&E, procurement, and O&M of software programs. Further details on BA-8 are contained in the Appendix A of this document, and details on the types of BAs, “colors of money,” and time availability of appropriations are discussed briefly in Appendix B.

The question arises: If the metrics and experience from BA-8 pilots indicate significant value with limited negative consequences, what next steps and approaches might the DoD and Congress consider?

This paper hypothesizes different approaches related to budgeting and appropriating to improve defense acquisition given inherent DoD and Congressional equities.

Framework on Congressional and DoD Equities and Associated Tensions

Figure 1 lays out a framework of some basic Congressional and DoD equities and relationships as they pertain to acquisition and funding. Those equities and relationships with orange or red arrows show some areas of modest or stronger tension (respectively) while the light-green arrows show areas of context, execution, or agreement with little to

¹ See Under Secretary of Defense (Comptroller) DoD 7000.14R (2008, Vol. 2A, Chapter 1, paragraph 1.7.2.25, p. 1-12. Also see Martin (2020).

² See USD(A&S), 2020, which cites the following as recent examples: DIB (2019), Defense Science Board (DSB, 2018), and Section 809 Panel (2019).

³ See House of Representatives (2020b), p. H8167.

no tension. Note that there are internal tensions both between and within Congress and the DoD (e.g., equities that result in tradeoffs or compromises).

Figure 1. Basic Equities and Responsibilities Relative to Acquisition: Congress and the DoD

Congress	DoD
C1. Frame basic DoD missions; authorize wars	D1. Meet the missions framed by Congress; meet strategy and missions set by POTUS and detailed by DoD leadership
C2. Set the basic structure of the DoD	D2. Organize within the basic structure set by Congress
C3. Considers the budget request. Authorizes and appropriates based on <i>Congressional equities and perspectives</i>	D3. Build near- and longer-term budget requests based on <i>need, optimized value, and affordability</i> given expected long-term top lines
C4. Ensure that the DoD is equipped to meet its missions	D4. Execute and oversee S&T and acquisition to cost-effectively field essential capabilities
C5. Seek spending for—protect existing spending within—own <i>states/districts</i>	D5. Optimize spending location based on <i>efficiency and need</i> rather than prior patterns or political equities
C6. Control major spending decisions and allocations (authorizations and appropriations)	D6. Ensure that spending is within bounds/controls set by Congress and the direction from DoD leadership
C7. Plan long-term capabilities relative to missions and fund annually	D7. Plan and acquire short- and long-term capabilities relative to missions
C8. Avoid constraining the decisions of future congresses	D8. Plan and execute long-term spending to optimize efficiency and needed stability
C9. Meet current needs	D9. Meet current needs
C10. Build for the future	D10. Build for the future
C11. Oversee DoD performance and compliance (broadly and on major acquisitions)	D11. Execute. Tailor. Identify and address performance issues. Stakeholder reporting.

NOTES: Cxx = Congressional equity; Dxx = DoD equity; Txx = tension. Equities and tensions are numbered solely for referencing convenience. Orange and red arrows show areas of modest and stronger tension, respectively. Light-green arrows show areas of context, execution, or agreement with little-to-no tension.

Equities

Equities C1 and D1 in Figure 1 constitute the overarching purpose of the DoD to ensure national defense. Congress sets the broad purpose of the DoD, declares wars, and purpose and authorizes the use of military force, and shapes U.S. military policy through funding authorizations, appropriations, and oversight (U.S. Senate, undated). The President of the United States (supported by the White House staff and the Office of Management and Budget) set the National Security Strategy and budgetary requests to Congress, supported by the DoD’s National Military Strategy, DoD budget requests, and operational missions. Thus, the DoD seeks to meet the broad mission framed by Congress as well as the strategy and missions set by the President and detailed by DoD leadership. This overarching purpose is supported and framed by equities such as Congress ensuring that the DoD is optimally equipped to meet its missions (equity C4) and the DoD executing and overseeing S&T and acquisition to field essential capabilities (D4). Congress supports the DoD’s equipping function through authorizations and

appropriations (C6) while the DoD ensures that spending stays within the purposes and controls set by Congress and DoD leadership (D6).

Finally, the DoD develops and acquires goods and services, identifying and addressing performance issues while reporting to stakeholders (such as Congress and the public). Congress executes its oversight authority and responsibility by monitoring DoD performance and acquisition compliance—both broadly and on major acquisitions and programs (C11).

Tensions

Below are brief discussions of the orange and red tensions, referring to the equity numbers shown in Figure 1.

(T1) The DoD builds a budget for the President’s budget (PB) request to Congress based on the DoD’s views of the optimized value of needs and requirements summarized in the National Defense Strategy to meet the President’s National Security Strategy and general budgetary scoping from the President’s Office of Management and Budget. Congress, in turn, authorizes and appropriates funding informed by the DoD’s budget but based on overall Congressional equities and perspectives, which can differ from those of the DoD. Once appropriated, there is modest flexibility for the DoD to adjust funding; many of these (known as Above and Below threshold budget requests⁴) require approval of both congressional appropriators and authorizers.

(T2) Congress’s equities are based, in principle, on ensuring that the DoD is *optimally equipped* to meet its *missions*. However, Congress (as a representative body consisting of elected officials) also seeks spending for—and protection of existing spending within—individual senator or member’s *states or districts*. This can lead to a tension when these equities are not aligned.⁵ While the two political parties differ greatly on many things, they have come together for over 50 years to craft and pass an annual defense authorization bill.

⁴ See, for example, the Under Secretary of Defense (Comptroller)’s Summary of Reprogramming Requirements (2021).

⁵ It is beyond the scope of this paper to examine the extent to which political decisions influence DoD appropriations and authorizations. Historical studies point to significant bipartisanship in defense appropriating. For example, Shogan (2012, p. 196) states that the Senate Armed Services Committee has “a complex mixture of committee traditions, rules, processes, a robust hearing schedule, bipartisanship, professional staff relationships, floor strategy, and widely shared belief in the overall mission [of the DoD].” Also, Adams stated that “While there are often important differences between the budget requested by the Pentagon and the one passed by the congressional committees, most of the defense budget is non-controversial. One...study found that the majority of line items in the president’s defense budget request are accepted without revision by the House and Senate Armed Services committees and the House and Senate Appropriations.” (Adams, 1992, p. 2). Also, moratoriums (Lynch, 2020) and disclosure rules (Lynch, 2021a, 2021b) can have an additional damping effect on earmarks. Still, as Schlick points out, “Political considerations influence all budgets. Both discretionary and direct spending programs have constituents who benefit from federal dollars and actively guard their interests. But political interest in discretionary programs is highly variable. Some programs have powerful political constituencies that lobby for additional funds; others hardly attract any attention.” (Schick, 2007, p. 62). Also, in years past, there have been a significant number of earmarks in defense (e.g., see Schlick, 2007, Table 9-8). Therefore, we merely recognize that politics can be a factor and introduce a tension between political parochialism and the pursuit of supporting the DoD independent of these concerns.

(T1, T3) Congressional equities (especially the political ones) also can set up inherent tensions with DoD views of optimality based on need and value from DoD infrastructure, organizational, or warfighter perspectives, as reflected in the PB request.

(T4) There is an inherent conflict between a Congressional control through appropriation types and BAs at the program level and a broader intent to plan and fund at the net capability level relative to missions and portfolios. This is true to some degree within the DoD, but this tension is more acute at the Congressional level given the DoD's need to adjust more frequently and quickly given changing threats and new technical opportunities for meeting operational needs and requirements. These needed adjustments often arise on a timescale much shorter than the budgeting and funding cycle, which takes two or more years.

(T5) While both Congress and the DoD plan on long-term capabilities relative to defense missions, the DoD also seeks more agile appropriations for short-term capabilities that arise in less than the 1–2+ year budgeting and appropriations cycles.⁶ Both Congress and the DoD have more ad hoc processes to seek in-year budgetary adjustments for pressing near-term needs, but these processes have dollar constraints and lead to tensions when larger changes are needed and when the DoD needs faster access to budgetary resources.

(T6) From a timeline perspective, there is an inherent tension between the DoD, (which seeks long-term planning and execution (e.g., future-year defense planning; multiyear procurement contracts to increase stability and lower costs) and Congress, which seeks to minimize constraints on future congresses to keep future options open .

(T7 and T8) There is an inherent tension between investments focused on current operational needs and investments for future capabilities. See, for example, the Iron Triangle of Painful Tradeoffs (Hicks, 2017). This is true both for Congress and the DoD.

Implications for BA-8 on Serving Equities

Perhaps the largest potential for BA-8 to support equities lies at the fundamental mission of the DoD. As the Defense Innovation Board (DIB) put it, “The single appropriation across the life cycle of a capability will enable continuous development, security, and operations (DevSecOps); allow for minimum viable product delivery at a relevant speed; support the use of managed (or cross PoR/enterprise) services; provide for greater transparency for information-centric capabilities; and provide the flexibility to pursue the most effective solution available at the time of acquisition without current restrictions of appropriations.”

⁶ Examples of DoD advocacy for responsive funding include DoD testimonies on the value of modest but responsive funding, Section 219 accounts (10 U.S. Code 4123), and the like (Stackley, 2016, pp. 10, 16–17, 31; Lombardi, 2016, p. 12; Williamson, pp. 17–18) to enable rapid research, development, prototyping, and experimentation in response to changing needs and threats. Examples of resulting funds include the Rapid Development and Experimentation Reserve [RDER]; the Rapid Innovation Fund established in response to the Defense Research and Development Rapid Innovation Program established by Congress in the FY 2011 National Defense Authorization Act (NDAA), Sec. 1074; Section 219 funding for DoD labs (); and the Rapid Prototyping Fund established by the FY 2016 NDAA, Sec. 804. Obtaining appropriations for these funds, however, have been difficult over the years. Discussions of prior such accounts that have been eliminated (and why) include the old Navy M account (Stackley, 2016, p. 18).

(DIB, 2019, pp. S135–S136). Thus, BA-8 should support both Congressional and DoD objectives of meeting national security missions, especially when threats and technologies are changing faster than the Planning, Programming, Budgeting, and Execution (PPBE) process timelines, which run over two years given that the DoD starts planning 19 months before the programming and budgeting stage begins (e.g., see McGarry, 2021b).

Also, BA-8 is neutral (i.e., remains supportive) with respect to other equities. For example, BA-8 currently is allocated within specific software programs (budget line numbers and associated PEs), so spending is constrained to the purpose and scope of those software programs.

Implications of BA-8 on Increasing Tensions

BA-8 (single appropriation) directly addresses some of tensions T7 and T8 by allowing flexibility within the DoD across RDT&E (BAs 1 through 7),⁷ Procurement, and Operation and Maintenance (O&M).⁸ While not absolutes, earlier stages of RDT&E tend to serve future needs (e.g., basic and applied research, advanced development, and prototyping of future systems) while latter stages (along with Procurement and O&M) tend to serve more current needs (e.g., testing and upgrades of current systems).

Conversely, BA-8 can aggravate program- and macro-level controls of the balance between current and future needs. Different BAs provide control at the budget line number (and associated PEs) level of detail on up between these areas as well as between stages in the lifecycle of a defense system. Removing the controls between these BAs reduced the ability of both Congress and DoD leadership to steer within tensions T7 and T8.

BA-8 does not directly address the other tensions, but the flexibility (especially in conjunction with Agile development) seeks to optimize investments based on user-perceived value rather than political positions. Thus, BA-8 could increase the tensions between mission-oriented and politically oriented spending decisions.

Options for Addressing Overarching Objectives and Equities

Given the need for increased DoD agility to address rapidly changing threats and technologies, the approaches listed in Table 1—either separately or combined—are postulated to seek increased acquisition agility while seeking balance and reduced tensions given Congressional and DoD equities. To give a rough sense of the anticipated difficulty to institute each of these approaches, a subjective rating of *High*, *Medium (Med.)*, and *Low* are provided for Congress (Congr.) and DoD. Further research would be needed to fully understand the institutional challenges and difficulties for these approaches and update these approximations.

⁷ Note that older nomenclature refers to RDT&E BAs 1-7 as 6.1–6.7 (see, for example, Sargent, 2022a).

⁸ See Appendix B for a general discussion of these appropriation accounts.

Table 1. Options for Increasing Appropriation and Authorization Responsiveness

Category	Approach
Easier and Timelier Rebudgeting and Appropriating	Introduce increased responsiveness in the current budgeting and appropriations processes as funding gets closer to enactment of the appropriations and authorizations.
Faster and Easier Reprogramming	Pursue increased responsiveness through existing mechanisms after enactment of the appropriations and authorizations.
Bridge funding	Undesignated funding (perhaps in major categories or portfolios) to initiate development and prototyping, to be followed by normal requests from Congress for continued program funding
Appropriated by system-level	Programs
	Portfolio or mission areas
Appropriated by lifecycle stage or type	Multiple BAs: Constrains funding to RDT&E (BAs 1–5 and 7), RDT&E Management (BA 6), Procurement, or O&M
	Single appropriation for any stage or type (e.g., the BA-8 pilot for any stage to type)
Reporting and insight	Report spending by program for appropriations provided at the portfolio- or mission-area levels
	Report spending by stage even when there is a single appropriation (e.g., BA-8) across stages (i.e., do not constrain appropriations by stage, but report what stage you ended up using the funds for so there is visibility into how the funds were used) ⁹
Bounded appropriations	For single appropriations (BA-8), specify total spending constraints (minimum and maximum) for each BA-category:
	<ul style="list-style-type: none"> o by portfolio or mission area
	<ul style="list-style-type: none"> o by program executive officer (PEO), military service, or total DoD
Program Start Control	Retain Congressional approval for new programs, even when appropriations are provided at a higher portfolio or mission level.
Obligation expiration deadlines	
	O&M: Same fiscal year (FY) (current policy)
	1 year from budget passing (i.e., after Continuing Resolutions [CRs])
	2 years from budget passing
	Split O&M Treat Maintenance like RDT&E 6.7 (2-year money)
	RDT&E: Next FY (current policy)
	2 years from budget passing (i.e., after CRs), including for BA-8
Obligation and Expenditure Targets	Replace straight lines with “S” curves
	Prorate in CRs
	Delayed obligation target curve starts: Under a CR
	Delayed obligation target curve starts: Outside of a CR
	Delay expenditure target start
	Spend more later
	MDA designates obligation and expenditure (O&E) profiles
PB Documentation	Improve the format of budgetary exhibits

Easier and Timelier Rebudgeting and Appropriating

One option is to simply make it easier to make budgets easier to change—including after they have been transmitted to Congress and appropriation bills are being prepared and finalized. The closer we are to the actual appropriation and subsequent spending (obligation and expenditure), the closer we are to understanding the present need. Thus, if these can be made more responsive and adjustable (along with explanations as to why the changes are needed), the more response the ultimate appropriations would be to ensure that funds are in the most needed categories and BAs.

Discussion: While this sounds simple, such changes involve both reviews and approvals within the DoD, needed access to Congressional staffers, and the capacity of staffers to handle such adjustments. Further research would be needed to assess the volume and associated workloads associated with such an expanded capacity.

Faster and Easier Reprogramming

As discussed earlier, there are mechanisms for reprogramming funds after the authorization and appropriation acts are passed into law. There are thresholds and limitations on reprogramming, but an expanded capacity to reprogram (e.g., adjusting the threshold or making it easier to consult with and obtain congressional approvals) is a logical consideration.

Discussion: As with rebudgeting and appropriating, reprogramming requires approvals with the DoD and (in the case of above-threshold reprogramming) with both the DoD and Congress. Again, further research would be needed to assess the volume and associated workloads associated with adjustments to reprogramming, but this option would retain the basic structures and controls while seeking increased responsiveness through existing mechanisms.

Bridge Funding

This option would provide immediately responsive funding for a capability as a bridge until normal appropriations can be requested through the regular PPBE and reprogramming processes (e.g., see, for example, Stackley, 2016, pp. 17, 31). Given they would be followed with more traditional requests, appropriations, and authorizations, the magnitude of these funds could be relatively modest. This option would include full disclosure to Congress of how those funds are used and why those uses are important.

Discussion: Attempts at such flexible funds have been difficult historically. Past Congresses have been reticent to provide funds without knowing in advance what they are for—even when such funds exist in statute.

⁹ Idea from Tory Cuff, personal communication, 2022.

Appropriated System Level

Another type of option is the program and system level at which the appropriations should be allocated.

By Programs (*current*). Appropriations are budgeted and appropriated for individual programs-of-record (PORs) through budget line numbers (and associated PEs).

By Portfolio or Mission Areas (*new*). Given that operational objectives and capabilities are provided by the combined capabilities of systems from PORs, budgetary control could be elevated at these effect levels. This would align the budgetary appropriations and control with these net effects rather than trying to control individual programs without a view and control by portfolio or mission area.¹⁰

Discussion: Funding is currently by larger programs, so low cultural barriers would be low to continue in this way. However, funding by portfolios or mission areas is highly counter to Congress' culture and would be confusing to Congress (and the public), at least initially. The DoD would require some cultural changes as well, especially when funding crosses budgets from different military departments. In the end, however, funding by portfolio or mission area would be more closely associated with operational capabilities that affect missions and thus should be easier to understand strategically without getting into minutia. For example, what matters is not how many trucks the DoD has of a certain type but how those trucks enable certain missions.

Appropriated Stage

Another type of option is to consider flexibility in appropriations by the stage in a system's (POR's) lifecycle.

Multiple BAs (Constrained to Individual Stages) (*current*). Within the designated system level, this approach constrains funding to individual stages within RDT&E (from basic research through operational system development [BA 1, 2, 3, 4, 5, or 7] or management [BA 6]), Procurement, or O&M.

Single Appropriation for Any Stage (*new*). Single appropriation for any stage or type (e.g., the BA-8 pilot with "colorless" money).

Discussion: Funding is currently by phase. However, shifting to phase-less funding would be a large shift for Congress, and the DoD would have some cultural adjustments. Note also that even current constraints by stage is not necessarily done well by the DoD and can be confusing and arcane in that such stages are not cleanly distinguished (e.g., is RDT&E for operational upgrades best categorized as BA-7, O&M, or even earlier stages of RDT&E?); a single appropriation can alleviate these artificial distinctions to some degree.

¹⁰ For example, the DIB stated that "Capability portfolio management would better enable agile/iterative force development and management decisions to include realignment of resources from one system to another system or process reengineering effort within the portfolio to increase the velocity of minimum viable product output and overall capability delivery." (DIB, 2019, p. S135)

Reporting and Insight

To help counterbalance increased flexibility and gain insight into how the flexibility is being used, reporting could be provided to DoD and Congressional leadership on how responsive appropriations were used. This provides insight into how the flexibility was used. If stakeholders are not happy with the resulting use, they could then take measures to adjust the flexibility according to their strategic objectives. These reporting details could be provided in future budget justification exhibits or other Comptroller reports. This would entail some adjustments to tracking and reporting by the DoD.

Spending by POR (*new for appropriation at portfolio or mission levels*). Currently, spending is already reported by POR when appropriations are provided by POR. This insight could be extended (retained) if appropriations are changed to be at a portfolio or mission-area level, spending by individual programs could still be produced.

Spending by Appropriation Stage (*new for BA-8*). Here also, current reports provide spending reports by lifecycle stage when appropriations are provided by stage. These insights could be provided even if appropriations are provided in single accounts (e.g., BA-8) so that stakeholders can see how the flexibility was used.

Discussion: Both Congress and the DoD currently fund and track in these ways. In other words, if the DoD is provided funding at a portfolio or mission area, the DoD would still track and report the actual spending by individual PORs (and their stages) that draw from that larger budget, providing Congress with a mapping of actual spending by POR (and its stages) from with the larger portfolio/mission budget. Challenges can arise when a POR draws from multiple portfolio or mission budgets, but that can also happen today.

Total Spending Bounds

Another way to counterbalance increased flexibility in appropriation by stages could be through macro constraints by stage at higher strategic-capability levels to achieve strategic objectives. The bounds (minima and maxima) could be proposed in the PB request to Congress, and Congress would then set or adjust these bounds.

By Stage Across Portfolio or Mission Area (*new*). For single appropriations at any stage for a program (e.g., BA-8), overarching constraints could be applied for each stage across a portfolio or mission area. These constraints could specify total spending (minimum and maximum) for each stage. This would allow the DoD and Congress to set strategic objectives and balance between early research, new development, production (for quantities and volume), and operational system developments without trying to set micro-level controls for each program. Allocations during execution would be made by the DoD at the portfolio or mission level (e.g., through the current Integrated Acquisition Portfolio Review [IAPR] process being developed by the DoD,¹¹ or delegated to a portfolio or mission area decision authority [perhaps the Defense Acquisition Executive or a Budgetary Steering Board] with oversight of the budget).

¹¹ Cronk, 2021.

By Stage Across PEO, Military Service, or Total DoD (*new*). Alternatively for single appropriations, the strategic objectives could be set through constraints in different dimensions, such as by PEO portfolio, military service, or across the entire DoD.

Discussion: Setting bounds (minima and maxima) would take some adjustments for both Congress and the DoD, but given they are already tracked today, setting bounds should be doable. The idea is that the Secretary of Defense, the President, and Congress can use these bounds to strategically ensure that areas such as science and technology are maintained at reasonable levels.

Program Start Control

Congressional approval: new programs (*new for appropriation at portfolio or mission levels*). If appropriations are provided at levels above that of a POR, Congress could still retain authorization and appropriation control for program new starts to retain those levels of strategic control. This would retain a degree of strategic involvement in determining major new capabilities within portfolios and mission areas while allowing increased DoD responsiveness to threats by balance within the portfolios and mission areas.

Discussion: Congress already controls the starts of larger programs, so this explicitly reinforces the retention of this control even when funding is at a higher level.

Obligation Expiration Deadlines

Another area of flexibility that could be given to the DoD is the amount of time available for obligating funds by stage type (especially RDT&E and O&M). Such flexibility will help give the DoD more time to obtain better deals with contractors and more time to align available funding with threat priorities and technology opportunities.

Also, the uncertainty from a CR introduces uncertainties on the best use of partial funding under a CR. Portfolio optimization research has found that the best set of investments for a given budget does not behave monotonically (i.e., investments are not simply added when more funding becomes available, but rather some investments made when budgets are lower are replaced with others as budgets rise).¹² Therefore, the DoD cannot simply spend up to the appropriation limit under a CR and expect to always get the best value from taxpayer resources. Added time to obligate and expend funding when a budget has not been passed can facilitate the best use of those funds.

O&M Obligation Deadline: Same FY (*current*). O&M appropriations currently expire at the end of the FY in which the appropriations are issued. The problem is that in most years, the DoD operates under CRs for 3–5 months, with spending constrained to a lower percentage than the prior year and with few new starts allowed. Thus, planning cannot be finalized and must be adjusted once the final budget is passed for the FY, leaving few months for replanning, decisions, and

¹² See, for example, Figure S.2 in Chow, Silbergliitt, and Hiromoto (2009, p. xv) and Table 4.2 in Chow et al. (2011, p. 56).

executions. This reduces flexibility and the ability to obtain good deals on behalf of taxpayers.

O&M Obligation Deadline: 1 year from budget passing (new). In this option, the DoD would have a full year to obligate O&M funds not from the beginning of the FY but from the time when the full budget is passed, giving a full year for replanning, contract negotiations, and execution.

O&M Obligation Deadline: 2 years from budget passing (new). In this option, the DoD would have two full years to obligate O&M funds not from the beginning of the FY but from the time when the full budget is passed, giving more time for replanning, contract negotiations, and execution. This increased flexibility would not incur new costs and the appropriations would still be constrained by Congress by the same budgetary breakdowns.

Split O&M: Treat Maintenance like RDT&E 6.7 (2-year money) (new). There are many aspects of system maintenance and upgrades that are more like acquisition than the pure operation of systems (e.g., competing performance-based maintenance contracts and acquiring replacement parts—especially when modest upgrades or updates are needed to deal with new threats or supply-chain issues). Thus, lumping acquisition-related maintenance with operational budgets (which should be somewhat more predictable and easier to spend within the FY) leads to issues in obligating and expending maintenance funds by program offices, maintenance depots, and operational commands. Thus, one option is to create a Maintenance BA separate from an Operations BA, treating Operations the way that O&M is currently treated but treating Maintenance like RDT&E 6.7 or Procurement. This would have the added benefit of increased insight into how much is spent in Operations versus Maintenance. Of course, definitions would have to be created, and extra work would be needed to budget for and manage these as separate funds, but this may be a way to give the DoD added time to ensure that good deals and performance are obtained for system-related sustainment if longer time periods for O&M is not palatable to Congress.

RDT&E Obligation Deadline: Next FY (current). RDT&E appropriations currently expire at the end of the FY after the year in which the appropriations are issued (i.e., they are “two-year moneys”). The problem is that in most years, the DoD operates under CRs for three or more months,¹³ with spending constrained to a lower percentage than the prior year and with few new starts allowed. Thus, planning cannot be finalized and must be adjusted once the final budget is passed for the FY, leaving reduced time for replanning, decisions, and executions. This reduces flexibility and the ability to obtain good deals on behalf of taxpayers.

RDT&E Obligation Deadline: 2 years from budget passing (new). In this option, the DoD would have two full years to obligate RDT&E funds from the time when the full budget is passed (or from the end of the FY, if there is a full-year CR) rather than from the beginning of the FY. This would give more time for replanning for optimal use once the full budget situation is certain. This change would not incur new costs, and appropriations would still be constrained by Congress by the same budgetary breakdowns.

¹³ See Figure 1 of U.S. General Accountability Office, 2021, p. 6).

Discussion: The DoD would likely appreciate longer times to obligate funds. Congress, however, has strongly objected to date on any extensions.

Target Constraints for Obligation and Expenditure Target Profiles

A different type of financial flexibility could be in the “rules of thumb” target rates for monitoring and enforcing progress in obligating and expending appropriated funds over time (see Figure 2). Currently, the Comptroller and Congress uses such targets to identify programs that appear to have issues in spending funds and thus are targets for “marks” and reallocation of their funds to other priorities. Two problems emerge. First, these rates are not based on available data on normal spending profiles but on arbitrary heuristics. Second, these targets tend to be enforced on PORs regardless of what their spending plans show or whether they need more time to obtain better negotiated deals with contractors (who know the DoD is under pressure to obligate).¹⁴

The following are options for mitigating these issues.

O&E Targets: S-Curves. Currently, the O&E target curves consist of straight lines (see Figure 2). In this option, the curves would be changed to S-curves.¹⁵ This option would base the curves not on arbitrary straight lines but on extensive earned-value execution data that reflect the natural of program behaviors.

O&E Targets: Prorate in CRs. A CR can constrain funding below the prior FY budget and the PB request.¹⁶ In such cases, it would make sense to pro-rate the targets based on CR spending limits (e.g., if constrained to 80% of prior years, then reduce the targets to 80%).

O&E Targets: Delay Obligation Target Curve Starts under a CRs. Usually, new starts are not allowed during a CR. In this option, the curves would be delayed for new start PORs until the full budget is passed or the new start is allowed under an “anomaly.”

O&E Targets: Delay Obligation Target Curve Starts outside of a CR. In the (uncommon) situation where funds are authorized and appropriated by Congress by the beginning of a FY (i.e., with no CR), it often takes 6–8 weeks for the DoD comptrollers to allocate funds down through the bureaucracy to program offices. Thus, under this situation, the program offices would not have the authority to obligate any funds until 6–8 weeks into the FY, so the beginning of the O&E curves should be delayed accordingly (e.g., by 45–60 days from the start of the FY, not in October). Similarly, once authorizations and appropriations have passed a full budget after operating under a CR, it takes 6–8 weeks for that funding authority to reach the program offices, so the beginning of the target obligations should be delayed accordingly. Note that this delay in the initial O&E targets will also provide time for the program offices to make re-optimize their spending plans given any changes from anticipated budget (see the discussion above related to footnote 12).

¹⁴ See, for example, Marsalis (2022).

¹⁵ Idea from COL Jesse R. Marsalis, U.S. Army, personal communication, 2022.

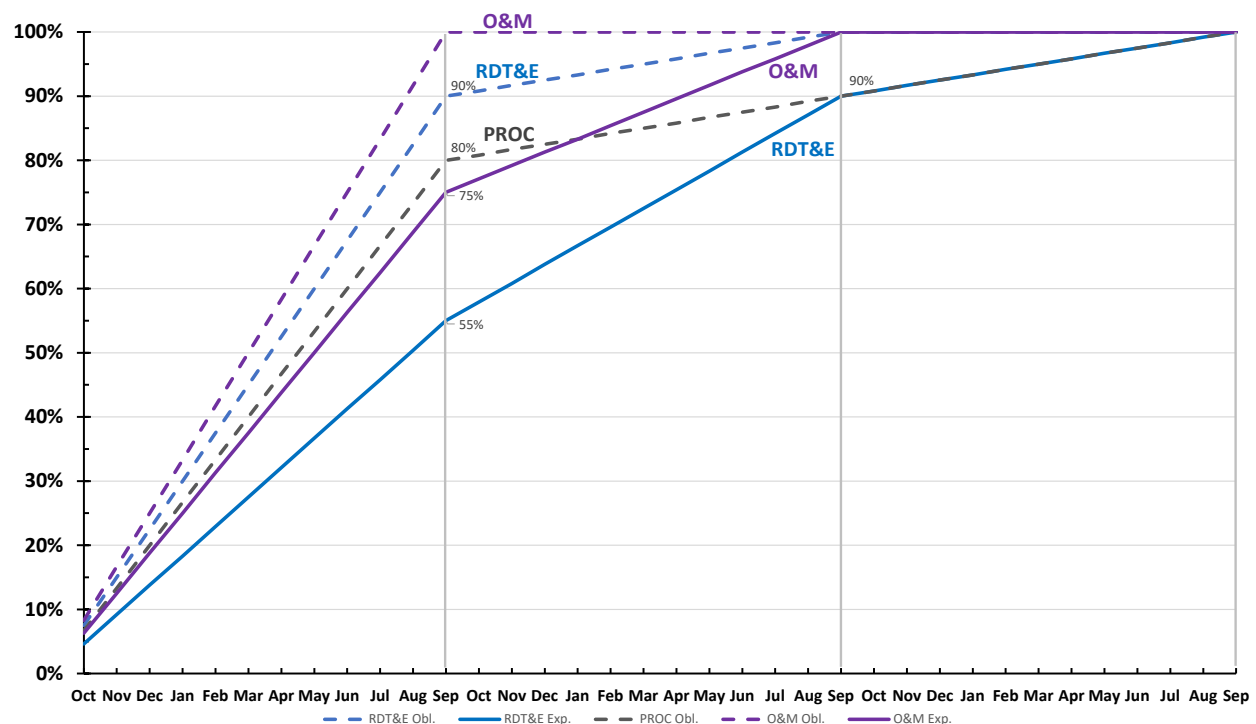
¹⁶ See, for example, Saturno, Lynch, and Heniff (2016, p. 13) and Defense Acquisition University (undated).

O&E Targets: Delay Expenditure Target Start. It often takes at least 30 days after obligation funds on a contract to receive a bill from the contractor for expenditure, so the beginning of the expenditure curve should start a month after the obligation curve begins to rise above zero, not during the same month.

O&E Targets: Spend More Later. For multi-year appropriations, the target curves could be biased for higher targets in the second year rather than the first year; currently, RDT&E is targeted to spend 90% of fund within the first of two years; Procurement is targeted to spend 80% in the first year and 90% by the end of the second of three years (see Figure 2). This would allow for more flexibility to get better deals for the government rather than rushing to spend. Of course, if needs and threats are pressing, then such funds could be spent sooner, but giving more time in the targets would give program offices more flexibility when better deals and increased planning are of the essence.

O&E Targets: MDA Designates O&E Profiles. Finally, the general rules-of-thumb targets could be replaced with MDA-approved O&E planned profiles that reflect the program plans and realities rather than arbitrary targets. This would align the O&E oversight with reality and enable programs to execute to plans, and giving this authority to the MDA would provide knowledgeable oversight of such plans and targets.

Figure 2 OSD(C) O&E Rule-of-Thumb Targets



SOURCE: Under Secretary of Defense (Comptroller) as reported in Tomasini (2017).

NOTE: The dashed lines are the obligation targets over time, and the solid lines are the associated expenditure targets over time. The O&M target curves rise the fastest, followed by RDT&E and Procurement.

Discussion: There would be some cultural adjustments for both Congress and the DoD to adjusting the obligation and expenditure target profiles over time. Those with larger shifts to later spending could have larger pushback from Congress.

Improving Transparency and Usefulness of PB Budget Exhibits

Finally, anecdotal information indicates that the extensive PB budget exhibits are excruciatingly difficult for congressional staffers to wade through to obtain the insights they need.

Improve the format of budgetary exhibits. This option would explore ways to improve these exhibits to improve transparency, insight, and usefulness. If combined with increased flexibility options, these improvements could help offset reduced congressional control while potentially having the side benefit of reducing the burden by the DoD in creating these exhibits. This idea requires further research, and motivations and equities would need to be assessed and balanced to achieve a “win-win” improvement.

Discussion: Revising the format to facilitate communication would entail significant process adjustments by the DoD.

Examples of Option Combinations

The options above could be utilized individually or in combination. Below are examples of how combinations could help address equities while mitigating tensions.

Option Combination 1: Single Appropriations by Line Number (PE) with Spend Reporting by Multiple BAs

In one combination option, the use of single appropriations (such as BA-8) could be combined with spend reporting in the older BA categories so that stakeholders would (a) know how the appropriations were spent, and (b) could tabulate across all programs so that Congress, the President, and DoD leadership could see whether there is a reasonable overall balance between short-term and long-term investments across military services and the DoD. For example, the Defensive Cyber Operations Army program (PE 0608041A) was authorized and appropriated \$58.445 million for FY2021 under BA-8,¹⁷ which can be spent (obligated and expended) on any activity (e.g., RDT&E, Procurement, or O&M). It would be informative to know how that funding was actually spent across what would normally be six types of RDT&E (6.1 through 6.7), Procurement, or O&M. Such reporting would give insight in the actual needs across these categories (e.g., whether more RDT&E or more O&M was needed to address immediate needs and threats).

- Benefits:

¹⁷ See House of Representatives (2020a, pp. 1086 and 2003).

- Provides broader measures (insight) of the balance between short-term needs and legacy systems versus long-term, new capabilities (insights within tensions T7 and T8)
- Provides flexibility and agility to meet immediate needs and priorities within a Future Years Defense Program (FYDP) and PPBE cycle (i.e., support equities C4 and D4). It may also support mission-level performance (equities C7 and D7)
- Side Effects:
 - Continued use of BA-8 reduces some Congressional control (equity C6).

Here the question is whether the increased transparency and performance benefits are worth the somewhat reduced control.

Option Combination 2: Single Appropriations by Line Number (PE) with Spend Reporting and Constraints in Multiple BAs

In another example, the use of single appropriations (such as BA-8) could be combined not only with spend reporting in the older BA categories but also with overall target constraints set by Congress for each BA category. This would introduce actual control (rather than just reporting oversight) of the overall balance between BAs while still giving the DoD more ability to adjust between BAs on a single program.

so that stakeholders would (a) know how the appropriations were spent, and (b) could tabulate across all programs so that Congress, the President, and DoD leadership could see whether there is a reasonable overall balance between short-term and long-term investments across military services and the DoD.

- Benefits: Same as Option 1, plus:
 - Provides strategic *control* of the balance between current and future needs (i.e., Congressional and DoD control of tensions T7 and T8).
- Side Effects: Same as Option 1, plus:
 - Adds management burden within the DoD to control the total BA spending within the bounds set by Congress.

Option 3: Single Appropriations by Portfolio or Mission Area with Spend Reporting, Constraints by Lifecycle Stage, and New Start Approvals

A third approach could be to use single appropriations (such as BA-8) not at the program level but rather at the level of a capability portfolio or mission area. This would allow Congress and the DoD to focus strategically on investing by the combined (net) operational capabilities for warfighters rather than on separate pieces that contribute to operational capabilities.

To mitigate this reduced control on the front end of the process, reporting could be provided by lifecycle stage (RDT&E, Procurement, and O&M) so that DoD and Congressional leadership can see the balance between these levels within the portfolio or mission area.

Additionally, Congress could set constraints (minimum and maximums) for each of these lifecycle stages to ensure that strategic balances are met. Ideally, these would be broad constraints, for example, to ensure that basic and applied research (RDT&E BAs 6.1 and 6.2) for long-term future needs are preserved even in times of pressing needs for immediate resources. Here the emphasis should be on truly strategic perspectives on the balance between immediate, near-term, and far-term investments.

Finally, while funding is responsive within the portfolio or mission area, the DoD could still be required to obtain congressional approval for new PORs, retaining Congressional say and partnership with the DoD at the front end before new system programs are formally initiated at milestone B or C.

- Benefits:
 - Increased focus of the budgetary process on strategic objectives.
 - Increased flexibility to address rapidly changing threats and technologies.
- Side Effects:
 - Reduced congressional control of spending splits between programs in the portfolio or mission area.

Appendix A. Statutory Basis of BA-8

The BA-8 Software and Digital Technology Pilot Programs is an initiative to pilot and assess a single appropriation for software development and upgrades. The DoD states that

*This initiative realigns funding from various appropriations for selected Software Pilot Programs to a new Software and Digital Technology Budget Activity (BA) “BA-08” in the Components’ respective Research, Development, Test & Evaluation (RDT&E) appropriations...the new funding mechanism aims to remove just one of many challenges program managers face when attempting to apply modern software development techniques and improve outcomes.*¹⁸

The authority to establish the BA-8 pilots is Section 8131 of the FY2021 Consolidated Appropriations Act:¹⁹

SEC. 8131. (a) Amounts appropriated under title IV of this Act, as detailed in budget activity eight of the tables in the explanatory statement regarding this Act, may be used for expenses for the agile research, development, test and evaluation, procurement, production, modification, and operation and maintenance, only for the following Software and Digital Technology Pilot programs—

- (1) Defensive Cyber Operations Army (PE 0608041A);*
- (2) Risk Management Information (PE 0608013N);*
- (3) Maritime Tactical Command Control (PE 0608231N);*
- (4) Space Command and Control (PE 1203614SF);*
- (5) National Background Investigation Services (PE 0608197V);*
- (6) Global Command and Control System-Joint (PE 0308150K);*
- (7) Algorithmic Warfare Cross Functional Team (PE 0308588D8Z); and*
- (8) Acquisition visibility (PE 0608648D8Z).*

(b) None of the funds appropriated by this or prior Department of Defense Appropriations Acts may be obligated or expended to initiate additional Software and Digital Technology Pilot Programs in fiscal year 2021.

¹⁸ Under Secretary of Defense for Acquisition and Sustainment (2020).

¹⁹ House of Representatives, 2022c. See also BA-8 entries in the budget justifications provided by the Under Secretary of Defense (Comptroller), 2020.

The following explanatory statement accompanying the FY2021 Consolidated Appropriations Act²⁰ provides added background from Congress on the BA-8 pilot:

SOFTWARE AND DIGITAL TECHNOLOGY PILOT PROGRAMS

The agreement includes a modified version of the new general provision submitted with the fiscal year 2021 President's budget request for Software and Digital Technology Pilot programs funded in a new Budget Activity Eight within the Research, Development, Test and Evaluation accounts. The agreement acknowledges the Department's rationale regarding the incremental technical challenges posed by modern software development, including implementing technical fixes to existing code, addressing cyber vulnerabilities, and integrating incrementally developed new capabilities. However, the agreement modifies the general provision under the premise that objective quantitative and qualitative evidence is needed to evaluate potential expansion of the approved pilot programs. Further, seeking additional flexibility in the execution of appropriations should not be a solution to internal accounting and guidance issues that challenge the Department's ability to execute these programs. The agreement encourages the Secretary of Defense to execute the recommended pilot programs through fiscal years 2021 and 2022, while performing a detailed analysis of the Department's accounting and financial management process for such pilot programs as compared to existing software and digital technology programs.

²⁰ House of Representatives, 2020b, p. H8167.

Appendix B. Appropriation Budget Activities

The U.S. Constitution states that “No Money shall be drawn from the Treasury, but in Consequence of Appropriations made by Law.”²¹ Thus, obligations and expenditures for acquisitions can only arise from congressional appropriation acts and associated authorization and other acts that have become law.²² For the DoD, these authorities are categorized (in order of typical decreasing size) primarily in appropriations accounts (the so-called “colors of money”) for O&M, Military Personnel, Procurement, RDT&E, Military Construction, Family Housing, and Revolving and Management Funds.²³ Note that RDT&E and Procurement are predominantly related to acquisition while the others are only partially related.

Appropriation accounts can have BAs within them. Perhaps the most relevant for acquisition are the eight BAs within RDT&E:

- BA-1: Basic Research
- BA-2: Applied Research
- BA-3: Advanced Technology Development
- BA-4: Advanced Component Development and Prototypes
- BA-5: System Development and Demonstration
- BA-6: RDT&E Management Support
- BA-7: Operational Systems Development
- BA-8: Software and Digital Technology Pilot Program.²⁴

Collectively, the appropriation accounts and BAs provide constraints and guidance on what the funding can be spend on. These constraints provide control and direction of purpose, but they also constrain well in advance of spending as to what type and category of capability can be acquired. There are limited mechanisms for reprogramming these authorizations and appropriations (McGarry, 2021a), but when a new threat or new operational need arises, these categories hinder the responsiveness of the system. For example, a new operational deficiency may require increased maintenance spending (O&M) or the development of a new sensor component (RDT&E: BA-2 through BA-7, depending on the situation), but if sufficient funds within those accounts, then the program must pursue reprogramming (if possible and with associated execution delays) or wait 1–2 years or longer for funding through future budgets.

²¹ Constitution of the United States, Article I, Section 9, clause 7 (see, for example, the U.S. National Archives and Records Administration).

²² See, for example, Stiff (2020).

²³ See, for example, Table A-1 of the Defense Budget Overview by the Under Secretary of Defense (Comptroller), 2022.

²⁴ See the introductory overview in Sargent (2022b). In-depth regulatory discussions can be found in the DoD’s Financial Management Regulation, Under Secretary of Defense (Comptroller) (2008, Vol.2).

This concern has led to the experimental BA-8 pilot appropriation, which (despite that it is housed as an RDT&E BA), can be obligated and expended for any appropriation category within the bounds of the designated pilot software and digital technology acquisition programs.

Also, each appropriation account has traditionally been given a time period by Congress in which the appropriations are available for use (obligated and expended). “All appropriations are presumed to be annual appropriations unless the appropriation act expressly provides otherwise,”²⁵ but the typical expectation is that Congress will explicitly appropriate RDT&E for 2 years, non-ship Procurements for 3 years, and ship Procurement and Military Construction for 5 years, leaving O&M and Military Personnel at 1 year (i.e., annual appropriations that are only available during the fiscal year in which they are appropriated).²⁶ The authority for longer appropriation periods lies strictly with Congress.

²⁵ See Chapter 5 of the General Accountability Office’s Principles of Federal Appropriations Law (2004).

²⁶ See Under Secretary of Defense (Comptroller) DoD 7000.14R (2008, Vol. 2A, Chapter 1, paragraph 1.7.2.25, p. 1-12. Also see Martin (2020).

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