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## THURSDAY SESSIONS VOLUME II

### **An Analytic Model for DoD Divestments**

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# An Analytic Model for DoD Divestments<sup>1</sup>

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## Abstract

This paper proposes an analytic model to improve Department of Defense (DoD) investment and divestment decisions. It builds from rules of thumb (RoTs) natural to government decision-makers and uses best practice models to improve the RoTs. It suggests three recommendations for the DoD: adopt the proposed model and address analytical barriers to inform RoT decisions, track investment vs. divestment decisions and Yes/No data points, and institute a Divestment Panel.

## Introduction and Background

Organizations invest and divest resources to prepare for the future and respond to events or conditions in the relevant social, political, resource, or business environment (Scott, 2006).<sup>2</sup> Successful *preparation* requires an effective and persistent process of management. Successful *response* requires a continuous and dynamic ability to offset threats and risks, or take advantage of opportunities. Both successful preparation and response require governance and management processes that focus decisions on the outcomes of the organization and improve the organization over time.<sup>3</sup> Because resources are limited, prioritization of activities and deciding what to divest from is as important as making decisions on where to invest next, whether budgets are increasing or decreasing.

### ***Deliberate Processes and Strategic Response***

While commercial businesses deal with these challenges every day, this is difficult for the federal government for several reasons. The complexity, purpose (public goods), and

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<sup>2</sup> “Resources” can include capital, time, and any effort in activities.

<sup>3</sup> The best literature for combining the value of strategic response with persistent management techniques can be found in Enterprise Risk Management guides. A recent book includes case studies: Fraser, Simkins, and Narvaez’s (2015) *Implementing Enterprise Risk Management: Case Studies and Best Practices*. See Chapter 32 for the lessons learned in the financial crisis of 2008.



scale present unique challenges to successful government preparation and response efforts (Wolf, 1979). First, the government sector in general, and the Department of Defense (DoD) in particular, is riddled with imperfect information and uncoordinated analytics. These often drive decision-makers to adopt rules of thumb (RoTs) to make what are usually suboptimal resource decisions (GAO, 2014). Second, best and possibly new practices are needed to simplify the logic and leverage natural biases already inherent to investment/divestment decision-making. Third, improvements in these factors would increase DoD leaders' confidence of outcome impacts inherent in planning cycles, and to be more responsive to mission or fiscal disruptions.

Models of governance responsiveness are also needed to assess the *ability* of leaders to produce results, the accountability of leaders to do what is “right,” and the desire of stakeholders to make *leaders more responsive* in the public sector. This paper will look at best practices in the private sector and borrow applicable concepts from other complex risk-driven domains to derive and present a framework for government decision-makers to identify and govern the systematic divestment of low performing investments across the organization and free up funds for better operational and organizational choices. The proposed construct draws a corollary between typical commercial drivers and the DoD resource impact areas of Readiness, Modernization, and Force Structure. The construct then proposes to use and assess performance criteria of organizational and operational impact, performance viability of capabilities as core competencies of an organization, and the economic value and affordability of the investment set for the DoD.

### **Human Decisions: “Imperfect” Resorts to Rules of Thumb**

Decisions to divest are often harder than decisions to invest.<sup>4</sup> The culprit is often emotion or self-interest *even when individuals believe they are doing the right thing*. The challenge is compounded when the possession in question is providing some value, even if that value could be achieved more effectively elsewhere. For example, an organization decides to outsource an important non-core function to a specialty organization that can deliver it more effectively and cheaper than keeping it in-house. While this makes sense at an enterprise level, the internal providing unit meets the decision with resistance and reluctance driven by self-interest. In both cases, money spent or saved has direct impact on individuals involved in the function, jobs, or bonuses.

In the case of public money, the drivers may be less direct, but emotional nonetheless. Transparent governance is often cited as a long pole in the tent for effective decision-making, but add to this the notion that divestments are harder than investments, and the problem compounds (United Nations, 2003). Criteria-driven accountability and evidence- and performance-based management become crucial to preparing good investment and divestment decisions because they allow decisions to have a basis *besides* emotion. The absence of such criteria also results in organizations optimizing locally as opposed to the enterprise level; the end state is uncoordinated at best, and likely suboptimal for the enterprise. Without objective, consistently applied criteria, there is no repeatable, impartial way to assess performance of sub-organizations and sub-objectives and how they

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<sup>4</sup> There is a literature that discusses this fact even for “regular” stock markets, where there is a reward—of making money, or losing less of it—when a good divestment is made (Brown, 2013). See also Franklin Templeton Investments, 2013.



contribute to the success of the overall enterprise. Effective governance of these choices relies on symmetric and shared awareness of the impacts on enterprise goals and an understanding of the associated risks so informed resource decisions can be made. This paper proposes three criteria to enable the needed assessments:

1. **Organizational and operational impacts:** impact of decision on outcomes and enterprise goals
2. **Performance viability:** measurable performance of capabilities that are/are not core competencies for the mission and organizational outcomes
3. **Economic value:** investment costs and economic value of the investment/divestment set

***The Priority Order of Divestment May Not Be the Opposite of the Priority Order of Investment***

In the context of organizational decision-making, the list from which divestments are selected is not necessarily the opposite of the list of proposed investments. This is true for two main reasons:

- Synergy and scale: The whole is sometimes greater than the sum of its parts. Interdependencies may not be exposed until all the pieces are put together, and an attempt is made to break the whole apart or remove a part. Without tracked data supporting key types of criteria, the imperfect information and lack of causality in measurement causes pause when divestment proposals are made (Ebrahim & Rangan, 2010).
- No financial meter or value proposition: In public goods environments, such as Defense, the lack of a “bottom line” makes comparing the value of both investment and divestment choices difficult. For example, which is more important: a weapons platform, cyber security, the network, or force protection? Size of budgets becomes a meter and this does not promote divestment, nor does a notion of “affordability,” which is challenging to define and execute (see findings and progress at MORs, n.d.).

In addition to the uncertainties and omissions in decision making, cognitive biases may reinforce predisposed notions regarding investment or divestment options. Table 1 provides a summary of cognitive biases in the context of acquisition or divestment decision-making that are shown to result in rules of thumb (RoTs) that are used to make decisions in the absence of a performance- or evidence-based approach (Duhaime & Schwenk, 1985).

**Table 1. Cognitive Biases in Decision-Making**

Investment Activity	Cognitive Bias
Consideration of alternative acquisition	Reasoning by analogy: In the decision process leading to acquisition, decision-makers rely on analogies to simpler situations that may bear little similarity to their strategic problem. Illusion of control: In the evaluation of an acquisition, decision-makers overestimate the potential impact of their expertise on the acquired unit's performance.
Management of the acquisition	Illusion of control: See above. Escalating commitment: Information on declining performance of the unit triggers rationalization and escalating commitment.
Consideration of divestment	Single outcome calculation: When divestment of a failing unit is finally considered, it quickly becomes the only course of action considered.



Without a data-driven understanding of the operational impacts and fiscal portfolio implications of investment sets, *reasoning by analogy* can turn perceived familiarity (“We have always done it this way.”) into a strategic error about projected outcomes and organizational and operational impacts. If not measured and tracked, the impacts generated by a particular investment set are easy to over-estimate with the *illusion of control*. This is especially true when emotional biases come into play (e.g., the idea that a broken program is fixable and is better than no program at all). Additionally, *escalating commitment* may arise, especially when a project is failing. Personal commitment to “save” the situation is natural for risk-averse thinkers. Risk averseness has been shown to increase with wealth, and should be relatively high for government fiscal stewards.<sup>5</sup> These biases cloud the perception of **performance viability**, and true **economic value** of available options is not considered well enough to substantiate decisions. These all result in rules of thumb (RoTs) to help deal with complexity and ambiguity but yield poor choices (Center for the Study of Intelligence, 1999).

### ***The Government Environment Arrives at Its Own “Rules of Thumb”***

In the absence of shared awareness, legislatively required governance, constraints or negative feedback mechanisms, and evidence or performance driven decisions, public organizations generally end up with RoTs or traditions that appear to overcome common sense (see Table 2).<sup>6</sup> The outcomes of low rigor can be inefficiencies and/or omissions that cause errors in decision-making in the aggregate, even though they may not have been made at the aggregate level.

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<sup>5</sup> While the income level of government workers may be disputable, and the monies they are working with are not their own, government employees are instructed to be highly regarded fiscal stewards, and we will stick with that theme in this paper. See Chu, Nie, & Zhang, 2014.

<sup>6</sup> These rules of thumb were collected from MITRE subject matter experts in the area of acquisition and resource management.





**Table 2. Rules of Thumb: Common Government Divestment Approaches**

<i>Common Government RoTs</i>	<i>Resulting Divestment Behavior</i>	<i>Net Effect</i>
<b>Organizational and Operational Impact/Reasoning by Analogy</b>		
1 Take money from fat programs or those that "seem to have a lot."	"Spend the money before it is taken."	When a budget is proportionally large, it becomes a target for redistribution and bill paying, even if the budget was needed to achieve desired outcomes.
2 Cut fairly.	Salami-slice (in current terms, "sequester") cuts across the board, with a strict percentage target.	Impact and distribution of cuts are disproportionately detrimental to priorities.
<b>Performance Viability/Illusion of Control and Escalating Commitment</b>		
3 Use trigger events (e.g., Nunn-McCurdy breaches) to mask as divestment.	Re-baseline programs and shift schedules to the right (slippage).	Money is simply spread over more years before a decision is finally made to kill a program or effort.
4 Penalize programs that measure performance.	Programs that effectively measure and report performance may be unfairly targeted and held to a different standard than those who do not.	Transparency is discouraged.
<b>Economic Value/Single Outcome Calculation</b>		
5 Pay for initiatives with "urgency" funds.	Gaps are resolved by taking money from unrelated programs.	Refusal to assess baseline for cuts related to gaps infers no business case is formulated—this can become a habit.
6 <i>Congressional disregard or favoritism</i>	This drives, or saves, many divestment decisions, for all military departments alike.	Decisions are made based on what can be approved, not what is needed.

***Business Best Practices to Deal With Cognitive Biases***

Because risks and returns are involved in divestment choices, the private sector has developed best practices (Mankins, Harding, & Weddigen, 2008). Table 3 compares best business practices against the DoD's common government practice.



**Table 3. Divestment Commercial Best Practices vs. Common Government Practices**

	Best Commercial Business Practice	Cognitive Bias Fixed	Common Government Practice
1	Dedicate a team to divestment full-time, just as you do with acquisitions.	Reasoning by Analogy	DoD has thousands of people that work on strategic and investment planning. Not many focus on divestment, but closing funding gaps <sup>7</sup>
2	Make sure you can clearly articulate how the deal will benefit the buyer and how you will motivate the unit's employees to stay until the deal is done.	Illusion of Control; Escalating Commitment	Understanding costs of transition and divestment is a captured, but under-appreciated set of costs in the DoD because transition takes a very long time with many changes in leadership
3	Work through the details of the de-integration process before you divest. <sup>8</sup>		DoD's duplicate costs for capabilities or services are on the books, yet may change names over the transition time, and are difficult to track. Limited insight into interdependencies
4	Establish objective criteria for determining divestment candidates—don't panic and sell for a song in bad times	Single Outcome Calculation	While DoD demands auditability, it does not emphasize accountability for losses, sunk costs, and returns on investment (Under Secretary of Defense [Comptroller]/Chief Financial Officer, 2013)

### Towards a Solution

The model presented here proposes that decisions should be made based on three key factors when selecting investments or divestments (Campbell & Whitehead, 2014):

- Strategic value: the criticality of the investment to operations of the enterprise
- Performance: potential to improve the business or create synergy with other businesses
- Economic value: net present value (NPV), capital flows (capital required and lifecycle efficiencies), and external or secondary effects

### The Proposed Framework and Criteria

Figure 1 below diagrams the investment/divestment logic for a commercial business (Suozzo, 2001). There are three general cases in Figure 1: (1) “obvious” buy/sell cases, (2) situations where the candidate is not strategic, and (3) cases where the candidate is strategic, but the required competencies or cost advantages are not necessarily evident. These latter two cases are most interesting for investment houses, but they are all interesting for government, because even “obvious” buys are an opportunity cost of another

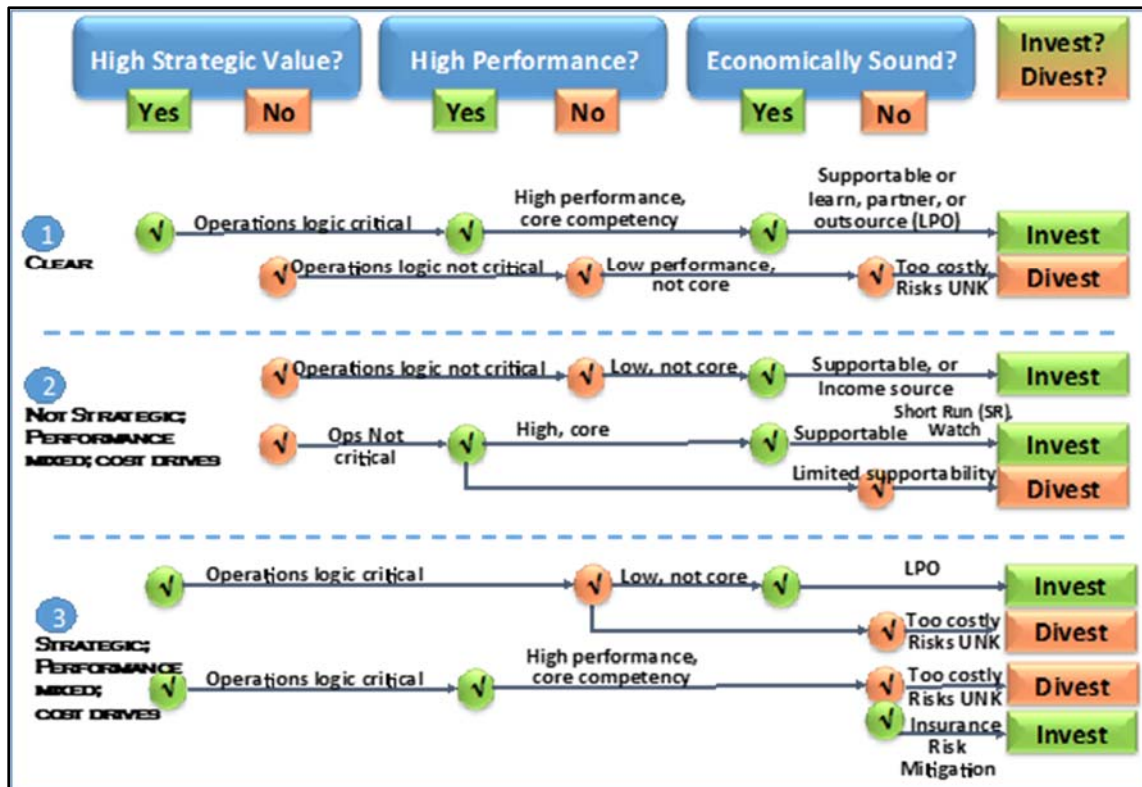
<sup>7</sup> As repeatedly witnessed by the authors.

<sup>8</sup> DoD architectures are listed in the Defense Acquisition Registry System (DARS): [www.dodenterprisearchitecture.org/exhibits/Pages/DoDArchitectureRegistrySystem\(DARS\).aspx](http://www.dodenterprisearchitecture.org/exhibits/Pages/DoDArchitectureRegistrySystem(DARS).aspx)





choice, so they must not only answer “Yes” to all three criteria, but the choice must also surpass the *holistic value* of competitors for the resources. Figure 1 makes commercial business sense.



**Figure 1. Three Criteria for Investment/Divestment for Commercial Business**

But what about self-interest and emotion? The “unmaking” of a product line? The transition of support to potential partners? *These factors alter the speed and cost of transition*, which are guided efficiently by negative feedback mechanisms that ensure survival (Hardin, 1968).<sup>9</sup>

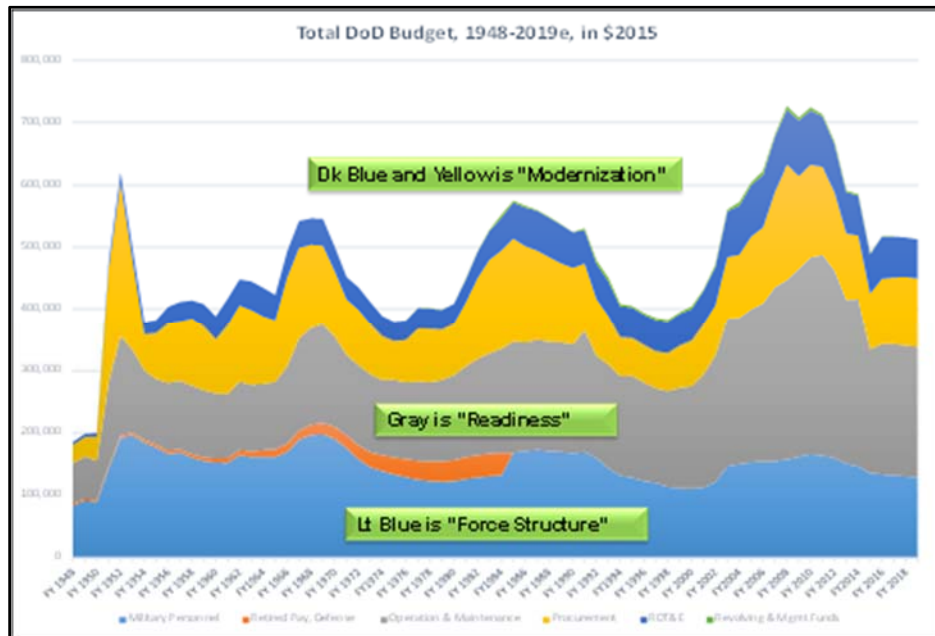
How might this apply to the DoD? For example, in response to wars, a DoD resource manager may choose to invest because the capability is strategic and high performing, but refuse to consider the high budget share and opportunity cost, or the risks that are unknown, or because the impacts to the defense industrial base are unacceptable. We end up with an array of buried or obfuscated investments that would benefit from an independent divestment panel equivalent. Figure 2 presents a proposed mapping of the business model to the DoD’s key drivers. Not only are the DoD resource concepts of Readiness, Modernization, and Force Structure attributes that the DoD seeks, but they are also Resource areas reflected in the budget (Trunkey, 2013).

<sup>9</sup> This article is actually a testimony to what happens when decision-makers choose to act in their own self-interest and are not guided by higher order feedback mechanisms, such as the over-grazing of public lands or the pollution of air.



**Figure 2. Translation of Valuation Criteria to DoD Resource Areas**

Figure 3 shows 70 years of DoD trends approximating the Congressional Budget Office's (CBO's) budgetary definitions of Readiness (all Operations & Maintenance [O&M], except Healthcare, Revolving funds, and Civilians), Modernization (Research, Development, Test, & Evaluation [RDT&E], Procurement, Military Construction, Science, & Technology, and Weapons Acquisition), and Force Structure (Military Personnel, Military Health [O&M], Family Housing).



**Figure 3. Seventy Years of Spending Trends: Impact (Readiness), Performance (Modernization), and Economies (Force Structure)**

At any given time, resources are developing, equipping, organizing, training, sustaining, and manning the force, and many dollars may “cross-over” and affect other resource pools. The high manpower of the 1950s shows the human warfighting power needed in the Korean War, the high Readiness costs in the wars since 9/11 shows the force is highly equipped for operations, and the increase in modernization of the 1980s shows the DoD's strategy to the Cold War.

These appear to be logical given the environments, but there is no objective way to assess the relative goodness of the decisions here. Additionally, a criticism across the three DoD processes—Requirements, Acquisition, and Budgeting—are that the criteria used for decision-making are not defined or well-coordinated (Defense Business Board, 2012):

- The processes do not have contemporaneous objectives (some are farther out than others).
- They track the resource pools differently: joint capability areas, program executive office families, Budget Activities, Program Elements, Appropriations, etc.
- DoD goal achievement is not measured, tracked, or aligned to resource pools to measure any kind of efficacy of planning or delivery.

While Figure 3 reflects the striking of an appropriate balance, it is impossible to determine within the current construct what balances have been achieved (Sledge, 2010). Figure 4 provides a summary of the model developed in this paper and shows how an analyst can arrive at answering “Yes” or “No” to the evaluation criteria proposed.

<h2>Selecting Investment Sets for Divestment</h2> <p><b>Yes = Opt to Keep    No = Opt to Divest</b></p>				
Criteria Area	Factor	Discriminator	Acceptance	In/Divest?
High Strategic Value or Readiness	Operations Logic Critical	Investment set meets critical equipping, training, and operations needs for current or future missions of critical COCOM forces or vital to accomplishment of a QDR Goal.	Mission Critical?	<b>Yes</b>
			Mission Essential or Support?	<b>No</b>
High Performance or Modernization	Core competency?	Validated Requirement	a. Included on Unified Command Integrated Priority list?	At least three, or b. and c. <b>Yes</b>
	High performance?	Performance in array of KPP metrics*	b. Average above threshold?	
	Modernization impact?	Impact on Balance of investment types	c. \$ profile defensible w/ Mod needs	Only two, and not b. and c. <b>No</b>
		Progresses modern-ization as needed	d. Investment worth technical risk?	
Economically Sound or Force Structure Sustainable	Cost Effective	Cost is supportable, LPO outsourced, or is income	Advantageous NPV?	Answer for each <b>Yes</b> <b>No</b>
	Secondary Effects (SE) + Insurance	Intended externalities, unintended consequences	Are SE measurable? Do they add/subtract so NPV is worthwhile?	
	Deadweight	Deadweight impact overrides investment impact	Does intervention matter to outcome?	

\*Capability Performance; Force Protection; Survivability; Sustainment (Reliability, O&S costs); Net-Readiness; Training; & Energy.

**Figure 4. Proposed Investment/Divestment Framework for the DoD**

Figure 5 borrows the logic from Figure 2 and puts the concepts in DoD terms to propose a set of criteria to assess such balance. This modified framework applied to the DoD should enable the use of a common language and valuation approach so that decisions could be made on common criteria of readiness (operational effectiveness), modernization (capability performance promise), and force structure efficacy (sustainable cost). Every investment set can be assessed against these three concepts with a “Yes” or “No” answer. We assume that all investments are compared from an end-to-end basis.



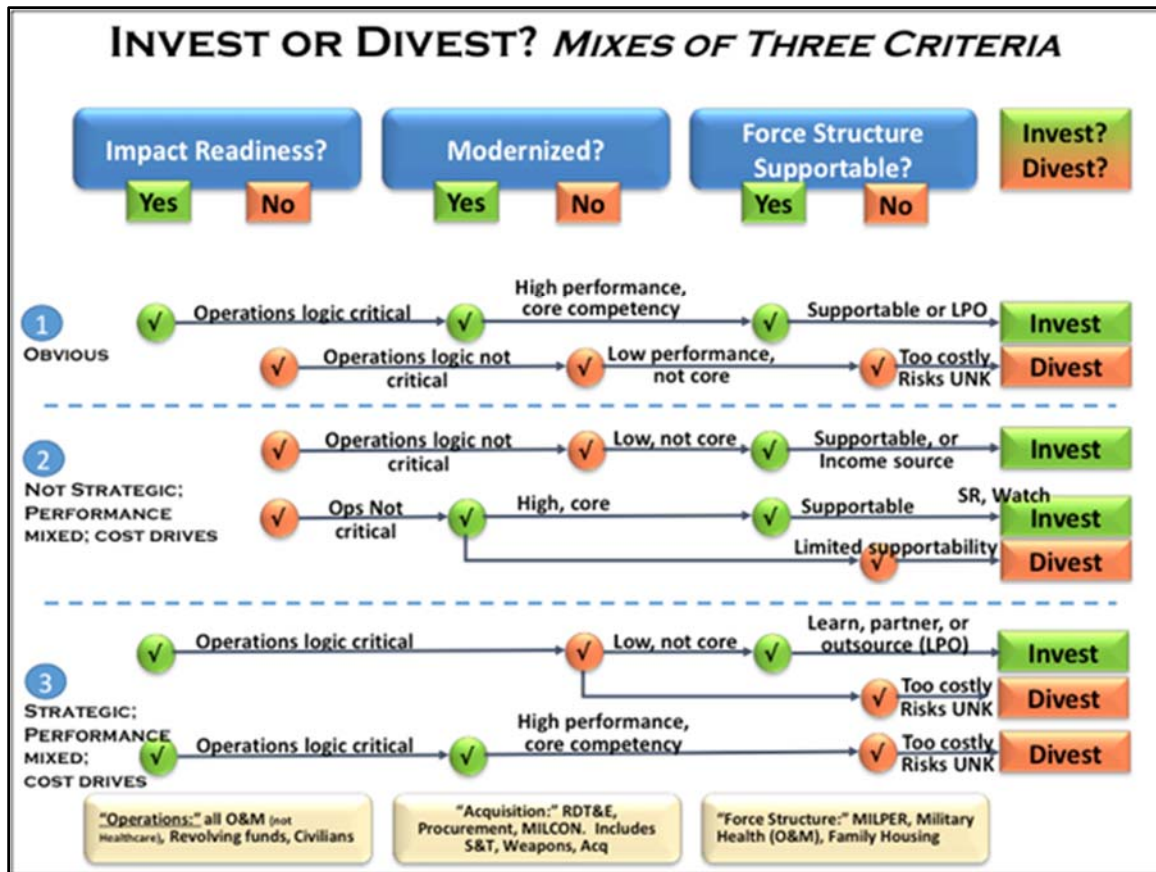


Figure 5. Proposed Investment/Divestment Framework for the DoD

**Proposed Criteria**

**Criteria #1: Strategic Value, Impact Readiness<sup>10</sup>**

Congress uses DoD-provided quarterly readiness assessments to determine resourcing requirements of the military (Trunkey, 2013). Therefore, any resource-consuming activity that occurs within the DoD should promote or support readiness either directly or indirectly. If a relationship between an activity and readiness cannot be demonstrated or articulated, then the determination should be “No” to this criterion. All investment sets *could* be placed in a priority order of Readiness contributions, and a cut line could be established.

<sup>10</sup> Much of this material was taken from Trunkey, 2013, and Osman, Wilk, and Oakley-Bogdewic, 2013.





Much effort is spent assessing how to measure how the DoD *resources readiness*, in addition to measuring Readiness levels.<sup>11</sup> The assessments are for units (“unit readiness”) and organizations within the military departments, which is not necessarily about an investment but the ability of the outputs supported to fill the critical operational logic presumed for the mission. Note that it is possible for an investment to have a “No” determination for this criterion and still be a viable investment choice. For example, activities that do not have a visible impact on the effectiveness of units but that allow them to execute their missions more efficiently or economically could be viable investment candidates.

To meet Criteria 1, the investment set must meet critical equipping, training, and operations needs for current or future missions of critical Combatant Command forces or be vital to the accomplishment of a QDR Goal.<sup>12</sup> Outcome indicators are needed for each investment set to track expectations of impact.

### **Criteria #2: Core Competency, High Performance, or Modernized**

To satisfy Criteria #2, investment sets should be able to answer one or more of the following:

- *Is it a Core Competency?* (Chairman of the Joint Chiefs of Staff [CJCS], 2012a, p. 2).<sup>13</sup> The DoD has nine Joint Capability Areas (JCAs), each with Capability Based Analyses and current validated requirements. Each has a Functional Control Board that oversees and rationalizes its area’s

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<sup>11</sup> Recent examples include the following:

From the CBO, see (1) CBO, 2013, p. 13; (2) CBO, 2011, pp. 3–4 & 8: This report separates Mission-Related and Infrastructure Related readiness spending; (3) Trunkey, 2013, pp. 1 & 17: Trunkey uses Personnel, Equipment, Supply, and Training in his definition (p. 17), as he states, “DoD spends about \$350 billion to further the readiness of its forces for current and future military operations. This includes attracting, retaining, educating, and training top quality military personnel; keeping equipment well maintained; and providing the food, fuel and other material needed to support operations” (p. 1).

From the GAO, see (1) GAO, 2013, Table 1; (2) GAO/NSIAD-95-29 (GAO, n.d.).

From the DoD, see DoD, 2013, Annexes A–M: Each of these functions can potentially be tied to one of the three concepts: A. SPACE; B. CYBER; C. CIVILIAN PERSONNEL; D. MILITARY PERSONNEL; E. READINESS; F. MUNITIONS; G. ACTIVE COMPONENT/RESERVE COMPONENT (AC/RC); H. NAVAL PRESENCE; I. STRATEGIC DEFENSE AND DETERRENT; J. SPECIAL OPERATIONS FORCES (SOF); K. INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE (ISR); L. ENERGY; M. INDUSTRIAL BASE & THE OFFICE OF ECONOMIC ADJUSTMENT.

From the CSBA, see Harrison, 2012, p. 16: Harrison stated, “Readiness funding includes the O&M budget activities for Operations Forces ..., Mobilization ..., and Training and Recruiting.”

<sup>12</sup> Criticality for COCOM forces is planned for by each service. See, for example, U.S. Army, n.d., Chapter 7. The QDR lays out the foundational force structure required from each service, which recently, was tied to the FY15 budget submission funding the force structures. See also <http://www.defense.gov/releases/release.aspx?releaseid=16567> and [http://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2015/fy2015\\_Budget\\_Request.pdf](http://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2015/fy2015_Budget_Request.pdf).

<sup>13</sup> While it is true that the Joint Staff keeps track of all requirements in the DoD, not all investments have formal requirements: “The responsibilities of the JROC over ‘joint military requirements’ include both joint requirements and single DOD Component requirements which makeup the entirety of the capabilities of the joint force and enable the DOD core mission areas” (CJCS, 2012 p. GL-6).



requirements (CJCS, 2012a, p. 2; CJCS, 2012b, Enclosure G). The DoD also conducts a Quadrennial Defense Review (QDR) every four years, and key goals are established with this review.

- *Does it deliver High Performance?* The Joint Capability Integration Development System (JCIDS) Manual provides a guide to parameterizing performance, which is a full array of metrics to gauge performance of a military system's actual and projected performance: Capability Performance (each JCA has defined performance attributes), Force Protection, Survivability, Sustainment (which includes Reliability and operating and sustainment costs), Net-Readiness, Training, and Energy (CJCS, 2012b).<sup>14</sup> Even if an investment set is not in the JCIDS process, these serve as holistic and common criteria.
- *Is the Modernization contribution needed?* The age distribution of investments in the capability area within which the investment set lies suggests the importance of modernization to the capability area, and the degree to which the funds supporting the investment set in question are value-added. A third metric would assess the degree of modernization existent in the capability area and the expectation of the investment set's contribution to this maturity. This would include market research on the DoD's need to have a leading edge capability.

### **Criteria #3: Economically Sound or Force Structure Supportable**

Investors solely seeking a return on investment (ROI) have beliefs about factors such as strategic value and performance for their financial needs. These beliefs lead to levels of confidence in investing, which in turn drive preferences over how much to change from, or divest from, their status quo portfolio. The preferences translate into behaviors such as larger numbers of trades or wider stock diversification. Investors using more highly informed analytics traded more (and therefore divested more), had more diverse portfolios, and had higher returns (Hoffman et al., 2010). With the general objective to manage the risk profile of their consumption stream, investors of all risk types (from low to high: retirement, financial diversification, capital growth, hobby, speculation) have various tendencies to “stick to the status quo” and not divest.<sup>15</sup>

### **Leveraging Other Fields: Social Return on Investment & Insurance Models**

This evidence encourages the proposed DoD divestment framework to include an economic soundness calculation that shows savings or efficiencies for the budget environment (Moore, 2009) and consider a wider measure of Social Return on Investment (SROI). Not only will the SROI calculation consider the value of strategic impact and performance, the SROI concept takes into account two new variables—secondary effects

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<sup>14</sup> See Appendix A of Enclosure A (pp. A-A-1–A-A-4) and Appendix A of Enclosure B (pp. B-A-1–B-A-4).

<sup>15</sup> From Hoffmann et al. (2010, p. 16): “Status quo bias is strong.” Mitchell et al. (2006) provide evidence that 80% of participants in 401(k) accounts initiate no trades in a two-year period, and an additional 11% make only one trade. Therefore, few investors in their sample rebalance. Similarly, Ameriks and Zeldes (2004) find that 50% of the investors in their sample do not rebalance over a nine-year period.





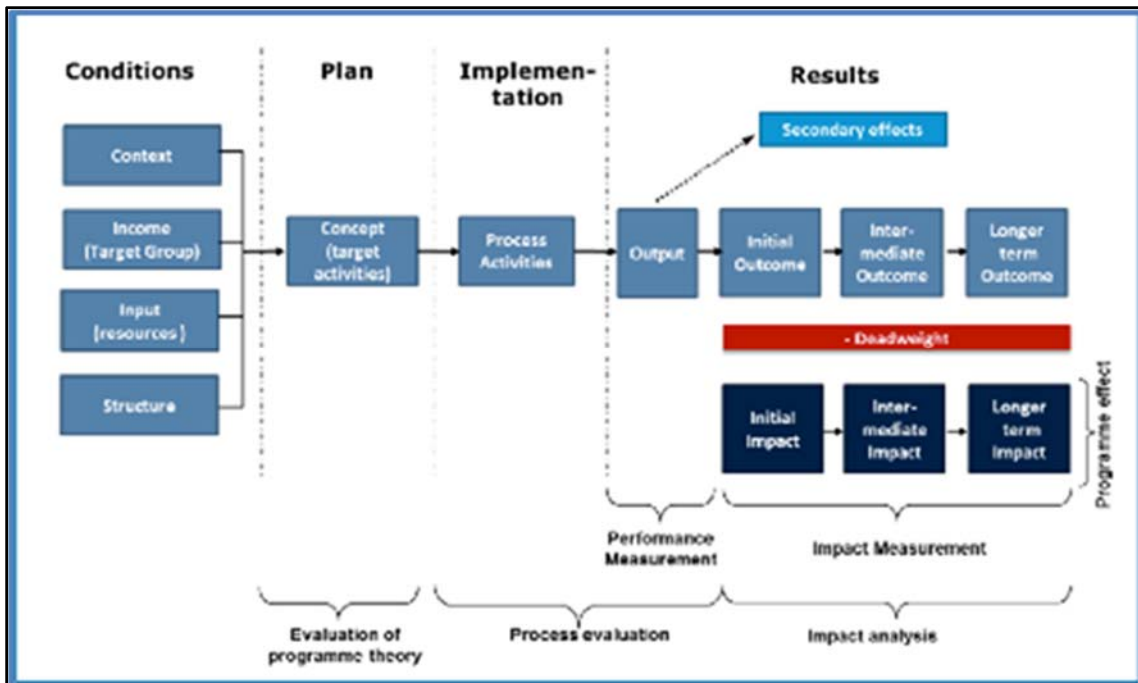
and deadweight (Rauscher, Schober, & Miller, 2012)—that make divestment decisions more difficult (Rauscher et al., 2012, p. 6):

- *Secondary effects* include impacts on other portfolios, including intended externalities and unintended consequences (e.g., the effects on other portfolios or the defense industrial base as a result of terminating a program). Enterprise architectures and cross portfolio management should capture and account for these.
- *Deadweight* is a placeholder for the levels of productivity or outcome changes that would have happened anyway, without the intervention (e.g., technology obsolescence or a politically driven decision to withdraw troops). The intent is to factor out double counting, especially if more than one or a complex intervention is being assessed.

Based on models of social investment, social entrepreneurship, and venture philanthropy, the SROI model captures varied types of impacts and outcomes. It focuses on an investment “intervention” at the enterprise, program, or project level. In addition to mission effects, their SROI calculation includes how the intervention affects how the organization functions as well—activity efficiencies—through the size of secondary and deadweight effects, as shown in Figure 6.

Time and portfolio averages taken from the insurance industry as variables that impact actuarial calculations are also worth considering here. For example, as the insurer of national security, the DoD’s needs, risks, and cost patterns evolve with threat cohorts, weapons, and technology generations over time. How these factors may change and complicate lifecycle calculations for costs and returns cannot be overlooked (Lebar, 2012; Wadsworth & Woodley, 2013). These added concepts parameterize factors that usually “blur” or are omitted from the standard DoD return on investment calculation, making divestment decisions more difficult. Figure 6 summarizes the logic model behind the SROI concept.





Note. Terms and definitions used in Figure 6:

**Context:** Economic, political, and social circumstances

**Income:** Target group needs; for the DoD, this can be a mission outcome

**Input:** Financial and personnel resources available

**Structure:** Legal and financial characteristics of sponsor

**Concept:** Roles, responsibilities, due dates of targets

**Process:** Targets linked to activities

**Output:** Directly provided contributions of program/activity to achieve desired impact(s)

**Outcome(s):** Effects or desired conditions of target group after activities are completed

**Impact:** Overall effects that are logically, theoretically, or empirically substantiated

**Initial:** Time for initial intervention impacts to be realized

**Interim:** Time for secondary effects to be observed and quantified/qualified

**Long-Term:** Time for relationships between impacts and deadweight to be delineated

**Figure 6. Logic Model Behind SROI Concept**  
(Rauscher et al., 2012)

In addition to Secondary Effects and Deadweight, our model leverages two factors from insurance modeling as important considerations (Lebar, 2012; Wadsworth & Woodley, 2013):

- First, there is a time element critical to returns on the portfolio. Time is important because of the timed targets set in the plan and because performance of incoming investments in the intervention may be masked by portfolio-wide calculations of ROI. When older investments retire, the ROI for the portfolio may rise or fall dramatically.
- Second, risk categorization errors may occur in NPV calculations. For example, models may rate a threat (or policy) being abated by the intervention as higher or lower than it should be. Not only will the error apply to the investments in the intervention, but it may also affect secondary effects or deadweight.

### What the Model Tells Us

While the detail in each criterion is potentially exhaustive, holistically the information derived from Figure 4 should address some of the biases discussed in Section 2.0 and enable improved decisions. Table 4 threads the constructs discussed in this paper. The generally omitted criterion in the first column leads to the cognitive bias usually relied upon in the second column. This leads to the DoD RoTs for divestment in the third column, to commercial best practices recommended to avoid mistakes typically made with these biases. These tie to the simple Yes/No criteria presented above.

**Table 4. Tying It All Together**

Omitted Criterion	Cognitive Bias	DoD RoTs for Divestment	Best Practices	Model Y/N Criterion
<b>Organizational &amp; Operational Impacts</b>	Reasoning by Analogy	<ul style="list-style-type: none"> <li>Take from those who have a lot</li> <li>Cut fairly (salami)</li> </ul>	Dedicate a (small) full-time team to Divestment planning	Importance: Is the investment set Mission Critical?
<b>Performance Viability</b>	<ul style="list-style-type: none"> <li>Illusion of Control</li> <li>Escalating Commitment</li> </ul>	<ul style="list-style-type: none"> <li>Use trigger events to re-baseline</li> <li>Penalize the transparent</li> </ul>	Establish Core/Non-core; Measure primary, secondary, deadweight values; Plan details of divestment transition	Confidence: Do we have confidence in the value proposition?
<b>Economic Value</b>	Single outcome calculation	<ul style="list-style-type: none"> <li>Pay for new w/ unrelated funds</li> <li>Congressional favor</li> </ul>	Account for the de-integration costs; Track variables to calculate SROI, including secondary, deadweight effects	Fidelity: Can we account for both value contribution and total cost factors for the portfolio baseline and the intervention?

Table 5 summarizes the options across three factors and Investment versus Divestment Decisions.

**Table 5. Relations Between Factor Acceptance and Invest/Divest Decisions**

Criteria Area	Factor	Discriminator	Acceptance	Invest					Divest			
				Invest	Invest	Invest	Invest	Invest	Divest	Divest	Divest	Divest
High Strategic Value or Readiness	Operations Logic Critical	Investment set meets critical equipping, training, and operations needs for current or future missions of critical COCOM forces or vital to accomplishment of a QDR Goal.	Mission Critical?	Y	N	N	Y	Y	N	N	Y	Y
			Mission Essential or Support?	N	Y	Y	N	N	Y	Y	N	N
High Performance or Modernization	Core competency?	Validated Requirement	a. Included on Unified Command Integrated Priority list?	Y	N	Y	N	Y	either	Y	N	Y
	High performance?	Performance in array of KPP metrics*	b. Average above Threshold?	Y	N	Y	N	Y	N	Y	N	Y
	Modernization impact?	Impact on Balance of investment types	c. S profile defensible w/ Mod needs	Y	either	Y	Y	Y	N	N	either	either
		Progresses modernization as needed	d. Investment worth technical risk?	Y	either	Y	either	either	either	either	either	Y
Economically Sound or Force Structure Sustainable	Cost Effective	Cost is supportable, LPO outsourced, or is income	Advantageous NPV?	Y	Y	Y	Y	either	N	N	N	N
	Secondary Effects+ Insurance	Intended externalities, unintended consequences	Are SE measurable? Do they add/subtract so NPV is worthwhile?	either	Y	Y	Y	Y	either	N	either	either
	Deadweight	Deadweight impact overrides investment impact	Does intervention matter to outcome?	Y	Y	Y	Y	Y	either	either	either	either



The following are key observations from Table 5:

1. The economic factors drive the decisions.
  - **Cost Effectiveness** drives investment except when mission criticality and performance are high, and secondary benefits are high and the deadweight is minimal.
  - **Deadweight**—Other factors actually drive the outcome, not the investment—uniquely determines investment and must be accounted for.
  - Only in one case are the **Secondary Effects** immaterial to investment choices, where everything else is affirmative (the first column under Invest).
2. High performance or modernization impact worked with the economic variables. The **Impact on Balance of Investment Types** is also nearly collinear with invest/divest decisions.
3. **Mission Criticality** may not be necessary for investment selection (e.g., when investments drive costs down while minimally impacting missions).

These conclusions are not natural products of the traditional RoTs discussed in the Introduction and Background and further demonstrate how uninformed RoTs lead to suboptimal decisions.

Figure 7 shows some well-known DoD investment and divestment choices overlaid on the proposed model. For example, an obvious investment area is Classified Networks since it easily meets all three criteria presented by model. The decision to divest of the next generation of amphibious assault vehicle is also supported by the model since while useful, it does not materially appear to affect the DoD's ability to execute missions (not mission critical), and, crucially, it presented limited force structure supportability. An example of a non-mission critical/non-strategic recommended investment area is Defense Finance and Accounting Services (DFAS) because it is important for efficiently operating the enterprise while minimally impacting actual execution of operational missions.



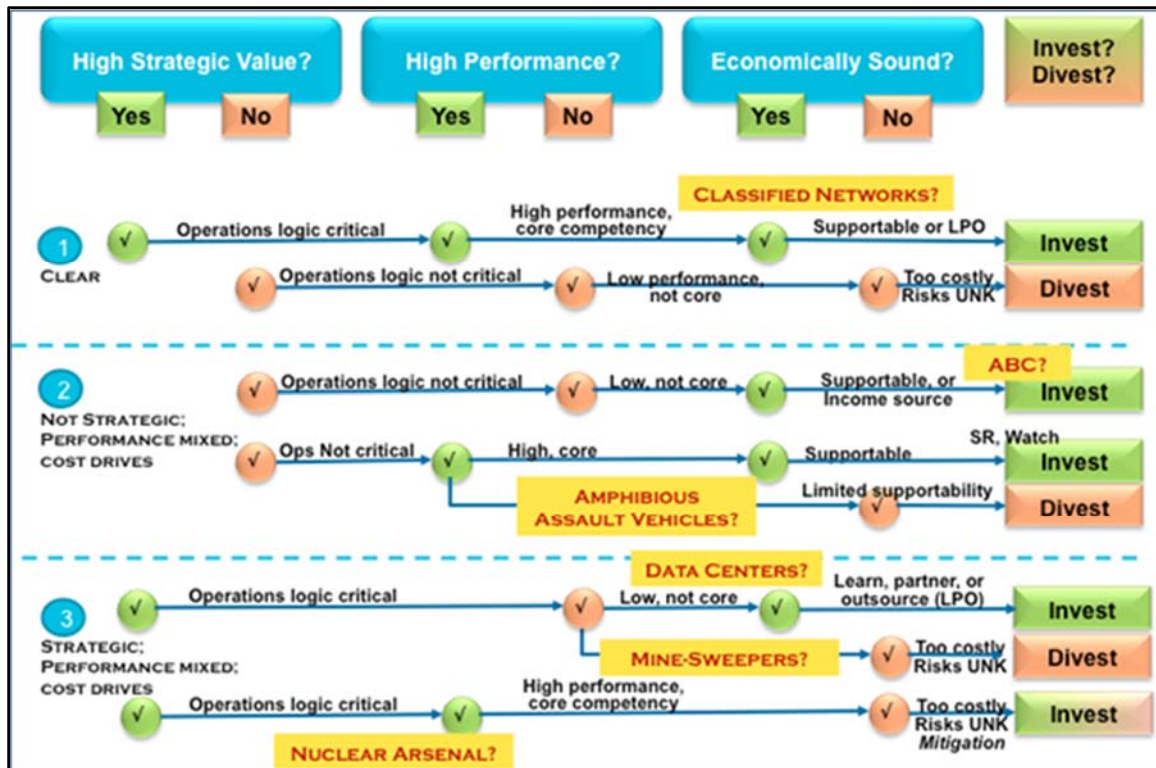


Figure 7. Exemplars Demonstrating the Proposed Model

## Recommendations

From a very wide discussion of rules of thumb in environments with imperfect information to SROI models to DoD criteria and data, we have drawn together an understanding of why persistent investment and divestment management data and processes can overcome predictable mistakes in resource decisions. We now present three basic recommendations:

1. Adopt the model presented in this paper and address the analytical barriers to allow decision-makers to answer the three basic questions presented in the model.
2. Track the logic of Yes/No data points as a feedback mechanism to decision-makers.
3. Implement an industry best practice: divestment panels.

**Recommendation 1:** *Adopt the model presented above to enable shared awareness and improved analytics so decision-makers are no longer forced to rely on uniformed RoTs to make decisions.*

Start small. Use the model for key program choices, and then for capability area choices (such as a program executive office), and then for portfolio choices. Understand the types of data needed to answer the questions in Figure 4. Begin using data from the DoD Requirements, Acquisition, and Budgeting processes to answer questions previously answered by rules of thumb. Enable the population and use of the SROI model, which incorporates data from all three criteria sets. The use of deliberate criteria could lead to the reward of auditability and the delivery of better results.



**Recommendation 2:** *Track the logic of Yes and No investment data points—at least at a capability level—so that the logic is captured, results are transparent, and the organization improves and learns from successes and mistakes. This will perpetuate responsive governance.*

Create a database of Invest/Divest decisions, traceable to the three criteria, and to the actual results produced over time. This traceability is difficult, as investments get joined and split, and the investment decisions made at the time are often altered before investments are actually implemented. The intent can be tracked, however, and the investment and divestment strategies can be logically understood. This should help stage migration plans so that Divestments become part of the usual process. Make decisions using the proposed framework and encourage the use of analytics, tracked to productive implications.

**Recommendation 3:** *Adopt an industry best practice of divestment panels as a way to promote the best use of resources instead of relying on rules of thumb as reliable predictors.*

The DoD should adopt the framework described in the earlier section, Human Decisions: “Imperfect” Resorts to Rules of Thumb, as a method for determining investments with simple and meaningful criteria while at the same time employing a divestment panel as a portion of their means of governance.

It should also establish standing divestment panels comprised of non-advocates who report their results annually to senior Component leadership. Investment panels exist at many levels in the DoD, but per Title 10, the Secretary of Defense and the Military Secretaries have the final say on divestment.

The DoD has the ability to divest, for example, when politics calls for “peace dividends.” In response to the 2011 Budget Control Act, the DoD was able to divest from \$500 billion per year (7%–10% of totals, varied across organizations). The DoD reduced Force Structure and also found “efficiencies” under the oversight of Secretary Gates (see the Defense Strategic Guidance [DoD, 2012]; DoD, 2010). Cuts can be taken in Strategic/Readiness endstrength equipping and training, Performance/Modernization upgrades to weapon and systems portfolios, or Economic/Force Structure areas of manpower-related investments. Savings take time to realize and are difficult to account for when continued operations and innovation are still taking place (Pellerin, 2013).

The DoD also has the Issue Paper process supporting RMD-700, which allows community leaders across the DoD to recommend shifts of resources before the budget is finalized. Money moved in this process is usually a small fraction of total spending and is considered fallout from the annual budgeting process (Huo, 2011; USD[C], 2013).<sup>16</sup> Both types of formal divestment processes are normal parts of the current bureaucracy, but do not necessarily illustrate a governance process relying on an informed thought construct to foster and maintain a forward-looking, innovative organization.

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<sup>16</sup> In the *Fiscal Year (FY) 2014 President Budget Submission*, the USD(C; 2013) claimed, “RMD 700 identifies a limited number of DoD-wide performance goal priorities” and suggests that “DoD Component-specific budget justification material should be consistent with” these goals.





In a budget-scarce environment, divestment strategies such as those recommended in this paper could prove to be useful for justification and selection of the “keeper” investment sets. The impact of a divestment panel could be measured. If the DoD captures and tracks distinct data on strategic impact, performance, and economic efficiencies, the DoD and Congress could reward good results with leadership recognition and continued fiscal support to sustain the positive pattern.

## Summary and Conclusions

This paper outlined a logical investment/divestment choice structure that corrects old RoTs that predictably lead to suboptimal choices. It relies on decision-makers having the capability and reward structure to use such a structure in a complex environment. It assumes that the DoD institution would be motivated by Congress to hold decision-makers accountable, and in turn, these leaders would be rewarded for being responsive and productive in their choices. In this new frame, divestments would be seen as strategic opportunities, and the reward structure would incentivize accountability and measurable outcomes. The following are two recommended next steps:

- **Design a tool for Preparation:** Gather data to answer Yes/No questions; program tool to produce Invest/Divest choices; alter model’s basis with events.
- **Use for effective Response:** Use analytics to increase capability of leaders; link analytics to “accountability data”; and effectively reward organizations and their leaders.

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