



**DEFENSE ACQUISITION RESEARCH JOURNAL**

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*Consolidation of the U.S. Defense  
Industrial Base*

**John M. Deutch**

*Adaptation of Porter's Five Forces Model  
to Risk Management*

**John F. Rice**

*The High Flying Leadership Qualities:  
What Matters the Most?*

**Col Robert L. Tremaine, USAF (Ret)**

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## ***ARJ EXTRA***

**The Defense Acquisition Professional  
Reading List**

*The Polaris System Development: Bureaucratic  
and Programmatic Success in Government*

**Written by Harvey M. Sapolsky**

**Reviewed by Dr. Michael Pryce**



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*Performing the Duties of Under Secretary of Defense for Acquisition and Sustainment*

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## Consolidation of the U.S. Defense Industrial Base

*John M. Deutch*

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A former Deputy Secretary of Defense discusses acquisition reform and the wisdom of downsizing/rightsizing the defense industrial base at the turn of the 21st century.

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## Adaptation of Porter's Five Forces Model to Risk Management

*John F. Rice*

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In this article, the author presents typical systems engineering models such as the work breakdown structure, functional flow block diagram, and risk reporting matrix, and explains how they are analogous to organizational hierarchies, enterprise flowcharts, and uncertainty matrices, respectively. Particular emphasis is placed on risk management and the associated adaptation of a strategic management model called the Five Forces Model.



# 140

## **The High Flying Leadership Qualities: What Matters the Most?**

*Col Robert L. Tremain, USAF (Ret.)*

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The author makes the case that when it comes to leadership, leaders underestimate, fail to notice, and/or prematurely dismiss how they ignore certain leadership traits to the detriment of their organizations. Demographic factors too can easily influence how leaders/subordinates judge certain leadership qualities through their personal experiences and exposure to various situations.

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We are currently soliciting articles and subject matter experts for the 2022 *Defense ARJ* print year. Please see our guidelines for contributors for submission deadlines





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# FROM THE CHAIRMAN AND EXECUTIVE EDITOR

Dr. Larrie D. Ferreiro

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This issue of the *Defense Acquisition Research Journal* is a retrospective of the 100 issues that have been published in the span of almost 30 years. This issue traces the path that defense acquisition research, as presented in these pages, has taken from the end of the Cold War until today. To this end, we are reprinting selected articles from our history, which chronicle how the field has evolved.

As the former managing editor, Norene Johnson, recounted in the *Defense ARJ* issue 87 (January 2019), since its inauguration in 1994, the journal “has stayed true to the publisher’s original intent—to specifically meet the requirements of the Defense Acquisition Workforce, giving Acquisition professionals a forum to publish scholarly research pertaining to subject matters relevant to the Defense Acquisition community.”

While we have stayed true to the original intent of meeting the requirements of the Defense Acquisition Workforce, the subjects of interest have of course changed over the span of three decades. For the first decade until 2004, those subjects were: Acquisition Reform, Acquisition Strategy, Management, Organizational Behavior, Interoperability, and Cost and Schedule.<sup>1</sup> From 2004 until the present, Acquisition Reform, Management, and Cost and Schedule (including cost growth and analysis) remained at the top of the list, but other priorities changed. Systems Engineering,

Contracts, and Performance and Technology became new priorities for defense acquisition research, which correlates with the 21st-century rise of network-centric warfare and web-enabled capabilities.<sup>2</sup>

Over that three-decade span, the journal has undergone several name changes. In this issue, we are reprinting the most widely read and cited article from each of these incarnations. The journal was first issued under the name *Acquisition Review Quarterly* (1994–2003), with its opening remarks penned by John M. Deutch, then United States Deputy Secretary of Defense. He is also the author of the premier article from that period, “Consolidation of the US Defense Industrial Base” (issue 8, Fall 2001), which opens this issue.

In 2004, the journal became the *Defense Acquisition Review Journal* (2004–2010). In that period, the most cited article was John Rice’s “Adaptation of Porter’s Five Forces Model to Risk Management” (issue 55, July 2010), which is the second article in this issue.

In 2011, the journal took the name *Defense Acquisition Research Journal*, under which it is published today. To date, the most widely read article has been Robert Tremaine’s “The High Flying Leadership Qualities: What Matters the Most?” (issue 77, April 2016), which is the third article.

We also reprint the first book review from our Defense Acquisition Professional Reading List, written by Michael Pryce about *The Polaris System Development: Bureaucratic and Programmatic Success in Government* by Harvey Sapolsky (issue 57, January 2011).

We are pleased to welcome to the Editorial Board Dr. Cynthia R. Cook of the Center for Strategic and International Studies.

<sup>1</sup> Subjects from 1994–2004 from Elder, Mitchell J., “An Eleven Year Retrospective of the *Acquisition Review Journal*” (March 2005). Wright-Patterson AFB, OH, Air Force Institute of Technology: *Theses and Dissertations* no. 3831, <https://scholar.afit.edu/etd/3831>.

<sup>2</sup> Subjects from 2005–2021 from online keyword searches conducted by Emily Beliles, January 2022.

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# FROM THE DAU PRESIDENT

James P. Woolsey

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Twenty-seven years ago, as the world watched the Cold War draw to a close, DAU fielded a new publication to fill a scholarly need that had never been addressed before. The publication that would eventually become the *Defense Acquisition Research Journal* (*Defense ARJ*) was created to act as an information and research channel dedicated specifically to the defense acquisition community. It aimed to provide acquisition professionals with relevant management tools; foster the exchange of opinions, information, and policy decisions; and maintain awareness and insight regarding acquisition management philosophies.

Three decades and 100 issues later, the *Defense ARJ* has evolved and grown into an integral piece of the defense acquisition landscape. Thanks to the advent of the internet making academic communities more interconnected than ever before, the *Defense ARJ* is able to work with respected professionals from organizations across the globe to provide relevant, cutting-edge research to a growing readership around the world.

In our digital age, the global acquisition ecosystem is growing and evolving at an ever-accelerating pace, and the *Defense ARJ* is evolving alongside it. Improvements to the digital publication are making articles easier to access, more intuitive to interact with, and simpler to share. The *Defense ARJ* is also working to ensure that its articles more easily find their way into the hands of those who need them and provide acquisition professionals pertinent, current research at their point of need. By removing obstacles to learning and incentivizing growth and discussion in the acquisition workforce, the *Defense ARJ* looks to create a truly foundational sense of freedom and accessibility for its readers.

As DAU undergoes its transformation to better meet the needs of the acquisition workforce, the *Defense ARJ* will transform alongside to bring the cutting edge of acquisition and management to those who need it, when they need it, as accessibly and efficiently as possible.



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# DAU CENTER FOR DEFENSE ACQUISITION

## RESEARCH AGENDA 2022

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This Research Agenda is intended to make researchers aware of the topics that are, or should be, of particular concern to the broad defense acquisition community in the government, academic, and industrial sectors. It is compiled using inputs from subject matter experts (SMEs) across those sectors. These topics are periodically vetted and updated as needed to ensure they address current areas of strategic interest.

The purpose of conducting research in these areas is to provide solid, empirically based findings to create a broad body of knowledge that can inform the development of policies, procedures, and processes in defense acquisition, and to help shape the thought leadership for the acquisition community. These research topics should be considered guidelines to help investigators form their own research questions. Some questions may cross topics and thus appear in multiple research areas.

Potential researchers are encouraged to contact the DAU Director of Research ([research@dau.edu](mailto:research@dau.edu)) to suggest additional research questions and topics, or with any questions on the topics.

### **Affordability and Cost Growth**

- Define or bound “affordability” in the defense portfolio. What is it? How will we know if something is affordable or unaffordable?

- What means are there (or can be developed) to measure, manage, and control “affordability” at the Program Office level? At the industry level? How do we determine their effectiveness?
- What means are there (or can be developed) to measure, manage, and control “Should Cost” estimates at the Service, Component, Program Executive, Program Office, and industry levels? How do we determine their effectiveness?
- What means are there (or can be developed) to evaluate and compare incentives for achieving “Should Cost” at the Service, Component, Program Executive, Program Office, and industry levels?
- Recent acquisition studies have noted the vast number of programs and projects that don’t make it through the acquisition system and are subsequently cancelled. What would systematic root cause analyses reveal about the underlying reasons, whether and how these cancellations are detrimental, and how acquisition leaders might rectify problems?
- Do joint programs—at the inter-Service and international levels—result in cost growth or cost savings compared with single-Service (or single-nation) acquisition? What are the specific mechanisms for cost savings or growth at each stage of acquisition? Do the data lend support to “jointness” across the board, or only at specific stages of a program, e.g., only at Research and Development (R&D), or only with specific aspects, such as critical systems or logistics?
- Can we compare systems with significantly increased capability developed in the commercial market to Department of Defense (DoD)-developed systems of similar characteristics?
- Is there a misalignment between industry and government priorities that causes the cost of such systems to grow significantly faster than inflation?
- If so, can we identify why this misalignment arises? What relationship (if any) does it have to industry’s required focus on shareholder value and/or profit, versus the government’s charter to deliver specific capabilities for the least total ownership costs?

## **Industrial Productivity and Innovation**

### *Industry insight and oversight*

- What means are there (or can be developed) to measure the level of oversight and/or control that government has over subcontractors?
- What means are there (or can be developed) to measure costs of enforcement (e.g., auditors) versus actual savings from enforcement?
- What means are there (or can be developed) to evaluate and compare incentives for subcontractor/supply chain competition and efficiencies?
- What means are there (or can be developed) to evaluate and compare market-based incentives with regulatory incentives?
- How can we perform institutional analyses of the behaviors of acquisition organizations that incentivize productivity?
- What means are there (or can be developed) to evaluate and compare the barriers of entry for SMEs in defense acquisition versus other industrial sectors?
- Is there a way to measure how and where market incentives are more effective than regulation, and vice versa?
- Do we have (or can we develop) methods to measure the effect of government requirements on increased overhead costs, at both government and industrial levels?

- Examine the possibilities to rationalize and balance the portfolio of capabilities through buying larger quantities of common systems/subsystems/components across Defense Agencies and Services. Are there examples from commercial procurement and international defense acquisition that have produced positive outcomes?
- Can principal-agent theory be used to analyze defense procurement realities? How?
- What means are there (or can be developed) to measure the effect on defense acquisition costs of maintaining the industrial base in various sectors?
- What means are there (or can be developed) of measuring the effect of utilizing defense industrial infrastructure for commercial manufacture, particularly in growth industries? In other words, can we measure the effect of using defense manufacturing to expand the buyer base?
- What means are there (or can be developed) to measure the breadth and depth of the industrial base in various sectors that go beyond a simple head count of providers?
- Has change in the industrial base resulted in actual change in output? How is that measured?

### ***Independent Research and Development***

- What means do we require to measure the cost-effectiveness or Return on Investment (ROI) for DoD-reimbursed Independent Research and Development (IR&D)?
- Can we properly account for sales and revenues that are products of IR&D?
- Can we properly account for the barriers to entry for SMEs in terms of IR&D?
- Examine industry trends in IR&D, for example, percentage of revenue devoted to IR&D, collaboration with academia. How do they vary by industry sector—in particular, those associated with defense acquisition?
- What means are there (or can be developed) to measure the ROI for DoD-reimbursed IR&D versus directly funded defense R&D?
- What incentive structures will motivate industry to focus on and fund disruptive technologies?
- What has been the impact of IR&D on developing disruptive technologies?

## **Competition**

### ***Measuring the effects of competition***

- What means are there (or can be developed) to measure the effect on defense acquisition costs of maintaining an industrial base in various sectors?
- What means are there (or can be developed) for measuring the effect of utilizing defense industrial infrastructure for commercial manufacture, particularly in growth industries? In other words, can we measure the effect of using defense manufacturing to expand the buyer base?
- What means are there (or can be developed) to determine the degree of openness that exists in competitive awards?
- What are the different effects of the two, best value, source selection processes (trade-off versus lowest price technically acceptable) on program cost, schedule, and performance?

### ***Strategic competition***

- Is there evidence that competition between system portfolios is an effective means of controlling price and costs?
- Does lack of competition automatically mean higher prices? For example, is there evidence that sole source can result in lower overall administrative costs at both the government and industry levels, to the effect of lowering total costs?
- What are long-term historical trends for competition guidance and practice in defense acquisition policies and practices?
- To what extent are contracts awarded noncompetitively by congressional mandate, for policy interest reasons? What is the effect on contract price and performance?
- What means are there (or can be developed) to determine the degree to which competitive program costs are negatively affected by laws and regulations such as the Berry Amendment, Buy American Act, etc.?
- The DoD should have enormous buying power and the ability to influence supplier prices. Is this the case? Examine the potential change in cost performance due to greater centralization of buying organizations or strategies.

### ***Effects of industrial base***

- What are the effects on program cost, schedule, and performance of having more or fewer competitors? What measures are there to determine these effects?
- What means are there (or can be developed) to measure the breadth and depth of the industrial base in various sectors, that go beyond a simple head count of providers?
- Has the change in industrial base resulted in actual change in output? How is that measured?

### ***Competitive contracting***

- Commercial industry often cultivates long-term, exclusive (noncompetitive) supply chain relationships. Does this model have any application to defense acquisition? Under what conditions/circumstances?
- What is the effect on program cost performance of awards based on varying levels of competition: (a) “Effective Competition” (two or more offers); (b) “Ineffective Competition” (only one offer received in response to competitive solicitation); (c) “Split Awards” versus winner take all; and (d) “Sole Source.”

### ***Improve DoD outreach for technology and products from global markets***

- How have militaries in the past benefitted from global technology development?
- How/why have militaries missed the largest technological advances?
- What are the key areas that require DoD focus and attention in the coming years to maintain or enhance the technological advantage of its weapons systems and equipment?
- What types of efforts should DoD consider pursuing to increase the breadth and depth of technology push efforts in DoD acquisition programs?
- How effectively are DoD’s global Science and Technology (S&T) investments transitioned into DoD acquisition programs?

- Are managers of DoD's applied R&D (i.e., acquisition program) investments effectively pursuing and using sources of global technology to affordably meet current and future DoD acquisition program requirements? If not, what steps could DoD take to improve its performance in these two areas?
- What are the strengths and weaknesses of DoD's global defense technology investment approach as compared to the approaches used by other nations?
- What are the strengths and weaknesses of DoD's global defense technology investment approach as compared to the approaches used by the private sector—both domestic and foreign entities (companies, universities, private-public partnerships, think tanks, etc.)?
- How does DoD currently assess the relative benefits and risks associated with global versus U.S. sourcing of key technologies used in DoD acquisition programs? How could DoD improve its policies and procedures in this area to enhance the benefits of global technology sourcing while minimizing potential risks?
- How could current DoD/U.S. Government Technology Security and Foreign Disclosure (TSFD) decision-making policies and processes be improved to help DoD better balance the benefits and risks associated with potential global sourcing of key technologies used in current and future DoD acquisition programs?
- How do DoD primes and key subcontractors currently assess the relative benefits and risks associated with global versus U.S. sourcing of key technologies used in DoD acquisition programs? How could they improve their contractor policies and procedures in this area to enhance the benefits of global technology sourcing while minimizing potential risks?
- How could current U.S. Government Export Control system decision-making policies and processes be improved to help DoD better balance the benefits and risks associated with potential global sourcing of key technologies used in current and future DoD acquisition programs?

### ***Comparative studies***

- Compare the industrial policies of military acquisition in different nations and the policy impacts on acquisition outcomes.
- Compare the cost and contract performance of highly regulated public utilities with nonregulated “natural monopolies” (e.g., military satellites, warship building).
- Compare contracting/competition practices of DoD with the commercial sector in regard to complex, custom-built products (e.g., offshore oil platforms).
- Compare program cost performance in various market sectors: highly competitive (multiple offerors), limited (two of three offerors), or monopoly?
- Compare the cost and contract performance of military acquisition programs in nations having single “purple” acquisition organizations with those having Service-level acquisition agencies.

## **Cybersecurity**

### ***General questions***

- How can we perform analyses of the investment savings associated with institution of robust cybersecurity measures?



- How can we measure the cybersecurity benefits associated with using continuous integration and continuous deployment methodologies?
- How can we cost the discrete elements of cybersecurity that ensure system operational effectiveness within the categories of system functions, mission execution, system performance, and system resilience?
- How can we assess the most effective methodologies for identifying threats quickly, assessing system risk, and developing countermeasures?
- How can we establish a repeatable process for incorporating a continuous Authorization to Operate (ATO) construct for all software-centric acquisition programs?
- How can we articulate cyber risk versus operational risk so Combatant Commands (COCOMs) can be better informed when accepting new software?

### ***Costs associated with cybersecurity***

- What are the cost implications of (adding) cybersecurity to a program?
- What are reasonable benchmarks for cybersecurity cost as a percentage of Prime Mission Product (PMP)?
- What are the key cost drivers associated with cybersecurity?
- Is cybersecurity best estimated as a below-the-line common element (similar to Systems Engineering/Program Management or Training) or a PMP element?
- How are risks associated with not incorporating cybersecurity appropriately best quantified/monetized?

## **Acquisition of Services**

### ***Metrics***

- What metrics are currently collected and available on services acquisition:
  - Within the DoD?
  - Within the U.S. Government?
  - Outside of the U.S. Government?
- What and how much do these metrics tell us about services acquisition in general and about the specific programs for which the metrics are collected?
- What are the possible metrics that could be used in evaluating services acquisition programs?
  - How many metrics should be used?
  - What is the efficacy of each metric?
  - What is the predictive power of each metric?
  - What is the interdependence (overlap) between metrics?
- How do we collect data for services acquisition metrics?
  - What is being done with the data currently being collected?
  - Are the data being collected on services acquisition reliable?
  - Is the collection process affecting the data collected for services acquisition?
- How do we measure the impact of different government requirements on overhead costs and rates on services contracts?

### ***Industrial base***

- What is the right amount of contracted services for government organizations?
  - What are the parameters that affect Make/Buy decisions in government services?
  - How do the different parameters interact and affect government force management and industry research availability?
- What are the advantages, disadvantages, and impacts of capping pass-through costs, and how do they change with the value of the pass-through costs?
- For Base Operations and Support (BOS) contracts, is there a best size? Should large BOS contracts be broken up? What are the parameters that should be considered?
- In the management of large service contracts, what is the best organization? Is the System Program Office a good model? What parameters should be used in evaluating the advantages and disadvantages of an organization to manage large service contracts?
- What effect does strategic sourcing and category management have on small business if the small business is a strategic source or whether the small business is not a strategic source?
- Do the on-ramping and off-ramping requirements of some service contracts have an effect on the industrial base? If so, what are the impacts?

### ***Industry practices***

- What private sector business practices, other than maximizing profit, can the government effectively use to incentivize performance and otherwise improve business relationships with vendors?
- What are the best methods for evaluating different incentives to encourage small businesses to participate in government services contracts?
- What potential benefits can the government achieve from long-term supply chain relationships? What are the disadvantages?
- What benefits does industry get from the use of category managers and functional domain experts, and can the government achieve the same benefits?
- How can the government best capture, validate, and use demand management strategies?
- Are current service acquisition taxonomies comprehensive, or can they be improved?

### ***Make/Buy***

- What methods can best be used to define the cost-value relationship in different classes of service contracts?
- Can we develop a method for determining the “should cost” of different services?
- Can we define and bound affordability of specific services?
- What are the characteristics of “inherently governmental” activities, and how can we evaluate the value of these services based on comparable characteristics in a competitive labor market?

- In service contracts, what are the inherent life-cycle costs, and how do we capture the life-cycle costs in Make/Buy decision making?
- In the case of government services contracting, what are the factors that contribute to less-than-optimum Make/Buy decision making?

### ***Category management/strategic sourcing***

- What effect does strategic sourcing/category management have on competition?
  - Effects on short term versus long term.
  - Effects on competition outside of the strategic sourcing/category management area of consideration.
- What metrics do different industries use for measuring the effectiveness of their supply chain management?
- Would the centralization of service acquisition contracts have measurable impacts on cost performance? Why or why not?
- What are the fundamental differences between the service taxonomy and the category management taxonomy, and are there means and good reasons to align the two taxonomies?

### ***Contract management/efficacy***

- What are the best ways to address the service parts of contracts that include both services and products (goods)?
- In the management of service contracts, what are the non-value-added tasks, and are there realistic ways to reduce the impact of these tasks on our process?
- When funds for services are provided via pass-throughs (i.e., from another organization), how are the requirements tracked, validated, and reviewed?
- Do Unfinalized Contract Actions have an effect on contractor pricing and willingness, or lack of willingness to provide support during proposal analysis?
- For multiaward, Indefinite-Delivery, Indefinite-Quantity (IDIQ)-type contracts, is there a method for optimizing the different characteristics (number of vendors, timelines, on-ramping, off-ramping, etc.) of these contracts?

### ***Policy***

- What current government policies inhibit alignment of contractors' approaches with the government's service acquisition programs?

### **Administrative Processes**

- What means are there (or can be developed) to measure the efficiency and effectiveness of DoD oversight, at the Component, Service, and Office of the Secretary of Defense levels?
- What measures are there (or can be developed) to evaluate and compare the costs of oversight versus the cost savings from improved processes?
- What means are there (or can be developed) to empirically establish oversight process metrics as a basis for comparison? Can these be used to establish the relationship of oversight to cost/schedule/performance outcomes?
- What means are there (or can be developed) to study the organizational and governance frameworks, resulting in successful change management?

- To what extent (investment and performance) can scenario/simulation testing improve the delivery of complex projects?
- Is there a comparative statistical divergence between organizational honesty (reality) and contractual relationships (intent) in tendering?
- How does one formulate relational contracting frameworks to better account for and manage risk and liability in a collaborative environment?

## **Human Capital of Acquisition Workforce**

- What means are there (or can be developed) to measure return on investment (ROI) for acquisition workforce training?
- What elements of the Professional Military Education framework can be applied to improve the professionalism of the civilian defense acquisition workforce?
- What factors contribute to the management and successful delivery of modern complex project management, including performance over the project life cycle?
- What behavioral leadership characteristics can be commonly observed in successful complex projects, contrasted against unsuccessful complex projects?
- What is the functional role of talent management in building organizational sustainability, performance, and leadership?
- How do we create incentives in the acquisition workforce (management, career, social, organizational) that provide real cost reductions?

## **Defense Business Systems**

### ***Organizational structure and culture in support of Agile software development methodologies***

- At the beginning of the Business Capability Acquisition Cycle (BCAC) process, various steps are used to ensure accurate requirements are thoroughly documented and supported throughout the software development life cycle. How can these documentation requirements and processes be streamlined to support more direct-line communication between the end-user and software engineers? What are the hurdles to implementing these changes and how are they overcome? What are the effects of these changes on the organization or agency?
- Regarding new starts, how can the BCAC be modified specifically to support Agile development? How are these changes advantageous or disadvantageous to the customer and organization? Would these changes be helpful or detrimental to R&D versus a concurrent design and engineering software project?
- Generally, readiness review briefings within the BCAC are used to determine if a project is at an acceptable state to go to the next step in the process. If software is developed and released to production within a single sprint (potentially every 2 weeks), how are Test Readiness Reviews, Systems Requirements Reviews, and Production Readiness Reviews handled? How have the changes to these events made them more or less relevant?

- How are organizations and agencies structured to support concurrent software design and development? What organizational structure would support R&D and non-R&D information technology (IT) capabilities?
- What steps are used to choose Agile as the default software development process versus any other software development methodology (e.g., Waterfall, Spiral, or Incremental) for your organization? What are the effects on project cost, schedule, and performance?
- Within DoD agencies and military branches, has the adoption of Agile resulted in faster deployment of new IT capabilities to the customer? How is this determined and measured?
- Industry often produces software using Agile. The DoD's BCAC process can produce an abundance of bureaucracy counter to Agile principles. How does hiring a contractor to implement or maintain IT capabilities and introducing Agile software development methods within a BCAC non-Agile process create conflict? How are these conflicts resolved or reconciled?
- How is IT engineering investment and innovation supported throughout DoD? What organizational or cultural aspects of an agency are specific to that support?

## Defense Acquisition and Society

- To what extent should the DoD use the defense acquisition process to effectuate various social policies? The existing procurement regime favors a dizzying array of private interests ranging from organized labor; domestic manufacturers and firms located in areas of high unemployment; small businesses, including disadvantaged and women-owned firms; blind, severely handicapped, and prison industries; and, most recently, environmentally friendly vendors. Affirmatively steering the government's business from the open marketplace to preferred providers adds complexity, thus increasing transaction costs throughout the procurement process, which absorbs scarce resources. (Source: IBM Center for the Business of Government, <http://www.businessofgovernment.org>)
- How significant are the transaction costs resulting from the administration's commitment to transparency (generally, and specifically in the context of stimulus or recovery spending)? In a representative democracy, transparency is critical. But transparency is expensive and time-consuming, and the additional resources required to comply with the recently enhanced disclosure standards remain an unfunded mandate. Thus, the existing acquisition workforce must devote scarce resources to an (admittedly legitimate) end other than the pursuit of value for money or customer satisfaction. Is there an optimal balance or a point of diminishing returns? In other words, at what point does the cost of developing transparent systems and measures exceed the benefits of that transparency? (Source: IBM Center for the Business of Government, <http://www.businessofgovernment.org>)

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# Consolidation OF THE U.S. DEFENSE Industrial Base

This article is a reprint of an article (opinion) featured in the *Defense Acquisition Quarterly* (Fall 2001), pp. 137-150, by John M. Deutch, former U.S. Deputy Secretary of Defense from 1994 to 1995. The *Defense Acquisition Quarterly* was an early forerunner to today's *Defense Acquisition Research Journal*.

## A WORD FROM THE AUTHOR

Twenty years' industry consolidation was pursued in an effort to achieve greater defense acquisition efficiency. Today, the effort should shift to innovation integration and supply chain management.



ORIGINALLY  
PRINTED  
**2001**



*John M. Deutch*

The U.S. Government has promoted defense industry consolidation in the past decade as part of its acquisition reform policies, to help control costs and promote efficiency. But when the Department of Defense (DoD) reversed its proconsolidation policy, defense firms were left financially less secure from the acquisitions and mergers and the hoped for reductions in tangible assets have been marginal. What is the best way forward?

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As the administration of George W. Bush considers national security priorities for the 21st century, it will necessarily address the health of the U.S. defense industry and consider policies designed to ensure an industrial base adequate to meet U.S. security needs. During most of the post-Cold War decade, the industry has faced a relatively stagnant defense budget. Notwithstanding improvements in efficiencies, the net return on invested capital has been inadequate for many of the leading firms. Share prices, which tumbled in 1998 and 1999, have recovered somewhat during the past 2 years, as a result of improved performance by several firms and the expectation of near-term defense budget increases. However, I believe there is a crisis in the defense industry with origins that need to be better understood if effective policies are to be adopted.

## Background

The first Clinton administration acknowledged strains on the defense industrial base and put into place two policies to address this problem: acquisition reform<sup>1</sup> and an industry consolidation policy. Although much remains to be done, there has been considerable progress on acquisition reform. On the other hand, the success of the consolidation policy that attempted to balance the number of competing firms with efficiency has been more controversial.



**My purpose is to stimulate thinking about one central proposition: Given the likely level of defense expenditures over the long term, the health of the U.S. defense industry depends on reducing the asset base devoted to defense by both the commercial and government sectors.**

In 1993, analysts assigned by Secretary of Defense Les Aspin to conduct a “bottom-up review” of U.S. defense posture concluded that the defense industry needed to be restructured. Then Deputy Secretary of Defense William J. Perry announced to industry leaders—at what has come to be referred to as the “Last Supper”—the Department of Defense (DoD) policy to encourage consolidation.

In July 1993, serving as the Under Secretary of Defense for Acquisition and Technology, I introduced rules for sharing savings from consolidation between DoD and industry. The Defense Science Board formed a task force, composed of defense industry executives and government lawyers, to address the antitrust issues raised by the consolidation policy. In the 5-year period of 1993–1998, many major defense firms merged or were acquired.



In 1998, DoD unexpectedly reversed the proconsolidation policy and urged the Department of Justice (DOJ) to reject the proposed merger of Lockheed Martin and Northrop and the proposed General Dynamics acquisition of Newport News Shipbuilding. The absence of a clear signal ending the consolidation policy is unfortunate because it left several defense firms stranded on a different course. In the spring of 2001, both General Dynamics and Northrop/Litton made offers for Newport News Shipbuilding, thus reopening the industry consolidation question for the Bush administration.

Here I will review the reasoning behind the proconsolidation policy, to assess what went right and what went wrong, and to speculate on the way forward for the U.S. defense industry.<sup>2</sup> My purpose is to stimulate thinking about one central proposition: Given the likely level of defense expenditures over the long term, the health of the U.S. defense industry depends on reducing the asset base devoted to defense by both the commercial and government sectors.

## Rationale for the Proconsolidation Policy

The Aspin-Perry team proposed the necessity of consolidation because of the more than 40% drop, in real terms, of DoD investment expenditures—procurement plus research and development (R&D) plus construction—and the expectation that these expenditures would not return to the mid-1980s Cold War levels. If the industrial base was properly sized during the higher level of expenditures of the mid-1980s, the inevitable conclusion was that, in the 1990s and beyond, the defense industry infrastructure had to shrink by as much as 40% to remain in balance with declining post-Cold War defense budgets. It followed that it was necessary to reduce the assets allocated to defense, in both private and public sectors.



The purpose of the consolidation policy was to encourage mergers that reduced the level of assets allocated to defense. At the time, DoD focused on reducing physical assets: property, plants, and equipment. Total assets include tangible assets (physical assets plus working capital) and intangible assets or “goodwill.” If assets are not reduced, smaller defense budgets mean unit costs will rise, inevitably placing downward pressure on profit margins available to industry. If post-Cold War returns on capital declined, defense aerospace companies essential to a strong defense infrastructure would be in trouble, and this was not in the interest of the nation, DoD, or stockholders. The policy intent was to encourage the companies, through normal capital market mechanisms, to make rational business decisions that would result in fewer assets devoted to defense.

Accordingly, DoD sought to reduce the asset base or “infrastructure” committed to defense. For government-owned facilities, downsizing meant an aggressive effort through the Base Reduction and Consolidation (BRAC) process to close bases and government-owned shipyards, depots, and laboratories. For the private sector, downsizing demanded a proconsolidation

policy. The DoD leadership recognized that the government was unlikely to be successful at directing exactly how consolidation should take place. Instead, sharing cost savings from consolidation would give industry an incentive to downsize. Industry and the capital markets would determine the best manner to adapt to the new policy.

Congressional reaction to these initiatives was negative. Downsizing means fewer jobs in congressional districts; Congress never likes to see less government expenditures at home, despite agreeing with the general proposition that downsizing is needed. Congress termed DoD defense industry policy “payoffs for layoffs” and placed limitations on government sharing of savings with private industry.

Congress also resisted BRAC but permitted four rounds of closures before refusing in 1997 to renew the authority. Paradoxically, Congress was more successful at slowing the process of asset downsizing than reducing the rate of decline in defense employment. Private sector defense jobs decline at least in proportion to reductions in defense contracts.

## Early Consequences of Industry Consolidation

Between 1993 and 1998, there was a burst of defense industry mergers and acquisitions. Some companies were sellers—for example, General Dynamics, Loral (after 1996), Ford Aerospace, Texas Instruments, and North American Rockwell. Other companies were buyers, notably Raytheon, Martin-Marietta, Lockheed, Loral (before 1996), and Boeing. There was a significant decline in the number of prime contractors and top system integrator companies in the defense-aerospace sector.



**Downsizing means fewer jobs in congressional districts; Congress never likes to see less government expenditures at home, despite agreeing with the general proposition that downsizing is needed. Congress termed DoD defense industry policy “payoffs for layoffs” and placed limitations on government sharing of savings with private industry.**

The impact of each transaction depended on the business circumstances of the firm from the potential for greater efficiency from downsizing to increasing market share. But there were also both positive and negative impacts on the financial situation of a company that were influenced by the financing strategy of the acquiring company and that, in turn, inevitably influenced the behavior of the firm.

When two companies effect a stock-based merger (and pool their balance sheets<sup>3</sup>), the resulting balance sheet is simply the sum of the balance sheets of the two entities. If one company acquires the other, the seller takes the proceeds and puts the resources to productive use elsewhere in the economy. The acquiring company pays for the purchase by using available cash, issuing new equity, and taking on new debt. If the purchase price exceeds the book value of the acquired company, an intangible asset or “goodwill” is created on the balance sheet.



In fact, most of the consolidation of the 1990s took place by acquisition rather than merger; taking on significant amounts of new debt financed most of the transactions. There was a significant increase in the level of assets employed as a result of goodwill and an accompanying increase in debt burden for most of the large acquiring defense companies, notably Lockheed-Martin and Raytheon. Because of the larger debt burden, operating cash flow and income needed to increase to pay the additional interest charges<sup>4</sup> if net income and return on equity were to remain fixed.

There are two good reasons why companies are willing to take on new debt or issue equity as a significant part of the cost of an acquisition. First, the acquiring and selling firms may see value in combining their intellectual

property, know-how, and customer relationships, which are not explicitly carried on the balance sheet as an asset. Second, there may be synergy and efficiency in the operations of the combined companies that lead to lower costs or more competitive products, thus justifying a premium over book value. However, there are also cases when the acquiring company may just be overpaying.

In my view, all three of these reasons were evident in the industry consolidation process of the early 1990s. There is no question that the desire to acquire complementary technology and intellectual capital was a significant factor in many of the transactions. Moreover, we know that the combinations presented opportunities for efficiency improvements because, I believe, in all cases, the surviving combined companies were able to report significant cost savings to the U.S. Government.<sup>5</sup> Unfortunately, the sharing of these cost savings between the government and the companies, intended by DoD policy and anticipated by defense firms, did not happen because of congressional restrictions and the opposition to “payoffs for layoffs.”

In the 1993–1998 period of euphoria, defense companies experienced significant increases in equity prices based on the expectation of revenue growth and margin improvement from cost savings. In 1998, the outlook for the industry began to darken for several reasons. First, DoD reversed the consolidation policy. Second, expected cost savings were not shared with the companies, and hence margins were squeezed, especially from increasing interest payments on debt required to fund acquisitions. Third, defense companies making acquisitions were overly optimistic about the expected growth in top-line revenues from DoD, foreign military sales, and commercial spin-offs of defense technology. The anticipated increase in defense outlays had not materialized.



**The consolidation process came to an abrupt end in 1998, when DoD and the DOJ became concerned about the impact of industry consolidation on competitiveness.**

Finally, some key companies found it difficult to manage their expanded enterprises effectively in all respects and to meet their optimistic financial targets. The capital markets quickly shifted to more glamorous (at that time) dot-com and high-tech stocks not associated with defense.

## The Defense Industry in 2000

The consolidation process came to an abrupt end in 1998, when DoD and the DOJ became concerned about the impact of industry consolidation on competitiveness. DoD turned down the proposed Lockheed Martin acquisition of Northrop and the proposed acquisition by (a re-emergent) General Dynamics of Newport News Shipbuilding. But DoD did not indicate whether further downsizing was necessary and, if so, how it was to be achieved. After all, DoD's responsibility for the national defense demands that the department be concerned with the long-term strength of the defense industrial base. But how should this be achieved?

By the beginning of 2000, the defense industry was in a much different position than anticipated in 1993. Assets were not significantly reduced, profit margins had declined, and government outlays for defense investments were still flat. For several companies, return on equity had fallen to below the cost of capital to service their debt. Several of the leading companies had been downgraded by the financial credit agencies,<sup>6</sup> so that their debt was on the verge of not being investment grade. This means that their cost of capital rises, and funding investment is more expensive.

During the period from 1993 to 1998, the level of assets of defense firms did not fall, and profit margins declined significantly. This of course is a generalization for the entire sector as of 2000.<sup>7</sup> Some companies closely followed the trend (e.g., Lockheed Martin, Raytheon, and TRW); others did not (General Dynamics, Boeing, and Northrop). But for DoD prime contractors, on average, the net move in assets has not shown a decline, although return on equity has declined. (The situation for mid-tier contractors is somewhat different, although this sector has also experienced considerable consolidation since 1985.)



**By the beginning of 2000, the defense industry was in a much different position than anticipated in 1993. Assets were not significantly reduced, profit margins had declined, and government outlays for defense investments were still flat.**

There are a number of reasons why it is difficult to collect financial data to substantiate this trend. The balance sheets of companies that were acquired are not always comparable to the reporting of the subsequent



parent company. Frequently, the historical data are not in a form that permits tracking of the variables of interest. For example, the concern here is with company sales to DoD, not total sales that may include both commercial sales and sales to foreign governments.



Moreover, data are not always available for different asset categories of interest (e.g., tangible assets such as working capital and property, plants, and equipment) and goodwill. Nevertheless, some estimates are possible. For the top five defense contractors,<sup>8</sup> in the 6-year period from 1993 to 1999, the value of total assets (intangible plus tangible) rose 32%. In that same period, the value of tangible assets fell 7%.

For this calculation, the asset base for each of the top five contractors (in 1999), the 1993 asset base is the sum of the assets of the firms acquired during the 6-year period. The data further indicate that the companies were more efficient, at least using the measure of productivity of operating assets: between 1993 and 1999, the operating asset “turns” (i.e., the ratio of revenue to operating assets) improved from 1.59 to 1.94—an impressive 20%.

The startling fact is that tangible (i.e., operating) assets have decreased relatively little, and total assets have increased significantly during the 6-year period. The reason that tangible assets have not declined more significantly (as intended by the proconsolidation policy) is that the incentive is not there. The Pentagon’s originally intended incentive of sharing cost savings has simply not occurred.<sup>9</sup>

I do not have data to confirm that a similar trend in asset growth has also occurred at second- and lower-tier defense firms, although that is my impression. However, even if the trend is restricted to primes, it is a problem for the entire defense industry because supplier firms depend on the health of the primes.

Defense companies understandably have become concerned about the future.<sup>10</sup> With profits and equity prices falling, companies have moved to reduce capital investment and cut discretionary research and development

(R&D). The industry and DoD worry about retention of talented technical people who understandably are attracted and recruited by the technology firms in the commercial sector.

The industry speaks of several ways that this adverse trend might be reversed. First, DoD investment (procurement plus research, development, test, and evaluation, or RDT&E) outlays have increased significantly during the past 5 years, thus regaining a significant fraction of the decline experienced in the late 1980s and early 1990s. The DoD budget estimate is displayed in Table 1.<sup>11</sup>

TABLE 1. DoD BUDGET ESTIMATE <sup>a</sup>			
	Fiscal Year		
Budget Authority	1996	2001	2002
Procurement	42	62	62
RDT&E	35	41	47
<b>Total DoD</b>	<b>254</b>	<b>296</b>	<b>329</b>

**Note.** <sup>a</sup>In billions of (current) \$

There is some optimism that the DoD investment account will continue to increase at 5% per year. Past history suggests that these projections of DoD investment increases may prove optimistic, which will only make matters worse for the defense industry. Further increases in investment require an increase in the defense budget; this seems unlikely given the tax cuts and shrinking surplus.

Moreover, an increasing portion of these new R&D and procurement funds may not find their way to the largest defense companies that focus on platforms, such as new combat ships or aircraft or system integration. The reason is that the changes in technology (referred to as the “revolution in military affairs”) depend more on information technology than hardware platforms.

Advances in information technology now make it possible for joint military commanders to have near real-time information available about the size and disposition of enemy forces. When this “battlefield awareness” is coupled with highly accurate munitions and the capability for information warfare, it is possible to imagine a newly configured U.S. military capability that can assure superiority in any conceivable conventional major military conflict situation for some decades to come.

This new military power requires many fewer traditional platforms—combat aircraft, ships, and armored vehicles—and much greater reliance on reliable and secure information networks that can distribute precise information to the appropriate level of command. Secretary of Defense Donald Rumsfeld has indicated a preference for the DoD to seek such “transformational” weapon systems.

Second, industry has aggressively expanded its share of the international arms market, but the potential here is limited by export controls on the most desirable high-performance systems and by the shrinking of the size of this market.

Third, there is the related interest in increasing trans-Atlantic cooperation in the hope of opening new markets in Europe. At present, this possibility seems limited, because European defense budgets are declining and Europe is moving toward a so-called “European defense and security identity,” which includes strengthening the European defense industry base. Moreover, if trans-Atlantic partnerships, joint ventures, or mergers take place without a reduction in assets employed on both sides of the Atlantic, the basic problem—too much defense industrial base for anticipated defense needs—is not effectively addressed.



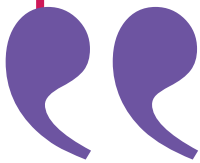
**When this “battlefield awareness” is coupled with highly accurate munitions and the capability for information warfare, it is possible to imagine a newly configured U.S. military capability that can assure superiority in any conceivable conventional major military conflict situation for some decades to come.**

Put another way, the European defense and aerospace industry faces the same problem as the U.S. defense industry.<sup>12</sup> But adjustment in Europe is likely to be even more difficult than in the United States because of the stronger state role in Europe. Consolidation between U.S. and European defense companies that does not result in a smaller infrastructure does not do the trick.

Finally, defense and aerospace companies have been aggressively seeking ways to enter commercial markets. An individual company may or may not be successful in this effort; the record indicates that larger companies

will find it difficult to be competitive. At the same time that defense and aerospace companies are seeking commercial opportunities, DoD is quite appropriately seeking to reform its procurement practices to make greater use of commercial products and services.

Today, in the age of information technology, commercial companies can meet DoD needs at lower cost, and frequently they are technically more advanced than defense companies. Increasing emphasis on information technology means that procurement and R&D are likely to shift increasingly away from traditional aerospace and defense companies to commercial firms.



**At the same time that defense and aerospace companies are seeking commercial opportunities, DoD is quite appropriately seeking to reform its procurement practices to make greater use of commercial products and services.**

To summarize, as a result of acquisitions, many companies in the defense and aerospace industries have added to their debt, which has resulted in lower earnings, cash flow, and credit ratings. Cash flow and profitability have generally declined, and there are few opportunities to grow out of this problem. Not surprisingly, market valuations have declined (although during 2000 there was a general recovery from the lows). The net result is companies and talented individuals are leaving the industry and those companies that remain must reduce expenditures on internal R&D and other efforts to create new technology and ideas for the future. But robust stock prices should not be taken as a reliable indicator of good health of defense firms.

## Choices for Government Policy

This weakness of the U.S. defense industry is certainly not in the interest of the nation. Not surprisingly, Congress has seized upon this problem. Since Congress does not know exactly what to do, it has taken the time-honored action of establishing a “Commission on the Future of the U.S. Aerospace Industry” (Section 1092 of the Fiscal Year 2001 Defense Authorization Act) to study the problem and bring forth recommendations. What is the range of choices open to the commission?

As a monopsonist, DoD has great power in the defense market, but how should it exercise its clout? There are three broad choices:

- Do nothing.
- Take prudent short-run measures.
- Introduce new financial incentives.

There is a great deal to recommend the first option of doing nothing. Any action that benefits the defense companies is sure to be attacked immediately as using taxpayer money to bail out firms that made mistakes. Moreover, the defense industry is not homogeneous, and therefore each firm is in different financial circumstances. Also, great differences exist between the large system integrator and prime contractor firms and the lower tier supplier firms.

Any set of actions means that some firms will benefit more than others, so DoD will be properly called upon to defend the particular measures it puts into place. I do not envy the new DoD officials who will try to put together a consensus on what should be done—seeking agreement between the industry, Congress, and other interested executive branch parties, such as the Office of Management and Budget.

It is surely true, however, that nothing should be or will be done until there is clear agreement on the nature of the problem and the desired solution. I believe there is wide agreement on the nature of the problem but much less agreement on the desired solution. The reason for this apparent paradox is that we are not clear about the kind of defense industry we need for the future. This lack of clarity in turn is caused by uncertainty about the threats we will face, and therefore the nature and size of the military forces we will need to provide for the common defense. Rumsfeld's comprehensive effort to redefine the defense force's need in the future is a necessary step toward deciding on what aspects of the present defense industry should be encouraged, and what part of the industry should be allowed to wither away.



Nevertheless, we will be reluctant to take action because of an understandable suspicion that the government is not very good at that sort of industrial policy; the incentives it sets, all too often, prove ill chosen.

Within the range of plausible future security scenarios, it is possible to identify with some degree of certainty the type of defense companies the country will need. These companies will need to perform the technically complex and demanding task of system integration. They will have to manufacture high-performance platforms (e.g., nuclear submarines, combat aircraft, missiles, and combat support systems that will remain the backbone of our conventional military capability). They must build networks that task, collect, process, exploit, and distribute intelligence. Moreover, these companies need proficiency at dealing with the DoD acquisition system. That is no easy matter despite the considerable progress in DoD acquisition reform.

But this specification leaves out a lot. The assumption is that the required asset base will be much smaller, but how small? And, what about second- and third-tier suppliers? Will there be more horizontal consolidation? More important is a question about the change in the nature of defense. To what extent are existing contractors focused on platforms needed in the information-age warfare model? Will the traditional defense primes or the commercial sector provide much of the new network-based warfare systems? The answer to these questions influences the policy options the government should consider.



**Adopting measures whose main effect is reducing the cost of capital for defense companies certainly helps them deal with their short-run financial predicament, but it does little to encourage reducing the asset base of the sector.**

Uncertainty and prudence thus lead to the second option: short-run measures that will help maintain the aerospace and defense industry, without embarking on a major alternative course of action. Several proposals in this vein have been put forward: increase progress payments on contracts;<sup>13</sup> speed contractor payments and recognize subcontractor billing earlier; reduce the number of controlled contractor line item numbers; increase use of multiyear procurements; and, going forward, improve the sharing of cost

savings from downsizing. Note that sharing cost savings does not address the size of the government infrastructure, and that it does not necessarily mean that financial assets will be reduced proportionally to reductions in tangible assets on which the sharing of cost saving is based.

All of these measures increase cash flow and improve profitability of defense companies, generally at relatively low cost. I certainly favor their adoption. But none of the short-term measures address the central problem of excess capacity in the defense sector. Adopting measures whose main effect is reducing the cost of capital for defense companies certainly helps them deal with their short-run financial predicament, but it does little to encourage reducing the asset base of the sector.



The third policy option is for DoD to set new financial incentives that will move the defense industry in the desired direction of shedding assets, while remaining politically acceptable and fair to all firms in the sector. Let me explore one proposal to demonstrate how difficult a task it will be to craft an acceptable policy measure.

One measure that would ease the considerable debt burden of defense firms is to make interest payments an allowable charge to contracts. But this would hardly be an incentive to reduce assets. In fact, it would be a disincentive. Once the government agrees to pay a portion of the interest charge, the effective cost of capital declines. The financial incentive must be linked to a requirement to reduce assets.

How would a proposal look that links short-run cash-flow benefit with a commitment to reduce asset levels devoted to defense? One way is to permit interest payments on a given amount of debt to be charged as an expense to DoD contracts, if the contractor agrees to reduce the level of assets devoted to defense in the future by a specified amount and for a specified period of time. This arrangement seeks to improve the profitability of defense firms

in the short run, while moving to the long-term goal of reducing unneeded assets. Ideally, this offer would be extended only to those firms that had less efficient or less needed assets and capability.<sup>14</sup>

It is most improbable that a mechanism of this sort would ever be adopted. First, it assumes an enormous amount of latitude in government action as to who might benefit from the proposal. Typically, the government is not good at making such judgments. Second, the assistance mechanism amounts to a significant subsidy available only to firms that have debt. A company that is not leveraged and relies on equity is disadvantaged. Third, the program is designed to assist contractors who have had traditional business with DoD and hence can identify the portion of their business assets that is dedicated to defense.

But how would this assistance program encourage the increasing number of commercial firms that sell products and services to DoD to do business with it? And what about the many supplier firms who serve DoD only by subcontract to primes?

Meanwhile, industry consolidation proposals continue to come forward for DoD and antitrust approval. The government will soon decide whether to allow the previously mentioned General Dynamics and Northrop/Litton offers to purchase Newport News Shipbuilding; both companies have offered about \$2.6 billion for the company. Newport News has assets of about \$1.5 billion and long-term debt of about \$0.5 billion; if the transaction is approved, approximately \$0.6 billion will need to be financed by either additional debt or capital.



Effectively, the assets employed in nuclear powered shipbuilding will increase whoever “wins.” Perhaps the synergies from the acquisition will lead to cost reductions that make the transaction profitable for the company and attractive to the government; the extent of profitability for the company depends to a significant degree on how much sharing of cost savings is allowed by DoD.

Almost certainly DoD is considering how to balance the opportunity to cut costs (which need not be to the benefit of either contractor) with a desire to preserve some degree of competition. The consequence that either of



the transactions will result in greater assets being devoted to the already capital-intensive nuclear ship platforms industry is probably not being considered.



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We face a policy problem that is not easy to resolve. A consolidation policy seeks to achieve a balance between competition and efficiency in order to keep defense costs low. Too much consolidation leads to an arsenal system with a single public or private supplier without competition to encourage new ideas and lower costs. Too little consolidation means that the tangible and financial asset base of the industry is too large and costs too high. The balance depends not only on the number of firms in a particular sector (e.g., combat aircraft), but also on the total size of the asset pool committed and how it is configured.

The correct balance depends, importantly, on the future sustained level of defense spending. I suspect (despite today’s optimism) that the likely future level will not be adequate to support the current size of the defense industry base. Accordingly, consideration will be given to how consolidation might take place at both the prime and subcontractor level in a way that assures competition, innovation, and cost containment.

## Conclusions

I come to three conclusions. First, DoD needs to state a clear policy for defense consolidation, so that the rules going forward are understood by the defense industry. This policy should be clearly based on the defense industry infrastructure needed to support the U.S. defense posture. The

policy should describe the criteria the government will use for granting approval; and the standard for horizontal and vertical integration and for cross-border transactions.

Second, DoD should return to the earlier policy of sharing savings from shrinking the tangible asset base. This is the single most important incentive for industry to downsize. Cost sharing does not assure reductions in particular areas. But DoD is unlikely to craft a new policy that provides significant incentives to reduce infrastructure in those areas that in someone's judgment deserve to be smaller, given the present and future security environment. It is just too hard to formulate a policy that will be both equitable and politically acceptable.

Third, market forces eventually will bring the private defense industry to a size at which return on invested capital is judged to be reasonable in light of anticipated risks and returns. (A similar market mechanism does not exist for the public sector enterprise of shipyards, depots, and laboratories, so we cannot anticipate a natural economic downsizing evolution here).



If the government does not take decisive action, there will be a long wait for a healthier environment. Most important, we should remember that the public

objective is to assure a defense industrial base (public plus private) that meets our security needs—market criteria are means to this end but not an end in themselves. We should not rely on financial markets to give us a properly sized defense industrial base.

Finally, defense firms on both sides of the Atlantic should avoid acquisitions that result in the commitment of greater financial assets, unless reductions in tangible assets such as plants, property, and equipment can be identified to justify the additional debt or invested capital required to close the transaction. Relying on optimistic projections of cash flow and operating income is not enough.

## Endnotes

<sup>1</sup> *Acquisition reform* refers to improving the Department of Defense development, procurement, testing, and maintenance of needed products, services, and systems.

<sup>2</sup> There have been a number of studies of the defense industrial base. One is the Defense Science Board Task Force report, “Preserving a Healthy and Competitive U.S. Defense Industry to Ensure our Future National Security” (April 2000). Another was done by Booz, Allen, and Hamilton: “U.S. Defense Industry Under Siege—An Agenda for Change,” by J. R. Harbison, T. S. Moorman, Jr., M. W. Jones, & J. Kim (July 2000) <https://fliphtml5.com/zcmg/oujv>.

<sup>3</sup> It is likely that the Financial Accounting Standards Board will eliminate the use of pooling and require purchase method accounting. At the same time, it will revise the treatment of goodwill, eliminating amortization and requiring impairment testing. The accounting consequence for defense firms is unclear, but in any case, not germane to my main argument.

<sup>4</sup> Interest on debt is not an allowable charge to government contracts.

<sup>5</sup> The General Accounting Office (GAO) has documented savings in some cases. See the GAO report “Defense Restructuring Costs: Information Pertaining to Five Business Combinations” (GAO-NSIAD-97-97) <https://www.gao.gov/products/nsiad-97-97>.

<sup>6</sup> See exhibit 3, page 4 of the Booz, Allen, and Hamilton study cited in Endnote 2.

<sup>7</sup> The most recent transaction, Northrop-Grumman’s acquisition of Litton, announced on December 21, 2000, continues the trend but is less egregious. Northrop paid \$5.1 billion, including adopting debt of \$1.3 billion, for Litton. Litton’s annual report for 2000 lists assets of \$4.8 billion: \$0.9 billion is property, plants, and equipment, and \$1.3 billion is goodwill.

<sup>8</sup> The top five firms, in terms of DoD sales, are Boeing, General Dynamics, Lockheed-Martin, Northrop-Grumman, and Raytheon. I am indebted to Frank Caine, Chief Financial Officer of Raytheon, for assistance in gathering these data.

<sup>9</sup> E. Gholz and H. M. Sapolsky argue that while there have been many mergers, there has been little reduction in defense industry production lines or physical asset base. See their 1999 article published in *International Security* (Vol. 24, pp. 5–51) <https://doi.org/10.1162/016228899560220>.

<sup>10</sup> The American Institute of Aeronautics and Astronautics (AIAA) seriously addresses these issues. See, for example, “A Blueprint for Action”

(*Proceedings of Defense Reform 2001*, February 14–15, 2001, Washington, DC).

<sup>11</sup> National Defense Budget Estimate for 2001 [On-line]. Table 6.9, [https://comptroller.defense.gov/Portals/45/Documents/defbudget/Docs/fy2001\\_greenbook.pdf](https://comptroller.defense.gov/Portals/45/Documents/defbudget/Docs/fy2001_greenbook.pdf) (June 27, 2001). DoD news release No. 287-01, giving President Bush's amended fiscal year 2002 defense budget. DoD procurement for RDT&E fell from \$160 billion in Fiscal Year (FY) 1987 to \$85 billion in FY 1997 in FY 2001 dollars.

<sup>12</sup> My impression is that the consolidation that has occurred within Europe, for example the formation of European Aeronautics Defense and Space Company (EADS), has taken place without a reduction in capacity.

<sup>13</sup> Indeed, DoD recently announced an increase in the rate of progress payments on contracts.

<sup>14</sup> Such a proposal might well send equity prices of participating firms skyrocketing. In order to avoid a “windfall” profit from this regulatory change, the financial package might include warrants for the government (much as was done in the Chrysler bailout in the 1970s) to assure that the taxpayer gains if some agreed equity price ceiling was exceeded.

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**The Honorable Dr. John M. Deutch** is an Institute Professor Emeritus at the Massachusetts Institute of Technology (MIT). Dr. Deutch has been a member of the MIT faculty since 1970 and has served as Chairman of the Department of Chemistry, Dean of Science, and Provost.

Dr. Deutch has enjoyed a long and distinguished career in the government as Director of the Central Intelligence Agency from May 1995–December 1996; Deputy Secretary of Defense from 1994–1995; Under Secretary of Defense for Acquisition and Technology from 1993–1994; Director of

Energy Research from 1977–1979; Acting Assistant Secretary for Energy Technology–1979; and Under Secretary, U.S. Department of Energy from 1979–1980.

In addition, he served on the President’s Nuclear Safety Oversight Committee (1980–1981); the President’s Commission on Strategic Forces (1983); the White House Science Council (1985–1989); the President’s Foreign Intelligence Advisory Board (1990–1993); the President’s Commission on Aviation Safety and Security (1996); the President’s Commission on Reducing and Protecting Government Secrecy (1996–1997); and as Chairman of the Commission to Assess the Organization of the Federal Government to Combat the Proliferation of Weapons of Mass Destruction (1998–1999). Dr. Deutch was also a member of the President’s Committee of Advisors on Science and Technology (1997–2001) and a member of the National Petroleum Council (2008–2018). He remains a member of the National Petroleum Council and the American Philosophical Society and is a former member of the Secretary of Energy Advisory Board (2012–2017) and Chair (2014–2017).

Dr. Deutch has served on the board of directors of Cheniere, Citigroup, CMS, Cummins, Raytheon, Schlumberger, and SAIC; and as a Trustee or Director of the Museum of Fine Arts, Boston; Massachusetts General Hospital Physicians Organization; Center for American Progress; Council on Foreign Relations; Resources for the Future; and the Urban Institute.

He received the Aspen Strategy Group Leadership Award in 2004 and was the Phi Beta Kappa “Orator” at Harvard University–2005. In 2009, Dr. Deutch received the MIT Gordon Y. Billard award: “...for special service of outstanding merit performed for the Institute.”

His published works include over 160 technical publications in physical chemistry, as well as numerous publications on technology, energy, international security, and public policy issues.

# Adaptation OF PORTER'S **FIVE FORCES MODEL** TO RISK Management


This article is a reprint of an article featured in the *Defense Acquisition Review Journal* (July 2010), Vol. 17, Issue 3, pp. 375-386, by John F. Rice. The *Defense Acquisition Review Journal* was a forerunner to today's *Defense Acquisition Research Journal*.

## A WORD FROM THE AUTHOR

The MBA program at the University of Alabama in Huntsville exposed the author to strategic management models that seemed well-suited to certain systems engineering activities. One competitive analysis method, Porter's Five Forces Model, served as the inspiration for his novel Risk Management framework named RM5. RM5 takes into account factors beyond cost, schedule, and technical/performance with a more holistic view of enterprise-wide risks. This article summarizes the approach and its direct application to a weapon system program.

ORIGINALLY  
PRINTED  
**2010**



 John F. Rice

Prominent tools for assessing and managing risk include risk reporting matrices, risk burndown charts, and automated risk management software. They are generally lacking, however, in accommodating ideation and brainstorming to identify potential problems. A suggested approach for improving the process is to apply strategic management models currently used as commercial best practices. Many are directly applicable and adaptable to systems engineering processes including risk management. This article presents traditional risk tools and introduces a complementary management model tailored to the identification, scoring, and tracking of potential program threats. Additional management models are presented for further investigation and adaptation.

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**Keywords:** Risk Management, Five Forces Model, Systems Engineering, Strategic Management Models, Armed Reconnaissance Helicopter (ARH)

The linkage between strategic organizational management and systems engineering has been observed for decades. Management theorists have compared corporate organizations to “systems” (Bertalanffy, 1956, pp. 1–10). Optner (1968) described organizational systems as follows: “A system is here defined as a set of objects together with relationships between the objects and between their attributes related to each other and to their environment so as to form a whole.”

Jenkins’ (1974) definition of a system is a complex grouping of human beings and machines for which there is an overall objective. Expressed in terms of systems engineering (SE), Hall (1962) viewed this domain as “operating in the space between research and business, assuming the attitudes of both.”

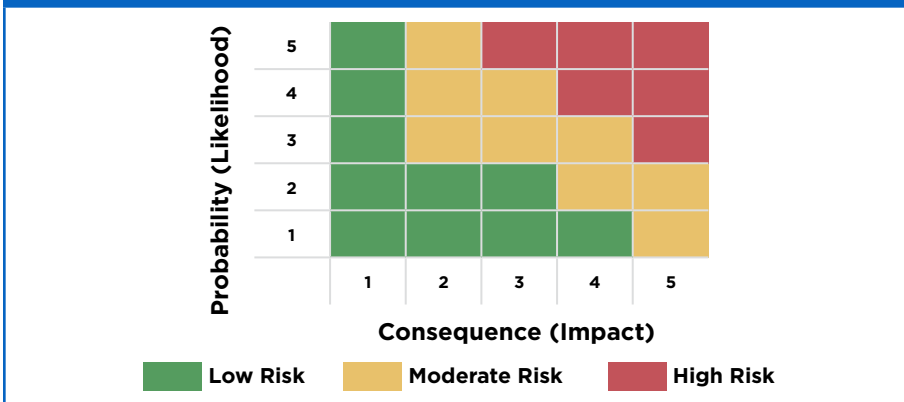


## Traditional Risk Management

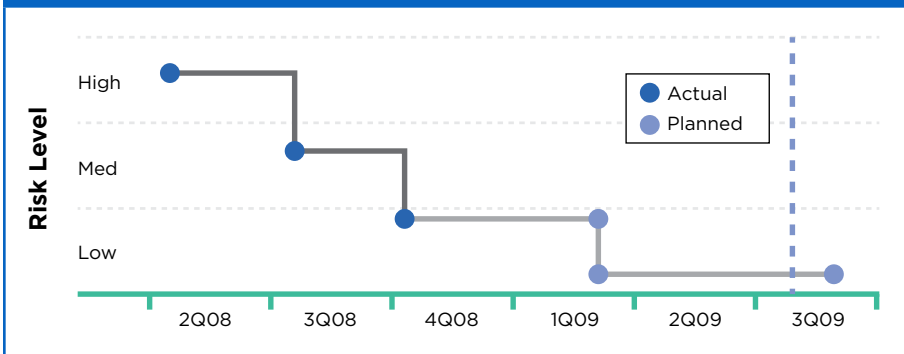
Traditional Risk Management (RM) models have included risk reporting matrices (Figure 1), risk burndown charts (Figure 2), and RM software applications such as Active Risk Manager, Risk Matrix, and Risk+ (DoD, 2009). This article addresses the adaptation of a strategic management tool to model risk as part of a structured SE process (DoD, 2006). By tailoring the management tool for RM, the systems engineer has another “arrow in the quiver” to perform the risk function or to complement existing methods.



**FIGURE 1. RISK REPORTING MATRIX**



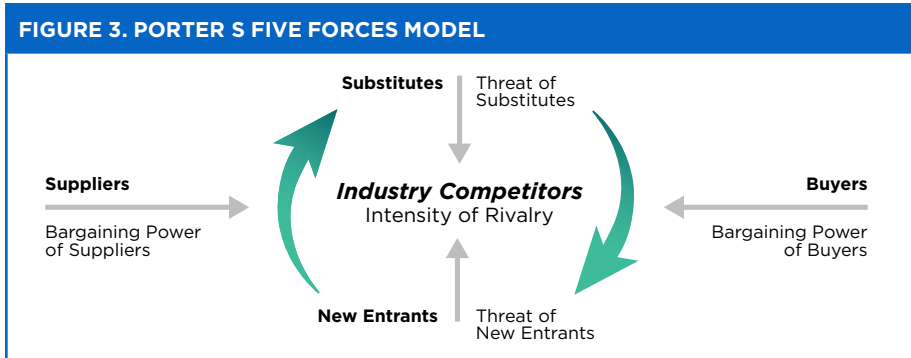
**FIGURE 2. RISK BURNDOWN CHART**



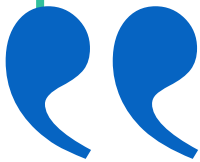
## Five Forces Model

The strategic management model and focal point of this article is known as the Five Forces Model (Barney, 1996, p. 6). Its originator, Dr. Michael Porter, University Professor at Harvard Business School, developed the tool for competitive advantage analysis within specific industries. (Other management tools adaptable to RM/SE functions are described in subsequent discussion on “Additional Models.”)

As shown in Figure 3, the center block depicts intensity of rivalry among industry competitors. The external forces—new entrants, bargaining power of buyers and suppliers, and substitutes—are shown as the threats acting on the industry.



The purpose of developing a model of environmental threats is to aid managers in evaluating these threats so they can become more successful in creating strategies to neutralize them. Porter and Millar (1985) contend the five characteristics of corporate structure can threaten the ability of an organization to either preserve or produce above-normal returns.



**The strategic management model and focal point of this article is known as the Five Forces Model (Barney, 1996, p. 6). Its originator, Dr. Michael Porter, University Professor at Harvard Business School, developed the tool for competitive advantage analysis within specific industries.**

## Adaptation to Risk Management

Adapting the Five Forces Model to RM involves replacing intra-industry rivalries and competitive threats with the following risk forces (a.k.a. the five I's):

- Internal organization
- Industry
- Information
- Infrastructure
- Influences

For discussion purposes, these forces are stated in the current tense. Actual risks would be stated in the future tense with root causes, and probabilities and consequences.

Internal organization risks include enterprise functions such as task sharing, personnel loads, cross training, assignment duration, and related parameters. Industry risks are associated with contractor and subcontractor organizations, technology maturity, product support, and contractual matters.



Information risks include software availability and functionality, information system backup, and network security. Infrastructure refers to physical security, communications networks, event recovery, and safety. Influences include external demands (e.g., meetings, travel), senior leadership support, and policy mandates.

It should be noted that the tailoring of Porter's model to a program-level effort involves more than a change in nomenclature. It requires a change of perspective from an industry view to an enterprise view. Additionally, the forces are no longer competitive in nature but risk-related.

The RM version of the Five Forces Model, hereafter called RM5, has numerous benefits, including the ability to:

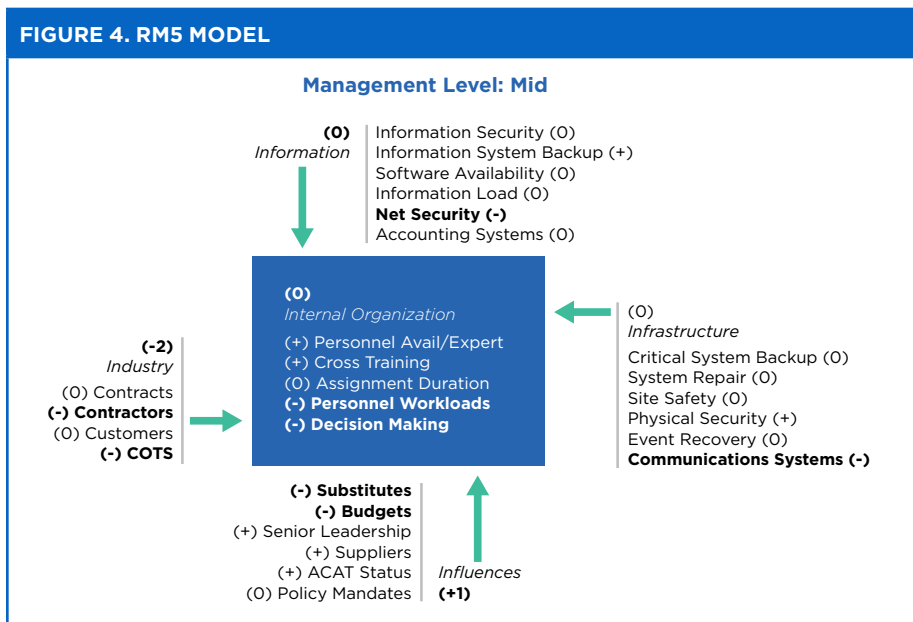
- Perform back-of-the-envelope cursory analyses.
- Promote and capture brainstorming among groups.
- Document the identification of potential risks from the brainstorming session.
- Categorize the risks into one of the five I's.

- Measure the impact of each risk using a consensus scoring approach.
- Track risk trends through comparison of RM5 iterations.

As a consequence, it can be shown all categories have some degree of risk, and those items could be targeted for mitigation. The risks for either approach could be weighted to underscore their importance.

## Practical Application

The author initially utilized RM5 in 2004 to assess risk in the U.S. Army’s Armed Reconnaissance Helicopter (ARH) Product Office—specifically, while serving on the proposal evaluation team. As shown in Figure 4, each of the five I’s was examined for candidate risks such as contractor (Industry), communications (Information), budget (Influences), personnel (Internal), and system risks (Infrastructure).



**Note.** COTS = Commercial Off-the-Shelf; ACAT = Acquisition Category

The identification of risks was generated from subject matter experts, experienced systems engineers, and brainstorming sessions. Initially, some of the submitted risks were of low significance or relevance. Through iterative reviews, the candidates were promoted or demoted to validate their importance.

When initially applied to ARH as a brainstorming effort, several risks were identified beyond the cost and schedule constraints formally tracked by the Product Office. Certainly, a Product Office's risk management resources are limited, and not all risks can or should be tracked. However, the time and effort to apply RM5 and identify other significant risks proved valuable.

The results of this initial run yielded the following example risks not tracked by the Product Office:

- Market research was indicating **COTS/MOTS** (Commercial Off-the-Shelf/Modified Commercial Off-the-Shelf) technical maturity might be lower than originally assessed. This raised the likelihood of future, unplanned subsystem development with the consequence of depleted resources.
- **Substitute** technologies and platforms were lacking. The likelihood of a gap in fielded capabilities was evident, with the consequence of compromised operational missions.
- **Enterprise Communications Systems** for the proposal evaluation team were limited compared to typical office systems with e-mail and instant messaging. This raised the likelihood that critical information during proposal assessment could remain isolated, with the consequence of unreported risks or opportunities.

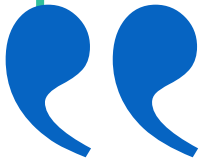
During subsequent runs, these risks remained notable, and additional RM5 risks proved to be consequential:

- **Physical security**, originally assessed as positive, was compromised during the proposal evaluation period. An individual in the team's facility lacked credentials and authorization, and was immediately escorted from the facility.
- **Assignment duration** was more than twice as long as planned, with detrimental effects on matrixed personnel. Engineers reported inability to complete their functional office tasks resulting in "other program" delays.

## RM5 Validity

The ARH contract was awarded in 2006 to Bell Helicopter. The contract later experienced a Nunn-McCurdy breach for significant cost overages. It was acknowledged by the Government Accountability Office (GAO, 2008, p. 43) that the inclusion of immature COTS technologies resulted in

significant, unplanned development funding and schedule delays. It was also noted that this program's shortcomings have left a void in the Army's ability to perform armed reconnaissance. Excessive delays and growth in program costs forced the ARH program's cancellation on October 16, 2008, when the Department of Defense failed to certify the program to Congress.



**RM5 could be used to identify strengths or opportunities that were previously unrecognized and could support or provide visibility to a program.**

Negative consequences from the physical security breach, communication system inadequacies, and other noted RM5 risks could have been avoided had RM5 been formalized. However, the method was novel and nonstandard, impeding its adoption in the Product Office. ARH subsequently experienced a Nunn-McCurdy breach as a result of technical challenges and cost overruns associated with many of the RM5 risks. The author contends a more formal treatment of RM5 would have uncovered and highlighted several “show-stopping” risks.

## Other Model Uses

Other uses for the model include applying it specifically to identification of existing, rather than projected, program issues. This could provide managers a snapshot of information that would otherwise escape attention and provide them with the insight to head off problems. Likewise, RM5 could be used to identify strengths or opportunities that were previously unrecognized and could support or provide visibility to a program.

In all of the previous cases, the potential for cost savings or revenue generation is apparent since reducing risks or capturing opportunities are means to improving the bottom line.

Furthermore, having a model to complement existing SE tools provides an additional decision aid to validate current assumptions or to promote ideation for new process/product development.

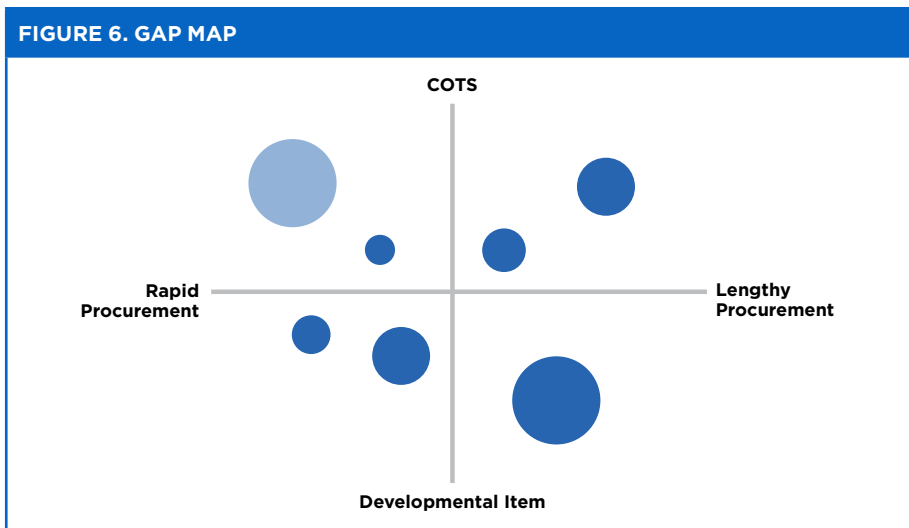
Other management tools adaptable to RM or SE functions include, but are not limited to:

- Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis for requirements development
- Gap analysis for trade studies (Robbins & Coulter, 1996, pp. 264–265)
- Value Chain analysis for determining value added from technical processes (Crawford, 1997, pp. 480–481)

## SWOT Analysis

SWOT analysis (Figure 5) can be performed by compiling a list of organizational attributes applied to each of these categories. This allows management to determine where resources need to be allocated to either shore up or scale back attributes to optimize program performance.

FIGURE 5. SWOT ANALYSIS			
Strengths	Weaknesses	Opportunities	Threats
Subject matter experts	Insufficient funding	Contract Personnel	Budget cuts
Certified processes	Process software outdated	Develop software internally	International standards
Market demand	Production limitations	Outsource production	Loss in quality



## Gap Analysis

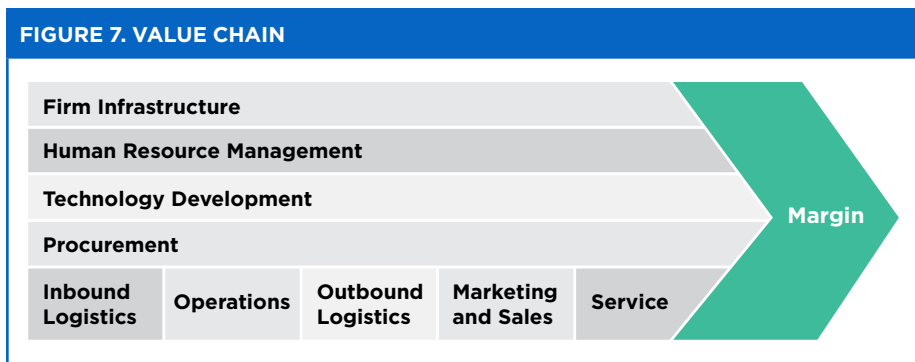
A gap map (Figure 6) employs a two-axis, four-quadrant graphic depicting variables of interest to the systems engineer. For example, variables could be metrics relating to cost, schedule, and performance; however, the axes are not restricted to specific categories. The systems engineer determines what is of value or interest.

The space is populated to show occurrences of the variables or lack thereof. Should a particular quadrant, for example, be void of data points, this could be an indication of an opportunity or perhaps a deficiency in the enterprise. To demonstrate the scale of an occurrence, symbols (e.g., circle) are sized accordingly. For instance, if many COTS systems were identified in a quadrant, the size of the symbol would be indicative. Conversely, few occurrences would be represented as a small symbol.

Finally, an opportunity or deficiency could be shown as a dashed, unfilled symbol—scaled to show the magnitude of the gap.

## Value Chain Analysis

The value chain (Figure 7) comprises the functions performed to create a product or service. A margin is depicted to highlight the value added for the customer. This would be a useful model for trade studies to represent alternative approaches and determine which produces the greatest margin or best value.



The elements of the value chain are defined as follows:

- **Firm infrastructure**—Support of entire value chain, such as general management, planning, finance, accounting, legal services, government affairs, and quality management



- **Human resource management**—Recruiting, hiring, training, and development
- **Technology development**—Improving product and manufacturing process
- **Procurement**—Function or purchasing input
- **Inbound logistics**—Materials receiving, storing, and distribution to manufacturing premises
- **Operations**—Transforming inputs into finished products
- **Outbound logistics**—Storing and distributing products
- **Marketing and sales**—Promotion and sales force
- **Service**—Service to maintain or enhance product value (Crawford, 1997)



## Conclusions

The multidisciplinary aspects of strategic management tools lend themselves to other uses. This article focused on one tool to present this approach as it pertains to RM. However, it is apparent from the other models presented that the overlap between strategic management and SE yields opportunities for similar analyses (della Cava, 2009). Opportunities exist to extend this approach to broad SE disciplines or focus the model on specialty domains. Examples include technology readiness, information assurance, and environmental considerations.

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# AUTHOR BIOGRAPHY



**Mr. John Rice** is owner and president of JR3 Consulting, LLC, established in March 2020 to provide subject matter expertise in digital engineering, cybersecurity, and advanced manufacturing. He acquired the requisite knowledge, skills, and abilities as an instructor at DAU, as a lead systems engineer at the Missile Defense Agency, and as an aerospace and defense contractor. In 2018, he received the 2018 DAU President's Award in recognition of significant contributions in teaching, research, and consulting in these disciplines.

Currently, he supports aerospace and defense contractors with business development projects including (a) digital engineering for a major defense acquisition program, (b) cybersecurity test and evaluation at major range and test facility bases, and (c) information technology and cybersecurity management for a defense agency. His company has also provided science, technology, engineering and mathematics training through industry-recognized mechatronics instruction that certified adult learners for advanced manufacturing jobs.

At DAU, Mr. Rice led the development of its online learning course, "Models, Simulations, and Digital Engineering," deployed across the DoD in 2019 as one of four specializations for workforce credentialing. He provided instruction in DoD cybersecurity as part of a robust acquisition curriculum and led the initial development of the DoD Cloud Acquisition Guidebook to serve as an enterprise-wide reference for cloud migration. Mr. Rice provided direct assistance to the National Aeronautics and Space Administration (NASA) and DoD for the streamlined procurement of 3D-printed launch vehicle parts, which led to his groundbreaking research and publications on Other Transaction Agreements for rapid prototyping.

Mr. Rice holds a BS in Mechanical Engineering from Auburn University and an MBA from The University of Alabama in Huntsville.

# THE High Flying LEADERSHIP QUALITIES: What Matters THE MOST?

This article is a reprint of an article featured in the *Defense Acquisition Research Journal* (April 2016), Vol. 23, Issue 2, pp. 122-150, by Col Robert L. Tremaine, USAF (Ret).

## A WORD FROM THE AUTHOR

Having written this article about 6 years ago, and after working for and with some extraordinary leaders over the decades prior and to date, I continue to think a lot about their effectiveness. There's hardly been a day gone by where I didn't witness something about their prowess, but what made them notably great? At the very least, leaders who exhibited empathy, inspiration, humility, integrity, moral courage (and the many other qualities that encapsulate "Leads by example"), coupled with exercising various skills "on demand" (and listed in this article), continue to make a huge difference. In tough times, leaders unified us; in good times, they made it about us. From a developmental perspective though, how often do we find ourselves admiring and trying to mimic these same fruitful behaviors, especially when the results proved to be exceptional for those we observed inside the organizations they led? Practicing and sharpening some of these same leadership qualities until they become part of our own winning leadership formulae can help us to achieve similar gains. At the same time, what leading indicators can we use to confirm our leadership journey stays on track and endures? Listing them as projected outcomes and monitoring them with our personal leadership calibrators can give us plenty of insight into those convincing signs and expose other areas that might need a little more horsepower.

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2016



Col Robert L. Tremaine, USAF (Ret.)

Like many U.S. companies, the Department of Defense (DoD) invests in leadership development. The DoD recognizes equal benefits and has instituted various programs to enable it. However, not every DoD organization invests in leadership development the same way. The ones that do think more deeply about their future have thoughtful and effective leadership development programs that combine training, practice, and cultivation—all intended to professionally nurture future leaders. DoD organizations that have more defined hierarchical leadership structures such as mid level managers (MLMs), senior level managers (SLMs), senior level leaders (SLLs), or equivalent offer a gateway to learn more about what leadership qualities matter to them. At DAU, 37 MLMs and 32 SLMs provided valuable insights in their survey responses. No SLLs participated in this study.

**DOI:** [https://doi.org/10.22594/dau.21\\_891.29.02](https://doi.org/10.22594/dau.21_891.29.02)

**Keywords:** Leadership Qualities, DoD, DAU, Senior- and Mid Level Managers, Strategic Planning

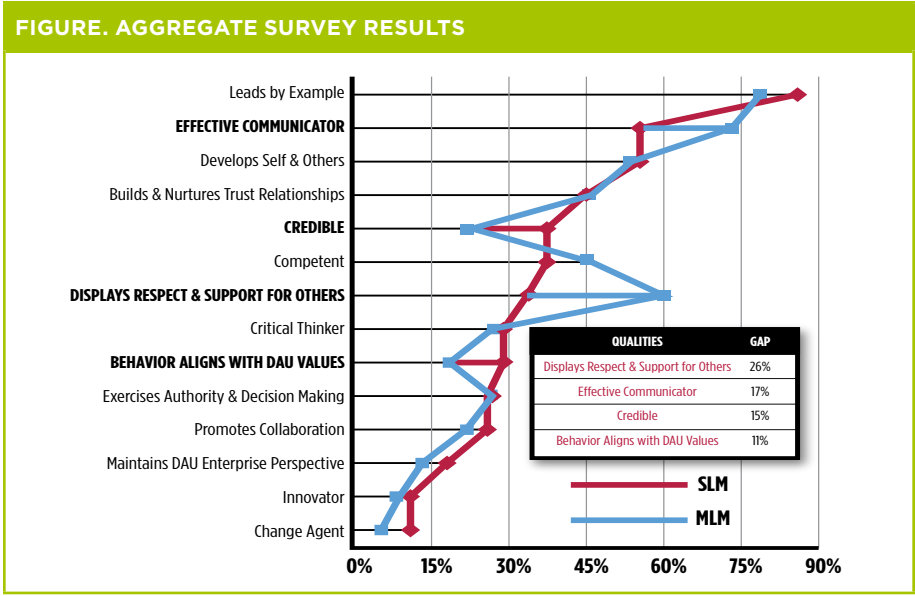
If institutions like DAU treat learning as a lifetime pursuit, then what do its mid-level managers (MLMs) and senior-level managers (SLMs) have to say about the leadership qualities that matter most during their own continuing professional development journey? Aside from growing more capable leaders along with the ability to create greater influence inside and outside their learning spheres, are there any leadership quality outliers in particular that deserve a more intensive review based on responses from a representative sample population? The DAU workforce is in a powerful position to address this question given the inherent diversity and capability among its ranks, as well as the previous operational and functional background of its personnel steeped in both DoD and industry experience.

## Research Methodology

Based on their experiences, survey respondents were asked to identify the five leadership qualities that mattered most to them, from a list of 14 representative ones drawn from multiple sources. The respondents had to make hard choices. What specific factors influenced their leadership quotient and why? Did their position, generational affiliation, supervisory experience, and number of years in their current position at DAU create any noticeable flux? What about the qualities that fell outside their top five? Were they still important, and to what degree? The remainder of this article addresses answers to these questions in aggregate, as well as in the context of various demographic slices among both MLMs and SLMs to understand better the causes, and whether or not there is a cause for concern for other institutions similar to DAU throughout the DoD. The more granular results are reported through frequency tables and augmented by qualitative comments.

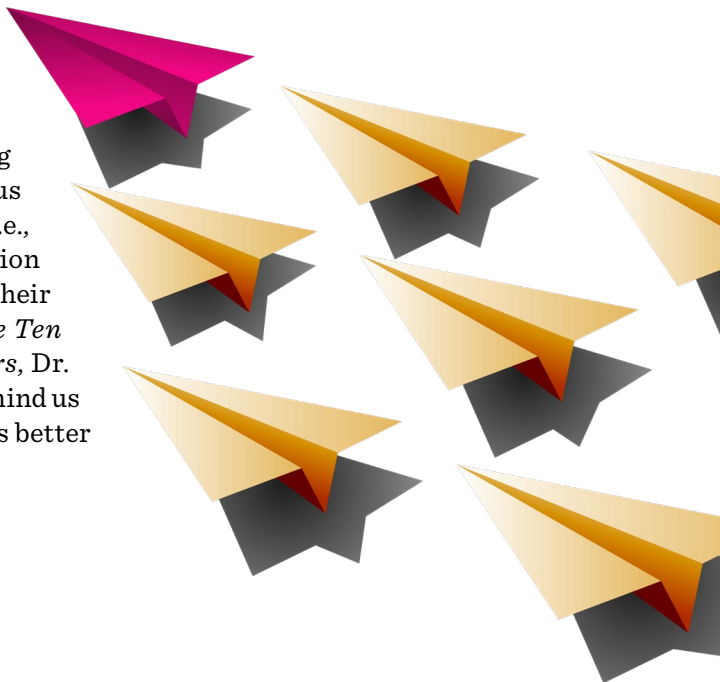
The order of the 14 leadership qualities (Table 1) in this particular survey was intentionally randomized.

TABLE 1. FOURTEEN LEADERSHIP QUALITIES	
Leads by Example	Develops Self & Others
Effective Communicator	Builds & Nurtures Trust Relationships
Competent	Credible
Displays Respect & Support for Others	Behavior Aligns with DAU Values
Critical Thinking	Exercises Authority & Decision Making
Promotes Collaboration	Maintains DAU Enterprise Perspective
Change Agent	Innovator



## Results and Findings (Aggregate)

The Figure displays aggregate survey results. Among all the respondents, **Leads by Example** and **Effective Communicator** rose as the top two choices. Research underscores similar findings. Both characteristics seem to embody the importance of the expected qualities found “in” and “of” leaders; they also tend to be inextricably linked in practice. RBC Financial Group, Canada’s largest financial corporation, recognized the value and combined the two by instituting a communication process called “Leadership Dialogues” where “established leaders relate their career experiences to developing leaders” (Beslin & Reddin, 2004). As part of Effective Communicator, listening is also an especially important component. Listening takes time and generally requires us to think more about our thinking (i.e., metacognition). Without it, decision missteps can potentially result. In their book, *Leadership by Example: The Ten Key Principles of All Great Leaders*, Dr. Sanjiv Chopra and David Fisher remind us that as Abraham Lincoln said, “It is better



to be silent and be thought a fool than to speak up and dispel all doubt” (Chopra & Fisher, 2012) by speaking up too soon. Surprisingly, research shows the average person listens at around 25% efficiency levels (Huseman et al., 1988), even though listening is so closely tied to effective leadership (Johnson & Bechler, 1998). An ample supply of programs teaches us to be better communicators; few programs exist that teach us to be better listeners (Janusik et al., n.d.) or the important role that culture plays in communication through the motivation, knowledge, and skills of the interactants involved (Spitzberg, 1994).



**An ample supply of programs teaches us to be better communicators; few programs exist that teach us to be better listeners (Janusik et al., n.d.) or the important role that culture plays in communication through the motivation, knowledge, and skills of the interactants involved (Spitzberg, 1994).**

For **Develops Self and Others**, instruments like an organization’s Strategic Plan (SP) or other similar means generally characterize some aspect of its leadership development programs as part of its mission heading. The Department of Homeland Security (DHS, 2014) addresses leadership development in its SP under Goal 6: Strengthen Service Delivery and Manage DHS Resources, with a specific objective that focuses on “building an effective, mission-focused, diverse, and inspiring cadre of leaders” (p. 45). Whatever the manifestation, these programs can also pay huge dividends by lowering costly turnover rates, growing more capable leaders, and creating greater opportunities for professional gains as well as concomitant organizational successes inside and outside their domains.

In the respondents’ selection of their top five, the author discerned a noticeable variance between how DAU SLMs and MLMs viewed Effective Communication, **Credible**, and **Displays Respect for Others**. MLMs more often selected Effective Communication and Displays Respect for Others in their top five, and provided quite a few supporting comments to reinforce their importance:



**Effective Communication:** “A leader must be able to communicate vision/purpose to the organization for it to understand goals and why they are important to the mission. ... Basis for leadership ... Can’t lead if you can’t communicate ... It’s not WHAT you say, but HOW you say it. ... Effective leaders must be able to share knowledge and ideas as well as transmit urgency and enthusiasm to others.”

**Displays Respect for Others (Critical for a Leader):** “Treat others the way you would expect to be treated. ... A leader needs to respect not only the people that work for them, but also everyone in the enterprise; otherwise, trust breaks down. ... A successful organization demonstrates respect for all levels of the organization. ... Without respect, others will not listen or follow. An effective leader must be willing to consider others’ opinions and be open to feedback, even if it’s not favorable.”

SLMs placed a greater emphasis than MLMs on Credible. For some MLMs, Credible may have dropped out of their top five based on their supporting comments (found under Leads by Example and Competent) where they responded:

**Credible:** “Basis of credibility ... A subordinate should only have to look one place for the standard that needs to be met—the supervisor. ... Do as I do works much better than do as I say. ... Time honored leadership quality ... It’s one of the key things I look for in my leaders. ... You get from others what you model for them. ... You must be an expert in your chosen field—it ties to credibility.”

Involving more MLMs as “leads” on strategic initiatives that cut across the enterprise, where they can demonstrate how their dependability and expertise converge, might help close the gap between the SLMs’ and MLMs’ top five.



**TABLE 2. RESPONSES TO 14 LEADERSHIP QUALITIES BASED ON “ROLE”**

Leadership Qualities	Aggregate		By Role					$\bar{x}$	Standard Deviation ( $\sigma$ )			$\bar{x} \pm 1\sigma$	
	SLM AGG	MLM AGG	SLM AD	SLM Faculty	MLM Faculty	SLM Staff	MLM Staff		MLM	SLM	MLM	$\bar{x} + 1\sigma$	$\bar{x} - 1\sigma$
Leads by Example	85%	79%	75%	100%	82%	90%	60%	82%	9%	8%	7%	90%	73%
Develops Self & Others	56%	55%	67%	40%	55%	50%	60%	52%	14%	17%	6%	66%	38%
Effective Communicator	56%	71%	67%	40%	70%	50%	80%	63%	13%	7%	7%	75%	50%
Builds & Nurtures Trust Relationships	44%	47%	58%	20%	42%	40%	80%	43%	19%	20%	14%	63%	24%
Competent	37%	45%	25%	60%	42%	40%	60%	44%	13%	16%	8%	57%	31%
Credible	37%	21%	58%	0%	24%	30%	0%	24%	17%	16%	12%	41%	7%
Displays Respect & Support for Others	33%	58%	17%	40%	61%	50%	40%	49%	18%	20%	10%	67%	30%
Behavior Aligns with DAU Values	30%	21%	17%	60%	21%	30%	20%	26%	13%	16%	7%	39%	13%
Critical Thinking	30%	26%	42%	20%	30%	20%	0%	27%	11%	10%	10%	38%	16%
Exercises Authority & Decision Making	26%	26%	17%	40%	27%	30%	20%	31%	18%	21%	10%	48%	13%
Promotes Collaboration	26%	21%	8%	40%	21%	40%	20%	24%	8%	9%	4%	33%	16%
Maintains DAU Enterprise Perspective	19%	13%	17%	40%	9%	10%	40%	17%	10%	10%	9%	27%	7%
Change Agent	11%	8%	8%	0%	9%	20%	0%	11%	9%	10%	7%	20%	1%
Innovator	11%	8%	25%	0%	6%	0%	20%	8%	7%	8%	5%	16%	1%

## Findings (By Demographic)

*Does a leader's role (either faculty or staff) influence the importance of certain leadership qualities?*

For each role grouping, the following leadership qualities rose one standard deviation *above* the mean ( $\bar{x} + 1\sigma$ ) as shown in Table 2.

- Associate deans: Develops Self and Others, Credible, **Critical Thinking**, and **Innovator**
- SLM faculty: Leads by Example, **Competent**, **Behavior Aligns with DAU Values**, **Promotes Collaboration**, and **Maintains DAU Enterprise Perspective**
- MLM staff: Effective Communicator, **Builds and Nurtures Trust Relationships**, Competent, Maintains DAU Enterprise Perspective, and Innovator
- SLM staff: Leads by Example, Promotes Collaboration, and **Change Agent**

For the same grouping, the following leadership qualities fell one standard deviation *below* the mean ( $\bar{x} - 1\sigma$ ) as shown in Table 2.

- Associate deans: Competent and Promotes Collaboration
- MLM staff: Leads by Example, Credible, Critical Thinking, and Change Agent
- SLM faculty: Effective Communicator, Builds and Nurtures Trust Relationships, Credible, Change Agent, and Innovator
- SLM staff: Effective Communicator and Innovator

For Credible, the foundation of building trust, according to Stephen Covey (n.d.), MLM faculty who raised its importance responded:

“Can’t lead without it ... Captures a number of the other qualities that matter and would be foolish to leave it out ... implies knowledgeable and proactive ... Similar to **Competent**—means we bring experience to the situation ... When subordinates come to believe that a senior is not credible or sufficiently informed, not honest, forthright, or responsive, they’ll likely no longer be listening by the time the leader finally recognizes his/her isolation.”

For Change Agent, where leaders work to alter employee attitudes and behaviors because it’s important for long-term success and sustainability (Abbas & Asghar, 2010, p. 26), SLM staff who raised its importance responded:

“Change is the constant. ... Need Change Agent to overcome natural resistance to change ... DAU can’t continue to do things the way they have always been done. ... Our leadership needs to be able to recognize positive change and be willing to accomplish that change.”

Some of the greatest differences in the top five selections occurred among the associate deans, SLM faculty, and MLM staff in their selections of Competent, Credible, Promotes Collaboration, and Innovator. Of all the demographic groups, the associate deans were the only ones to score Develops Self and Others one standard deviation above the mean. As the saying goes, “What you see depends on where you sit.” Associate deans might be more strategically positioned to witness the greater impacts that a more capable and “developed” workforce can make. SLM faculty were the only group to raise Behavior Aligns with DAU Values one standard deviation above the mean. This might stem from their frequent interaction with diversified and sometimes larger groups, combined with the recognition that “the greater the linkage between behavior and values, the greater an organization’s success” (Rubino, 1998). SLM faculty also generally witness firsthand the prevailing professionalism, enthusiasm, and resulting impacts of more cross-cutting enterprise projects (or the absence thereof), firsthand.



**As the saying goes, “What you see depends on where you sit.” Associate deans might be more strategically positioned to witness the greater impacts that a more capable and “developed” workforce can make.**

*Do generational affiliations indicate any predispositions?*

For the generational slice, the following leadership qualities rose one standard deviation *above* the mean ( $\bar{x} + 1\sigma$ ) as shown in Table 3.

- GEN X SLMs: Competent, Critical Thinking, **Exercises Authority** and **Decision Making**, and Change Agent
- GEN X MLMs: Effective Communicator and Builds and Nurtures Trust Relationships

In this same category, the following leadership qualities fell one standard deviation *below* the mean ( $\bar{x} - 1\sigma$ ) as shown in Table 3.

- Boomer SLMs: Competent

**TABLE 3. RESPONSES TO 14 LEADERSHIP QUALITIES BASED ON “GENERATION**

Leadership Qualities	Aggregate			By Generation				$\bar{x}$	Standard Deviation ( $\sigma$ )			$\bar{x} \pm 1\sigma$	
	SLM AGG	MLM AGG	MLM AGG	SLM Boomr	MLM Boomr	SLM Gen X	MLM Gen X		ALL	SLM	MLM	$\bar{x} + 1\sigma$	$\bar{x} - 1\sigma$
Leads by Example	85%	79%		87%	77%	75%	88%	82%	9%	8%	7%	90%	73%
Develops Self & Others	56%	55%		61%	57%	25%	50%	52%	14%	17%	6%	66%	38%
Effective Communicator	56%	71%		57%	67%	50%	88%	63%	13%	7%	7%	75%	50%
Builds & Nurtures Trust Relationships	44%	47%		52%	43%	0%	63%	43%	19%	20%	14%	63%	24%
Competent	37%	45%		30%	47%	75%	38%	44%	13%	16%	8%	57%	31%
Credible	37%	21%		39%	27%	25%	0%	24%	17%	16%	12%	41%	7%
Displays Respect & Support for Others	33%	58%		26%	60%	75%	50%	49%	18%	20%	10%	67%	30%
Behavior Aligns with DAU Values	30%	21%		35%	17%	0%	38%	26%	13%	16%	7%	39%	13%
Critical Thinking	30%	26%		26%	27%	50%	25%	27%	11%	10%	10%	38%	16%
Exercises Authority & Decision Making	26%	26%		17%	30%	75%	13%	31%	18%	21%	10%	48%	13%
Promotes Collaboration	26%	21%		26%	20%	25%	25%	24%	8%	9%	4%	33%	16%
Maintains DAU Enterprise Perspective	19%	13%		22%	13%	0%	13%	17%	10%	10%	9%	27%	7%
Change Agent	11%	8%		9%	10%	25%	0%	11%	9%	10%	7%	20%	1%
Innovator	11%	8%		13%	7%	0%	13%	8%	7%	8%	5%	16%	1%

- GEN X SLMs: Develops Self and Others, Effective Communicator, Builds and Nurtures Trust Relationships, Displays Respect for Others, Behavior Aligns with DAU Values, Maintains DAU Enterprise Perspective, and Innovator
- GEN X MLMs: Credible, Exercises Authority and Decision Making, and Change Agent

By juxtaposing SLMs and MLMs along the lines of their generational affiliation, more dramatic variances surfaced for GEN X in particular. While the Boomers were generally consistent in the selection of their top five, GEN X SLMs' selections were more dispersed for 11 of the 14 qualities, while GEN X MLMs were less distributed in their selections. No Boomer left any of the 14 qualities out of their top five leadership qualities. GEN X SLMs and GEN X MLMs left out four and two, respectively. There can be several explanations for the GEN X fluctuations.



GEN X SLMs apparently placed significantly more stock in Competent, Critical Thinking, Exercises Authority and Decision Making, and Change Agent in what appears to be at the expense of three of the top five.

For Competent, they may have learned and want what Kolditz (2007) theorized: “Leaders need to take the time and effort to show followers what they’re good at and why followers should be confident in the leader’s ability” (p. 41). In their supporting comments, the respondents said:

Competent: “A leader needs to be competent for several reasons. Subordinates will have respect for a leader that has technical and leadership competence. ... A competent leader automatically sets high standards for his/her employees

because subordinates will naturally follow leadership's example. ... A leader should be competent in their role; if not, then that is a weakness to those you wish to lead."

For Critical Thinking, they could have learned very early the value of questioning more, challenging the status quo, and reaping the benefits of creative tension and divergent thinking. They may have even learned how to "dispute their beliefs," according to Dr. Albert Ellis, and promote more rational thinking about their own beliefs (Epstein, 2001); as well as recognize what other scholars have reported—that thinking controls feelings and volition (Elder, 1996), which can easily cloud rational and sound thinking. Two of the respondents pointed out that:

Critical Thinking: "Critical thinking skills are required for an individual to be successful at nearly all of the qualities identified. ... It strengthens individual capabilities and encourages professionalism of others through an intellectually disciplined process by conceptualizing, applying, evaluating, and formulating a reasoning of beliefs."

For Exercises Authority and Decision Making, the other groups gave a substantially higher number of reasons for keeping them out of the top five. Two respondents characterized it simply by saying:

Exercises Authority and Decision Making: "I feel this trait is important, but not as valuable as others listed in my opinion. ... I considered it less important [and] because I have to trust my people to execute, I delegate."



**For Critical Thinking, they could have learned very early the value of questioning more, challenging the status quo, and reaping the benefits of creative tension and divergent thinking.**

For Change Agent to rise in the ranking, especially in the top five, something had to occur with some of the GEN X MLMs in their past where they probably experienced the necessity for change. More often than not, many individuals generally question the need. Why the change? How will I/we

be affected? Am I/we at risk as a result of the change? Harvard Professor John Kotter (1996) established an eight-step process if the case for change can be made.

1. Establishing a Sense of Urgency
2. Creating the Guiding Coalition
3. Developing a Vision and Strategy
4. Communicating the Change Vision
5. Empowering Employees for Broad-based Action
6. Generating Short-term Wins
7. Consolidating Gains and Producing More Change
8. Anchoring New Approaches in the Culture



Kotter’s construct is still very popular. However, GEN X MLMs might not yet fully appreciate the extent of the value proposition of change due to inexperience and/or limited exposure to certain situations, the reason for change, or perhaps merely more inconsistency among the MLMs in their top five selections. Timing could also be a factor. For example, DAU underwent a major transformation at the turn of the past century. DAU’s relevancy as an institution came under scrutiny. It was about to be absorbed by another institution. DAU clearly had a “Sense of Urgency” (i.e., Kotter’s Step 1) and even incorporated the word “Transformation” to promulgate it as one of DAU’s five top goals. DAU had to change—and many of the Boomers and some GEN X SLMs took part in the transformation. GEN X MLMs who joined DAU later didn’t—and missed the revolution. “Transformation” is no longer a DAU Strategic Goal, which could later create greater resistance to change.

The reason GEN X MLMs ranked Credible so low is only speculative. Instead of devaluing Credible, they may have made tighter connections to other leadership qualities. One of the respondents said, “Credible is



**TABLE 4. RESPONSES TO 14 LEADERSHIP QUALITIES BASED ON “SUPERVISOR EXPERIENCE**

Leadership Qualities	Aggregate			By Supervisory Experience			$\bar{x}$	Standard Deviation ( $\sigma$ )			$\bar{x} \pm 1\sigma$	
	SLM AGG	MLM AGG	MLM < 15	SLM < 15	MLM < 15	MLM < 15		ALL	SLM	MLM		
Leads by Example	85%	79%	80%	86%	80%	83%	82%	9%	8%	7%	90%	73%
Develops Self & Others	56%	55%	60%	67%	60%	17%	52%	14%	17%	6%	66%	38%
Effective Communicator	56%	71%	65%	57%	65%	50%	63%	13%	7%	7%	75%	50%
Builds & Nurtures Trust Relationships	44%	47%	35%	52%	35%	17%	43%	19%	20%	14%	63%	24%
Competent	37%	45%	40%	33%	40%	50%	44%	13%	16%	8%	57%	31%
Credible	37%	21%	25%	43%	25%	17%	24%	17%	16%	12%	41%	7%
Displays Respect & Support for Others	33%	58%	55%	24%	55%	67%	49%	18%	20%	10%	67%	30%
Behavior Aligns with DAU Values	30%	21%	15%	33%	15%	17%	26%	13%	16%	7%	39%	13%
Critical Thinking	30%	26%	35%	29%	35%	33%	27%	11%	10%	10%	38%	16%
Exercises Authority & Decision Making	26%	26%	35%	14%	35%	67%	31%	18%	21%	10%	48%	13%
Promotes Collaboration	26%	21%	20%	24%	20%	33%	24%	8%	9%	4%	33%	16%
Maintains DAU Enterprise Perspective	19%	13%	15%	19%	15%	17%	17%	10%	10%	9%	27%	7%
Change Agent	11%	8%	10%	5%	10%	33%	11%	9%	10%	7%	20%	1%
Innovator	11%	8%	10%	14%	10%	0%	8%	7%	8%	5%	16%	1%

similar to competent—it means we bring experience to the situation.” Additionally, GEN X MLMs may not fully appreciate the trust tax (Covey, n.d.)—imposed by certain leaders (and organizations) and so closely coupled with credibility—that costs organizations time and money by instituting (or inadvertently maintaining) various decision barriers (e.g., lengthy coordination cycles, bureaucratic red tape, extensive time spent in meetings, etc.).



*Does supervisory experience influence the perceived importance of certain leadership qualities?*

For SLMs with 15 years or more of supervisory experience, the following leadership qualities rose one standard deviation *above* the mean ( $\bar{x} + 1\sigma$ ) as shown in Table 4, with the following supporting comments:

Develops Self and Others: “[A] Leader’s job is to train him/herself out of their jobs by preparing the next wave of leaders and prepare themselves for their next job. ... Learning is a never-ending process. Everyone can always improve, learn something new, and expand their minds, thoughts, and ideas. This will lead to better critical thinking and open up peoples’ ‘apertures’ as they view the world. ... One of the most important functions of a leader is to facilitate development of his or her subordinates, providing mentorship and development opportunities so they can accomplish success in their own careers and positively contribute to the mission. ... We have to stay current and relevant, and we have to do succession. That means developing our people and also giving them [the] best chance to succeed—also outside of DAU. ... Enabling opportunities for growth in capability and improvement in themselves by supporting learning engagements and new experiences demonstrates direct interest and investment in the individual that coincides with objectives of the organization.”

Credible: “A credible leader possesses character (ethical, honest, loyal, respects others) and is recognized as competent (accountable and gets results). ... Credibility is the foundation for effectiveness and working with others as senior, peer, or subordinate; credibility includes competency. ... A lack of respect and support for others severely degrades the organizational climate. ... Most important quality. Goes with integrity. Without it, there will be no trust.”

For SLMs with less than 15 years of supervisory experience, the following leadership qualities rose one standard deviation *above* the mean ( $\bar{x} + 1\sigma$ ), with the following supporting comments:

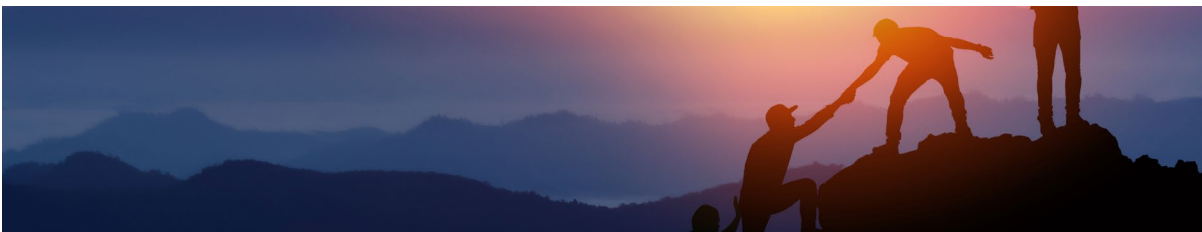
**Displays Respect and Support for Others:** “This is a simple rule, but often forgotten. Simple respect for everyone, regardless of rank or position. It is just as important to treat the janitorial staff with respect as it is senior leadership—everyone deserves respect. The truth is we all just have different jobs. This rolls into leading by example—people watch the way you treat others and it makes a difference on how they see you as leadership material.”

Exercises Authority and Decision Making: None given.

Promotes Collaboration: “This piggy-backs on DAU Values—we are customer-focused, team-oriented, strive for excellence, and are agile and responsive to customer requirements. ... We must promote collaboration with our faculty peers, stakeholders, acquisition workforce, etc., to ensure that we develop the most qualified acquisition workforce.”

Change Agent: None given.

For MLMs with less than 15 years of supervisory experience, the following leadership quality rose one standard deviation *above* the mean ( $\bar{x} + 1\sigma$ ) as shown in Table 4, with the following supporting comments:



**Effective Communicator:** “A leader needs to be able to communicate ideas, policy, etc., up and down the chain for his unit to be effective and feel that they are valued enough to be kept in the loop on decisions impacting them. ... As a leader, you need to issue clear instructions for your subordinates to follow, as well as easy-to-understand interpretations of policy to enable your people to follow them. ... We gain a lot by lessons learned by following the policies and procedures we have in place, and in order to ensure folks know that they exist or have changed, we need to have leaders and managers that communicate clearly and deliberately.”



Considering that the importance of professional development, communication, relationships, and even innovation tends to become more compelling over time, the dichotomy reinforced the importance of experience. With more experience, supervisors could be learning later that all four leadership qualities are essential to their success.

For SLMs with 15 years or more, the following leadership qualities fell one standard deviation *below* the mean ( $\bar{x} - 1\sigma$ ), without any supporting comments:

Displays Respect and Support for Others: None given.

For SLMs with less than 15 years, the following leadership qualities fell one standard deviation *below* the mean ( $\bar{x} - 1\sigma$ ), without any supporting comments:

Develops Self and Others, Effective Communicator, Builds and Nurtures Trust Relationships, Displays Respect and Support for Others, and Innovator: None given.

**TABLE 5. RESPONSES TO 14 LEADERSHIP QUALITIES BASED ON 4 YEARS AT DAU**

Leadership Qualities	Aggregate			By Years at DAU			$\bar{x}$	Standard Deviation ( $\sigma$ )			$\bar{x} \pm 1\sigma$		
	SLM AGG	MLM AGG	MLM AGG	SLM 3-10	MLM 3-10	SLM > 10		MLM > 10	ALL	SLM		MLM	
Leads by Example	85%	79%	79%	77%	79%	93%	78%	82%	9%	8%	7%	90%	73%
Develops Self & Others	56%	55%	55%	46%	50%	64%	67%	52%	14%	17%	6%	66%	38%
Effective Communicator	56%	71%	71%	62%	71%	50%	67%	63%	13%	7%	7%	75%	50%
Builds & Nurtures Trust Relationships	44%	47%	47%	31%	42%	57%	44%	43%	19%	20%	14%	63%	24%
Competent	37%	45%	45%	46%	54%	29%	33%	44%	13%	16%	8%	57%	31%
Credible	37%	21%	21%	31%	29%	43%	0%	24%	17%	16%	12%	41%	7%
Displays Respect & Support for Others	33%	58%	58%	46%	54%	21%	78%	49%	18%	20%	10%	67%	30%
Behavior Aligns with DAU Values	30%	21%	21%	23%	25%	36%	22%	26%	13%	16%	7%	39%	13%
Critical Thinking	30%	26%	26%	38%	25%	21%	22%	27%	11%	10%	10%	38%	16%
Exercises Authority & Decision Making	26%	26%	26%	31%	21%	21%	44%	31%	18%	21%	10%	48%	13%
Promotes Collaboration	26%	21%	21%	31%	25%	21%	11%	24%	8%	9%	4%	33%	16%
Maintains DAU Enterprise Perspective	19%	13%	13%	23%	13%	14%	11%	17%	10%	10%	9%	27%	7%
Change Agent	11%	8%	8%	8%	4%	14%	22%	11%	9%	10%	7%	20%	1%
Innovator	11%	8%	8%	8%	8%	14%	0%	8%	7%	8%	5%	16%	1%

*Do the number of years at an organization like DAU influence the perceived importance of certain leadership qualities?*

For SLMs at DAU with 3 to 10 years, the following leadership quality rose one standard deviation *above* the mean ( $\bar{x} + 1\sigma$ ), with the following supporting comments:

Critical Thinking: “Problem solving is vital. ... will find the best path focused on outcomes and reality ... separates perceptions and agendas from needs and goals.”

For SLMs at DAU more than 10 years, the following leadership qualities rose one standard deviation *above* the mean ( $\bar{x} + 1\sigma$ ) as shown in Table 5, with the following supporting comments:

Leads by Example: “Cannot expect people to follow if you are not walking [the] talk! ... People are more willing to follow someone that’s personally committed. ... You have to show integrity, show what you expect of others, no less than what they can expect of you. ... Every action a leader takes is closely examined by those he works with. As a leader, you broadcast your values, ethics, competence, commitment, and knowledge. These actions are infectious throughout the organization and set the standards for behavior.”

Credible: “A must if you are going to be recognized as [an] SME in a functional area within the [Defense Acquisition Management] process ... This gets to trust and respect ... without which a leader is inept. ... If you aren’t credible, you could also be regarded as insincere, which doesn’t aid trust or the internal organizational climate, nor the confidence of external customers who count on DAU to help develop a professional acquisition workforce. ... Most important quality. Goes with integrity. Without it, there will be no trust.”

For MLMs at DAU more than 10 years, the following leadership qualities fell one standard deviation *below* the mean ( $\bar{x} + 1\sigma$ ) as shown in Table 5, with the following supporting comments:

Develops Self and Others: “A really good manager seeks to develop subordinates to the extent that they can be given ‘mission orders’ to execute without being given every little detail of how to do it. ... Demonstrates selflessness, which is an important leadership quality ... If it’s important to the supervisor to develop skills and education in both



themselves and employees, it shows that you care not only about the job, but about making all better at what we do. ... You need to encourage growth in your people to fight against stagnation of thought (this includes yourself).”

Displays Respect and Support for Others: “Critical for a leader. Treat others the way you would expect to be treated. ... Respect is a two-way street. You get what you give. ... Without respect both ways, you have nothing. People will only do what they have to in order to get by; support and respect by the supervisor displays a trusting work environment.”

Change Agent: “Having trust in leaders instills confidence in them. ... The leader’s credibility reflects the organization’s capabilities.”

For MLMs at DAU more than 10 years, the following leadership quality fell one standard deviation below the mean ( $\bar{x} - 1\sigma$ ), without any supporting comments:

Effective Communicator: “These are all great traits of a good leader. Cannot ‘justify’ why they are at the bottom.”

Competent: “I think it’s a component of credibility. ... You don’t have to be the smartest guy or gal to lead, but you have to be smart enough to surround yourself with the smart folks and then listen to them. ... Competent is a minimum

threshold to rise to a leadership position. Other attributes become the delta between an average leader and a good leader.”

Displays Respect and Support for Others: “As a leader, it is important for you to display respect and support for others. When your followers recognize that you care and respect them, they will work harder to accomplish the mission.”



For MLMs at DAU more than 10 years, the following leadership quality fell one standard deviation below the mean ( $\bar{x} - 1\sigma$ ), without any supporting comments:

Credible, Promotes Collaboration and Innovation: None given.

Various studies have shown that 20% to 67% of the variance that measures the climate for creativity in organizations is directly attributable to leadership behavior. This suggests that leaders must act in ways that promote and support organizational innovation (Horth & Buchner, 2014). Over 80% of executive leaders surveyed in 2007 felt innovation was a success indicator, although less than 30% were satisfied with their present innovation levels (Legrand & Weiss, 2011). Coincidentally, many of the 10 traits of innovative leaders described by Jack Zenger and Joseph Folkman (2014) in the text that follows are embodied in the top 14 leadership qualities outlined in this study:

- Display excellent strategic vision. The most effective innovation leaders could *vividly describe their vision* of the future, and as one respondent noted about his boss: “She excelled at *painting a clear picture* of the destination, while we worked to figure out how to get there” (Effective Communication).



- Have a strong customer focus. What was merely interesting to the customer became fascinating to these individuals. They sought to get inside the customer's mind. They *networked with clients and asked incessant questions* about their needs and wants (Critical Thinking).
- Create a climate of reciprocal trust. Innovation often requires some level of risk. Not all innovative ideas are successful. These highly innovative leaders initiated warm, *collaborative relationships* with the innovators who worked for them. They made themselves highly accessible. Colleagues knew that their leader would cover their backs and not throw them under the bus if something went wrong. People were never punished for honest mistakes (Promotes Collaboration).
- Display fearless loyalty to doing what's right for the organization and customer. Pleasing the boss or some other higher level executive always took a back seat to doing the right thing for the project or the company (Behavior Aligns with Values).
- Put their faith in a culture that *magnifies upward communication*. These leaders believed that the best and most innovative ideas bubbled up from underneath. They strived to create a culture that uncorked good ideas from the first level of the organization. They were often described as projecting optimism, full of energy, and always receptive to new ideas. Grimness was replaced with kidding and laughter (Effective Communication).
- Are persuasive. These individuals were highly effective in getting others to accept good ideas. They *did not push or force their ideas* onto their teams. Instead, they presented ideas with enthusiasm and conviction, and the team willingly followed (Displays Respect and Support for Others).
- Excel at setting stretch goals. These goals required people to go far beyond just working harder. These goals required that they find new ways to achieve a high goal (Critical Thinking).
- Emphasize speed. These leaders believed that speed scraped the barnacles off the hull of the boat. Experiments and rapid prototypes were preferred to lengthy studies by large committees.

- Are *candid in their communication*. These leaders were described as providing honest, and at times even blunt, feedback. Subordinates felt they could always count on straight answers from their leader (Effective Communication).
- Inspire and motivate through action. One respondent said, “For innovation to exist, you have to feel inspired.” This comes from a clear sense of purpose and meaning in the work (Builds and Nurtures Trust Relationships).

## Other Leadership Qualities

At the end of the survey, the respondents were also asked what other qualities they thought were important in a DAU leader and why. Here’s a sampling of what they had to say:

“Ability to manage personnel issues effectively. Problems can quickly get out of hand if not handled in a quick and fair manner. It will not only impact the person, but the perception among others that either you are not handling it well or not handling it; thus, it may affect morale amongst the other members.”

“Be forward thinking. In today’s world where things change constantly, it is important to look ahead and try to lead your workers towards the more productive path; this is part of being competent; we want to lead folks towards what we believe is the future and not down a dead end.”



**When it comes to leadership, demographic factors can easily influence how individuals judge certain leadership qualities through their personal experiences and exposure to various situations.**

“A leader should be a good teacher and committed to teaching those who work for him. Humility is also an important characteristic.”

**TABLE 6. RESPONSES TO 14 LEADERSHIP QUALITIES BASED ON “AGGREGATE”**

DAU Leadership Qualities	Aggregate		By Role				By Generation				By Supervisory Exp				By Years at DAU				$\bar{x}$	Standard Deviations ( $\sigma$ )			Average $\bar{x} \pm 1\sigma$		
	SLM AGG	MLM AGG	SLM AD	SLM Faculty	MLM Faculty	SLM Staff	MLM Staff	SLM Boomr	MLM Boomr	SLM Gen X	MLM Gen X	SLM 15+	MLM 15+	SLM <15	MLM <15	SLM 3-10	MLM 3-10	SLM >10		MLM >10	ALL	SLM		MLM	
Leads by Example	85%	79%	75%	100%	82%	90%	60%	87%	77%	75%	88%	86%	80%	83%	78%	77%	79%	93%	78%	82%	9%	8%	7%	90%	73%
Develops Self & Others	56%	55%	67%	40%	55%	50%	60%	61%	57%	25%	50%	67%	60%	17%	50%	46%	50%	64%	67%	52%	14%	17%	6%	66%	38%
Effective Communicator	56%	71%	67%	40%	70%	50%	80%	57%	67%	50%	88%	57%	65%	50%	78%	62%	71%	50%	67%	63%	13%	7%	7%	75%	50%
Builds & Nurtures Trust Relationships	44%	47%	58%	20%	42%	40%	80%	52%	43%	0%	63%	52%	35%	17%	61%	31%	42%	57%	44%	43%	19%	20%	14%	63%	24%
Competent	37%	45%	25%	60%	42%	40%	60%	30%	47%	75%	38%	33%	40%	50%	50%	46%	54%	29%	33%	44%	13%	16%	8%	57%	31%
Credible	37%	21%	58%	0%	24%	30%	0%	39%	27%	25%	0%	43%	25%	17%	17%	31%	29%	43%	0%	24%	17%	16%	12%	41%	7%
Displays Respect & Support for Others	33%	58%	17%	40%	61%	50%	40%	26%	60%	75%	50%	24%	55%	67%	61%	46%	54%	21%	78%	48%	18%	20%	10%	67%	30%
Behavior Aligns with DAU Values	30%	21%	17%	60%	21%	30%	20%	35%	17%	0%	38%	33%	15%	17%	28%	23%	25%	36%	22%	26%	13%	16%	7%	39%	13%
Critical Thinking	30%	26%	42%	20%	30%	20%	0%	26%	27%	50%	25%	29%	35%	33%	17%	38%	25%	21%	22%	27%	11%	10%	10%	38%	16%
Exercises Authority & Decision Making	26%	26%	17%	40%	27%	30%	20%	17%	30%	75%	13%	14%	35%	67%	17%	31%	21%	21%	44%	31%	18%	21%	10%	48%	13%
Promotes Collaboration	26%	21%	8%	40%	21%	40%	20%	26%	20%	25%	25%	24%	20%	33%	22%	31%	25%	21%	11%	24%	8%	9%	4%	33%	16%
Maintains DAU Enterprise Perspective	19%	13%	17%	40%	9%	10%	40%	22%	13%	0%	13%	19%	15%	17%	11%	23%	13%	14%	11%	17%	10%	10%	9%	27%	7%
Change Agent	11%	8%	8%	0%	9%	20%	0%	9%	10%	25%	0%	5%	10%	33%	6%	8%	4%	14%	22%	11%	9%	10%	7%	20%	1%
Innovator	11%	8%	25%	0%	6%	0%	20%	13%	7%	0%	13%	14%	10%	0%	6%	8%	8%	14%	0%	8%	7%	8%	5%	16%	1%

“Patience and persistence. Bureaucratic organizations are slow to change, so leaders in DAU need to be prepared for the long haul.”

“Curiosity. It is the best antidote to complacency.”

“Cross-region collaboration.”

“DAU’s leaders should know their way around the inside of a classroom.”



## Conclusions

What does all this mean? As Table 6 shows, when it comes to leadership, demographic factors can easily influence how individuals judge certain leadership qualities through their personal experiences and exposure to various situations. The DAU respondents who participated in this particular study highlighted how they fluctuate. Is it a cause for concern? It invariably depends on a given scenario and what vital leadership qualities have either been highly effective or perhaps marginalized in their view. Historically, if leaders are undervaluing a particular set of leadership imperatives that needs more thrust, it could cost the organization they lead—profoundly. Polaroid, Eastman Kodak, Blockbuster, Eastern Airlines, Arthur Andersen, DeLorean Motors, Levitz Furniture, Enron, and many other corporations like these learned what happens when key leadership qualities lose all lift. These companies are now either resting in peace, have been cannibalized by another company, or are operating as a mere fraction of their original size. Their leaders underestimated, ignored, and/or prematurely dismissed

how their culture, product lines, processes, corporate structure, competition, customer base, outside forces, politics, etc., combined in some way to create a consequential nexus with negative returns. Their leaders had to make hard choices, or tried to make them, and subsequently succumbed to insurmountable organizational resistance.

On the other hand, what leadership qualities did they discount too quickly that would have resulted in more favorable outcomes? According to research, leadership shortcomings generally center on the failure to recognize (or believe in) the warning signs and respond in kind with a confluence of these same 14 leadership qualities.

In this study, the respondents had to reflect on their experiences and decide what still predominates today. The leadership qualities that rose to their top five were generally very consistent in the aggregate until the slicing began. The most significant fluctuations occurred among four of the top five. Leading by Example saw much less variation. The respondents did not undervalue any particular leadership quality. Instead, they seemed to make connections among several below their top five to reclaim their relative importance.

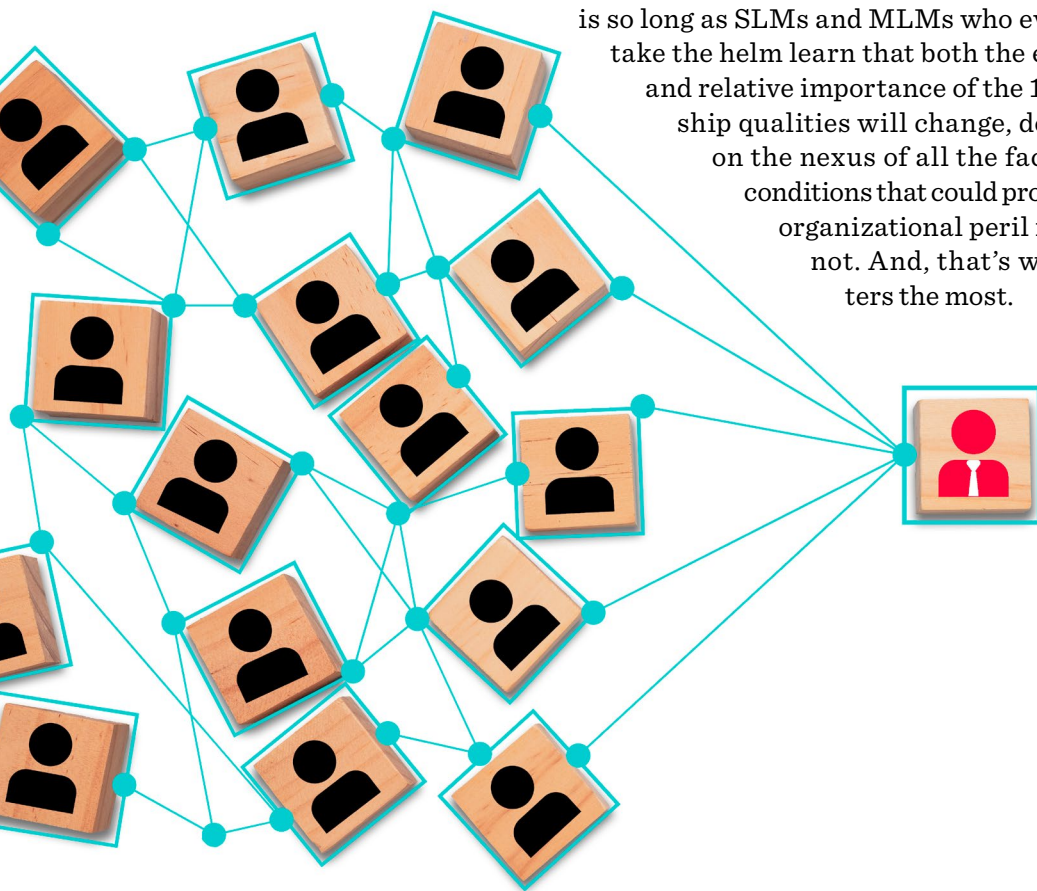


**Because DAU aligns its workforce with annually updated Strategic Goals and measurable performance targets, this “development-of-the-fittest” approach knowingly positions SLMs and MLMs to recognize better, during their development, the early warning signs that leaders sometimes miss—and sometimes miss too late.**

It’s difficult to attribute any one factor that promotes the predominance or lessens some of the leadership qualities that typically find their way over others in the top five. This author was particularly surprised to see where Innovator fell, however. Lately, the Defense Acquisition Executive and his senior leaders have reinforced both its importance and connection to persistence (Kendall, 2015). Inarguably, DAU is not a technology company and is not necessarily subject to the same consequences of disruptive technology that affect technology companies. However, since Innovator fell so markedly outside the respondents’ top five, will it eventually result in a negative

“performance trajectory” and hasten DAU’s decline as it did for other companies with the same fatal flight path (Christensen, 2015, pp. 9–21)? Even though DAU is fulfilling congressional direction (in accordance with the Defense Acquisition Workforce Improvement Act, 1991) to train DoD’s acquisition workforce, many companies are hot on its heels, vying to deliver the same training and other services that DAU provides. Because DAU aligns its workforce with annually updated Strategic Goals and measurable performance targets, this “development-of-the-fittest” approach knowingly positions SLMs and MLMs to recognize better, during their development, the early warning signs that leaders sometimes miss—and sometimes miss too late (McCall, 1998, p. 17). At DAU, the fluctuations among the 14 leadership qualities are no cause for concern in this author’s opinion. This

is so long as SLMs and MLMs who eventually take the helm learn that both the emphasis and relative importance of the 14 leadership qualities will change, depending on the nexus of all the factors and conditions that could produce real organizational peril if they do not. And, that’s what matters the most.



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# PROFESSIONAL READING LIST



The Defense Acquisition Professional Reading List is intended to enrich the knowledge and understanding of the civilian, military, contractor, and industrial workforce who participate in the entire defense acquisition enterprise. These book recommendations are designed to complement the education and training vital to developing essential competencies and skills of the acquisition workforce. Each issue of the *Defense Acquisition Research Journal* will include one or more reviews of suggested books, with more available on our website: <http://dau.edu/library>.

We encourage our readers to submit book reviews they believe should be required reading for the defense acquisition professional. The books themselves should be in print or generally available to a wide audience; address subjects and themes that have broad applicability to defense acquisition professionals; and provide context for the reader, not prescriptive practices. Book reviews should be 450 words or fewer, describe the book and its major ideas, and explain its relevance to defense acquisition. Please send your reviews to the managing editor, *Defense Acquisition Research Journal* at [DefenseARJ@dau.edu](mailto:DefenseARJ@dau.edu).

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## Featured Book

***The Polaris System Development:  
Bureaucratic and Programmatic  
Success in Government***

**Author:** Harvey M. Sapolsky

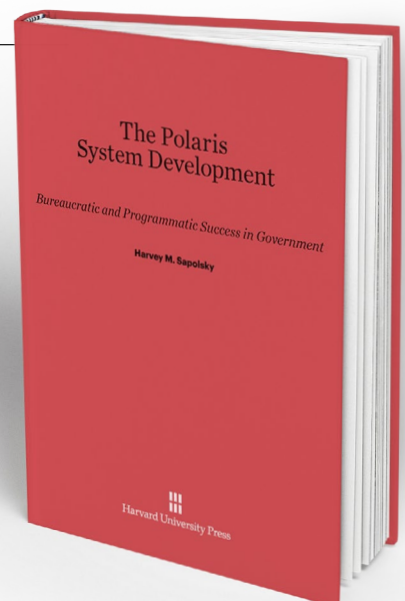
**Publisher:** Cambridge,  
Harvard University Press

**Copyright Date:** 1971

**Hard/Softcover/Digital:**  
Hardcover, 261 pages

**ISBN-13:** 978-0674682252

**Reviewed by:** Dr. Michael Pryce, Research  
Fellow, Manchester Business School, UK



**Review:**

During the Cold War, the U.S. Navy set about creating a stealthy nuclear deterrent against the Soviet Union, based upon creating a force of nuclear submarines carrying Fleet Ballistic Missiles (FBMs) known as Polaris. From 1955 until 1960, this capability was developed and fielded under a Special Project Office (SPO) led by Admiral William F. Raborn.

Sapolsky sets out in this book to “describe a government program which worked, a public bureaucracy which was successful” (p. 1). As such, it is a “success study.” His basic aim is to find out how a large government bureaucracy can successfully manage a technologically challenging, large-scale weapon systems acquisition program.

Sapolsky focuses not on the technical accomplishments of the Polaris program, but on the political/management success. He does so by examining the four strategies that the supporters of the program used to protect and manage its resources:

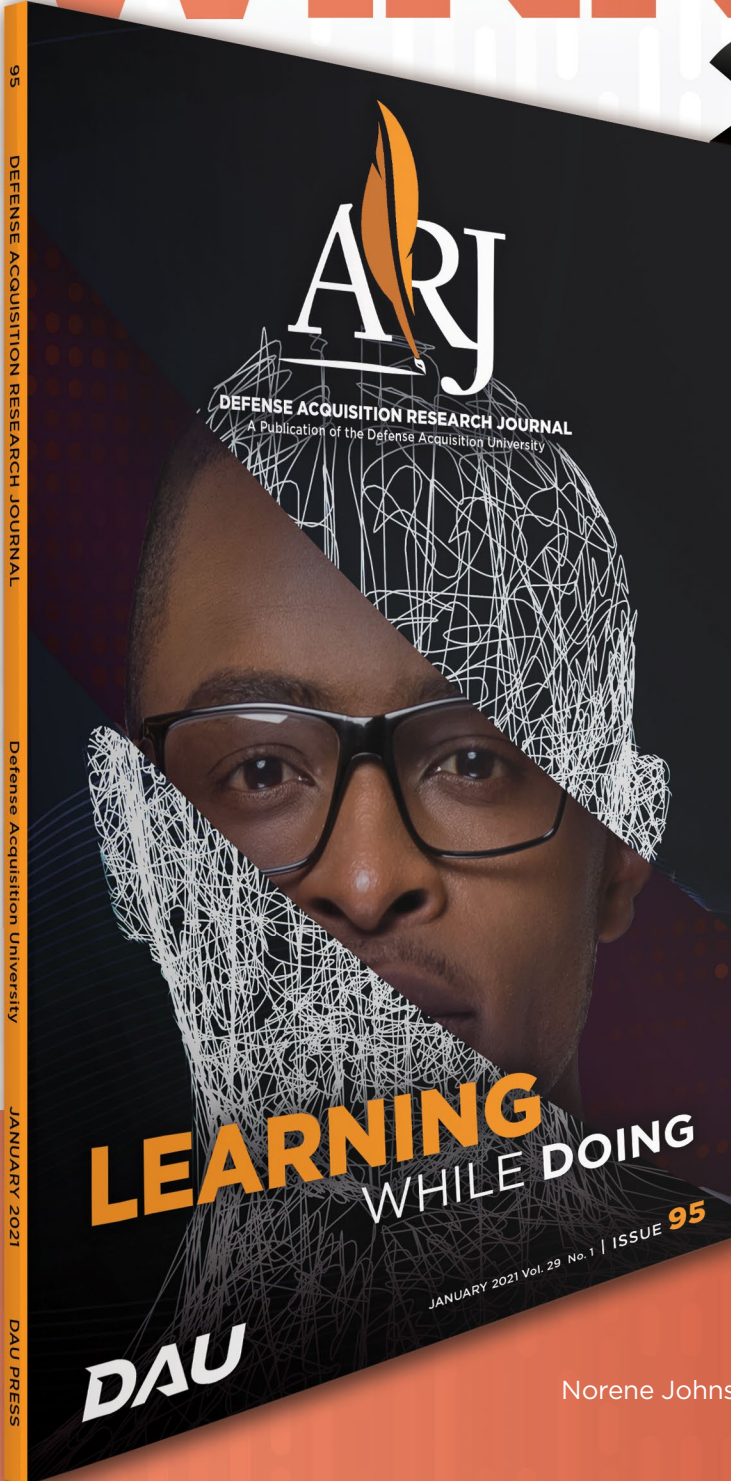
- Differentiation—“the attempts of organizations to establish unchallengeable claims on valued resources by distinguishing their own products or programs from those of competitors” (p. 43)
- Co-optation—“the attempts of organizations to absorb ‘...new elements into [its] leadership or policy-determining structure... as a means of averting threats to its stability or existence’” (p. 47)
- Managerial Innovation—“the attempts of organizations to achieve autonomy in the direction of a complex and risky program through the introduction of managerial techniques that appear to indicate unique managerial competence” (p. 58)
- Moderation—“the attempts of organizations to build long-term support for their programs by sacrificing short-term gains” (p. 54)

Sapolsky attempts to separate the myths of the program’s success, which have largely been attributed to managerial innovations such as PERT (Program Evaluation and Review Technique), from the realities such as the perceived strategic need for the program and the management competency of the SPO—all of which created an environment that was highly conducive to eventual success. He also shows that in

following a technical strategy that did not seek a fundamental advance in the state of the art, the Polaris project was also able to deliver the required performance on time and on cost.

This book, although 30 years out of print and describing a now-defunct weapon system, is essential reading for managers and decision makers who want to understand the critical factors that drive program success.

# HERMES AWARD FOR PRINT MEDIA | PUBLICATION WINNER 2021



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**DAU Press**

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## Current Research Resources in **DEFENSE ACQUISITION**

### **Cybersecurity Maturity Model Certification**

Each issue of the *Defense Acquisition Research Journal* will bring to the attention of the defense acquisition community a topic of current research, which has been undertaken by the DAU Virtual Research Library team in collaboration with DAU's Director of Research. Both government civilian and military Defense Acquisition Workforce readers will be able to access papers publicly and from licensed resources on the DAU Virtual Research Library Website: <https://dau.libguides.com/daukr>.

Nongovernment Defense Acquisition Workforce readers should be able to use their local knowledge management centers/libraries to download, borrow, or obtain copies. We regret that DAU cannot furnish downloads or copies.

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## **The Price of a Cybersecurity Culture: How the CMMC Should Secure the Department of Defense's Supply Chain Without Harming Small Businesses and Competition**

*Aleskey House*

### **Summary:**

The Department of Defense (DoD) released the final version of its landmark cybersecurity certification program on January 31, 2020, titled the Cybersecurity Maturity Model Certification. The new program features a third-party audit requirement based on a multilevel certification framework that is intended to strengthen the cybersecurity hygiene of all defense contractors included in the DoD's supply chain. The program was quickly established and introduced in response to the growing concerns over threats of cyber-crime. A high cost of compliance accompanies this new certification program, and it will greatly impact the ability of many businesses to compete, especially small businesses. This journal article

explores the policy tensions between two of the DoD's goals: creating a stricter cybersecurity regime and preserving small businesses' ability to compete for defense contracts.

**APA Citation:**

House, A. (2021, Spring). The price of a cybersecurity culture: How the CMMC should secure the Department of Defense's supply chain without harming small businesses and competition. *Public Contract Law Journal*, 50(3), 449-470. <https://www.proquest.com/scholarly-journals/price-cybersecurity-culture-how-cmmc-should/docview/2557548013/se-2?accountid=40390>

## Defense Contractor Cybersecurity: Stakeholder Communication and Performance Goals Could Improve Certification Framework

*William Russell, Joseph W. Kirschbaum, and Jennifer R. Franks*

**Summary:**

The Department of Defense (DoD) relies on thousands of defense contractors for goods and services ranging from weapon systems to analysis to maintenance. In doing business with DoD, these companies access and use sensitive unclassified data. Accordingly, the department has taken steps intended to improve the cybersecurity of this defense industrial base. A Senate report included a provision for the Government Accountability Office (GAO) to review DoD's implementation of Cybersecurity Maturity Model Certification (CMMC). This report addresses (a) what steps DoD took to develop CMMC; (b) the extent to which DoD made progress in implementing CMMC, including communication with industry; and (c) the extent to which DoD has developed plans to assess the effectiveness of CMMC. GAO reviewed DoD documents related to the design and implementation of CMMC and interviewed DoD officials involved in designing and managing it. GAO also interviewed representatives from defense contractors, industry trade groups, and research centers.

**APA Citation:**

Russell, W., Kirschbaum, J. W., & Franks, J. R. (2021). *Defense contractor cybersecurity: Stakeholder communication and performance goals could improve certification framework* (Report No. GAO-22-104679). U.S. Government Accountability Office. <https://www.gao.gov/products/gao-22-104679>



## Cybersecurity Maturity Model Certification (CMMC): The Road to Compliance

*Cybersecurity and Information Systems Information Analysis Center*

### Summary:

In response to the repeated attacks on the industrial supply chain, the Department of Defense (DoD) has taken proactive measures to ensure that critical DoD suppliers are adequately protecting Controlled Unclassified Information (CUI) resident on supplier/contractor information systems. Such requirements initially date back to 2013, at which time the Defense Federal Acquisition Regulation Supplement (DFARS) final rule (78 FR 69273) was released. Over time, the requirements have been updated to better suit the Defense Industrial Base (DIB) as well as to address shortcomings of previous frameworks. One example includes the 2015 release of DFARS clause 252.204-7012, “Safeguarding Covered Defense Information and Cyber Incident Reporting,” which has since been updated as recently as 2019. After acknowledging that these requirements were insufficient, DoD announced the planned migration to the Cybersecurity Maturity Model Certification (CMMC), which introduces a more stringent and independently validated approach to assessing the security of DIB suppliers and contractors.

### APA Citation:

Cybersecurity and Information Systems Information Analysis Center. (2021). *Cybersecurity maturity model certification (CMMC): The road to compliance*. <https://csiac.org/wp-content/uploads/2021/06/2021-03-15-csiac-report-cmmc-the-road-to-compliance.pdf>

## Cybersecurity Maturity Model Certification Initial Impact on the Defense Industrial Base

*Hala Strohmier, Geoff Stoker, Manoj Vanajakumari, Ulku Clark, Jeff Cummings, and Mino Modaresnezhad*

### Summary:

The Office of the Under Secretary of Defense for Acquisition and Sustainment, OUSD(A&S), published the Cybersecurity Maturity Model

Certification (CMMC) framework in January 2020. The CMMC is a major federal effort intended to strengthen the ability of Defense Industrial Base (DIB) members to protect Federal Contract Information (FCI) and Controlled Unclassified Information (CUI). In this article, we briefly recount the history of unclassified information handling in the U.S. Federal Government that led to the current situation and explain why the CMMC was created, what it is, and what it entails. Through a series of interviews with a small sample of current large and small DIB members, we explore some of the perceptions, perceived challenges, and expected impacts of the CMMC on the DIB. We also consider the chances that the CMMC will accomplish its intended goals and describe a planned future larger study of the CMMC effort and its effects on the DIB.

### APA Citation:

Strohmer, H., Stoker, G., Vanajakumari, M., Clark, U., Cummings, J., & Modaresnezhad, M. (2021, November). Cybersecurity maturity model certification initial impact on the defense industrial base. In B. Ghosh (Chair), *Proceedings of the Conference on Information Systems Applied Research*, Washington, DC, United States. <https://proc.conisar.org/2021/pdf/5534.pdf>

## Defense Acquisitions: DoD's Cybersecurity Maturity Model Certification Framework

*Heidi M. Peters*

### Summary:

Cybersecurity threats represented by cyberattacks and data theft have had a significant impact on the Department of Defense (DoD) and the defense industrial base (DIB). These threats have become a significant concern to policymakers due to recent alleged incidents involving the unlawful acquisition of significant quantities of sensitive defense information from DIB systems. As part of its response to these threats, DoD began work in early 2019 to develop the Cybersecurity Maturity Model Certification (CMMC) framework. The intent of this DoD-driven initiative is to provide a “unified cybersecurity standard” for defense acquisition and aims to use and build on existing law and regulations.

### APA Citation:

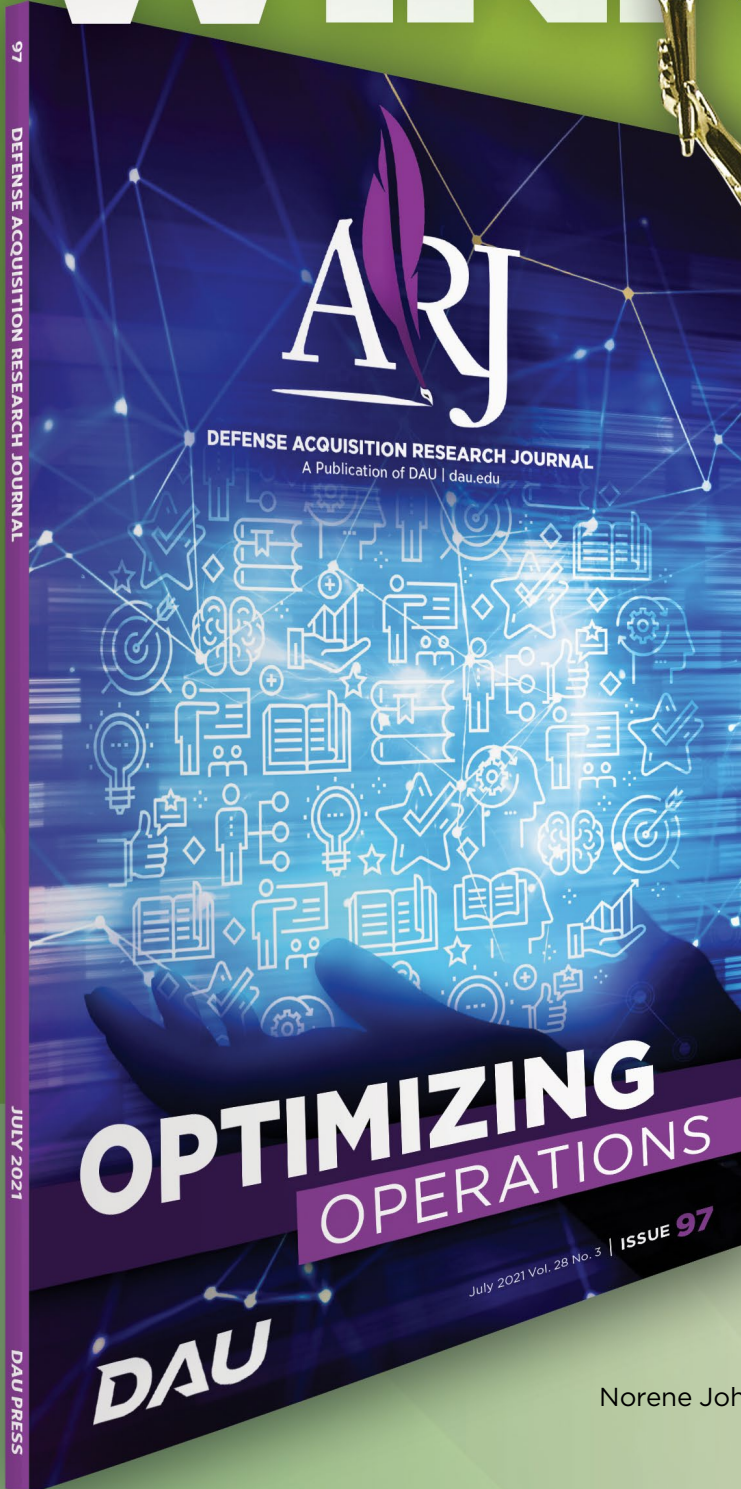
Peters, H. M. (2020, December) *Defense acquisitions: DoD's cybersecurity maturity model certification framework*. Congressional Research Service. <https://crsreports.congress.gov/product/pdf/R/R46643>

# MARCOM

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The *Defense Acquisition Research Journal (ARJ)* is a scholarly peer-reviewed journal published by DAU. All submissions receive a double-blind review to ensure impartial evaluation.

## IN GENERAL

We welcome submissions describing original research or case histories from anyone involved in the defense acquisition process. Defense acquisition is broadly defined as any actions, processes, or techniques relevant to as the conceptualization, initiation, design, development, testing, contracting, production, deployment, logistics support, modification, and disposal of weapons and other systems, supplies, or services needed for a nation's defense and security, or intended for use to support military missions.

Research involves the creation of new knowledge. This generally requires either original analysis of material from primary sources, including program documents, policy papers, memoranda, surveys, interviews, etc.; or analysis of new data collected by the researcher. Articles are characterized by a systematic inquiry into a subject to establish facts or test theories that have implications for the development of acquisition policy and/or process.

The *Defense ARJ* also welcomes case history submissions from anyone involved in the defense acquisition process. Case histories differ from case studies, which are primarily intended for classroom and pedagogical use. Case histories must be based on defense acquisition programs or efforts. Cases from all acquisition career fields and/or phases of the acquisition life cycle will be considered. They may be decision-based, descriptive, or explanatory in nature. Cases must be sufficiently focused and complete (i.e., not open-ended like classroom case studies) with relevant analysis and conclusions. All cases must be factual and authentic. Fictional cases will not be considered.

We encourage prospective writers to coauthor, adding depth to manuscripts. We recommend that junior researchers select a mentor who has been previously published or has expertise in the manuscript's subject. Authors should



be familiar with the style and format of previous *Defense ARJs* and adhere to the use of endnotes versus footnotes, formatting of reference lists, and the use of designated style guides. It is also the responsibility of the corresponding author to furnish any required government agency/employer clearances with each submission.

## MANUSCRIPTS

Manuscripts should reflect research of empirically supported experience in one or more of the areas of acquisition discussed above. The *Defense ARJ* is a scholarly research journal and as such does not publish position papers, essays, or other writings not supported by research firmly based in empirical data. Authors should clearly state in their submission whether they are submitting a research article or a case history. The requirements for each are outlined below.

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Empirical research findings are based on acquired knowledge and experience versus results founded on theory and belief. Critical characteristics of empirical research articles:

- clearly state the question,
- define the research methodology,
- describe the research instruments (e.g., program documentation, surveys, interviews),
- describe the limitations of the research (e.g., access to data, sample size),
- summarize protocols to protect human subjects (e.g., in surveys and interviews), if applicable,

- ensure results are clearly described, both quantitatively and qualitatively,
- determine if results are generalizable to the defense acquisition community
- determine if the study can be replicated, and
- discuss suggestions for future research (if applicable).

Research articles may be published either in print and online, or as a Web-only version. Articles that are 5,000 words or fewer (excluding abstracts, references, and endnotes) will be considered for print as well as Web publication. Articles between 5,000 and 10,000 words will be considered for Web only publication, with a two sentence summary included in the print version of the *Defense ARJ*. In no case should article submissions exceed 10,000 words.

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Each case history should contain the following components:

- Introduction
- Background
- Characters
- Situation/problem
- Analysis
- Conclusions
- References

### Book Reviews

*Defense ARJ* readers are encouraged to submit book reviews they believe should be required reading for the defense acquisition professional. The reviews should be 500 words or fewer describing the book and its major ideas, and explaining why it is relevant to defense acquisition. In general,

book reviews should reflect specific in-depth knowledge and understanding that is uniquely applicable to the acquisition and life cycle of large complex defense systems and services. Please include the title, ISBN number, and all necessary identifying information for the book that you are reviewing as well as your current title or position for the byline.

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Figures or tables should not be inserted or embedded into the text, but submitted as separate files in the original software format in which they were created. For additional information on the preparation of figures or tables, refer to the Scientific Illustration Committee, 1988, *Illustrating Science: Standards for Publication*, Bethesda, MD: Council of Biology Editors, Inc. Restructure briefing charts and slides to look similar to those in previous issues of the *Defense ARJ*.

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The *Defense ARJ* is published in quarterly theme editions.

All submissions are due by the first day of the month.  
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<b>Author Deadline</b>	<b>Issue</b>
<b>July</b>	<b>January</b>
<b>October</b>	<b>April</b>
<b>January</b>	<b>July</b>
<b>April</b>	<b>October</b>

In most cases, the author will be notified that the submission has been received within 48 hours of its arrival. Following an initial review, submissions will be referred to peer reviewers and for subsequent consideration by the Executive Editor, *Defense ARJ*.



Contributors may direct their questions to the Managing Editor, *Defense ARJ*, at the address shown below, or by calling 703-805-4655, or via email at [DefenseARJ@dau.edu](mailto:DefenseARJ@dau.edu).



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