

# THE CROW'S NEST

ISSUE 1

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A QUARTERLY REVIEW OF RESEARCH & ACTIVITIES  
FROM THE ACQUISITION RESEARCH PROGRAM  
AT NAVAL POSTGRADUATE SCHOOL



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## PROGRAM UPDATES

Welcome to the first edition of *The Crow's Nest*, the quarterly review from the Naval Postgraduate School's Acquisition Research Program. This is our attempt to look broadly at the scholarship and engagement our program has facilitated in the past few months, with an eye on the issues, opportunities, and concerns we see in acquisition research from our lofty perch at NPS.

This is also my opportunity to introduce myself as NPS' new Chair of Acquisition for the Acquisition Research Program (ARP) and as a new "Professor of the Practice" for acquisition. I am humbled to be selected for this assignment. Although I will never be able to fill Jim Greene's shoes or duplicate his 17 years of service to NPS and ARP, I believe that I bring some new capabilities to the acquisition research table. This is a dream assignment for me, so I am already enjoying the job, one month in!



Dave Lewis

ARP draws faculty researchers from the Graduate School of Defense Management (GSDM), Graduate School of Engineering and Applied Sciences (GSEAS), and Graduate School of Operational and Information Sciences (GSOIS) at NPS. Currently, 65 GSDM Master's students are conducting thesis research supported through ARP, double the number from just four years ago. NPS professors depend on ARP-funded research to further their academic studies, to the extent that 25% of their time is expected to be funded through outside research funding, including ARP. ARP-funded support has enabled the completion of 332 thesis projects to date and a larger number of peer-reviewed, published articles by ARP-funded students and professors, creating, I believe, the largest single body of organically grown academic research on acquisition in the Department of Defense. All reports that have been supported by ARP over the past 17 years can be accessed by the public in the [Defense Acquisition Innovation Repository](#), our newly updated online collection of student, faculty, grant, and symposium publications.

Each spring, ARP sponsors the only acquisition research symposium in the Department, an annual event that brings together the Department's acquisition leaders, thought leaders, and student innovators in a thoroughly dynamic and effective exchange of ideas and deep discussions on the critical acquisition topics of the day. For 2021 we'll be conducting the 18th Symposium virtually May 11-13; please mark your calendars.

This issue showcases the work of our students, faculty, and grant recipients who have not only produced excellent research but have frequently been rewarded for academic excellence. ARP-supported research makes an impact on the community: Dr. Aruna Apte's internationally-recognized work on humanitarian aid and disaster relief, Dr. Robert Mortlock's award-winning case study on Army camouflage uniforms, numerous student theses recognized as NPS outstanding theses, and a collection of research first

presented as symposium papers that have sparked webinars, further publication, and ongoing conversations in the defense acquisition community.

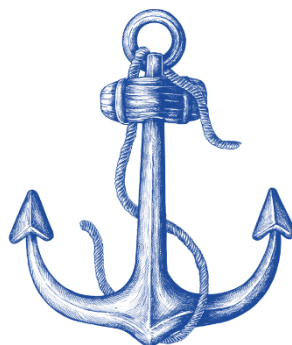
Again, I am honored and humbled to be leading the Naval Postgraduate Schools' Acquisition Research Program, and I look forward to meeting with each of you in the coming weeks.

Sincerely,

A handwritten signature in black ink, appearing to be 'DL', written over a light blue grid background.

VADM David H. Lewis, USN (Ret.)

Chair of Acquisition



# STUDENT SPOTLIGHT

## JUNE GRADUATES, THESES, & AWARDS

In June, 13 students graduated from NPS with ARP-supported thesis projects. These graduates include 10 U.S. Navy officers, one U.S. Marine Corps officer, and two distance learning students (DoD civilians). Working individually or on teams, these students produced six thesis reports:

### [Contracting at the Speed of Relevance: A Survey to Aid U.S. Navy Speed and Relevancy](#)

Zachary Augustine and Chelsea A. Isherwood

*Advisors: Dr. Charles K. Pickar (NPS) and Christopher J. Kenney (Naval Undersea Warfare Center)*

*Recognized as an NPS outstanding thesis.*

- This joint applied project created a survey to help Navy warfare centers assess whether they are utilizing tools designed to produce greater efficiency in procurement of material and services. Naval Undersea Warfare Center, Division Newport is likely in need of more human capital, specifically in the form of experienced contract specialists and contracting officers, to help improve efficiencies and evenly spread out the workload.

### [How Can The DoD Adopt Commercial-Style Artificial Intelligence For Procurement?](#)

Kory D. Krebs

*Advisors: E. Cory Yoder and Dr. Neil C. Rowe*

*Recognized as an NPS outstanding thesis.*

- This thesis studies organizations that have incorporated artificial intelligence in business practices, and on the basis of interviews with key personnel analyzes how well businesses have improved speed and agility. Recommendations address the two biggest DoD challenges when implementing emerging technologies: data integrity and change management.

### [Analysis of the Multiple Award Contracting Strategy on U.S. Government Husbanding Service Provider \(HSP\) Prices](#)

LCDR Jesse Kiengsiri, LCDR Christy Rieger, LCDR Callan Walsh (USN)

*Advisors: Dr. Jeremy Arkes and Dr. Robert Mortlock*

*Recognized with the Distinguished Professor Kenneth J. Euske Dean's Medal for Innovative Contribution to National Defense.*

- [Watch the video summary:](#) Jesse Kiengsiri discusses his team's research completed with ARP support to determine if there is a statistically significant difference in price for U.S. Navy husbanding port services when using MAC and SAC contracting strategies.

### [Do Corporate Officers' Political Connections affect DoD Contractor Profitability? A 10-Year, Data-Driven Analysis of U.S. Public Firms](#)

LCDR David Couchman, LCDR Christopher Harvey, LCDR Joseph Brewen (USN)

*Advisors: Dr. Chong Wang and Dr. Alan Ballard*

- **[Watch the video summary](#)**: Dave Couchman discusses his team's capstone research project completed with ARP support. The team used a disciplined, data-driven approach to analyze the effect that political connection has on possible excessive profits of DoD contractors.

### [Can America's Shipbuilders meet the U.S. Navy's Long-Range Vessel Construction Plan?](#)

LCDR Connor Darr, LCDR Wyatt France, LCDR Rudy Mason (USN)

*Advisors: Dr. Geraldo Ferrer and Dr. K. H. Ferrer*

- **[Watch the video summary](#)**: LCDR Rudy Mason presents his team's thesis research on how to expand the nation's shipbuilding capabilities to fulfill the Navy's 30-year, 355-ship goal.

### [How Do Accelerated Payments for DoD Contractors Help Small Businesses?](#)

Capt. Pearl A. Winston (USMC)

*Advisors: Jesse Cunha and Justin Marion*

- The feedback from businesses indicates a need for in-depth exploration of accelerated payment policy and DOD processes, internal controls, personnel, stakeholder impact, and areas for improvement for adequate incentive application. The trend is that the accelerated payment timeline is not being met.

We are pleased to celebrate the following five awards from the June 2020 class:

- **LCDR David Couchman (USN)**
  - Naval Supply Systems Command Award for Academic Excellence in Management
- **LCDR Jesse Kiengsiri (USN)**
  - Distinguished Professor Kenneth J. Euske Dean's Medal for Innovative Contribution to National Defense, the Graduate School of Defense Management
- **LCDR Christy Rieger (USN)**
  - Distinguished Professor Kenneth J. Euske Dean's Medal for Innovative Contribution to National Defense, the Graduate School of Defense Management
- **LCDR Callan Walsh (USN)**
  - Louis D. Liskin Award for Excellence in Business and Public Policy
  - Distinguished Professor Kenneth J. Euske Dean's Medal for Innovative Contribution to National Defense, the Graduate School of Defense Management
  - Graduation with Distinction
- **Zachary Augustine (DL)**
  - Commander Philip A. Murphy-Sweet Memorial Award for Acquisition Excellence

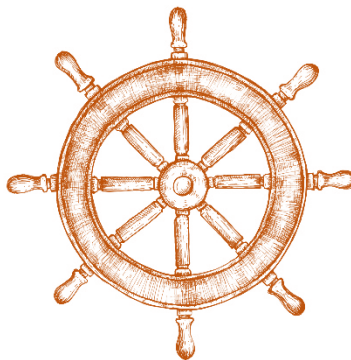
- Graduation with Distinction and Outstanding Thesis

## ALUMNI IN THE NEWS

This July, the Senate confirmed **U.S. Navy Rear Admiral Michelle Skubic** to receive the rank of vice admiral and serve as director of the Defense Logistics Agency (DLA). Skubic studied acquisition and contract management as a student in the Graduate School of Defense Management at NPS. Congratulations to this alumna!



Michelle Skubic



# FACULTY RESEARCH & PUBLICATIONS

Research sponsored by the Acquisition Research Program continues to make significant contributions to how we understand the data, people, and culture of defense acquisition. This quarter we celebrate numerous successes from NPS faculty supported by ARP.

## RESEARCH AWARDS

**Dr. Robert F. Mortlock**, faculty in the Graduate School of Defense Management (GSDM) and ARP's principal investigator, won first place in the 2020 Edward Hirsch Acquisition and Writing Competition.



Bob Mortlock

As the first-place winner, Bob received the Jacques S. Gansler Research Award for his paper, "Camouflage Combat Uniform." This case history studies the Army's decision to change the camouflage pattern on combat uniforms. The case allows acquisition professionals to analyze the Army acquisition decision-making process, specifically focusing on skills in critical thinking, problem solving, resource management, stakeholder engagement, and strategic communication. [Watch the 2020 Defense Acquisition Influencer Awards Ceremony.](#)

## PROFESSOR PROFILE

**Dr. Aruna Apte** is one of the stars of Naval Postgraduate School and the Acquisition Research Program. She is Professor of Humanitarian Logistics and tenured Professor of Operations and Logistics Management in the Graduate School of Defense Management. She joined NPS in 2005 as a tenure track Assistant Professor. She currently teaches Business Modeling Analysis (GB4043) and Topics in Special Supply Chain Networks (GB4490).

Aruna has successfully completed many research projects involving applications of mathematical models and optimization techniques. ARP has funded and supported much of Aruna's research, which she has matured into a substantial body of knowledge: she has over 50 research articles, 30 of which have been published in peer-reviewed journals, and one patent. Currently her research is focused on humanitarian and military logistics. She gives frequent briefings on this topic to admirals, diplomats, and senior government officials.



Aruna Apte

Aruna has advised over 100 NPS students who have completed 56 theses that received funding support from ARP. Ten of these projects were recognized as outstanding theses by the Graduate School of Defense Management, and two were awarded the Surface Navy Association Award for Academic Excellence in Surface Warfare. She has received four awards for outstanding teaching.



We asked Aruna to tell us more about her work and how ARP has supported her ability to research, influence, and improve the implementation of humanitarian aid and disaster relief.

### **How did you get into the field of humanitarian aid and disaster relief (HADR)?**

When Hurricane Katrina devastated Louisiana, I wanted to use my operations research skills to help the affected population. Being at Naval Postgraduate School and realizing how much Humanitarian Assistance and Disaster Relief (HADR) the United States Navy and Marine Corps provide, I started to study the relief provided by these organizations. My research focus is on operational and strategic pre-positioning in anticipation of a natural disaster. I have published over 14 peer-reviewed articles in humanitarian logistics (some of which were partially supported by ARP) in journals including *Production and Operations Management*, *Decision Sciences*, *Interfaces*, *Naval Research Logistics* and *Journal of Humanitarian Logistics and Supply Chain Management*. I have also published 10 technical reports based on projects sponsored by ARP.

### **How has ARP supported your research and professional development?**

RADM Jim Greene, the founding chair of acquisition for ARP and NPS, was astute and visionary to see the importance of HADR. He supported my research efforts before HADR was a well-known acronym. I am very grateful to him as the chair, and the ARP as an organization, for supporting this research. Not many organizations sponsor HADR research, but I consider myself fortunate to have received considerable funding for this research.

In addition, I have conducted research on services acquisition and category management, resulting in seven peer-reviewed journal articles begun as ARP-sponsored projects. These publications can be found in journals such as *Journal of Public Procurement*, *Journal of Defense Analytics and Logistics*, *Journal of Purchasing and Supply Chain Management*, and *Journal of Contract Management*. I have also published about nine technical reports based on projects sponsored by ARP.

Last year, I worked on an unclassified/classified project for OPNAV N4 (Fleet Readiness and Logistics) that looked at the acquisition of Next Generation Logistics Ships for refuel, rearm, and resupply in the contested environment. This project was sponsored through ARP.

### **How does your research impact current acquisition or operational processes?**

In HADR, I am known worldwide as the person who studies the intersection of HADR and USN/USMC. I am often contacted for consultation and have briefed many senior flag officers in USN on HADR. Additionally, former NPS students have applied concepts from my classes directly to their operational assignments. Here are some examples:

- I have advised city officials—namely from San Francisco and Washington, DC—on emergency management planning. In 2011 I joined San Francisco’s Senior Leaders Seminar to discuss the role of armed forces in the event of a catastrophic earthquake in the bay area.

- In 2017, I assisted Middlebury Institute of International Studies at Monterey with curriculum development for government personnel responding to an event. This curriculum was ultimately informed by my work on advising emergency planners to prepare for disaster response, humanitarian operations, and crisis management.
- One of my former NPS students assisted with relief efforts following Super Typhoon Haiyan in 2013. He was then serving as chief engineer on the USS MUSTIN (DDG-89). In his words, “While I had never actually done an HADR mission before, we had done enough chalk talking in the classroom, that once the real deal popped up, the overarching themes and concepts were there to pull from. That, along with other major concepts from my MBA curriculum really came together to provide solid groundwork for what needed to be done to be successful.”
- In February 2018, I was interviewed by a journalist at The Guardian in London to discuss my work on humanitarian logistics as part of her research on strategies for theoretically evacuating London and other cities.
- My research on the response to Haiti’s 2010 earthquake was cited in 2017 commentary questioning the role of the U.S. military in disaster relief. These researchers from Harvard University and US Naval War College referenced my estimates that “the U.S. spent more than \$17 million just to operate a single aircraft carrier nearby for 17 days – not counting personnel costs.”

**You’ve advised a number of student thesis projects. What advice would you give students considering research in your field (HADR) or in acquisition generally?**

No matter the field, I suggest that they pick an area that is focused, while keeping the problem sufficiently vague to have flexibility in carrying out the project. Then find someone with expertise in the field who can help them understand the larger need for and impact of their research.

**Put on your predicting hat: What kind of information and analysis do you think will be most needed by the HADR community in the next 5 years?**

Collecting data that can predict or deliver real-time information on the demand for HADR is and will continue to be the hardest part of HADR research. The three ‘w’s—when? where? what?—are the hardest to understand. However, the HADR community does not have the resources, manpower, and funding to collect this data. All they can do during a disaster is put out fires.

## NOTABLE RECENT REPORTS

[“Retention Analysis Modeling for the Acquisition Workforce”](#)

*Dr. Sae Young (Tom) Ahn and Dr. Amilcar Menichini*

How can the Department of Defense (DoD) and Department of the Navy (DoN) grow and shape the civilian acquisition workforce to deliver world-class warfighting capabilities for the U.S. military? This question has plagued DoD, DoN, and the federal government for decades. Two faculty members in the Graduate School of Defense Management at Naval Postgraduate School (NPS) are developing a data-

driven approach that will allow DoD leadership and human resources managers to forecast an acquisition professional's choice to stay in the workforce or to leave based on his or her socio-demographic, academic, and professional background. This approach will enable leadership to make strategic, informed policy decisions about recruiting, retention, and incentives that cultivate an efficient, diverse, and motivated workforce for the long run.



Sae Young (Tom) Ahn

NPS faculty members Tom Ahn and Amilcar Menichini are developing a Dynamic Retention Model, which uses a powerful mathematical technique called dynamic programming. This tool can predict where DoD and DoN can most effectively focus energy and resources to retain and develop members of the acquisition workforce not only for the immediate future, but also for decades ahead. This study addresses a known problem in the defense acquisition workforce – a high percentage of employees (over 50%) are currently within 10 years of retirement age, and there are not enough younger workers to balance this seniority and fill the gaps that will come with the upcoming surge in

retirement.

Using data from Defense Manpower Data Center (DMDC), the authors tracked over 13,000 DoD acquisition professionals across four decades. They find two factors that have substantial impact on retention: prior military experience and education level. If an acquisition professional comes to the workforce from military service, they are more likely to remain. Their conclusion: “leadership should augment recruiting from active duty to seamlessly transition them into the civilian workforce.” Additionally, more education equals longer careers. This is especially true for employees who earn master’s degrees mid-career; this group has the longest career. Here, the key takeaways are that leadership “should be ambitious in recruiting advanced degree holders” and “invest in the workforce by encouraging/subsidizing education without worrying about brain drain.”



Amilcar Menichini

The study also finds that while the acquisition workforce is fairly diverse, it is more heavily weighted toward female and white. As retention rates hold steady across all demographic groups, DoD leadership may be able to improve diversity by ramping up recruitment of traditionally under-represented socio-economic groups.

The authors propose ambitious additions to the model, which “can be extended in different important directions. For instance, we may incorporate the effect of the Federal Employees Retirement System pension and Thrift Savings Plan on retention behavior. We can also extend the model to help leaders make hiring/firing decisions at various points of the employee experience distribution to achieve a target shape of the force in a certain number of years.” The fully constructed model will allow leadership to use the information and analysis generated to make smarter, more cost-effective talent management decisions to improve the acquisition workforce. For example, as implied in the current study, DoD may be able to

cut costs, increase retention, and improve worker quality by putting more funds toward subsidized education rather than into higher compensation or retirement benefits.

As noted in this report, the DoD and DoN strategic workforce plans note the need for a diverse, adaptable, and well-managed acquisition workforce for the U.S. military to remain competitive in an age of rapidly changing technologies, business processes, and threats. Using the power of data analysis to understand what motivates today's workforce – and what is likely to predict workforce behavior in the near (and far) future – is an invaluable contribution to DoD and DoN.

## FACULTY PEER-REVIEWED PUBLICATIONS

### [Rethinking Government Supplier Decisions: The Economic Evaluation of Alternatives \(EEoA\)](#)

*Francois Melese and James Fan | Defence and Peace Economics (September 2020)*

This ARP-funded research from two professors in NPS's Graduate School of Defense Management offers an economic model to assist public procurement officials to rank competing vendors when benefits cannot be monetized. "As nations struggle to recover from a global pandemic, massive government spending aimed at limiting the damage has shattered fiscal balance sheets. To preserve capabilities, hard choices lie ahead that require a sober assessment of security challenges and robust methodologies to prioritize defense and other public investments. The 'Economic Evaluation of Alternatives' (EEoA) captures both demand side and supply side in decision making, encouraging public procurement officials to carefully consider the impact on vendor proposals of announced priorities—i.e., desired criteria, characteristics, or attributes for solicited quantities of products, services—as well as the impact of anticipated future budgets. In response to government-issued priorities, competing vendors maximize their production offers – bid proposals that consist of bundles of nonprice characteristics or attributes.

### [Increasing Value and Savings in Shipbuilding With Innovative Technologies](#)

*David N. Ford and Tom Housel | Defense Acquisition Research Journal*

This research describes the potential value and savings of adopting Three-Dimensional Laser Scanning (3DLS), Additive Manufacturing (AM), and Product Life-cycle Management (PLM). Simulation and modeling using knowledge value added demonstrates an innovative investment analysis approach and the potential for large savings and increased value.

### [Studying Acquisition Strategy Formulation of Incremental Development Approaches](#)

*Robert F. Mortlock | Defense Acquisition Research Journal*

Mortlock's article studies the challenges that acquisition professionals have in formulating the Department of Defense's preferred acquisition approach—incremental development—and provides acquisition policy reform recommendations. The research involves surveys of acquisition professionals to formulate the components of a recommended acquisition strategy based on typical programmatic decision inputs such as requirements, technology maturity, risk, urgency, and funding.

## [A Commons for a Supply Chain in the Post-COVID-19 Era: The Case for a Reformed Strategic National Stockpile](#)

Robert Handfield, Daniel Joseph Finkenstadt, Eugene S. Schneller, A. Blanton Godfrey, Peter Guinto | The Milbank Quarterly

Recently published research from **Dan Finkenstadt**, professor in the NPS Graduate School of Defense Management, offers a model for a national contingency supply chain cell construct to manage the medical materials supply chain in support of emergencies, such as COVID-19. “The United States needs a “commons-based strategy” that is not simply a stockpile repository but instead is a network of repositories, fluid inventories, and analytic monitoring governed by the experts.”

## FACULTY TECHNICAL REPORTS SPONSORED & PUBLISHED BY ARP

In fiscal year 2020, ARP supported and published 14 technical reports from faculty in the Graduate School of Defense Management, the Graduate School of Operational and Information Sciences, and the Graduate School of Engineering and Applied Sciences at Naval Postgraduate School. These reports can be found online in ARP’s [Defense Acquisition Innovation Repository](#).

- Dr. Sae Young Ahn and Dr. Amilcar A. Menichini, **Retention Analysis Modeling for the Acquisition Workforce**
- Dr. Aruna Apte, **Framework for Augmenting Current Fleet with Commercially Available Assets for Logistics Support in Contested Environment**
- Dr. Spencer T. Brien, **Attrition Among the DoD Civilian Workforce**
- Dr. Eddine Dahel, **Budget Forecasting for US Marine Corps Corrective Maintenance Costs**
- Dr. Thomas J. Housel and Dr. Johnathan Mun, **A Comparative Analysis of Advanced Methodologies to Improve the Acquisition of Information Technology in the Department of Defense for Optimal Risk Mitigation and Decision Support Systems to Avoid Cost and Schedule Overruns**
- Dr. Randy William Maule, **Acquisition Cybersecurity Management Framework**
- Dr. Francoise Melese and Dr. James Fan, **Rethinking Government Supplier Decisions: The Economic Evaluation of Alternatives (EEoA)**
- Dr. Erich D. Morman, **An Approximate Dynamic Programming Approach for Weapon System Financial Execution Management**
- Dr. Robert Mortlock, **Defense Industrial Base Case Study**
- Dr. Charles K. Pickar, **Making Time from Data: Toward Realistic Acquisition Schedule Estimates**
- Dr. Rene G. Rendon, **Enhancing Professional and Technical Excellence: Analysis of Contract Management Competency Models**

- Dr. Neil C. Rowe, **Analysis of Differences between Versions of Software Executables**
- Dr. Warren K. Vaneman, **Defining a Model-Based Systems Engineering Approach for Milestone Technical Reviews**

## CALL FOR RESEARCH

The Graduate School of Defense Management at the Naval Postgraduate School announces the 18th Annual Acquisition Research Symposium to be held May 11-13, 2021 as a virtual event.



This symposium serves as a forum for the presentation of acquisition research and the exchange of ideas among scholars and practitioners of public-sector acquisition. We seek a diverse audience of influential attendees from academe, government, and industry who are well placed to shape and promote future research in acquisition.

The Symposium Program Committee solicits proposals for papers or panels from academicians, practitioners, researchers at think tank, and others interested in defense acquisition research.

The following list of topics is provided to indicate the range of potential research areas of interest for this symposium: acquisition innovation, acquisition workforce and culture, budgeting/cost estimating/ financial management, contract management, data analysis and architecture, digital platforms, industrial base, logistics, policy analysis, program management, supply chain management, systems engineering, shipbuilding, and space acquisition.



**Proposals are due December 11, 2020, and can be submitted on the [symposium website](#).**

# ARP-SPONSORED RESEARCH IN ACTION

## GRANTS

The following three papers published in fiscal year 2020 began with support from grants ARP administered on behalf of the Office of the Under Secretary of Defense for Acquisition and Sustainment:

### [Cycle Times and Cycles of Acquisition Reform](#)

*Morgan Dwyer, Brenen Tidwell, and Alec Blivas | Center for Strategic & International Studies (August 2020)*

Acquisition reform occurs in cycles. For example, to increase acquisition speed, the most recent cycle restructured the Pentagon to reduce and decentralize the Office of the Secretary of Defense's (OSD) oversight of major defense acquisition programs (MDAPs). Using a qualitative and quantitative analysis of past reform cycles and MDAP cycle times (i.e., the time to field new capabilities), this analysis observes that:

- Even though OSD oversight activities take time, they do not appreciably slow down MDAP acquisition speed;
- Instead, strong, centralized OSD oversight may reduce MDAP cycle times and cycle time growth; and
- The Pentagon has historically fielded new MDAP capabilities at average speeds that are comparable to external benchmarks.

### [Measuring Service Contract Performance](#)

*Andrew P. Hunter and Gregory Sanders | Center for Strategic & International Studies (September 2020)*

Contracting for services accounts for over 41 percent of DoD contract obligations in 2018. Service contracting is challenging as services can be difficult to define and measure. But services are increasingly central to the U.S. economy. The Department of Defense seeks to attract new firms that will increase its speed and agility—many of these firms are service providers, e.g., data analytics or cloud computing. CSIS looked at a million contracts to evaluate how three factors influence performance: service complexity, contract-management capacity, and vendor's history working with a DoD contracting office.

### [Is the Ratio of Investment between Research and Development to Production in Major Defense Acquisition Programs Experiencing Fundamental Change?](#)

*Rhys McCormick, Gregory Sanders, Andrew P. Hunter | Center for Strategic & International Studies (August 2020)*

This research charts the history of DoD and Service-level investment in R&D as compared to production costs. "For firms like Boeing and others in the defense marketplace, the business model has been to conduct development and early production at a monetary loss before turning a profit as production

ramps up. However, if a fundamental change in the relationship between development and production is underway, these business models may no longer be sustainable.”

## SYMPOSIUM PAPERS

The following papers, submitted for the 17<sup>th</sup> Annual Acquisition Research Symposium in May, have continued to develop and influence thinking in the defense acquisition community. They and other papers from the symposium will be archived in the [Defense Acquisition Innovation Repository](#).

**[The DoD Budget Process: The Next Frontier of Acquisition Reform](#)**. Eric M. Lofgren. George Mason University Government Contracting Center. July 2020.

This paper explores the wisdom of the traditional budget process based on organization rather than program. It proposes a 21st century agenda for budget reform, including specific examples of how program elements can be consolidated and appropriations reclassified. The goal is to empower mission-driven organizations, allowing them to accelerate innovation by embracing an uncertain learning process through portfolio management.

Note that Lofgren’s paper provided the foundation for an August 19 [webinar](#) on the future of budget reform, with panelists Katharina McFarland (Former Assistant Secretary of Defense for Acquisition), Bob Daigle (Former Director of Cost Assessment & Program Evaluation), and Bill Greenwalt (Former Deputy Undersecretary of Defense for Industrial Policy).

**[The Value of Intellectual Property in Government Procurement Auctions: The Case of Military Trucks in the United States after the Cold War](#)**. James Hasik. George Mason University Government Contracting Center. July 2020.

The ownership of the intellectual property (IP) underlying the design of complex weapon systems has been at issue between governments and their contractors for over a century. A focused comparison of the U. S. Army’s Family of Medium Tactical Vehicles program to that of the Medium Tactical Vehicle Replacement (MTVR) of the U. S. Marine Corps suggests that limit pricing is not always the case. Securing advantageous pricing over the long-term through data rights requires a credible threat to move away from sole-source, follow-on awards.

Note that Hasik’s paper provided the foundation for a November 12 [webinar](#) on intellectual property in government procurement competitions, with panelists Shay Assad (Former Director of Defense Pricing), Bill Elkington (Section 813 Panel Member), Richard Gray (Office of the Under Secretary of Defense for Acquisition and Sustainment), and Kelly Kyes (Boeing).



[Building a Broader Evidence Base for Defense Acquisition Policymaking](#). Elizabeth M. Bartels, Jeffrey A. Drezner, Joel B. Predd. RAND Corporation.

The authors argue that acquisition policymaking should be evidence based, in recognition of a wider variety of analytic tools that can be brought to bear on acquisition policy questions. Policy gaming can be used to generate observations about how stakeholders might change their decisionmaking and behavior in light of changes in policy. Because the strengths and limitations of games differ from those of traditional tools for acquisition analysis, the authors argue that games complement the existing portfolio of analytic approaches.

[Defense Acquisition Trends 2020: Topline DoD Trends](#). Rhys McCormick. Center for Strategic & International Studies. October 2020.

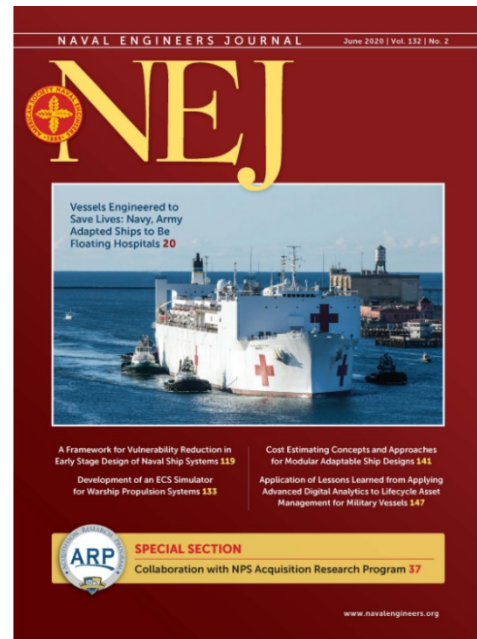
This paper, the first in our 2020 report series, presents the topline contracting trends of the Department of Defense (DoD) for Fiscal Year (FY) 2019, as available in the Federal Procurement Data System (FPDS). This year's study focuses on whether there is an ongoing transformation in the defense acquisition system in response to the 2018 National Defense Strategy, along with the use of new acquisition approaches such as Middle Tier of Acquisition and Other Transaction Authority Agreements. Furthermore, this study looks at whether there is an emerging new paradigm for the development of major weapon systems. Finally, this report includes an analysis of the topline DoD contracting trends.



# NEW COLLABORATIONS

## AMERICAN SOCIETY OF NAVAL ENGINEERS

The June 2020 issue of the [Naval Engineers Journal \(NEJ\)](#), published by the American Society of Naval Engineers (ASNE), features select papers from the 17th Annual Acquisition Research Symposium. This first collaboration between ARP and ASNE continues ARP's commitment to producing and sharing the best multidisciplinary research in acquisition with a wide audience. Titles of included papers are below. The full issue, including these papers, is available online. Normally available only to subscribers, this access comes courtesy of ASNE.



### **Industrial Mobilization—Assessing Surge Capabilities, Wartime Risk, and System Brittleness**

*Mark F. Cancian, Adam Saxton, Lee Ann Bryan, Owen Helman*

### ***Evaluating Current Systems Engineering Models for Applicability to Model-Based Systems Engineering Technical Reviews***

*Dr. Warren K. Vaneman, Prof. Ronald R. Carlson (Naval Postgraduate School)*

### **Technology Insertion OODA Loop Strategy for Future Flexible Surface Warship Acquisition and Sustainment**

*CAPT Michael R. Good, USN (Ret.), Glen H. Sturtevant*

### **Acquiring Artificial Intelligence Systems: Development Challenges, Implementation Risks, and Cost/Benefits Opportunities**

*Dr. Johnathan Mun, Dr. Thomas Housel, COL Raymond Jones, USA (Ret.), MAJ Benjamin Carlton, MAJ Vladislav Skots (Naval Postgraduate School)*

### **Architecture-Based Security for UxVs**

*Valdis Berzins (Naval Postgraduate School)*

### **The Lightly Manned Autonomous Combat Capability (LMACC)**

*Dr. Johnathan C. Mun, Dr. Shelley Gallup (Naval Postgraduate School)*

## HACKING FOR DEFENSE AND THE NATIONAL SECURITY INNOVATION NETWORK

This quarter, the Acquisition Research Program is amplifying our abilities to foster evidence-based innovation in acquisition, starting in a Naval Postgraduate School classroom. Working with Major Daniel Finkenstadt, a professor in the Graduate School of Defense Management, ARP is helping pilot a Hacking for Defense (H4D) course, integrated with Finkenstadt’s course on entrepreneurship. Graduate students are learning about the lean startup methodology and other entrepreneurial concepts, while applying them to three important topics for sponsors from the Air Force, Army and National Guard:



1. How can the USAF and wider DoD monitor, verify and manage duplicative bid and proposal costs in large acquisitions?
2. What are the policy and market challenges facing the next generation of materials/textiles for development and use in the Army of the future given all that we’ve learned about supply chain risks and textile weaknesses within the CONUS?
3. How can the National Guard deliver emergency response materials in the most optimal fashion?

As a first step, students take on the process of validating the sponsor’s problem, engaging with other stakeholders to develop a fuller picture of the myriad pain points and possible solutions. By the end of the quarter, student teams will present a minimum viable product to their sponsors. The benefit to sponsors is significant – getting a fresh perspective from military officers familiar with defense contracting but new to this issue. For students, it sharpens their critical thinking abilities and reminds them to remain flexible and adaptable both as operators and researchers.

As Professor Finkenstadt puts it, “Service members are constantly innovating, designing, and deploying creative solutions to fuzzy problems in areas of extreme constraints and difficulties. But we need to make sure that’s not just happening by accident. We want that to happen by design and we want that to happen in the academic environment, the steady state environment, not just the contingency environment.”

ARP is posting regular updates about the course on our [blog](#) and with [videos](#) on YouTube. We will share final results at the end of the quarter.

