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Acquisition Research Symposium

2020-05

The Proceedings of the 17th Annual Acquisition Research Symposium

NPS Acquisition Research Program

Monterey, California. Naval Postgraduate School

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The Proceedings of the 17th Annual Acquisition Research Symposium

Although this year's symposium was not held as a live event, ARP continues the annual tradition of making publicly available papers and presentations from the many researchers in the ARP community who were scheduled to appear. Two publications appear below:

- Book of Abstracts, which provides short summaries of all papers in a quickly scannable format, and
- Proceedings, which includes both the full text of all papers and, where possible, the accompanying PowerPoint presentations.

Both publications follow the organization of the symposium, with papers grouped by panels and in order of scheduled appearance.

These documents will also be archived with ARP's [Defense Acquisition Innovation Repository](#), a searchable collection of over 2,500 research reports produced and published with ARP support.

[Book of Abstracts: 17th Annual Acquisition Research Symposium](#)

[Book of Abstracts](#)

[Proceedings: 17th Annual Acquisition Research Symposium](#)

Keynote Speaker: Hon. Alan R. Shaffer

[Presentation](#)

Panel #2: Ship Building Acquisition and Sustainment

Technology Insertion OODA Loop Strategy for future Flexible Surface Warship Acquisition and Sustainment

Authors: Michael Good (DELTA Resources, Inc), Glen Sturtevant (PEO Ships)

[Paper](#)

Decisions Made During Acquisition Have Lasting Effects on Navy Ship Sustainment

Authors: Diana Moldafsky (GAO), Larri Fish (Government Accountability Office)

[Paper](#) [Presentation](#)

Design for Sustainment: Governance Engineering in Major Acquisition Programs

Authors: William Baker (U.S. Navy), Lucas Marino (AECOM), Joseph Bradley (Patrona Corporation), Kaitlynn Castelle (Patrona Corporation)

[Paper](#)

Panel #3: Initiatives in Contract Management

Overseas Contingency Operations Contracts After Iraq: Enabling Financial Management Research and Transparency Through Contract Labeling

Author: Gregory Sanders (Center for Strategic and International Studies)

[Paper](#) [Presentation](#)

Uncovering Value in Knowledge-based Services: Monetizing Latent Service Quality Indicators for Source Selection

Author: Daniel Finkenstadt (Marketing Department KFBS)

[Paper](#) [Presentation](#)

A Game Theory Approach and Application for Government Acquisition

Authors: Kelly Horinek (MITRE), Scott Rosen (MITRE)

[Paper](#)

Panel #4: Enabling Rapid Acquisition

Cycle Times and Cycles of Acquisition Reform

Authors: Morgan Dwyer (CSIS), Alec Blivas (CSIS), Andrew Hunter (CSIS), Brenen Tidwell (CSIS)

[Paper](#) [Presentation](#)

Faster Acquisition: Putting the Priority on Speed

Author: David Riel (Defense Acquisition University)

[Paper](#)

Panel #5: Characterizing the Acquisition Workforce

Retention Analysis Modeling for the Acquisition Workforce

Authors: Tom Ahn (Naval Postgraduate School), Amilcar Menichini (Naval Postgraduate School)

[Paper](#) [Presentation](#)

Examining Turnover Behavior, Gender, and STEM Participation in the Federal Civil Service

Authors: Spencer Brien (Naval Postgraduate School), Sam Buttrey (Naval Postgraduate School), Lyn Whittaker (Naval Postgraduate School), Kurt Klingensmith (US ARMY - TRAC Monterey)

[Paper](#)

An Innovative Approach to Assessing DoD Contracting Workforce Competency

Authors: Rene Rendon (Naval Postgraduate School), Brett Schwartz (Graduate School of Defense Management)
[Paper](#)

Panel #6: Unmanned Vehicles in a Model Based Systems Engineering Universe

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

Authors: Ronald Carlson (Naval Postgraduate School), Warren Vaneman (Naval Postgraduate School)
[Paper](#) [Presentation](#)

Architecture-Based Security for UxVs

Author: Valdis Berzins (Naval Postgraduate School)
[Paper](#) [Presentation](#)

The Lightly Manned Autonomous Combat Capability (LMACC)

Authors: Johnathan Mun (Naval Postgraduate School), Shelley Gallup (Naval Postgraduate School)
[Paper](#) [Presentation](#)

Panel #07: Informed Acquisition for an Era of Great Power Competition

Chinese Influence in Federal DoD Contracting Spend - Strategic Peril for United States?

Author: E. Cory Yoder (Naval Postgraduate School)
[Paper](#) [Presentation](#)

Beijing's Innovation Strategy: Threat-informed Acquisition for an Era of Great Power Competition

Author: Emily de La Bruyere (Horizon Advisory)
[Paper](#)

Panel #8: Acquisition Education: Changing Perspectives and Techniques

Learning from Experience: Acquisition Professional Education for this Century

Author: Charles K Pickar (Naval Postgraduate School)
[Paper](#)

PEO AICS and PAINS, DAU's Senior Dynamic Cross-Functional Multi-Program Leadership Simulation

Authors: John Driessnack (Defense Systems Management College), Patrick Barker (DSMC/DAU)
[Paper](#)

Assessing the Relationship of Training, Education, and Experience to Workforce Readiness and Program Performance

Authors: Raymond Jones (Naval Postgraduate School), Kevin Carman (Defense Acquisition University - West)
[Presentation](#)

Panel #9: Artificial Intelligence and the Cloud

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

Authors: Johnathan Mun (Naval Postgraduate School), Thomas Housel (Naval Postgraduate School)
[Paper](#) [Presentation](#)

Panel #10: Lifecycle Impacts of the Emerging Digital Universe

Investigation of Leading Indicators for Systems Engineering Effectiveness in Model-Centric Programs

Author: Donna Rhodes (Massachusetts Institute of Technology)

[Paper](#) [Presentation](#)

Panel #11: Analytics in Acquisition Management

System-of-Systems Acquisition Analytics Using Machine Learning Techniques

Authors: Ali Raz (Purdue University), Prajwal Balasubramani (Purdue University), Stephanie Marie Harrington (Purdue University), Cesare Guariniello (Purdue University), Daniel DeLaurentis (Purdue University)

[Paper](#) [Presentation](#)

Analysis of Contractor Data in Federal Acquisition Databases

Authors: Ningning Wu (University of Arkansas), John Talburt (University of Arkansas at Little Rock), Richard Wang (University of Arkansas at Little Rock), Mihail Tudoreanu (University of Arkansas at Little Rock), sanketh Siruvolu (University of Arkansas at Little Rock)

[Paper](#) [Presentation](#)

Using Natural Language Processing, Sentiment Analysis, and Text Mining to Determine if Text in Selected Acquisition Report Executive Summaries Are Highly Correlated with Major Defense Acquisition Program (MDAP) Unit Costs and Can Be Used as a Variable to Predict Future MDAP Costs

Authors: Brian Joseph (OUSD(A&S)), Michael Smith (OUSD(A&S)), Darris Sconion (OUSD(A&S))

[Paper](#) [Presentation](#)

Measuring the Technology Transition Performance by Data Envelopment Analysis

Authors: Toshiyuki Sueyoshi (New Mexico Institute of Mining and Technology), Youngbok Ryu (New Mexico Tech)

[Paper](#)

Panel #12: Persistent Issues in Defense Management

Is the DoD a High-Risk Anomaly? An Analysis of the Government Accountability Office's High-Risk List's Persistent Residents

Authors: Danelle Gamble (Sanford School of Public Policy - Duke University), Douglas Brook (Duke University)

[Paper](#) [Presentation](#)

The Budget Control Act: Effects and Unintended Consequences for DoD

Author: Abigail Zofchak (U.S. Air Force)

[Paper](#) [Presentation](#)

Persistent Perspectives on Defense Management Reform

Author: Douglas Brook (Duke University)

[Paper](#) [Presentation](#)

Panel #13: Lessons Learned in MDAP Reliability, Maintainability and Sustainment

KC-46 TANKER MODERNIZATION: Aircraft Delivery Has Begun, but Deficiencies Could Affect Operations and Will Take Time to Correct

Author: Cheryl Andrew (GAO)

[Paper](#) [Presentation](#)

F-35 Joint Strike Fighter - What Actions Are Needed to Improve Aircraft Reliability?

Authors: Desiree Cunningham (GAO), Justin Jaynes (U.S. GAO), Cheryl Andrew (GAO)

[Presentation](#)

Defense Acquisitions: Senior Leaders Should Emphasize Key Practices to Improve Weapon System Reliability

Authors: Nathan Tranquilli (GAO)

[Paper](#)

Panel #15: Enabling Innovation Ecosystems in Defense Acquisition

Understanding the Incentives for Small Businesses to Participate in the Acquisition Process for R&D Intensive Products

Author: Vivek Bhattacharya (Northwestern University)

[Paper](#) [Presentation](#)

Harnessing Rapid Innovative Culture to Invigorate the Adaptive Acquisition Framework

Authors: Matthew MacGregor (MITRE), Colleen Murphy (MITRE), Jen Choi (MITRE), Ryan Novak (MITRE)

[Paper](#)

Panel #16: Improving Schedule Estimates in MDAPS

Program Duration, Funding Climate, and Acquisition Policy

Author: David McNicol (Institute for Defense Analyses)

[Presentation](#)

Using ANOVA and Multinomial Logistic Regression to Analyze Defense Acquisition Executive Summary (DAES) and Acquisition Program Baseline (APB) Milestone Estimates to Determine Contributing Factors to Schedule Slips

Authors: Brian Joseph (OUSD(A&S)), Christopher Hastings (OUSD(A&S))

[Paper](#)

It's About Time: Toward Realistic Schedule Estimates

Authors: Charles Pickar (Naval Postgraduate School), Raymond Franck (United States Air Force Academy)

[Paper](#)

Panel #17: Performance of the Defense Acquisition System

Defense Acquisition Trends 2020: A Preliminary Look

Authors: Rhys McCormick (Center for Strategic and International Studies), Andrew Hunter (Center for Strategic and International Studies)

[Paper](#)

Building a Broader Base for Evidence-Based Acquisition Policymaking

Author: Jeff Drezner (RAND Corporation), Elizabeth Bartels (RAND Corporation), Joel Predd (The RAND Corporation)

[Paper](#)

Panel #18: Cost and Pricing in the 21st Century

Understanding and Modeling the Life-Cycle Cost Tradeoffs Associated with the Procurement of Open Systems

Authors: Peter Sandborn (University of Maryland), Shao-Peng Chen (University of Maryland), William Lucyshyn (University of Maryland)

[Paper](#)

The Last Frontier of Acquisition Reform: The Budget Process

Author: Eric Lofgren (Mercatus Center)

[Paper](#)

Budget Forecasting for US Marine Corps Corrective Maintenance Costs

Author: Eddine Dahel (Naval Postgraduate School)

[Paper](#)

Panel #19: Cost Estimating in Defense Acquisition

There is Cost Growth and there is Cost Growth and the Two are not the Same

Author: David McNicol (Institute for Defense Analyses)

[Presentation](#)

Strategic Cost Estimation: Understanding Resource Tradeoffs in China's Defense Modernization Efforts

Author: John Bianchi (Center for Strategic and Budgetary Assessments)

[Paper](#) [Presentation](#)

Panel #20: Contemporary Challenges in Contract Management

Non-Competitive Contracting: Lessons from Contracting Personnel

Authors: Latika Hartmann (Naval Postgraduate School), Josh Cissell (Contract Manager, F-22 Modernization/F-119 Sustainment), Rene Rendon (Naval Postgraduate School)

[Paper](#) [Presentation](#)

Evaluating the Impact of Contracting "Tripwires" on Service Acquisitions

Authors: William Lucyshyn (Center for Public Policy and Private ent), Samuel Quist (University of Maryland)

[Paper](#)

A Rendezvous with Discretion: An Analysis of Federal Simplified Acquisition Procedure Contracts

Author: Benjamin Brunjes (University of Washington)

[Paper](#)

Panel #21: Acquisition Strategies for the Future

Studying the Formulation of Incremental Development Approaches

Author: Robert Mortlock (Naval Postgraduate School)

[Paper](#) [Presentation](#)

Army Modernization: Steps Needed to Ensure Army Futures Command Fully Applies Leading Practices (GAO-19-132)

Author: J. Kristopher Keener (U.S. GAO)

[Paper](#) [Presentation](#)

The Cultural Change Required for Rapid Defense Acquisitions

Author: Chad Millette (Air Force Institute of Technology)

[Paper](#) [Presentation](#)

Panel #22: Acquisition Dimensions of Cybersecurity

Cybersecurity Acquisition Framework Based on Risk Management: Economics Perspective

Authors: Goksel Kucukkaya (Old Dominion University), Omer Keskin (Old Dominion University - Engineering Management & Systems Engineering), Omer Poyraz (Old Dominion University - Engineering Management &

Systems Engineering), Ali Can Kucukozyigit (Arizona State University - Computing, Informatics, and Decision Systems Engineering Lecturer), C. Ariel Pinto (Old Dominion University), Unal Tatar (SUNY Albany - College of Emergency Preparedness, Homeland Security and Cybersecurity), Abdulrahman Alfaqiri (Old Dominion University - Engineering Management & Systems Engineering)

[Paper](#)

Cloud Increases the Role of Acquisition in Cybersecurity

Authors: Charles Wallen (Software Engineering Institute), Carol Woody (Software Engineering Institute), John Klein (Software Engineering Institute), Christopher Alberts (Software Engineering Institute)

[Paper](#)

Acquisition Data Analytics for Supply Chain Cybersecurity

Author: Randy Maule (Naval Postgraduate School)

[Paper](#)

Panel #23: Software Development and Sustainment

Factors Limiting the Speed of Software Acquisition

Author: David Tate (Institute for Defense Analyses)

[Paper](#) [Presentation](#)

Using Texture Vector Analysis to Measure Computer and Device File Similarity

Authors: Bruce Allen (Naval Postgraduate School), Neil Rowe (Naval Postgraduate School)

[Paper](#) [Presentation](#)

Panel #24: Industrial Base in the Era of Rapid Acquisition

Industrial Mobilization: Surge Capabilities, Wartime Risk, and System Brittleness

Author: Mark Cancian (Center for Strategic and International Studies)

[Paper](#) [Presentation](#)

The Effect of Defense-Sponsored Innovation Programs on the Military's Industrial Base

Authors: Amanda Bresler (PW Communications), Alex Bresler (PW Communications)

[Paper](#) [Presentation](#)

Panel #25: Unlocking the Value of Acquisition Data

Assessing Department of Defense Use of Data Analytics and Enabling Data Management to Improve Acquisition Outcomes

Authors: Megan McKernan (RAND Corporation), Jeffrey Drezner (RAND), Ken Munson (RAND), Philip Anton (RAND), Sydne Newberry (RAND), Alexis Levedahl (RAND), Irv Blickstein (RAND), James Kallimani (RAND)

[Paper](#) [Presentation](#)

Acquisition Data Practice in the Era of Interconnected Digital Transformation

Authors: Richard Wang (Massachusetts Institute of Technology), Yang Lee (Northeastern University), Jeff Drezner (RAND Corporation)

[Paper](#) [Presentation](#)

Application of Natural Language Processing to Defense Acquisition Executive Summary Reports

Authors: Madison Hassler (Rotunda Solutions), Terrence Clark (OUSD A-S)

[Paper](#)

Panel #26: Dimensions of Financial Management

Assessing the Reliability of the Future Years Defense Program and Building a Forecast

Authors: Gregory Sanders (Center for Strategic and International Studies), Andrew Hunter (Defense-Industrial Initiatives Group, Center for Strategic and International Studies)

[Paper](#) [Presentation](#)

A Critical Look at "Use or Lose"

Author: Philip Candreva (Naval Postgraduate School)

[Paper](#)

The Value of Intellectual Property in Government Procurement Auctions: The Case of Military Trucks in the U.S. after the Cold War

Author: James Hasik (George Mason University)

[Paper](#)