Get Free Statistics Testing And Defense Acquisition

Yeah, reviewing a ebook **Statistics Testing And Defense Acquisition** could grow your near connections listings. This is just one of the solutions for you to be successful. As understood, achievement does not suggest that you have astounding points.

Comprehending as capably as treaty even more than supplementary will give each success. bordering to, the statement as well as sharpness of this Statistics Testing And Defense Acquisition can be taken as skillfully as picked to act.

KEY=STATISTICS, - BLAZE TRUJILLO

Statistics, Testing, and Defense Acquisition

Background Papers

National Academies Press *The Panel on Statistical Methods for Testing and Evaluating Defense Systems had a broad mandate-to examine the use of statistics in conjunction with defense testing. This involved examining methods for software testing, reliability test planning and estimation, validation of modeling and simulation, and use of modem techniques for experimental design. Given the breadth of these areas, including the great variety of applications and special issues that arise, making a contribution in each of these areas required that the Panel's work and recommendations be at a relatively general level. However, a variety of more specific research issues were either brought to the Panel's attention by members of the test and acquisition community, e.g., what was referred to as Dubin's challenge (addressed in the Panel's interim report), or were identified by members of the panel. In many of these cases the panel thought that a more in-depth analysis or a more detailed application of suggestions or recommendations made by the Panel would either be useful as input to its deliberations or could be used to help communicate more individual views of members of the Panel to the defense test community. This resulted in several research efforts. Given various criteria, especially immediate relevance to the test and acquisition community, the Panel has decided to make available three technical or background papers, each authored by a Panel member jointly with a colleague. These papers are individual contributions and are not a consensus product of the Panel; however, the Panel has drawn from these papers in preparation of its final report: Statistics, Testing, and Defense Acquisition. The Panel has found each of these papers to be extremely*

useful and they are strongly recommended to readers of the Panel's final report.

Testing of Defense Systems in an Evolutionary Acquisition Environment

National Academies Press *The Department of Defense (DoD) recently adopted evolutionary acquisition, a dynamic strategy for the development and acquisition of its defense systems. Evolutionary defense systems are planned, in advance, to be developed through several stages in a single procurement program. Each stage is planned to produce a viable system which could be fielded. The system requirements for each stage of development may be specified in advance of a given stage or may be decided at the outset of that stage's development. Due to the different stages that comprise an evolutionary system, there exists a need for careful reexamination of current testing and evaluation policies and processes, which were designed for single-stage developments. The Office of the Under Secretary of Defense for Acquisition, Technology and Logistics (USD-AT&L) and the Director of Operational Testing and Evaluation (DOT&E) asked the Committee on National Statistics (CNSTAT) of the National Academies to examine the key issues and implications for defense testing from the introduction of evolutionary acquisition. The CNSTAT was charged with planning and conducting a workshop to study test strategies for the evolutionary acquisition. The committee reviewed defense materials defining evolutionary acquisition and interviewed test officials from the three major test service agencies to understand the current approaches used in testing systems procured through evolutionary acquisition. The committee also examined possible alternatives to identify problems in implementation. At the workshop that took place on December 13-14, 2004, the committee tried to answer many questions including: What are the appropriate roles and objectives for testing in an evolutionary environment?, Can a systematic, disciplined process be developed for testing and evaluation in such a fluid and flexible environment?, and Is there adequate technical expertise within the acquisition community to fully exploit data gathered from previous stages to effectively combine information from various sources for test design and analysis?. Testing of Defense Systems in an Evolutionary Acquisition Environment provides the conclusions and recommendations of the CNSTAT following the workshop and its other investigations.*

Statistics, Testing, and Defense Acquisition

Background Papers

National Academies Press *The Panel on Statistical Methods for Testing and Evaluating Defense Systems had a broad mandate-to examine the use of statistics in conjunction with defense testing. This involved examining methods for software testing, reliability test planning and estimation, validation of modeling and simulation, and use of modem techniques for experimental design. Given the breadth of these areas, including the great variety of applications and special issues that arise, making a contribution in each of these areas required that the Panel's work and recommendations be at a relatively general level. However, a variety of more specific research issues were either brought to the Panel's attention by members of the test and acquisition community, e.g., what was referred to as Dubin's challenge (addressed in the Panel's interim report), or were identified by members of the panel. In many of these cases the panel thought that a more in-depth analysis or a more detailed application of suggestions or recommendations made by the Panel would either be useful as input to its deliberations or could be used to help communicate more individual views of members of the Panel to the defense test community. This resulted in several research efforts. Given various criteria, especially immediate relevance to the test and acquisition community, the Panel has decided to make available three technical or background papers, each authored by a Panel member jointly with a colleague. These papers are individual contributions and are not a consensus product of the Panel; however, the Panel has drawn from these papers in preparation of its final report: Statistics, Testing, and Defense Acquisition. The Panel has found each of these papers to be extremely useful and they are strongly recommended to readers of the Panel's final report.*

Industrial Methods for the Effective Development and Testing of Defense Systems

National Academies Press *During the past decade and a half, the National Research Council, through its Committee on National Statistics, has carried out a number of studies on the application of statistical methods to improve the testing and development of defense systems. These studies were intended to provide advice to the Department of Defense (DOD), which sponsored these studies. The previous studies have been concerned with the role of statistical methods in testing and evaluation, reliability practices, software methods, combining information, and evolutionary acquisition. Industrial Methods for the Effective Testing and Development of Defense Systems is the latest in a series of studies, and unlike earlier studies, this report identifies current engineering practices that have proved successful in industrial applications for system development and testing. This report explores how developmental and operational testing, modeling and simulation, and*

related techniques can improve the development and performance of defense systems, particularly techniques that have been shown to be effective in industrial applications and are likely to be useful in defense system development. In addition to the broad issues, the report identifies three specific topics for its focus: finding failure modes earlier, technology maturity, and use of all relevant information for operational assessments.

Report on the Test Science Roadmap

CreateSpace *Statistical test and analysis methodologies provide many benefits to the DoD Test and Evaluation (T&E) community. These benefits include: Design of Experiments (DOE) that elicit the maximum information from constrained resources. Avenues for maximizing information learned from testing and integrating information across multiple tests. Defensible rationales for test adequacy and quantification of risk as a function of test size. Despite these benefits, statistical test and analysis methods have not been universally or consistently applied within the DoD T&E community. The 1998 National Research Study "Statistics in Defense, Acquisition and Testing" concluded that, "major advances can be realized by applying selected industrial principles and practices in restructuring the paradigm for operational testing..." and that ..".the current practice of statistics in defense testing design and evaluation does not take full advantage of the benefits available from the use of state-of-the-art statistical methodology." Dr. J. Michael Gilmore, Director, Operational Test and Evaluation, agreed that there was much to be gained by applying state-of-the-art statistical tools to test and evaluation and has pushed to increase the rigor of operational test and evaluation. The Test Science Roadmap effort chronicled in this report officially began in January 2011 with the development of the Roadmap Committee Charter. The overarching goal of the Test Science Roadmap was to increase the scientific and statistical rigor of test and evaluation. This document summarizes the accomplishments of the past two years.*

Reliability Issues for DOD Systems Report of a Workshop

National Academies Press *The final report of the National Research Council's (NRC) Panel on Statistical Methods for Testing and Evaluating Defense Systems (National Research Council, 1998) was intended to provide broad advice to the U.S. Department of Defense (DoD) on current statistical methods and principles that could be applied to the developmental and operational testing and evaluation of defense systems. To that end, the report contained chapters on the use of testing as a tool of system development; current methods of experimental design; evaluation methods; methods for testing and assessing reliability, availability, and maintainability; software development and testing; and validation of modeling and*

simulation for use in operational test and evaluation. While the examination of such a wide variety of topics was useful in helping DoD understand the breadth of problems for which statistical methods could be applied and providing direction as to how the methods currently used could be improved, there was, quite naturally, a lack of detail in each area. To address the need for further detail, two DoD agencies-the Office of the Director of Operational Test and Evaluation and the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics-asked the NRC's Committee on National Statistics to initiate a series of workshops on statistical issues relevant to defense acquisition. The aim of each workshop is to inform DoD about the methods that represent the statistical state of the art and, through interactions of the statistical and defense communities, explore their relevance for DoD application.

Review of Department of Defense Test Protocols for Combat Helmets

National Academies Press *Combat helmets have evolved considerably over the years from those used in World War I to today's Advanced Combat Helmet. One of the key advances was the development of aramid fibers in the 1960s, which led to today's Kevlar-based helmets. The Department of Defense is continuing to invest in research to improve helmet performance, through better design and materials as well as better manufacturing processes. Review of the Department of Defense Test Protocols for Combat Helmets considers the technical issues relating to test protocols for military combat helmets. At the request of the DOD Director of Operational Test and Evaluation, this report evaluates the adequacy of the Advanced Combat Helmet test protocol for both first article testing and lot acceptance testing, including its use of the metrics of probability of no penetration and the upper tolerance limit (used to evaluate backface deformation). The report evaluates appropriate use of statistical techniques in gathering data; adequacy of current helmet testing procedures; procedures for the conduct of additional analysis of penetration and backface deformation data; and scope of characterization testing relative to the benefit of the information obtained.*

Reliability Growth

Enhancing Defense System Reliability

National Academy Press *A high percentage of defense systems fail to meet their reliability requirements. This is a serious problem for the U.S. Department of Defense (DOD), as well as the nation. Those systems are not only less likely to successfully carry out their intended missions, but they also could endanger the lives of the operators. Furthermore, reliability failures discovered after deployment can result in*

costly and strategic delays and the need for expensive redesign, which often limits the tactical situations in which the system can be used. Finally, systems that fail to meet their reliability requirements are much more likely to need additional scheduled and unscheduled maintenance and to need more spare parts and possibly replacement systems, all of which can substantially increase the life-cycle costs of a system. Beginning in 2008, DOD undertook a concerted effort to raise the priority of reliability through greater use of design for reliability techniques, reliability growth testing, and formal reliability growth modeling, by both the contractors and DOD units. To this end, handbooks, guidances, and formal memoranda were revised or newly issued to reduce the frequency of reliability deficiencies for defense systems in operational testing and the effects of those deficiencies. "Reliability Growth" evaluates these recent changes and, more generally, assesses how current DOD principles and practices could be modified to increase the likelihood that defense systems will satisfy their reliability requirements. This report examines changes to the reliability requirements for proposed systems; defines modern design and testing for reliability; discusses the contractor's role in reliability testing; and summarizes the current state of formal reliability growth modeling. The recommendations of "Reliability Growth" will improve the reliability of defense systems and protect the health of the valuable personnel who operate them.

Innovations in Software Engineering for Defense Systems

National Academies Press *Recent rough estimates are that the U.S. Department of Defense (DoD) spends at least $38 billion a year on the research, development, testing, and evaluation of new defense systems; approximately 40 percent of that cost-at least $16 billion-is spent on software development and testing. There is widespread understanding within DoD that the effectiveness of software-intensive defense systems is often hampered by low-quality software as well as increased costs and late delivery of software components. Given the costs involved, even relatively incremental improvements to the software development process for defense systems could represent a large savings in funds. And given the importance of producing defense software that will carry out its intended function, relatively small improvements to the quality of defense software systems would be extremely important to identify. DoD software engineers and test and evaluation officials may not be fully aware of a range of available techniques, because of both the recent development of these techniques and their origination from an orientation somewhat removed from software engineering, i.e., from a statistical perspective. The panel's charge therefore was to convene a workshop to identify statistical software engineering techniques that could have applicability to DoD systems in development.*

Strengthening Forensic Science in the United States

A Path Forward

National Academies Press *Scores of talented and dedicated people serve the forensic science community, performing vitally important work. However, they are often constrained by lack of adequate resources, sound policies, and national support. It is clear that change and advancements, both systematic and scientific, are needed in a number of forensic science disciplines to ensure the reliability of work, establish enforceable standards, and promote best practices with consistent application. Strengthening Forensic Science in the United States: A Path Forward provides a detailed plan for addressing these needs and suggests the creation of a new government entity, the National Institute of Forensic Science, to establish and enforce standards within the forensic science community. The benefits of improving and regulating the forensic science disciplines are clear: assisting law enforcement officials, enhancing homeland security, and reducing the risk of wrongful conviction and exoneration. Strengthening Forensic Science in the United States gives a full account of what is needed to advance the forensic science disciplines, including upgrading of systems and organizational structures, better training, widespread adoption of uniform and enforceable best practices, and mandatory certification and accreditation programs. While this book provides an essential call-to-action for congress and policy makers, it also serves as a vital tool for law enforcement agencies, criminal prosecutors and attorneys, and forensic science educators.*

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

Congress asked about acquisition data analytics in the Department of Defense. This report identifies and measures capabilities and recent progress. Barriers to improvement include a culture against data sharing due to security and burden concerns.

Test & Evaluation Management

Guide: August 2016

Independently Published *This PRINT REPLICA contains the 6th edition of the Test & Evaluation Management Guide (TEMG). The Test & Evaluation Management Guide is intended primarily for use in courses at DAU and secondarily as a generic desk reference for program and project management, and Test & Evaluation (T&E) personnel. It is written for current and potential acquisition management personnel and assumes some familiarity with basic terms, definitions, and processes as employed by the DoD acquisition process. The Test & Evaluation Management Guide is designed to assist Government and industry personnel in executing their management responsibilities relative to the T&E support of defense systems and facilitate learning during Defense Acquisition University coursework. The objective of a well-managed T&E program is to provide timely and accurate information to decision makers and program managers (PMs). The Test & Evaluation Management Guide was developed to assist the acquisition community in obtaining a better understanding of who the decision makers are and determining how and when to plan T&E events so that they are efficient and effective. Why buy a book you can download for free? We print this book so you don't have to. First you gotta find a good clean (legible) copy and make sure it's the latest version (not always easy). Some documents found on the web are missing some pages or the image quality is so poor, they are difficult to read. We look over each document carefully and replace poor quality images by going back to the original source document. We proof each document to make sure it's all there - including all changes. If you find a good copy, you could print it using a network printer you share with 100 other people (typically its either out of paper or toner). If it's just a 10-page document, no problem, but if it's 250-pages, you will need to punch 3 holes in all those pages and put it in a 3-ring binder. Takes at least an hour. It's much more cost-effective to just order the latest version from Amazon.com This book includes original commentary which is copyright material. Note that government documents are in the public domain. We print these large documents as a service so you don't have to. The books are compact, tightly-bound, full-size (8 1/2 by 11 inches), with large text and glossy covers. 4th Watch Publishing Co. is a HUBZONE SDVOSB. https: //usgovpub.com*

National Strategy for the COVID-19 Response and Pandemic Preparedness

January 2021

Simon and Schuster *The ultimate guide for anyone wondering how President Joe Biden will respond to the COVID-19 pandemic—all his plans, goals, and executive orders in response to the coronavirus crisis. Shortly after being inaugurated as the*

46th President of the United States, Joe Biden and his administration released this 200 page guide detailing his plans to respond to the coronavirus pandemic. The National Strategy for the COVID-19 Response and Pandemic Preparedness breaks down seven crucial goals of President Joe Biden's administration with regards to the coronavirus pandemic: 1. Restore trust with the American people. 2. Mount a safe, effective, and comprehensive vaccination campaign. 3. Mitigate spread through expanding masking, testing, data, treatments, health care workforce, and clear public health standards. 4. Immediately expand emergency relief and exercise the Defense Production Act. 5. Safely reopen schools, businesses, and travel while protecting workers. 6. Protect those most at risk and advance equity, including across racial, ethnic and rural/urban lines. 7. Restore U.S. leadership globally and build better preparedness for future threats. Each of these goals are explained and detailed in the book, with evidence about the current circumstances and how we got here, as well as plans and concrete steps to achieve each goal. Also included is the full text of the many Executive Orders that will be issued by President Biden to achieve each of these goals. The National Strategy for the COVID-19 Response and Pandemic Preparedness is required reading for anyone interested in or concerned about the COVID-19 pandemic and its effects on American society.

Achieving Effective Acquisition of Information Technology in the Department of Defense

National Academies Press *In the military, information technology (IT) has enabled profound advances in weapons systems and the management and operation of the defense enterprise. A significant portion of the Department of Defense (DOD) budget is spent on capabilities acquired as commercial IT commodities, developmental IT systems that support a broad range of warfighting and functional applications, and IT components embedded in weapons systems. The ability of the DOD and its industrial partners to harness and apply IT for warfighting, command and control and communications, logistics, and transportation has contributed enormously to fielding the world's best defense force. However, despite the DOD's decades of success in leveraging IT across the defense enterprise, the acquisition of IT systems continues to be burdened with serious problems. To address these issues, the National Research Council assembled a group of IT systems acquisition and T&E experts, commercial software developers, software engineers, computer scientists and other academic researchers. The group evaluated applicable legislative requirements, examined the processes and capabilities of the commercial IT sector, analyzed DOD's concepts for systems engineering and testing in virtual environments, and examined the DOD acquisition environment. The present volume summarizes this analysis and also includes recommendations on how to improve the acquisition, systems engineering, and T&E processes to achieve the DOD's network-centric goals.*

Improved Operational Testing and Evaluation and Methods of Combining Test Information for the Stryker Family of Vehicles and Related Army Systems

Phase II Report

National Academies Press *The U.S. Army Test and Evaluation Command (ATEC) is responsible for the operational testing and evaluation of Army systems in development. ATEC requested that the National Research Council form the Panel on Operational Test Design and Evaluation of the Interim Armored Vehicle (Stryker). The charge to this panel was to explore three issues concerning the IOT plans for the Stryker/SBCT. First, the panel was asked to examine the measures selected to assess the performance and effectiveness of the Stryker/SBCT in comparison both to requirements and to the baseline system. Second, the panel was asked to review the test design for the Stryker/SBCT initial operational test to see whether it is consistent with best practices. Third, the panel was asked to identify the advantages and disadvantages of techniques for combining operational test data with data from other sources and types of use. In a previous report (appended to the current report) the panel presented findings, conclusions, and recommendations pertaining to the first two issues: measures of performance and effectiveness, and test design. In the current report, the panel discusses techniques for combining information.*

Occupational Outlook Handbook

Military Readiness

DoD Needs to Strengthen Management and Oversight of the Defense Readiness Reporting

System

DIANE Publishing *The Dept. of Defense (DoD) reports data about the operational readiness of its forces. In 1999, Congress directed DoD to create a comprehensive readiness system with timely, objective, and accurate data. In response, DoD started to develop the Defense Readiness Reporting System (DRRS). After 7 years, DoD has incrementally fielded some capabilities, and, through FY 2008, reported obligating about $96.5 million. This report reviews the program including the extent that DoD has: (1) effectively managed and overseen DRRS acquisition and deployment; and (2) implemented features of DRRS consistent with legislative requirements and DoD guidance. Includes recommendations. Charts and tables. This is a print on demand report.*

Test and Evaluation

Dod Has Been Slow in Improving Testing of Software-Intensive Systems

BiblioGov *GAO reviewed the Department of Defense's (DOD) efforts to improve its software acquisition processes and test and evaluation of software-intensive systems, focusing on: (1) how software-related problems affect defense acquisition programs during operational test and evaluation (OT&E); and (2) barriers that limit OT&E effectiveness. GAO found that: (1) DOD software-intensive systems often fail to meet their performance expectations, experience cost overruns and schedule delays, and are not ready for OT&E because they are not subject to rigorous developmental testing and evaluation and software development is often not fully mature when OT&E begins; (2) DOD has not adequately addressed barriers that inhibit software acquisition and OT&E effectiveness; (3) DOD has not adequately addressed the importance of software development, lacks a consistent policy that defines and coordinates software maturity and operational testing readiness, has not adequately defined and managed software requirements, and lacks reliable cost, schedule, and performance data; (4) DOD has not implemented previous recommendations to ensure that quality software is adequately developed and tested and software-intensive systems are effective; (5) although the military services have tried to improve their software development processes, they lack a DOD-wide coordinated strategy; and (6) the creation of a single executive-level office for software development and testing would help to resolve long-standing software problems.*

Implementing Integrated Testing

Current Department of Defense (DoD) acquisition policy mandates the use of integrated testing. The policy not only makes economic sense but also has the potential to reduce risk, as early, integrated testing often involves more realistic operational scenarios than traditional developmental testing and therefore allows earlier discovery of operational failure modes. As more programs have attempted to implement the policy, however, they have encountered obstacles that have prevented them from fully realizing the benefits of integrated testing. Issues that present difficulty in integrated testing fall into three principal areas: sharing and access to data; shared control of test events; and overreaction by some observers to the test results. I believe the real obstacles to fully implementing integrated testing are mostly cultural and can be overcome with appropriate action by acquisition leaders. DoD policy memos and guidance documents define what we mean by "integrated testing." The Defense Acquisition Guidebook, Test and Evaluation (T & E) chapter (chapter 9) provides the formal definition and additional detail. The definition focuses on collaborative planning and execution of tests to provide a shared or common data set for independent evaluations and reporting. It is important to note that the definition is not "integrated test and evaluation" but "integrated testing." Although the testing is planned and executed collaboratively by the contractor, government Developmental Test (DT) and Operational Test (OT) communities, the evaluations are performed independently to fulfill respective roles and missions.

Guidebook for Acquiring Commercial Items

Part A &

Independently Published *The Guidebook for Acquiring Commercial Items (Jan 2018) is written for anyone seeking additional understanding on commercial items- the definition, the determination, and how to price them. This includes supplies purchased from the General Services Administration Federal Supply Schedule (GSA FSS), which are considered commercial items. Contracting officers have asked for more examples in the guidebook, and we have complied. All examples are hypothetical to illustrate a point and bear no relation to any actual experience. A short, simple example is labelled an "Application." More complex examples are termed "Practical Examples" and follow a standard format: Objective; Background; Analysis; Results; and Takeaways. Why buy a book you can download for free? We print this book so you don't have to. First you gotta find a good clean (legible) copy and make sure it's the latest version (not always easy). Some documents found on the web are missing some pages or the image quality is so poor, they are difficult to read. We look over each document carefully and replace poor quality images by*

going back to the original source document. We proof each document to make sure it's all there - including all changes. If you find a good copy, you could print it using a network printer you share with 100 other people (typically its either out of paper or toner). If it's just a 10-page document, no problem, but if it's 250-pages, you will need to punch 3 holes in all those pages and put it in a 3-ring binder. Takes at least an hour. It's much more cost-effective to just order the latest version from Amazon.com This book includes original commentary which is copyright material. Note that government documents are in the public domain. We print these large documents as a service so you don't have to. The books are compact, tightly-bound, full-size (8 1/2 by 11 inches), with large text and glossy covers. 4th Watch Publishing Co. is a HUBZONE SDVOSB. https: //usgovpub.com Other titles we print for acquisition professionals include: FAR Federal Acquisition Regulation DFARS Defense Federal Acquisition Regulation Supplement DFAR PGI DFARS Procedures, Guidance, and Information (PGI) AFARS Army Federal Acquisition Regulation Supplement DAG Defense Acquisition Guidebook (Chapters 1 - 10) FITARA Federal Information Technology Acquisition Reform Army Corps of Engineers Acquisition Instruction and Desk Guide Principles of Federal Appropriations Law DoDi 5000.02 Operation of the Defense Acquisition System DoD Contract Pricing Reference Guide Contract Attorneys Deskbook DCAA Contract Audit Manual DoD Glossary of Defense Acquisition Acronyms and Terms

Innovations in Software Engineering for Defense Systems

National Academies Press *Recent rough estimates are that the U.S. Department of Defense (DoD) spends at least $38 billion a year on the research, development, testing, and evaluation of new defense systems; approximately 40 percent of that cost-at least $16 billion-is spent on software development and testing. There is widespread understanding within DoD that the effectiveness of software-intensive defense systems is often hampered by low-quality software as well as increased costs and late delivery of software components. Given the costs involved, even relatively incremental improvements to the software development process for defense systems could represent a large savings in funds. And given the importance of producing defense software that will carry out its intended function, relatively small improvements to the quality of defense software systems would be extremely important to identify. DoD software engineers and test and evaluation officials may not be fully aware of a range of available techniques, because of both the recent development of these techniques and their origination from an orientation somewhat removed from software engineering, i.e., from a statistical perspective. The panel's charge therefore was to convene a workshop to identify statistical software engineering techniques that could have applicability to DoD systems in development.*

Test and evaluation management guide

DIANE Publishing

The Costs of Independence: Operational Testing in DOD Systems Acquisition

The objective of this study was to investigate, describe and analyze the key factors surrounding the establishment of the Air Force Test and Evaluation Center (AFTEC), the Operational Test and Evaluation Agency (OTEA) and the Operational Test and Evaluation Force (OPTEVFOR). Data sources used were of two types. First, a literature search was conducted to obtain as much background information on the subject as possible. Secondly, interviews were conducted with key personnel of the independent test agencies and various DOD program Management Office personnel, some of which are attending the Defense Systems Management School. Three significant recommendations are presented.

Statistics in a Nutshell

"O'Reilly Media, Inc." *A clear and concise introduction and reference for anyone new to the subject of statistics.*

Defense Acquisition Reform, 1960 to 2009

An Elusive Goal - Scholar's Choice Edition

LISP-STAT

An Object-Oriented Environment for Statistical Computing and Dynamic Graphics

John Wiley & Sons *Written for the professional statistician or graduate statistics student, the primary objective of this book is to describe a system, based on the LISP language, for statistical computing and dynamic graphics to show how it can be used as an effective platform for a wide range of statistical computing tasks ranging from basic calculations to customizing dynamic graphs. In addition, it introduces object-oriented programming and graphics programming in a statistical context. The discussion of these ideas is based on the Lisp-Stat system; readers with access to such a system can reproduce the examples presented and use them as a basis for further experimentation and study.*

Analytic Methods in Systems and Software Testing

John Wiley & Sons *A comprehensive treatment of systems and software testing using state of the art methods and tools This book provides valuable insights into state of the art software testing methods and explains, with examples, the statistical and analytic methods used in this field. Numerous examples are used to provide understanding in applying these methods to real-world problems. Leading authorities in applied statistics, computer science, and software engineering present state-of-the-art methods addressing challenges faced by practitioners and researchers involved in system and software testing. Methods include: machine learning, Bayesian methods, graphical models, experimental design, generalized regression, and reliability modeling. Analytic Methods in Systems and Software Testing presents its comprehensive collection of methods in four parts: Part I: Testing Concepts and Methods; Part II: Statistical Models; Part III: Testing Infrastructures; and Part IV: Testing Applications. It seeks to maintain a focus on analytic methods, while at the same time offering a contextual landscape of modern engineering, in order to introduce related statistical and probabilistic models used in this domain. This makes*

the book an incredibly useful tool, offering interesting insights on challenges in the field for researchers and practitioners alike. Compiles cutting-edge methods and examples of analytical approaches to systems and software testing from leading authorities in applied statistics, computer science, and software engineering Combines methods and examples focused on the analytic aspects of systems and software testing Covers logistic regression, machine learning, Bayesian methods, graphical models, experimental design, generalized regression, and reliability models Written by leading researchers and practitioners in the field, from diverse backgrounds including research, business, government, and consulting Stimulates research at the theoretical and practical level Analytic Methods in Systems and Software Testing is an excellent advanced reference directed toward industrial and academic readers whose work in systems and software development approaches or surpasses existing frontiers of testing and validation procedures. It will also be valuable to post-graduate students in computer science and mathematics.

Joint strike fighter DOD plans to enter production before testing demonstrates acceptable performance : report to congressional committees.

DIANE Publishing

Operations Research for Military Organizations

IGI Global *The study of operations research arose during World War II to enhance the effectiveness of weapons and equipment used on the battlefield. Since then, operations research techniques have also been used to solve several sophisticated and complex defense-related problems. Operations Research for Military Organizations is a critical scholarly resource that examines the issues that have an impact on aspects of contemporary quantitative applications of operations research methods in the military. It also addresses innovative applications, techniques, and methodologies to assist in solving defense and military-related problems. Featuring coverage on a broad range of topics such as combat planning, tactical decision aids, and weapon system simulations, this book is geared towards defense contractors, military consultants, military personnel, policy makers, and government departments seeking current research on defense methodologies.*

Examination of the U.S. Air Force's Science, Technology, Engineering, and Mathematics (STEM) Workforce Needs in the Future and Its Strategy to Meet Those Needs

National Academies Press *The Air Force requires technical skills and expertise across the entire range of activities and processes associated with the development, fielding, and employment of air, space, and cyber operational capabilities. The growing complexity of both traditional and emerging missions is placing new demands on education, training, career development, system acquisition, platform sustainment, and development of operational systems. While in the past the Air Force's technologically intensive mission has been highly attractive to individuals educated in science, technology, engineering, and mathematics (STEM) disciplines, force reductions, ongoing military operations, and budget pressures are creating new challenges for attracting and managing personnel with the needed technical skills. Assessments of recent development and acquisition process failures have identified a loss of technical competence within the Air Force (that is, in house or organic competence, as opposed to contractor support) as an underlying problem. These challenges come at a time of increased competition for technical graduates who are U.S. citizens, an aging industry and government workforce, and consolidations of the industrial base that supports military systems. In response to a request from the Deputy Assistant Secretary of the Air Force for Science, Technology, and Engineering, the National Research Council conducted five fact-finding meetings at which senior Air Force commanders in the science and engineering, acquisition, test, operations, and logistics domains provided assessments of the adequacy of the current workforce in terms of quality and quantity.*

DoD Digital Modernization Strategy

DoD Information Resource Management Strategic Plan FY19-23

The global threat landscape is constantly evolving and remaining competitive and modernizing our digital environment for great power competition is imperative for

the Department of Defense. We must act now to secure our future.This Digital Modernization Strategy is the cornerstone for advancing our digital environment to afford the Joint Force a competitive advantage in the modern battlespace.Our approach is simple. We will increase technological capabilities across the Department and strengthen overall adoption of enterprise systems to expand the competitive space in the digital arena. We will achieve this through four strategic initiatives: innovation for advantage, optimization, resilient cybersecurity, and cultivation of talent.The Digital Modernization Strategy provides a roadmap to support implementation of the National Defense Strategy lines of effort through the lens of cloud, artificial intelligence, command, control and communications and cybersecurity.This approach will enable increased lethality for the Joint warfighter, empower new partnerships that will drive mission success, and implement new reforms enacted to improve capabilities across the information enterprise.The strategy also highlights two important elements that will create an enduring and outcome driven strategy. First, it articulates an enterprise view of the future where more common foundational technology is delivered across the DoD Components. Secondly, the strategy calls for a Management System that drives outcomes through a metric driven approach, tied to new DoD CIO authorities granted by Congress for both technology budgets and standards.As we modernize our digital environment across the Department, we must recognize now more than ever the importance of collaboration with our industry and academic partners. I expect the senior leaders of our Department, the Services, and the Joint Warfighting community to take the intent and guidance in this strategy and drive implementation to achieve results in support of our mission to Defend the Nation.

Research Anthology on Military and Defense Applications, Utilization, Education, and Ethics

IGI Global *Military technology is highly advanced in terms of technology being used in the field, computer applications, artificial intelligence, and software applications. These high-performance technologies range from weapons to communications technology to automation in vehicles and weaponry. These technologies must be both secure and reliable in harsh environments. Research is being focused specifically on that, including how military and defense applications operate, what modern technologies are being used, and the ethics surrounding these applications. A holistic view of these applications is necessary for both understanding current military tactics and tools along with the future applications. The Research Anthology on Military and Defense Applications, Utilization, Education, and Ethics focuses specifically on military and defense operations, expenditure, technologies, and tools, and the ethics surrounding technologies like weaponry and artificial intelligence in the military. The chapters cover a wide and diverse range of military and defense applications while providing crucial information on the functions, security, and*

reliability of these technologies. Beyond an understanding of the applications themselves, this book also focuses on military education surrounding these technologies and the ethics of usage to provide a well-rounded understanding of research in the field. This book is ideal for military consultants, military personnel, defense agencies, national security agencies, government officials, defense personnel, policymakers, military educators and trainers, stakeholders, practitioners, researchers, academicians, and students interested in the latest research in military and defense applications.

Health Data in the Information Age Use, Disclosure, and Privacy

National Academies Press *Regional health care databases are being established around the country with the goal of providing timely and useful information to policymakers, physicians, and patients. But their emergence is raising important and sometimes controversial questions about the collection, quality, and appropriate use of health care data. Based on experience with databases now in operation and in development, Health Data in the Information Age provides a clear set of guidelines and principles for exploiting the potential benefits of aggregated health data-- without jeopardizing confidentiality. A panel of experts identifies characteristics of emerging health database organizations (HDOs). The committee explores how HDOs can maintain the quality of their data, what policies and practices they should adopt, how they can prepare for linkages with computer-based patient records, and how diverse groups from researchers to health care administrators might use aggregated data. Health Data in the Information Age offers frank analysis and guidelines that will be invaluable to anyone interested in the operation of health care databases.*

Improved Operational Testing and Evaluation

Better Measurement and Test Design for the Interim Brigade Combat Team with Stryker Vehicles: Phase I Report

National Academies Press *The U.S. Army Test and Evaluation Command (ATEC) is responsible for the operational testing and evaluation of Army systems in development. ATEC requested that the National Research Council form the Panel on*

Operational Test Design and Evaluation of the Interim Armored Vehicle (Stryker) to explore three issues concerning the initial operation test plans for the Stryker/Interim Brigade Combat Team (IBCT). First, the panel was asked to examine the measures selected to assess the performance and effectiveness of the Stryker/IBCT in comparison both to requirements and to the baseline system. Second, the panel was asked to review the test design for the Stryker/IBCT initial operational test to see whether it is consistent with best practices. Third, the panel was asked to identify the advantages and disadvantages of techniques for combining operational test data with data from other sources and types of use. In this report the panel presents findings, conclusions, and recommendations pertaining to the first two issues: measures of performance and effectiveness, and test design. The panel intends to prepare a second report that discusses techniques for combining information.

Defense Acquisitions

Assessments of Selected Weapon Programs

DIANE Publishing *This report examines how well DoD is planning and executing its weapon acquisition programs. The report includes: (1) an analysis of the overall performance of DoD's 2008 portfolio of 96 major defense acquisition programs and a comparison to the portfolio performance at two other points in time -- 5 years ago and 1 year ago; (2) an analysis of current cost and schedule outcomes and knowledge attained by key junctures in the acquisition process for a subset of 47 weapon programs -- primarily in development -- from the 2008 portfolio; (3) data on other factors that could impact program stability; and (4) an update on changes in DoD's acquisition policies. Includes a one- or two-page assessment of 67 weapon programs. Illustrations.*

Weapons Acquisition Reform

Actions Needed to Address Systems Engineering and Developmental Testing Challenges; Report to the Committee on Armed Services, U.s.

Senate.

"In the past 2 years, the Department of Defense (DOD) has been implementing the Weapon Systems Acquisition Reform Act (Reform Act) requirements for systems engineering and developmental testing. These activities are important to DOD's ability to control acquisition costs, which increased by $135 billion over the past 2 years for 98 major defense acquisition programs.GAO was asked to determine (1) DOD's progress in implementing the Reform Act's requirements and (2) whether there are challenges at the military service level that could affect their systems engineering and developmental testing activities. To do this, GAO analyzed implementation status documents, discussed developmental testing office concerns with current and former DOD officials, and analyzed military service workforce growth plans and test range funding data. "

Handbook of Engineering Systems Design

Springer Nature *This handbook charts the new engineering paradigm of engineering systems. It brings together contributions from leading thinkers in the field and discusses the design, management and enabling policy of engineering systems. It contains explorations of core themes including technical and (socio-) organisational complexity, human behaviour and uncertainty. The text includes chapters on the education of future engineers, the way in which interventions can be designed, and presents a look to the future. This book follows the emergence of engineering systems, a new engineering paradigm that will help solve truly global challenges. This global approach is characterised by complex sociotechnical systems that are now co-dependent and highly integrated both functionally and technically as well as by a realisation that we all share the same: climate, natural resources, a highly integrated economical system and a responsibility for global sustainability goals. The new paradigm and approach requires the (re)designing of engineering systems that take into account the shifting dynamics of human behaviour, the influence of global stakeholders, and the need for system integration. The text is a reference point for scholars, engineers and policy leaders who are interested in broadening their current perspective on engineering systems design and in devising interventions to help shape societal futures.*

Reliability Issues for DOD Systems Report of a Workshop

National Academies Press *The final report of the National Research Council's (NRC) Panel on Statistical Methods for Testing and Evaluating Defense Systems (National Research Council, 1998) was intended to provide broad advice to the U.S.*

Department of Defense (DoD) on current statistical methods and principles that could be applied to the developmental and operational testing and evaluation of defense systems. To that end, the report contained chapters on the use of testing as a tool of system development; current methods of experimental design; evaluation methods; methods for testing and assessing reliability, availability, and maintainability; software development and testing; and validation of modeling and simulation for use in operational test and evaluation. While the examination of such a wide variety of topics was useful in helping DoD understand the breadth of problems for which statistical methods could be applied and providing direction as to how the methods currently used could be improved, there was, quite naturally, a lack of detail in each area. To address the need for further detail, two DoD agencies-the Office of the Director of Operational Test and Evaluation and the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics-asked the NRC's Committee on National Statistics to initiate a series of workshops on statistical issues relevant to defense acquisition. The aim of each workshop is to inform DoD about the methods that represent the statistical state of the art and, through interactions of the statistical and defense communities, explore their relevance for DoD application.

Model-Based Testing for Embedded Systems

CRC Press *What the experts have to say about Model-Based Testing for Embedded Systems: "This book is exactly what is needed at the exact right time in this fast-growing area. From its beginnings over 10 years ago of deriving tests from UML statecharts, model-based testing has matured into a topic with both breadth and depth. Testing embedded systems is a natural application of MBT, and this book hits the nail exactly on the head. Numerous topics are presented clearly, thoroughly, and concisely in this cutting-edge book. The authors are world-class leading experts in this area and teach us well-used and validated techniques, along with new ideas for solving hard problems. "It is rare that a book can take recent research advances and present them in a form ready for practical use, but this book accomplishes that and more. I am anxious to recommend this in my consulting and to teach a new class to my students." —Dr. Jeff Offutt, professor of software engineering, George Mason University, Fairfax, Virginia, USA "This handbook is the best resource I am aware of on the automated testing of embedded systems. It is thorough, comprehensive, and authoritative. It covers all important technical and scientific aspects but also provides highly interesting insights into the state of practice of model-based testing for embedded systems." —Dr. Lionel C. Briand, IEEE Fellow, Simula Research Laboratory, Lysaker, Norway, and professor at the University of Oslo, Norway "As model-based testing is entering the mainstream, such a comprehensive and intelligible book is a must-read for anyone looking for more information about improved testing methods for embedded systems. Illustrated with numerous aspects of these techniques from many contributors, it gives a clear picture of what the state of the art is today." —Dr. Bruno Legeard, CTO of Smartesting, professor of Software*

Engineering at the University of Franche-Comté, Besançon, France, and co-author of Practical Model-Based Testing

Searching and Seizing Computers and Obtaining Electronic Evidence in Criminal Investigations