



INSTITUTE FOR DEFENSE ANALYSES

The 2009 DOD Cost Research Workshop: Acquisition Reform

Lance M. Roark, Project Leader
Daniel L. Cuda

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Acquisition Reform**

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PREFACE

The Institute for Defense Analyses (IDA) prepared this document for the Office of the Director, Program Analysis and Evaluation (recently renamed Cost Assessment and Program Evaluation), in the Office of the Secretary of Defense (OSD) under a task titled “Cost Research Workshop.” The objective of the task is to annually identify cost research projects being conducted or planned by Department of Defense (DOD) offices and Federally Funded Research and Development Centers (FFRDCs) and facilitate the exchange of this information through conduct of a workshop and publication of a compendium that includes summaries of the research projects.

This document summarizes the proceedings of the 2009 DOD Cost Research Workshop and describes ongoing research projects at the offices and organizations invited to participate. The material in this document has not been evaluated, analyzed, or subjected to formal IDA review. Its purpose is to make the material available to those who participated in the 2009 DOD Cost Research Workshop, and for other purposes the task sponsor deems appropriate.

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I. INTRODUCTION

Several Department of Defense (DOD) offices are responsible for estimating and monitoring the costs of defense systems and forces in support of planning, programming, budgeting, and acquisition decisions. For example, the Cost Analysis Improvement Group (CAIG) in the Office of the Secretary of Defense (OSD)—now part of the recently designated office Cost Assessment and Program Evaluation (CAPE)—provides independent cost estimates and reports on life-cycle costs of major defense acquisition programs (MDAPs) that are subject to OSD oversight (i.e., Acquisition Category ID). Cost agencies and centers in the relevant defense components provide independent estimates for other MDAPs where the oversight is delegated to the component head or acquisition executive (i.e., Acquisition Category IC).

The OSD CAIG leads efforts by these and other offices and organizations to improve the Defense Department's technical capabilities to forecast future costs. Near the beginning of each year, during the DOD Cost Analysis Symposium, the CAIG reviews the status of the Defense Department's capabilities to estimate the costs of defense systems. Several months later, representatives from offices that sponsor defense cost research meet at the Institute for Defense Analyses (IDA) at the DOD Cost Research Workshop to exchange information on their ongoing and planned cost research projects and discuss current issues. The workshop (formerly the IDA Cost Research Symposium) has been held every year since 1989.

The 2009 DOD Cost Research Workshop, held on June 8, 2009, focused on issues related to acquisition reform. Table 1 shows the participants in this year's workshop, and Table 2 presents the workshop agenda.¹

This document summarizes the proceedings of the 2009 workshop (Chapters II and III) and catalogs defense cost research projects in progress or planned at the time of the workshop (Chapter IV).

¹ Note that since this workshop was held, Program Analysis and Evaluation (PA&E) was designated Cost Assessment and Program Evaluation (CAPE), incorporating the former CAIG.

Table 1. Participants in the 2009 DOD Cost Research Workshop

Office/Organization	Representative
Office of the Director, Program Analysis and Evaluation	Richard Burke
OUSD(AT&L)/Acquisition Resources and Analysis	Nancy Spruill
OUSD(AT&L)/Defense Procurement and Acquisition Policy	Skip Hawthorne
Deputy Assistant Secretary of the Army for Cost and Economics	Steve Loftus
Army TACOM Life Cycle Management Command	Richard Bazzz
Army Space and Missile Defense Command	George Tovar
Naval Center for Cost Analysis	Wendy Kunc
Naval Air Systems Command	David Burgess
Air Force Cost Analysis Agency	Jay Jordan/William Bartlebaugh
Air Force Electronics Systems Center	Wesley Tate
National Reconnaissance Office CAIG	Karen Schaben
The Aerospace Corporation	John Lang
RAND Corporation	John (Jack) Graser
The MITRE Corporation	Raj Agrawal/Sumita Jain
Center for Naval Analyses	Jino Choi
Institute for Defense Analyses	David Chu/David McNicol

Table 2. Agenda for the 2009 DOD Cost Research Workshop

Welcome and Administrative Remarks
<i>David McNicol, Director, Cost Analysis and Research Division, Institute for Defense Analyses</i>
PA&E Welcome
<i>Richard Burke, Director, Cost Analysis Improvement Group, Office of the Secretary of Defense</i>
Introduction
<i>David Chu, President, Institute for Defense Analyses</i>
Invited Presentations
Acquisition Reform
<i>Paul Kaminski, Chairman and CEO, Technovation, Inc.</i>
Milestone A Certifications and Cost Growth
<i>Nancy Spruill, Director, OUSD(AT&L)/Acquisition Resources and Analysis</i>
Weapon Systems Acquisition Reform Act
<i>Peter Levine, General Counsel, Senate Armed Services Committee</i>
Acquisition Workforce
<i>Shay Assad, Director, OUSD(AT&L)/Defense Procurement and Acquisition Policy</i>
Discussions
<i>Implementing the Weapon Systems Acquisition Reform Act</i>
<i>Last Year's Action Items</i>
<i>Wrap-Up/Action Items</i>

II. INVITED SPEAKERS

A. ACQUISITION REFORM

Dr. Paul Kaminski, Chairman and CEO, Technovation, Inc.

Dr. Kaminski provided a general discussion on the current conditions of defense acquisition reform. He noted that the roots of acquisition reform can be traced back to the 1986 President's Blue Ribbon Commission on Defense (also known as the Packard Commission). Reform was also a major theme in the early Clinton administration, where Dr. Kaminski served as the Under Secretary of Defense for Acquisition and Technology. At that time, a major goal of acquisition reform was to streamline the process. In hindsight, it would appear that streamlining in some cases may have been carried too far, but that overall the streamlining initiatives provided a net positive for the Department. Dr. Kaminski noted a few key concerns that were problems then that remain as issues today:

- Government shedding of program management responsibilities to weapon system prime contractors, through arrangements such as Total System Performance Responsibility (TSPR);
- Severe cuts to the acquisition workforce, some of which were imposed by Congress; and
- Lack of funding stability (in cases where major acquisition programs were used as bill-payers).

Despite these and other concerns, Dr. Kaminski felt that many of the acquisition programs during that time (DDG-51, C-17, F/A-18E/F, JDAM) were more or less success stories.

To bring the discussion about acquisition reform to today's issues, Dr. Kaminski described a recent opinion-editorial article (*Real Acquisition Reform: Spending in a Way That Better Helps Our Troops*) written by William J. Lynn, Deputy Secretary of Defense. In this article, Mr. Lynn describes the current defense reforms "of how we develop, test and field the weapons our troops need":

- Increase in the size of the acquisition work force by 20,000 positions, including cost estimators, systems engineers and program managers (education and training of this workforce will be critical);
- Reduction in the risks that weapon system costs will spiral out of control, through more reliance on independent cost estimates at the start and more discipline in the entire acquisition process;
- Use of competing industry teams to make prototypes of systems before choosing the best and most affordable ones to produce; and
- Increased use of more fixed-price development contracts, and new mechanisms to prevent endless “requirements creep.” (This needs care in implementation – fixed price doesn’t make sense if we can’t describe exactly what we wish to buy).

Mr. Lynn also wrote that, as a final step, the DOD must avoid a business-as-usual approach to troubled programs, and be willing to restructure or cancel weapon programs that are not on track.

Dr. Kaminski also suggested that at least one additional reform would be critical—namely, additional emphasis and resources on systems engineering and development planning early in a program. He felt that the Air Force success with program management for intercontinental ballistic missiles (ICBMs) from the late 1970s through the early 1990s provided a useful model for future programs. This model includes competitive concept definition studies, demonstrations and tests of critical high-risk technologies, and other early system development planning before the formal entry into full-scale development (now known as engineering and manufacturing development). In addition, the Air Force ICBM experience was supported by a strong, experienced, and highly trained and educated workforce for both the Government (resident in the Ballistic Missile Program Office) and the contractor responsible for systems engineering and integration (resident in TRW Inc., which was excluded from any hardware responsibilities in ICBM development and procurement).

With these up-front activities and resources, the Air Force was able to achieve development lead times on the order of only 3 to 5 years. Achieving such short lead times is important, because it (1) permits the timely fielding of new capabilities to the military users in a reasonable period of time, (2) allows for a single program manager (for both Government and industry) to serve for the duration of the development program, and (3) provides significant domain experience for the participating workforce. Although there can be resistance to additional resources for up-front system development planning,

Dr. Kaminski argued that applying such resources in fact saves money over the long run by providing a solid foundation for full-scale development and thereby reducing technical risks and associated cost growth. In terms of being able to apply the Air Force ICBM model to today's programs, Dr. Kaminski felt that a serious hindrance is the lack of an educated and trained workforce (both Government and industry) with relevant domain experience (especially for the systems engineers). Another challenge is the inability to identify performance and cost drivers, and make appropriate tradeoffs. Such trades should be addressed not only as part of system development, but even earlier as part of the requirements process.

Dr. Kaminski went on to enumerate other serious flaws in the current acquisition process:

- The lack of front-end risk-reduction planning and investment;
- Confusion about the roles appropriate to program oversight versus program management, leading to misalignment among authorities, responsibilities, and accountability;
- Lack of stability in program funding;
- Lack of early attention to test and evaluation planning—including the exploitation of modeling and simulation early in the program—leading to the situation where we are forced to wait too long for test results; and
- Excessive lead times between program initiation and initial fielding.

To mitigate these flaws and challenges, Dr. Kaminski argued for the following steps:

- Early systems engineering and development planning, conducted by a core workforce with experience in systems engineering, program management, contracting, etc. Building this core workforce will require expanded career paths for the relevant occupations, and the relaxation of current conflict-of-interest restrictions (that limit our ability to hire experienced industry professionals into Government positions).
- Proper alignment of responsibilities, authorities, and accountability between program management and program oversight, where program managers are empowered to make program decisions without seeking permission from higher management as long as targets for cost, performance, and schedule are on track.
- Use of risk mitigation (not risk avoidance) in program acquisition strategies, where programs pursue multiple technology and development paths with appropriate fall-back plans.
- Funding stability, with modest management reserves (perhaps ~8%) managed at the portfolio level (not for individual programs).

- Early consideration and up-front investments in test and evaluation, including integration of modeling and simulation of system performance.
- Limited development scope to achieve cycle times of 3 to 5 years. Such shorter cycle times permit the workforce to experience a wider range of learning opportunities over most tours of duty. Shorter cycle times also provide a greater opportunity for people to experience a sense of tangible accomplishment, thus making it easier to attract talent to defense acquisition programs.

Regarding cost estimates and the role of the Cost Analysis Improvement Group (CAIG), Dr. Kaminski offered his views based on his time as the Under Secretary of Acquisition and Technology. He felt that the CAIG for the most part was effective, although there were some cases when even CAIG estimates were a bit low. Dr. Kaminski's policy was to budget to CAIG estimates, but to manage to the program manager's estimate, holding the difference between the two cost estimates as a reserve. He expressed a concern about providing independent cost estimates to the Congress and industry, which might lead to a self-fulfilling prophecy regarding the higher cost estimate. He also stated that making better choices in dealing with program and independent cost estimates would require a better and more fundamental understanding of performance and cost drivers and associated tradeoffs.

B. MILESTONE A CERTIFICATIONS AND COST GROWTH

Dr. Nancy Spruill, Director, Acquisition Resources and Analysis

Dr. Spruill's presentation addressed two topics. The first topic was the legal requirement (Section 2366a of Title 10, United States Code) for the Milestone Decision Authority (MDA) to make certain certifications on matters related to program requirements and military needs prior to granting Milestone A approval (i.e., permission to enter the Technology Development Phase) to a Major Defense Acquisition Program (MDAP). The second topic was MDAP cost growth. Dr. Spruill's presentation slides are provided in Appendix A.

Dr. Spruill noted that the Congress has continually placed increasing emphasis on stronger certification requirements since the original Nunn-McCurdy Amendment to the Department of Defense Authorization Act, 1982. In four consecutive defense authorization bills between FY 2006 through FY 2009, the Congress has added stricter certification requirements for acquisition programs. Dr. Spruill explained that the perception of the Congress was that DOD had not implemented the original Nunn-McCurdy law as intended. As a result, according to this perception, there was too little

consequence for a Nunn-McCurdy cost breach, leading to “rubber baselines,” lack of discipline, and a permissive attitude about cost growth.

Most recently, Congress has established additional requirements for the certification process as part of the Weapon Systems Acquisition Reform Act of 2009. For Milestone A approval, the MDA must now certify the following:

- The program has an approved requirements document (i.e., Initial Capabilities Document);
- The program is being executed by an entity (military department or defense agency) with a relevant core competency;
- If a program duplicates a capability already provided, the duplication is necessary and appropriate;
- An Analysis of Alternatives (AoA) has been performed consistent with study guidance developed by the Director, Cost Assessment and Program Evaluation; and
- A cost estimate (prepared by the military department or defense agency) has been submitted and reviewed for reasonableness by the Director, Cost Assessment and Program Evaluation.

The Weapon System Acquisition Reform Act also requires the program manager to notify the MDA if the total program cost grows by at least 25 percent, or if the estimated time required to reach Initial Operational Capability from the time of Milestone A approval grows by more than 25 percent prior to Milestone B. Such a notification triggers a “Nunn-McCurdy”-like review where the MDA decides whether or not the program should be terminated. In addition, for acquisition programs that received Milestone A approval (or were otherwise initiated) prior to the enactment of the 2366a MS A certification requirement, but have not yet received Milestone B approval, the Reform Act requires retroactive (“catch-up”) certifications within one year of the passage of the Reform Act (which was signed by the President on May 22, 2009). Dr. Spruill estimated that the number of Milestone A catch-up certifications would be in the dozens, perhaps as many as forty. She then used an example of a recent Milestone A certification (the Ship-to-Shore Connector program) to illustrate the new process.

The second topic in Dr. Spruill’s presentation was weapon system cost growth. Cost growth is addressed each year in an assessment provided by the Government Accountability Office (GAO). The annual GAO report (“Defense Acquisitions: Assessments of Selected Weapon Programs”) often receives significant media attention. The report may be found at the GAO Web site (www.gao.gov/new.items/d09326sp.pdf).

Dr. Spruill presented an overview of the GAO methodology for measuring overall cost growth for a portfolio of 96 major acquisition programs. She also presented the OSD Acquisition, Technology and Logistics (AT&L) perspective, which identified several issues and concerns about the GAO methodology. She proposed that new metrics are needed to measure cost growth in a fair, transparent, and analytically valid way. She then mentioned that GAO, the Office of Management and Budget (OMB), and AT&L are working together to develop new metrics to measure acquisition cost growth, and that GAO and AT&L have agreed to conduct a pilot study to test these new metrics.

She concluded by requesting help from the DOD cost community in attendance at the DOD Cost Research Workshop. Dr. Spruill suggested that as a community, we need better metrics and methods, new analysis methods, better data, and better people with the right tools and training.

C. WEAPON SYSTEMS ACQUISITION REFORM ACT

Mr. Peter Levine, General Counsel, Senate Armed Services Committee

Mr. Levine was invited to discuss the recent Weapon Systems Acquisition Reform Act that President Obama signed into law on May 22, 2009. The Reform Act was designed to address several issues (as perceived by the Congress) associated with weapon system acquisition. A summary of the provisions of the law, prepared by the House Armed Services Committee staff, is provided in Appendix B.

One provision of the Reform Act was of special interest to the attendees of the Cost Research Workshop. This provision established a new position—the Director of Cost Assessment and Program Evaluation—as a Presidentially appointed, Senate-confirmed official in the Office of the Secretary of Defense (OSD). The new Director will have two deputy directors, one for cost assessment and one for program evaluation. The personnel of the Cost Analysis Improvement Group (CAIG) transfer to the new deputy for cost assessment, and the remaining personnel of OSD Program Analysis and Evaluation (PA&E) transfer to the other deputy director. The Director of Cost Assessment and Program Evaluation serves as the principal advisor to the Secretary of Defense and other senior management officials for matters of cost estimation and cost analysis for DOD acquisition programs. The Director also prescribes policy and procedures for cost estimation and cost analysis throughout the Department.

Mr. Levine stated that, in his view, the Reform Act was very significant, and that he wanted to describe for the audience what the Congress intended to see in the DOD's implementation of the legislation. He described what he said was the main motivation on the part of Senator Carl Levin, namely to address the fundamental causes of cost growth. In Senator Levin's view, the Department has had a permissive culture that overpromises on cost, performance, and schedule—resulting in too many acquisition programs with not enough funding in the DOD program and budget. Mr. Levine also stated that part of the legislation was intended to promote balance among cost, performance, and schedule in tradeoff decisions. He also stated that two important and related provisions, concerning (1) systems engineering and (2) development test and evaluation, were intended to strengthen the acquisition workforce in these areas, and to provide more emphasis in these two areas earlier in a program.

Mr. Levine stated that the single most important provision of the legislation was the establishment of the Director, Cost Assessment and Program Evaluation. He explained that the Congress intended for the new organization to go beyond responsibility for independent cost estimates by taking charge of cost estimation and analysis DOD-wide. The new organization establishes guidelines, policy, and procedures for cost estimation and analysis associated with Major Defense Acquisition Programs (MDAPs) and Major Automated Information Systems (MAIS), thus assuming a “dotted-line” responsibility over the cost organizations of the military departments and defense agencies. In this capacity, the new organization reviews and monitors the various cost estimates, and assesses their reliability and adequacy. Mr. Levine also offered that the legislation was not prescriptive in its own implementation, and DOD was provided wide latitude and flexibility as to how to meet the legislation's intent.

A summary of Mr. Levine's remarks during general questions and answers follow:

- He supported the notion of a management reserve in funding for acquisition programs, but felt that the reserve should be managed at the portfolio level, not at the program level. He also stated that the congressional appropriators historically have not supported the use of reserves.
- He conceded the point that once programs are initiated, it is difficult to terminate them (even when they have cost, performance, or schedule shortfalls), and that the Congress had a significant role in contributing to this difficulty. But he then stated that is precisely why it is important to get programs started on a solid foundation.

- He was asked about the rationale for “80-percent confidence levels” in cost estimates. *[Note: The Reform Act requires disclosure of the confidence level used in establishing a cost estimate for an MDAP or MAIS program, with justification if the confidence level selected is less than 80 percent.]* He stated that this initiative had come from the House of Representatives during the legislation House-Senate conference, and he also noted that DOD had offered no comments on this specific aspect of the law at that time. Clearly, the use of confidence levels is an attempt to offset the optimism inherent in DOD cost estimates. Mr. Levine suggested that he believed that it is likely that the Congress would be receptive to constructive suggestions from DOD to modify and improve this aspect of the law.
- He was asked about the GAO assessment of cost growth (as discussed in the earlier presentation by Dr. Spruill). He responded with the observation that the recognition of DOD cost growth as a major issue was not based solely on the GAO methodology, and that numerous studies had confirmed the problem.
- He was asked how DOD could show success or improvement (as a result of the DOD implementation of the Reform Act) in 2 years’ time. *[Note: The Reform Act requires an annual report summarizing the cost estimation and cost analysis activities of the Department and assessing the progress of the Department in improving the accuracy of its cost estimates and analyses.]* He agreed with the point that we need better metrics for cost growth. He also stated that the reforms are long term in nature, and would take longer than 2 years to materialize.
- He remarked that the intent of the new Director of Cost Assessment and Program Evaluation was not to provide an “Inspector General”-like function. Rather, in his view, the role of the new organization, which is supervisory in nature, is to (1) issue guidance, (2) review and comment on cost estimates, both in-process and at the major milestone decision, and (3) concur or endorse the ultimate DOD decision on program cost and funding.
- He was asked about what criteria the Congress would use to judge the success of the legislation (as implemented by the Department). He stated that it would be important to look at the major milestone approval of new programs and see whether or not such programs begin on a more sound basis (i.e., critical technologies are mature, early planning for systems engineering and test and evaluation, etc.).
- He was asked about the congressional requirement for a report on monitoring operating and support (O&S) costs for major defense acquisition programs. *[Note: The Reform Act calls for a report (due May 2010) by the Director of Cost Assessment and Program Evaluation to review existing systems and methods for tracking and assessing O&S costs, including an assessment of the feasibility and advisability of establishing the equivalent of Acquisition*

Program Baselines (APBs) for O&S costs.] He stated that it was unclear if we are actually ready to conduct such tracking and assessing, hence the requirement for a study on feasibility and advisability on O&S cost baselines. He also felt that it would be important to identify the appropriate management decisions that could be made as a result of such O&S cost information.

- He agreed with the observation that for many acquisition programs there can be disconnects between (1) the assumed content reflected on cost estimates and (2) the scope of the actual contract(s). He also stated that such disconnects are not necessarily bad, and that there are cases where it was desirable to keep cost estimates (for programming and budgeting purposes) separate from contract negotiations. In particular, he felt that any program reserves associated with confidence intervals (beyond 50-percent confidence) should not be placed on contract.
- He was asked for the rationale for including MAIS programs within the area of responsibility of the Director of Cost Assessment and Program Evaluation. He stated that MAIS programs have had serious cost and schedule issues over the years, and that it was necessary to place them under the oversight of the cost assessment function.
- He was asked about the congressional emphasis favoring the use of fixed-price contracts. He stated that DOD should use the contract type consistent with the level of program risk, and that the way to achieve greater use of fixed-price contracts was to strengthen up-front planning, thereby reducing the level of risk. He also stated that the congressional intent was not necessarily for the use of firm-fixed-price development contracts, which might place unreasonable risks on the contractors, but rather for the use of fixed-price incentive contracts where the Government would remain liable for a significant portion of any cost overrun (using a share ratio as high as 80/20 or 90/10).

D. ACQUISITION WORKFORCE

Mr. Shay Assad, Director, Defense Procurement and Acquisition Policy

Mr. Assad described the Department's recent initiative to increase the size of its organic acquisition workforce by roughly 20,000 positions in order to ensure that DOD has the right people and skills to effectively manage its acquisition programs. Under an initiative announced by Secretary Gates in April 2009, DOD intends in the next 5 years to convert roughly 10,000 contractor employees to full-time government employees, and to hire roughly 10,000 additional acquisition professionals. Mr. Assad noted that large personnel cuts were made to the acquisition workforce in the 1990s, and that thereafter

the workforce remained flat despite an increase in workload associated with the large increases in the defense modernization budget that began in 2001. The planned increase in the acquisition workforce is intended to remedy the adverse effects of this mismatch, leading to more effective program management and thus better deals for the taxpayers.

Mr. Assad noted that the increases (conversions and new hires) to the government acquisition workforce can be grouped into two basic categories of occupations. The first category consists of various contracting and contract oversight occupations. The category is subject to roughly half of the total increase, an increase of over 10,000 personnel. Specifically, the first category is subject to increases of roughly 5,300 contracting specialists, 2,500 contract management officials (primarily in the Defense Contract Management Agency), 700 auditors (primarily in the Defense Contract Audit Agency), and 800 cost and price analysts. The second category of occupations subject to personnel increases consists of program management, systems engineering, and logistics career fields. This category makes up the other half of the initiative, an increase of roughly 10,000 personnel for these occupations. Mr. Assad explained that each military service had somewhat different priorities for its role during this initiative. For the Navy, and in particular the Naval Sea Systems Command, the emphasis will be on rebuilding its in-house engineering capability. For the Army, the most important priority will be its program management workforce. For the Air Force, the increases are more evenly distributed across the various occupations.

Mr. Assad explained that the main challenges for the initiative will be in maintaining the pace of the hiring and ensuring a smooth transition (from contractor to government personnel). He noted that his office will be reviewing metrics by organization by quarter throughout the duration of the workforce initiative.

Mr. Assad made special note of the importance of the increase to the cost and price analysts. Their analyses support source selections, proposal evaluations, and contract negotiations, and ensure that the Government ultimately pays fair and reasonable prices for its purchased goods and services. Yet these analytic capabilities had been allowed to atrophy, leading to inadequate resources for cost and price analysis. As one example, he said that there were significant differences among Government customers (such as paying different overhead rates for similar work) that industry was aware of in their contract negotiations. He made the distinction between the cost estimators (supporting programming, budgeting, and program tradeoff studies) and price analysts (supporting the contracting process). He explained that the cost estimators needed some degree of

technical or engineering background, and also needed a broader perspective than the price analysts. Nevertheless, he felt that there should be more interaction between these two communities, and that the pricing analysts would benefit with more frequent use of the cost estimating toolkit.

Mr. Assad also addressed the issue of workforce training and development. He noted that some organizations have good processes for workforce development, and that the best practices should be adopted as models for the rest of the Department. He suggested that the Defense Acquisition University (DAU) curriculum for cost estimation, price analysis, and earned value management should be reengineered. He also stated that most of these occupations in the acquisition workforce will need expanded career paths for progression. Ultimately, making the defense acquisition process more effective is less about changing process or regulations than it is about getting experienced and talented people.

Mr. Assad also offered the observation that the Defense Contract Management Agency (DCMA) should establish a “data warehouse” that could be used throughout the Department in support of cost estimates and price analyses. This warehouse would consist of direct hours and rates, overhead rates, and profit rates—stratified by location, by commodity, by buying organization. This approach would provide for more integrated cost information of benefit to the entire community.

III. DISCUSSIONS

A. IMPLEMENTING THE WEAPON SYSTEMS ACQUISITION REFORM ACT

Dr. Richard Burke, Chairman, Cost Analysis Improvement Group

Dr. Burke's presentation described the status of the Department's new organization for Cost Assessment and Program Evaluation (as established by the Weapon Systems Acquisition Reform Act). Dr. Burke's presentation slides are provided in Appendix C.

Dr. Burke noted that the legislation was already in effect. However, it had been passed only two weeks earlier, and that the Department was not far along in its implementation. *[Note: The Cost Research Workshop was held on June 8, and the Weapon Systems Acquisition Reform Act of 2009 was signed by the President on May 22.]*

Dr. Burke described the wide range of responsibilities for the new Director for Cost Assessment and Program Evaluation. This position will be a Presidential appointee subject to Senate confirmation. Dr. Burke stated that this new position is demanding due to its vast responsibilities and the likely requirement for frequent congressional testimony. Dr. Burke also described the likely job description for the position of Deputy Director, Cost Assessment. *[Note: On June 9, one day after the Workshop, the Deputy Secretary announced that Dr. Burke was assigned as the Acting Deputy Director, Cost Assessment to oversee the statutory cost assessment responsibilities—including the functions previously performed by the Chairman of the Cost Analysis Improvement Group.]*

Dr. Burke then described the next few steps that the Department will be taking in the near term. The Office of General Counsel is conducting a legal review of the Act, and is working with the OSD staff to assess its implications for new or modified requirements. Dr. Burke stated that he anticipates a series of policy memoranda will be issued providing interim guidance to the military departments and defense agencies. Dr. Burke also noted that the requirements of the legislation probably exceed the capacity of

current staffing levels, and it will be necessary in the near term to prioritize the workload for the next year.

To close, Dr. Burke gave a preview of the upcoming tasks that he anticipates will be levied on cost organizations in the Department. First, he noted that the law requires retroactive (“catch-up”) certifications for major defense acquisition programs already past Milestone A or Milestone B. The Director of Cost Assessment and Performance Evaluation will be required to review and assess the cost estimate for each of these retroactive certifications. Second, the new Director is required to promulgate policy, guidance, and procedures for cost estimation for the entire Department. Third, the Director will publish an annual report on DOD cost assessment activities that summarizes cost estimating organizations, processes, and activities for the entire department. This report will assess the progress of the Department in improving the accuracy of its cost estimates and analyses. Fourth, the Director is required to submit a one-time report on monitoring operating and support costs for major defense acquisition programs.

B. STATUS OF LAST YEAR’S ACTION ITEMS

Dr. Ronald Lile, Director, Defense Cost and Resource Center

The theme of last year’s workshop was contractor data reporting systems that support the cost estimating function. At that workshop, the discussion focused on (1) data content and accessibility, (2) policy dissemination and compliance, and (3) data quality. At the conclusion of the 2008 conference, the CAIG Chairman summarized this discussion and identified required actions and responsible organizations. A complete description of the action items may be found in last year’s workshop report (Stephen J. Balut, “The 2008 IDA Cost Research Workshop: Contractor Data Reporting Systems,” Institute for Defense Analyses, Document D-3571, July 2008).

At this year’s workshop, Dr. Lile described the status of the action items from last year’s workshop. Dr. Lile’s presentation slides are provided in Appendix D. Of particular interest, significant progress has been made on (1) the establishment of a plant-wide contractor overhead report, and (2) a new operating and support cost reporting system for major weapon system sustainment contracts. In addition, business process changes have been made to improve data review and validation procedures and to expand notification of policy changes associated with cost reporting (i.e., Earned Value Management and Cost and Software Data Reporting).

C. WRAP-UP/GOING FORWARD

Dr. Richard Burke, Chairman, Cost Analysis Improvement Group

Dr. Burke summarized the major issues and themes that emerged during the presentations made at this year's Cost Research Workshop.

- One important issue that will challenge the DOD cost community is the implementation of the Weapon Systems Acquisition Reform Act. A critical workload driver will be the legal requirement for "catch-up" certifications. The catch-up certifications are due within one year for programs past Milestone A, and within 270 days for programs past Milestone B. The number of certifications is anticipated to be in the dozens, and the requirement for updated cost estimates and assessments will exceed available resources. Thus it will be necessary to prioritize these programs and develop an achievable work plan.
- Another issue is the size and quality of the cost estimating workforce. The Reform Act has created significantly more cost estimating tasks, and each defense cost organization will need to plan accordingly. The plans will need to address the size and nature of the workforce. Dr. Burke pointed out that there is little or no flexibility to contract out for cost estimates, although there may be some exceptions for Federally Funded Research and Development Centers (FFRDCs) on a case-by-case basis.
- Training and education for the cost estimating community will be more important.
- All three of the above topics (cost estimation activities and workload, workforce, and training and education) will be important elements of the Annual Report of Cost Assessment Activities.
- Dr. Burke agreed with the earlier observations (as made by Dr. Spruill as well as Mr. Levine) that better metrics to assess cost growth are needed for the Department to establish more credibility in its cost estimates. This is one research topic that could be addressed by a support contractor or FFRDC.
- Dr. Burke suggested that the cost community could be better integrated with other acquisition communities (including the contracting community, as noted by Mr. Assad). In particular, the cost community likely will become more involved with supporting the Joint Requirements Oversight Council (JROC) process.
- Finally, Dr. Burke called for more emphasis on program execution and Earned Value Management. He also stated that the Annual Report should address cost data quality.

In summary, the cost community will be experiencing a large cultural change over the coming year and beyond. The past debates about the nature of acquisition reform

legislation are over, and now the discussion within the cost community needs to be focused on efficient and effective implementation.

IV. COST RESEARCH STUDIES

A. STUDY TITLES

The titles of the studies listed here are grouped according to the offices and organizations performing them in the order the summaries were submitted to IDA (and the order in which they are presented in section B of this chapter). We assigned each study title a number using an abbreviation for the reporting office/organization name (e.g., PA&E-1).

Office of the Deputy Director (Resource Analysis), Program Analysis and Evaluation

PA&E-1	Major Defense Acquisition Program (MDAP) Cost Growth (CG) and Other Study Support
PA&E-2	Force and Infrastructure Studies
PA&E-3	Defense Cost and Resource Center (DCARC)
PA&E-4	Global Defense Posture: Forward Operating Site/Cooperative Security Location Cost Model
PA&E-5	Depot Maintenance Requirements Metrics Study
PA&E-6	CLS and PBL Data Collection
PA&E-7	Resource Analysis Course for PA&E/Other Analysts
PA&E-8	Revision of CAIG Policy, Procedure, and Processes
PA&E-9	Medical Cost Growth
PA&E-10	Commercial Pricing
PA&E-11	Economic and Manpower Forecasting Models
PA&E-12	Manpower Cost Modeling
PA&E-13	Infrastructure Analytical Services
PA&E-14	Base Realignment and Closure (BRAC) 2005 Joint Basing Implementation
PA&E-15	Readiness Support: U.S. Forces and Weapon Systems Analysis
PA&E-16	Space Industrial Base Study

Deputy Assistant Secretary of the Army for Cost and Economics

DASA-CE-1	Operating and Support Management Information System (OSMIS) Database Management
DASA-CE-2	ACEIT Enhancement, Help-Desk/Training, Consulting
DASA-CE-3	Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) Systems
DASA-CE-4	Electronics Methodologies Development

DASA-CE-5	Tri-Service Missile and Smart Munitions Database
DASA-CE-6	Wheel and Tracked Vehicle (Manned and Robotic) Database and Methodology Development
DASA-CE-7	Aircraft Database Development
DASA-CE-8	Standard Service Cost (SSC)
DASA-CE-9	Personnel Costing System
DASA-CE-10	Software Database
DASA-CE-11	Joint Integrated Analysis Tool (JIAT)
DASA-CE-12	Cost and Performance Portal (CPP)
DASA-CE-13	Force and Contingency Cost Models Update

Communications-Electronics Command

CECOM-1	Cost Factors Study for the Relationship Between Hardware Costs for Production/Development for Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) Family of Equipment
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Army Aviation and Missile Command (AMCOM)

No summaries provided—all cost research projects are funded through DASA-CE

TACOM Life Cycle Management Command

LCMC-1	Mine Resistant Ambush Protected (MRAP) Optimization Tool
LCMC-2	Impact of Advanced Armor on Various Phases of Life Cycle Cost

Naval Center for Cost Analysis

NCCA-1	Operating and Support Cost Analysis Model (OSCAM-Naval Suite)
NCCA-2	Aircraft Operating and Support Cost Analysis Model (OSCAM-Air)
NCCA-3	Naval VAMOS Management Information System
NCCA-4	NCCA Online Document Library
NCCA-5	NCCA Software Development Estimating Handbook Update
NCCA-6	Aircraft/Ship/Weapons/Major System Acquisition Cost and Requirements Database
NCCA-7	Portfolio Analysis Pilot and Methods
NCCA-8	NCCA Inflation Calculator (NIC) Enhancements
NCCA-9	NATO Independent Cost Estimating and its Role in Capability Portfolio Analysis

Naval Air Systems Command

NAVAIR-1	Joint Cost Analysis Research & Database (JCARD) Working Group (WG): Web Information System
NAVAIR-2	HAPCA (Historical Aircraft Procurement Cost Archive) Database
NAVAIR-3	Overhead Rate Study
NAVAIR-4	Hourly Labor Wrap Rates Database
NAVAIR-5	HASP (Historical Aviation Schedule Performance) Database
NAVAIR-6	Repairable and Consumable Material Cost Growth Analyses

NAVAIR-7	Recurring Cost to Train Aircraft Squadron Personnel
NAVAIR-8	Representative Squadron Operating and Support Cost for Various T/M/S Aircraft
NAVAIR-9	Performance Based Logistics (PBL)
NAVAIR-10	Software Data Consolidation and Analysis
NAVAIR-11	Naval Aviation Propulsion Cost Analysis of Type/Model/Series Engines
NAVAIR-12	Industry Insight

Naval Sea Systems Command

NAVSEA-1	Material Vendor Survey
NAVSEA-2	NAVSEA Common Cost Model (NCCM) – Ships
NAVSEA-3	NAVSEA 05C Cost Information Management System (IMS)

Naval Surface Warfare Center, Dahlgren Division (NSWCDD)

No summaries provided

Air Force Cost Analysis Agency

AFCAA-1	Joint Cost Analysis Research Database (JCARD)
AFCAA-2	Air Force Total Ownership Cost (AFTOC) Management Information System
AFCAA-3	Air Force Inflation Model and Tutorial
AFCAA-4	Cost Handbook Update
AFCAA-5	AFCAA FY08 Cost Risk and Uncertainty Analysis Metrics Manual
AFCAA-6	Force Analysis On-Site Analytical and Technical Analytical Support
AFCAA-7	Aircraft Modification Cost Estimating Handbook
AFCAA-8	Methods for Predicting Development/Production Costs
AFCAA-9	Software Cost Estimating Handbook
AFCAA-10	Joint Information Technology Software Development Database
AFCAA-11	NASA/Air Force Cost Model (NAFCOM)
AFCAA-12	FMA Depot Standup Costs Analysis/Data Gathering
AFCAA-13	Missile Sufficiency Review Handbook Update
AFCAA-14	Initial Spares Model
AFCAA-15	Engineering Change Order (ECO) Cost Factors and Analysis
AFCAA-16	Database and Models Update
AFCAA-17	Technology Readiness Level (TRL)/Technology Maturity Index (TMI) Cost Methods and Factors
AFCAA-18	Methods to Predict Ground Based Radar Cost Model
AFCAA-19	Software Cost Estimation Manual

Electronics Systems Center

ESC-1	ESC Acquisition Support Cost Factors and Cost Estimating Relationships (CER)
ESC-2	Government Program Office Support Sizing and Labor Rate Analysis
ESC-3	Allocating Risk on Development Programs

Air Force Space and Missile Systems Center (SMC)

No summaries provided

National Reconnaissance Office Cost Analysis Improvement Group

NRO CAIG-1	Space Cost Analysis Templates, Toolkits and Repository (SCATTR)
NRO CAIG-2	Advanced Cost Modeling Environment (ACME)
NRO CAIG-3	Software Database
NRO CAIG-4	NRO CAIG's Software Development Methodology
NRO CAIG-5	Complexity Based Risk Analysis (CoBRA)
NRO CAIG-6	Demonstration-Satellite Cost Model (DSCM)
NRO CAIG-7	Satellite Sizing Model
NRO CAIG-8	Commercial Acquisition Programs Study (CAPS)
NRO CAIG-9	Space System Data Collections
NRO CAIG-10	Space Hardware CERs
NRO CAIG-11	NRO Subsystem Cost Model
NRO CAIG-12	Ground System Cost Model
NRO CAIG-13	System Engineering, Integration, Test, and Program Management (SEITPM) Study
NRO CAIG-14	Scheduling and Phasing Model
NRO CAIG-15	Box vs. Subsystem Estimating Accuracy
NRO CAIG-16	Optical Payload Cost Models
NRO CAIG-17	Ground Methods Development
NRO CAIG-18	NRO Inflation Index

The Aerospace Corporation

AEROSPACE-1	Space System Executability Heuristics
AEROSPACE-2	Small Satellite Cost Model (SSCM)
AEROSPACE-3	Improving Cost Estimation Methods for Software-Intensive Systems (SIS)

Center for Naval Analyses

CNA-1	Design-Build Concurrency: Cost Implications
CNA-2	O&S Cost Growth from Initial Estimates
CNA-3	Quantifying Uncertainty of Predictions from Nonlinear Cost Estimation Relationships
CNA-4	Cost and Industrial Base Implications of Capital Investments
CNA-5	Early Warning Model for Acquisition Program Cost and Schedule Growth
CNA-6	Information Markets for Acquisition
CNA-7	eCASS Cost-Benefit Analysis Update
CNA-8	DON Budget Migration
CNA-9	Identifying the Navy's New Baseline Budget

MITRE Corporation

MITRE-1	Business Continuity Decision Framework
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MITRE-2 Adapting Venture Capital Concepts to System Acquisitions

RAND Corporation

RAND-1 Incorporating Leading Indicators into Program Monitoring and Evaluation

RAND-2 Cost Estimates at Milestone B: A Comparison with Program Baselines

RAND-3 Estimating the Impact of Avionic System Complexity on Integration Costs

RAND-4 Improving the Design and Management of Incentives in System Development and Demonstration (SDD) Contracts

RAND-5 Estimating the Cost of Stealth Technology

RAND-6 F-22A Post-Multiyear Procurement Options

RAND-7 Analysis of Cost Growth using Selected Acquisition Reports

RAND-8 Estimating the Effects of Complexity on Software Size and Costs

Institute for Defense Analyses

IDA-1 Financial and Economic Analysis

IDA-2 Production Material Analysis

IDA-3 Commercial Content in DOD Weapon Systems

IDA-4 Cost-Effectiveness Analysis of Training

IDA-5 Business Plan for Training Modeling and Simulation

IDA-6 Data Consolidation Study

IDA-7 Detailed Earned Value Analysis

IDA-8 Methods for Evaluating Cost and Schedule Status of Major Defense Acquisition Programs

IDA-9 Contingency Operations Support Tool (COST)

IDA-10 Forecasting TRICARE Utilization and Costs

IDA-11 Evaluation of TRICARE Program Costs

IDA-12 Market and Industrial Base Study of Night Vision Equipment

IDA-13 Total Ownership Cost Reduction

IDA-14 Prices of Commercial Aircraft and Engines

IDA-15 Long Endurance UAV Acquisition Strategy

IDA-16 Mergers and Acquisitions Lessons Learned

IDA-17 Resource Analysis for T&E – CTEIP

IDA-18 Analytical Support for the Test and Evaluation Science and Technology (TEST) Program

IDA-19 Resource Analysis for Operational Test and Evaluation (OT&E)

IDA-20 Resource Analysis for Test and Evaluation Strategic Planning, Budget Certification and Range Policy for the DOD Test Resource Management Center (DTRMC)

IDA-21 Resource and Technical Analyses for the National Aeronautics RDT&E Infrastructure Plan

IDA-22 Resource and Technical Analyses for the National Aeronautics RDT&E Infrastructure Plan – NASA

IDA-23 Technical Analysis Support for Missile Defense Agency RDT&E

IDA-24	Cost-Effective Aerial Targets
IDA-25	Evaluating, Managing and Forecasting Army Equipment Readiness
IDA-26	Support to the Department of Veterans Affairs
IDA-27	Operating and Support Costs for Unmanned Aircraft Systems
IDA-28	Force Structure Costing Study

B. SUMMARIES

The remainder of this chapter contains summaries of the studies listed in the previous section. Except for the number assignments (e.g., PA&E-1), formatting of content for consistency of appearance, and minor copyedits, the summaries are reproduced as they were submitted to IDA. Tabs separate each office/organization.

Office of the Secretary of Defense, Program Analysis and Evaluation (PA&E)

Name:	Office of the Deputy Director (Resource Analysis), Program Analysis and Evaluation		
Address:	OSD(PA&E), 1800 Defense Pentagon, Washington, DC 20301-1800		
Director:	Dr. Richard P. Burke, (703) 695-0721		
Size:	Professional:	40	
	Support:	4	
	Consultants:	0	
	Subcontractors:	13	
Focus:	Cost Analysis Improvement Group (CAIG); Life Cycle Costs of Major Defense Acquisition Programs; Force Structure; Operating and Support Costs; Economic Analysis		
Activity:	CAIG reviews and studies per year:		55-60
	POM, budget, FYDP reviews:		As required

PA&E-1

Title:	Major Defense Acquisition Program (MDAP), Cost Growth (CG) and Other Study Support		
Summary:	MDAP CG is defined as any variance from a baseline value after being normalized for quantity variation, inflation, and learning curve. Each variance is categorized as either a mistake or decision and is further refined into 10 subcategories. The source data for this study are Selected Acquisition Reports (SARs) which detail cost variation from a baseline. The contractor will update the MS Access database with cost variance data as new SARs are released. CAIG analysts process the data with the support of the contractor. To address production rate variation, the study will be expanded to include schedule-quantity data. The study is expected to provide insight into the magnitude and sources of CG so the DoD can better manage its programs.		
Classification:	Unclassified		
Sponsor:	OSD(PA&E) WSCAD LtCol Steven Cox (703) 697-8228 The Pentagon, Room BE798 Washington, DC 20301		
Performer:	AT&T		
Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2000	\$215,000	
	2001	\$215,000	
	2002	\$211,000	
	2003	\$230,000	
	2004	\$250,000	

2005	\$260,000
2006	\$250,000
2007	\$125,000
2008	\$ 75,000
2009	\$50,000

Schedule: Start End
Ongoing

Database: Title: SAR Cost Growth Database
Description: Updated MS Access database with FY07 SAR data.

Publications: To be determined

PA&E-2

Title: Force and Infrastructure Studies

Summary: ICAD requires tools that facilitate analyses of resource allocations. For example, each year, the Department must report to Congress on its expenditures on forces and infrastructure over the preceding fiscal years, as well as its projection for the upcoming year. To perform this analysis, the FYDP must be normalized to ensure that funds and manpower values found in program elements over the past several years use definitions consistent with the current budget year. Taxonomies used to relate program elements to missions and infrastructure categories require periodic review and updating. Additionally, FICAD is periodically asked to conduct special, short-deadline studies for senior leadership on a wide variety of subjects requiring analysis of the FYDP. This work program aims at producing a specialized version of the Future Defense Years Program (FYDP) and other data structures that support analyses of the Department's resource allocations. The effort will include a detailed analysis of the effects of decisions and policies made during the current budget year on the historical years of the FYDP (FY 1975 through FY 2008). The project will update, redefine or adjust the F&ICs to reflect decisions and guidance stemming from the most recent QDR and other high level reviews. Additional research will be conducted using the FYDP databases as required.

Classification: Unclassified work dealing with a classified database

Sponsor: OSD(PA&E)
FICAD
Mr. Walter Cooper
(703) 697-4312
The Pentagon, Room BE798
Washington, DC 20301

Performer: IDA

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	1992	\$40,000	
	1993	\$220,000	
	1995	\$130,000	
	1996	\$150,000	
	1999	\$250,000	
	1900	\$322,000	
	2002	\$80,000	
	2003	\$200,000	
	2004	\$150,000	
	2005	\$150,000	
	2006	\$100,000	

	2007	\$100,000
	2008	\$100,000
	2009	\$100,000

Schedule: Start End
Ongoing

Database: (1) A normalized version of the FY 2010 President's Budget. (2) An update of the F&ICs. (3) Other deliverables as required.

PA&E-3

Title: Defense Cost and Resource Center (DCARC)

Summary: The goal of this project is to enhance the DoD cost analysis capability by improving the quality and utility of available cost related information, and improving access to diverse cost related information sources including those sponsored by OSD, the military services, and defense agencies, all of which will be accessible and searchable via a web-based, user-friendly data/document retrieval system. The DoD cost estimating community requires quality historical data and research to estimate current and future systems. This project would be of obvious use to the global DoD cost estimating community. This is a coordinated effort between the Cost Analysis Improvement Group (CAIG) and the Defense Cost and Resource Center (DCARC) to provide a digital database of cost-data and cost-research products for use by cost estimators. This project will continue the spiral acquisition of the Internet-based, secure document and data retrieval system that incorporates Contractor Cost Data Report (CCDR) data, cost research libraries, system performance data, as well as interfaces with other cost-related data systems. This year's upgrade will be to improve the search capabilities, maintain compatibility with new hardware and operating system updates, and upgrade architecture to further streamline the submission and review processes. Access to the system will be available to authorized users through the World Wide Web. The project will maintain and update software, provide a user-friendly, common search functionality for both electronic data and electronically stored documents, provide help-desk support, scan documents into the system, develop both classroom and computer-based training programs for use of and access to the data, and continue its ongoing assessment of user needs and system streamlining requirements. The DCARC will also assist acquisition program offices in developing data collection plans and make assessments and recommendations on DoD policy affecting cost data collection and develop a data-availability assessment tool to assist cost estimators in using cost data for estimating purposes.

Classification: Unclassified

Sponsor: OSD(PA&E)
WSCAD/DCARC
Dr. Ron Lile
(703) 601-4850
Suite 220, CGN
Arlington, VA

Performer: IDA, Technomics, Tecolote
Jack Cloos (IDA), (703) 845-2506

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2002	\$1,800,000	
	2003	\$2,385,000	
	2004	\$2,000,000	
	2005	\$2,000,000	
	2006	\$2,000,000	

	2007	\$2,000,000
	2008	\$2,000,000
	2009	\$2,000,000
Schedule:	<u>Start</u>	<u>End</u>
	Oct 1996	Ongoing
Database:	Not applicable	
Publications:	Deliverable products will be the automated cost information management software, help desk support, classroom and computer-based training, web site interfaces, cost data availability assessments, briefing presentations and written analyses and recommendations, documents, and tools.	

PA&E-4

Title:	Global Defense Posture: Forward Operating Site/Cooperative Security Location Cost Model (CC-375K)
Summary:	This project will establish the capability to support the Secretary of Defense's Global Defense Posture initiative. The contract will study all U.S. worldwide main operating bases (MOBs), forward operating sites (FOSs) and cooperative security locations (CSLs) and then make recommendations on future MOB, FOS, and CSL sites and global basing strategies. The study will support the development of analytical decision support tools and graphic information systems to assist DoD leaders in determining political agreements and investment in support of the Global Defense Posture network. Continuing the contract will allow for the continued development of a user friendly database of FOS & CSL requirements, current infrastructure requirements; and gaps; improved costing modeling software to support planning and programming for FOS & CSL infrastructure requirements, based on the intended mission and units to be stationed at those installations. Our goal is to assess, analyze, and validate FOS and CSL infrastructure requirements, development, realignment, investment strategies, and operational capabilities in light of the Global War on Terror, recent contingency operations in Afghanistan and Iraq, over-arching capabilities such as air-lift, etc.; Establish a diverse network of relationships and capabilities better suited to contending with a dynamic and uncertain geo-political landscape; Enhance our ability to rapidly project power into new theaters in order to conduct more lengthy and expeditionary contingency operations; Strengthen the roles of our Allies and build new partnerships, which are affordable, sustainable, and relevant to the 21st century security landscape; Develop flexible and diverse networks of host-nation arrangements and infrastructure that will enable our forces to reach potential crisis spots quickly, and to sustain needed capability in key regions over time; and Prioritize and focus our capabilities both within and across regions so that we can better adapt to the increasing global challenges and prioritize our investment.
Classification:	Unclassified
Sponsor:	OSD(PA&E) FICAD LTC Chris Lover (703) 697-0221 The Pentagon, Room BE798 Washington, DC 20301
Co-Sponsors:	Policy, AT&L
Performer:	Commercial or Industrial Firms (e.g. SAIC or AT&T)

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2006	\$29,000	
	2007	\$30,000	
	2008	\$35,000	
	2009	\$35,000	
Schedule:	<u>Start</u>	<u>End</u>	
	Ongoing		
Database:	PLAN OF ACTION AND MILESTONES (POA&M): The contractor shall develop and submit a plan of action and milestones, which demonstrate how he will implement this contract. ANALYSIS OF EXISTING CONDITIONS, MISSIONS, CAPABILITIES, AND LAND USE: Develop a snap-shot in time of the existing CSL and FOS missions, capabilities, infrastructure, land, constraints, policies, host nation agreements, restrictions, etc. ANALYSIS, ALTERNATIVES, RECOMMENDATIONS, AND FUTURE REQUIREMENTS: Analyze existing conditions, missions, capabilities, and land use of CSLs and FOSs. DEVELOP FOS AND CSL TEMPLATE: Develop a standardized 'template' and/or model for FOSs and CSLs in efforts to better standardize FOS and CSL basic facility and general infrastructure requirements and shortfalls. REFINE AND EXPAND COMPUTER BASED COST MODEL: Refine and expand computer based FOS and CSL cost model to incorporate the information to be delivered in this master plan and further refine the costing data. This cost model provides a rough order of magnitude for the development of new FOSs and CSLs capabilities.		
Publications:	None		

PA&E-5

Title:	Depot Maintenance Requirement Metrics Study									
Summary:	The aim of this effort is to produce a suite of forecasting tools to determine how much O&M funding is reasonable to allocate for Depot Maintenance. Prior year efforts have produced a promising first-generation tool in developing leading indicator for out year projection for ground combat vehicles. The goal for the FY 2009 research advance the first-generation tool for estimating the need for depot maintenance funding, such that they are suitable for support senior leader resource allocation decision-making. Tools and techniques will be developed for analysis of budgeted and programmed O&M resources for depot maintenance. In this follow-on research, the study team will identify other factors likely to influence the need for O&M depot maintenance resources. The study team will identify these candidate factors through on-site visits with cognizant commands and headquarters staff elements. Once candidate factors have been identified, the team will conduct necessary statistical analyses to quantify the contributions of these factors and forecast the need for depot maintenance O&M funding.									
Classification:	Unclassified									
Sponsor:	OSD(PA&E) FICAD Dr. Chien Huo (703) 695-7710 The Pentagon, Room BE798 Washington, DC 20301									
Performer:	TBD									
Resources:	<table border="0"> <tr> <td><u>FY</u></td> <td><u>Dollars</u></td> <td><u>Staff-years</u></td> </tr> <tr> <td>2000</td> <td>\$230,000</td> <td></td> </tr> <tr> <td>2001</td> <td>\$200,000</td> <td></td> </tr> </table>	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>	2000	\$230,000		2001	\$200,000	
<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>								
2000	\$230,000									
2001	\$200,000									

2002	\$350,000
2003	\$150,000
2004	\$100,000
2005	\$185,000
2006	\$190,000
2007	\$200,000
2008	\$134,000
2009	\$283,200

Schedule: Start End
Ongoing

Database: The selected vendor will provide computer-based tools for independent review and analysis of O&M resources. These products are to be furnished in time for use in assessment of Program Review 2011, scheduled for fall 2010.

Publications: None

PA&E-6

Title: CLS and PBL Data Collection

Summary: Efforts previously performed by the government have transitioned to contractors in recent years, which can account for a significant portion of a program's cost. The Services have been forwarding Cost and Software Data Reporting (CSDR) Plans containing contractor logistics support (CLS) and Performance Based Logistics (PBL) efforts. The DCARC has not participated in developing the contract specific requirements because there is no standard. In order to better understand these costs for cost estimating purposes, these costs must be collected in a comprehensive and understandable format. The approach to collecting historical CLS cost data will be to integrate CLS data collection into the current Contractor Cost Data Reporting (CCDR) process. The contractor will identify additions/edits required in the training material needed to incorporate CLS data reporting, screen new MDAP contracts for CLS activities, coordinate CSDR planning to ensure CLS is covered, and verify/validate CLS reporting. The contractor will also coordinate with the current Collection of O&S Data from Contractor Weapon System Support Contracts cross cutting study by identifying additions/edits required in existing guidance (CSDR manual, DIDs, etc.) needed to incorporate CLS data collection and coordinating changes with government (CAIG, Service Cost Groups, SYSCOMs, etc.) and industry. This is a joint DCARC and FICAD project per direction of Dr Burke, 29 Aug 07.

Classification: Unclassified

Sponsor: OSD(PA&E)/RA

Performer: Commercial or Industrial Firms (e.g. SAIC or AT&T)

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2007	\$300,000	1.3
	2008	\$125,000	
	2009	\$200,000	

Schedule: Start End
Aug 2006 Ongoing

Database: None

Publications: New training material integrated into the existing CSDR classroom training package; CSDR plans reflecting CLS data collection requirements; Verification/Validation reports

reflecting CLS data reporting CLS data planning and collection requirements delivered to C/PET developer; and, Updated guidance reflecting the agreed upon approach to CLS cost data collection.

PA&E-7

Title: Resource Analysis Course for PA&E/Other Analysts

Summary: The goal of this project is to provide a 5 day course for newly assigned PA&E and CAIG analysts and selected resource and cost analysts from the OSD/Joint/MDA, Service staffs and Service Cost Agencies. Newly assigned PA&E, CAIG and other staff analysts often take 12-18 months before fully understanding how to prepare, coordinate and integrate a thorough program or cost analysis for key program events (e.g. Milestones A, B or C, DAE review, AoA, etc). In this 5-day course the analyst is exposed to, as a minimum, the following areas: PPBES, FYDP, requirements process, work breakdown structure(s), cost estimating relationships (CERs), learning curves, inflation indices, CSDR and FYDP databases, intricacies of DoD 5000 and CJCS 3170 guidance, Earned Value, Cost Performance Reports, schedule variance, beta/rayleigh distributions for schedule overruns, effectiveness analysis, and risk analysis. This course would ensure the PA&E, CAIG and staff analysts are exposed to the essentials of building a program assessment/cost estimate shortly after being assigned to their respective organizations. The training would be off-site, organized by the Institute for Defense Analysis (IDA) and approved by the PA&E Course Director. Classes would be taught by IDA personnel. Four courses will be taught in FY09.

Classification: Unclassified

Sponsor: OSD(PA&E)/RA
Ms. Bess Dopkeen
(703) 695-7282
The Pentagon, Room BE779
Washington, DC 20301

Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2002	\$100,000	
	2003	\$117,773	
	2004	\$ 75,000	
	2005	\$135,737	
	2006	\$155,000	
	2007	\$155,000	
	2008	\$155,000	
	2009	\$155,000	

Schedule: Start End
Jun 2002 Indefinite

Database: None

Deliverables: 5-day teaching sessions held at IDA facilities, course material and proposed draft updates to course material.

PA&E-8

Title: Revision of CAIG Policy, Procedure, and Processes

Summary: New and evolving principals such as faster fielding of technology to warfighters, evolutionary acquisition/spiral development, full funding, delegation of milestone decision authority, fund to the CAIG estimate, proper use of inflation indexes, and others will be incorporated into the existing set of cost directives, instructions, manuals and publications as well as associated and related acquisition and capabilities policy documents. Additional support from an FFRDC is required to assist in development and preparation of revised policy, procedures and operating processes (publications) for the DoD acquisition and cost estimating community. Integration of DoD Cost Analysis Research must be achieved. The goal is to provide assistance on initial and annual updates to CAIG and acquisition publications. Continual and planned updates to both the DoD 5000 (DoD Acquisition System) and CJCS 3170 (Joint Capabilities Integration and Development System) series has resulted in profound changes to the operations of the cost estimating community and the CAIG. The CRW provides sound integration and planning of DoD cost research activities among OSD, the military services, and the defense agencies sponsoring the efforts. The approach to this effort is to continue to fund IDA to assist with the development and preparation of revised CAIG policy, procedures and operating processes (publications). Conduct annual workshop for cost research. The Congressionally mandated cost research workshop will continue to be a one-day event. The workshop will develop a catalogue of research proposals. IDA will provide the expertise to support it, the neutral location it requires, the assurance that government-sensitive information will be safeguarded, and the necessary continuity of effort. This project comprises CAIG Policy, Procedures & Processes Updates and the annual Cost Research Workshop (funded in FY08 under a separate contract).

Classification: Unclassified

Sponsor: OSD(PA&E)
Dr. Ron Lile
(703) 601-4850
The Pentagon, Room BE779
Washington, DC 20301

Performer: IDA

Resources:

<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
2004	\$250,000	1.1
2005	\$300,000	1.3
2006	\$300,000	1.3
2007	\$300,000	1.3
2008	\$250,000	1.1
2009	\$200,000	

Schedule:

<u>Start</u>	<u>End</u>
Aug 2003	Ongoing

Database: None

Publications: Preparation and/or updates of directives, manuals, handbooks and guidebooks. Workshop proceedings and research catalogue available upon request.

PA&E-9

Title: Medical Cost Growth

Summary: IDA prepared medical costing models used by OSD staff. This work has been used by the Department in estimating the cost of non-Medicare eligible retirees. These estimates

have been used in program budget reviews when programming for rising health care costs that the Department incurs due to growth in private sector care costs. Work underway at IDA is developing a detailed costing model to project costs through the program under status quo and alternative benefit designs. Continuing this work will extend the model to include more of the DHP program and continue to improve the quality of the forecasts. Additional work required on this issue includes extending the IDA model to analyze the in-house (direct) care system, over-65 retirees, and active-duty members. The plan is to continue work with IDA and expand current model to include previously excluded beneficiary categories and venues of care.

Classification: Unclassified

Sponsor: OSD(PA&E)
EMAD
Mr. Michael Strobl
(703) 697-3202
The Pentagon, Room BE798
Washington, DC 20301

Performer: FFRDC-Nonprofit

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2005	\$466,000	
	2006	\$219,000	
	2007	\$400,000	
	2008	\$295,000	
	2009	\$295,000	

Schedule:	<u>Start</u>	<u>End</u>
	Feb 2006	Ongoing

Database: None

Publications: 1) Comprehensive, fully-integrated cost model, updated with FY07 data. 2) Cost projections to FY15, updated to FY07 baseline. 3) Excursion analyses on benefit reform proposals.

PA&E-10

Title: Commercial Pricing

Summary: The goal is to collect latest commercial pricing and concessions. Commercial aircraft and engines, procured by DoD on a price basis, are critical components of many current and planned major defense acquisition programs, including the KC-45, C-27, P-8, and C-5 RERP. The department does not typically have access to traditional cost data for these commercial systems, and price data tends to be limited and of uneven quality. The lack of quality data and algorithms creates a major challenge when estimating costs for programs that contain these commercial systems. The Department of Transportation's Bureau of Transportation Statistics (BTS) collects data from U.S. air carriers on the prices paid for commercial aircraft and engines. Previously, this data was available to the public after it became ten years old, but the DOT has recently ceased public access to the data, regardless of its age. It is anticipated that an agreement could be reached between OSD and DOT to allow release of the data to OSD. Work under this project will: 1) Collect data from the department of transportation, consulting firms and commercial databases for a wide range of commercial aircraft and engines. The data is expected to include aircraft as small as regional jets and turboprops, and as large as the Boeing 747. 2) Normalize the data for subcategories within each model type, engine type, engine thrust and other relevant features. The unusual nomenclature of the DOT data will demand

significant effort in this area. 3) Use the normalized data to create price estimating relationships, to evaluate the range of list price discounts offered, and to identify other trends and patterns that would aid the creation of useful price estimates.

Classification: Unclassified

Sponsor: OSD(PA&E)
WSCAD
Mr. Ed Kelly
The Pentagon, Room BE779
Washington, DC 20301

Performer: FFRDC-Nonprofit (e.g. IDA or CNA or RAND)

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2009	\$150,000	

Schedule:	<u>Start</u>	<u>End</u>
	Mar 2009	

Database:

Publications: A study report and briefing slides detailing results of research and econometric models for commercial aircraft. Briefing slides should summarize information collected from contractors and from PA&E in-house data sources. An automated database that is compatible with Excel. Complete software documentation and briefing slides detailing methodology programmed. Periodic updates are required.

PA&E-11

Title: Economic and Manpower Forecasting Models

Summary: Provides funding for: Defense Employment and Purchases Projection System (DEPPS) and Macroeconomic and Cost Data (from Global Insight, Inc.). DEPPS funding provides access to DEPPS model created and updated by INFORUM, data maintenance, and model documentation. Pays for subscriptions and gains access to macroeconomic models necessary to support DEPPS process and various defense studies. Macroeconomic and Cost Data funding pays for subscriptions and gains access to macroeconomic forecasts and full cost information service from Global Insight, Inc., to support various defense studies including Medical Readiness Review (MRR) and cost analyses for the CAIG. DEPPS saves an enormous amount of PA&E time answering questions by providing an employment and purchasing projection of the FYDP in an unclassified, cleared-for-public-release format that is divisible by state and industry. The annual report is furnished to each member of the Senate and to each member of the House Armed Services Committee. The report is also posted to a publicly accessible website and is used by academics, state governments, and industry associations. In addition, the effort includes the cost of essential data to support DEPPS. Macroeconomic and Cost Data: This data forecasts economic and cost growth by industry. These forecasts will provide better insights into anticipated effects on major weapon system acquisitions and are valuable to the CAIG and support PA&E's charter to advise the Secretary of Defense on the effects of defense spending on the U.S. economy. DEPPS: Using INFORUM's input/output models, (e.g., LIFT and Iliad), DoD's outlay and translator data are used to obtain purchases (direct and indirect) and employment by state and industry. This funding request includes subscriptions to INFORUM's models and their labor, and Global Insight's macroeconomic models, data, forecasts, and full cost information service.

Classification: Unclassified

Sponsor: OSD(PA&E)
EMAD
Dr. Soyong Chong
(703) 614-3840
The Pentagon, Room BE779
Washington, DC 20301

Performer: TBD

Resources: FY Dollars Staff-years
2008 \$205,000
2009 \$303,000

Schedule: Start End
Sep 2008

Database: DEPPS: Hard copies and electronic files containing projections of defense purchases and employment by industry and state. Periodic meetings and INFORUM's expertise required during the process. Macroeconomic and Cost Data: Hard copies and electronic files containing the forecasts periodically. Admissions to World and U.S. economic outlook conferences.

Publications:

PA&E-12

Title: Manpower Cost Modeling (CC-600K)

Summary: The Department is continually improving its analyses to support manpower management and workforce mix decisions. This model will provide a comprehensive and consistent method of estimating the full costs of manpower across the Department. Our goal is to continue to develop a web-based application that calculates the fully-burdened costs of civilian, military and contracted personnel, by grade and occupational specialty. This model, when completed, should be able to determine the fully-burdened costs of manpower at both a micro and macro level, and be used as a standard across the Department for manpower economic analyses. The manpower cost elements in this model include: short-term fixed costs, short-term variable costs, and the deferred pay-as-you-go costs. It should also recognize costs associated with manpower that are borne by the DoD and by non-DoD federal agencies. This approach can be used to inform decisions on DoD workforce mix issues, and other relevant studies where costs of manpower must be considered.

Classification: Unclassified

Co-Sponsor: OSD(P&R)

Sponsor: OSD(PA&E)
EMAD
LTC Fernando Huerta
(703) 692-8046
The Pentagon, Room BE779
Washington, DC 20301

Performer: TBD

Resources: FY Dollars Staff-years
2008 \$200,000
2009 \$200,000

Schedule: Start End
 Nov 2007

Database: Web-based software application that computes the fully-burdened cost of DoD manpower.

Publications: Instruction manual that describes the cost factors and data sources. Periodic tutorials to DoD cost analysts on how to use the model.

PA&E-13

Title: Infrastructure Analytical Services

Summary: The goal of this effort is to enhance FICAD's quantitative analytical capabilities with respect to the full range O&S activities, including infrastructure activities, facilities, and other support functions. FICAD routinely conducts a number of projects throughout the year that require quantitative analyses of large, complex programs related to Installations and Facilities. This includes analysis to support facilities metric development and refinements. It also includes work to establish and maintain strong linkages between data routinely collected in PPBE data systems such as PRCP and SDCS and the metrics in use and under development to assist senior management with resource allocation decisions. FICAD supports assessment of compliance with established DoD installations support metrics using the FDQAW. The contractor will maintain and enhance a repository of related data, normalizing and conducting verification and validation of the data where appropriate. The contractor will provide technical support to periodically update SAG and F&IC assignments. The contractor will maintain and adapt the overall repository design including database structures, relationships, standards, and naming conventions. The contractor will update and automate PPBE, investment, force and infrastructure, discretionary funding, and installations business rules. As directed by the task monitor, the contractor will check DPD warehouse displays to determine if they are produced as specified in the related business rules for creating the displays. The contractor will maintain and update the Facilities metric business rules used to support senior management's use of those metrics. The contractor will also administer the Facilities Data Quality Assurance Website.

Classification: Unclassified

Sponsor: OSD(PA&E)
 FICAD
 LTC Chris Lover
 (703) 697-0221
 The Pentagon, Room BE798
 Washington, DC 20301

Performer: Commercial or Industrial Firms (e.g. SAIC or AT&T)

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2008	\$100,000	
	2009	\$100,000	

Schedule: Start End
 Aug 2008

Database:

Publications: Periodic briefings, written business rules in hard copy for turning raw PPBE data into useful/functional aligned information, a written standard operating procedure for updating business rules and performing quality checks on displays posted at the DPD

warehouse, and various other products as directed by the task monitor. All written documents will be submitted in both hard copy and in an appropriate electronic media, such as MS Word files.

PA&E-14

Title: Base Realignment and Closure (BRAC) 2005 Joint Basing Implementation (CC-\$1,050K)

Summary: The Department currently allocates about \$20B in year to installations support and environmental services, but lacks Department-wide models and metrics to support the PPBES process. This effort provides the tools to support the implementation of joint basing by providing common output levels for installations services. This effort will apply previous Common Output Level Standards (COLS) and Common Delivery of Installation Support (CDIS) work using the 12 Joint Basing locations as pilot locations. It will provide senior leadership with guidance, models and metrics, and integration activities to enhance joint basing implementation and to make better-informed resource allocation decisions, as well as justify and defend the need for these resources to the Office of Management and Budget and the Congress. Joint Basing Implementation leverages previous Common Delivery of Installation Support (CDIS) and Common Output Level Standards (COLS) efforts. CDIS is an overarching framework that will create a common language for all Components and OSD to follow. In order to obtain an optimal result, COLS must be developed to provide a common framework for all DoD Components. This methodology will produce an end-state consolidation that reduces duplicity, provides efficient services, illustrates costs, and verifies performance to all the supported organizations.

Classification: Unclassified

Co-Sponsor: OUSD(I&E)

Sponsor: OSD(PA&E)
FICAD
LTC Chris Lover
(703) 697-0221
The Pentagon, Room BE798
Washington, DC 20301

Performer: Commercial or Industrial Firms (e.g. SAIC or AT&T)

Resources:

<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
2008	\$50,000 (PA&E share)	
2009	\$50,000 (PA&E share)	
2010		

Schedule:

<u>Start</u>	<u>End</u>
Sep 2008	

Database:

Publications: Facility Assessment Methodology; Recommendation for Optimal Delivery Method/Organization and manpower standards at 12 Joint Base sites; Cost Visibility/Transparency Framework; Installation Services Cost Model (ISM); Cost Factor Handbook for ISM; Revised DoD Instruction 4000.19, Interservice and Intergovernmental Support Agreement; Analysis of Existing COLS; DoD Manual for Installation Support Services Standards

PA&E-15

Title: Readiness Support: U.S. Forces and Weapon Systems Analysis

Summary: This effort will provide PA&E with U.S. force structure and weapons systems data and analytical tools to assist in analyzing these data. Specifically, the project operates and maintains PA&E's readiness models, program and force costing models, aging models, and associated databases. Continuing development and support of an integrated database and analysis toolkit. The toolkit is used extensively to extract readiness data from the Status of Resources and Training (SORTS) database and to conduct various resources to readiness analyses that enable PA&E Government analysts to assess the adequacy of resources programmed to meet defense readiness guidance. The contractor is also expected to monitor and gather data from the Defense Readiness Reporting System (DRRS), and the Services' readiness reporting systems. The contractor is expected to obtain data from the Forces Readiness and Manpower Information System (FORMIS) and to perform analyses to support PA&E action officers. This requires continuing maintenance in the form of monthly database updates using Service native data supplied by the Defense Manpower Data Center. The contractor must also demonstrate knowledge of historical DoD readiness trends, as well as the ability to carry out continued improvements in data manipulation and analysis capabilities. Additionally, the project requires extensive programmer support in order to create and/or improve modeling capabilities.

Classification: Unclassified

Sponsor: OSD(PA&E)
FICAD
CDR Kevin Byrne
(703) 692-8049
The Pentagon, Room BE798
Washington, DC 20301

Performer: Commercial or Industrial Firms (e.g. SAIC or AT&T)

Resources:

<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
2008	\$205,000	
2009	\$212,000	

Schedule:

<u>Start</u>	<u>End</u>
Apr 2008	

Database: This includes database updates, improved model and data manipulation tools, and data displays—including briefing materials.

Publications:

PA&E-16

Title: Space Industrial Base (SIB) Study

Summary: The goal of this effort is to improve data collection and estimating for Space programs. Space system cost estimates, subsequent fiscal budgets, and effective program execution are driven by reliable cost data and sound analytical tools and methods. Many Space programs are experiencing cost over runs and data collection on Space programs and sound analytical tools are in need of improvement. The planned approach is to develop an aerospace collection of manpower database information, use contractor manpower database support, automate visual displays of CPR & time-phased performance data,

develop an historical space software database, develop a space contract price database, develop enhanced analytical methods for CCDR validation, develop enhanced analytical methods for SRDR validation, collect and scan programmatic data into appropriate locations, and pull data book information into DCARC.

Classification: Unclassified

Sponsor: OSD (PA&E)
OAPPD
Mr. Steve Miller
(703) 697-5059
The Pentagon, Room BE829
Washington, DC 20301

Performer: Commercial or Industrial Firms (e.g. SAIC or AT&T)

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2009	\$4,000,000	

Schedule:	<u>Start</u>	<u>End</u>
	Feb 2009	

Database: Standardized Technical Metrics; Collection process; Historical Space Software Database

Publications:

Deputy Assistant Secretary of the Army for Cost and Economics (DASA-CE)

Name:	Deputy Assistant Secretary of the Army for Cost and Economics (DASA-CE)	
Address:	109 Army Pentagon, Rm. 3E352, Washington, DC 20310-0109	
Director:	Mr. Stephen T. Bagby, (703) 692-1722 DSN: 222-1722 FAX: (703) 614-2473	
Size:	Professional: 110	
	Support: 5	
Focus:	The focus of the Army's centrally funded Cost Research Program is to improve the capability of the Army to develop cost estimates and economic analyses. The main categories of concentration are: - Database and Cost Tools Development - Methodology Development - Costing the Effects of New Technology - Software Support Systems - PPBES Linkages - Total Life Cycle Costing - ARCENT Costing Support The areas we cover are: - Aircraft Systems - Missiles and Space Systems - Wheel and Tracked Vehicle Systems - Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C⁴ISR) Systems - Future Technology/Tools and Models - Forces and Unit Costing - Operating and Support Costing - Financial Management and Operations - Pre-Milestone A Costing - Cost & Performance Portal (CPP)	
Activity:	Number of projects in progress:	13
	Average duration of project:	11 months
	Number of Government personnel assigned to project:	.25

DASA-CE-1

Title:	Operating and Support Management Information System (OSMIS) Database Management
Summary:	OSMIS is a Management Information System designed to assist the Army in determining the historical operating and support costs of selected major fielded weapons systems through the production of cost data and cost factors based on actual usage data. The cost data generated from OSMIS is derived from existing Army Logistics Support Management Information Systems. Includes the development of the annual data

collection process, collection of data from LIF, PMR, ULLS and other sources, construction of the annual Materiel Systems Definition by system/Line Item Number, generation and validation of Weapon system to ammunition crosswalk tables, Unit tables and system asset tables, Cost Tables and OSMIS Cost Tables. This contract also develops O&S Cost Factors for the POM, BES and President's Budget, Aircraft reimbursement rates, Class II & IV Cost Factors and management reports on data collected. The OSMIS data is also widely used as a basis for estimating O&S costs in weapon system lifecycle cost estimates. OSMIS also contains information on consumables, depot level repairables (DLRs), training ammunition, OPTEMPO, densities, depot maintenance, and petroleum, oil and lubricants (POL).

Classification: Unclassified
Sponsor: DASA-CE
Performer: CALIBRE Systems
Resources: FY Dollars
 2009 \$4.5M
Schedule: Start End
 May 2009 Apr 2010
Database: OSMIS
Publications: U.S. Army Operating and Support Management Information System (OSMIS) online interactive relational database

DASA-CE-2

Title: ACEIT Enhancement, Help-Desk/Training, Consulting
Summary: Funding provides for annual-database maintenance, software maintenance, software modifications, on-demand telephonic helpdesk, e-mail technical support and training for the Automated Cost estimator Integrated Tools (ACEIT) software suite. ACEIT is the Army standard suite of analytical tools for developing cost models and life cycle cost estimates. ACEIT provides standard Work Breakdown Structures with approved definitions, standard algorithms, economic analysis functions, risk analysis, and the current inflation indices for Army-wide use. ACEIT links to the Automated Cost Data Base (ACDB) modules to provide rapid analysis and documentation of cost and technical data. Maintenance and enhancement of the ACEIT software suite is an annual recurring requirement.

Classification: Unclassified
Sponsor: DASA-CE
Performer: TBD.
Resources: FY Dollars
 2009 \$1.0M
Schedule: Start End
 Apr 2009 Mar 2010
Database: None
Publications: ACEIT Version 7.2, ACEIT Application Programming Interface (API) Document

DASA-CE-3

Title: Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C⁴ISR) Systems
Summary: Continue to develop and update a comprehensive command, control, communication, computer, intelligence, surveillance and reconnaissance (C4ISR) Automated Cost Data

Base (ACDB) Module by collecting additional cost, technical and program data, mapping it to the common WBS and entering it into the C4ISR database structure. Develop cost estimating relationships (CER) and cost-performance estimating relationships (CPER) from the C4ISR module database that will estimate state-of-the-art system technologies. Collect additional lower level cost data on C4ISR systems and components. Develop cost estimating relationships (CER) and cost-performance estimating relationships (CPER) from the lower level data.

Classification: Unclassified
Sponsor: DASA-CE
Performer: TBD
Resources: FY Dollars
 2009 \$0.5M
Schedule: Start End
 Jun 2009 May 2010
Database: ACDB database
Publications: Updated database on CD

DASA-CE-4

Title: Electronics Methodologies Development
Summary: The objective of this project is to collect data and develop cost estimating relationships (CER), cost-performance estimating relationships (CPER), factors and/or other costing methodologies for electronics components. Miniaturization of electronics components may cause a cost penalty. Existing methodologies, especially weight based CER/CPER typically do not account for the inverse relationship between size and cost when a vendor is trying to reduce the size of an existing component. In other cases miniaturization could result in reduced cost (e.g., reducing the number of printed circuit boards from 4 to 2). In the defense industry size and performance typically take precedent over cost however we still need to accurately estimate the increased costs. Also many defense programs are requiring contractors to push the state of the art versus using proven commercial off the shelf items. This effort is not focused on the new development but rather on repackaging or shrinking existing technology. In addition, there are usually second order impacts of miniaturization because the reduction in size of one component could cause issues on other components. At a minimum a program's testing costs could increase.

Classification: Unclassified
Sponsor: DASA-CE
Performer: TBD
Resources: FY Dollars
 2008 TBD
Schedule: Start End
 Sept 2008 Aug 2009
Database: None
Publications: CD containing methodology results and raw data

DASA-CE-5

Title: Tri-Service Missile and Smart Munitions Database
Summary: DASA-CE in conjunction with the Air Force and Navy Cost Communities has participated in the joint development and maturation of this Tri-Service database. Tasks that will be performed under this delivery order include additional data collection for the

Missile Module of the Automated Cost Data Base (ACDB), additional data collection to support the use of parametric models, continued expansion the ACDB with missile subsystem cost, technical and programmatic data, and providing training on the Missile Module of ACDB. There is one research effort that will be performed under this delivery order. Propulsion (Rocket Motor) cost performance estimating relationships (CPER) and/or cost estimating relationships (CER) will be developed that can provide rough order of magnitude estimates for various types of missiles and munitions.

Classification: Unclassified
Sponsor: DASA-CE
Performer: TBD.
Resources: FY Dollars
2008 \$0.8M
Schedule: Start End
July 2008 July 2009
Database: ACDB FoxPro database
Publications: Updated database on CD

DASA-CE-6

Title: Wheel and Tracked Vehicle (Manned and Robotic) Database and Methodology Development

Summary: Continue to develop and update a comprehensive Wheeled and Tracked Vehicle (WTV) Automated Cost Data Base (ACDB) by collecting additional cost, technical, performance and programmatic data mapping it to a common work breakdown structure (WBS) and entering it into the WTV ACDB. This delivery order will develop cost estimating relationships (CER) and cost-performance estimating relationships (CPER) that provide ODASA-CE support in the development of cost estimates and analyses of designated vehicle systems. This project also includes the following cost studies:

- System of Systems: Family of Vehicles
- Ground Vehicle Programs Requirements Growth Research
- Heavy Brigade Combat Teams (HBCT) Vehicle Modernization Cost-Benefit Analysis
- Unmanned Ground Vehicle (UGV) Cost Methodology Research
- Prototype Manufacturing/Recurring Manufacturing Cost Methodologies, Procurement Below-the-line Cost Methodologies, and Operating and Sustainment Cost Methodologies.
- Integration Readiness Level Development and Costing

Classification: Unclassified
Sponsor: DASA-CE
Performer: TBD
Resources: FY Dollars
2008 \$0.6M
Schedule: Start End
Sept 2008 Sept 2009
Database: ACDB FoxPro database
Publications: Updated database on CD, electronic documents

DASA-CE-7

Title: Aircraft Database Development

Summary: Continue data collection, normalization and input of new CCDB into the Aircraft ACDB. Collect aircraft subsystem cost, technical, and programmatic data. Perform thorough review of collected raw data in preparation for entry into the Aircraft Module ACDB. Finally, ensure the accuracy and display of all data entered into the ACDB. Collect sufficient data to allow use of a commercial parametric estimating model (e.g., PRICE-H). Review the technical and performance characteristics identified in previous UAV research efforts to determine characteristics that are commonly used when specifying UAV requirements that could be used as input parameters to estimate the costs of development and manufacturing costs of UAV components and/or systems. Determine the system-level and sub-system technical and performance characteristics that could be used as estimating relationship variables. Identify technical and performance characteristics that could be used as estimating relationship variables for command and control elements. Conduct review with Government technical representative within three months of contract award to obtain consensus on cost estimating parameters. The non-cost data collection will focus on these technical, performance or capability parameters. Collect cost, technical and performance data using a work breakdown structure (WBS) or a portion of the UAV WBS determined by contractor and Government technical representative. Contractor will propose WBS for data collection within four months of contract award. Government technical representatives will review proposed WBS and meet with contractor within two weeks of WBS receipt to finalize data collection elements. Identify specific systems and/or subsystems as candidate data points for inclusion in the study. The contractor shall provide interim data deliveries at the informal progress reviews.

Classification: Unclassified

Sponsor: DASA-CE

Performer: TBD

Resources:

<u>FY</u>	<u>Dollars</u>
2008	\$0.6M

Schedule:

<u>Start</u>	<u>End</u>
Sept 2008	Sept 2009

Database: ACDB FoxPro database

Publications: Updated database on CD

DASA-CE-8

Title: Standard Service Cost (SSC)

Summary: Develop Standard Service Costing (SSC) cost estimating relationships (CERs) for green, amber, red, and black quality standards pertinent to each installation as indicated in our most current Analysis Methodology Standard Operating Procedure. Use normalized quantitative data from Service Based Costing (SBC), qualitative data from the Installation Status Report (ISR), and other sources where applicable for fiscal years 2004, 2005 and 2006. Refine and build adjustment table for de-normalization as indicated in our most current De-normalization Methodology. Develop variable input tables for Base Operations Requirements Model (BRM) CER requirements and support validation process. Alternatives to this task may be considered and approved by DASA-CE's Technical Representative. Provide general cost estimating support and database management to include Performance Metric Warehouse (PMW), support to PPBES Processes for HQDA, ACSIM, IMCOM, and other cost estimating studies, models, and tools.

Classification: Unclassified
Sponsor: DASA-CE
Performer: TBD
Resources: FY Dollars
2009 TBD
Schedule: Start End
May 2009 Apr 2010
Database: IBM PC Compatible
Publications: None

DASA-CE-9

Title: Personnel Costing System
Summary: Personnel costing is a recurring annual requirement to support the Army PPBS process. Military and Civilian Pay and associated benefits consume a large component of the Army's budget. Two systems provide the tools for Army decision makers—Civilian Rate and Execution System (CRE) and the Army Military-Civilian Cost System (AMCOS). CRE provides the Army civilian pay rates based upon execution data as directed by OMB Circular A-11. Pay rates are changing from GS to NSPS. The pay rates are then used by G-1 (manpower), G-8 (programming), PEGS, and ABO (budget) to develop reports necessary in the PPBES process. AMCOS is an automated tool that helps users estimate the costs associated with personnel and personnel requirements for different grades and skills. AMCOS contains a comprehensive database of personnel-related cost factors for the Active, Reserve, and Civilian components. Applications of the tool include the life cycle cost estimation for weapon systems, evaluation of personnel policy decisions, assessments of Organizational alternatives, and other types of economic analyses.
Classification: Unclassified
Sponsor: DASA-CE
Performer: TBD
Resources: FY Dollars
2009 TBD
Schedule: Start End
May 2009 Apr 2010
Database: IBM PC Compatible
Publications: None

DASA-CE-10

Title: Software Database
Summary: Implement a purchase order contract specifically designed to meet the unmet operational needs of the Office of the Deputy Assistant Secretary of the Army for Cost & Economics (ODASA-CE) in the areas of Software Cost Data Collection and Software Metrics Data Base. "Software Cost Data" is defined as the raw data collected from completed software development and maintenance efforts. This software cost data is not limited to only costs, but will include data categories that are essential to better understand and estimate software cost, staffing & schedule concerns (i.e., hours worked, staffing levels, source line of code (SLOC) counts, schedule length, etc.). This raw data will be used to develop software metrics that will assist the Army in estimating reasonable and realistic software

program cost, staffing and schedule. A “Software Metric” is defined as a measurement of a software product at any stage of development (i.e., SLOC count or developmental hours) or a measurement of the software development process (i.e., overall productivity, SLOC growth, development schedule). Software metrics will be developed from the raw software cost data that is collected. The “Software Metrics Data Base” is where the software cost data will be stored and software metrics will be maintained and updated.

Classification: Unclassified
Sponsor: DASA-CE
Performer: TBD
Resources: FY Dollars Staff-years
2008 \$0.4M
Schedule: Start End
Sept 2008 Sept 2009
Database: Excel compatible
Publications: Updated database on CD, electronic documents

DASA-CE-11

Title: Joint Integrated Analysis Tool (JIAT)
Summary: The Joint Integrated Analysis Tool (JIAT) concept is an architecture that allows models in the functional areas of cost estimating, engineering design, requirements, capability, modeling and simulation, and performance analysis to be linked together. JIAT will provide web-based cost estimating capability to the acquisition and requirements and modeling and simulation communities. JIAT will include Office of the Deputy Assistant Secretary of the Army for Cost and Economics (ODASA-CE) databases, cost, engineering, and requirements modules and provide read access to cost and technical data in each commodity area: Missiles, Aircraft, Vehicles and Communications-Electronics Systems. The objective of the JIAT program is to allow cost and requirements analysts and engineers to develop cost estimates and perform cost-performance trades at the system level (future development at lower levels) with the limited amounts of data available early in a program’s lifecycle. The architecture will also allow analysts to perform Cost as an Independent Variable (CAIV) analysis and Capabilities Costing. JIAT will incorporate various Army analysis models, databases and commercial cost estimating products (SEER, PRICE, ACEIT, etc.) to perform trade-off analysis with optimal techniques. The JIAT system is a web-based client model and a client server model and its host server is at the Army Data Center – Fairfield (ADCF). The ADCF is in a joint development and maintenance agreement with the Army Business Transformation Office (DUSA-BT) for the purpose of expanding the Army Workload & Performance System (AWPS). The ADC will provide support to for JIAT’s Production version and will establish interfaces with OSMIS, AMCOS, FORCES and other .mil systems.

Classification: Unclassified
Sponsor: DASA-CE
Performer: Tecolote Research, Inc.
Resources: FY Dollars Staff-years
2008 \$0.8M
Schedule: Start End
Sept 2008 Sept 2009
Database: OSMIS, AMCOS, FORCES, and Capability-Based costing databases

Publications: Cost Estimating Standards, Beta Test Aug 2009

DASA-CE-12

Title: Cost and Performance Portal (CPP)

Summary: This effort maintains the technology of the Cost & Performance Portal (CPP) and continues to maintain existing products and to develop new products. The CPP is an Oracle based commercial off-the-shelf (COTS) suite of tools designed to promote an Army cost culture by linking Army cost and performance data for multiple functional areas to provide analytical reports for Army cost analysts, Army functional managers, and Army senior leaders. A major goal of the CPP is to add value to the Army by automating manual processes for collecting and analyzing data, and to provide transparent visibility of Army cost and performance information to the Army community. Some of the major product areas of the CPP include: Army Command Mid-Year review, OPTEMPO, IMCOM Services, IMCOM Common Level of Support (CLS) Support Service Programs (SSPs), and an MPA Forecasting Model.

Classification: Unclassified

Sponsor: DASA-CE

Performer: Northern Taiga Ventures, Inc.

Resources:

<u>FY</u>	<u>Dollars</u>
2008	\$1.0M

Schedule:

<u>Start</u>	<u>End</u>
Sep 2008	Sep 2009

Database: None

Publications: Brochure, <http://www.asafm.army.mil/ceac/cpp/cpp.asp>

DASA-CE-13

Title: Force and Contingency Cost Models Update

Summary: This effort is to provide required annual maintenance and updates of the FORCES suite of models. The Force and Organization Cost estimating System (FORCES) is an Army M&S Standard system. Currently over 1,600 customers use the FORCES suite of models worldwide for analyses ranging from Force activation, annual operating costs and movement of TO&E units, contingency deployment costing, as well as a myriad of end strength reduction and streamlining actions. G-8 PA&E, Army Budget, G-3 and other analysts throughout the Army and OSD rely on these models to provide timely and accurate cost analyses to the Army and Secretariat's Staffs, OSD and Congress.

Classification: Unclassified

Sponsor: DASA-CE

Performer: Management Analysis Incorporated

Resources:

	<u>FY</u>	<u>Dollars</u>
Option Year	2009	\$855,296
	2010	\$876,526
	2011	\$898,287
	2012	\$920,592

Schedule:

<u>Start</u>	<u>End</u>
May 2008	Ongoing

Database: IBM PC Compatible

Publications: None

Army Communications-Electronics Command (CECOM)

CECOM-1

Title: Cost Factors Study for the Relationship Between Hardware Costs for Production/Development for Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) Family of Equipment

Summary: The objective of this study was to develop reliable cost factors which could be used to estimate or determine the reasonableness of cost estimates in a Life Cycle Cost Estimate (LCCE).

Description: The CECOM LCMC G8, Cost Analysis Division analyzed cost data from the Army Cost Data Base (ACDB) to develop Cost Estimating Relationships (CERs) in order to estimate relationships between Hardware Costs for Production/Development and the related cost elements in an LCCE.

This study reviewed results gathered from completed contracts in order to estimate relationships between Hardware Costs for Production/Development. The Development Cost Elements included Systems Engineering, Systems Test & Evaluation (STE), Data, and Support Equipment. The Production Cost Elements were Systems Engineering, STE, Training, and Data. The results in this research effort are applicable only to the C4ISR Family of Equipment.

Classification: Unclassified

Sponsor: CECOM LCMC G8
Chief, Cost Analysis
Fort Monmouth, NJ

Performer: Mr. Paul Novick
Operations Research Analyst
HQ, USA ARMY CECOM LCMC G8
Fort Monmouth, NJ 07703
E: Mail: Paul.Novick@US.Army.Mil
DSN: 987-4552
Commercial: 732-437-4552

Resources:

<u>FY</u>	<u>Dollars</u>
2007	\$60,000
2008	\$12,000
2009	\$12,000

Schedule: Completed March 25, 2009

Database: Army Cost Data Base (ACDB)

Publications: Cost Factors Study for Life Cycle Cost Estimates, April 2009

Army Aviation and Missile Command (AMCOM)

Name:	Cost Analysis Division, Command Analysis Directorate (CAD), G-3 U.S. Army Aviation & Missile Life Cycle Management Command (AMCOM)		
Address:	AMSAM-OPS-CA-CA, Redstone Arsenal, Alabama 35898-5000		
Director:	Wayne S. Bruno, Director, Command Analysis (256) 842-2817, DSN 788-2817, Fax (256) 876-6351 wayne.bruno@us.army.mil		
Contact:	Claudia L. Rhen, Chief, Cost Analysis Division (256) 842-7843, DSN 788-7843, Fax (256) 876-6415 claudia.rhen@us.army.mil		
Size:	Professional:	58	
	Support:	6	
	Consultants:	N/A	
	Subcontractors:	N/A	
Focus:	Provide cost estimation and analysis support to Aviation, Missiles & Space Program Executive Offices and their Program/Project Offices, other PEO/PMO entities and AMCOM Life Cycle Management Command (LCMC) organizational elements. Manages the AMCOM Cost Analysis Program. Develop, update or obtain Cost Estimating Relationships (CERs), cost factors, and mathematical and computerized cost models for estimating purposes. Develop cost estimates to support Analyses of Alternatives (AoAs), tradeoff studies, and force structure estimates. Develop and prepare life cycle cost estimates, and conduct other related studies in support of weapon systems cost analysis. Perform cost risk analyses and cost risk assessments to support weapon systems program decisions. Provide validation/reviews for cost estimates, Economic Analyses, and Business Case Analyses (BCAs).		
Activity:	Number of projects in process:	38	
	Average duration of a project:	3–26 weeks	
	Average number of staff members assigned to project:	1–4	
	Average number of staff-years expended per project:	1	
	Percentage of effort conducted by consultants:	0%	
	Percentage of effort conducted by subcontractors:	0%	

Note: Major focuses are supporting PEOs/PMOs for upcoming Milestone Reviews and associated Acquisition activities. Command Analysis Directorate (CAD) is also actively engaged in Condition Based Maintenance (CBM) and Aviation RESET cost analysis and systems analysis efforts, along with Performance Based Logistics (PBL) Business Case Analyses (BCAs) and Supply Chain Management initiatives. No active internal cost research projects at this time. All cost research projects are funded through DASA-CE.

TACOM Life Cycle Management Command (LCMC)

Name:	U.S. Army TACOM Life Cycle Management Command (LCMC), Cost & Systems Analysis		
Address:	6501 E. 11 Mile Road, Warren, MI 49397-5000		
Director:	Richard S. Bazzzy		
Size:	Professional:	71	
	Support:	3	
	Consultants:	0	
	Subcontractors:	0	
Focus:	Responsible for preparation of program office estimates, life cycle cost estimates, economic analyses, and combat effectiveness modeling. Supports the development of combat and tactical vehicles.		
Activity:	Number of projects in process:	26	
	Average duration of a project:	3–20 weeks	
	Average number of staff members assigned to a project:	1–3	
	Average number of staff-years expended per project:	.5	
	Percentage of effort conducted by consultants:	0%	
	Percentage of effort conducted by subcontractors:	0%	

LCMC-1

Title:	Mine Resistant Ambush Protected (MRAP) Optimization Tool		
Summary:	The objective of this project is to develop a decision aid tool that utilizes user defined and weighted performance capabilities (e.g. mobility, survivability, etc.) to identify (by unique MRAP variant) the optimal fleet mix of MRAPs based on desired capabilities.		
Classification:	Unclassified		
Sponsor:	TACOM Cost & Systems Analysis		
Performer:	TACOM Cost & Systems Analysis		
Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2009	\$25,000	.25
Schedule:	<u>Start</u>	<u>End</u>	
	FY09	FY10	
Database:	None		
Publications:	None		

LCMC-2

Title: Impact of advanced armor on various phases of life cycle cost.

Summary: The objective of this project is to assess the elements of life cycle cost impacted by various advanced armor solutions early in the acquisition process.

Classification: Unclassified

Sponsor: TACOM Cost & Systems Analysis

Performer: TACOM Cost & Systems Analysis

Resources:

<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
2009	\$25,000	.25

Schedule:

<u>Start</u>	<u>End</u>
FY09	FY10

Database: None

Publications: None

Naval Center for Cost Analysis (NCCA)

Name:	Naval Center for Cost Analysis (NCCA)		
Address:	1000 Navy Pentagon Rm 4C449 Washington, DC 20350-1000		
Director:	Ms. Wendy Kunc (703) 692-4889		
Size:	Professional:	31 civilian, 1 military	
	Support	1 civilian	
	Consultants:	4	
	Subcontractors:		
Focus:	The Naval Center for Cost Analysis (NCCA) prepares independent cost estimates for DON ACAT 1C programs and for major automated information systems. NCCA also manages the DON VAMOSC Program and coordinates DON cost research. The focus of the NCCA cost research program is as follows: improved acquisition and operating and support (O&S) cost/technical databases (e.g., VAMOSC, ACDB, etc.); improved methods for estimating direct and indirect O&S costs; improved methods for estimating software development/maintenance costs; improved methods for estimating specific SDD/E&MD cost elements, e.g., non-recurring engineering, system integration, government in-house support, etc.; methods for estimating the cost impact of acquisition reform initiatives.		
Activity:	Number of projects in process:		9
	Average duration of a project:		
	Average number of staff members assigned to a project:	Program:	
	Average number of staff-years expended per project:	Program:	
	Percentage of effort conducted by consultants:		
	Percentage of effort conducted by subcontractors:		

NCCA-1

Title:	Operating and Support Cost Analysis Model (OSCAM-Naval Suite)
Summary:	These models were developed using a “system dynamics” approach. This approach provides a structured methodology for dealing with complex systems having many interacting components. A system dynamics approach enables us to capture the dynamic behavior of a system while allowing for a flexible design, which can be easily enhanced and expanded. The model suite provides the flexibility for fast, top-level cost estimating, as well as the framework for analyzing possible policy decisions and their impact on cost and availability. Model outputs include both cost and availability. The inclusion of availability data within the model is crucial because cost reduction policies need to be analyzed in conjunction with their impact on availability, and vice versa.
Classification:	Unclassified

Sponsor: Naval Center for Cost Analysis (NCCA)
1000 Navy Pentagon, Room 4C449
Washington, DC 20350-1000
Mr. Michael Carey, (703) 692-4901
Defence Equipment and Support DG Commercial - Supplier Engagement Team (SET)
MoD Abbey Wood
P.O. Box 702
Bristol BS12 7DU
UK
Mr. Sean O'Connor, UK, 011 44 07721 782231

Performer: NCCA in-house, NSWCD in-house, UK MoD in-house and HVR Consulting Services, Ltd
Mr. Michael Carey, NCCA, (703) 692-4901
Mr. Craig Clark, HVR CSL, 011 44 1252 395053
Ms. Mary M. Mertz, NSWCD, (301) 227-4012

Resources:

<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
1996	UK\$ only	1.0
1997	UK\$ only	1.5
1998	\$123,000 + UK\$	0.75
1999	\$125,000 + UK\$	0.5
2000	\$ 96,203 + UK\$	0.5
2001	\$100,000 + UK\$	0.5
2002	\$125,000 + UK\$	0.5
2003	\$135,000	0.5
2004	\$125,000	0.5
2005	\$125,000	0.5
2006	\$125,000	0.5
2007	\$211,000	0.7
2008	\$351,000	2.0
2009	\$286,000	1.5

Schedule:

<u>Start</u>	<u>End</u>	
Jan 1997	Nov 1997	Version 1 development
Dec 1997	Feb 1998	Version 2 development
Aug 1998	Apr 1999	Version 3 development
May 1999	Apr 2000	Version 4 development
Jun 2000	Sep 2001	Version 5 development
Dec 2001	Jul 2002	Version 6 development
Jun 2005	Jan 2006	Version 7 development
May 2007	Oct 2009	Version 8 development

Database: VAMOSCO/other cost data and technical data

Publications: Training information, model software, and supporting documentation available on website, www.oscamtools.com.

NCCA-2

Title: Aircraft Operating and Support Cost Analysis Model (OSCAM-Air)

Summary: This model was developed using a “system dynamics” approach. This approach provides a structured methodology for dealing with complex systems having many interacting components. A system dynamics approach enables us to capture the dynamic behavior of a system while allowing for a flexible design that can be easily enhanced and expanded. Many questions posed today (e.g., How can the Navy reduce operating and support costs while maintaining readiness?) cannot be addressed with existing tools. The model will provide the flexibility for fast, top-level cost estimating, as well as the framework for analyzing possible policy decisions and their impact on cost and availability. Model outputs will include both cost and availability. The inclusion of availability within the model is crucial because cost reduction policies need to be analyzed in conjunction with their impact on availability, and vice versa.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis (NCCA)
1000 Navy Pentagon, Room 4C449
Washington, DC 20350-1000
Mr. Michael Carey, (703) 692-4901

Performer: NCCA in-house and HVR Consulting Services, Ltd
Mr. Michael Carey, NCCA, (703) 692-4901
Mr. Craig Clark, HVR CSL, 011 44 1252 395053
Ms. Mary M. Mertz, NSWC-CD, (301) 227-4012

Resources: See OSCAM Naval Suite above

Schedule:

<u>Start</u>	<u>End</u>	
Apr 1999	Sep 1999	(Prototype development)
Oct 1999	Apr 2000	(Version 2 development)
Jun 2000	Sep 2001	(Continuing development)
Dec 2001	Nov 2002	(Version 3 development)
Mar 2003	Mar 2003	(Verification and Validation)
Sep 2003		(Version 3 Released)

Database: VAMOSC/other cost data and technical data

Publications: Training information and supporting documentation available on website, www.oscamtools.com.

NCCA-3

Title: Naval VAMOSC Management Information System

Summary: The Visibility and Management of Operating and Support Costs (VAMOSC) management information system displays Naval operating and support (O&S) costs and related information (e.g., operating hours or manning levels) for ships, shipboard systems, aircraft, weapons, and USMC ground systems. Depending on the specific commodity type and system, the VAMOSC Oracle relational databases contain up to 25 years of data presented by fiscal year by alternative hierarchical cost element structures. Depending on the cost element, data for a particular commodity are available not only at the system level, but also at the subsystem and component levels. Detailed ship, aviation, and USMC ground equipment maintenance data provide additional insight into Organizational, Intermediate, and Depot level maintenance man-hours and parts costs. Ship O&I level maintenance data are reported by ship and Equipment Identification Code, and ship public depot maintenance data are reported by ship and Expanded Ship Work Breakdown Structure. Aviation O&I maintenance data are reported by Type/Model/Series and Work Unit Code. USMC maintenance data are reported by Table of Authorized Material Control Numbers (TAMCNs). A five-year (FY99-03) improvement effort was completed that increased the breadth (i.e., weapon system and cost element coverage), depth (i.e., cost element visibility), timeliness, and accessibility of the VAMOSC database. A detailed manpower database containing military pay and attribute data was released during FY03. An infrastructure database, a DON civilian personnel database, and a ship depot availability database were released in 2008/09.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis (NCCA)
1000 Navy Pentagon, Room 4C449
Washington, DC 20350-1000
Mr. Michael Carey, (703) 692-4901

Performer: IBM Business Consulting
Mr. Michael Carey, Program Manager, (703) 692-4901
Mr. Don Clarke, IT Integration, (703) 692-4893
Mr. John Murray, Aviation Deputy PM (703) 692-4882
Mr. Thomas Demas, Ships Deputy PM (703) 692-4896
Ms. Alicia lankford, IBM Business Consulting, (212) 745-3743

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2000	\$2,800,000	5.0
	2001	\$2,035,000	5.0
	2002	\$2,615,000	5.0
	2003	\$2,700,000	2.5
	2004	\$2,400,000	2.5
	2005	\$2,400,000	2.5
	2006	\$2,400,000	3.5
	2007	\$3,208,000	2.5
	2008	\$4,013,000	2.5
	2009	\$3,072,000	3.5

Schedule: Start End
FY 1999 Continuing

Database: VAMOSC Ships, Shipboard Systems, Aviation, Weapons, USMC Ground Systems, Personnel

Publications: Data and supporting documentation accessible via www.navyvamosc.com and www.usmcvamosc.com

NCCA-4

Title: NCCA Online Document Library

Summary: The NCCA Online Document Library is currently comprised of over 13,000 cost estimating related documents. These documents are currently available in PDF format from the NCCA website. This allows the cost community to search for and find documents quickly from any location with Internet access. The documents are available for download to Government employees and FFRDCs directly from the website, while contractors can get the documents from their government sponsors. Additional documents have been identified to add to the library in the near future. An online document submission, review and approval process is being added to the website to allow representatives from around the cost community to insert and manage new documents remotely.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis (NCCA)
1000 Navy Pentagon, Room 4C449
Washington, DC 20350-1000
Mr. Don Clarke, (703) 692-4893

Performer: NCCA in-house
Perot Systems
Unisys Corporation

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2003	\$294K	0.1
	2004	\$125K	0.1
	2005	\$75K	0.1
	2007	\$136K	0.1
	2008	\$75K	0.1
	2009	\$30K	0.1

Schedule: Start End
Oct 1, 2003 Sep 30, 2009

Database: The Current Microsoft Access database contains information on over 13,000 documents in the NCCA library. This database is being converted to MS-Sequel Server architecture, and an on-line document submission system is being developed.

Publications: Information available online at <http://www.ncca.navy.mil/resources/library.cfm>

NCCA-5

Title: NCCA Software Development Estimating Handbook Update

Summary: This effort will update and enhance the existing NCCA *Software Development Estimating Handbook - Phase One* with new and updated weapon system information and methodologies. This first volume is expected to be posted to the NCCA web-site by 30 Sept 09. In addition to Volume I, this effort will add a second volume covering AIS programs. Volume II is expected to be posted to the NCCA web-site by 30 Sept 10.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis (NCCA)
1000 Navy Pentagon, 4C449
Washington, DC 20350-1000
Mr. Dave Cashin (703) 692-4891

Performers: Mr. John Moskowitz, NCCA
Mr. Steve Oxman, NCCA
Mr. Wilson Rosa, Air Force Cost Analysis Agency (AFCAA) (advisor/additional funding)
USAF Software Technology Support Center (STSC) (authors)

Resources:

	<u>FY05</u>	<u>FY06</u>	<u>FY07</u>	<u>FY08</u>	<u>FY09</u>	<u>FY10</u>
NCCA	\$240K	\$175K	\$90K	\$94K	\$ 97K	\$100K
AFCAA	\$125K	\$50K	\$63K			

Schedule: Start End
May 2005 Sept 2010

Database: Data collected and used for the handbook volumes

Publications: Two up-to-date volumes of the *Software Development Estimating Handbook* – one for weapon systems and one for AIS/ERP programs.

NCCA-6

Title: Aircraft / Ship / Weapons / Major System Acquisition Cost and Requirements Database

Summary: This research project is building a cost and technical and programmatic acquisition cost database. This project was started in FY04 by the Air Force Cost Analysis Agency (AFCAA). The Naval Center for Cost Analysis (NCCA) worked with AFCAA and Naval Air Systems Command and other USAF cost staff in building a Joint Cost Analysis Research and Database (JCARD) research project. NCCA has supported funding the NAVAIR Aircraft and aircraft systems and NAVSEA Ship/ship systems database projects since FY05. The JCARD funding covers civilian staff at Naval Air Systems Command. The Ship effort funds contractor support services.

Classification: Cost Data: Business Sensitive
Technical Characteristics: Business Sensitive

Sponsor: Naval Center for Cost Analysis (NCCA)
1000 Navy Pentagon, Rm 4C449
Washington, DC 20350-1000
Mr. Tom Burton, (703) 692-4887

Performer: Mr. Tom Burton, (703) 692-4887
Mr. Anil Dhawan, (703) 692-4895
Mr. Don Clarke, (703) 692-4893
Mr. Don Allen, NAVAIR 4.2
Ms. Saroja Raman, NAVAIR4.2

Resources: FY Dollars
 2005 350K
 2006 380K
 2007 400K
 2008 418K
 2009 0
 2010 447K

Schedule: Start End
 AIRCRAFT Apr 2005 TBD
 NAVSEA May 2005 TBD

Database: Development, Production cost, technical and programmatic data

Publications: N/A – This will be a controlled access database

NCCA-7

Title: Portfolio Analysis Pilot and Methods

Summary: NCCA developed methods for conducting portfolio analysis and tested them with a pilot portfolio analysis of mine countermeasure systems. These methods were then used successfully to assess and present the risk-reward implications for other special analyses and the on-going OSD joint capability portfolio test cases. NCCA will continue to refine the techniques in support of Navy and OSD portfolio initiatives.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis (NCCA)
 1000 Navy Pentagon, Rm 4C449
 Washington, DC 20350-1000
 ASN(FM&C)

Performer: Mr. Brian Flynn, NCCA
 Mr. Robert Hiram, NCCA, (703) 692-4898

Resources: FY Dollars Staff-years
 FY05 0 1
 FY06 0 1
 FY07 0 .3
 FY08-13 TBD TBD

Schedule: Start End
 March 2005 TBD

Database: Cost and effectiveness data for the mine countermeasure pilot

Publications: Briefings for DoD Cost Analysis Symposium, Professional Development Institute

NCCA-8

Title: NCCA Inflation Calculator (NIC) Enhancements

Summary: This effort surveys the needs for inflation calculation tools throughout the Navy cost community, and investigates the ways the NIC could be enhanced to better meet these needs. Enhancements that have wide applicability will be incorporated into the NIC. This project will also incorporate Army requirements that will result in a joint inflation calculator for use by Navy, Marine Corps and Army estimators.

Classification: Unclassified

Sponsor: NCCA

Performer: Robert Hiram NCCA (703) 692-4898
 Tom Tannery NCCA (703) 695-1989
 DASA-CE staff

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2008	0	.1
	2009	0	.2
	2010	0	.2
Schedule:	<u>Start</u>	<u>End</u>	
	March 2008	March 2011	
Database:	Inflation rate history		
Publications:	Updated inflation calculator at www.ncca.navy.mil/services/inflation.cfm		

NCCA-9

Title:	NATO Independent Cost Estimating and its Role in Capability Portfolio Analysis		
Summary:	The NATO Systems Analysis and Studies (SAS) Panel established a task group to demonstrate new methods and models for estimating for life-cycle cost and performing portfolio analysis and to identify best practices.		
	<u>Independent Cost Estimate</u>		
	The study task group has chosen the Rotterdam class ship for this effort. The group will generate an independent cost estimate based on existing guidelines. Risks and uncertainty will be analyzed, and costs generated over the life cycle. Finally, after the ICE is completed, the task group will obtain information on the actual cost of the weapon system under study. These actual costs might include those for development or first unit production. Differences between actuals and estimates will be tallied and analyzed.		
	The task group will also analyze the NATO Alliance Ground Surveillance (AGS) system, a program that is currently in development.		
	<u>Capability Portfolio Analysis</u>		
	Portfolio analysis is a promising method to improve defense business practices by analyzing a group of systems as a whole rather than focusing on acquisition programs one at a time. The task group will identify best practices among NATO and Partnership for Peace (PfP) nations in performing capability portfolio analysis, especially in respect of the life-cycle costing aspects of this approach. The ultimate goal of this work is to engender more informed resource allocation decisions early in the defence planning process, to better support the joint, coalition warfighter.		
Classification:	Various, see Publications below		
Sponsor:	NATO Systems Analysis and Studies (SAS) Panel		
Performer:	Team Leader: Dr. Brian Flynn (703) 692-4902, Lead nation: United States. To date, the following nations are willing to participate: Canada, Germany, Greece, Italy, Netherlands, Norway, Poland, Sweden, Switzerland, Turkey, United Kingdom, and United States. Other NATO and PfP nations are invited to join the group.		
Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2008-2011	NTE 15K euros	TBD
Schedule:	<u>Start</u>	<u>End</u>	
	June 2008	June 2011	
Database:	TBD		
Publications:	The end product will be at least one technical report which is “unclassified unlimited.” Some information to be used in the study may be classified up to “NATO/national restricted.” Provisions for use, handling, storage, and reporting of classified, business		

sensitive or company proprietary data may be required; however, information to be exchanged at the meetings of the group will be unclassified.

Naval Air Systems Command (NAVAIR)

Name:	Naval Air Systems Command Headquarters		
Address:	Cost Department (AIR-4.2), 47254 Davis Spur Rd., Patuxent River, MD 20670		
Director:	Dave Burgess (301) 757-7810 Web site: http://www.navair.navy.mil/air40/air42/		
Size:	Professional:		
	NAVAIR HQ	26	
	NAWC-AD-LAKE	22	
	NAWC-AD-PAX	207	
	NAWC-WD-CL	14	
Focus:	The Cost Department provides a wide variety of cost analysis products and services. The department's primary focus is to provide a clear and comprehensive understanding of life cycle cost and attendant uncertainties to be used in developing, acquiring, and supporting affordable Naval Aviation Systems. Besides life cycle cost estimates, the Cost Department provides source selection cost evaluation support, earned value management analysis, cost research, databases and various cost/benefit studies. The focus of NAVAIR cost research is: Total Ownership Cost initiatives; cost growth; modifications; cost/benefits; engineering investigations, and building comprehensive databases. Most projects are continuous efforts or they are updated annually.		
Activity:	Number of projects in process:	11	
	Average number of staff members assigned to a project:	1-2	
	Average number of staff-years expended per project:	1-2	
	Percentage of effort conducted by consultants:	1%	
	Percentage of effort conducted by subcontractors:	5%	

NAVAIR-1

Title:	Joint Cost Analysis Research & Database (JCARD) Web Information System (WIS)
Summary:	The JCARD WIS was established and is maintained as an official service by the JCARD Working Group (WG). The goal of the JCARD WG is to advance the capability, productivity and credibility of the DoD Cost Analysis Community through the sharing of resources, data, knowledge and expertise. The JCARD WIS is a relational database which houses validated cost, technical and programmatic data and information for Aircraft Systems, Propulsion Systems, Missile Systems and Avionics Systems. The goal is to integrate all standalone databases into this system and then build the system up using data from authoritative sources. In this way, redundancies between databases can be eliminated and duplication of effort in collecting and validating information can be reduced. The JCARD WIS is designed to be the single information bridge between cost analysts and the numerous Department of Defense (DoD) authoritative data sources for Unclassified/For Official Use Only (U/FOUO) cost, technical and programmatic data. The initial focus of the WG is in the area of weapon systems/subsystems acquisition cost analysis, both development and production. During FY05 and FY06, efforts were focused on establishing the JCARD WIS and a Fixed Wing Aircraft data module which included

CCDR cost data and aircraft weight data. During FY07, the HAPCA (Historical Aircraft Procurement Cost Archive) Database was transitioned to the Fixed Wing Aircraft data module section of JCARD. In this process, the HAPCA Database which was a standalone ACCESS Database and included expenditure cost data as well as technical and programmatic data was taken apart. The expenditure cost portion of HAPCA was integrated directly into JCARD. The technical and programmatic sections were researched and cross checked against other sources for validity. The research and cross checks revealed redundant data which was not migrated over to JCARD. Also in FY07, the Fixed Wing Data Module was populated with additional aircraft technical data. During FY08, a NAVAIR standalone excel based propulsion database was integrated into the JCARD WIS and a separate Propulsion data module was established. In addition, the Fixed Wing Aircraft data module was populated with more cost, technical and programmatic information. During FY10 plans include expanding the system to incorporate missile and avionics data. The vision of the JCARD WG is to have the JCARD WIS be the one stop shop for DoD cost analysts to store, retrieve, and share cost, technical and programmatic information required to conduct official business for the Department of Defense.

Classification: Business Sensitive, Contractor Proprietary

Sponsor: JCARD Working Group

NAVAIR	AFCAA
47254 Davis Spur Rd.,	201 12th Street, Suite 403
Patuxent River, MD 20670	Arlington, VA 22202
Naval Center for Cost Analysis (NCCA)	ASC/FMC
1000 Navy Pentagon	Building 14, Room 126
4C449, FMB-6	1865 4th Street
Washington, DC 20350-1000	Wright Patterson Air Force Base OH, 45433-7123

Performer: AIR-4.2, NCCA, AFCAA, and ASC

Resources:

<u>FY</u>	<u>Dollars</u>
2005	\$673,000
2006	\$693,000
2007	\$605,000
2008	\$640,000
2009	\$530,000
2010	TBD

Schedule:

<u>Start</u>	<u>End</u>
Jan 2005	TBD

Database: *Description:* Cost, technical, and programmatic data for historical fixed wing aircraft
Automation: Cold Fusion Web Based System, SQL Server Database

Publication: Not applicable controlled access, Web Based System and Database

NAVAIR-2

Title: HAPCA (Historical Aircraft Procurement Cost Archive) Database

Summary: This database has transitioned over to the JCARD Web Information System and is being updated and maintained by the JCARD WG.

NAVAIR-3

Title: Overhead Rate Study

Summary: Study the impact to NAVAIR programs as a result of change in overhead costs as provided in forward pricing rate agreements (FPRA's) or forward pricing rate proposals (FPRP's). Create a database then generate a relationship between Navy program cost,

overhead change and cost factors of the FPRA or FPRP. The initial study will focus on the top NAVAIR contractors (Boeing, Lockheed, United Technologies, GE A/C Engines, Northrop Grumman, Raytheon and Bell Boeing JPO) who capture 70% of the NAVAIR TOA. The re-establishment of the DoD form 1921-3 (currently named Contractor Business Data Report) will greatly enhance this study once data is available.

Classification: Business Sensitive, Contractor Proprietary

Sponsor: NAVAIR 4.2
47254 Davis Spur Rd.
Patuxent River, MD 20670

Performer: NAVAIR 4.2

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2004	\$156,000	1
	2005	\$328,000	2
	2006	\$88,000	0.5
	2007	\$36,000	0.2
	2008	\$38,000	0.2
	2009	\$39,000	0.2
	2010	\$39,000	0.2

Schedule:	<u>Start</u>	<u>End</u>
	Mar 2004	TBD

Database: Contractor Overhead Labor Rates

Description: Cost data

Automation: Microsoft Excel

Publication: Not applicable controlled access database and Cost Estimating Relationships (CERs)

NAVAIR-4

Title: Hourly Labor Wrap Rates Database

Summary: The Hourly Labor Wrap Rates Database is composed of selected NAVAIR contractors. It is based on the latest Forward Pricing Rate Agreement/Proposals (FPRA/FPRP), audited by Defense Contract Audit Agency (DCAA) at the specific contractor plant site. The data is constantly being updated when changes are obtained. Since there are over 109 company sites that NAVAIR does business, some NAVAIR contractor sites have not been populated at this time. Currently the database is composed of 74 companies at 154 locations. The priority has been to obtain the FRPA from the largest dollar volume contractor sites. The method used to calculate the wrap rate has been reviewed and approved by DCAA before being entered. The database is stored in excel format with documentation to make it easy for 4.2 use. Future plans are to continue the population of labor rate data and to evolve the excel spreadsheets into a database. A thorough investigation will be conducted to determine the feasibility of incorporating the Labor Wrap Rate database within the JCARD Web Information System.

Classification: Business Sensitive, Contractor Proprietary

Sponsor: NAVAIR 4.2
47254 Davis Spur Rd.
Patuxent River, MD 20670

Performer: NAVAIR 4.2

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2004	\$78,000	0.5
	2005	\$82,000	0.5
	2006	\$88,000	0.5
	2007	\$91,500	0.5

	2008	\$94,000	0.5
	2009	\$97,000	0.5
	2010	\$97,000	0.5

Schedule: Start End
Mar 2004 TBD

Database: Controlled access Contractor Labor Wrap Rates
Description: Cost data
Automation: Microsoft Excel

Publication: Not applicable controlled access database

NAVAIR-5

Title: HASP (Historical Aviation Schedule Performance) Database

Summary: A database has been developed by the NAVAIR cost department to support research into improving the planning and execution of development programs. The database covers key milestones for DoD aircraft and missile programs and compares the plans at Milestone B with the actual event dates. This database also contains a comprehensive history of fixed wing and rotary aircraft programs from the 1960s to the present day. It builds on previous work by Rand, GAO and others, but adds to the scope. Future plans are to incorporate the HASP database within the JCARD Web Information System and to conduct cost correlation studies.

Classification: Unclassified

Sponsor: NAVAIR 4.2
47254 Davis Spur Rd.,
Patuxent River, MD 20670

Performer: NAVAIR 4.2

Resources: FY Dollars Staff-years
2007 \$35,000 0.2
2008 \$38,000 0.2
2009 \$40,000 0.2
2010 \$40,000 0.2

Schedule: Start End
Sep 2007 TBD

Database: Controlled access historical schedule performance
Description: Actual and planned data for DoD aircraft and missiles
Automation: TBD

Publication: Not applicable controlled access database

NAVAIR-6

Title: Repairable and Consumable Material Cost Growth Analyses

Summary: Using price and demand data from various sources, e.g., NAVICP Demand Files, Navy VAMOSC, NAVAIR NALDA, DLIS, investigate multi-dimensional factors which can explain recurring cost growth over time which exceeds normal inflation standards. This includes the impact of new items entering the inventory, obsolescence, raw material commodity cost growth, and labor cost growth. Analysis deals with mid to long-term analyses (5–15 years) as a means to eliminate short-term fluctuations and consider life cycle effects for system, sub-system level support.

Classification: Unclassified

Sponsor: NAVAIR 4.2
47254 Davis Spur Rd.
Patuxent River, MD 20670

Performer: NAVAIR 4.2

Resources:

<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
2004	\$78,000	0.5
2005	\$82,000	0.5
2006	\$88,000	0.5
2007	\$91,500	0.5
2008	\$94,000	0.5
2009	\$97,000	0.5
2010	TBD	

Schedule:

<u>Start</u>	<u>End</u>
Jan 2002	TBD

Database:

Title: AVDLR and AFM Cost Growth

Description: Flying Hour Program Cost Analysis

Automation: Microsoft Access, Microsoft Excel

Publication: Not applicable controlled access database

NAVAIR-7

Title: Recurring Cost to Train Aircraft Squadron Personnel

Summary: Using Naval Education and Training data, develop the annual cost of classroom and formal course training to maintain squadron operational readiness. By considering the courses completed by personnel within one year of reporting for duty, through repeated sampling, an estimate can be made of the annual cost to train the normal turnover of personnel in a squadron.

Classification: Unclassified

Sponsor: NAVAIR 4.2
47254 Davis Spur Rd.
Patuxent River, MD 20670

Performer: NAVAIR 4.2

Resources:

<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
2004	\$78,000	0.5
2005	\$82,000	0.5
2006	\$88,000	0.5
2007	\$91,500	0.5
2008	\$94,000	0.5
2009	\$97,000	0.5
2010	\$97,000	0.5

Schedule:

<u>Start</u>	<u>End</u>
Jan 2002	TBD

Database:

Title: Annual Squadron Cost of Training

Description: Develop Annualized Recurring Cost of School House Training

Automation: Microsoft Access, Microsoft Excel

Publication: Not applicable controlled access database

NAVAIR-8

Title: Representative Squadron Operating and Support Cost for Various T/M/S Aircraft

Summary: Annually conduct data collection and analysis of Operating and Support data to estimate the annual cost to operate and deploy various T/M/S operational aircraft squadrons. These analyses require collecting data from multiple sources and merging the information into a single Excel workbook as a means to use consistent methodology for each T/M/S.

Classification: Unclassified

Sponsor: NAVAIR 4.2
47254 Davis Spur Rd.
Patuxent River, MD 20670

Performer: NAVAIR 4.2

Resources:

<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
2004	\$78,000	0.5
2005	\$82,000	0.5
2006	\$88,000	0.5
2007	\$91,500	0.5
2008	\$94,000	0.5
2009	\$97,000	0.5
2010	\$97,000	0.5

Schedule:

<u>Start</u>	<u>End</u>
Jan 2002	TBD

Database:

Title: Annual TMS Squadron Cost Analysis

Description: Develop Annual Operating and Support Cost for Deployable Aircraft Squadrons

Automation: Microsoft Access, Microsoft Excel, Microsoft Word

Publication: Not applicable controlled access database

NAVAIR-9

Title: Performance Based Logistics (PBL)

Summary: Department of the Navy (DoN) guidance and responsibilities for implementation of Performance Based Logistics (PBL) require use of Business Case Analysis (BCA) to support individual PBL decisions. This guide provides amplifying guidance and information for NAVAIR Program Managers and cost analysts in the development of PBL BCAs. Completion of a Business Case Analysis Cost Estimate and documentation in a consistent, repeatable format is required. A PBL Strategy is an agreement in which the logistics support provider (organic, commercial, and/or public/private partnership) is responsible for meeting result-oriented performance requirements in order to improve product support effectiveness while containing or reducing Total Ownership Cost (TOC). A critical task within a PBL BCA is defining the specific approach being taken to meet overall program objectives. From various Office of the Secretary of Defense (OSD) and DoN PBL policy statements it is clear that the overall objectives of PBL are to optimize weapon system support in a manner that will provide a cost effective process while maximizing operational effectiveness. A key part of an effective PBL approach involves establishing clear requirements and associated metrics that can be tracked over time.

Classification: Unclassified

Sponsor: NAVAIR 4.2
47254 Davis Spur Rd.
Patuxent River, MD 20670

Performer: NAVAIR 4.2

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2005	\$170,000	1
	2006	\$176,000	1
	2007	\$182,000	1
	2008	\$188,000	1
	2009	\$192,000	1
	2010	\$192,000	1
Schedule:	<u>Start</u>	<u>End</u>	
	Jan 2005	TBD	
Database:	Business Case Analysis Template		
	<i>Description:</i>	BCA Template	
	<i>Automation:</i>	MICROSOFT Excel	
Publication:	NAVAIR Knowledge Management System (KMS) Performance Based Logistics (PBL) Community of Practice (CoP) http://www.navair.navy.mil/kms		

NAVAIR-10

Title: Software Data Consolidation and Analysis

Summary: This is an internal effort to take all of the Software Resource Data Reports posted on the DCARC system and put them into an Excel spreadsheet allowing for various types of analysis to be performed on the data. This includes sizing databases, productivity by commodity and company, and schedule analysis. Information is posted to a DCARC E-room allowing the DOD cost community a forum for getting the data and posting of analysis done.

Classification: Unclassified

Sponsor: NAVAIR 4.2
47254 Davis Spur Rd.
Patuxent River, MD 20670

Performer: Naval Air Systems Command

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2007	\$38,000	0.2
	2008	\$39,000	0.2
	2009	\$42,000	0.2
	2010	\$42,000	0.2

Schedule: Start End

This is a continuous process with a plan to post updates to the dataset every 6 to 8 weeks as new information is turned in by contractors

Database: *Title:* DOD Software Database Compilation
Description: Consolidated Excel file of SRDR data submittals
Automation: Excel file available to government cost analysts

Publications: None planned. Information is posted to a government only e-room hosted by DCARC

NAVAIR-11

Title: Naval Aviation Propulsion Cost Analysis of Type/Model/Series Engines

Summary: In support of NAVAIR AIR 4.4 Propulsion and Power, AIR 4.2.2 is developing cost analyses of selected Type/Model/Series Engines. The process is combining maintenance and material cost at all levels of repair to provide a comprehensive set of data to measure the effectiveness of propulsion systems. The analysis provides cost information down to individual serial numbered engines, but is structured to provide cost information across

the entire population of engines. This effort is a combined effort of the cost and propulsion competencies.

Classification: Unclassified

Sponsor: NAVAIR 4.2
47254 Davis Spur Rd.
Patuxent River, MD 20670

Performer: Naval Air Systems Command

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2008		About 1
	2009		About 1
	2010		About 1

Schedule: Start End
This is a continuous process with a plan to updates cost analyses annually.

Database: *Title:* Propulsion and Power Cost Metrics
Description: Propulsion and Power Cost and Performance Data to Provide Cost Metrics
Automation: Excel file available to government cost analysts

Publications: None planned. Information is provided to AIR 4.4.7 and available for program analysts

NAVAIR-12

Title: Industry Insight

Summary: Annually conduct data collection and analysis of financial and contract cost and schedule performance for select contractors doing business with NAVAIR. This product serves to demonstrate at an industry-wide level where the divergent centers of gravity exist between the industrial base and the warfighter and provides a government perspective on industry's activities utilizing taxpayer monies. These analyses require collecting data from multiple sources including Contractor Performance Reports and open source intelligence such as company SEC filings.

Classification: Business Sensitive, Contractor Proprietary

Sponsor: NAVAIR 4.2
47254 Davis Spur Rd.
Patuxent River, MD 20670

Performer: NAVAIR 4.2

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2009		About 1
	2010		1.5

Schedule: Start End
This is a continuous process with a plan to update the Industry Insight document annually.

Database: *Title:* Naval Aviation Industry Insight
Description: Financial and Contractor Performance Data and Analysis for NAVAIR's Prime Contractors
Automation: Microsoft Excel and Power Point

Publications: Naval Aviation Industry Insight (hardcopies available upon request)

Naval Sea Systems Command (NAVSEA)

Name:	Cost Engineering and Industrial Analysis Group, Naval Sea Systems Command (SEA 05C)		
Address:	1333 Isaac Hull Ave., SE, Washington Navy Yard, DC 20376-1340		
Director:	Nidak Sumrean, (202) 781-3875		
Size:	Professional:	65	
	Support:	2	
	Consultants:	0	
	Subcontractors:	9 collocated or 30 total	
Focus:	O&S Cost Estimating; Total Ownership Cost Estimating; Commonality and Standardization of Ship Design and Construction Processes and of Ship Components or Sub-assemblies (impact on acquisition and O&S costs); Build Strategy Impact on Ship Costs; Ship Design Trade-Off Analysis Tools; Ship and Weapon System Cost Modeling; Performance Based Cost Model - Submarines		
Activity:	Number of projects in process:	3	
	Average duration of a project:	~1.3 years	
	Average number of staff members assigned to a project:	~1	
	Average number of staff-years expended per project:	2/3	
	Percentage of effort conducted by consultants:	0%	
	Percentage of effort conducted by subcontractors:	90%	

NAVSEA-1

Title:	Material Vendor Survey		
Summary:	The objective of this annual survey is to capture future price trends and last year's actual price change for material used in Navy ship construction. The survey samples over 900 shipboard material and equipment suppliers and requests their price changes for the current year and their projections of future price changes for the next five years. The results are grouped according to Ship Work Breakdown Structure (SWBS) Cost Groups 1-9, and indices are calculated.		
Classification:	Unclassified		
Sponsor:	NAVSEA (SEA 05C) 1333 Isaac Hull Ave, SE Washington Navy Yard, DC 20376-1340 Lisa Pfeiffer, (202) 781-2766; DSN: 326-2766, lisa.pfeiffer@navy.mil		
Performer:	Naval Shipyard Norfolk Detachment NAVSEA Shipbuilding Support Office 3751 Island Ave, 3rd Floor Philadelphia, PA 19153 James Gresh, (215) 365-5767, ext. 218		
Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	Each year	\$125,000	

Schedule: Start End
 Oct each year Sep each year

Database: End use is MATCER Data File update. Backup data is maintained at NAVSHIPSO.

Publications: None

NAVSEA-2

Title: NAVSEA Common Cost Model (NCCM) – Ships

Summary: The objective of the NAVSEA Common Cost Model is to consolidate and standardize NAVSEA ship cost estimating tools/models. The common model will provide flexibility to capture unique characteristics of specific programs while retaining a common, configuration controlled structure to provide greater consistency across NAVSEA cost estimates. The model will provide standardized outputs to support both analysis and presentation of cost estimates to customers and Navy leadership. NCCM will be a web-based application that is Navy-Marine Corps Intranet (NMCI) and Section 508 compliant.

Classification: Unclassified

Sponsor: Department of the Navy
 Naval Sea Systems Command (SEA 05C)
 1333 Isaac Hull Ave., SE
 Washington Navy Yard, DC 20376
 Hershel Young, 202-781-0961, DSN 326-0961, hershel.young@navy.mil

Performer: Naval Sea System Command
 Cost Engineering and Industrial Analysis Division (SEA 05C)
 1333 Isaac Hull Ave., SE
 Washington Navy Yard, DC 20376

 Computer Sciences Corp.
 1201 M Street, SE Suite 400
 Washington, DC 22203

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2005	\$552,000	0.5 man-year
	2007	\$400,000	0.5 man-year
	2008	\$100,000	0.5 man-year
	2009	\$60,000	0.3 man-year

Schedule: Start End
 Jul 2005 Sep 2009

Database: None

Publications: None

NAVSEA-3

Title: NAVSEA 05C Cost Information Management System (IMS)

Summary: The SEA 05C Cost IMS provides a centralized repository for cost information to support the SEA 05C cost engineers, as well as the Navy Cost Community, in their development of ship platform and combat systems cost estimates for NAVSEA Program Managers. The system will be divided into multiple categories: ship, combat systems, and industrial base. The system will contain historical information related to ships, shipbuilding and combat systems, including financial data (budgets, bid cost, actual cost data,

GFE/Mission system cost, software cost), technical (production and engineering hours, weights, characteristics), contract information, industrial/economic (ship employment, inflation) and programmatic information (shipbuilding progress/schedules). All data stored in the system will be unclassified.

Classification: Unclassified

Sponsor: Department of the Navy
 Naval Sea Systems Command (SEA 05C)
 1333 Isaac Hull Ave, SE
 Washington Navy Yard, DC 20376-1340
 Jerome Acks, 202-781-2678, DSN 326-2678, jerome.acks@navy.mil

Performer: Naval Sea System Command
 Cost Engineering and Industrial Analysis Division (SEA 05C)
 1333 Isaac Hull Ave., SE
 Washington Navy Yard, DC 20376

Computer Sciences Corp.
 1201 M Street, SE, Suite 400
 Washington, DC 22203

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2005	\$400,000 (Ship Module)	.75 man-year
	2006	\$336,000 (\$140K Ship, \$196K CS)	.75 man-year
	2007	\$590,000 (\$290K Ship, \$300K CS)	1.5 man-year
	2008	\$560,000 (\$560K CS)	1.5 man-year
	2009	\$475,000 (\$475K CS)	1.0 man-year

Schedule:	<u>Start</u>	<u>End</u>
	Aug 2005	Sep 2009 CS Module

Database: MS SQL 2005

Publications: N/A

Naval Surface Warfare Center, Dahlgren Division (NSWCDD)

Name:	Cost Analysis Group Warfare Analysis Branch, Code W11 Requirements Analysis and Advanced Concepts Division, Code W10 Warfare Systems Department, Code W Naval Surface Warfare Center, Dahlgren Division (NSWCDD)
Address:	19008 Wayside Drive, Suite 2009 Dahlgren, VA 22448-5162
Director:	Linda Brown (Group Lead)
Size:	Professional: 14 Support: 0 Consultants: 0 Subcontractors: Tecolote
Focus:	The Cost Analysis Group resides within the Warfare Analysis Branch of the Requirements Analysis and Advanced Concepts Division of the Warfare Systems Department at the Naval Surface Warfare Center, Dahlgren Division (NSWCDD). The Cost Analysis Group produces cost estimates, cost-risk assessments, and affordability analysis for Combat Systems. The Group also develops cost-estimating methodology in support of systems development and production, analyses of alternatives, and strategic planning. Particular areas of expertise include model development and maintenance, cost-research databases, technology assessments, life cycle cost estimates, budget and force-level analyses, performance-based cost models, product-oriented cost models, proposal evaluation, and source selection reviews.
Activity:	None.

Air Force Cost Analysis Agency (AFCAA)

Name:	Air Force Cost Analysis Agency		
Address:	201 12th Street, South, Suite 403, Arlington, VA 22202-4306		
Director:	Mr. Richard Hartley, (703) 697-5311 Mr. Jay Jordan, Technical Director, (703) 604-0400 Ms. Deborah Cann, Research Chief, (703) 604-0402		
Size:	Professional:	108 (authorized); 95 (assigned)	
	Support:	13	
Focus:	The Air Force Cost Analysis Agency supports the Air Force by providing thorough, effective independent cost analyses and special studies in support of weapon system programs. We provide quality analyses through research to develop superior analytical tools, models and databases.		
Activity:	Number of projects in process:		19
	Average duration of a project:		1 year

AFCAA-1

Title:	Joint Cost Analysis Research Database (JCARD)
Summary:	The objective of the JCARD (Joint Cost Analysis and Research Database) effort is to develop a Joint Web Information System with the objective of being the single information bridge between cost analysts and the DoD authoritative sources for Unclassified/For Official Use Only (U/FOUO) cost, technical and programmatic data. The effort to date has included AFCAA, NCCA, and NAVAIR with some participation from the OSD CAIG. Early efforts focused on identifying the appropriate programming application and database structure. In FY06, F22 and F18EF CCDR and weight data were incorporated into the system. In FY07, the USN HAPCA database was added along with weight data from ~55 USN aircraft. In FY08 a propulsion database was incorporated along with technical and programmatic data for a number of aircraft. In FY09, additional CCDR data is being added (E-2C and V-22), the MACDAR database is being incorporated, and additional technical/programmatic data is being added. We expect to continue working/funding this joint effort with the Navy into the foreseeable future.
Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency, Research & Resource Management Division Mr. Scott Adamson E-mail: Scott.Adamson@pentagon.af.mil 201 12th Street, Suite 403 Arlington, VA 22202
Performer:	Government, NAVAIR, NCCA

Resources:	<u>FY</u>	<u>Dollars</u>
	05	\$129,000
	06	\$129,000
	07	\$130,000
	08	\$130,000
	09	\$230,000
Database:	Excel (pivot tables)	
Publications:	Written report and data dictionary.	

AFCAA-2

Title:	Air Force Total Ownership Cost (AFTOC) Management Information System	
Summary:	AFTOC is an unclassified management information system consolidating data from many Air Force legacy data systems. The product is consistent and reliable information about Air Force weapon systems and infrastructure. Mission costs are reported by system (aircraft, space systems, munitions, and some C3I) while infrastructure costs can be viewed by functional category (supply operations, mission operation, MILCON, etc.). Additionally, supply transaction detail (National Stock Number, MSD and GSD) is available for major aircraft and space systems as well as for many subsystems. Munitions and small missile expenditure costs can also be found in AFTOC. Cost details can be obtained by program element, appropriation, EEIC, and RC/CC to name a few. For registered users, AFTOC products are available on the Air Force Portal (https://www.my.af.mil/gcss-af/afp40/USAF/ep/index.do?command=application). The registration process for new user access is located in the applications section of the Air Force Portal. Current activities include development of a new web page and the addition of depot maintenance information for aircraft.	
Classification:	Unclassified	
Sponsor:	Air Force Cost Analysis Agency, Research & Resource Management Division Mr. Richard Snow Email: Richard.Snow@pentagon.af.mil 201 12th Street, Suite 403 Arlington, VA 22202	
Performer:	Battelle Memorial Institute, Northrop Grumman, and 309 th Software Support Wing	
Resources:	<u>FY</u>	<u>Dollars</u>
	Phase I	1998
	Phase II & III	1999
	Phase IV	2000
	Phase V	2001
	Phase VI	2002
	Phase VII	2003
	Phase VIII	2004
	Phase IX	2005
	Phase X	2006
	Phase XI	2007
	Phase XII	2008
	Phase XIII	2009

Schedule:

<u>Start</u>	<u>End</u>	
Initial Development	Dec 1997	Complete
Validation	Oct 2000	Complete
Expansion	Oct 2001	Complete
Reengineering	Oct 2002	Complete
Revalidation	Dec 2003	Complete
Enhancements	Oct 2004	Complete

Database: SQL Server 2005

Publications: Metadata files

AFCAA-3

Title: Air Force Inflation Model and Tutorial

Summary: This tool is used throughout the Air Force for making inflation conversion calculations and instructing personnel in the principles of inflation. It supports all cost analysis activities in AFCAA including aircraft weapon systems, computer, command and control, missile and munitions weapon systems, and space systems. A custom generator report feature and update to the tool for new inflation indices is contained in the model. The FY03 and FY04 efforts updated and upgraded the annual inflation indices as well as revised programming for compatibility with current updates of Excel and Microsoft Office. Development continued modifying the inflation tool to support custom report generating capabilities. The FY05 effort provided software programming support as well as updates to the inflation indices. The FY06 effort will provide updated and upgraded annual inflation indices as well as revised programming for compatibility with current updates of Excel and Microsoft Office. The FY07 effort continues to provide software program support, as well as, update and modernize the interface, incorporating new EXCEL and/or MS WINDOWS features as they become available and compatible with the Air Force standard desktop environment. Provide software programming support during the annual inflation update and throughout FY 2008 and 2009. This effort will ensure that the Air Force Inflation Table Generator, the Inflation Indices Calculator, and the Air Force Tutorial program execute properly and produce accurate inflation calculations and information on inflation principles.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division
Mr. Stephen Connair
E-mail: Stephen.Connair@pentagon.af.mil
1430 Air Force Pentagon
Washington, DC 20332

Performer: FY 97-98 TASC
FY 99-09 Center for Systems Management, Inc.

Resources:

<u>FY</u>	<u>Dollars</u>
97	\$41,000
98	\$46,000
99	\$20,000
00	\$16,000
01	\$16,000
02	\$25,000
03	\$16,000
04	\$25,000
05	\$16,000
06	\$16,500

	07	\$26,200
	08	\$17,800
	09	\$18,348
Schedule:	<u>Start</u>	<u>End</u>
	Oct 96	On-going
Database:	Excel	
Publications:	N/A	

AFCAA-4

Title: Cost Handbook Update

Summary: The objective of this effort is to update the Aeronautical Systems Cost Analysis Handbook. This will serve as a single, authoritative reference to foster methods and techniques for AF acquisition cost estimating. The update will ensure all references to Air Force and DoD policies, regulations, processes, and terminology are current, and that all references to cost analytical methods and terminology are current and widely accepted by the professional DoD acquisition and cost analytical communities.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division
Mr. Jay Jordan
E-mail: Jay.Jordan@pentagon.af.mil
201 12th Street, Suite 403
Arlington, VA 22202

Performer: MCR Federal, Inc.

Resources:

<u>FY</u>	<u>Dollars</u>
05	\$100,000
06	\$157,000
07	\$148,000

Schedule:

<u>Start</u>	<u>End</u>
Sep 05	Mar 08

Database: N/A

Publications: Final Handbook

AFCAA-5

Title: AFCAA FY08 Cost Risk and Uncertainty Analysis Metrics Manual

Summary: In 2006, AFCAA published the AFCAA Cost Risk Analysis Handbook (CHR) to provide analysts with the basic concepts and rules for developing cost uncertainty analyses based on three primary methods -- Inputs-Based Analysis, Outputs-Based Analysis, and Scenario-Based. However, this handbook did not provide analysts with the 17 KEY ELEMENTS that a standard cost risk and uncertainty guide should address. To mitigate these shortcomings, AFCAA will publish a supplement to the 2006 AFCAA Cost Risk and Uncertainty Analysis Handbook (CRH), to be named the Air Force Cost Risk and Uncertainty Analysis Metrics Manual. The purpose of this manual is to provide guidelines and empirical metrics for developing easy and quick cost uncertainty analyses based on the most popular uncertainty method in the Air Force, Input-Based Analysis. The manual will be divided into six (6) chapters. The first chapter provides default uncertainty bounds, distributions and descriptive statistics for assessing commodity independent cost drivers derived from empirical data. The second chapter provides default uncertainty bounds, distributions and descriptive statistics for assessing commodity specific cost drivers derived from empirical data. The third chapter provides

default uncertainty bounds, distributions and descriptive statistics for assessing operations & support cost drivers derived from empirical data.

The remaining chapters (4 through 6) will provide guidelines and default metrics for assessing schedule and technical uncertainties, instructions for documenting and presenting results to decision makers, and a checklist for determining quality and completeness of input-based cost uncertainty analyses.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division
Mr. Wilson Rosa
E-mail: Wilson.Rosa@pentagon.af.mil
201 12th Street, Suite 403
Arlington, VA 22202

Performer: Tecolote Research, Inc.

Resources:	<u>FY</u>	<u>Dollars</u>
	08	\$500,000

Schedule:	<u>Start</u>	<u>End</u>
	Sep 08	On-going

Database: Excel

Publications: Final Reports and Study

AFCAA-6

Title: Force Analysis On-Site Analytical and Technical Analytical Support

Summary: The objective of this task is to provide skilled analytic and information technology support services to assist with comprehensive activities related to: projecting long-term financial requirements of new acquisition programs; analyzing the effects of changes in sustainment support policies; and developing cutting edge decision tools in support of the AF corporate structure and senior AF leadership. In FY08, activities included maintenance and development of analytical databases and decision support tools, leading or participation in complex analytical studies pertaining to Cost per Flying Hour (CPFH) requirements for major weapon systems, contractor Logistics support, performance-based logistics, and depot maintenance. Continuing into FY09, we will be developing life cycle cost models for use in the upcoming QDR for costing various force mix options, developing and updating operational cost per aircraft and fuel consumption data for senior leadership and updating the Physics-Based model (PBM) used to adjust historical materiel consumption rates for anticipated changes in the mix of peacetime to wartime flying.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division
Mr. John Wallace,
E-mail: John.Wallace@pentagon.af.mil
201 12th Street, Suite 403
Arlington, VA 22202

Performer: Logistics Management Institute - LMI

Resources:	<u>FY</u>	<u>Dollars</u>
	06	\$632,000
	07	\$477,000
	08	\$685,000
	09	\$709,000

Schedule: Start End
 July 06 Ongoing

Database: AFTOC

Publications: Draft Study/Annotated Briefing/Reports

AFCAA-7

Title: Aircraft Modification Cost Estimating Handbook

Summary: The objective of this effort is to develop a handbook for estimating the cost of aircraft modifications. The Aircraft Modification Cost Estimating Handbook shall provide clear guidance to mid-level cost analysts on developing cost estimates for aircraft modifications for a comprehensive work breakdown structure, including development, production, and operation and support. As part of this effort, the contractor shall draw upon, with government assistance, Air Force and Navy resources to assemble and deliver the most comprehensive aircraft modification cost and schedule database possible.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division
 Mr. Scott Adamson
 E-mail: Scott.Adamson@pentagon.af.mil
 201 12th Street, Suite 403
 Arlington, VA 22202

Performer: Technomics

Resources: FY Dollars
 06 \$300,000
 07 \$150,000

Schedule: Start End
 Mar 06 May 08

Database: N/A

Publications: Draft and Final Report

Categories: Government, Estimating, Analysis, Aircraft, Airframe, Propulsion, Electronics/Avionics, Spares/Logistics, Life Cycle, Labor, Overhead/Indirect, Material, Engineering, Manufacturing, Production Rate, Acquisition Strategy, Advanced Technology, Risk/Uncertainty, Integration, Schedule, Size, Software, Statistics/Regression, Handbook

AFCAA-8

Title: Methods for Predicting Development/Production Costs

Summary: The objective of this effort is to update production contract pricing data from a previous effort, collect development contract pricing data, and perform analyses on the weapon cost data (i.e., missiles, aircraft, spacecraft, etc.). The contractor updates development (or production) contractual pricing data (original contract and modification) for weapons systems programs, and normalizes the data. The contractor analyzes the development (or production) contractual modifications pricing data and develops factors and cost estimating relationships that describe the magnitude and various types of contract modifications that are levied on development contracts and will deliver this information in a well-documented and user friendly database.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division
 Mr. Scott Adamson
 E-mail: Scott.Adamson@pentagon.af.mil

201 12th Street, Suite 403
Arlington, VA 22202

Performer: Technomics, Inc.

Resources:	<u>FY</u>	<u>Dollars</u>
	05	\$125,000
	06	\$122,000
	07	\$285,000
	08	\$250,000
	09	\$327,000

Schedule:	<u>Start</u>	<u>End</u>
	Sep 05	Sep 06
	Sep 06	Sep 07
	Sep 07	Sep 08
	Sep 08	On-going

Database: Access/Excel

Categories: Government, Analysis, Weapon Systems, Missiles, Munitions, Aircraft, Spacecraft, EMD, Production, Contracts, Modifications.

Publications: Final Report and Database

AFCAA-9

Title: Software Cost Estimating Handbook

Summary: The objective of this effort is to work jointly with the Naval Center for Cost Analysis (NCCA) and the Software Technology Support Center (STSC) to update the NCCA *Software Development Estimating Handbook*. The effort covers the review, validation, and normalization of the software project data in databases for use in the handbook efforts.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division
Mr. Wilson Rosa
E-mail: Wilson.Rosa@pentagon.af.mil
201 12th Street, Suite 403
Arlington, VA 22202

Performer: STSC

Resources:	<u>FY</u>	<u>Dollars</u>
	06	\$50,000
	07	\$50,000

Schedule:	<u>Start</u>	<u>End</u>
	Feb 06	Feb 09

Database: N/A

Categories: Government, Analysis, Weapon Systems

Publications: Final Report

AFCAA-10

Title: Joint Information Technology Software Development Database

Summary: This is a joint military service effort between AFCAA, NCAD, and ASA-FM. It seeks to collect historical data on Information Technology software development. The initial effort's focus is on collection of historical data about Enterprise Resource Planning

(ERP) initiatives in the Government, based on performance metrics unique to these emerging software products with their imbedded organizational structure and process implications. Once enough valid data is collected, the effort may develop statistical relationships between the performance metrics and resulting costs to fully implement ERPs. The planned horizon for the longer-term will expand the data collection, and possible mathematical relationship development, to other Automated Information Systems (AIS) development and implementation activities.

Classification: Unclassified

Sponsors: Air Force Cost Analysis Agency, Research & Resource Management Division
Mr. Wilson Rosa
E-mail: Rosa.Wilson@pentagon.af.mil
201 12th Street, Suite 403
Arlington, VA 22202
Naval Center for Cost Analysis (NCCA)
Mr. Lee Lavinder
E-mail: carlton.l.lavinder@navy.mil
Dave Cashin
Assistant Secretary of the Army (ASA-FM)
Noel D. Bishop
E-mail: Noel.Bishop@hqda.army.mil

Performer: Software Technology Support Center (STSC)

Resources:	<u>FY</u>	<u>Dollars</u>
	05	\$148,000 (\$64K- AF, \$84K-NCAD)
	06	\$104,000(\$84K-Army, \$31K-AF)

Schedule:	<u>Start</u>	<u>End</u>
	Aug 05	Jun 08

Database: N/A

Publications: Draft and Final Documentation

Categories: Software cost estimating

AFCAA-11

Title: NASA/Air Force Cost Model (NAFCOM)

Summary: This effort will modify the NAFCOM model to better provide a cost estimating environment that answers AFCAA requirements for a capable parametric cost estimating model. Provide technical support to AFCAA users on use of the software. Improve the completeness and accuracy of cost estimates, and to allow the addition of several new features to NAFCOM (schedule estimate, operations cost estimating, time-phasing of cost, risk analysis, etc.).

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division,
Mr. David Graham
david.graham@losangeles.af.mil
LA Air Force Base
483 N. Aviation Blvd, EL Segundo, CA 90245

Performer: NASA/Science Applications International Corp. (SAIC)

Resources:	<u>FY</u>	<u>Dollars</u>
	07	\$240,000
	08	\$125,000

Schedule: Ongoing
Database: Access/Excel
Publications: Final Report

AFCAA-12

Title: FMA Depot Standup Costs Analysis/Data Gathering
Summary: This effort includes looking across a number of major aircraft programs at a top level of cost. Scope out what cost information is available and compile some high level data that would be useful to form a high-level CER or range of values.
Classification: Unclassified
Sponsor: Air Force Cost Analysis Agency, Space Division
Mr. Peter Delinski
E-mail: Peter.Delinski@pentagon.af.mil
201 12th Street, Suite 403
Arlington, VA 22202
Performer: Logistics Management Institute - LMI
Resources: FY Dollars
08 \$150,000
Schedule: Ongoing
Database: N/A
Publications: Final Report

AFCAA-13

Title: Missile Sufficiency Review Handbook Update
Summary: This task will expand and update the Air Force Cost Analysis Agency (AFCAA) resources and guidelines for performing sufficiency reviews of Analyses of Alternatives (AoA), program office estimates (POE), and other items requiring a sufficiency review. The contractor will provide an updated Missiles Sufficiency Review Handbook that will summarize basic cost estimating cross-checks for missile cost estimates. This handbook will assist AFCAA cost analysts in the performance of quick sufficiency reviews and will guide them in how to conduct checks for overall reasonableness of the cost estimating methodologies being reviewed.
Classification: Unclassified
Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division
Mr. John Cargill
E-mail: John.Cargill@eglin.af.mil
102 West D Ave, Suite 106
Eglin AFB, FL
Performer: Tecolote Research, Inc.
Resources: FY Dollars
08 \$300,000
Schedule: Ongoing
Database: Access/Excel
Publications: N/A

AFCAA-14

Title: Initial Spares Model

Summary: Examines available historical data and attempt to create a more flexible and accurate approach to estimating initial spares, taking into account the maintenance concept, basing concept, operational availability and other potential influences for full weapon systems, engines and major modification programs.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division
Mr. John Wallace
E-mail: John.Wallace@pentagon.af.mil
201 12th Street, Suite 403
Arlington, VA 22202

Performer: Logistics Management Institute - LMI

Resources: FY Dollars
08 \$50,000

Schedule: Ongoing

Database: Access/Excel

Publications: N/A

AFCAA-15

Title: Engineering Change Order (ECO) Cost Factors and Analysis

Summary: The purpose of this effort is to develop methods to account for Engineering Change Orders (ECO) that are included and not-included in typical Air Force and NRO independent cost estimates, developed with Air Force and NRO space systems data.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division
Capt Aaron Gregory
E-mail: Aaron.Gregory@pentagon.af.mil
201 12th Street, Suite 403
Arlington, VA 22202

Performer: Tecolote Research Inc

Resources: FY Dollars
08 \$100,000

Schedule: Ongoing

Database: Access/Excel

Publications: N/A

AFCAA-16

Title: Database and Models Update

Summary: This effort will expand the existing AFCAA schedule and time-phasing model database to include additional Air Force (SMC), NRO, NASA and commercial program data previously not included to support additional analysis, and verify correctness of existing data, improving model estimating capabilities.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division
Mr. David Graham
E-mail: David.Graham@losangeles.af.mil
LA Air Force Base

Performer: Tecolote Research, Inc.

Resources: FY Dollars
08 \$600,000

Schedule: Ongoing

Database: Access/Excel

Publications: N/A

AFCAA-17

Title: Technology Readiness Level (TRL)/Technology Maturity Index (TMI) Cost Methods and Factors

Summary: This effort will develop methods to account for TRL/TMI levels in space systems cost estimates that are not currently accounted for.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division
Mr. Paul Cunniff
E-mail: Paul.Cunniff@losangeles.af.mil
LA Air Force Base
483 N. Aviation Blvd, El Segundo, CA 90245

Performer: Tecolote Research, Inc.

Resources: FY Dollars
08 \$200,000

Schedule: Ongoing

Database: Access/Excel

Publications: N/A

AFCAA-18

Title: Methods to Predict Ground Based Radar Cost Model

Summary: Collect data and formulate a ground-based radar cost model. This is a dual contractor effort. Technomics will research and normalize program cost data and Georgia Institute of Technology will relate technical performance to those same programs.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division
Mr. Bill Dorman
E-mail: Bill.Dorman@losangeles.af.mil
LA Air Force Base
483 N. Aviation Blvd, El Segundo, CA 90245

Performer: Technomics Research, Inc and Georgia Institute of Technology

Resources: FY Dollars
08 \$500,000

Schedule: Ongoing

Database: Access/Excel

Publications: N/A

AFCAA-19

Title: Software Cost Estimation Manual

Summary: Develop a software cost estimating manual to help junior and senior analysts develop 'easy and quick' software cost estimates for avionics, space, ground and shipboard applications. Manual will include basic literature, guidelines, rules of thumb, calibrated parametric tools, historical data and alternative methods for estimating product size, effective size, productivity, schedule and code growth.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division
Mr. Wilson Rosa
E-mail: Wilson.Rosa@pentagon.af.mil
201 12th Street, Suite 403
Arlington, VA 22202

Performer: University of Southern California (USC) – Dr. Barry Boehm and Larry Putnam

Resources:

<u>FY</u>	<u>Dollars</u>
08	\$145,000
09	\$255,000

Schedule: Ongoing

Database: Access/Excel

Publications: N/A

Electronic Systems Center (ESC)

Name:	Acquisition Cost Division, Comptroller, Electronic Systems Center		
Address:	11 Eglin Street, Hanscom AFB, MA 01731-2117		
Director:	Col Brian Shimel, (781) 377-5161		
	Dave Morana, Chief, Cost Estimating Division		
	(781) 377-7492, DSN 478-7492		
	E-mail: dave.morana@hanscom.af.mil		
Size:	Professional: 14		
Focus:	The Acquisition Cost Division supports the Electronic Systems Center by providing independent analysis and verification of electronic systems cost to ESC leadership, with a focus on improving the overall quality, objectivity, and credibility of cost estimates. The Cost Division leads the Center's modern, quick-reaction cost tools program, as well as spearheading comprehensive cost training essential to ESC Wing/Group cost analysts and its program managers. The Cost Division's overall objective is to lessen the liability caused by excessive cost growth, while at the same time providing decision-quality cost analysis products to a wide range of customers across DoD.		
Activity:	Number of projects in process:		3
	Average duration:		1 year
	Average number of staff members assigned to a project:		2
	Average number of staff-years expended per project:		.5

ESC-1

Title:	ESC Acquisition Support Cost Factors and Cost Estimating Relationships (CER)		
Summary:	The objective of the ESC Acquisition Support Cost Factors and CERs is continuous update of the cost factors and CERs for WBS level 2 acquisition cost elements such as SEPM, ST&E, Data, Training, and others. These factors and CERs are based upon Cost Performance Reporting (CPR) on ESC programs and are commonly used at ESC, the AF, and other government cost estimating agencies as an effort-bounding crosscheck to a primary methodology, but in some cases they are used as the primary estimating rough-order method early in programs before there is a more appropriate level of program definition. The last published update to the factors and CERs application method was accomplished in 2006. The current effort is being accomplished in parallel with AFCAA to expand the dataset to include other AF and DoD commodities. The ESC effort is focused on creating a process of continuous improvement by centralizing data collection, mapping and normalizing recent cost data into a standard WBS, analyzing cost relationships and application methods, and publishing guidance on the application and uncertainty of the method to the ESC/FMC Community of Practice website to provide analysts access to the most recent data, documentation, and methodology improvements.		
Classification:	Unclassified		
Sponsor:	Acquisition Cost Division		
Performer:	ESC/FMC		
Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2009	N/A	1.5

Schedule: Start End
 Dec 2008 Dec 2009
Database: ESC Cost Reporting Database
Publications: ESC/FMC CoP Website

ESC-2

Title: Government Program Office Support Sizing and Labor Rate Analysis
Summary: ESC has teamed with AFCAA analysts to build a comprehensive program office sizing and labor cost model. A government program office can include civilian, military, and contractor support, made up of multiple organizational and matrixed functional areas, covering multiple contracting vehicles. The objective of this analysis is to provide guidance in bounding the size of a typical ESC program office and collecting the associated labor costs to develop a program office staffing cost model. The analysis will seek to collect and describe both actual “fact-of-life” program office costs in addition to the “optimal” sizing and costs associated with high performing acquisitions.
Classification: Unclassified
Sponsor: Acquisition Cost Division
Performer: ESC/FMC
Resources: FY Dollars Staff-years
 2009 N/A .5
Schedule: Start End
 Oct 2008 Oct 2009
Database: Program Office Support Database
Publications: ESC/FMC CoP Website

ESC-3

Title: Allocating Risk on Development Programs
Summary: Early analysis of the results of modern ESC cost risk analysis and simulation methods, when compared to actual program development costs, suggests that program risks and modifications in scope materialize in consistent spending patterns that are not appropriately captured by the generic cost risk allocation schemes often utilized within cost models. This research will leverage the contractor cost data collection associated with the ESC Acquisition Support Cost Factors, for comparison to government estimates developed at the start of development (MS B or APB estimates) on ESC programs since 2005. The objective of the analysis is the formalization of concrete rules of thumb for allocating cost risk for improving estimates and decision making prior to MS B. We will research alternative mathematical models that may more appropriately quantify the magnitude of program uncertainty prior to MS B and better imitate actual program spending outlays.
Classification: Unclassified
Sponsor: Acquisition Cost Division
Performer: ESC/FMC
Resources: FY Dollars Staff-years
 2009 N/A .25
Schedule: Start End
 Apr 2009 Apr 2010
Database: ESC Cost Reporting Database
Publications: ESC/FMC CoP Website

Air Force Space and Missile Systems Center (SMC)

Name:	Air Force Space Command (AFSPC) Space and Missile Systems Center/Acquisition Cost Division (SMC/FMC)	
Address:	483 North Aviation Blvd., Los Angeles AFB, CA 90245	
Director:	Warren Carlson (GG-15) Director, Cost Estimating & Earned Value Division	
Size:	Professional:	16 – 12 Civilians, 4 Military
	Support:	4 – Aerospace
	Consultants:	0
	Subcontractors:	18 – MCR Federal and Tecolote Research Inc.
Focus:	Satellites, Launch & Range, and Network	
Activity:	Number of projects in progress:	6
	Average duration of a project:	varies
	Average number of staff members assigned to a project:	1–5
	Average number of staff-years expended per project:	approx. 1
	Percentage of effort conducted by consultants:	0%
	Percentage of effort conducted by subcontractors:	95%

No summaries provided

National Reconnaissance Office Cost Analysis Improvement Group (NRO CAIG)

Name:	NRO Cost Analysis Improvement Group (NRO CAIG)		
Address:	15049 Conference Center Dr. Chantilly, VA 20151		
Director:	Mr. Keith Robertson		
Size:	Government	10	
	FFRDC	4	
	SETA	50	
Focus:	Provide independent cost estimating support to NRO. Includes support to Milestone Decisions, Budget Submissions, Earned Value Management, ad-hoc Program Support, Data Collection, Methods Development, and Model/Tool Development.		
Activity:			

NRO CAIG-1

Title: Space Cost Analysis Templates, Toolkits and Repository (SCATTR)

Summary: SCATTR is a web-based environment providing the tools, models, and methods necessary for the NRO CAIG to accomplish its mission. SCATTR consists of three primary functions:

1. Providing the user with data storage and retrieval tools;
2. Providing the user with tools for data analysis and model and methods development;
3. Providing the user with estimating and analysis tools.

The NRO CAIG has collected, normalized and documented a vast amount of cost, technical, and programmatic data on national security space system contracts and programs. These data can be as simple as top level reference points such as SEIT/PM factors as a percentage of prime mission equipment from a contractor cost report or as complex as an extensive listing of labor hours, labor dollars, material dollars, ODCs, general and administrative costs, and total dollar cost accounts for every WBS of a program. In addition, the NRO CAIG data includes technical and programmatic data such as schedules, standard datasheets, and documents describing subsystem and/or segment-to-segment interfaces, diagrams, and pictures. The data storage and retrieval subsystem of SCATTR houses all of these data types; provides the analyst with access and export features to use these data in further analyses; and provides a configuration control environment to assure accuracy of the data. SCATTR also provides access to NRO CAIG approved analysis, plotting, and robust statistical analysis tools.

Classification: Unclassified (classification of data changes the classification level)

Sponsor: NRO CAIG

Performer: NRO CAIG

Resources: FY Dollars Staff-years

Schedule: Start End
Dec 03 Ongoing

Database:

Publications:

NRO CAIG-2

Title: Advanced Cost Modeling Environment (ACME)

Summary: The Advanced Cost Modeling Environment (ACME) will provide the NRO CAIG an integrated, portable, cost estimating environment. ACME will support end-to-end estimation space systems through the use of configurable modules including, but not limited to, spacecraft bus hardware, payload hardware, flight software, ground system hardware and software, system engineering, integration & test and program management (SEIT/PM), launch vehicles and services, operations and maintenance (O&M) and other government costs (OGC).

Classification: Unclassified (classification of data changes the classification level)

Sponsor: NRO CAIG

Performer: NRO CAIG

Resources: FY Dollars Staff-years

Schedule: Start End
Oct 08 Ongoing

Database:

Publications:

NRO CAIG-3

Title: Software Database

Summary: NRO CAIG created a software database which automates the mapping of USC code count files and difference results to a CSCI/CSC and Work Breakdown Structure (WBS). Mapping would otherwise be time and labor intensive if done manually, since it is most meaningful when done at the lowest functional level of the WBS. Software database is primary tool for storing all NRO CAIG software related data. Database provides:

- Low level functional breakout
- Traceability to past programs
- Historical representation of development process
- Code Counts/Difference Results
- Staffing Profiles
- Discrepancy Reports (DRs)
- Schedules

Classification: Unclassified (classification of data changes the classification level)

Sponsor: NRO CAIG

Performer: NRO CAIG

Resources: FY Dollars Staff-years

Schedule: Start End
Ongoing

Database:

Publications:

NRO CAIG-4

Title: NRO CAIG's Software Development Methodology

Summary: NRO CAIG uses an array of data and methodologies in estimating software costs for Space and Ground portions of NRO satellite systems. We have recently initiated a comprehensive review of all data collectively to see where, and if, trends can be found and to ultimately improve our software estimating process. The following areas are being addressed:

- Diff Results: Develop trends for reuse; develop new ESLOC calculation or equivalency; determine how to use diff results for estimating. Analyze complexity indicators; evaluate whether complexity ties to productivity.
- Staffing Profiles: Develop trends; align with schedule dates and LOC to develop CERs.
- Deficiency Reports: Evaluate whether DRs align with productivity.
- Productivities: Evaluate productivities for factors/ranges.
- NAVAIR (OSD) Model: Evaluate model to determine whether data points can be used in NRO CAIG methodology development. Assess similarity/differences of NAVAIR and NRO CAIG productivity factors and trends. Communicate models usages and shortfalls.

Classification: Classified

Sponsor: NRO CAIG

Performer: NRO CAIG

Resources: FY Dollars Staff-years

Schedule: Start End

Feb 08 Ongoing

Database:

Publications:

NRO CAIG-5

Title: Complexity Based Risk Analysis (CoBRA)

Summary: Evaluate the utility of the Complexity Based Risk Analysis (CoBRA) methodology to NRO systems. Develop complexity model for use in “substantiating” the relative cost of a new system compared to historical system(s). For example, cost is 50% higher than legacy because it is a 50% more complex system. Study complexity as a function of time for NRO, DOD, NASA, and Commercial systems. Assess the complexity/\$ changes over time—is bang for the buck increasing? Compare NRO complexity to DOD, NASA, Commercial. This study leverages the extensive work already published by The Aerospace Corporation.

Classification: Classified

Sponsor: NRO CAIG

Performer: NRO CAIG, Aerospace

Resources: FY Dollars Staff-years

Schedule: Start End

Jan 07 Ongoing

Database:

Publications:

NRO CAIG-6

Title: Demonstration-Satellite Cost Model (DSCM)

Summary: A parametric cost model for technology demonstration satellites of all sizes. DSCM is a subsystem level parametric model for estimating bus cost, electro-optical payload cost, RF payload cost, satellite SEITPM cost, and overall development schedule. DSCM results are used to assess the cost-effectiveness of the small-sat paradigm when extended to mid-size and larger demonstration programs.

Classification: Classified

Sponsor: NRO CAIG

Performer: NRO CAIG

Resources: FY Dollars Staff-years

Schedule: Start End
FY07 FY08

Database:

Publications:

NRO CAIG-7

Title: Satellite Sizing Model

Summary: The overall scope of this task is to provide a model that can roughly size spacecraft according to mission type and payload performance parameters. The study is an investigation of how payload size, weight, and power impact bus weight, power, thermal, and other subsystems. Results will be used to assess risk in early-phase satellite designs.

Classification: Classified

Sponsor: NRO CAIG

Performer: NRO CAIG

Resources: FY Dollars Staff-years

Schedule: Start End
Mar 08 Ongoing

Database:

Publications:

NRO CAIG-8

Title: Commercial Acquisition Programs Study (CAPS)

Summary: The scope of this effort is to research the costs and technical data of “Purely Commercial” and “Commercial-Like” space acquisition programs. For the purpose of this study “Purely Commercial” is defined as programs that are procured by a non-U.S. government organization. “Commercial Like” is defined as programs that either: use a commercial bus; are acquired via a fixed price with delivery on orbit contract; and/or, are procured via a fixed price production contract.

A goal of the study is to develop cost estimating methodologies to support program estimates for “Purely Commercial” and “Commercial Like” acquisition programs. A product of this task will be estimating guidance and/or a spacecraft-specific subsystem-level cost model.

Classification: Unclassified

Sponsor: NRO CAIG

Performer: NRO CAIG

Resources: FY Dollars Staff-years

Schedule: Start End

FY07 Ongoing

Database:

Publications:

NRO CAIG-9

Title: Space System Data Collections

Summary: Collect and normalize multiple space system data points (space HW/SW, ground HW/SW, SEITPM)

Classification: Classified

Sponsor: NRO CAIG

Performer: NRO CAIG

Resources: FY Dollars Staff-years

Schedule: Start End

Ongoing

Database:

Publications:

NRO CAIG-10

Title: Space Hardware CERs

Summary: Goal: The NRO CAIG CER Working Group has been developing a new set of satellite box-level CERs since April 2004. These CERs are based on a mix of data from NRO programs and from the Air Force's Unmanned Satellite Cost Model (USCM) dataset. CERs make use of newly collected and validated data and ensure latest technology is represented in NRO CAIG cost models.

Classification: Classified

Sponsor: NRO CAIG

Performer: NRO CAIG

Resources: FY Dollars Staff-years

Schedule: Start End

FY04 Ongoing

Database:

Publications:

NRO CAIG-11

Title: NRO Subsystem Cost Model

Summary: NRO CAIG has developed a subsystem-level cost model based on a mix of data from NRO, DoD, and NASA space systems. Because the NRO CAIG relies primarily on box-level estimating methods, this subsystem-level model will be used for estimate cross-checks and as a basis for several studies. It establishes the government "baseline costliness" for comparison to demo-satellite costs (e.g., in DSCM) and to commercial-satellite costs (e.g., in CAPS).

Classification: Unclassified (some underlying data are classified)

Sponsor: NRO CAIG and DNI CAIG

Performer: NRO CAIG and DNI CAIG

Resources: FY Dollars Staff-years

Schedule: Start End

FY06 FY08

Database:

Publications:

NRO CAIG-12

Title: Ground System Cost Model

Summary: The NRO CAIG and The Aerospace Corporation are collaborating in the development of the Ground System Cost Model (GSCM). GSCM will be used to develop ROM cost estimates for satellite ground systems by calibrating a suite of existing CERs to cost and technical profiles of actual programs. Preliminary results have been completed in FY08, and research will continue to add/calibrate more programs to the supporting database.

Classification: Unclassified

Sponsor: NRO CAIG

Performer: NRO CAIG

Resources: FY Dollars Staff-years

Schedule: Start End

Database:

Publications:

NRO CAIG-13

Title: System Engineering, Integration, Test, and Program Management (SEITPM) Study

Summary: The NRO CAIG is developing new methods and models for estimating SEITPM costs for space and ground systems. Models are based on parametric analysis of historical data, including costs, headcounts, labor rates, and programmatic descriptors. This multi-year study is addressing results at various WBS levels in the following phases:

- Phase I: Electro-optical payload SEITPM (completed)
- Phase II: Communications and SIGINT payload SEITPM (completed)
- Phase III: Satellite-level SEITPM (Completed)
- Phase IV: System-level SEITPM (ongoing)
- Phase V: Ground-system SEITPM (ongoing)

Classification: Classified

Sponsor: NRO CAIG

Performer: NRO CAIG

Resources: FY Dollars Staff-years

Schedule: Start End

FY06 Ongoing

Database:

Publications:

NRO CAIG-14

Title: Scheduling and Phasing Model

Summary: The NRO CAIG has developed parametric models for estimating satellite development schedules and budget profiles. Models are based on an extensive historical database of NRO, DoD, and NASA programs. While supporting databases are continually updated to support estimates and ad-hoc studies, models have been completed in the following areas:

- Total satellite development schedule
- Satellite test schedule
- Payload development schedule
- Satellite budget profile
- Ground-segment budget profile

Classification: Unclassified (some supporting data are classified)

Sponsor: NRO CAIG and Air Force Cost Agency

Performer: NRO CAIG

Resources: FY Dollars Staff-years
2008
2009

Schedule: Start End
FY03 Ongoing

Database:

Publications:

NRO CAIG-15

Title: Box vs. Subsystem Estimating Accuracy

Summary: The NRO CAIG uses box-level parametric models and analogy methods for most ICEs to gain insight into costs and design risks at a low level. This study is investigating the accuracy of box-level methods compared to subsystem-level methods, which are less precise but not necessarily less accurate. All methods and supporting data come from the same NRO CAIG database, which promotes a comprehensive and consistent comparison.

Classification: Classified

Sponsor: NRO CAIG and DNI CAIG

Performer: NRO CAIG and DNI CAIG

Resources: FY Dollars Staff-years

Schedule: Start End
FY07 Ongoing

Database:

Publications:

NRO CAIG-16

Title: Optical Payload Cost Models

Summary: The NRO CAIG is updating its primary cost models for electro-optical payloads by combining NRO data with cost and technical data from NASA and DoD programs where applicable. A new cost model for focal planes has been completed, based on data and recent experience in developing state of the art sensors. A second model for estimating optical telescope assemblies is currently in development – a database of 48 small, medium, and large telescopes is being compiled.

Classification: Classified
Sponsor: NRO CAIG
Performer: NRO CAIG
Resources: FY Dollars Staff-years
Schedule: Start End
FY06 Ongoing
Database:
Publications:

NRO CAIG-17

Title: Ground Methods Development
Summary: The NRO CAIG is working to improve Ground and O&M Estimating techniques/methods/models/data collection. By continuing to collect and analyze ground system data points, we are researching new methods and metrics and investigating alternative approaches to ground system estimating.
Classification: Classified
Sponsor: NRO CAIG
Performer: NRO CAIG
Resources: FY Dollars Staff-years
Schedule: Start End
FY07 Ongoing
Database:
Publications:

NRO CAIG-18

Title: NRO Inflation Index
Summary: The NRO CAIG developed and began using NRO inflation indices in 2004. The NRO inflation indices (raw and weighted) are based on actual labor, material, and other direct costs experienced by major NRO contractors on NRO programs. Current studies in partnership with SAF/FMC are focused on the impact of productivity and are expected to improve our indices to better reflect the Government's cost of doing business.
Classification: Unclassified
Sponsor: NRO CAIG
Performer: NRO CAIG
Resources: FY Dollars Staff-years
Schedule: Start End
FY04 Ongoing
Database:
Publications:

The Aerospace Corporation

Name:	Acquisition and Planning Subdivision, The Aerospace Corporation		
Address:	2350 E. El Segundo Blvd., El Segundo, CA 90245 Mail: M4-929, P.O. Box 92957, Los Angeles, CA 90009-2957		
Director:	Rosalind Lewis, Principal Director Email: Rosalind.Lewis@aero.org (310) 336-1805		
Size:	Professional:	65	
	Support:	5	
Focus:	Space and ground system cost and schedule modeling and estimating; relationship between requirements and cost and schedule; cost and schedule risk analysis; commercial practices; statistical issues in cost analysis; cost, schedule, performance, design, and architecture trade studies.		
Activity:	Number of internal research projects in process:	3	
	Average duration of a project:		yearly funding
	Average number of staff members assigned to a project:	2	
	Average number of staff-years expended per project:	1.0	

AEROSPACE-1

Title:	Space System Executability Heuristics		
Summary:	Numerous recent reports have been critical of the National Security Space community's cost, schedule, and technology planning. Reports routinely refer to overly optimistic cost estimates, aggressive and unrealistic schedules, unstable requirements, and unrealized technology development plans. Cross program heuristics and trend data based on historical program performance are needed to help identify the boundaries of executability (envelopes) and risks for these ongoing and future programs. Heuristics and trends based on historical data are being developed in the following areas: requirements, cost, schedule, complexity and technology maturity.		
Classification:	Unclassified		
Sponsor:	The Aerospace Corporation, Internal Research and Development (IRAD)		
Performer:	The Aerospace Corporation, Engineering and Technology Group, Systems Engineering Division		
Resources:	<u>FY</u>	<u>Dollars</u>	
	2008	0.8 MTS-years	
	2009	0.4 MTS-years	
Schedule:	<u>Start</u>	<u>End</u>	
	Oct 2007	Ongoing	
Database:	None		
Publications:	None		

AEROSPACE-2

Title: Small Satellite Cost Model (SSCM)

Summary: In recent years, NASA, the Air Force, and commercial industry have increasingly funded and developed small satellite missions. In response to this trend, the Small Satellite Cost Model (SSCM) was developed. SSCM is used to evaluate the costs associated with designing, building, and testing small satellites. The model estimates the first-unit development and production cost of a spacecraft bus by using parametric CERs derived from actual small satellite cost and technical information. SSCM is updated as more data is obtained on the most recently launched small satellite missions to keep the model relevant for the estimation of small satellites.

Classification: Unclassified

Sponsor: The Aerospace Corporation, Engineering Methods (EM)

Performer: The Aerospace Corporation, Engineering and Technology Group, Systems Engineering Division

Resources:

<u>FY</u>	<u>Dollars</u>
Yearly	0.2 to 0.3 MTS-years

Schedule:

<u>Start</u>	<u>End</u>
Early 1990s	Ongoing

Database: 100+ technical, programmatic, and mission parameters, plus cost information, on over 100 small satellites.

Publications: E. Mahr and G. Richardson, "Development of the Small Satellite Cost Model (SSCM) Edition 2002," 2003 IEEE Aerospace Conference Proceedings, March 8–15, 2003.
D. A. Bearden et al., "Comparison of NEAR Costs with a Small-Spacecraft Cost Model," AIAA/USU Conference on Small Satellites, September 16–19, 1996.
R. Kellogg, E. Mahr and M. Lobbia, "An Analogy-based Method for Estimating the Costs of Spacecraft," 2005 IEEE Aerospace Conference Proceedings, March 5–12, 2005.
T. Mosher et al., "A Comparison of NEAR Actual Spacecraft Costs with Three Parametric Cost Models," *Acta Astronautica*, vol. 45, nos. 4-9, pg. 457–464, 1999.

AEROSPACE-3

Title: Improving Cost Estimation Methods for Software-Intensive Systems (SIS)

Summary: In the case of estimates for large software-intensive systems (SIS), software development is treated as a monolithic activity with a singular life cycle. In reality, development of such systems requires the integration of multiple development increments which often continue for years, even after Full Operational Capability (FOC) is achieved. There is a need for life cycle models that represent these complex inter-related activities as well as costing techniques that adequately account for the additional effort required to integrate these activities. New methodologies will assist all NSS customers in developing more realistic plans and budgets that increase the likelihood of successful acquisitions that meet mission needs. Our research objective is to identify the primary costs that we believe are currently being ignored or under-estimated. The team is surveying methodologies in use by various contractors, government cost agencies, and cost tools to assess current state-of-the-practice. We will then devise methods to estimate iterative and concurrent activities that better reflect the reality of the current acquisition environment.

Classification: Unclassified

Sponsor: The Aerospace Corporation, Internal Research and Development (IRAD)

Performer: The Aerospace Corporation, Engineering and Technology Group, Systems Engineering Division in collaboration with the Computers and Software Division

Resources: FY Dollars
2009 0.3 MTS-years

Schedule: Start End
Oct 2008 Sept 2009

Database: n/a

Publications: In preparation

Center for Naval Analyses (CNA)

Name:	CNA, Cost and Acquisition Team		
Address:	4825 Mark Center Drive Alexandria, VA 22311-1850		
Director:	Dr. Jino Choi, (703) 824-2266		
Size:	Professional:	8	
	Support:	4	
	Consultants:	4	
	Subcontractors:	0	
Focus:	Cost, budget, affordability analysis of the Navy and DoD programs; review and assessment of Navy and defense acquisition programs and processes; cost and benefit tradeoff studies; investigation of defense industrial base		
Activity:	Number of projects in process:	9	
	Average duration of a project:	11 months	
	Average number of staff members assigned to a project:	3.5	
	Average number of staff-years expended per project:	0.7	
	Percentage of effort conducted by consultants:	5%	
	Percentage of effort conducted by subcontractors:	0%	

CNA-1

Title: Design-build concurrency: cost implications

Summary: Typically, major defense acquisition programs experience some level of design-build concurrency. That is, production of the weapon system happens while some portions of the design are still being completed. There is a general perception that high degrees of such concurrency introduce additional risk into programs. In contrast, acquisition officials we interviewed suggested that too much or too little concurrency would be bad for a program and lead to excessive cost growth. Statistical analysis of 28 programs using SAR data show that concurrency alone is a poor predictor of cost growth. However, low levels of concurrency do seem to be associated with higher cost growth.

Classification: Unclassified

Sponsor: Deputy Assistant Secretary of the Navy (Management and Budget)

Performer: CNA, Cost and Acquisition Team
4825 Mark Center Drive
Alexandria, VA 22311-2053
Dr. Don Birchler, (703) 824-2998

Resources:

<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
07	\$215,000	
08	\$128,000	1.4

Schedule:

<u>Start</u>	<u>End</u>
Jul 07	Apr 09

Publications: CNA document D0020008, "Design-Build Concurrency: Cost Implications," May 2009

CNA-2

Title: O&S cost growth from initial estimates

Summary: Recent experiences show that the actual program O&S costs are radically exceeding initial estimates. The Navy's Assessment Division (N81), under the Deputy Chief of Naval Operations for Resources, Requirements and Assessments, asked CNA to examine the growth in O&S costs from the AOA estimates. We analyzed the growth in O&S costs of the Navy's major ship and aircraft programs. We examined 15 ship and 11 aircraft programs and found that the final O&S cost estimates are on average 15 percent higher than the initial estimates. The aircraft programs experienced substantially higher cost growth (27 percent) than the ship programs (6 percent). The biggest problem area appears to be aircraft O&M with an average cost growth of 42 percent. We have also conducted three case studies to better understand the major causes of cost growth and to assess what contributes to this problem. The case studies suggest that the major causes of cost growth include: addition of newer capabilities increases in compensation cost associated with new personnel policies, accounting changes that include more indirect costs to the platforms, and parts prices outpacing inflation. The problem areas include: inadequate use of cost estimating relationships or much reliance on analogy, inconsistent reporting and availability of data, deflators underestimating prices, and not incorporating foreseeable changes into cost estimates. We recommend greater and more proper use of CERs in generation of O&S cost estimates to help improve the accuracy of estimation and to involve more stakeholders in the process.

Classification: Unclassified

Sponsor: Director, Navy Assessment Division (OPNAV N81)

Performer: CNA, Cost and Acquisition Team
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Alexandria, VA 22311-2053
Dr. Jino Choi, (703) 824-2266

Resources:

<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
08	\$200,000	
09	\$100,000	1.0

Schedule:

<u>Start</u>	<u>End</u>
Mar 08	Apr 09

Publications: CNA document D0019778, "O&S Cost Forecasting: Issues and Evidence," Apr 2009

CNA-3

Title: Quantifying uncertainty of predictions from nonlinear cost estimation relationships

Summary: This study compares two methods for quantifying uncertainty of cost predictions from inherently non-linear cost estimating relationships (CERs). A limitation of CERs is that they yield prediction point estimates that are certain to be wrong. Estimation of CER prediction uncertainty, then, is an important issue. There are two sources of cost prediction uncertainty that compound each other. First, CER parameters are subject to sampling error because the parameters are estimated from a sample of data. A second source of uncertainty stems from the fact that CERs cannot account for every factor that affects the cost of a system. There exists an exact formula to calculate the cost prediction uncertainty for a linear (in parameters) CER. But no such formula exists to calculate the prediction interval for an inherently non-linear CER. An inherently non-linear CER is one that cannot be linearized by applying a monotonic or order preserving transformation such as the logarithmic transformation. Some recent discussions in the cost analysis and estimating community have focused on how to quantify prediction uncertainty for inherently non-linear CERs. One group of cost analysts advocates the non-parametric

bootstrap, a computationally intensive statistical re-sampling algorithm that is similar to the well-known Monte Carlo method. A second group of cost analysts advocates using the approximate delta method of statistics. It approximates the non-linear CER prediction with a linear expression in the CER parameters, and then applies the formula for the variance of a linear combination of random variables. We conducted a Monte Carlo experiment that compares alternative methods to quantify the uncertainty of predictions from an intrinsically nonlinear cost estimation relationship (CER). More specifically, we compared the delta method of statistics to the non-parametric bootstrap. The so-called "triad" CER we used in our experiment is not well identified in a statistical sense. The identification problem makes accurate estimation of CER parameters difficult at best. The Monte Carlo results indicate that for the triad CER, and our chosen or "true" parameter values, the bootstrap performs poorly from a computational perspective. This result ties directly to the identification problem. The results also highlight the need for cost analysts and estimators to pay particular attention to choices of CER functional form and statistical estimator used to estimate CER parameters.

Classification: Unclassified

Sponsor: CNA-initiated project, approved by Navy Assessment Division (OPNAV N81)

Performer: CNA Corporation, Cost and Acquisition Team
4825 Mark Center Drive
Alexandria, VA 22311-2053
Dr. Richard Sperling, (703) 824-2533

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	07	\$25,000	
	08	\$15,000	0.2

Schedule:	<u>Start</u>	<u>End</u>
	Jan 07	Jun 08

Publications: CNA document, D0018425, "Quantifying Uncertainty of Predictions from an Intrinsically Nonlinear Cost Estimation Relationship," Jun 2008

CNA-4

Title: Cost and industrial base implications of capital investments

Summary: In 2001, Bath Iron Works (General Dynamics) completed a four-year modernization plan to its shipyard. This project built the "Land Level Transfer Facility" and a floating dry dock. The investment in modernization allowed for a reported 6 percent increase in productivity for Bath's DDG-51 production line, despite the program already being mature and had already achieved all possible savings due to the learning curve. The self-investment by Bath Iron Works led to productivity gains for the shipyard and lower prices for the Navy. DASN (M&B) is interested in how investments at other shipyards will impact the prices the Navy pays for its ships. Due to Hurricane Katrina, Ingalls (Northrop Grumman Ship Systems) had to invest in its own shipyard to rebuild its capital stock. The exogenous shock to the shipyard will allow CNA to study how these new investments will affect productivity at Ingalls. To that end, the Navy wants to know what the expectation should be for productivity gains at Ingalls, given the experience at Bath Iron Works. This study examined the effects of capital investments at the aforementioned shipyards. One investment was planned to improve the build process, while the other was in response to a natural disaster. The planned investment resulted in vastly improved productivity, but with a delay. The unplanned investment has not yielded similar results. This is in part due to the timing of the investment and in part due to its unplanned nature. We used two non-parametric techniques to measure productivity at these two shipyards: total factor productivity and data envelopment analysis. The gains in productivity from the planned investment have resulted in decreased build times, decreased total labor hours needed to construct the ship, and lower prices. We recommend that the Navy

explore other opportunities to examine productivity at other shipyards and other ship lines.

Classification: Unclassified

Sponsor: Deputy Assistant Secretary of the Navy (Management and Budget)

Performer: CNA Corporation, Cost and Acquisition Team
4825 Mark Center Drive
Alexandria, VA 22311-2053
Dr. Michael Gessner, (703) 824-2700

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	08	\$178,000	
	09	\$158,000	1.2

Schedule: Start End
Oct 07 May 09

Publications: CNA document D0020104, "Capital Investments and Productivity at Navy Ship Builders: Evidence from Two Ship Yards," May 2009

CNA-5

Title: Early warning model for acquisition program cost and schedule growth

Summary: In a previous study, CNA demonstrated the validity of the Rayleigh distribution to model cost accrual over the life of a research and development contract. The Deputy Assistant Secretary of the Navy (Management and Budget) asked CNA to examine expansion of the model to a broader range of applications and improve the user interface. This study modeled cumulative cost and schedule for research and development contracts using the non-linear Rayleigh distribution. Parametric estimation, using the actual data to date of an executing contract, yields independent forecasts of final contract cost and schedule that give early warning of potential execution difficulties to decision-makers. Overall contract cost and schedule risk can also be calculated. The model was rigorously tested and validated against 107 completed development contracts drawn from the DOD database over a 35 year period. A software application was also developed to graphically portray trends and includes automated business insights. In addition, a plan assessment module was developed to evaluate plan realism. This module can be used to assess the realism of a contractor's offer during source selection and to assess plan realism early in contract execution, even before actual cost data are available. The module may also be used to assess the realism of research and development funding profiles.

Classification: Unclassified

Sponsor: Deputy Assistant Secretary of the Navy (Management and Budget)

Performer: CNA Corporation, Cost and Acquisition Team
4825 Mark Center Drive
Alexandria, VA 22311-2053
Dr. Dan Davis, (703) 824-2533

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	08	\$300,000	0.8

Schedule: Start End
Oct 07 Jan 09

Publications: CNA document D0015902, "A Stitch in Time Saves Nine: Program Diagnostics Using the Rayleigh Model for Executive Decision-Makers," Feb 2007
CNA documents D0019285 and D0019289, "Using the Rayleigh Model to Assess Future Acquisition Contract Performance and Overall Contract Risk: The future isn't what it used to be. (Yogi Berra) Volumes I and II," Jan 2009

CNA-6

Title: Information markets for acquisition

Summary: The idea for this project germinated in a method called information markets, which was cursorily examined in an earlier CNA study as a way of assessing acquisition volatility. In 2008, we developed a market trading in “assets” whose contingent future value depends on the outcome of an acquisition cost or schedule variable. All “endowments,” “assets,” and “prices” are denominated and exchanged in “virtual dollars.” Each trader begins with an equal “endowment” of these “virtual dollars” to participate in the market. Traders conduct trades based on their beliefs about future contingent acquisition events. The pilot market produced encouraging results. The market efficiently discovered, aggregated, and communicated information held by internally selected traders about possible cost and schedule outcomes for selected acquisition programs. This information market accurately forecasted acquisition outcomes, measured program risk, and outperformed experts. The DASN (M&B) found the results from our pilot study interesting and asked us to develop a plan and a concept of execution that uses internal Navy personnel to conduct a similar market over a longer period of time. This study will develop a detailed information market implementation plan based on lessons learned from our pilot market to validate the viability and utility of information markets within the Navy acquisition community. We also intend to show how such a market could offer insights and information to decision-makers that are not currently available to them.

Classification: Unclassified

Sponsor: Deputy Assistant Secretary of the Navy (Management and Budget)

Performer: CNA Corporation, Cost and Acquisition Team
4825 Mark Center Drive
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Dr. Dan Davis, (703) 824-2533

Resources:

<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
09	\$50,000	0.5

Schedule:

<u>Start</u>	<u>End</u>
Dec 08	Sep 09

Publications: CNA document D0016573.A2, Management of the Navy’s Acquisition Portfolio: New Approaches, by Gary Christle, Dan Davis, and Keith Brown, Unclassified, Sep 2007

CNA-7

Title: eCASS cost-benefit analysis update

Summary: The Consolidated Automated Support System (CASS) is the Navy’s standard Automated Test Equipment for support of electronic and avionics systems. It was developed to reduce the proliferation of peculiar support equipment used at shore and afloat Intermediate Maintenance Activities and Navy depots. The NAVAIR CASS program office (PMA-260) is initiating a CASS modernization program (called eCASS) to update the earlier stations. CNA developed the life-cycle cost estimates for the CASS alternatives and updated cost-benefit analysis performed originally in 2006.

Classification: Unclassified

Sponsor: CASS Program Office (PMA-260), Naval Air Systems Command

Performer: CNA, Cost and Acquisition Team
4825 Mark Center Drive
Alexandria, VA 22311-2053
Dr. Jino Choi, (703) 824-2266

Resources: FY Dollars Staff-years
08 \$200,000 0.8

Schedule: Start End
Nov 07 Jun 09

Publications: CNA document D0019638, "Updated Cost Benefit Analysis for CASS Alternatives," Jan 2009

CNA-8

Title: DON Budget Migration

Summary: Given anticipated operational requirements, fiscal constraints, and rising unit costs for major weapons systems, the Department of the Navy (DON) may face significant difficulty in trying to implement the procurement component of its current Maritime Strategy. Long-term trends in procurement funding, the possible "migration" of funds away from procurement in the face of rising operations and support (O&S) costs, and shifting priorities within the procurement budget itself all represent sources of financial risk as DON plans for an orderly transition to a new administration. The Navy's Office of Program and Process Assessment (OPPA) asked CNA to examine the extent of these financial risks. We found that there has been generally funding migration toward procurement when the DON budget as a whole was rising and away from procurement when the DON budget was falling; that there were changes in funding priorities between the publication of PB08 and PB09, with proposed reductions in procurement appropriations being used to finance increases in other programs; and that DON procurement budget projections over the FYDP are substantially below the likely fiscal requirements implied by the current DON procurement strategy.

Classification: Unclassified

Sponsor: Department of the Navy, Office of Program and Process Assessment

Performer: CNA, Cost and Acquisition Team
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Dr. Julianne Nelson, (703) 824-2285

Resources: FY Dollars Staff-years
08 \$100,000 0.4

Schedule: Start End
Aug 08 Jan 09

Publications: CNA document D0019164, "DON Budget Migration," Dec 2008

CNA-9

Title: Identifying the Navy's new baseline budget

Summary: This study examined how much of the supplemental budget request could justifiably be included in the Navy's future baseline budget. To that end, this paper examined the differences between pre-GWOT and GWOT era expenditures on operations and maintenance for ships and aircraft. It was found that several cost categories for ships are up dramatically from their pre-GWOT levels. Some of this increase can be attributed to increased usage during GWOT. Overall, the Navy is steaming 9% more during GWOT. Aircraft also show a dramatic increase in costs from their pre-GWOT levels. However, at an aggregate level, this is not due to an increase in flying hours. Rather, it is due to increasing costs per flying hour. Having shown that costs are up during GWOT, we also modeled costs as a function of observable characteristics of ships and aircraft. We find

some strong relationships between some cost categories and usage (steaming hours, flying hours) and age.

Classification: Unclassified

Sponsor: Director, Navy Programming Division (OPNAV N80)

Performer: CNA Corporation, Cost and Acquisition Team
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Dr. Donald Birchler, (703) 824-2998

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	08	\$200,000	0.7

Schedule:	<u>Start</u>	<u>End</u>
	Oct 07	Nov 08

Publications: CNA document D0018728, “Implications of Enduring GWOT for the Navy’s baseline budget: the O&M account,” Nov 2008

The MITRE Corporation

Name:	The MITRE Corporation Center for Acquisition and Systems Analysis (CASA)		
Address:	7515 Colshire Drive McLean, Virginia 22102-7539		
Director:	Barbara Moran and Mike Janiga		
Size:	Professional:	235	
	Support:	8	
	Consultants:	0	
	Subcontractors:	0	
Focus:	CASA provides support to numerous Federal Governmental sponsors in the fields of cost analysis, financial management, acquisition, program management, risk analysis, decision analysis, modeling and simulation, and portfolio management.		
Activity:	Number of projects in process:	200+	
	Average duration of a project:	6 to 12 months	
	Average number of staff members assigned to a project:	1 to 2	
	Percentage of effort conducted by consultants:	0	
	Percentage of effort conducted by subcontractors:	0	

MITRE-1

Title:	Business Continuity Decision Framework		
Summary:	The objective of this research is to develop a decision framework and supporting tools and guidance that can be applied by our Government sponsors to improve national disaster response capabilities through more effective supply chain resiliency and response planning		
Classification:	Unclassified		
Sponsor:	The MITRE Corporation		
Performer:	Audrey Taub, Frank Chang, Kevin Buck		
Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2009	\$125,000	
Schedule:	<u>Start</u>	<u>End</u>	
	Oct 2008	Aug 2009	
Database:	In progress		
Publications:	None		

MITRE-2

Title:	Adapting Venture Capital Concepts to System Acquisitions		
Summary:	The goal of this research is to contribute a strategic, forward-looking view of enterprise systems acquisition. Specifically, the research objectives are to explore venture capital (VC) approaches and determine whether and how they can be used to improve the		

acquisition of enterprise systems in the federal arena, and to develop and pilot elements or an enterprise systems acquisition model.

Classification: Unclassified

Sponsor: The MITRE Corporation

Performer: Renee Stevens, Margaret King

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2008	\$500,000	3.5
	2009	\$500,000	3.5

Schedule:	<u>Start</u>	<u>End</u>
	Oct 2007	Sep 2009

Database: In progress

Publications: None

RAND Corporation

Name:	RAND Corporation Note: RAND cost analysts are part of the research staff and also work on other, non-cost research projects within all of RAND's FFRDCs (Project Air Force, Arroyo Center, and National Defense Research Institute). All published RAND documents can be down loaded from WWW.RAND.ORG		
Address:	Main Office: 1776 Main Street, Santa Monica, CA 90407-2138 Washington Office: 1200 South Hayes Street, Arlington, VA 22202-5050		
Director:	John C. (Jack) Graser (703) 413-1100 Ext. 5142		
Size:	Professional:	10	
	Support:	0	
	Consultants:	0	
	Subcontractors:	0	
Focus:	The purpose of this on-going project is to conduct a number of studies related to developing better cost estimating tools for use by the acquisition community, examine the effects of DoD policies as they impact weapon system costs, and establish a Center of Excellence for Cost Analysis at RAND. The initial direction was to concentrate on military aircraft costing, so the results could be used as part of the Joint Strike Fighter deliberations in 2001. Later, the focus was to shift to unmanned air vehicles, space systems, and universal costs such as software, testing,, systems engineering/ program management costs, sustainment and contractor logistics support, operating and support costs, as well as weapon system cost growth analyses. Using this expertise, other studies have been performed such as analyses of alternatives, Congressionally-mandated studies for OSD and the USAF, and studies on specific topics of interest for the operations and acquisition communities.		
Activity:	Number of projects in process:	5-10	
	Average duration of a project:	1 year	
	Average number of staff members assigned to a project:	1-4	
	Average number of staff-years expended per project:	0.5 to 3	
	Percentage of effort conducted by consultants:	0%	
	Percentage of effort conducted by subcontractors:	0%	

RAND-1

Title:	Incorporating Leading Indicators into Program Monitoring and Evaluation
Summary:	Cost and schedule overruns are a continuing problem for the Air Force and the other services. Often these overruns are recognized too late or come as a surprise to decision-makers. The purpose of this effort is to assist SAF/AQ with the assessment of existing and proposed leading indicators of acquisition program cost and schedule growth. RAND case studies of recent acquisition programs will be used to identify common causes of poor program performance and to assess the likely utility of various metrics. It will also explore how these indicators can be used to enhance government insight and improve program performance.
Classification:	Unclassified
Sponsor:	Blaise Durante (SAF/AQX) Deputy Assistant Secretary (Acquisition Integration), (703) 588-7211 with Mr. Jay Jordan, (AFCAA/TD) as Technical Monitor

Air Force Cost Analysis Agency, Research and Resource Management Division
Mr. Jay Jordan, (703) 604-0400; DSN 664-0451
E-mail: Jay.Jordan@pentagon.af.mil

Performer: Bernard Fox, Thomas Light, Mark Lorell
Resources: Approximately one staff year for FY 2009
Schedule: Start End
Oct 2008 Sep 2009
Database: None
Publications: In work

RAND-2

Title: Cost Estimates at Milestone B: A Comparison with Program Baselines
Summary: For this project, various credible estimates of the development and procurement cost of major weapon systems will be analyzed and compared to the “official” Program Baseline funding estimates listed in the Selected Acquisition Reports (SARs). Those different estimates for each program – the program office position, the service cost position, and the OSD CAIG position – will be compared to the cost estimate approved by the Milestone Decision Authority (MDA). The main question is whether program office estimates, service cost positions, and OSD CAIG estimates are substantially different from one another or from the reported SAR Program Baseline estimate. Research questions include: How large are the differences, in percentage terms? Is there a trend? How does the variability in estimates compare to the difference between the estimates and actuals? How much could cost growth be reduced if the most pessimistic estimate were selected as a SAR baseline?
Classification: Unclassified
Sponsor: Blaise Durante (SAF/AQX) Deputy Assistant Secretary (Acquisition Integration), (703) 588-7211 with Mr. Jay Jordan, (AFCAA/TD) as Technical Monitor
Air Force Cost Analysis Agency, Research and Resource Management Division
Mr. Jay Jordan, (703) 604-0400; DSN 664-0451
E-mail: Jay.Jordan@pentagon.af.mil
Performer: Robert Leonard and Kevin Brancato
Resources: Approximately one-half staff year each for FY 2008 and FY 2009
Schedule: Start End
Oct 2007 July 2009
Database: Yes
Publications: Research Ongoing

RAND-3

Title: Estimating the Impact of Avionic System Complexity on Integration Costs
Summary: The purpose of this project is to review current and new methods for assessing the impact of technical and organizational structure of a system on its development phase, specifically the integration process. Historically parametric cost analysis has focused on easily quantifiable metrics such as weight, speed, material, power, frequency, size, etc., to predict cost. While these are still useful, they often don’t adequately capture the cost effects of increasingly complex systems. In the development of aerospace and defense systems, the impact of increasing technical sophistication and interconnectedness manifests itself primarily in the systems integration function. Systems integration is an outstanding issue for cost estimators; the process has not been well studied in terms of

understanding what drives cost and time. We seek to develop measures to define this impact, assess their usefulness, and explore how they may be incorporated into current cost forecasting practice. This research will attempt to characterize both the architecture of the systems as well as the process in which integration occurs that may be correlated with integration efforts. Our focus will be on military aircraft avionics systems.

Classification: Unclassified

Sponsor: Blaise Durante (SAF/AQX) Deputy Assistant Secretary (Acquisition Integration), (703) 588-7211 with Mr. Jay Jordan, (AFCAA/TD) as Technical Monitor
Air Force Cost Analysis Agency, Research and Resource Management Division,
Mr. Jay Jordan, (703) 604-0400; DSN 664-0451
E-mail: Jay.Jordan@pentagon.af.mil

Performer: Ian Cook, Joel Predd, Bernard Fox, Rena Rudavsky

Resources: Approximately one staff year for FYs 2008 and 2009

Schedule: Start End
Nov 2007 June 2009 -- May be merged with other complexity work

Database: None

Publications: Research Ongoing

RAND-4

Title: Improving the Design and Management of Incentives in System Development and Demonstration (SDD) Contracts

Summary: Through the course of a series of acquisition reform efforts, the Department of Defense (DoD) has repeatedly sought to change the incentive structures that frame the decisions that contractors make in ways that would improve the performance, schedule, and cost of contracts associated with major acquisition programs. In this context, "incentives" include explicit forms of incentives, such as cost-plus-incentive-fee and cost-plus-award-fee contract types, as well as new reporting requirements and approaches to program management, such as earned value management. Policy changes have rarely achieved their goals. In recent years, particular concerns have increased within DoD about liberal award fees awarded even when contractors are not achieving their goals and, more generally, about persistent shortfalls in programs relative to their performance, schedule, and cost goals. Like its sister services, the Air Force has experienced such problems and has a particular interest in improving the design and management of incentives in its major system acquisition SDD contracts. This project will examine a few development contracts to determine why incentives in current SDD contracts are not performing as well as they could and identify specific ways to improve their performance.

Classification: Unclassified

Sponsor: Roger Correll, Deputy Assistant Secretary for Contracting (SAF/AQC) 703-588-7070

Performer: Frank Camm, John C. (Jack) Graser, Mark Lorell

Resources: Approximately one staff year

Schedule: Start End
Oct 2007 July 2009

Database: None

Publications: In draft (as of May, 2009)

RAND-5

Title: Estimating the Cost of Stealth Technology

Summary: Among the combat aircraft produced for the USAF, four have involved significant efforts to reduce their signatures to enemy defenses: F-117, B-2, F-22, and F-35. All have used different approaches to signature reduction as technology has evolved since early signature efforts by the USAF. For cost estimators, including these costs in their life cycle estimates has been a challenge as little actual data has been available, particularly in an unclassified or collateral classified form. The Institute for Defense Analyses produced a Secret report on LO costs in 2001, but significant changes have occurred since their data gathering. The F-22 was just beginning production, the B-2 was immature in terms of O&S costs, and the F-117 has been retired. A major concern in the USAF is that the B-2 and F-22 operating and maintenance costs have been higher than anticipated, thereby perturbing budgets and manpower requirements. This study will attempt to identify specific low observable costs in an unclassified venue, with particular emphasis on O&S costs.

Classification: Unclassified

Sponsor: Blaise Durante (SAF/AQX) Deputy Assistant Secretary (Acquisition Integration), (703) 588-7211 with Mr. Jay Jordan, (AFCAA/TD) as Technical Monitor
Air Force Cost Analysis Agency, Research and Resource Management Division,
Mr. Jay Jordan, (703) 604-0400; DSN 664-0451
E-mail: Jay.Jordan@pentagon.af.mil

Performer: Mike Boito, John C. (Jack) Graser, John Drew, Mark Lorell, Kevin Brancato, Guy Weichenberg, Rena Rudavsky

Resources: Approximately one staff year

Schedule: Start End
Oct 2008 Sept 2009

Database: None

Publications:

RAND-6

Title: F-22A Post-Multiyear Procurement Options

Summary: A follow-on to RAND's *F-22A Multiyear Procurement Program: An Assessment of Cost Savings* (MG-664), the purpose of this research is to explore the costs and industrial base impacts of the procurement options the US Air Force will face after the last multiyear procurement of F-22A is awarded in FY2009. There are four courses of action: shutdown, shutdown and planned restart, production at low rates, and continued production at current rates. The program activities necessary to follow each course of action are identified, and a low, likely, and high range of associated costs for each activity are estimated. Procurement costs are estimated using a quantity-adjusted cost-improvement-curve model. This model was modified for loss-of-learning effects of shutdown and restart through reanalysis of data first gathered in RAND's *Reconstituting a Production Capability* (MR-273). Comparison of procurement costs of an equal number of aircraft under the shutdown and restart, low rate production, and continued production scenarios is performed. The industrial base assessment used subjective classification to determine the extent and range of difficulties that might be faced by suppliers during a shutdown and restart. Additionally, the impacts to the F-22A sustainment and modernization programs were assessed qualitatively.

Classification: Unclassified

Sponsor: Maj Gen Jeffrey R. Riemer, AFPEO F-22

F-22 Program Executive Office
Maj Gen Jeffrey R. Riemer, (703) 588-7300
E-mail: jeff.riemer@pentagon.af.mil

Performer: Obaid Younossi, Kevin Brancato, John C. Graser, Tom Light

Resources: Approximately two staff years for FY 2008

Schedule: Start End
Sep 2007 June 2008

Database: None

Publications: F-22A Post Multiyear Procurement Options, DRR-4543-1, due out June, 2009

RAND-7

Title: Analysis of Cost Growth using Selected Acquisition Reports

Summary: This is a continuing effort to maintain and update the RAND DoD Selected Acquisition Reports (SAR) database by analyzing and summarizing the contents of the SARs from the inception of a program through the latest SARs submitted as part of the annual president's budget. This analysis will categorize cost growth by Service, type of system, and growth from milestones. The database contains a wide range of programmatic information for all Major Defense Acquisition Programs (MDAPs) in a digital format. This analysis will improve understanding of cost growth in order to enable better-informed decisions regarding both specific weapon system acquisitions and future resource and acquisition policy decisions.

Classification: Unclassified

Sponsor: Blaise Durante (SAF/AQX) Deputy Assistant Secretary (Acquisition Integration), (703) 588-7211, with Mr. Jay Jordan, (AFCAA/TD) as Technical Monitor
Air Force Cost Analysis Agency, Research and Resource Management Division
Mr. Jay Jordan, (703) 604-0400; DSN 664-0451
E-mail: Jay.Jordan@pentagon.af.mil

Performer: Robert Leonard

Resources: Approximately one-half staff year

Schedule: Start End
Mar 2001 Continuing

Database: Yes

Publications: Historical Cost Growth of Completed Weapons Systems Programs, TR-343-AF, 2006
Is Weapon System Cost Growth Increasing? MG-588-AF, 2007
Sources of Weapon System Cost Growth, MG-670-AF, 2008

RAND-8

Title: Estimating the Effects of Complexity on Software Size and Costs

Summary: The primary objective of this project is to develop an analytical approach to estimating software costs as they relate to software size and complexity resulting from software integration requirements. The project extends the work done in FY08 on the avionics system complexity project, which found that (1) integration problems are most commonly manifested in software and (2) both technical and organizational interface issues contribute to integration costs. Several software cost estimation methods currently exist that are based on software sizing. This project will focus specifically on how software integration complexities affect software size and ultimately software cost. We will review both technical and organizational software integration issues; identify critical factors that

trigger software complexities; and attempt to develop key “integration” metrics that are cost-drivers. Our analysis will also focus on identifying/developing cost estimation methods useful in the early phases of software development, e.g., pre-Milestone B.

Classification: Unclassified

Sponsor: Blaise Durante (SAF/AQX) Deputy Assistant Secretary (Acquisition Integration),
(703) 588-7211, with Mr. Wilson Rosa (AFCAA) as Technical Monitor 703-604-0395
Wilson.rosa@pentagon.af.mil
Air Force Cost Analysis Agency

Performer: Julie Kim, Bernard Fox, Guy Weichenberg

Resources: Approximately .75 staff years

Schedule: Start End
Oct 2008 Sept 2009

Database: No

Publications: In work

Institute for Defense Analyses (IDA)

Name:	Cost Analysis and Research Division		
Address:	4850 Mark Center Drive, Alexandria, VA 22311-1882		
Director:	Dr. David L. McNicol		
Size:	Professional:	110	
	Support:	5	
	Consultants:	50	
	Subcontractors:	5	
Focus:	Costs of weapon systems, forces, and operations		
Activity:	Number of projects in process:	50	
	Average duration of a project:	1 year	
	Average number of staff members assigned to a project:	4	
	Average number of staff-years expended per project:	2	
	Percentage of effort conducted by consultants:	7%	
	Percentage of effort conducted by subcontractors:	10%	

IDA-1

Title: Financial and Economic Analysis

Summary: This task has three elements: to study the financial effects of specific proposed mergers or acquisitions within the defense industry; to study the status of venture capital efforts within the Government that pertain to national defense; and to develop metrics and analyses that effectively track the financial health of the U.S. Defense industrial base. Additionally IDA will study specific financial areas that may be of importance to the health of the defense industrial base, e.g. the effects of pension accounting changes on profitability.

Classification: Unclassified

Sponsor: OSD(AT&L – Industrial Policy)
Ms. Jody Tran-Le
Jody.Tran-Le@osd.mil
241 18th Street South
Crystal Square 4, Suite 501
Arlington, VA 22202

Performer: IDA

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2008	\$250,000	

Schedule:	<u>Start</u>	<u>End</u>
	Mar 2009	ongoing

Database:

Publications:

IDA-2

Title: Production Material Analysis

Summary: U.S. manufacturers and distributors of steel products and other strategic materials have experienced sharp price increases and availability problems for certain materials. There is growing concern that volatility in these markets will cause cost increases, schedule delays, quality issues and availability problems on important DoD production programs, such as ground systems and aircraft. Exacerbating this uncertainty is the relative decline of the DoD's share of the overall market for these materials as global commercial industrial growth has outpaced the growth in military applications. In this task IDA will collect detailed information on the amounts of both raw product and final material forms of selected materials used on a specified set of weapons systems and examine the implications of this content on the cost and success of the subject weapons system programs

Classification: Unclassified

Sponsor: OSD(AT&L – Industrial Policy)
Mr. Rick Lowden
Rick.Lowden@osd.mil
241 18th Street South
Crystal Square 4, Suite 501
Arlington, VA 22202

Performer: IDA

Resources: FY Dollars Staff-years
2008 \$375,000

Schedule: Start End
Mar 2009 Dec 2009

Database:

Publications:

IDA-3

Title: Commercial Content in DoD Weapon Systems

Summary: For well over a decade, the DoD has stressed the need to incorporate more commercial technologies in weapons systems. The potential benefits are obvious: commercial technologies evolve and unit costs generally decline quickly almost exclusively through privately funded innovation and capital investment. However, many commercial products are not compatible with requirements for military equipment and software. In spite of this complication the Department would like to learn how it can reap more benefits of commercial technologies in cost, quality, and reduced development cycle time. This desire is implied in the Department's AT&L Goal 5.2.3--to improve the DoD's access to non-traditional suppliers by changing regulations and recommending legislative changes to Congress. This task aims to address: what factors facilitate and what factors inhibit the adoption of commercial products in military acquisitions; and what lessons can be learned from examples of acquisitions that adopted commercial product content?

Classification: Unclassified

Sponsor: OSD(AT&L – Industrial Policy)
Mr. Bradley Nelson
Bradley.Nelson@osd.mil
241 18th Street South
Crystal Square 4, Suite 501
Arlington, VA 22202

Performer: IDA

Resources: FY Dollars Staff-years
 2009 \$220,000

Schedule: Start End
 Mar 2009 Dec 2009

Database:

Publications:

IDA-4

Title: Cost-Effectiveness Analysis of Training

Summary: The Under Secretary of Defense (Personnel and Readiness) is overseeing an assessment of the Training Transformation (T2) program. IDA is providing support for this study effort. This includes consideration of how well T2 is supporting the joint training needs of the Combatant Commanders. The adequacy of funding to accomplish T2's mission will also be addressed.

Classification: Unclassified

Sponsor: Deputy Under Secretary of Defense (Readiness)
 The Pentagon, Room 1C757
 Washington, DC 20301

Performer: IDA
 4850 Mark Center Drive
 Alexandria, VA 22311-1882

Resources: FY Dollars Staff-years
 2004 \$519,000 2.0
 2005 \$600,000 2.4
 2006 \$750,000 3.0
 2007 \$1,058,000 4.0
 2008 \$725,000 3.0
 2009 \$700,000 2.7

Schedule: Start End
 Jan 2004 Sept 2010

Database: To be determined

Publications: "2005 Training Transformation Assessment," Office of the Under Secretary of Defense for Personnel and Readiness
 "2007 Training Transformation Block Assessment," Office of the Under Secretary of Defense for Personnel and Readiness

IDA-5

Title: Business Plan for Training Modeling and Simulation

Summary: This task will produce an investment strategy for developing modeling & simulation (M&S) tools that will help fill key gaps in the training capability of the Department of Defense. It will:

- Identify current and planned training M&S capabilities
- Identify gaps in the current and planned training M&S capabilities
- Define activities to close the identified gaps
- Provide a Draft Training M&S Business Plan

Classification: Unclassified

Sponsor: Under Secretary (Personnel and Readiness)

Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882

Resources: FY Dollars Staff-years
2006 \$250,000 1.0

Schedule: Start End
Aug 2006 Jul 2008

Database: None

Publications: IDA Document NS D-3562, "Training Community Modeling and Simulation Business Plan, 2007 Edition"

IDA-6

Title: Data Consolidation Study

Summary: The Defense Acquisition Executive needs visibility and control over the cost, schedule, and technical performance of major acquisition programs. This requires the most timely, accurate, and actionable information available throughout DoD. The purpose of this study is to aggregate ACAT I acquisition data into a single repository where DoD analysts can quickly and easily access the most current data available to DoD. The first step which has now been completed was to establish the repository and store the initial set of Earned Value Management (EVM) data. This included the Contract Performance Reports (CPRs), the Contract Funds Status Reports (CSFRs) and the Integrated master Schedules (IMSs). The second step in the intermediate term will be to improve and integrate the contracting process for EVM and the Cost and Software Data Reporting (CSDR) systems to ensure all contractual requirements are complete, accurate, and consistent. The third step in the long term will be to integrate data policy and reporting to improve efficiency and effectiveness.

Classification: Unclassified

Sponsor: OSD/AT&L/ARA (Room 3D161, Pentagon) and OSD/PA&E/DCARC (Suite 200, CGN, Arlington, VA)

Performer: IDA

Resources: FY Dollars Staff-years
2006 \$300,000
2007 \$180,000
2008 \$210,000
2009 \$100,000

Schedule: Start End
Sep 2006 Ongoing

Database: Central Repository of Acquisition Data initially consisting of EVM Data

Publications:

IDA-7

Title: Detailed Earned Value Analysis

Summary: The Department of Defense requires the collection of Earned Value (EV) Management information for high dollar value cost or incentive contracts. OSD routinely uses high-level EV data to monitor program progress and often misses early signs of potential cost and schedule problems. The objective of this project is to develop techniques, algorithms, and tools to support automated analysis of detailed EV data to provide early detection and identification of program issues.

Classification: Unclassified
Sponsor: OSD(PA&E)
 OAPPD
 The Pentagon, Room BE827
 Washington, DC 20301
 OUSD/AT&L/ARA
 The Pentagon, Room 3D161
 Washington, DC 20301
Performer: IDA
Resources: FY Dollars Staff-years
 2007 \$480,000
Schedule: Start End
 Jan 07 Jan 09
Database: None
Publications: IDA-Paper D-3687, "Detailed Earn Value Analysis," June 2009

IDA-8

Title: Methods for Evaluating Cost and Schedule Status of Major Defense Acquisition Programs
Summary: The Department of Defense (DoD) requires the submission of earned value management and contract cost data for all cost and incentive contracts meeting established dollar value thresholds and other criteria. The department has dedicated considerable resources over the last decade in developing the information management systems to collect and make available to the OSD community these data. This task and its predecessors have addressed a range of topics concerning data and analysis of cost and schedule status. Work under this task has included the creation of standardized earned value data analysis and presentation tools, evaluation of program progress outside of standard earned value tools, evaluation of the predictive quality of common earned value metrics, and the development and application of alternative earned value metrics. Currently the task's work has focused evaluating the quality of these data from a cost analysts perspective and provide feedback to the sponsor, Office of the Under Secretary of Defense (Acquisition, Technology and Logistics). Recently we provided assessments on two General Dynamic contracts for the Navy, Bath Iron Works' contract for the Detail Design and Construction of the Navy destroyer DDG-1000 and Electric Boat's construction contracts for the SSN-774 Virginia Class submarine. These reports are being used by OSD(AT&L) in negotiation with the contractor to improve the quality of their reporting. This work also produced two presentations at DoDCAS this year: "DACIMS, DCARC, DAMIR Data Quality from a Cost Analysts Perspective" and "A Spiral Development Cost Model for UAV Unit Costs Global Hawk."

Classification: Unclassified
Sponsor : OSD(AT&L) ARA/AM
 The Pentagon, 3C959
 Washington, DC 20301
Performer: IDA
 4850 Mark Center Drive
 Alexandria, VA 22311-1882
Resources: FY Dollars Staff-years
 2009 \$200,000
Schedule: Start End
 October 2008 September 2009

Database: N/A

Publications: N/A

IDA-9

Title: Contingency Operations Support Tool (COST)

Summary: The objective of this task is to continue to refine the process of estimating the incremental cost of proposed and on-going overseas contingency operations, and to further develop the automated tool for conducting such estimates. The USD(C) has mandated the use of COST as the common cost estimating platform for the reimbursement of all war-related costs. COST is a systemic part of the supplemental appropriation process. More than \$396B of supplemental funding requests from FY02 through FY10 were generated by the COST model. Additionally, this task supports the design and development of the GWOT Request Information Database (GRID) which is used by USD(C), the Services, and Defense Agencies to submit, manage, and assess all supplemental requests. IDA hosts the COST and GRID applications 24/7 worldwide via its own secure SIPRNet facility.

Classification: Unclassified

Sponsor: Office of the Under Secretary of Defense (Comptroller), Program/Budget

Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2004	\$1,400,000	8.0
	2005	\$1,400,000	7.5
	2006	\$1,400,000	7.1
	2007	\$1,700,000	7.5
	2008	\$1,700,000	7.0
	2009	\$600,000	8.0
	2010	\$1,800,000	8.0

Schedule:	<u>Start</u>	<u>End</u>
	1997	Ongoing

Database: SQL Server 2008/Visual Studio 2008

Publications: Contingency Operations Support Tool (COST)
GWOT Request Information Database (GRID)

IDA-10

Title: Forecasting TRICARE Utilization and Costs

Summary: In recent years the Defense Health Program (DHP) has increased substantially because of enhanced benefits and increased utilization by Military Health System (MHS) beneficiaries. There are several factors influencing the increase in utilization. Retired beneficiaries under age 65 have traditionally been marginal users of the MHS because many have other sources of private health insurance. However, many retirees have been returning to the MHS because of rising private health insurance premiums. At the same time, the Global War on Terror has put a heavy strain on military treatment facility (MTF) capacity because of the mobilization of large numbers of Guardsmen/Reservists and the extension of benefits to their family members. Once the capacity of an MTF is reached, additional demand must be met with purchased health care services. Because DoD has no reliable way of forecasting out-year purchased care costs, IDA was tasked with conducting an independent, analytically sound, analysis of the impact of increased demand on DoD purchased care costs. This year's task improved the forecasts by adding

another year of data to the historical trends and expanded the analysis and forecasts to include direct care costs.

Classification: Unclassified
Sponsor: Office of the Director (Program Analysis and Evaluation)
1800 Defense Pentagon, Room BE798
Washington, DC 20301-1800
Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882
Resources:

<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
2006	\$400,000	1.3
2007	\$400,000	1.6
2008	\$295,000	

Schedule:

<u>Start</u>	<u>End</u>
Nov 2008	Oct 2009

Database: None
Publications: Report pending

IDA-11

Title: Evaluation of TRICARE Program Costs
Summary: TRICARE is the DoD's health care benefit that brings together the world-wide health care resources of the Army, Navy, and Air Force and supplements that capability with networks of civilian health care providers. Its goals are to provide better access and quality while controlling costs to the government. Since TRICARE's inception, however, Congress has mandated more and more generous benefits for DoD health care beneficiaries and consequently, the cost to the government has spiraled upward. Earlier IDA evaluations compared TRICARE costs in the year of interest with an estimate of what those costs would have been had the traditional CHAMPUS benefit been continued. Because TRICARE has been in place for over a decade, the comparison with CHAMPUS is no longer relevant. The most recent evaluations have examined trends in TRICARE utilization and costs over a 3-year window and compared them with corresponding civilian-sector benchmarks. This year's evaluation continues this approach but adds one more year of data to the trends.
Classification: Unclassified
Sponsor: TRICARE Management Activity (HPA&E)
5111 Leesburg Pike
Suite 517
Falls Church, VA 22041
Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882
Resources:

<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
2006	\$600,000	1.7
2007	\$517,000	1.5
2008	\$740,600	

Schedule:

<u>Start</u>	<u>End</u>
Apr 2008	Mar 2009

Database: None

Publications: Evaluation of the TRICARE Program: FY 2009 Report to Congress

IDA-12

Title: Market and Industrial Base Study of Night Vision Equipment

Summary: The objective of this task is to identify current and emergent night vision technologies, to assess technology levels across companies and countries, and to correlate technology levels with commercial and military applications. We are studying the markets for image intensifier tubes and infrared detectors that can be used in military grade night vision equipment.

Classification: Unclassified

Sponsor: ODUSD (Industrial Policy)
Mr. Robert Read
robert.read@osd.mil
241 18th Street South
Crystal Square 4, Suite 501
Arlington, VA 22202

Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882
gdavis@ida.org

Resources: FY Dollars Staff-years
2009 \$195,000

Schedule: Start End
March 2009 August 2009

Database: None

Publications: Briefing due in August

IDA-13

Title: Total Ownership Cost Reduction

Summary: OSD(AT&L)/Defense Systems/Systems Engineering Office is actively seeking new and innovative ways to reduce the cost of weapon systems. The strategy involves reducing the total ownership costs (R-TOC) of weapon systems by reducing their Operations and Support (O&S) costs in the sustainment phase of programs. IDA develops strategies and action plans to identify high cost drivers, reviews current DoD activities addressing components O&S cost, and develops plans to reduce the cost impact of those drivers. IDA acts as the DoD interface agent for the fifteen R-TOC Special Interest Programs (SIPs) now in place as they develop and implement their individual cost reduction initiatives. IDA plans and conducts R-TOC Forums to facilitate the exchange of ideas and best practices between programs and across Services. The USD (AT&L) has challenged all programs to reduce their inflation growth of O&S costs by 30 percent between FY04 and FY10. Thus, all programs must/should set an R-TOC goal for FY10 and define a set of actions to reach that goal. A set of fifteen Special Interest Programs was named to show-the-way for this new R-TOC focus and to institutionalize R-TOC across programs. IDA continues to work with these programs on strategies, action plans and initiatives to reach their FY10 goals. An R-TOC Program Element was developed with IDA assistance and it currently funds projects at a rate of \$25M per year. The DoD Value Engineering (VE) initiative is another element of this overall Total Ownership Cost Reduction effort. IDA developed a strategy to re-invigorate this legislatively required initiative in all programs and is currently working that strategy. R-TOC and VE initiatives are complimentary and are being integrated through strategies, requirements, assessments, planning recommendations and implementation guidance.

Classification: Unclassified

Sponsor: OUSD(AT&L)/Defense Systems/Systems Engineering
The Pentagon, Room 3D1075
Washington, DC

Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882

Resources:

<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
2006	\$450,000	2
2007	\$450,000	2
2008	\$450,000	2
2009	\$450,000	2

Schedule:

<u>Start</u>	<u>End</u>
Oct 2003	Continuing

Database: None

Publications: Multiple IDA Internal documents

“Reduction of Total Ownership Costs (R-TOC) Best Practices,” Danny L. Reed

“Guidebook for Using Value Engineering Change Proposals in Supplies and Services Contracts,” IDA Document, D-3046, Danny L. Reed and Jay Mandelbaum

“Value Engineering Handbook,” IDA Document, P-4114, Danny L. Reed and Jay Mandelbaum

Developed a VE Continuous Learning Module – on the DAU website

Developed a VECF Community of Practice – on the DAU website

R-TOC and VE websites – hosted by IDA

Numerous open presentations on R-TOC and VE

“Reducing Cost with Value Engineering Cost Proposals”—Defense AT&L—January-February 2009 - Danny L. Reed and Jay Mandelbaum

“Value Engineering Throughout a Defense System’s Life Cycle”—May-June 2009 – Danny L. Reed and Jay Mandelbaum

IDA-14

Title: Prices of Commercial Aircraft and Engines

Summary: Commercial aircraft and engines, procured by DoD on a price basis, are major components of many current and planned major defense acquisition programs, including the KC-X, C-27, P-8, C-5 RERP and Air Force One. The department does not typically have access to traditional cost data for these commercial systems, and price data tends to be limited and of uneven quality. The objective of this task is to collect a robust set of pricing data for commercial aircraft and engines from government sources and from commercial consulting firms, and use these data to create price estimating relationships that would be applicable to a range of commercial aircraft and engine systems.

Classification: Unclassified

Sponsor: OSD(PA&E)
WSCAD
The Pentagon, Room BE779
Washington, DC 20301

Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882

Resources: FY Dollars Staff-years
2009 \$150,000

Schedule: Start End
April 2009 April 2010

Database: N/A

Publications: A report will be written documenting study results.

IDA-15

Title: Long Endurance UAV Acquisition Strategy

Summary: The Defense Advanced Research Projects Agency (DARPA) Vulture program seeks to develop and demonstrate the capability to sustain unmanned, heavier-than-air flight for periods of as long as five years. This capability would combine some of the favorable qualities of both traditional aircraft and satellite systems to provide high quality, persistent and responsive intelligence, surveillance and reconnaissance. Three contractors were funded in Phase I to develop Vulture concepts. In Phase II DARPA will fund continued development of at least one subscale flight demonstration article. It has not been determined how many concepts will advance to this stage, or to any of the acquisition phases that would follow. The objective of this task is to provide preliminary analysis on the costs and benefits of maintaining multiple contractors through various phases of the Vulture program. Additional work may be undertaken in future tasks to add detail to this preliminary analysis.

Classification: Unclassified

Sponsor: DARPA/TTO

Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882

Resources: FY Dollars Staff-years
2009 \$75,000

Schedule: Start End
May 2009 September 2009

Database: None

Publications: None

IDA-16

Title: Mergers and Acquisitions Lessons Learned

Summary: The office of the Deputy Under Secretary of Defense, Industrial Policy, evaluates the costs and benefits of proposed mergers and acquisitions involving defense firms, and makes recommendations concerning measures intended to mitigate any negative impact on the defense industrial base. A large number of proposed mergers have been evaluated, with outcomes ranging from mergers that were allowed without modification, to those where a variety of measures were employed to reduce their impact on competition for defense products. This history provides a set of potential case studies on the cost and benefits of mergers and of the measures employed to mitigate their potentially harmful effects. The objective of this task is to study selected examples of previous merger actions and provide ODUSD(IP) with recommendations and lessons learned that may be incorporated into future merger decisions.

Classification: Unclassified

Sponsor: Deputy Under Secretary of Defense (Industrial Policy)
3300 Defense Pentagon, Room 3C855A
Washington, DC 20301

Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882

Resources: FY Dollars Staff-years
2009 \$266,000

Schedule: Start End
June 2009 March 2010

Database: None

Publications: Results will be reported in a final briefing and in a report.

IDA-17

Title: Resource Analysis for T&E – CTEIP

Summary: IDA activities include research, analyses and special studies to support planning, management and effective execution of the Central Test and Evaluation Investment Program (CTEIP). Primary activities focus on resource analysis to support budget planning, resource allocation to developmental projects, and tracking project-level fiscal execution. Other analysis activities include review of technical justification and documentation for developmental projects to meet joint and/or multi-Service test requirements, identification of project execution issues, and the development of proposed corrective contract or management alternatives.

This task is a continuation of work performed under a previous task order, same title, for the Deputy Director, Operational Test and Evaluation (DOT&E).

Classification: Unclassified

Sponsor: Director
Test Resources Management Center
1225 S. Clark Street
Arlington, VA 22201

Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882

Resources: FY Dollars Staff-years
2006 \$650,000 4.0
2007 \$1,100,000 5.0
2008 \$1,054,000 5.0
2009 \$875,000 5.0

Schedule: Start End
Oct 2006 Sep 2009

Database: None

Publications: None

IDA-18

Title: Analytical Support for the Test and Evaluation Science and Technology (TEST) Program

Summary: IDA activities include research, analyses and special studies to support the management and execution of the TEST Program. Task activities include providing resource analysis, research and analyses of promising technologies, determination of alternative contracting strategies, recommendations on the selection of research and developmental projects, conducting special studies, development of analyses to support preparation of management and resource documentation, and monitoring of research project progress.

This task is a continuation of work performed under a previous task order, same title, for the Deputy Director, Operational Test and Evaluation (DOT&E).

Classification: Unclassified

Sponsor: Director, Test Resource Management Center
3010 Defense Pentagon
Washington, DC 20301

Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882

Resources:

<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
2005	\$100,000	0.5
2006	\$325,000	1.5
2007	\$450,000	2.0
2008	\$480,000	2.0
2009	\$480,000	2.0

Schedule:

<u>Start</u>	<u>End</u>
Sep 2005	Sep 2009

Database: None

Publications: None

IDA-19

Title: Resource Analysis for Operational Test and Evaluation (OT&E)

Summary: Conduct resource analysis and technical studies to support Office of the Director, Operational Test and Evaluation, in its statutory responsibility to advise the Secretary of Defense on the adequacy of T&E resources and test processes that support the operational test and evaluation phase of acquisition programs. Conduct analyses to support DOT&E participation in senior-level OSD activities associated with the Planning, Programming, Budgeting and Execution System and development of resource related policy recommendations throughout the PPBE cycle.

FY08 focus area included: Resource analyses (funding and manpower) supporting the Services' operational test agencies; analyses of the DoD Test Resource Strategic Master Plan and T&E Budget Certification; a study on the potential benefits for a greater partnering between Test and Training, Phase I; a study of a proposal to use the F-16 as the new advanced aerial target; a study on the use of a diesel-electric submarine for testing the Virginia Class submarine; development of a White Paper for use in transition to a new administration.

FY09 focus areas have included research and assistance in: Implementing a new Reliability Enhancement initiative; Completion of the advance submarine target study; and an update to proposed QF-16 aerial target initiative. Anticipated focus areas include: a study on the history of the Joint Test and Evaluation Program and recommendations for its future direction; a study on improving Combined Developmental and Operational

Testing; development of a Business Plan for the T&E Community on the use of Modeling and Simulation; and a study on an improved partnership with the newly created Director for Developmental Test and Evaluation. Continuing efforts will include various research and analyses supporting the DOT&E's participation in the Quadrennial Defense Review and the Department's efforts to mitigate impacts to test and training ranges by environmental impacts and urban encroachment. The creation of new Energy Corridors and wind turbine generation farms have the potential for significant impacts to test ranges and interference with instrumentation.

Classification: Unclassified

Sponsor: Principal Deputy Director, Operational Test and Evaluation
The Pentagon, Room 3D947
1700 Defense Pentagon
Washington, DC 20301-1700

Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	1998	\$200,000	1.2
	1999	\$100,000	0.6
	2000	\$400,000	2.5
	2001	\$400,000	1.9
	2002	\$400,000	2.0
	2003	\$300,000	2.5
	2004	\$300,000	2.0
	2005	\$2,900,000	14.5
	2006	\$2,500,000	12.0
	2007	\$3,700,000	16.0
	2008	\$3,200,000	14.0
	2009	\$3,470,000	14.0

Schedule:	<u>Start</u>	<u>End</u>
	Feb 1998	Ongoing

Database: *Title:* OT&E Resources

Description: Programmed and Budgeted Funds, Manpower

Automation: Excel spreadsheets, Knowledge-based information retrieval system, MS Project

Publications: "DOT&E GPRA Methodology and Definitions, FY 2001: Government Performance and Results Act," IDA Document D-2570 (NS), Unclassified, FY 2001, T. Musson and I. Boyles

"Marine Corps Operational Test and Evaluation Activity Manpower Assessment," IDA Document D-2578 (NS), Unclassified, February 2001, Charles T. Ackerman and George C. Tolis

"Demographic Analysis of the Operational Test Agencies' Workforce," IDA Document D-2618, Unclassified, March 2002, Dennis O. Madl, Tom A. Musson, and George C. Tolis

"Effect of the Proposed Closure of NASA's Subsonic Wind Tunnels, An Assessment of Alternatives," IDA Paper P-3858, Unclassified, April 2004, Dennis O. Madl, Terrence A. Trepal, Alexander F. Money and James G. Mitchell

"The Partnership Between the Boeing Company and the Air Force's National Radar Cross Section Test Facility: A Review," IDA Document D-2577 (NS), February 2001, W. Andrew Wisdom and John G. Honig

IDA-20

Title: Resource Analysis for Test and Evaluation Strategic Planning, Budget Certification and Range Policy for the DoD Test Resource Management Center (DTRMC)

Summary: Conduct resource and technical analyses to support the DTRMC. The Center has statutory responsibility to prepare a T&E infrastructure strategic plan at least every two years, and to certify to the Secretary of Defense whether service T&E budgets are adequate to provide affordable testing and to support the strategic plan. The Center also undertakes policy analyses of T&E user charge policies, access to test facilities, inter-agency agreements for operation and retention of T&E capabilities, and other topics vital to maintaining a robust T&E capability for the Department. IDA performs studies and analyses for the DTRMC across the full range of its activities. Also includes special studies on T&E infrastructure and DoD-NASA inter-agency agreements on T&E capabilities and potential shared usage.

FY07 activities and special studies included: an expanded analyses of Air Force decisions to close/consolidate various test facilities; analyses to support development of the TRMC bi-annual DoD Test resources master Plan; analyses to support revision of the DoD Directive and Instruction for the oversight and operation of the Department’s Major Range and Test facility Base; various manpower analyses to define the status of the Department’s Acquisition and T&E workforce demographics; analyses supporting various agreements among the DoD, NASA and other Agencies on the use and retention of major aeronautical test facilities; analyses to support the development of a practical oversight function of Service owned T&E facilities/capabilities; and various budget and process analyses to be used in preparing a Congressional mandated certification of the adequacy of budget proposals to support the Department’s T&E functions.

FY08 anticipated studies and analyses efforts include: Continued analyses support for implementation of the new interagency agreements on the charge policy and use of aeronautical test facilities; increased analytic work supporting initiatives to counter encroachment and preserve existing T&E open-air range space; continue analyses to improve the overall oversight and budget certification processes; expanded analytic efforts to review all proposed reductions/divestitures of Service own and operated T&E capabilities/facilities; and the continuation of collection of information and analyses supporting the next update of the DoD T&E Resources master Plan.

FY09 efforts included a Business Case Analysis on continued operation of the High Energy Laser Test Facility; a study on Infrastructure Requirements for Testing High Energy Lasers; a Study on an Improved Management Construct for Missile Defense Agency test and evaluation assets; and research and analyses on emerging test and evaluation instrumentation and capabilities for inclusion in the 2009 DoD Test and Evaluation Strategic Plan. Anticipated efforts include analysis for development of a Test and Evaluation Capabilities Directory; development of metrics for assessing the health and status of the Department’s major test ranges and centers; and a study on issues and impacts for combining the organization into the newly created Director for Developmental Test and Evaluation. On-going efforts include: assistance in developing a partnership between NASA and the DoD on aeronautical test facilities and budget and resource analyses to assist in the certification of sufficient (or insufficient) Service and DoD funding for the reasonable operation of the Department’s major test ranges and centers.

Classification: Unclassified

Sponsor: Director, Defense Test Resource Management Center
1225 South Clark St.
Crystal Gateway 2, Suite 1200
Arlington, VA 22202

Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882

Resources:

<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
2004	\$500,000	2.5
2005	\$800,000	4.0
2006	\$1,200,000	5.5
2007	\$1,900,000	7.0
2008	\$2,300,000	9.5
2009	\$2,100,000	9.0

Schedule:

<u>Start</u>	<u>End</u>
Jun 2004	Ongoing

Database:

Title: DoD T&E Resources

Description: Programmed and Budgeted Funds, Manpower

Automation: Excel spreadsheets; Access databases; Knowledge-base information retrieval system; Microsoft Project

Publications: None to date

IDA-21

Title: Resource and Technical Analyses for the National Aeronautics RDT&E Infrastructure Plan

Summary: Conduct research and analyses to support the Test Resource Management Center in development the test infrastructure portion of the new National Aeronautical RDT&E Plan required by the Presidential Executive Order 13419.

FY08 activity included research and analyses of emerging aeronautical concepts and anticipated test and evaluation needs and comparison with existing and planned T&E capabilities to define the specific issues in providing needed capabilities in the future. Participated on Inter-agency working groups to develop the overall national plan and identify the specific needs for the T&E Infrastructure to be included. Conducted research and analyses and wrote the final draft Infrastructure Plan.

FY09 anticipated activities are expected to be minimal, using residual FY07 funds to provide some analyses and support to the TRMC participation in follow-on working group meetings and completion of the Infrastructure Plan. This effort is anticipated to be funded under another task order after FY09.

Classification: Unclassified

Sponsor: Director, Defense Test Resource Management Center
1225 South Clark St.
Crystal Gateway 2, Suite 1200
Arlington, VA 22202

Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2007	\$300,000	1.0
	2008	\$0	0.5
	2009	\$0	0.5
Schedule:	<u>Start</u>	<u>End</u>	
	Jun 2007	Ongoing	
Database:	<u>Title:</u>	None	
	<u>Description:</u>		
	<u>Automation:</u>		
Publications:	Draft Infrastructure Plan, IDA informal product, August, 2007, T. Trepal		

IDA-22

Title: Resource and Technical Analyses for the National Aeronautics RDT&E Infrastructure Plan – NASA

Summary: Conduct research and analyses to support of the NASA in development the test infrastructure portion of the new National Aeronautical RDT&E Plan required by the Presidential Executive Order 13419.

FY08 activity is anticipated to provide a small amount of research and analyses to assess the potential impacts on NASA from the proposed elements of the new national plan.

FY09 anticipated activity includes continued analyses supporting versions inter-agency agreements.

Classification: Unclassified

Sponsor: NASA Headquarters
Mr. Karl Loutinsky
Mail Suite: 6M34
300 E Street
Washington, DC, 20546-0001

Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2008	\$50,000	0.2
	2009	\$150,000	0.6
Schedule:	<u>Start</u>	<u>End</u>	
	Nov 2007	Oct 2008	
Database:	<u>Title:</u>	None	
	<u>Description:</u>		
	<u>Automation:</u>		
Publications:	None to date		

IDA-23

Title: Technical Analysis Support for Missile Defense Agency RDT&E

Summary: Provide information, analyses, and appropriate recommendations to the MDA Director of Engineering for the follow-on testing necessary to baseline the current BMDS performance and operational capabilities, validate models and simulations, and to

evaluate the adequacy and effectiveness of the BMDS capability to provide effective ballistic missile defense across the spectrum of potential threats.

FY09 activity is anticipated to include research and analyses on MDA developmental programs and assist with the restructuring of the test program to address Critical Performance Factors analyses and support modeling and simulation validation, and the Ballistic Missile Defense System performance evaluation.

Classification: Unclassified

Sponsor: MDA Director for Engineering
Mr. Keith Englander
MDA/DE
7100 Defense Pentagon
Washington, DC, 20301

Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2009	\$220,000	1.0

Schedule:	<u>Start</u>	<u>End</u>
	Jan 2009	Oct 2009

Database: None

Publications: None to date

IDA-24

Title: Cost-Effective Aerial Targets

Summary: This task evaluated the cost of prototyping and producing full-scale aerial targets as defined by government-created design concepts. The cost estimates used information provided by commercial vendors to estimate the savings that their participation might achieve. The work found that the manufacturing labor rates for these commercial firms is substantially less than that typical for DoD Primes. Moreover, the commercial companies were able to achieve higher productivity in the production of composite parts than has typically been observed for DoD primes. This higher productivity appears to be associated with more producible designs rather than innovative processing or capital investment. Finally, the cost improvement behavior of these commercial firms was found to be similar to that of DoD primes.

Classification: Unclassified

Sponsor: DOT&E

Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2008	\$300,000	

Schedule:	<u>Start</u>	<u>End</u>
	Nov 2007	Dec 2008

Database: None

Publications: None

IDA-25

Title: Evaluating, Managing and Forecasting Army Equipment Readiness

Summary: The Institute for Defense Analyses analyzed up to 25 years of historical data to address several issues on helicopter readiness posed by the Army's Aircraft and Missiles Command (AMCOM). Helicopter readiness was measured by Mission Capability (MC) rate and related to top-down variables such as helicopter age, flying hours and O&M cost. Average MC rates were found to have fallen by one percentage point per year of helicopter age; and helicopter O&M costs rose twice as fast as flying hours percentage-wise following large increases in OPTEMPO at the start of OEF and OIF. The second analysis found that the Army's new Recap (Recapitalization) maintenance program has historically increased helicopter readiness by 13 percentage points for non-deployed helicopters. Deployed helicopters showed a smaller rise of 6 percentage points; they have higher readiness to start with, due to preferential O&M spending and personnel factors such as longer mechanic work hours and soldier workarounds. Finally, the study analyzed three supply metrics commonly measured at the brigade level in a search for a good leading indicator of changes in readiness. Fill rate, due-out rate and average backorder age were studied, but only backorder age yielded positive results. Lower backorder age led to higher MC rate 5 months hence with an 80 percent correlation coefficient that was statistically significant at better than one percent. Each one-month reduction in backorder age was found to increase MC rate by 2.8 percentage points. Work is continuing to refine the analysis.

Classification: Unclassified

Sponsor: OSD (PA&E),
Force and Infrastructure Cost Analysis Division,
Pentagon, Room BE798

Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882

Resources:

<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
2004	\$150,000	0.6
2005	\$150,000	0.6
2006	\$160,000	0.6
2008	\$100,000	0.4
2009	\$100,000	0.4

Schedule:

<u>Start</u>	<u>End</u>
April 2004	Dec 2011

Database: N/A

Publications: IDA Paper P-4252, "Enhancing the Readiness of Army Helicopters"

IDA-26

Title: Support to the Department of Veterans Affairs

Summary: The objective of the task is to conduct analytical studies in support of the Department of Veteran Affairs (VA). IDA is currently performing three studies for the VA. These studies were in response to the Veterans' Benefits Improvement Act of 2008. The first is an assessment of the current personnel requirements of the Veteran Benefits Administration. The second study is an analysis of the differences among various groups of veterans in disability compensation awards. The third study is an independent analysis of the VA quality assurance program.

Classification: Unclassified

Sponsor: Department of Veterans Affairs

Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2004	\$400,000	2.0
	2005	\$871,946	3.5
	2006	\$750,000	3.5
	2007	\$0	0
	2008	\$0	0
	2009	\$2,100,000	8.5

Schedule:	<u>Start</u>	<u>End</u>
	Sep 2004	Ongoing

Database: None

Publications: "Independent Verification and Validation of the Veterans Actuarial Model: Final Report," IDA Document D-3129, June 2005

"Analysis of Differences in Disability Compensation in the Department of Veteran Affairs: IDA Paper P-4175 Volume 1: Final Report, December 2006

"Analysis of Differences in Disability Compensation in the Department of Veteran Affairs: IDA Paper P-4175 Volume 2: Supporting Documentation, March 2007

IDA-27

Title: Operating and Support Costs for Unmanned Aircraft Systems

Summary: The purpose of this task is to collect, organize and validate Operating and Support (O&S) cost data for fielded unmanned aircraft systems for all of the military services. A main sponsor interest is comparability across the systems, as well as comparability to current O&S cost estimates for manned aircraft. Main sources of data include service Visibility and Management of Operating and Support Costs (VAMOSC) systems, unit manning documents, and contract performance reports for high-cost contractor logistics support contracts.

Classification: Unclassified

Sponsor: OUSD(Acquisition, Technology, and Logistics)
Director, Portfolio Systems Acquisition
Deputy Director, Unmanned Warfare

Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882

Resources:	<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
	2008	\$150,000	
	2009	\$100,000	

Schedule:	<u>Start</u>	<u>End</u>
	Jul 2008	Dec 2009

Database: None

Publications: TBD

IDA-28

Title: Force Structure Costing Study

Summary: The objective of this task order is for IDA to develop methods for the costing of alternative military force structures that will be used in support of PA&E force structure studies. The approach is for IDA to build well-annotated spreadsheet tools and accompanying documentation that can be used to provide estimates of annual steady-state support costs for force structure units (such as squadrons, brigades, and ships by class) stratified by active or reserve component, legacy or modernized equipment, and CONUS or overseas location.

Classification: Unclassified

Sponsor: OSD(Program Analysis and Evaluation)
Deputy Director, General Purpose Programs

Performer: IDA
4850 Mark Center Drive
Alexandria, VA 22311-1882

Resources:

<u>FY</u>	<u>Dollars</u>	<u>Staff-years</u>
2009	\$425,000	

Schedule:

<u>Start</u>	<u>End</u>
Feb 2009	Incremental

Database: None

Publications: TBD

APPENDIX A. MILESTONE A CERTIFICATIONS AND COST GROWTH

This appendix contains invited speaker Dr. Nancy Spruill’s presentation slides on the topics of Milestone A certifications and cost growth.



View from the Congress. . .

- ***Congress's Perception:***
 - **Nunn McCurdy law in place since 1982, but:**
 - Not that many consequences over time
 - Cost growth continued
 - Perception of "Rubber Baselines" & lack of discipline
- ***Reaction: Mandatory Discipline***
 - **FY06 NDAA**
 - Tightened Nunn McCurdy rules and measurements
 - Section 2366, Title 10, required certification of MDAPS at MS B
 - **FY07 NDAA**
 - Added three more criteria for MS B certification
 - **FY08 NDAA**
 - Required certification at MS A (costs understood, non-duplicative, valid requirement)
 - **FY09 NDAA**
 - Updated section 2366 for technical corrections

And that's not all. . .

2

Weapon System Acquisition Reform Act 2009

*"The **purpose of this law** will be to limit cost overruns before they spiral out of control. It will strengthen oversight and accountability by appointing officials who will be charged with closely monitoring the weapons systems we're purchasing to ensure that costs are controlled. If the cost of certain defense projects continue to grow year after year, those projects will be closely reviewed, and if they don't provide the value we need, they will be terminated. This law will also enhance competition and end conflicts of interest in the weapons acquisitions process so that American taxpayers and the American military can get the best weapons at the lowest cost."*

*Signing Statement
May 22, 2009*

BARACK OBAMA

3

Even More Teeth . . .

Weapon Systems Acquisition Reform Act of 2009

- **Amends MS A (section 2366a) Certification Process**
 - Invokes Nunn-McCurdy “like” process for pre-MS B pre-MDAPs
 - Retroactively applies certification criteria to post-MS A programs that began prior to enactment of the 2366a certification requirements, but have not yet received MS B approval.
- **Amends MS B (section 2366b) Certification Process**
 - Retroactively applies certification criteria to post-MS B programs that began prior to enactment of the 2366b certification requirements, but have not yet received MS C approval.
- **Creates SEC-DEF designated official for Program Assessment and Root Cause Analysis**
- **Strengthens Nunn McCurdy Process**
 - *But that’s another topic all on its own. . .*

4



5

2366a Certification Outcomes

- ***The 2366a Certification process focuses on starting programs right***
 - Valid Requirement
 - Properly Assigned
 - No unnecessary duplication
 - Cost Estimate consistent with priority
 - Establishment of early cost and schedule targets

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MS A Certification Requirements

The Milestone Decision Authority must Certify that:

1. The program has an approved Requirements Document (i.e., an Initial Capabilities Document)
2. The program is being executed by an entity with a relevant core competency
3. If the program duplicates a capability already provided, the duplication is necessary and appropriate
4. ***That an analysis of alternatives has been performed consistent with study guidance developed by the Director, Cost Assessment and Program Evaluation***
5. A **Cost Estimate** has been submitted ***with the concurrence of the Director, Cost Assessment and Program Evaluation*** and is consistent with the priority of the program assigned by the JROC

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MS A Certification Process

Director, ARA (with input from the OSD staff, Joint Staff, and cognizant Component) provides a recommendation to the USD(AT&L) that addresses the four criteria:

- 1. Valid Requirement**
 - Joint Staff asserts that an approved Requirements Document exists (i.e., an Initial Capabilities Document)
- 2. Executed by an entity with a relevant core competency**
 - Component provides supporting information
- 3. Duplication assessment**
 - Joint Staff provides supporting information
- 4. Cost estimate consistent with priority**
 - Component cost center prepares & submits the estimate and Director, Cost Assessment and Program Evaluation assesses reasonableness
 - Joint Staff concurs on priority established in the Program Review Process

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Impact of New Statute on MS A Certification

- **Amends MS A certification process**
 - Requires the PM to notify the MDA, if prior to a MS B, the total program cost grows by at least 25%, or the time required to reach IOC grows by more than 25%.
- **Invokes “Nunn-McCurdy” like review**
 - MDA must consider termination
- **Requires Report to Congress that:**
 - Identifies the root causes of the cost or schedule growth;
 - Identifies appropriate acquisition performance measures for remainder of the development program; and
 - Includes **either**
 - a **written certification** stating that the program is essential to national security, there are no alternatives to the program that will provide acceptable military capability at less cost, the new estimates of the developmental cost or schedule, as appropriate, are reasonable, and the management structure for the program is adequate to manage and control program cost and schedule,
 - **or—a plan for terminating** the development of the program **or withdrawal of MS A approval.**
- **Requires “Catch-up” certifications for programs not previously certified**

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2366a MS A Certification

- ***MS A (ACAT ID) Certifications to Date***
 - America Class Amphibious Assault Ship (LHA(R))
 - Ground Soldier Ensemble (GSE)
 - Space Fence
 - Ship-to-Shore Connector (SSC)
- ***Catch-up Certification Forecast***
 - Dozens

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MS A Certification – a Real Example

Ship-to-Shore Connector (SSC) MS A Certification Process Events

- OSD Staff, Joint Staff, and the Navy reviewed the four certification criteria & provided supporting input to D, ARA prior to the DAB
- DAB conducted May 7, 2009
- MS A Certification Recommendation Memorandum signed by D, ARA on May 14, 2009
- MS A Certification signed by USD(AT&L) on May 21, 2009
- SSC MS A ADM signed by USD(AT&L) on May 21, 2009

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MS A Certification – a Real Example

Ship-to-Shore Connector (SSC) MS A Criteria Review & Recommendation Process

1. Valid Requirement

- JROC-approved October 18, 2006 SSC Initial Capabilities Document defines gaps and describes desired capability to fill those gaps.
- Navy 2007 AoA identified three viable alternative designs – one was selected to provide the material solution for the identified gaps.

2. Executed by an entity with a relevant core competency

- Amphibious Warfare Program (PMS377) within Navy PEO Ships is the designated Navy acquisition materiel developer for SSC.
- PMS377 has previously demonstrated competency in developing landing craft programs.

3. Duplication Assessment

- SSC is a replacement for the retiring Landing Craft, Air Cushion program. In the post 2014 time frame, there are no programs of record to fill those capability gaps.

4. Cost estimate consistent with priority

- Navy's baseline acquisition cost estimate (i.e., RDT&E and procurement) is \$4,274.4M (BY10) for 73 craft (first one is an R&D craft). SSC fully funded for the Tech Development phase, FY09-11.
- SSC ICD validated via JROCM 220-06 (October 16, 2006) with Joint Potential Designator of "JROC Interest". The Joint Staff sustained the Navy's request in the Program Review, reinforcing the priority of the system to the Joint force.

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Cost Growth!!!



13

Staggering Overruns?

The Washington Post

March 31, 2009: Development costs for the Pentagon's major weapons systems soared last year, helping drive overruns that are "staggering," the Government Accountability Office said in a report released yesterday. Overall, the cost overruns associated with the military's major weapons ... "total near \$300 billion, and the average program delay has stretched from 21 to 22 months,"

The figures reflect a weapons development and procurement system that is woefully broken... "Pentagon planners don't do a good enough job of analyzing those requirements to understand whether they have the technologies and designs to build to them," GAO analyst Michael J. Sullivan said.

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Or... Sensationalism?

The new GAO report continues to sensationalize the assessed cost growth of \$296 billion on 96 programs. This number has been cited by many people as a condemnation of the defense procurement process. I have analyzed the components of this GAO number, and I would suggest that the number is misleading, out-of-date, and largely irrelevant to the current management of DoD programs.

--Mr. John J. Young, former USD(AT&L)

The Math Matters....

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GAO Methodology

- ***GAO defines cost growth as the change in total program acquisition costs from the original estimate to the current estimate***
- ***GAO publishes an annual report focused on cost growth***
 - Summarizes 96 acquisition programs
 - Stated a \$296B cost growth for the FY08 portfolio, down from \$301B in FY07
- ***The fine print....***
 - 1) Procurement of additional quantities and/or required capability counts as “bad”;
 - 2) Differing “portfolios” compared on an annual basis;
 - 3) Pre-Milestone B estimates used (i.e, before the program defined);
 - 4) Poor early performers can never recover, even if they have been performing well for many years;
 - 5) Acquisition painted with broad brush as though all programs are broken.

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Our Interpretation

- ***Procurement of additional quantities and/or required capability is not cost “growth”***
 - Quantity and capability enhancements due to mission requirements should not be chargeable to cost growth.
 - AT&L estimates capability enhancements alone account for \$96B of total
- ***Portfolio cost growth cannot be compared on an annual basis***
 - Analysis is grounded in dissimilar comparison of programs.
 - 59 programs moved into or out of the portfolio between 2003 and 2008.
- ***Pre-Milestone B estimates should not be used***
 - Pre-Milestone B estimates are incomplete and are not a reliable estimate
 - AT&L methodology uses the more reliable Milestone B estimate
 - This alone yields total cost growth of \$278B as opposed to \$296B.

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Our Interpretation

- ***Past sins never forgiven (...some remorse is useful though)***
 - Original estimates are done many years ahead of actual production and can be greatly outdated. Examples are JSF, FCS, V-22, and C-17.
 - Twelve of the current programs are 15 years or older; 41 of the programs had a MS B before 2001 (Oldest: Trident II Missile July 1987)
 - Example: JSF and FCS programs are planned to be in the portfolio until 2034 and 2030, respectively. By GAO methodology, they will keep a \$78B cost growth mark even if they have no cost growth for the next 25 years!
 - Portfolio cost growth over last 5 years is \$176B
- ***Sinners and saints***
 - The top eight highest cost growth programs account for about 80% of the total cost growth.
 - DDG 51, FCS, and JSF alone account for more than 45% of total
 - 29 Programs have zero or negative cost growth

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More Meaningful Metrics Needed

- ***AT&L proposed new set of metrics to more fairly represent weapon system cost growth***
 - Performance Analysis: Total cost growth over a period of time
 - Trend Analysis: Average yearly cost growth over a period of time
- ***GAO, OMB and OSD(AT&L) worked together to develop new metrics to measure acquisition cost growth***
 - Continue to measure cost growth from Original Estimate
 - Fair, transparent, and fact based (unbiased) metrics meant to provide total visibility
- ***GAO and AT&L agreed to conduct a pilot study using new metrics***

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Top 10 Cost Growth Programs

Top 10 Programs	First Original Estimate Date	Cost Growth - GAO Method	Cost Growth - 2002 - 2007
DDG 51 Destroyer	Feb-88	48	-1
Future Combat System (FCS)	May-03	39	39
F-35 / Joint Strike Fighter	Oct-01	38	56
V-22 Joint Services Advanced Vertical Lift Aircraft	Feb-88	24	3
C-17 Globemaster III	Dec-88	23	0
Virginia Class Submarine (SSN 774)	Jun-95	23	-1
C-130J Hercules	Oct-96	11	-4
Family of Medium Tactical Vehicles	Oct-88	10	1
CH-47F Improved Cargo Helicopter (ICH)	May-98	9	5
Stryker Family of Vehicles	Nov-00	8	8
Total		238	108

All data in \$B, FY09

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What's Happened Lately? Total Portfolio Growth Last 5 Years

Program	Estimate SAR 2002 or Later	Estimate SAR 2007	Cost Growth 2002-2007	Program	Estimate SAR 2002 or Later	Estimate SAR 2007	Cost Growth 2002-2007
DDG 51 Destroyer	48	48	-1	DDG 51 Destroyer	48	48	-1
Future Combat System (FCS)	39	39	39	Future Combat System (FCS)	39	39	39
F-35 / Joint Strike Fighter	38	38	56	F-35 / Joint Strike Fighter	38	38	56
V-22 Joint Services Advanced Vertical Lift Aircraft	24	24	3	V-22 Joint Services Advanced Vertical Lift Aircraft	24	24	3
C-17 Globemaster III	23	23	0	C-17 Globemaster III	23	23	0
Virginia Class Submarine (SSN 774)	23	23	-1	Virginia Class Submarine (SSN 774)	23	23	-1
C-130J Hercules	11	11	-4	C-130J Hercules	11	11	-4
Family of Medium Tactical Vehicles	10	10	1	Family of Medium Tactical Vehicles	10	10	1
CH-47F Improved Cargo Helicopter (ICH)	9	9	5	CH-47F Improved Cargo Helicopter (ICH)	9	9	5
Stryker Family of Vehicles	8	8	8	Stryker Family of Vehicles	8	8	8
Total	1,316	1,491	176	Total	1,316	1,491	176

Get off the stage Nancy

I need your help

- ***Metrics and Methods***

- For young programs to measure the cost, schedule, and performance
- Trend Analysis: In two years, what should we objectively be able to say?

- ***Analysis***

- Technology / Tools aren't the problem – Interpretation is
- Data capture, quality and transparency

- ***People People People***

- Nothing you do is more important
- If anyone could do this work, it would be easy
- Find the best, nurture and build them

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APPENDIX B. SUMMARY OF WEAPON SYSTEMS ACQUISITION REFORM ACT

SUMMARY OF S. 454 CONFERENCE REPORT

(prepared by HASC staff)

TITLE I — ACQUISITION ORGANIZATION

Section 101 — Director of Cost Assessment and Program Evaluation

This section codifies the position of Director of Cost Assessment and Program Evaluation as a Senate confirmed official. The Director takes on the cost estimation function outlined in both House and Senate bills, and also takes over the functions of the Director of Program Analysis and Evaluation (PA&E) within DoD, which is currently non-statutory. The section assigns the Director two deputy directors, one for cost assessment and one for program evaluation. The personnel of the Cost Analysis Improvement Group (CAIG) transfer to the new deputy director for cost assessment and the remaining personnel of PA&E transfer to the second deputy director. The Director has an annual reporting requirement to Congress and a requirement for a one-time report providing recommendations on tracking operating and support costs.

Section 102 — Directors of Developmental Test and Evaluation and Systems Engineering

This section requires the Secretary of Defense to select officials to serve in the newly created roles of Director for Developmental Test & Evaluation and Director for Systems Engineering, with responsibilities for issuing joint guidance relating to the integration of developmental test and systems engineering. The Directors are responsible for leading the developmental test and systems engineering workforces within DOD. These Directors report to the Under Secretary of Defense for Acquisition, Technology, and Logistics and are required to work in close coordination with each other (consistent with the existing offices fulfilling these functions). However, this section has the effect of elevating the official in charge of Developmental Test and Evaluation compared to the status quo. The Directors are required to submit a joint annual report to Congress. The section allows the Director for Developmental Test & Evaluation to also serve as the Director, Test Resources Management Center (an existing position), but does not change the functions or reporting chain for DTRMC. The military departments and defense agencies would be required to develop and implement plans to ensure they have the appropriate resources for developmental testing and systems engineering, and the two Directors are required to assess these plans. Finally, the Directors are required to submit an annual, joint report to Congress.

Section 103 — Performance Assessment and Root Cause Analysis

This section directs the Secretary of Defense to designate a senior official as the principal official for conducting performance assessments and root cause analysis for major defense acquisition programs. The official is responsible for issuing guidance related to performance assessment for acquisition programs and for analyzing the root causes of poor performance, including reviews conducted after Nunn-McCurdy breaches.

Section 104 — Assessment of Technological Maturity of Critical Technologies of Major Defense Acquisition Programs by the Director of Defense Research and Engineering

This section directs the Director of Defense Research & Engineering, in consultation with the Director for Developmental Test & Evaluation, to conduct an assessment of the technological maturity and technological integration risk of programs at key points during the development of a major defense acquisition program. It requires the Director to submit an annual report to Congress on his/her activities, and also directs the Director to develop knowledge-based standards against which to measure the technological maturity and integration risk of critical technologies on these programs.

Section 105 — Role of the Commanders of the Combatant Commands in Identifying Joint Military Requirements

This section directs the Joint Requirements Oversight Council (JROC) to seek input from the combatant commanders in assessing military requirements. It requires GAO to conduct a review of recent legislative changes to the functions of the JROC to assess how these requirements are being implemented.

TITLE II — ACQUISITION POLICY

Section 201 — Consideration of Trade-Offs Among Cost, Schedule, and Performance Objectives in Department of Defense Acquisition Programs

This section requires the Secretary of Defense to ensure that mechanisms are developed and implemented to consider trade-offs among cost, schedule, and performance objectives in establishing requirements for acquisition programs. These mechanisms must include, at a minimum, that officials outside the JROC who are responsible for acquisition, budget, and cost estimation are given a chance to develop estimates of cost and schedule before the JROC approves a requirement, and that requirements are structured in a way that will allow for incremental, evolutionary, or spiral development.

The section also requires the JROC, in consultation with these same officials, to set a schedule objective for each requirement (i.e., the time when initial operational capability is needed). Further, the Secretary is required to ensure that each newly approved JROC requirement is reviewed to ensure the JROC consulted with the COCOMs and considered trade-offs of cost, schedule, and performance objectives.

The section requires the Director of Cost Assessment and Program Evaluation (the official formerly known as PA&E) to issue guidance in advance of all Analyses of Alternatives (AOA). Each alternative considered in the AOA must evaluate trade-offs among cost, schedule, and performance objectives; and whether the alternative can meet the JROC established cost and schedule objectives. It also includes a requirement for an AOA prior to a Milestone A certification (in line with current practice)

The section requires the milestone decision authority, prior to granting a Milestone B certification, to certify that appropriate trade-offs among cost, schedule, and performance have been made to ensure that the program is affordable.

Section 202 — Acquisition Strategies to Ensure Competition Throughout the Lifecycle of Major Defense Acquisition Programs

This section requires the Secretary of Defense to ensure that the acquisition strategy for each program includes measures to preserve the option of competition, at both the prime and subcontract levels, throughout the life of the program. The section specifies ten competition-promoting measures for consideration in acquisition strategies. It requires the Secretary to ensure “make-buy” decisions made by a prime contractor are fair, by requiring prime contractors to give “full and fair consideration” to qualified sources other than themselves for major subsystems and components; providing for government surveillance of the process the primes use to make these decisions; and including assessments of compliance with this requirement in past performance evaluations.

The section also directs the Secretary to ensure that maintenance and sustainment contracts are awarded competitively and that public sector performance of maintenance and sustainment is fully considered.

Section 203 — Prototyping Requirements for Major Defense Acquisition Programs

This section requires the Secretary of Defense to modify acquisition guidance to require competitive prototyping prior to a Milestone B decision. It allows prototyping to occur at the system or subsystem level. It includes waivers in the event prototyping is not affordable or in the interest of national security (e.g., not for rapid acquisition programs that are needed to address urgent warfighter needs).

Section 204 — Actions to Identify and Address Systemic Problems in Major Defense Acquisition Programs Prior to Milestone B Approval

This section requires a program manager to notify the Milestone Decision Authority, if at any time prior to a Milestone B decision, the estimate of the total program cost grows by more than 25% or the program schedule for initial operational capability grows by more than 25%. The milestone decision authority would then have to review the program and consider termination. This section would apply to existing and new programs that are pre-Milestone B.

Section 205 — Additional Requirements for Certain Major Defense Acquisition Programs

This section would require that programs entering into system development (i.e., receiving Milestone B approval) on the basis of a waiver to any of the statutory criteria for Milestone B, must be reviewed by the milestone decision authority at least annually until they meet all of the

criteria. It would also require that these programs be flagged in any budget documentation that comes to Congress. It would apply to existing programs, as well as new programs.

The provision would also require a semi-annual review, by the official in charge of performance assessment, of programs that have not been terminated following a Nunn-McCurdy breach, until one year after the date that such programs receive a new milestone approval (pursuant to the new requirements established in section 206 of this bill).

Section 206 — Critical Cost Growth in Major Defense Acquisition Programs

This section modifies the “Nunn-McCurdy” law, relating to significant and critical cost threshold breaches on major defense acquisition programs. It would require the official responsible for performance assessment to perform a root cause analysis following a critical Nunn-McCurdy breach. It would include a presumption of termination for such a program. However, if the program is not terminated, but is restructured, it would rescind the most recent milestone approval and require the program to receive a new milestone approval prior to proceeding. It would limit DOD from new contractual actions on the program until a new milestone approval is received, but would allow the Under Secretary of Defense for Acquisition Technology & Logistics to grant an exception to this restriction in order to allow the program to be restructured without unnecessarily wasting resources.

This section clarifies the definition of “major defense acquisition program”, which is primarily based on an estimate of the total resources to be expended in development and procurement. This section would clarify that the estimate of resources include all planned increments or spirals and that the Secretary of Defense must consider multiple estimates for this purpose (i.e., not simply the estimate established at Milestone B).

Section 207 — Organizational Conflicts of Interest in Major Defense Acquisition Programs

This section requires the Secretary to revise regulations dealing with contractors’ organizational conflicts of interest. Requires that the regulations, at a minimum:

- Address conflicts of interest that could occur as a result of:
 - Lead systems integrator contracts (which have been previously prohibited starting in FY10).
 - Companies that have business units providing technical advice/assistance services to DOD on a major weapons program and also have business units that are competing to be the prime contractor or a major subcontractor for the same program.
 - A prime contractor awarding a subcontract for a major subsystem to another division of its parent company, or
 - Using contractors to do the technical evaluation of a major defense acquisition program.

- Ensure that DOD gets systems engineering advice from sources independent of the prime contractor, while allowing DOD to establish limited exceptions to this requirement.
- Require that a contractor who performs systems engineering and technical assistance functions on a major weapon system cannot have a corporate affiliate who is a major contractor on the same weapon system, while allowing DOD to establish limited exceptions to this requirement.

The provision would require the Secretary to consider the recommendations of the existing DOD Panel on Contracting Integrity and the Administrator of the Office of Federal Procurement Policy, who is currently reviewing (on a government-wide basis) the issues of organizational conflicts of interest, as required by the FY09 NDAA. It extends the life of the Panel on Contracting Integrity (created in the FY07 NDAA) through at least the end of 2011.

TITLE III — ADDITIONAL ACQUISITION PROVISIONS

Section 301 — Awards for Department of Defense Personnel for Excellence in the Acquisition of Products and Services

This section requires the Secretary to commence a program to recognize excellent performance by individuals and teams of personnel in the acquisition of products and services at DOD.

Section 302 — Earned Value Management

This section adds four elements to a study on the use of earned value management that the Secretary of Defense was already required to do, per the FY09 NDAA, and also extends the due date of that report.

Section 303 — Expansion of National Security Objectives of the National Technology and Industrial Base

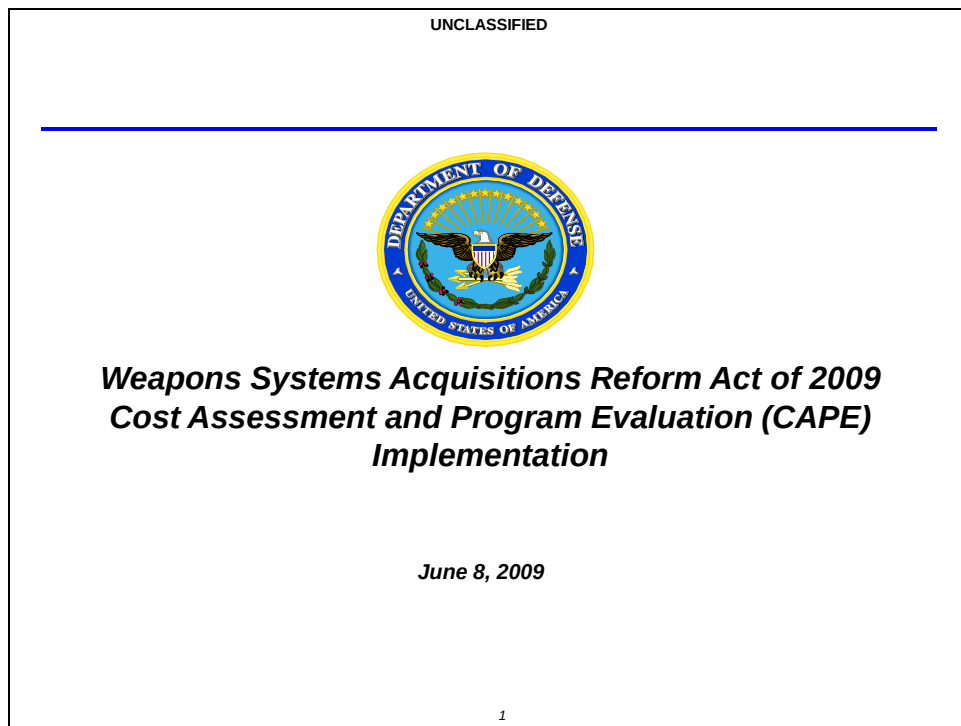
This section modifies the requirement for defense capability assessments (which are performed pursuant to 10 USC 2505), to require that DOD consider the effects of the termination of major defense acquisition programs on the industrial base. These assessments are reported annually to Congress.

Section 304 — Comptroller General of the United States reports on Costs and Financial Information Regarding Major Defense Acquisition Programs

This section requires GAO to do two reports: 1) on growth in operating and support costs of major weapon systems; and 2) how DOD collects financial information relating to major defense acquisition programs (in consultation with the Chief Management Officers of DOD and the military departments).

APPENDIX C. COST ASSESSMENT AND PROGRAM EVALUATION (CAPE) IMPLEMENTATION

This appendix contains Dr. Richard Burke's presentation slides on the topic of implementation of the Weapons Systems Acquisition Reform Act of 2009.



Director, Cost Assessment and Program Evaluation (CAPE)

- **Appointed by the President, with advice and consent of Senate**
- **Two Deputy Directors**
 - Cost Assessment
 - Program Evaluation
 - No restrictions: Political, career, military
- **Responsible for**
 - Cost estimation and analysis for acquisition programs
 - The planning and programming phases of PPBES
 - Resource analysis of JROC requirements
 - Analysis of Alternatives study guidance
 - Review, analysis and evaluation of programs
 - Assessments of intelligence programs
 - Assessments of alternatives for acquisition programs
 - Leading the development of the CAPE workforce of the department
 - Leading the development of improved tools and data

Law is already in effect!

Deputy Director, Cost Assessment (CA)

- Prescribes policies and procedures for the conduct of cost estimation for acquisition programs **(expanded)**
- Establishes guidance on confidence levels for cost estimates for MDAPs and MAIS programs **(new)**
- Establishes guidance to full consideration of life-cycle management and sustainability costs for MDAPs and MAIS programs **(new)**
- Provide guidance to SECDEF, DEPSECDEF, USD(AT&L) and USD(C) **(expanded)**
- Reviews all cost estimates and assessments associated with MDAPs and MAIS programs **(expanded)**
- Conducts Independent Cost Estimates and Cost Analyses for MDAPs and MAIS programs where USD(AT&L) maintains Milestone Decision Authority:
 - In support of:
 - Milestone A approvals/certifications **(new)**
 - Milestone B approvals/certifications
 - Milestone C approvals
 - To support Nunn-McCurdy certifications for both MDAP & MAIS programs **(MAIS programs added)**
 - All reports for MAIS programs **(new)**
 - As necessary to ensure cost analysis is unbiased, fair, reliable
 - Assesses and updated cost indexes used by the department **(new)**
- Has access to all records of the Department including each military department **(expanded)**
- Participates in all discussions on cost estimation and resource levels for MDAPs and MAIS programs
- Shall disclose the confidence level used in cost estimates for MDAPs and MAIS programs **(new)**
- Prepares annual report for Congress with a summary of all cost estimation activities in year, submitted in February **(new)**
 - Report must be posted on the Internet, on a publicly available DoD website
- Prepares a report on monitoring of O&S costs for MDAPs within one year of enactment **(new)**
 - GAO will also provide a 'report card' report on O&S costs in one year

Next Steps

- **Complete OGC legal review**
- **Continue analysis of law for new/modified requirements**
- **DoD designate acting Director and Deputy Director with appropriate signature authorities**
- **Establish interim policies and guidance**
 - Documentation, signatures, “Confidence levels,” etc.
- **Prioritize workload for next year—legal requirements exceed capacity**
 - Propose stop-gap solutions to accelerate compliance
- **Personnel-related actions**
 - Establish organizational structure; commence hiring processes
 - Begin review of educational program
- **Ensure transparency while developing capability**
 - Much stronger legislative affairs interface is required

Distribution of MDAPs and MAIS Programs

Type of Program	Category	Number of Programs
MDAP	ACAT ID	63
	ACAT IC	38
	Pre-MDAP	44
MAIS	ACAT IAM	22
	ACAT IAC	12
	Pre-MAIS	10

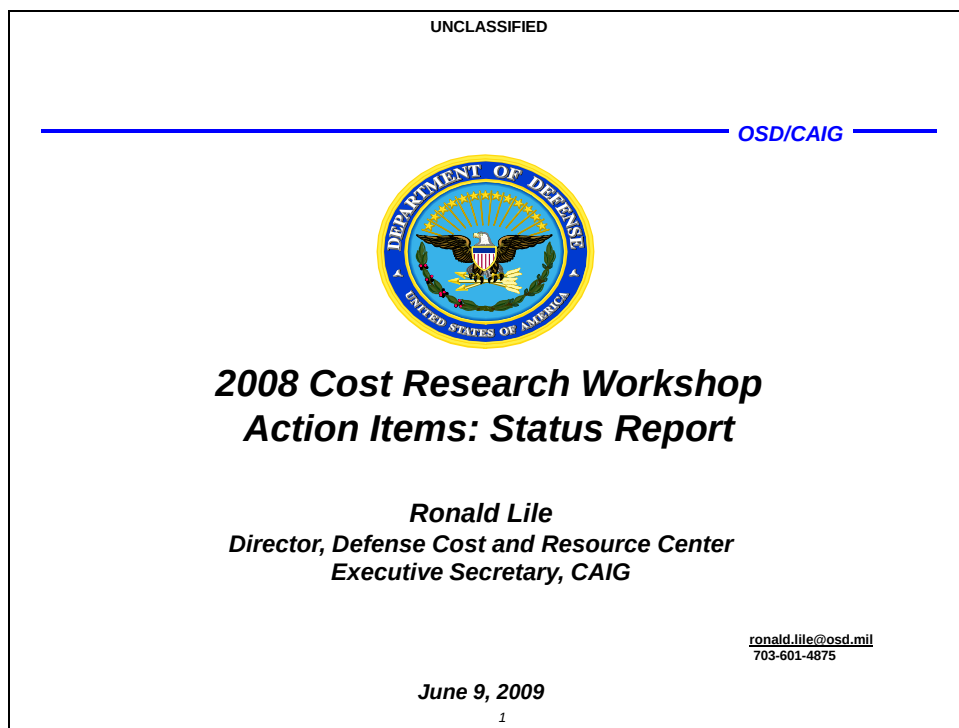
Total Programs 189

Warning Order – New Tasks Coming

- **“Catch-up” Certifications**
 - Confirm requirements for the “catch-up” certifications for MDAPs
 - For each program requiring “catch-up” certification, provide a plan to support eventual certification
- **Policies, procedures**
 - Develop and implement policies and procedures for the following topics:
 - Confidence levels
 - Full consideration of life-cycle management and sustainability costs
 - Assessment of cost indexes
- **Annual Cost Estimating Report**
 - Provide report on costing activities for FY09 – D, CAPE report due early February
 - Status of ID programs—documented estimates, dates, baselines, % growth, etc.
 - Status of IC programs—same questions apply
 - MAIS programs (???)
 - Provide descriptions of existing policies, procedures, and organizations.
- **O&S Reports**
 - Support for preparation
 - Details to follow

APPENDIX D. STATUS REPORT ON 2008 WORKSHOP ACTION ITEMS

This appendix contains Dr. Ronald Lile's presentation slides on the status of action items from the 2008 Cost Research Workshop.



Overview

OSD/CAIG

- **12 action items**
- **3 requests for new data**
- **2 requests for changes in data being collected**
- **1 action regarding data quality**
- **2 actions regarding data access**
- **4 actions regarding business process changes**

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New Data Requests

OSD/CAIG

- **Establish a new contractor Overhead Report to replace the deleted DD Form 1921-3.**
 - Status:
 - Contractor Business Data Report, DD Form 1921-3, approved on April 1, 2009
 - Related Data Item Description (DID) approved on April 2, 2009
 - The report is currently being implemented on any new contracts issued after April 2, 2009
 - OSD/DPAP and DCMA to implement the requirement on all applicable existing contracts
- **Establish technical metrics reporting**
 - Status:
 - CSDR Focus Group established voluntary technical metrics working groups (WGs)
 - However, the efforts of the individual WGs were neither timely nor productive and were disbanded.
 - Currently exploring other alternatives to complete the task
- **Establish contractor O&S report for sustainment contracts**
 - Status:
 - Study completed in August 2008
 - Conceptual framework for the O&S work breakdown structure (WBS) and related reporting proposed
 - Developing the WBS, reporting formats, related procedures and instructions
 - Recommended reporting package to be presented to the O&S working group (WG) in September
 - The objective is to finalize the entire reporting package by the spring of 2010

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Changes in Data Collection

OSD/CAIG

- **Cancel the Progress Curve Report, DD Form 1921-2**
 - **Status:**
 - *Defer cancellation*
 - *Collect and evaluate user feedback*
 - *Proposed changes will be evaluated via the CSDR Focus Group*
 - *Next update to current CSDR reports and DIDs starts in March 2010*

- **Revise SRDR requirements and reports**
 - **Status:**
 - *Defer revision*
 - *Collect and evaluate user feedback*
 - *Proposed changes will be evaluated via the CSDR Focus Group*
 - *Next update to current CSDR reports and DIDs starts in March 2010*

Data Quality

OSD/CAIG

- **Assess the quality of CSDRs of major rotary-wing aircraft contractors for the past year**

- **Status:**
 - *Compliance metrics were developed in Summer 2008*
 - *Detailed data analysis not conducted*
 - *Detailed data analysis to start by end of Summer 2009*

Data Accessibility

OSD/CAIG

- **Provide cost analysts access to DCMA Reports and DCAA Audits**
 - **Status:**
 - No action taken by DCMA
 - Best that DCMA can do today: provide info on as needed basis.
 - DCAA submits CSDR audits to DCARC; uploaded in DACIMS
- **Provide cost analysts access to CARDS**
 - **Status:**
 - Minimal progress
 - Army is developing online capability; Air Force and Navy efforts unknown
 - CAIG is currently updating the DoD 5000.04-M

Business Process Changes

OSD/CAIG

- **Change the SRDR review and validation process so organizations with software expertise are involved**
 - **Status:**
 - DCARC eRooms has been hosting an ad-hoc review team
 - DCARC and SSE have been collaborating on SRDR quality
 - A new "Submit-Review" module will be added to DACIMS in July
 - Will be establishing Communities of Interest to participate
- **Improve timing of DCMA's EVMS surveillances**
 - **Status:**
 - No action to date
 - Recent DCMA commitment to involve cost community
 - DCMA's surveillance schedule for the upcoming year is developed at the end of the year
 - DCMA HQ does not have the full cooperation of the field
- **Improve notification process of changed in EVMS and CSDR policies.**
 - **Status:**
 - DCARC website contains "what's New" section
 - Defense Acquisition Guidebook currently being revised; expect publication by August
- **Improve contract implementation of CSDR requirements**
 - **Status:**
 - DAR Council finalizing DFARs language requiring CSDRs
 - DPAP considering updating DFARs language regarding post-contract award
 - Continuing to pursue "independent" review of RFPs

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