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INSTITUTE FOR DEFENSE ANALYSES

Defense Cost Research
Projects and Plans, 1999

Stephen J. Balut, Project Leader
Matthew Schaffer

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PREFACE

The Institute for Defense Analyses (IDA) prepared this document as part of a project that is jointly sponsored by IDA's Independent Research Program and the Office of the Director, Program Analysis and Evaluation, in the Office of the Secretary of Defense (OSD). Every year, OSD's Cost Analysis Improvement Group (CAIG) reviews the status of DoD's ability to estimate the costs of forces and weapons at the DoD Cost Analysis Symposium. Later, CAIG meets with representatives from selected government offices, Federally Funded Research and Development Centers, and military universities to discuss ongoing and planned cost studies at the IDA Cost Research Symposium. Following these gatherings, the CAIG prepares an analysis plan that focuses on the areas of cost research needing the most attention given upcoming acquisition decisions.

This document serves as documentation of that process for the 1999 cycle. Its purpose is to make available the material it contains to those who participated in the 1999 Cost Research Symposium, and for other purposes deemed appropriate by the Chairman of OSD's Cost Analysis Improvement Group. The material has not been evaluated, analyzed, or subjected to formal IDA review.

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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) provides independent cost estimates and reports on life-cycle costs of major defense acquisition programs (MDAPs) in Acquisition Category ID [1]. Cost agencies in the cognizant defense components provide independent estimates for other MDAPs.

These and other offices and organizations routinely conduct research with the hope of improving the technical capabilities of the DoD to forecast future costs. The OSD CAIG leads these efforts through an annual process depicted in Figure I-1. Near the beginning of each year, during the DoD Cost Analysis Symposium, the CAIG reviews the status of DoD's capabilities to estimate the costs of forces and weapon systems. Several months later, representatives from the offices and organizations that sponsor cost research meet at the IDA Cost Research Symposium to discuss ongoing and planned cost research projects. Following these two events, the CAIG prepares a plan that encourages those who conduct cost research to focus on areas of highest payoff in view of pending acquisition decisions.

This document documents the process just described for the 1999 cycle. The remainder of this chapter describes the 32nd annual DoD Cost Analysis Symposium and the 1999 IDA Cost Research Symposium. Chapter II presents OSD CAIG's analysis plan for future cost research. Finally, Chapter III contains summaries of current and planned cost research projects at the offices and organizations that participated in this year's Cost Research Symposium.
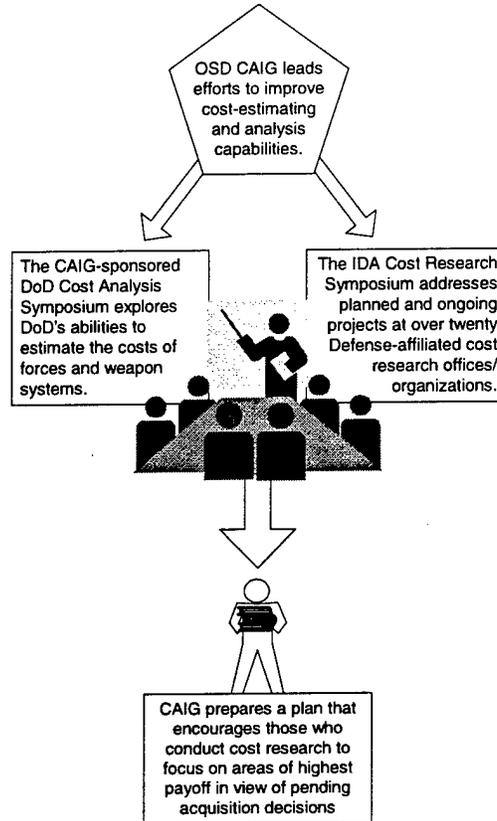
Figure I-1. CAIG's Annual Quest to Improve DoD's Cost-Estimating Capabilities

A. 32ND ANNUAL DoD COST ANALYSIS SYMPOSIUM

A panel of representatives from the Office of the Secretary of Defense and the Military Departments presented an assessment of DoD's capabilities to estimate the costs of weapon systems at this year's symposium, held February 3–5, 1999, in Williamsburg, Virginia. That assessment, fully documented in Reference [2], explored whether cost analysts would have the data, methods, and tools needed to estimate the costs of major weapon systems, as follows:

- U.S. Air Force representative—space systems and fixed-wing aircraft;

- U.S. Navy representative—ships, electronics, and automated information systems;

- U.S. Army representative—missiles, rotary-wing aircraft, and surface vehicle systems; and

- OSD CAIG representative—summary of findings and the OSD perspective.

This year, as in the past, the panel found that uncertainty about DoD estimates is greatest at Milestones I and II. Given weapon systems acquisition plans for the next few years, attention is needed most in the areas of platform integration, software, and avionics. See Reference [2] for details. These findings are used to revise the DoD Six-Year Cost Research Plan, which guides investments in DoD cost research.

B. IDA COST RESEARCH SYMPOSIUM

On 27 May 1999, representatives from offices that sponsor defense cost research met at the Institute for Defense Analyses (IDA) to discuss and exchange information on their current research programs. The symposium, jointly sponsored by the OSD CAIG and IDA, has been held every year since 1989 [3-12]. Before the meeting, representatives prepared summaries of each cost research study in progress or planned at their offices. These summaries, contained in Chapter III of this document, were discussed at the symposium.

Table I-1 lists the offices and organizations that were invited to participate in the symposium along with the names of the people who represented them at this year's symposium.

Table I-2 is the agenda for the 1999 symposium. Following the keynote address by Dr. David McNicol, Chairman of the OSD CAIG, Dr. David Gallagher presented a list of upcoming milestone reviews for major weapon systems and a summary of areas where cost research was needed to prepare for these reviews. Next, representatives from the cost agencies/centers of the three Military Departments presented assessments of the DoD's capabilities to estimate the cost of weapon systems. These presentations paralleled and built on the presentations given at the DoD Cost Analysis Symposium. As part of each assessment, representatives identified ongoing cost research projects that address areas where improvement is needed the most. They also pointed out areas needing research where little or no research was in progress or planned. In the afternoon, attendees saw presentations of the "best" ongoing research projects sponsored by the cost centers/agencies and the OSD CAIG.

Table I-1. Participants in the 1999 IDA Cost Research Symposium

Office/Organization	Abbreviation	Representative
Office of the Deputy Director (Resource Analysis), Program Analysis and Evaluation	PA&E	Dr. David L. McNicol
Ballistic Missile Defense Organization	BMDO	Mr. Lowell Naes
Army Cost and Economic Analysis Center	CEAC	Mr. Robert W. Young
Army Materiel Command	AMCRM	Mr. Wayne Wesson
Army Tank-automotive and Armaments Command	TACOM	Mr. Richard S. Bazzy
Army Aviation and Missile Command[a]	AMCOM	Mr. Carl L. Story
Army Space and Strategic Defense Command	SMDC	Mr. Jackson G. Calvert
Naval Center for Cost Analysis	NCCA	Dr. Daniel A. Nussbaum
Naval Air Systems Command	NAVAIR	Ms. Maria R. Ponti
Naval Sea Systems Command	NAVSEA	Mr. Wilmot Summerall
Naval Surface Warfare Center, Dahlgren Division[a]	NSWCDD	Mr. John W. Kozicki
Naval Surface Warfare Center, Carderock Division	NSWCCD	Mr. Robert R. Jones
Air Force Cost Analysis Agency	AFCAA	Mr. Joseph T. Kammerer
Aeronautical Systems Center, Air Force Material Command	ASC/FMC	Ms. Kathy L. Watern
Electronics Systems Center, Air Force Material Command	ESC/FMC	Ms. Ellen Coakley
Air Force Space and Missile Systems Center	AFSMC	Mr. Anthony E. Finefield
Ministry of Defence, Special Procurement Services/ Cost Forecasting	SPS/CF	Mr. Brian Avery
Air Force Institute of Technology	AFIT/LAS	MAJ Daryl Hauck
Defense Systems Management College	DSMC	CDR Stacy Azama
Aerospace Corporation	AERO	Dr. Stephen A. Book
MITRE Corporation	MITRE	Mr. Mike Janiga
RAND Corporation	RAND	Mr. Frederick S. Timson
Center for Naval Analyses[a]	CNA	Dr. Henry Eskew
Institute for Defense Analyses	IDA	Dr. Stephen J. Balut

[a] These three offices/organizations did not submit project summaries this year.

Table I-2. Agenda

Welcome—*Dr. Stephen J. Balut, IDA*
Keynote Address—*Dr. David L. McNicol, OSD CAIG*
Demand for Cost Research: Upcoming Milestone Reviews—*Dr. David Gallagher, OSD CAIG*

Status of DoD's Capabilities to Estimate the Cost of Weapon Systems and Related Ongoing Cost Research Projects
Electronics, Ships, and Automated Information Systems—*Mr. Richard Collins, NCCA*
Space Systems and Fixed-Wing Aircraft—*Ms. Deborah Cann, AFCAA*
Rotary-Wing Aircraft, Missiles, and Surface Vehicle Systems—*Mr. Richard Bishop, CEAC*

"Best" Research Projects
Fighter Aircraft Cost Estimating Relationships—*Mr. John Dorsett, AFCAA*
O&S Cost Analysis Model (OSCAM) for Ships and Ship Systems—*Mr. Brian Octeau, NCCA*
Relational Database for OSMIS—*Mr. Terry Mateer, CEAC*
Reporting Software Costs in CCDR—*Mr. Thomas Coontz, OSD CAIG, and Dr. Thomas Frazier, IDA*

II. ANALYSIS PLAN FOR FUTURE COST RESEARCH

This chapter reviews the major defense acquisition programs (MDAPs) that are approaching cost reviews and discusses potential cost-research areas to support these reviews.[1]

A. CURRENT MDAPs AND UPCOMING REVIEWS

The Cost Analysis Improvement Group (CAIG), in support of the Defense Acquisition Board (DAB), provides independent cost estimates and reports on life-cycle costs for all MDAPs in Acquisition Category (ACAT) ID and other selected acquisitions. Independent cost estimates for MDAPs in ACAT IC are done by the cost office or agency in the cognizant component. DoD policy, which expands on statutory language in Title X of the U.S. Code, requires independent estimates at all milestones beyond Milestone 0. On occasion, senior DoD officials ask the CAIG to prepare independent cost assessments for MDAPs in support of major program reviews between these milestones.

Figure II-1 shows a history of the number of MDAPs over the past 5 years. For the last 3 years, the number of MDAPs has stayed fairly constant at about 80 programs, roughly evenly split among the Army, Navy, and Air Force. Figure II-2 shows the same programs aggregated by acquisition category designation—ACAT IC or ACAT ID. The Under Secretary of Defense (Acquisition and Technology) has milestone decision authority (MDA) for ACAT ID programs, whereas the cognizant Component Acquisition Executive has MDA for ACAT IC programs. Figure II-2 also illustrates the historical trend of total pre-MDAPs (i.e., those programs the Department expects to achieve MDAP status at a future date). The Department tracks about 20 programs in a pre-MDAP state.

Figure II-3 shows the numbers and types of reviews expected over the next 6 years. As implied by the note to the figure, the number of programs requiring cost reviews will grow as new programs enter the review process and existing programs experience cost overruns and schedule slips. Figure II-4 groups upcoming reviews into eleven commodity classes and shows the distinction between production reviews—those

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[1] Matthew Schaffer, Executive Secretary, OSD CAIG, wrote this chapter specifically for inclusion in this document.

that correspond to low-rate initial production (LRIP) and Milestone (MS) III reviews—and pre-production reviews—Milestone I, Milestone II, or mid-milestone reviews.
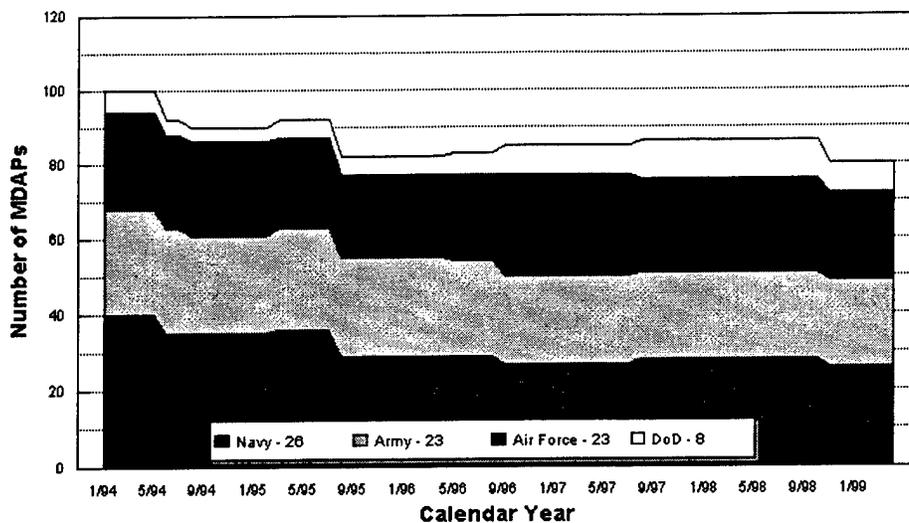
Figure II-1. MDAPs by Service as of January 1999
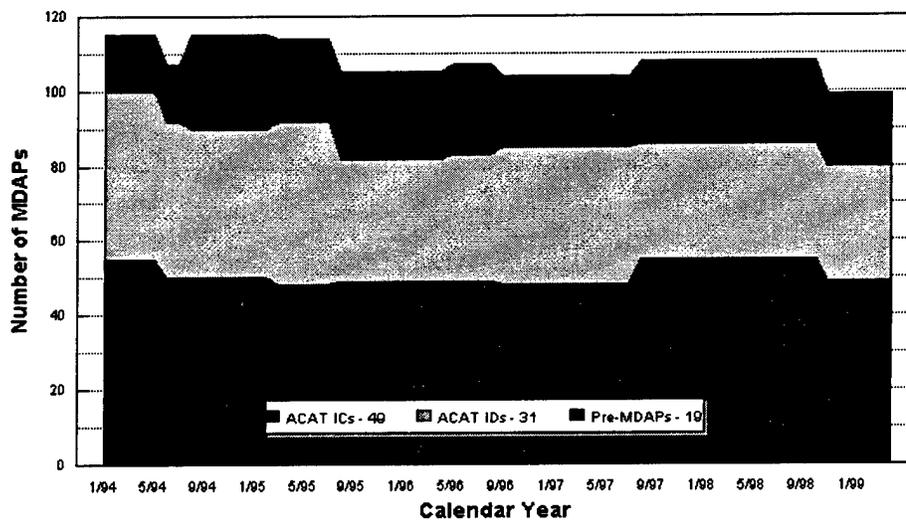
Figure II-2. MDAPs by Acquisition Category as of January 1999
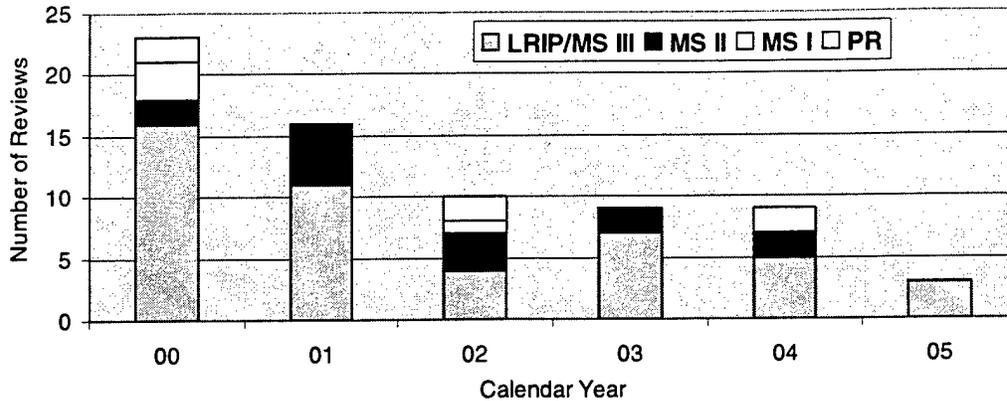
Note: Most reviews after calendar year 2001 are not yet on the books. These include Milestone I reviews for the current set of pre-MDAPS, Milestone I reviews for the next set of pre-MDAPS, and program reviews for troubled systems.

Figure II-3. Upcoming Reviews for ACAT IC and ID Systems by Phase
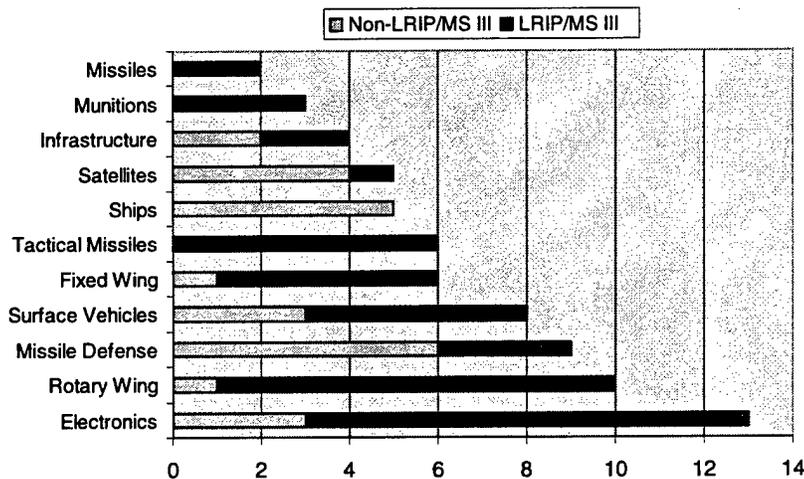
Note: Most reviews after calendar year 2001 are not yet on the books. These include Milestone I reviews for the current set of pre-MDAPS, Milestone I reviews for the next set of pre-MDAPS, and program reviews for troubled systems.

Figure II-4. Upcoming Reviews for ACAT IC and ID Systems by Commodity Class

Both Figure II-3 and II-4 indicate a large number of programs are approaching production decision points. This analysis plan, however, focuses on the programs coming up for pre-production reviews. There are two reasons for this choice. First, a review of historical cost growth in MDAPs shows that production cost estimates are more accurate than estimates for the research, development, test, and evaluation (RDT&E) phases of the program—even when measuring cost growth relative to Milestone II production estimates. Second, LRIP and MS III estimates are based, at least partially, on actual cost data for units produced in the Engineering and Manufacturing Development (EMD)

phase of the program. RDT&E estimates, by contrast, typically have little or no actual program costs on which to base the estimate and instead rely on statistical measures of analogous, historical program costs.

B. COST-ESTIMATING CHALLENGES

Figure II-4 reveals that most programs with upcoming pre-production cost reviews fall within the following four commodity groups: missile defense systems, ships, satellites, and electronics. The challenges posed for cost estimators in each of these four commodity areas are discussed in the subsections that follow.

1. Missile Defense Systems

The Ballistic Missile Defense Organization (BMDO) oversees acquisition of five MDAPs and one pre-MDAP for missile defense systems, all of which have milestone reviews approaching. The systems are National Missile Defense (NMD), Patriot Advanced Capability-3 (PAC-3), Navy Area Defense System (NADS), Theater High Altitude Area Defense (THAAD), Navy Theater Wide (NTW), and Medium Extended Air Defense System (MEADS). The Air Force's Airborne Laser (ABL), another missile defense system, has a major review approaching in about 3 years.

All of today's missile-based missile defense systems can be thought of as comprising three major subsystems—the interceptor; the sensor suite; and the battle management command, control, communications, and intelligence (BMC3I) suite. The generic hit-to-kill interceptor consists of a single- or multi-stage booster coupled to a kill vehicle front end. The kill vehicle includes a guidance section, often including a divert and attitude control system, and a seeker (usually an active radio frequency or passive infrared system, sometimes both) that make up the bulk of the interceptor cost. Sensor suites for these systems consist of fire-control radar operating somewhere in the Super High Frequency (SHF) band of the radio spectrum. Such radar may also provide surveillance capability or may be supplemented with a separate surveillance radar system, generally operating in the UHF band. The BMC3I suites are complex, highly integrated architectures that blend largely commercial off-the-shelf (COTS) hardware architectures and standard military communications suites with massive software programs that typically comprise multiple millions of lines of code.

The two areas of these missile defense systems that are particularly challenging to cost are software embedded within the BMC3I system and the kill vehicles. Some of the BMC3I code is commercially available, some exists from previous developments, and

some requires new development. For cost estimating purposes, analysts need a database that captures the baseline efforts and follow-on upgrades in terms of size (code count), productivity (lines of code delivered per development hour stratified by application type), schedule, and other metrics. Estimators need relationships that can predict software size, coding productivity and schedule as a function of the complexity (generally correlated to the software functionality) and integration extent (generally correlated to the number of external and internal interfaces for each major software item).

The kill vehicles for hit-to-kill interceptors (all but the NADS missile are hit to kill) appear to be significantly more challenging (and, therefore, costly) to design and build than predecessor missiles that relied on proximity-fused warheads. Estimators need updated vehicle guidance (including the divert and attitude control system) and seeker models that incorporate the latest cost information from the new systems and an understanding of the cost drivers that make today's hit-to-kill seekers more expensive.

A third area in missile defense that requires new research is high-energy laser systems. When the CAIG developed the Milestone I estimate for ABL, few analogies were available, and those that did exist were exclusively ground-based laser systems. New cost-estimating relationships are needed for the multi-megawatt lasers anticipated for airborne and space-based laser architectures. Estimators also need a firmer understanding of the key cost drivers for such systems.

2. Ships

The Navy has four new classes of ships in early phases of acquisition, DD-21, SSN 774, TADC(X), and CVN(X). Another class, LCC(X), is also being discussed within the Department as a possible new acquisition.

Naval shipbuilding is one of the last military-unique development areas. Cost-estimating relationships based on years of shipbuilding experience remain generally useful today. Affordability concerns for the new classes of Navy ships, however, are forcing the Navy to examine more extensive application of commercial production practices to naval shipbuilding. Such practices should be reviewed to ascertain which commercial practices naval shipyards can implement and what cost implications may result. Estimators need to know what historical cost differences exist between commercial and military shipbuilding and how they might change with the adoption of commercial practices at a naval shipyard.

Five other areas of cost research would improve cost estimates of tomorrow's naval acquis.tions—signature reduction, propulsion, manning reduction, teaming, and integrated process and product development (IPPD). Both DD-21 and CVN(X) require major development efforts to reduce radar cross-section and infrared, acoustic, and magnetic signatures. Estimators need to know what state-of-the-art processes are available for accomplishing such reductions, what processes are in development, and what costs are associated with applying such processes to naval ships.

DD-21 and CVN(X) also have aggressive manning reduction goals. Estimators need tools to evaluate the reasonableness of the projected manning levels, in terms of operational effectiveness and quality of life. These tools should help estimators understand necessary mixes of skill levels, new training requirements necessitated by the manning reductions, and the effects on shore-based support. A study on means and associated costs for manning reduction for analogous functions in the private sector would improve analysts' understanding of the applicability and effect of manning reductions on Navy ships.

CVN(X) will have a new nuclear propulsion plant. The cost-estimating relationships for nuclear propulsion plants must be updated to reflect current technologies, new manufacturing processes, and their costs.

Teaming of the system integrator and the shipyards was first adopted for the LPD-17. This ship program was also the first to use IPPD teams, which originated in the aircraft industry. Expectations are that future classes of Navy ships will also be built by teams and will incorporate IPPD. A review of the LPD-17 experience with teaming and IPPDs is called for to better understand the cost implications of such arrangements. Experience and practice by other industries would also provide useful insights.

3. Satellites

The Air Force has recently entered or is about to enter Phase I on the Space Based Infrared System Low Component (SBIRS Low), the National Polar-orbiting Operational Environmental Satellite System (NPOESS), and the Advanced Extremely High Frequency (AEHF) communication satellite system. The Air Force is about to embark on a modernization program for the Global Positioning System (GPS) and is looking at a wideband gap-filler system to replace older Defense Satellite Communication System (DSCS) satellites. The Navy has requested Milestone 0 approval for Mobile User

Operational System (MUOS), a replacement for the Ultra High Frequency Follow-on (UFO) narrowband satellite communication system.

Satellite systems generally have two major segments—space vehicles and ground support systems. The space vehicles are usually thought of as having two subsystems. One is the spacecraft (often called the "bus"), which provides electrical power, thermal dissipation, attitude control, and communications with the ground stations. The other is the payload. Most of DoD's satellite constellations are primarily space-based communications architectures. Thus, most payloads consist of antennas and processors to transmit and receive communications signals. On most of the other DoD constellations (GPS being the exception), as well as most intelligence systems, the payloads consist of specialized sensors for unique military and intelligence applications. The ground support systems comprise ground stations for communicating with and controlling the satellites, and facilities for processing the received signals. At a minimum, the ground stations provide command and control functions to monitor the health of the vehicle subsystems and to maintain the orbital integrity of the vehicles. For those systems with space-based sensors, the ground support system also includes a mission data processing function, which takes the raw sensor data collected by the satellite to produce intelligence, strategic, or tactical products that can take a variety of forms for distribution, such as messages or images.

Spacecraft costs have been and continue to be generally well understood. The cost-estimating relationships developed from numerous historical DoD and other government agency systems appear to capture adequately the costs of developing and building the spacecraft portion of a space vehicle. These relationships should be updated with more recent data. But, more importantly, the recent growth in the commercial satellite industry argues for a review of commercial practices and their applicability to defense satellite programs.

The three main cost research areas needed for satellite systems are for the ground support segments, communication payloads, and unique sensors. Much like the new missile defense battle management systems, satellite ground support systems are software intensive. Unlike them, however, ground support systems also have considerable hardware requirements for communicating with and controlling the satellite constellation; downloading and storing sensor data from the constellation; and processing, storing, and distributing these data and the resulting products. From a command and control perspective, the large constellations (in terms of the number of vehicles making up the constellation), such as GPS and SBIRS Low, have unique challenges that the smaller,

geosynchronous constellations do not have, simply because the orbital ephemera are far less complex for geosynchronous satellites. From a mission processing perspective, the relative uniqueness of the payload makes this portion of the ground support segment challenging—both to develop and estimate.

New databases must be developed using data gathered from existing satellite ground support systems for such development parameters as software size, COTS content, hardware requirements, development schedule, and cost. Models based on these databases must account for leverage gained from predecessor satellite systems. For example, is productivity improved by modifying similar algorithms from previous or related systems, or is the effort equivalent to writing the new algorithm from scratch? What is the cost of integrating existing software modules into new software developments? The exponential growth in computer processing capability requires frequent re-hosting efforts to port old software onto new servers and desktop computers. What is the cost of this effort? How is obsolescence accounted for in the design and cost of ground support systems?

The bulk of DoD's future satellite acquisitions will be communication satellites. Each portion of the spectrum in which DoD operates satellite-based communication systems—wideband SHF and Ka, protected EHF, and narrowband UHF—will have replacement satellites launched within the next 8 years. Estimators need updated models for the communication payloads that incorporate not only DoD experience but also commercial experience. Such models should be sensitive to the degree of link protection required for the transmitted signals.

For the other DoD satellite acquisitions, new models are needed for the next generation of meteorological and infrared sensors, as well as new phased-array antennas for radio frequency–based sensors (e.g., GPS Modernization and the new Discoverer II programs). Such models will likely include sensors found on non-DoD systems, such as those built for NASA, NOAA, and intelligence community applications.

4. Electronics

DoD has several major acquisitions underway (or plans for such) that will improve existing radar performance, provide better information management and command and control, upgrade aircraft avionics, or introduce new communication suites. The systems include the All Source Analysis System (ASAS), Joint Tactical Radio System (JTRS), Warfighter Information Network-Tactical (WIN-T), the Joint STARS

Radar Technology Insertion Program (RTIP), and an avionics modernization program for the C-130. They share a reliance on advances in electronics technology that are primarily driven by commercial applications of the same or similar technologies.

Programs in this commodity group generally attain MDAP status in one of two ways—either the program comprises a large, expensive sensor to be integrated into a few platforms of a single type or a relatively inexpensive electronic component (i.e., a circuit card or terminal) that must be installed into a large number of platforms of many types. Both program types have common features, such as the development and manufacturing of new functional hardware, often referred to as Group B hardware, and the design and manufacture of installation kits, often referred to as Group A kits. The latter consist of items such as structures or templates necessary for installing the Group B hardware and new cable harnesses for linking the new hardware with platform power supplies and mission computers.

But the two program types differ significantly in their management structure. For large sensor programs, typically a single program manager is responsible for the design, development, and manufacture of the new functional hardware, as well as the installation and test and evaluation of the sensor with the platform. All programmatic activities are orchestrated by and funded through this single manager. RTIP is an archetype.

For smaller electronic systems, a single program manager is responsible for development and manufacture of the electronic component (Group B) only. But installation, integration, and test and evaluation are the responsibility of individual platform program offices. Thus, funds and programmatic activities associated with the Group B hardware flow through the single program office, whereas funds for the installation nonrecurring and recurring expenses must be provided to multiple program offices, which are often strewn across all services. Installation expenses usually represent the majority of the acquisition costs for the program. GPS user equipment is an archetype here.

Estimators need new models for understanding the costs associated with the integration, installation, and test and evaluation efforts for both types of programs. For those electronics systems that will be installed on a large number of platform types, estimators need methods for narrowing the universe of platform types to a manageable subset that can serve as useful analogies for platform types with similar integration, installation, and test and evaluation costs.

The trend in inexpensive replacement electronic components is toward form-fit-function circuit cards with the same functionality in considerably less volume. Systems that use functions such as GPS are likely to move even more toward embedding that functionality into the larger subsystems rather than linking the functionality via data busses as is currently done. Despite the low costs of such electronic components, errors in recurring cost estimates are magnified simply because of the large procurement volume. Thus, estimators also need new tools that reflect the rapid advancements in and miniaturization of digital and RF electronics. What are the fundamental phenomena behind these advances and what are appropriate tools for predicting prices of future electronics?

C. OTHER ISSUES FOR COST ESTIMATORS

Analysis of cost growth in DoD programs demonstrates that estimating research and development (R&D) program phases is quite challenging. Many of the tools cost analysts use for estimating development costs can be simply characterized as a factor of the production costs. Because both the factor and the production estimate have some uncertainty, it is obvious that the R&D cost variance from such models is considerably larger than the production estimate variance. In a sense, cost estimators have compounded the error in their R&D estimates by using such models.

Cost estimators are also criticized for not being able to capture cost reductions resulting from new development and manufacturing processes and better business practices in their R&D estimates. Since the tools analysts use are primarily statistical analyses of historical programs, models will always lag improvements in such processes. To get better, it may be necessary to break from such history-based tools and develop new models that provide better insight into the underlying processes that drive costs.

Is it possible, for example, to build a model for R&D that captures the interrelationships among the various tasks associated with a development effort? Such tasks would be grouped into broad categories, such as hardware design, software development, recurring hardware build, system test and evaluation, systems engineering and program management. Each task then would have an underlying distribution associated with it that characterized the length of time needed to complete the task and a measure of the labor requirements as a function of time. The model also would capture the interdependence of each task with completion of predecessor and concurrent tasks.

Such a process-oriented model could be used in a number of analyses besides building a cost estimate. It could prove useful as a risk tool to assess schedule and cost implications for those tasks with significant technical risk. It could provide a mechanism for testing the efficiency of a spending profile, possibly providing an analytically based alternative program and spend plan to compare to a less efficient, resource-constrained program. Such an analysis would, thereby, address acquisition cycle-time issues prior to program initiation. The model could also be used to test claims of cost reduction by measuring the cost effects of changes in the interdependence, length, and overall costs of individual tasks brought about by changes in development processes.

Another topic of growing interest, given the push to maximize use of commercial products in DoD acquisitions, is the issue of obsolescence. How does the rapid pace of technological advances (both in hardware and software) affect programs with acquisition cycle times significantly greater than the obsolescence period (which is true for almost all MDAPs)? Does the notion of an "open-system architecture" accurately capture what happens in today's development efforts, in the sense that programs can readily adopt new commercial developments within the systems architecture? What are the costs associated with maintaining interfaces with constantly changing commercial products? Is the cost of keeping current less than the cost of obsolescence?

D. CONCLUSION

All the analysis topics discussed in this chapter focus on cost issues. Topic selection was guided by imminent projects, not all of which will maintain their schedules but ultimately will face Milestone reviews. Often the topics were general enough to apply to many similar programs that the CAIG and other cost agencies will have to review in the coming years.

The analysis requirements, however, have a slightly different feel than previous cost analysis efforts. The latter have typically centered on construction of cost-estimating relationships using statistical tools. Such analyses will continue to be needed and, therefore, will need updating with newer data. But this analysis plan proposes a more ambitious undertaking, asking analysts to dig deeper and attempt to gain insight into program cost drivers, especially for R&D efforts. Such analyses will require different analytical tactics, such as thorough reviews of individual programs, detailed surveys conducted with contractors and government program offices, and different analytic tools. Success in this endeavor may be more elusive than traditional cost analyses, but it will almost certainly improve cost estimators' ability to evaluate programs and their costs and

will provide cost estimates and related analyses from which decision makers can make better informed programmatic and resource decisions.

III. ONGOING AND PLANNED COST RESEARCH STUDIES

As mentioned in Chapter I, IDA asked representatives from each office and organization invited to participate in the 1999 IDA Cost Research Symposium to submit summaries of all planned and ongoing cost research studies. This chapter contains those summaries. Section A lists the titles of the studies summarized in Section B.

A. STUDY TITLES

The study titles listed here are grouped according to the office or organization performing the study and are arranged in the order they were submitted to IDA. We assigned each title a number (e.g., PA&E-1) using the office/organization abbreviations listed in Chapter I, Table I-1.

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

PA&E–1	Force and Support Cost (FSC) System
PA&E–2	Force and Support Cost (FSC) System and FYDP Support—VGS
PA&E–3	Visibility and Management of Operation and Support Costs (VAMOSC) for Major Weapon Systems
PA&E–4	Visibility and Management of Operation and Support Costs (VAMOSC) for Major Weapon Systems
PA&E–5	Improved Software Cost Reporting Processes for Weapon Systems
PA&E–6	Selected Acquisition Report (SAR) Cost Variance Analysis
PA&E–7	Improved Methodologies for Estimating Development Costs
PA&E–8	Cost Estimating for the 21st Century Manufacturing Environment
PA&E–9	Cost Research Symposium
PA&E–10	Understanding the Sources of Cost Growth
PA&E–11	Cost of Developing and Producing Next Generation Tactical Aircraft
PA&E–12	Contractor Cost Data Reporting (CCDR) Clearinghouse/Repository
PA&E–13	CAIG Information Center Support
PA&E–14	Improved Methodology for Projection of Development Costs

Ballistic Missile Defense Organization

BMDO–1	Automated CER Data Base
BMDO–2	BMDO Operating & Support Cost Estimating
BMDO–3	BMDO Cost Risk Research
BMDO–4	Cost Drivers Analysis
BMDO–5	Fixed Site Early Warning Radars

| BMDO-6 | Development CERs |
| BMDO-7 | EMD Learning Slope and the Prototype to Production Step-Down Factor |

Army Cost and Economic Analysis Center

CEAC-1	Operating and Support Management Information System (OSMIS) Data Base Management
CEAC-2	Operating and Support Management Information System (OSMIS) Output Products
CEAC-3	Operating and Support Management Information System (OSMIS) Special Studies
CEAC-4	ACEIT/ACDB
CEAC-5	Communications and Electronics Cost Data Base/Methodology
CEAC-6	Army Tri-Service Missile and Smart Munitions Database
CEAC-7	Wheel and Tracked Combat Vehicle Data Base and Methodology Development
CEAC-8	Aircraft Module Data Base
CEAC-9	ACEIT Economic Analysis Applications

Army Materiel Command

| AMCRM-1 | ACE-IT Verification and Validation Tool |

Army Tank-automotive and Armaments Command

| TACOM-1 | Performance Affordability Assessment Model (PAAM) |

Army Space and Strategic Defense Command

| SMDC-1 | Updated Ground Based Radar Independent Cost Model |
| SMDC-2 | Software Sizing |

Naval Center for Cost Analysis

NCCA-1	Top-Level Ship Operating and Support Cost Estimating Relationships
NCCA-2	Ship Operating and Support Cost Analysis Model (OSCAM-Ship)
NCCA-3	Shipboard Systems Operating and Support Cost Analysis Model (OSCAM-Sys)
NCCA-4	Aircraft Operating and Support Cost Analysis Model (OSCAM-Air)
NCCA-5	Avionics Operating and Support Cost Analysis Model (OSCAM-Air Sys)
NCCA-6	Cost of Manpower Estimating Tool (COMET)
NCCA-7	Navy VAMOSC Database Improvement Program
NCCA-8	Integrated Detailed Total Operating and Support Cost Database
NCCA-9	COTS Electronics Acquisition Cost Impact Factors
NCCA-10	Platform Integration Cost Database/Model for Electronics
NCCA-11	MILSPEC Electronics Acquisition Cost/Technical Database
NCCA-12	Software Development Estimating Handbook–Phase One
NCCA-13	Weapon System Development Cost/Technical Database
NCCA-14	Weapon System Software Development Estimating Methodology
NCCA-15	Weapon System Software Maintenance Cost/Technical Database Estimating Methodology

NCCA-16	Automated Information System (AIS) Software Cost/Technical Database and Estimating
NCCA-17	Missile Development Cost Estimating Method
NCCA-18	Rotary Wing Aircraft Cost Database

Naval Air Systems Command

NAVAIR-1	Avionics Obsolescence Model
NAVAIR-2	SLAP/SLEP Full Scale Testing Model
NAVAIR-3	Environmental Impact/Demilitarization/Disposal
NAVAIR-4	NNTE CER Development
NAVAIR-5	Aging Aircraft Study Cost Update

Naval Sea Systems Command

NAVSEA-1	Material Vendor Survey
NAVSEA-2	Government Furnished Equipment/Materiel (GFE/GFM) Process Improvement Initiative
NAVSEA-3	CVNX Total Ownership Cost Database, Model, and Process Development
NAVSEA-4	AACEI Cost Model for Aircraft Carriers

Naval Surface Warfare Center, Carderock Division

NSWCCD-1	Product-Oriented Design and Construction (PODAC) Cost Model
NSWCCD-2	Navy Force Affordability Model (NFAM)
NSWCCD-3	Aircraft Carrier Performance-Based Life Cycle Cost Model and Present Value Analysis Modeling
NSWCCD-4	USCG Performance-Based Life Cycle Cost Model

Air Force Cost Analysis Agency

AFCAA-1	ACE-IT/CO$TAT Enhancements
AFCAA-2	Military Aircraft Data and Retrieval (MACDAR) System Update
AFCAA-3	NAFCOM (NASA/Air Force Cost Model)
AFCAA-4	ACDB Missile Database Improvements
AFCAA-5	Air Force Total Ownership Cost (AFTOC)
AFCAA-6	Defense Contractor Overhead Rate Analysis Follow-On
AFCAA-7	B-2 Database
AFCAA-8	Air Force Inflation Model Tool
AFCAA-9	Aircraft Avionics Systems Database and Study
AFCAA-10	COTS Open Software Cost Model
AFCAA-11	Missile CER Development
AFCAA-12	Crosslink Payloads Data Collection and CER Development
AFCAA-13	C-5 Aircraft Database
AFCAA-14	Comprehensive Force Cost Model (CFCM)
AFCAA-15	Wartime Cost Per Flying Hour Analysis
AFCAA-16	Unmanned Air Vehicle (UAV) Database
AFCAA-17	Force Analysis Decision Support System (FADSS) (ACE-IT Enhancements)
AFCAA-18	Phased Array Cost Database

Aeronautical Systems Center, Air Force Materiel Command

ASC/FMC–1   Case Study, APG-63 V(1) Radar, F-15
ASC/FMC–2   PRICE Model Calibration Studies: F-15 and B-2
ASC/FMC–3   Integrated Desktop Analysis and Planning System (IDAPS) Concept
                      Evaluation (ICE)
ASC/FMC–4   Avionics Support Cost Factors Update
ASC/FMC–5   Automated Model for Integrating Cost with Operational Effectiveness

Electronics Systems Center, Air Force Material Command

ESC/FMC–1   C2 Cost Information Center Web Site
ESC/FMC–2   "Open" Estimating Tool for Software-Intensive Programs with COTS H/W &
                      S/W

Air Force Space and Missile Systems Center

AFSMC–1   FY-98 Operation and Support (O&S) Database
AFSMC–2   FY-98 Passive Sensor Cost Model Update
AFSMC–3   FY-98 Software Database
AFSMC–4   FY-99 Software Database
AFSMC–5   FY-98 Unmanned Spacecraft Cost Model (USCM) Update
AFSMC–6   FY-99 Non-Recurring to T1 Communications Payload Study

Ministry of Defence, Special Procurement Services/Cost Forecasting

SPS/CF–1   Software Support Cost Model Project (SSCMP)
SPS/CF–2   Operating and Support Costs Analysis Models (OSCAM)

Air Force Institute of Technology

AFIT/LAS–1   A Return on Investment Model for Air Force Technology Transfer
AFIT/LAS–2   Multinational Communications Satellite Cost Study: Program Management
                       Costs
AFIT/LAS–3   Fighter/Attack Aircraft Production CERS and Seemingly Unrelated Regression
AFIT/LAS–4   Software Support Cost Estimating Models: a Comparative Study of Model
                       Content and Parameter Sensitivity
AFIT/LAS–5   Manned Versus Unmanned Reconnaissance Air Vehicles: A Quantitative
                       Comparison of the U-2 and Global Hawk Operating and Support Costs
AFIT/LAS–6   Predictive Reliability of the Contractor Performance Assessment Report
                       (CPAR) Process
AFIT/LAS–7   Air Refueling Operations In The North Pacific: Is There A More Efficient
                       Method?
AFIT/LAS–8   The Adequacy of the Fourteen General System Characteristics in Estimating
                       Software Size Using Function Points
AFIT/LAS–9   The Development of Military Laser Cost Estimating Relationships From
                       Commercial Data
AFIT/LAS–10 Implementing an Activity Based Costing System in an Air Force Laboratory
                       Environment

Defense Systems Management College

DSMC–1   Research on Ongoing Acquisition Research (ROAR)

Aerospace Corporation

AERO–1   Costs of Space, Launch, and Ground Systems
AERO–2   Small-Satellite Subsystem Cost Model
AERO–3   Ground Systems Cost Model
AERO–4   Concept Design Center
AERO–5   Instrument Cost Model
AERO–6   Production Cost Anthology
AERO–7   Space-based Optical Instrument Cost Model

MITRE Corporation

MITRE–1   C4ISR Investment Strategies
MITRE–2   Integrating Total Ownership Cost Methods with IT Investment Strategies
MITRE–3   Integrating the Balanced Scorecard with Decision Analytics to Support IT
           Investment Decisions

RAND Corporation

RAND–1   Force Structure and Support Infrastructure Costing for Program Analysis and
          Evaluation
RAND–2   The Cost of Future Military Aircraft: Historical Cost Estimating Relationships
          and Cost Reduction Initiatives
RAND–3   Understanding the Sources of Cost Growth in Weapon Systems

Institute for Defense Analyses

IDA–1   Defense Programming Database
IDA–2   Defense Resource Management Cost Model
IDA–3   FYDP Tracking and Analysis Systems
IDA–4   Contingency Operations Support Tool (COST)
IDA–5   Reducing Defense Infrastructure Costs
IDA–6   Portfolio Optimization Feasibility Study
IDA–7   Force Aging
IDA–8   Assessing Defense Funding Supporting Readiness
IDA–9   Force Modernization Metrics
IDA–10   FYDP Related Studies
IDA–11   Non-major Procurement Funding
IDA–12   Major Defense Acquisition Program (MDAP) Analysis and FYDP Support
IDA–13   Program Objective Memorandum (POM) Major Defense Acquisition
          Programs (MDAP) Reporting
IDA–14   Financial Databases of Defense Manufacturers
IDA–15   Economic Drivers of Defense Overhead Costs
IDA–16   Defense Economic Planning and Projection Systems (DEPPS)
IDA–17   Cost of Stealth
IDA–18   Affordable Multi-Missile Manufacturing (AM3)
IDA–19   Technical and Schedule Risk Assessments for Tactical Aircraft Programs

IDA–20	Methods to Assess Schedules for the Strategic Defense System
IDA–21	Costs & Benefits of Installation of Flight Safety Systems on F-22 Aircraft
IDA–22	Improved Software Cost Reporting Processes for Weapon Systems
IDA–23	Assess BMDO Cost Control/Reduction Initiatives
IDA–24	Space and Missile Systems Nuclear Hardening Costs
IDA–25	Resource Analysis for Test and Evaluation
IDA–26	Support for Reserve Component Employment Study
IDA–27	Active/Reserve Integration
IDA–28	Evaluation of TRICARE Program Costs
IDA–29	Workload Forecasting for the Veterans Benefits Administration
IDA–30	DSCA Business Metrics
IDA–31	DSAMS Cost Estimating
IDA–32	Cost & Benefits of Raising the Micro-Purchasing Dollar Threshold
IDA–33	Science and Technology Models
IDA–34	Cost Analysis Education

B. SUMMARIES

The summaries of ongoing and planned cost research studies that follow are grouped by office or organization (separated by tabs) in the order indicated by the list of study titles in the previous section. The first part of each subsection describes the office or organization (name, location, director,[1] size, etc.).[2] These are followed by the summaries themselves.[3]

Near the end of each summary is a list of keywords the office or organization assigned to the study. (In some cases, keywords were modified for consistency.) These keywords were used in tabulating the numbers shown in Table III-1. The rows represent keywords and the columns represent offices and organizations. The number at the intersection of a row and column is the number of studies by the office or organization that have that keyword assigned to them.

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[1] Though their actual titles vary, the heads of the offices/organizations are referred to as "directors" in this document.

[2] This description is absent if the office/organization did not provide one.

[3] In the case of NSWCDD, we received only an office description.

Table III-1. Keyword Assignments

	PA&E	BMDO	CEAC	AMCRM	TACOM	SMDC	NCCA	NAVAIR	NAVSEA	NSWCCD	AFCAA	ASC/FMC	AFSMC	ESC/FMC	SPS/CF	AFIT/LAS	DSMC	AERO	MITRE	RAND	IDA	Total
PERSPECTIVE																						
Industry	5	2	—	—	—	—	—	—	3	—	2	2	—	1	—	—	1	—	2	1	5	24
Government	13	3	9	1	1	1	18	—	3	4	18	5	6	2	2	9	1	7	1	2	27	133
CONTEXT																						
Estimating	7	5	7	1	1	2	12	3	3	2	16	4	6	2	2	6	—	5	1	2	12	98
Analysis	3	—	7	1	—	1	9	5	3	3	17	4	—	1	—	5	—	2	1	2	13	77
Reviewing/Monitoring	3	—	—	—	—	—	—	—	1	1	1	—	—	—	—	—	—	—	—	—	—	5
Policy	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	6	7
Programming	4	—	—	—	—	—	—	—	—	1	1	—	—	—	1	—	—	—	—	1	11	18
Budgeting	—	—	3	—	—	—	—	—	1	1	—	—	—	—	—	1	—	—	—	—	4	10
OBJECT																						
Forces	5	—	—	—	—	—	—	—	—	—	2	—	—	2	—	—	—	—	—	—	12	21
Weapon Systems	4	5	5	1	—	2	2	—	—	1	3	3	—	2	1	3	—	—	1	—	3	38
Aircraft	1	—	—	—	—	—	3	3	1	—	3	3	—	—	—	2	—	—	—	—	5	21
Helicopters	—	—	1	—	—	1	1	—	—	—	—	—	—	—	1	—	—	—	—	—	1	4
Missiles	—	—	1	—	—	—	2	—	—	—	3	—	—	—	1	—	—	—	—	—	4	11
Ships	—	—	—	—	—	—	2	—	4	2	—	—	—	—	—	—	—	—	—	—	—	10
Land Vehicles	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	4
Space Systems	—	—	1	—	—	—	—	—	—	—	2	—	6	—	—	1	—	7	—	—	2	19
Airframe	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	1	—	—	—	1	1	5
Propulsion	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	2
Electronics/Avionics	—	1	—	—	—	—	7	—	—	—	1	3	—	2	—	—	—	—	—	—	—	20
Spares/Logistics	—	—	—	—	—	—	—	—	—	—	8	—	—	—	—	—	—	—	—	—	—	8
Facilities	2	—	—	—	—	—	—	—	—	—	1	—	1	—	—	1	—	—	—	—	—	5
Infrastructure	—	—	—	—	—	—	2	—	1	—	1	—	—	—	—	1	—	—	2	—	2	12
Manpower/Personnel	—	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	4	5
STAGE																						
Concept Development	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	1	—	—	—	6
Demonstration/Validation	2	—	—	—	—	—	1	—	1	1	2	3	5	1	—	—	—	5	—	1	—	7
EMD	4	1	—	—	—	—	6	—	2	—	3	2	5	—	—	1	—	6	—	1	8	36
Production	3	—	—	—	—	—	4	—	—	2	3	—	—	—	—	—	—	—	—	1	9	37
Test and Evaluation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	4
Operations and Support	—	1	3	—	—	—	9	—	1	—	2	—	1	—	—	—	—	—	—	1	8	28
Retirement and Demilitarization	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Life Cycle	3	3	—	1	—	2	3	—	1	2	13	2	—	—	—	1	—	—	—	—	6	38

(Continued on the next page.)

Table III-1—Continued

FOCUS	PA&E	BMDO	CEAC	AMCRM	TACOM	SMDC	NCCA	NAVAIR	NAVSEA	NSWCCD	AFCAA	ASC/FMC	AFSMC	ESC/FMC	SPS/CF	AFIT/LAS	DSMC	AERO	MITRE	RAND	IDA	Total
Labor	1	—	—	—	—	—	—	—	2	2	5	—	—	—	—	—	—	—	—	—	2	12
Material	2	—	—	—	—	—	—	—	2	2	5	—	—	—	—	—	—	—	—	1	1	13
Overhead/Indirect	2	1	—	—	—	—	—	—	1	2	—	—	—	—	—	1	—	—	—	—	5	12
Engineering	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	2	8
Manufacturing	—	—	—	—	—	—	—	—	—	2	—	2	—	—	—	—	—	1	—	1	—	8
CPR/CCDR	—	—	2	—	—	—	1	—	—	—	—	1	—	—	—	—	—	—	—	1	1	5
WBS	—	—	1	—	—	—	1	—	2	—	—	—	6	—	—	—	—	6	—	—	—	18
Fixed Costs	—	—	—	—	—	—	1	—	1	1	—	—	—	—	—	1	—	1	—	—	2	5
Variable Costs	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1	—	—	3	6
Production Rate	—	—	—	—	—	—	1	—	—	—	—	1	—	1	—	1	—	1	—	—	—	2
Acquisition Strategy	3	—	—	—	—	—	—	—	2	1	1	—	—	—	—	—	—	3	—	1	8	21
Automation	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	4	7
Advanced Technology	1	—	—	—	1	—	—	—	—	2	—	—	—	—	—	—	—	5	—	—	—	11
Risk/Uncertainty	1	1	—	—	—	2	3	—	1	—	1	—	—	—	—	—	—	1	—	—	1	10
Training	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Readiness	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	2	3
Reliability	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0
Sustainability	—	—	—	—	—	—	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4
Integration	—	—	—	—	—	—	—	—	—	—	—	—	2	1	—	—	—	—	—	—	1	1
Modification	—	—	—	—	—	—	—	—	1	—	—	1	—	2	—	—	—	—	—	—	—	5
Security	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0
Environment	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	0
Schedule	—	—	—	—	—	1	3	—	—	1	—	—	3	1	1	—	—	—	—	—	4	9
Size	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5
Software	1	—	—	—	—	—	4	—	—	—	1	—	—	1	1	2	—	1	—	—	3	15

(Continued on the next page.)

III-8

Table III-1—Continued

	PA&E	BMDO	CEAC	AMCRM	TACOM	SMDC	NCCA	NAVAIR	NAVSEA	NSWCCD	AFCAA	ASC/FMC	AFSMC	ESC/FMC	SPS/CF	AFIT/LAS	DSMC	AERO	MITRE	RAND	IDA	Total
APPROACH																						
Data Collection	3	—	4	—	—	2	8	4	2	2	15	2	4	1	1	2	1	5	2	2	15	75
Survey	1	1	—	—	—	—	1	—	1	1	—	1	1	—	—	2	—	—	2	1	2	11
Case Study	—	—	—	—	—	—	—	—	—	1	—	1	—	—	—	4	—	—	2	—	1	11
Mathematical Modeling	2	1	1	—	—	—	4	—	2	2	12	1	2	—	2	—	—	6	1	—	13	48
Economic Analysis	—	—	—	—	—	—	—	—	2	1	—	—	—	—	—	—	—	—	—	—	5	9
Cost/Production Function	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	4
Time Series	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
Statistics/Regression	—	—	—	—	—	2	9	—	1	3	9	—	3	—	—	2	—	5	—	1	7	43
PRODUCT																						
Data Base	3	1	9	—	—	2	13	—	2	2	15	1	6	—	—	—	1	5	—	1	15	75
Review	2	—	—	—	—	—	—	—	1	1	—	—	—	—	—	1	—	—	—	—	3	8
Method	—	1	—	—	—	3	8	3	2	2	3	1	3	1	—	1	—	—	2	2	4	34
Mathematical Model	—	1	—	1	1	—	—	—	1	3	3	2	2	—	—	1	—	1	—	—	2	11
Computer Model	2	1	—	—	—	—	1	1	2	3	12	—	—	—	2	—	—	5	1	—	11	45
Expert System	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5
Cost Progress Curve	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	2
CER	—	—	3	—	—	2	7	1	2	1	8	—	3	—	—	2	—	4	—	1	4	39
Study	3	—	—	—	—	1	6	—	2	1	—	1	—	—	—	6	—	2	—	2	13	37

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. David L. McNicol, (703) 695-0721
Size	Professional: 36 Support: 5 Consultants: 1 Subcontractors: 17
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: 30–40 POM, budget, FYDP reviews: As required

PA&E-1

Title: Force and Support Cost (FSC) System

Summary: DoD needs a quick and accurate cost estimating tool for proposed changes in forces and support infrastructure. OSD(PA&E) must supply rapid, credible, and incisive evaluations of the likely budget effects of major force and infrastructure alternatives in support of the program/budget review process. This project designs and implements an analysis system to address these fundamental issues.

Classification: Unclassified

Sponsor: OSD(PA&E)
FICAD
The Pentagon, Room 2D278
Washington, DC 20301

Donald Tison, (703) 697-4311

Performer: RAND

Resources:

FY	*Dollars*	*Staff-years*
96	$375,000	
97	$550,000	
98	$230,000	
99	$230,000	

Schedule:

Start	*End*
Ongoing	

Data Base:	Title:
	Description:
	Automation:
Publications:	TBD
Keywords:	Government, Programming, Forces, Life Cycle, Acquisition Strategy, Mathematical Modeling, Computer Model

PA&E-2

Title: Force and Support Cost (FSC) System and FYDP Support—VGS

Summary: This project is the O&M adjunct to the RDT&E funded research and development effort (see PA&E-1). The O&M funding provides software maintenance of portions previously developed. FSC must be imported from Ingres to ORACLE and from Excel 4.0 macro language to Excel Visual Basic. This effort also provides critical client software support through Microsoft Office applications such as the electronic FYDP book.

Classification: Unclassified

Sponsor: OSD(PA&E)
FICAD
The Pentagon, Room 2D278
Washington, DC 20301

Donald Tison, (703) 697-4311

Performer: RAND

Resources:

FY	Dollars	Staff-years
96	$170,000	
97	$200,000	
98	$275,000	
99	$365,000	

Schedule:

Start	End
Ongoing	

Data Base:	Title:
	Description:
	Automation:
Publications:	TBD
Keywords:	Government, Programming, Forces, Life Cycle, Acquisition Strategy, Mathematical Modeling, Computer Model

PA&E-3

Title: Visibility and Management of Operating and Support Costs (VAMOSC) for Major Weapon Systems

Summary: Follow-on to CIM-funded Functional Process Improvement (FPI) project for VAMOSC. The FY 1997 data standardization/identification effort will be based on lessons learned from the FY 1996 VAMOSC Business Process Review (BPR) and will lay a foundation for the prototype development of the standard "To Be" VAMOSC system.

Classification: Unclassified

Sponsor:	OSD(PA&E)
	FICAD
	The Pentagon, Room 2D278
	Washington, DC 20301

Donald Tison, (703) 697-4311

Performer: Andrulis

Resources:

FY	Dollars	Staff-years
96	$275,000	
97	$150,000	
98	$170,000	
99	$170,000	

Schedule:

Start	End
Ongoing	

Data Base: Title:

Description:

Automation:

Publications:

Keywords: Government, Estimating, Reviewing/Monitoring, Programming, Forces, Facilities, Overhead/Indirect

PA&E-4

Title: Visibility and Management of Operating and Support Costs (VAMOSC) for Major Weapon Systems

Summary: The objective of this effort is to maintain PA&E's VAMOSC capability. The contractor will support the VAMOSC/CIM working group and the Senior Level Steering Group, both of which comprise representatives from the CAIG, A&T, DUSD(L), CALS, DFAS, and the Services. The effort involves data modeling of Service VAMOSC databases, implementation of software that can read Service and DFAS data, update to Microsoft Access VAMOSC database application, and analysis of VAMOSC data for weapon systems

Classification: Unclassified

Sponsor: OSD(PA&E)
FICAD
The Pentagon, Room 2D278
Washington, DC 20301

Donald Tison, (703) 697-4311

Performer: Andrulis

Resources:

FY	Dollars	Staff-years
96	$ 93,000	
97	$260,000	
98	$220,000	
99	$300,000	

Schedule:

Start	End
Ongoing	

Data Base:	Title:
	Description:
	Automation:
Publications:	
Keywords:	Government, Estimating, Reviewing/Monitoring, Programming, Forces, Facilities, Overhead/Indirect

PA&E-5

Title:	Improved Software Cost Reporting Processes for Weapon Systems
Summary:	There is an urgent need to improve the reporting of actual costs incurred in the development of software for major defense acquisition programs for advanced weapon systems. These actual costs are the primary basis for the preparation of cost estimates for future weapon systems. However, there is currently no well-defined universal data that can be used to record the important aspects of a software task. Further, there is a need for a software cost model specific to OD(PA&E) requirements, which utilizes data about a software effort to predict its cost or schedule. This task will: (1) evaluate the minimum set of cost data that should be collected; and (2) develop a simplified, streamlined reporting format for use by all DoD program offices. This task will serve as a basis for a follow-on task to calibrate or develop software cost models that utilize the collected data.
Classification:	Unclassified
Sponsor:	OSD(PA&E) The Pentagon, Rm. 2D300 Washington, DC 20301 Dr. Vance Gordon, (703) 697-2999
Performer:	Institute for Defense Analyses 1801 N Beauregard Alexandria, VA 22311 Dr. Thomas Frazier, (703) 845-2132 Dr. John Bailey, (703) 845-2132

Resources:	FY	Dollars	Staff-years
	98	$200,000	
	99	$ 50,000	

Schedule:	Start	End
	Sep 97	Jan 00

Data Base:	Title:
	Description:
	Automation:
Publications:	TBA
Keywords:	Government, Estimating, Production, Software, Study

PA&E-6

Title:	Selected Acquisition Report (SAR) Cost Variance Analysis
Summary:	The project will provide insight into the magnitude and sources of major defense acquisition program (MDAP) cost growth. The project will quantify the amount of MDAP cost growth that is attributable to policy decisions as well as the amount

attributable to errors on the part of the acquisition community as a whole. The principal investigators will transfer historical cost data, cost variance data, and explanatory notes contained in SARs to an electronic spreadsheet. In addition to recording the SAR taxonomy of cost variances, the principal investigators will classify historical cost variances according to a new taxonomy, which will be provided by the project sponsor.

Classification: Unclassified

Sponsor: OSD(PA&E)
PFED
The Pentagon, Room 2D322
Washington, DC 20301

Jermone E. Pannullo, (703) 693-7828

Performer: RAND

Resources:

FY	Dollars	Staff-years
96	$ 65,000	
97	$ 65,000	
98	$103,000	
99	$103,000	

Schedule:

Start	End
Ongoing	

Data Base: Title:

Description:

Automation:

Publications:

Keywords: Industry, Government, Estimating, Weapon Systems, Review, Study

PA&E-7

Title: Improved Methodologies for Estimating Development Costs

Summary: The project will survey best practices in estimating development costs for large-scale product developments, identify the applicability of various methodologies to different DoD sectors, and recommend best practices for key DoD sectors

Classification: Unclassified

Sponsor: OSD(PA&E)

OAPPD
The Pentagon, Room 2D278
Washington, DC 20301

Richard P. Burke, (703) 697-5056

Performer: LMI

Resources:

FY	Dollars	Staff-years
98	$250,000	
99	$250,000	

Schedule:

Start	End
Oct 97	Sep 99

Data Base:	Title:
	Description:
	Automation:
Publications:	
Keywords:	Government, Estimating, EMD, Survey, Expert System

PA&E-8

Title:	Cost Estimating for the 21st Century Manufacturing Environment
Summary:	The objective of this task is to examine specific cost reduction measures that have been undertaken by defense contractors and to assess the likely impact of such measures on manufacturing costs in the next century.
Classification:	Unclassified (Proprietary Information)
Sponsor:	OSD(PA&E)
	OAPPD The Pentagon, Room 2D-278 Washington, DC 20301
	Richard P. Burke, (703) 697-5056
Performer:	IDA

Resources:

FY	Dollars	Staff-years
98	$200,000	1.3

Schedule:

Start	End
	Jan 00

Data Base:	None
Publications:	TBD
Keywords:	Industry, Estimating, Production, Acquisition Strategy, Automation, Advanced Technology, Case Study, Review

PA&E-9

Title:	IDA Cost Research Symposium
Summary:	IDA conducts a cost research symposium to facilitate the exchange of information on cost research that is in progress and planned, thereby avoiding wasteful duplication of effort and providing for more informed research planning decisions by participating offices. The Chairman, OSD CAIG, cosponsors this symposium. The 1999 Symposium will focus on the status of the Military Departments' capabilities to estimate the costs of weapon systems. Documentation of the symposium includes a catalog of cost research projects recently completed or still in progress at participating offices.
Classification:	Unclassified
Sponsor:	IDA Central Research Program
	OD(PA&E)
Performer:	IDA
	Dr. Stephen J. Balut, (703) 845-2527

Resources:

FY	Dollars	Staff-years
99	$45,000	0.3

Schedule:	Start	End
	Oct 98	Sep 99

Data Base:	Title:	DoD Cost Research Projects
	Description:	Summary descriptions of cost research projects (an example is this description)
	Automation:	On the web in Acrobat Reader.

Publications: *The 1999 IDA Cost Research Symposium*, Stephen J. Balut, Document D-XXXX, Unclassified, August 1999.

Keywords: Government, Reviewing/Monitoring, Forces, Weapon Systems, Life Cycle, Data Collection, Data Base

PA&E-10

Title: Understanding the Sources of Cost Growth

Summary: The project will assemble a database on cost growth as evidenced in Selected Acquisition Reports (SARs) and will permit rapid analysis of the extent and causes of cost growth in Major Defense Acquisition Programs.

Classification: Unclassified

Sponsor: OSD(PA&E)
WSCAD
The Pentagon, Room 2C310
Washington, DC 20301

Dr. Jerry Pannullo (703) 693-7828

Performer: RAND

Resources:	FY	Dollars	Staff-years
	99	$180,000	
	00	$180,000	

Schedule:	Start	End
	Ongoing	

Data Base:	Title:	
	Description:	
	Automation:	

Publications:

Keywords: Government, Analysis, Weapon Systems, EMD, Production

PA&E-11

Title: Cost of Developing and Producing Next Generation Tactical Aircraft

Summary: Over the next five years, DoD will be making funding decisions for tactical aircraft development and production, amounting to over $350 billion. CAIG is responsible for preparing independent cost estimates for these aircraft for cost certification to Congress. The existing tools do not address the cost of the new generation fighter aircraft. Design attributes of the next generation of tactical aircraft are not accommodated in existing cost estimating tools. Important attributes include low observable, advanced materials (both composites and metals), integrated avionics, and unique propulsion designs. These attributes are all evident in the F-22 and Joint Strike Fighter (JSF) programs. An urgent need exists to develop the necessary cost estimating tools to support these and future

tactical aircraft programs. The objective is to collect, analyze, and exploit the latest available information to develop databases and methods for estimating the development and production costs of the next generation tactical aircraft.

Classification: Unclassified

Sponsor: OSD(PA&E)
WSCAD
The Pentagon, Room 2C-310
Washington, DC 20301

Gary Pennett, (703) 697-7282

Performer: IDA

Mr. Bruce Harmon, (703) 845-2501

Resources:

FY	Dollars	Staff-years
97	$350,000	2
98	$350,000	2
99	$150,000	0.8

Schedule:

Start	End
Oct 97	Sept 00

Data Base: *Title:*

Description: Cost and other data on contemporary aircraft programs, including F-117, B-2, YF/F-22, YF-23, F/A-18E/F, V-22, C-17

Automation: TBD

Publications:

Keywords: Government, Estimating, Analysis, Aircraft, EMD, Material, Demonstration/Validation, Engineering

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PA&E-12

Title: Contractor Cost Data Reporting (CCDR) Clearinghouse/Repository

Summary: The DoD develops cost estimates of major weapon systems using historical data, the primary sources of which are the Contractor Cost Data Reports (CCDRs) provided by hundreds of defense contractors. CCDR data requirements have not been revised substantially since the system was established nearly two decades ago. In annual meetings at IDA on cost research, the directors of the major DoD organizations that do defense cost research noted that the CCDR system had not been meeting their needs. Since then, steps have been taken to improve the usefulness of the CCDR system, to include analysis and reengineering of the system. This effort addresses additional steps that will further improve the utility of the CCDR system. This includes preparation of the CCDR Handbook that is consistent with established CCDR policies, DoD cost estimating requirements, and contractor capabilities. The study will also evaluate the existing CCDR report formats and make appropriate recommendations to re-design or replace the forms. In this regard, IDA will review and evaluate the availability of DCAA provided data to satisfy overhead cost estimating needs. This task will also address the potential for developing and implementing a system to collect data directly from the contractor's accounting system and convert or map the data into the standard CCDR report formats.

Classification: Unclassified

Sponsor:	OD(PA&E), WSCAD
	The Pentagon, Rm. 2C310
	Washington, DC 20301
	Thomas J. Coonce, (703) 695-7282

Performer: To Be Determined

Resources:

FY	Dollars	Staff-years
97	$150,000	
98	$220,000	
99	$ 75,000	

Schedule:

Start	End
Oct 96	Sep 99

Data Base: Title:

Description:

Automation:

Publications:

Keywords: Government, Industry, Analysis, Labor, Material, Schedule, Study

PA&E-13

Title: CAIG Information Center Support

Summary: The purpose of this task is to purchase equipment and software for establishing the CAIG Information Center. The immediate objective is to establish a central catalog of existing holdings, including technical reports, CAIG case files, and PPBS documents.

Classification: Unclassified

Sponsor:	OSD(PA&E)
	Resource Analysis
	The Pentagon, Room 2D278
	Washington, DC 20301
	Libbie Blaeuer, (703) 697-0221

Performer:

Resources:

FY	Dollars	Staff-years
97	$50,000	
98	$50,000	

Schedule:

Start	End
Oct 96	Sep 98

Data Base: Title:

Description:

Automation:

Publications:

Keywords: Government, Industry, Data Collection, Data Base

PA&E-14

Title:	Improved Methodology for Projection of Development Costs

Summary: The purposes of this task are to develop a better understanding of the factors that drive development costs for DoD systems, and to devise an improved methodology for projecting those costs.

Classification: Unclassified

Sponsor: OSD(PA&E)
Resource Analysis
The Pentagon, Room 2D278
Washington, DC 20301

Steve Miller, (703) 697-0317

Performer: LMI

Resources:

FY	Dollars	Staff-years
98	$200,000	
99	$ 50,000	

Schedule:

Start	End
Oct 96	Sep 98

Data Base: Title:

Description:

Automation:

Publications:

Keywords: Government, Industry, Weapon Systems, Demonstration/Validation, EMD, Risk/Uncertainty, Data Collection, Data Base, Expert System.

Name	Ballistic Missile Defense Organization
Address	Crystal Square Two, Suite 809 1725 Jefferson Davis Highway Arlington, VA 22202
Director	Lowell Naef, (703) 604-0530 E-mail: lowell.naef@bmdo.osd.mil
Size	Professional: 7 Support: — Consultants: 36 Subcontractors: —
Focus	BMDO Cost Policy, Cost Estimating, Cost Analysis, Cost Research/Methodology Improvement
Activity	Number of projects in process: 6 Average duration of a project: 4 months Average number of staff members assigned to a project: 2 Average number of staff-years expended per project: 1+ Percentage of effort conducted by consultants: 85%

BMDO-1

Title:	Automated CER Data Base
Summary:	This effort will establish a relational data base of cost estimating relationships (CERs) which are available for use in BMDO Independent Cost Assessments. At this time we envision that the data base will consist of four tables which contain (1) CERs and their fit statistics; (2) variables and their properties (units, ranges, etc.); (3) the CERs' coefficients and their statistics; and (4) a description of the source documentation.
Classification:	Unclassified
Sponsor:	Ballistic Missile Defense Organization (BMDO) BMDO/POE Crystal Square Two, Suite 1200 1725 Jefferson Davis Highway Arlington, VA 22202 Lowell Naef, (703) 604-0530
Performer:	MCR, Inc. 1111 Jefferson Davis Highway, Suite 601 Arlington, VA 22202 Vernon Reisenleiter, Tom Gilbride, (703) 416-9500

Resources:

FY	Dollars	Staff-years
98		1.2

Schedule:	Start	End
	Jan 98	Sep 98

Data Base:	Title:	
	Description:	The structure of the data base was described under summary
	Automation:	Microsoft Access

Publications: TBD

Keywords: Weapon Systems, Estimating, Data Base

BMDO-2

Title: BMDO Operating & Support Cost Estimating

Summary: Use of Operating & Support (O&S) cost estimates in the acquisition review and decision process is becoming more prevalent. The desire to maximize the return on budgeted acquisition dollars, reduced operating and maintenance budgets, and the need to trade off capabilities to reduce costs, mean more information on the cost to field a system is necessary. Also, with multiple programs in the early to mid-development stages, when O&S trades are of most benefit, the BMDO has found that O&S considerations are of growing importance to their systems decision analysis processes. Concurrently, it was noted that there is no common system of systems approach to O&S costing across these programs. Definition of the O&S period, ground rules for application of O&S costs, system life span, and rules for apportionment of O&S across multiple systems are among the issues which need to be addressed for future BMDO O&S estimates.

Classification: Unclassified

Sponsor: Ballistic Missile Defense Organization (BMDO)
BMDO/POE
Crystal Square Two, Suite 1200
1725 Jefferson Davis Highway
Arlington VA 22202

Lowell Naef, (703) 604-0530

Performer: MCR, Inc.
1111 Jefferson Davis Highway, Suite 601
Arlington VA 22202

Joe Wagner, (703) 416-9500

Resources:	FY	Dollars	Staff-years
	98		0.1

Schedule:	Start	End
	Feb 98	Sep 98

Data Base: N/A

Publications: *BMDO Operating & Support Cost Estimating Guide*, pending

Keywords: Government, Industry, Estimating, Operations and Support, Life Cycle, Weapon Systems

BMDO-3

Title: BMDO Cost Risk Research

Summary: The Ballistic Missile Defense Organization requires accurate risk estimation for budget preparation. A variety of risk research topics will be studied for continued enhancement of the BMDO cost risk model (last updated October 1997). The BMDO Cost Risk Working Group will meet about quarterly to review and discuss the progress and results

of the research. Topics include: Study of EVM Data to provide insights into time distribution of cost growth; Procedures for promulgation of risk results to Program Offices; Risk in O&S; Cost Risk for the NMD System of Systems; Modeling mid-phase risk assessments; Assessment of Schedule/Technical Risk Criteria and Weighting Schemes; Study of Cost Estimating Risk; Study of Hardware-to-Below-the-Line cost growth correlation; Study of COTS/NDI effect on Cost Growth; Effect of the "Ping Factor" on Cost Estimates; Revisit of the effect of Cost Analyst Confidence Scores; Coefficient of Variation as a QA Metric; Software Cost Growth; Re-visit of Schedule/Technical Mapping Equations.

Classification: Unclassified

Sponsor: Ballistic Missile Defense Organization (BMDO)
BMDO/POE
Crystal Square Two, Suite 1200
1725 Jefferson Davis Highway
Arlington VA 22202

Lowell Naef, (703) 604-0530

Performer: MCR, Inc.
1111 Jefferson Davis Highway, Suite 601
Arlington VA 22202

Vernon Reisenleiter, (703) 416-9500

TASC, Inc.
1101 Wilson Blvd, Suite 1500
Arlington, VA 22209

Dick Coleman, (703) 834-5000; Jessica Ayers, (703) 416-9500

Resources:

FY	*Dollars*	*Staff-years*
98		1.3

Schedule:

Start	*End*
Apr 98	Dec 98

Data Base: *Title:*

Description: Databases will consist of historical SARs and CPRs

Automation: Microsoft Excel and Crystal Ball

Publications: *Cost Risk Analysis of the Ballistic Missile Defense (BMD) System, Revision 3*, completed October 1997

Keywords: Government, Estimating, Weapon Systems, Life Cycle, Risk/Uncertainty, Mathematical Modeling, Computer Model

BMDO-4

Title: Cost Drivers Analysis

Summary: BMDO is establishing a technology road map and prioritizing its technology development programs. This research effort supports that objective. It is being done in conjunction with a working group whose membership is responsible for technology development, acquisition, and cost estimating. The purpose of this effort is to provide insights into: the hardware items, the software products, and the support activities; and the technical and performance CER variables that drive the life cycle costs of BMDO's Major Defense Acquisition Programs (MDAPs). A long term product of this effort will be the accumulation of databases, cost estimating relationships, and modeling approaches for estimating the life cycle cost impacts of advanced technology applications to missile defense systems. In the first phase of Cost Drivers Analysis, BMDO/POE examined its

Independent Cost Assessments to identify the high cost items at the fourth and lower levels of the cost breakdown structures and to identify cost driving items common across the MDAPs. BMDO/POE also examined the sensitivity of MDAP cost estimates to variation in the independent variables of the BMDO ICA CERs. At the CER level the analysis revealed a number of cost driving technical and performance characteristics, such as fabrication yield and integrated chip count as drivers of focal plane array (FPA) production costs. At the MDAP level the analysis determined the first order impacts of the same technical and performance subsystem life cycle costs - such as FPA yield on the life cycle cost of the THAAD IR seeker. Continuing Cost Drivers Analysis research is focusing on refining the earlier results and conducting detailed cost impact assessments of technology insertions into BMDO MDAPs. This project includes service participation.

Classification:	Unclassified
Sponsor:	Ballistic Missile Defense Organization (BMDO)
	BMDO/POE
	Crystal Square Two, Suite 1200
	1725 Jefferson Davis Highway
	Arlington, VA 22202
	Lowell Naef, (703) 604-0530; William Seeman, (703) 604-0364
Performer:	MCR, Inc.
	1111 Jefferson Davis Highway, Suite 601
	Arlington VA 22202
	Vernon Reisenleiter, (703) 416-9500

Resources:

FY	Dollars	Staff-years
98		1 (FTE)

Schedule:

Start	End
Aug 97	Indef

Data Base:	*Title:*	
	Description:	Data base will consist of lists of cost drivers, critical parameters, and candidate cost improvement projects.
	Automation:	Manual at this time
Publications:	TBD	
Keywords:	Weapon Systems, Life Cycle	

BMDO-5

Title:	Fixed Site Early Warning Radars
Summary:	This type of radar has some unique programmatic features. These include turn-key contracts, mixing development and production activities (and funding) on the same contract, production in a factory environment with final integration and assembly at a remote site. A previous study (1984) to update CERs for ABM Radars did not appear to include systems with these programmatic characteristics. A more recent cost estimate (1988) for the BMEWs Site III upgrade did. However, the data base was small and also included data on mobile long-range surveillance Radars. A recent small scale study produced a factor for I&A and several BTL CERs. Jane's indicates that a number of BMEWs and PAVE-PAWS sites were upgraded in the late 1980s. The purpose of this research is to collect cost, technical, and programmatic data on these upgrades including support concepts and O&S experience. The purpose of this research is to improve BMDO estimates for GBR, XBR, and UEWR.
Classification:	Unclassified (proprietary), Classified supplement possible

Sponsor:	Ballistic Missile Defense Organization (BMDO)
	BMDO/POE
	Crystal Square Two, Suite 1200
	1725 Jefferson Davis Highway
	Arlington, VA 22202
	Lowell Naef, (703) 604-0530
Performer:	MCR, Inc.
	1111 Jefferson Davis Highway, Suite 601
	Arlington, VA 22202
	Vernon Reisenleiter, (703) 416-9500

Resources:

FY	Dollars	Staff-years
98		0.5

Schedule:

Start	End
Mar 98	Dec 98

Data Base:	Title:	
	Description:	Database will consist of cost, programmatic and technical information
	Automation:	Microsoft Excel
Publications:	Technical Report	
Keywords:	Estimating, Government, Industry	

BMDO-6

Title:	Development CERs
Summary:	Certain important CERs for the development phases require improvement. A set of CERs used by BMDO to estimate development engineering has a high standard error. Further it is desirable to use time as a predictor variable for both development engineering and development phase SEPM. In this project we will review some recent work for suitability to BMDO's needs. We will also expand existing data sets and develop new CERs.
Classification:	Unclassified (Proprietary)
Sponsor:	Ballistic Missile Defense Organization (BMDO)
	BMDO/POE
	Crystal Square Two, Suite 1200
	1725 Jefferson Davis Highway
	Arlington, VA 22202
	Lowell Naef, (703) 604-0530
Performer:	MCR, Inc.
	1111 Jefferson Davis Highway, Suite 601
	Arlington, VA 22202
	Vernon Reisenleiter, (703) 416-9500

Resources:

FY	Dollars	Staff-years
98	TBD	

Schedule:

Start	End
Jul 98	TBD

Data Base:	Title:	
	Description:	Data base will consist of development phase cost data, system. technical data, and related programmatic information
	Automation:	Microsoft Excel
Publications:	Technical Report	
Keywords:	Engineering, CER, Weapon Systems	

BMDO-7

Title: EMD Learning Slope and the Prototype to Production Step-Down Factor

Summary: An analysis of missile data conducted for NCCA in 199x simultaneously determined production and development phase learning curve slopes and a prototype to production step-down factor. The analysis was updated for NAVAIR 199y. The purpose of this study is to conduct similar analysis for Radar systems.

Classification: Unclassified

Sponsor:
Ballistic Missile Defense Organization (BMDO)
BMDO/POE
Crystal Square Two, Suite 1200
1725 Jefferson Davis Highway
Arlington, VA 22202

Lowell Naef, (703) 604-0530

Performer:
MCR, Inc.
1111 Jefferson Davis Highway, Suite 601
Arlington, VA 22202

Vernon Reisenleiter, (703) 416-9500

Resources:

FY	Dollars	Staff-years
99	TBD	

Schedule:

Start	End	
TBD	TBD	-

Data Base:	Title:	
	Description:	Development and production cost data and quantities for electronics systems
	Automation:	Microsoft Excel
Publications:	TBD	
Keywords:	Estimating, Electronics/Avionics, EMD, Cost Progress Curve	

Name	U.S. Army Cost and Economic Analysis Center
Address	5611 Columbia Pike Falls Church, VA 22041-5050
Director	Robert W. Young; (703) 681-3217 DSN: 761-3217 FAX: (703) 681-8732
Size	Professional: 56 Support: 10 Consultants: 0 Subcontractors: 1

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:
	    Data Base Development
	    Methodology Development
	    Costing the Effects of New Technology
	    Software Support Systems
	    PPBES Linkages
	
	The Commodity areas we cover are:
	    Aircraft Systems
	    Missiles and Space Systems
	    Wheel and Tracked Combat Vehicle Systems
	    Communications and Electronics Systems
	    General Systems/Future Technology/Tools and Models
	    Information Management Systems
	    Force Unit Costing
	    Operating and Support Costing
	    Financial Management and Operations

Activity	Number of projects in process: 6–10 Average duration of a project: 9–12 months Average number of staff members assigned to a project: 0.25 Average number of staff-years expended per project: 2 Percentage of effort conducted by consultants: 0% Percentage of effort conducted by contractors: 90% Percentage of effort conducted by subcontractors: 5%

CEAC-1

Title: Operating and Support Management Information System (OSMIS) Data Base 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. Develop annual data collection process, collect data from LIF, PMR, ULLS and other sources. Construct annual Materiel Systems Definition by system/Line Item Number. Generate and validate Weapon system to ammunition crosswalk tables, Unit tables and system asset tables, Cost Tables and OSMIS Cost Tables. Perform system maintenance and develop system documentation.

Classification: Unclassified

Sponsor: US Army Cost and Economic Analysis Center

Terry Mateer, (703) 681-3335/DSN 761-3335

Performer: CALIBRE Systems, Inc.

Bernard Bean

Resources:

FY	Dollars	Staff-years
99	$908,000	

Schedule:

Start	End
Nov 98	Nov 99

Data Base: OSMIS

Publications: U.S Army Operating and Support Management Information System (OSMIS) Manuals (FY97) Reference Table Maintenance Manual, Program Maintenance Manual, OSMIS Operations Manual.

Keywords: Government, Estimating, Analysis, Budgeting, Weapon Systems, Operations and Support, Data Base

CEAC-2

Title: Operating and Support Management Information System (OSMIS) Output Products

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. This contract 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 processed data is used in other systems and models such as FORCES, REVOLVER, and the OSD VAMOSC System Interface Model. OSMIS also contains information on consumables, depot level reparables (DLRs), training ammunition, OPTEMPO, densities, depot maintenance, and petroleum, oil and lubricants (POL).

Classification: Unclassified

Sponsor: US Army Cost and Economic Analysis Center

Terry Mateer, (703) 681-3335/DSN 761-3335

Performer: CALIBRE Systems, Inc.

Bernard Bean

Resources:	FY	Dollars	Staff-years
	99	$332,000	

Schedule:	Start	End
	Nov 98	Nov 99

Data Base: OSMIS

Publications: "U.S Army Operating and Support Management Information System (OSMIS)/ Visibility and Maintenance of Operating and Support Cost (VAMOSC) Annual Report (FY97)," 27 Oct 1997.

Keywords: Government, Estimating, Analysis, Budgeting, Weapon Systems, Operations and Support, Data Base

CEAC-3

Title: Operating and Support Management Information System (OSMIS) Special Studies

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. This effort updates and maintains a relational database. Other special studies include; Increase OSMIS database coverage for Contractor Logistics Support, Integrated Sustainment Maintenance, IMPAC purchases and warranty demands. Create OCIE market basket to support PPBES, Investigate sources for PDSS information. Coordinate Master System Definitions with system PMOs for validation and verification. Investigate ULLS-G for additional useful data, Incorporate Army Modernization Reference Data into OSMIS database. Develop procedure for tracking Training Resource Model projections with historical OSMIS data. Investigate LIF/CDBB as sources of data and recommend necessary fixes/changes to improve databases. Support Prime Vendor Support (PVS) projects such as AH-64A, M109A6 etc. Develop methodology to account for age of the fleet tactical, combat vehicles and aircraft.

Classification: Unclassified

Sponsor: US Army Cost and Economic Analysis Center

Terry Mateer, (703) 681-3335/DSN 761-3335

Performer: CALIBRE Systems, Inc.

Bernard Bean

Resources:	FY	Dollars	Staff-years
	99	$592,000	

Schedule:	Start	End
	Dec 98	Dec 99

Data Base: OSMIS

Publications: TBD

Keywords: Government, Estimating, Analysis, Budgeting, Weapon Systems, Operations and Support, Data Base

CEAC-4

Title:	ACEIT/ACDB
Summary:	This project funds the Army portion of a joint effort of the US Army Cost and Economic Analysis Center and the Air Force Electronic Systems Center and Air Force Cost Analysis Agency to meet the Army Cost Estimation Support Requirements. This funds dial up support for technical assistance when required for Army Cost Analysts and support contractors. It includes the update of annual Inflation Indices, problem resolution, bug fixes and configuration control for Army Acquisition Information/Databases. This contract acts as the Super Database Administrator (DBA) for USACEAC commodity contractors' DBAs.
Classification:	Unclassified
Sponsor:	US Army Cost and Economic Analysis Center
	Richard Bishop, (703) 681-9124/DSN 761-9124
Performer:	Tecolote Research, Inc.
	Tom Kielpinski

Resources:

FY	Dollars	Staff-years
99	$80,000	

Schedule:

Start	End
Apr 99	Oct 99

Data Base:	IBM PC Compatible
Publications:	Tecolote ACE-IT Users Guide
Keywords:	Government, Weapon Systems, Data Base

CEAC-5

Title:	Communications and Electronics Cost Data Base/Methodology
Summary:	This project will continue the development of a Communications and Electronics Database. This effort will add additional Army communications-electronics systems to the database. Database module has developed a common Work Breakdown Structure (WBS) that will describe a comprehensive set of communications systems from small radios to large network control stations. Database includes cost, technical and programmatic data for 13 development programs for 9 Army Communication systems. Currently production data is being loaded for the above set of systems. Other items include investigation of future alternatives for wireless network connectivity; develop useful factors and investigate potential models supporting this new capability.
Classification:	Unclassified
Sponsor:	US Army Cost and Economic Analysis Center
Performer:	Technomics, Inc.
	John Horak

Resources:

FY	Dollars	Staff-years
99	$60,000	

Schedule:

Start	End
Apr 99	Dec 99

Data Base:	ACDB
Publications:	Communications And Electronics Cost Model, TR-9607-01, October 1996

CEAC-6

Title:	Army Tri-Service Missile and Smart Munitions Database

Summary: USACEAC developed a standard architecture for the acquisition of Weapon systems. USACEAC in conjunction with the Air Force and Navy Cost Communities has participated in the joint development and maturation of this Tri-Service database. The primary objective of this project has been collect missile cost data from CCDRs, CPRs, contracts or other sources which can be mapped and normalized to populate the Missile database. The database currently contains 874 missile cost records. These data records are extracted from 60% CDSR, 35% FCHR and 5% CPR and other source documents. Data from other DOD agencies are of particular interest if applicable to US Army Missile Systems. This current effort is expected to add 300 Army missile records. The database will be used to develop improved CERs, learning curves and cost factors.

Classification: Unclassified

Sponsor: US Army Cost and Economic Analysis Center

Performer: Tecolote Research, Inc.

Resources:

FY	*Dollars*	*Staff-years*
99	$100,000	

Schedule:

Start	*End*
Apr 99	Apr 00

Data Base: Automated Cost Data Base (ACDB)

Publications:

Keywords: Government, Estimating, Analysis, Missiles, Space Systems, Data Base, CER, CPR/CCDR, Data Collection

CEAC-7

Title:	Wheel and Tracked Vehicle Data Base and Methodology Development

Summary: This project will provide USACEAC continued support in the development of a Wheeled and Tracked Vehicle Module (WTVM) for the Automated Cost Database (ACDB). Support will consist of data collection and analysis, data base evaluation and management, and the development of cost relationships using collected data. The database is fielded at USACEAC, PEO-GROUND COMBAT & SUPPORT SYSTEMS, and TACOM. The current database contains 1527 tasks form 795 contracts. Approximately 1200 of these records are contract data. This and the current projects are expected to add approximately 1000 tasks to the database and improve the technical and programmatic information. Performing special studies and analyses that further the state of the art of cost estimation of Wheeled and Tracked Vehicle Systems.

Classification: Unclassified

Sponsor: US Army Cost and Economic Analysis Center

Performer: Science Applications International Corporation (SAIC) Len Ogborn

Resources:

FY	*Dollars*	*Staff-years*
99	$100,000	

Schedule:

Start	*End*

Data Base: Automated Cost Data Base (ACDB)

Publications:

Keywords: Government, Estimating, Analysis, Land Vehicles, CER, CPR/CCDR, Data Collection, Data Base

CEAC-8

Title: Aircraft Module Data Base

Summary: This project provides continued development and improvement of the Aircraft Rotary Wing Cost database. This project includes the transition of the Aircraft Module Database in Automated Cost Database (ACDB) to a new contractor to perform the Army Aircraft DBA tasks. The current database contains approximately 95% of the US Rotary Wing Cost Data, the technical data is 50% completed and the programmatic data is 30% complete. This project is expected to add additional cost, programmatic, and technical data for programs such as the Comanche, Longbow Apache Airframe Modifications, Longbow Apache Fire Control Radar, ATIRCM/CMWS, Blackhawk, and Improved Cargo Helicopter.

Classification: Unclassified

Sponsor: US Army Cost and Economic Analysis Center

Performer: Ketron

Phil Wilson

Resources:

FY	Dollars	Staff-years
99	$100,000	

Schedule:

Start	End
Apr 99	Apr 00

Data Base: Automated Cost Data Base (ACDB)

Publications:

Keywords: Government, Estimating, Analysis, Helicopters, Data Collection, Data Base

CEAC-9

Title: ACEIT Economic Analysis Applications

Summary: This project funds the development of an Economic Analysis Tool using ACEIT and the ACE Executive to facilitate economic analysis and enhance the implementation of CAIV functions in ACEIT. This project is developing an Economic Analysis (EA) template hosted in ACEIT that will facilitate the analysis of up to five alternatives in separate ACE sessions using ACE Executive. This new capability will support Economic Analyses down to the Cost Element Structure (CES) level and possibly below using current built in EA functions and other functions such as Savings Investment Ratio (SIR) and Benefit Investment Ratio (BIR).

Classification: Unclassified

Sponsor: US Army Cost and Economic Analysis Center

Richard Bishop, (703) 681-9124/DSN 761-9124

Performer: Tecolote Research, Inc.

Tom Kielpinski

Resources:

FY	Dollars	Staff-years
97	$90,000	

Schedule:	*Start*	*End*
	Apr 9*1*	May 99
Data Base:	IBM PC Compatible	
Publications:		
Keywords:	Government, Weapon Systems, Data Base, Economic Analysis	

Name	U.S. Army Materiel Command, Cost Analysis Division
Address	U.S. Army Materiel Command, Cost Analysis Division 5001 Eisenhower Avenue Alexandria, VA 22333-0001
Director	Mr. Wayne A. Wesson, (703) 617-9100
Size	Professional: 14 Support: 1 Consultants: 0 Subcontractors: 1
Focus	
Activity	Number of projects in process: 1 Average duration of a project: 3 years Average number of staff members assigned to a project: 1 Average number of staff-years expended per project: 0.25 Percentage of effort conducted by consultants: 0% Percentage of effort conducted by subcontractors: 75%

AMCRM-1

Title: ACE-IT Verification and Validation Tool

Summary: The ACEIT V&V Tool is an automated tool to assist cost analysts and validators in verifying the appropriateness of life cycle cost estimate methodology and time phased results at the WBS/Cost Element level. The V&V tool shall indicate acceptable ranges based on historical data obtained from the ACEIT libraries and PC ACDB for similar commodities/systems. The V&V tool will flag those costs which are outside acceptable ranges and which will require further evaluation. The ACEIT user shall be able to use the V&V tool while developing an estimate in ACEIT (real time) or choose to utilize it following completion of the estimate.

An Operational Prototype of the V&V tool was developed under an initial concept development phase. This effort resulted in a demonstrable capability that was integrated into the ACEIT 3.2 framework as part of the ACE Executive component. With this tool, an ACE user can quickly create a specialized V&V analysis template in Excel that contains the time-phased costs from an ACE session down to the level of the Cost Element Structure (CES). These results can then be checked against a V&V rule database stored in Microsoft Access. Costs are then red or yellow flagged as a function of these rules.

This contractual effort involves expansion of the initial proof-of-concept Operational Prototype to a full operational capability. The primary emphasis of this effort will be to increase the flexibility of the rule database to support a more robust set of rule formats and to provide a user friendly administration capability to easily allow an analyst to populate the rule database.

Classification: Unclassified

Sponsor:	HQ AMC
	Mr. Rex Stone
	Phone: (703) 617-9102/DSN 767-9102
	FAX: (703) 617-8425
	Email: rstone@hqamc.army.mil
	Information Management Support Center Funded
Performer:	Tecolote Research Inc.
	John McGahan

Resources:

FY	Dollars	Staff-years
98	$100,000 OMA	

Schedule:

Start	End
Aug 98	Aug 99

Data Base:	IBM PC Compatible
Publications:	Tecolote ACE-IT Users Guide
Keywords:	Government, Analysis, Weapon Systems, Life Cycle, Statistics/Regression, Expert System

Name	Cost Analysis Division U.S. Army Tank-automotive and Armaments Command
Address	AMSTA-RM-V Warren, MI 48397-5000
Director	Richard S. Bazzy, (810) 574-6665 E-mail: bazzyr@cc.tacom.army.mil
Size	Professional: 38 Support: 1 Consultants: 0 Subcontractors: 0
Focus	Responsible for the preparation of Program Office Estimates, Life Cycle Cost Estimates, and Economic Analyses. Perform cost validation to determine the reasonableness of cost estimates. Support the Earned Value Management Process. Develop cost models and data bases along with performing cost research. Support is provided to combat and combat support vehicle systems.
Activity	Number of projects in process: 20 Average duration of a project: 3–20 weeks Average number of staff members assigned to a project: 1–3 Percentage of effort conducted by consultants: 0% Percentage of effort conducted by subcontractors: 0%

TACOM-1

Title:	Performance Affordability Assessment Model (PAAM)
Summary:	The product of this modeling effort is a cost model that will perform Cost as an Independent Variable (CAIV) trades utilizing not only cost, but also technical performance/effectiveness type information. Model will allow users to vary weapon system component level technical performance and see the resulting impact on system level cost and operational effectiveness.
Classification:	Unclassified
Sponsor:	US Army Tank-automotive and Armaments Command AMSTA-RM-V Richard Bazzy, (810) 574-6665
Performer:	US Army Tank-automotive and Armaments Command AMSTA-RM-VC Diane Hohn, (810) 574-8693; Lawrence Delaney

Resources:

FY	Dollars	Staff-years
	$426,000 (to date)	5.5 (to date)

Schedule:	Start	End
	May 94	Jan 99

Data Base: None

Publications: None

Keywords: Government, Estimating, Weapon Systems, Life Cycle, Advanced Technology, Cost/Production Function, Computer Model.

Name	U.S. Army Space and Missile Defense Command
Address	SMDC-SP 106 Wynn Drive, P.O. Box 1500 Huntsville, AL 35807
Director	Mr. Jackson G. Calvert, Cost Analysis Division Chief, (205) 955-3612 Ms. Carolyn S. Thompson, Director, Strategic Planning & Analysis (SPA), (205) 955-3069
Size	Professional: 12 Support: 2 Consultants: Mevatech Corporation Subcontractors: SAIC
Focus	Systems Costs, Component Cost Analyses, Economic Analyses
Activity	Number of projects in process: 1 Average duration of a project: 9 months Average number of staff members assigned to a project: 1 Average number of staff-years expended per project: 0.25 Percentage of effort conducted by consultants: 5% Percentage of effort conducted by subcontractors: 70%

SMDC-1

Title: Updated Ground Based Radar Independent Cost Model

Summary: The Ground Based Radar Independent Cost Model (GBR ICM) was completed in October 1993 and most of the data used for developing the cost model is Traveling Waveform Tube and outdated solid state radars. The radars being proposed and developed for Ballistic Missile Defense efforts are solid state Transmit/Receive module radars. The task involves the development of cost estimating relationships to estimate the cost of ground based radars for National Missile Defense and Theater Missile Defense systems. Data from solid state radars will be used to update the GBR ICM, and this data will be collected by members of the US Army Space and Missile Defense Command Cost Analysis Division and the contractor.

Classification: Unclassified

Sponsor: US Army Space and Missile Defense Command

Performer: SAIC
Ben Davis (US Army SMDC), (256) 955-5466
and Rick Taylor (SAIC)

Resources:

FY	*Dollars*	*Staff-years*
	$154,000	1.3

Schedule:

Start	*End*
Jun 98	Sep 99

Data Base:	*Title:*	
	Description:	DOD systems
	Automation:	Strategic and Theater Automated Research (STAR)
Publications:	N/A	
Keywords:	Estimating, Missiles, Weapon Systems, Electronics/Avionics, Life Cycle, Data Collection, Statistics/Regression, Data Base, CER	

SMDC-2

Title:	Software Sizing
Summary:	Software development costs represent a significant portion of missile system life cycle costs. There are several software cost estimating models which appear to provide reasonably sound software development costs. Validation of these models always makes use of perfect knowledge of the software sizing–which is usually measured by the number of lines of code. In reality, users of the aforementioned software estimating models read the Cost Analysis Requirements Description (CARD), and input the lines of code specified in the CARD directly into the model. Little to no research has been performed that can assist the cost estimator in the determination of whether or not the lines of code value he or she is using as the basis for the estimate is a reasonable one. The subject cost research focuses on providing a method for gauging the CARD-provided line of code estimate. In addition to providing a better expected value cost estimate, it will also assist in risk analyses, and in the determination of range estimates.
Classification:	Unclassified
Sponsor:	US Army Space and Missile Defense Command
Performer:	US Army Space and Missile Defense Command

Resources:	*FY*	*Dollars*	*Staff-years*
	99		0.25
	00		0.50

Schedule:	*Start*	*End*
	Mar 99	Aug 00

Data Base:	*Title:*	
	Description:	Weapon Systems
	Automation:	Strategic and Theater Automated Research
Publications:	N/A	
Keywords:	Government, Estimating, Analysis, Weapon Systems, Life Cycle, Software, Size, Data Collection, Statistics/Regression, Data Base, CER, Study	

Name	Naval Center for Cost Analysis (NCCA)
Address	1111 Jefferson Davis Highway Suite 400, West Tower Arlington, VA 22202-4306
Director	Dr. Daniel A. Nussbaum, (703) 604-0293 CAPT John E. Fink, Deputy Director, (703) 604-0308 Mr. Rick Collins, Director of Cost Research, (703) 604-0280
Size	Total: 35 civilian, 14 military Professional: 32 civilian, 14 military
Focus	Naval Center for Cost Analysis (NCCA)is responsible for assisting (via IPTs) in the preparation of life cycle cost estimates for DoN weapon and automated information systems, administering the DoN Contractor Cost Data Reporting (CCDR) program, managing the DoN VAMOSC Program and coordinating the DoN cost research program. The focus of the NCCA cost research program is the following: 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 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: 18 Average duration of a project: 43.9 mos. Average number of staff members assigned to a project: 1–2 Average number of staff-years expended per project: 2–3 Percentage of effort conducted by consultants: 59 % Percentage of effort conducted by subcontractors: 0%

NCCA–1

Title:	Top-Level Ship Operating and Support Cost Estimating Relationships
Summary:	Parametric cost estimating relationships were developed that estimate annual ship operating and support costs.
Classification:	Unclassified
Sponsor:	Naval Center for Cost Analysis 1111 Jefferson Davis Highway Suite 400, West Tower Arlington, VA 22202-4306 Mr. Jack Smuck, (703) 604-0292

Performer:	NCCA in-house		
Resource.:	*FY*	*Dollars*	*Staff-years*
	96		0.25
	99		0.1

Schedule:	*Start*	*End*
	Jan 96	Apr. 99

Data Base: VAMOSC/other cost data and technical data

Publications: Report and appropriate spreadsheet files

Keywords: Government, Estimating, Operations and Support, Statistics/Regression, Computer Model

NCCA-2

Title   Ship Operating and Support Cost Analysis Model (OSCAM-Ship)

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 which can be easily enhanced and expanded. The model 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 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)
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Rick Collins, (703) 604-0280

Specialist Procurement Services/Cost Forecasting (SPS/CF)
MoD Abbey Wood
P.O. Box 702
Bristol BS12 7DU
UK

Mr. David Baggley, 011 44 117 91 32778

Performer: NCCA in-house, UK MoD in-house and HVR Consulting Services, Ltd.

Mr. Brian Octeau, NCCA, (703) 604-0317

Mr. Brian Tanner, UK MoD, 011 44 117 91 32768

Mr. Jonathan Coyle, HVR CSL, 1420 87977

Resources:	*FY*	*Dollars*	*Staff-years*
	97	UK$ only	0.75
	98	$61,500 + UK$	0.5
	99	$62,500 + UK$	0.25
	00	TBD	0.25

Schedule:	*Start*	*End*	
	Jan 97	Nov 97	Version 1 development
	Dec 97	Feb 98	Version 2 development
	Aug 98	Apr 99	Version 3 development
	May 99	TBD	Continuing enhancements

Data Base:	VAMOSC/other cost data and technical data
Publications:	Mat'iematical model with supporting documentation
Keywords:	Government, Estimating, Analysis, Operations and Support, Sustainability, Ships, Mathematical Modeling, Statistics/Regression, Data Base, Method, CER, Study

NCCA-3

Title:	Shipboard Systems Operating and Support Cost Analysis Model (OSCAM-Sys)
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 which can be easily enhanced and expanded. The model 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 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) 1111 Jefferson Davis Highway Suite 400, West Tower Arlington, VA 22202-4306
	Mr. Rick Collins, (703) 604-0280
	Specialist Procurement Services/Cost Forecasting (SPS/CF) MoD Abbey Wood P.O. Box 702 Bristol BS12 7DU UK
	Mr. David Baggley 011 44 117 91 32778
Performer:	NCCA in-house, UK MoD in-house and HVR Consulting Services, Ltd
	Mr. Brian Octeau, NCCA, (703) 604-0317
	Mr. Brian Tanner, UK MoD, 011 44 117 91 32768
	Mr. Jonathan Coyle, HVR CSL, 142 087977

Resources:

FY	Dollars	Staff-years
96	UK$ only	1.0
97	UK$ only	0.75
98	$61,500 + UK$	0.25
99	$62,500 + UK$	0.25
00	TBD	0.25

Schedule:

Start	End	
Jan 96	Jun 97	Version 1 development
Jul 97	Jan 98	Version 2 development
Aug 98	Apr 99	Version 3 development
May 99	TBD	Continuing enhancements

Data Base:	VAMOSC/other cost data and technical data
Publications:	Mathematical model with supporting documentation
Keywords:	Government, Estimating, Analysis, Operations and Support, Sustainability, Weapon Systems, Mathematical Modeling, Statistics/Regression, Data Base, Method, CER, Study

NCCA-4

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

Summary: This model is being 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. 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)
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Rick Collins, (703) 604-0280

Specialist Procurement Services/Cost Forecasting (SPS/CF)
MoD Abbey Wood
P.O. Box 702
Bristol BS12 7DU
UK

Mr. David Baggley 011 44 117 91 32778

Performer: NCCA in-house, UK MoD in-house and HVR Consulting Services, Ltd

Mr. Brian Octeau, NCCA, (703) 604-0317

Mr. David Baggley 011 44 117 91 32778

Mr. Jonathan Coyle, HVR CSL, 142 087977

Resources:

FY	Dollars	Staff-years
99	$100,000 + UK$	0.75
00	TBD	0.5

Schedule:

Start	End
Apr 99	Sep 99 (Version 1 development)
Oct 99	Mar 00 (Version 2 development)
Apr 00	TBD (Continuing enhancements)

Data Base: VAMOSC/other cost data and technical data

Publications: Mathematical model with supporting documentation

Keywords: Government, Estimating, Analysis, Operations and Support, Sustainability, Aircraft, Mathematical Modeling, Statistics/Regression, Data Base, Method, CER, Study

NCCA-5

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

Summary: This model will be 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. 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) 1111 Jefferson Davis Highway Suite 400, West Tower Arlington, VA 22202-4306
	Mr. Rick Collins, (703) 604-0280
	Specialist Procurement Services/Cost Forecasting (SPS/CF) MoD Abbey Wood P.O. Box 702 Bristol BS12 7DU UK
	Mr. David Baggley 011 44 117 91 32778
Performer:	NCCA in-house, UK MoD in-house and HVR Consulting Services, Ltd
	Mr. Brian Octeau, NCCA, (703) 604-0317
	Mr. David Baggley, 011 44 117 91 32778
	Mr. Jonathan Coyle, HVR CSL, 142 087977

Resources:	*FY*	*Dollars*	*Staff-years*
	00	TBD	0.5

Schedule:	*Start*	*End*
	Apr 00	Sep 00 (Version 1 development)

Data Base:	VAMOSC/other cost data and technical data
Publications:	Mathematical model with supporting documentation
Keywords:	Government, Estimating, Analysis, Operations and Support, Sustainability, Electronics/Avionics, Mathematical Modeling, Statistics/Regression, Data Base, Method, CER, Study

NCCA-6

Title:	Cost of Manpower Estimating Tool (COMET)
Summary:	COMET is a Windows 95 based, PC, software (freeware) tool which provides users with the most accurate total estimates for the costs (MPN and O&MN) of Navy manpower (active duty, reserve and civilian components) available. The model identifies historic Cost Estimating Relationships (CERs) between the "direct" (MPN) costs of "deployable" forces (ships, squadrons and other "sea duty" personnel) and the "variable indirect" costs (MPN and O&MN) associated with "shore duty" personnel that recruit, train and support those "deployable" forces and themselves. The model presents the user with a high degree of cost granularity (encompassing 23 officer designators and 118 ratings and enlisted management communities) and additionally provides the user with easy-to-use screens to perform life-cycle cost and delta analysis comparisons. COMET is in use now by Program Managers and Contractors alike, in evaluating tradeoffs where different types of manpower options are compared or the affordability of embracing new technologies that will either generate or eliminate the requirement for manpower. FY 00 improvements are currently under contract to incorporate a resident Activity Manning Document (AMD) Library, which will include current ship's classes and selected aviation squadrons.

Classification:	Unclassified
Sponsor:	Naval Center for Cost Analysis 1111 Jefferson Davis Highway Suite 400, West Tower Arlington, VA 22202-4306
	Mr. Rick Collins (703) 604-0280
Performer:	NCCA in-house and SAG Corporation
	CDR Mark Dye, NCCA, (703) 604-0289
	Dr. Pat Mackin, SAG, (703) 538-4500

Resources:	*FY*	*Dollars*	*Staff-years*
	97	$119,000	0.1
	98	$ 77,000	0.25
	99	$ 75,000	0.25
	00	TBD	0.25

Schedule:	*Start*	*End*
	FY97	FY97 (initial update/revision)
	FY98	FY00 (annual updates)

Data Base:	Revised Navy Billet Cost Factors/Model
Publications:	Mathematical model with supporting documentation
Keywords:	Infrastructure, Study, Government, Manpower/Personnel

NCCA-7

Title:	Navy VAMOSC Database Improvement Program

Summary: In response to USD(A&T) and ASN(RD&A) initiatives to aggressively reduce weapon system O&S costs, the Navy Visibility and Management of Operating and Support Cost (VAMOSC) database will be improved. Though recognized as the best repository of historical, annual, weapon system-specific O&S costs, the VAMOSC database requires expanded weapon system and cost element coverage, more frequent updating and improved accessibility. These improvements will support the Department of Navy's efforts to understand and reduce existing and future systems' O&S costs. Specifically, this five year program will provide the improved O&S data that engineers, logisticians and cost analysts require to assist Program Managers in determining O&S cost baselines from which realistic cost reduction goals can be established and measured.

Classification:	Unclassified
Sponsor:	Naval Center for Cost Analysis (NCCA) 1111 Jefferson Davis Highway Suite 400, West Tower Arlington, VA 22202-4306
	Mr. Rick Collins, (703) 604-0280
Performer:	NCCA, Pricewaterhouse Coopers LLP, Information Spectrum Inc. and others TBD
	CDR Walter Bednarski, NCCA, (703) 604-0273
	Mr. Al Leung, PWC, (703) 633-4305
	Ms. Denise Lucero, ISI, (703) 813-8530

Resources:	*FY*	*Dollars*	*Staff-years*
	99	$3,466,000	TBD
	00	$2,211,000	TBD
	02	$1,090,000	TBD
	03	$1,111,000	TBD

Schedule:	Start	End
	Mar 99	TBD

Data Base: VAMOSC Ships, Air, Missile, Torpedo and Ground System Data

Publications: TBD

Keywords: Government, Operations and Support, Data Collection, Data Base

NCCA–8

Title: Integrated Detailed Total Operating and Support Cost Database

Summary: This project is developing a detailed, fully integrated, total operating and support cost database accessible via the Internet. Presently called Navy Obligations Data Extraction System (NODES), the database will include indirect cost and will relate to both VAMOSC and programming and budgeting databases.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Rick Collins, (703) 604-0280

Performer: NCCA in-house, Mathtech, Inc. and Information Spectrum, Inc. (ISI)

Mr. Robert Hirama, NCCA, (703) 604-0303

Mr. Steve Taylor, Mathtech, (703) 294-5809

Ms. Denise Lucero, ISI, (703) 813-8530

Resources:	FY	Dollars	Staff-years
	96	$300,000	0.1
	97	$ 85,000	0.1
	98	$ 85,000	0.3
	99	$200,000	0.3
	00	$200,000	0.3

Schedule:	Start	End
	FY96	FY00

Data Base: VAMOSC, NODES, STARS, WINPAT

Publications: NODES database with documentation and web site

Keywords: Government, Operations and Support, Infrastructure, Data Base

NCCA–9

Title: COTS Electronics Acquisition Cost Impact Factors

Summary: Develop expert opinion- and engineering-based commercial off-the-shelf (COTS) adjustment factors for application to: 1) military specification (MILSPEC) actuals (in the case of hardware cost) and 2) MILSPEC-based estimating factors (in the case of contractor and government in-house support cost).

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Jack Smuck, (703) 604-0292 and Mr. Bill Stranges, (703) 604-0310

Performer:	NCCA in-house and Naval Surface Warfare Center(NSWC)/Crane Division

Resources:

FY	Dollars	Staff-years
00	TBD	TBD

Schedule:

Start	End
Oct 99	TBD

Data Base:	TBD
Publications:	TBD
Keywords:	Government, Estimating, Electronics/Avionics, EMD, Production, WBS, Case Study, Method

NCCA–10

Title:	Platform Integration Cost Database/Model for Electronics
Summary:	A database and cost estimating methodology will be developed for projecting hardware integration and hardware/software integration costs for shipboard and airborne electronics. The database should include cost data, technical characteristics, and other relevant information (e.g., software size) for a variety of systems, including sonar, radar, fire control, EW, and launching systems. The cost data should include relevant contractor and Navy in-house costs.
Classification:	Cost Data: Business Sensitive Technical Characteristics: Classified
Sponsor:	Naval Center for Cost Analysis 1111 Jefferson Davis Highway Suite 400, West Tower Arlington, VA 22202-4306 Mr. Jack Smuck, (703) 604-0280 and Mr. Bill Stranges, (703) 604-0310
Performer:	NCCA in-house and Contractor

Resources:

FY	Dollars	Staff-years
00	TBD	TBD

Schedule:

Start	End
FY00	TBD

Data Base:	Ship Systems Electronics Cost and Technical Characteristics
Publications:	TBD
Keywords:	Government, Estimating, Weapon Systems, Missiles, Ships, Aircraft, Electronics/Avionics, EMD, Production, Data Collection, Data Base, Method

NCCA–11

Title:	MILSPEC Electronics Acquisition Cost/Technical Database
Summary:	A Navy electronics module of the Automated Cost Database (ACDB) will be developed. The database will include development/production cost, technical and programmatic data for a variety of shipboard and airborne electronics systems, including sonar, radar, fire control, and electronic warfare systems.
Classification:	Unclassified
Sponsor:	Naval Center for Cost Analysis 1111 Jefferson Davis Highway Suite 400, West Tower Arlington, VA 22202-4306 Mr. Brian Flynn, (703) 604-0301

Performer:	NCCA in-house and Tecolote Research, Inc.
	Mr. Lowell Blagmon, NCCA, (703) 604-0274
	Mr. Robert Currie, Tecolote, (703) 243-2800

Resources:

FY	Dollars	Staff-years
97	$75,000	0.1
98	$ 0	0.1
99	$ 0	0
00	TBD	TBD

Schedule:

Start	End
Jul 97	TBD

Data Base: Navy ACDB Electronics Module Version 1, which includes raw (vice normalized) cost data (but no technical data) for AN/ALQ-165, AN/ALR-67, AN/APG-73, AN/BSY-1, AN/BSY-2, MK 7, AN/SQQ-89, AN/SQR-19 and AN/SQS-53C

Publications: TBD

Keywords: Government, Estimating, Analysis, Electronics/Avionics, EMD, Production, CPR/CCDR, Data Collection, Data Base

NCCA-12

Title: Software Development Estimating Handbook–Phase One

Summary: This handbook is a comprehensive software development estimating manual that provides: a) a centralized and well-documented compilation of existing databases; and b) formal procedures, tools, and guidelines for developing software effort, schedule, cost, and risk (growth) estimates. Raw effort database consists of 457 data points, including 151 program-level and 306 CSCI-level data points.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mrs. Cheri E. Cummings, (703) 604-0275

Performer: NCCA in-house

Ms. Pamela L. Johnson, (703) 604-0294

Resources:

FY	Dollars	Staff-years
95		4
96		2
97		1
98		1

Schedule:

Start	End
Jan 95	Feb 98

Data Bases: Separate NCCA software databases covering effort, schedule, labor rate and SLOC growth

Publications: *Software Development Estimating Handbook–Phase One*, Naval Center for Cost Analysis, February 1998

Keywords: Government, Analysis, Electronics/Avionics, Life Cycle, Data Collection, Data Base, Schedule, Risk/Uncertainty

NCCA-13

Title: Weapon System Development Cost/Technical Database

Summary: This effort is expanding the NCCA software effort, schedule, labor rate, and SLOC growth databases developed for the NCCA *Software Development Estimating Handbook*. To date, the Near-term effort will target the collection of shipboard electronics, avionics, and aircraft systems software development cost/technical data points.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mrs. Cheri E. Cummings, (703) 604-0275

Performer: NCCA in-house and MCR Federal, Inc.
Ms. Pamela L. Johnson, NCCA, (703) 604-0294
Ms. Sherry Stukes, MCR, (805) 496-7111

Resources:

FY	Dollars	Staff-years
97	$ 50,000	0.1
98	$100,000	0.1
99	$ 0	0.1
00	TBD	0.1

Schedule:

Start	End
Jul 97	TBD

Data Base: Separate NCCA software databases covering effort, schedule, labor rate and SLOC growth

Publications: TBD

Keywords: Government, Analysis, Electronics/Avionics, Life Cycle, Software, Data Collection, Data Base, Schedule, Risk/Uncertainty

NCCA-14

Title: Weapon System Software Development Estimating Methodology

Summary: This effort will entail maintaining/updating the NCCA software effort, schedule, labor rate, and SLOC growth estimating methodologies developed for the NCCA *Software Development Estimating Handbook* (see NCCA-12). Effort will include updating the current software development estimating tools and documenting the results. Additionally, effort will target the identification and assessment of commercially available software development estimating methodologies.

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mrs. Cheri E. Cummings, (703) 604-0275

Performer: Contractor, TBD

NCCA in-house

Ms. Pamela L. Johnson, (703) 604-0294

Resources:

FY	Dollars	Staff-years
00	TBD	0.25

Schedule:	Start	End
	Oct 99	TBD

Data Base: TBD

Publications: Update of the NCCA *Software Development Estimating Handbook*

Keywords: Government, Analysis, Electronics/Avionics, Life Cycle, Software, Data Collection, Data Base, Schedule, Risk/Uncertainty

NCCA-15

Title: Weapon System Software Maintenance Cost/Technical Database and Estimating Methodology

Summary: Software maintenance metrics and cost data will be collected on a variety of weapon systems. The initial effort will focus on shipboard electronic systems. This data will be used to develop software maintenance arrival/closure distribution curves and cost estimating relationships/factors. Follow-on efforts will focus on avionics and other aircraft software. This effort is a continuation of the NSWCDD project entitled, "Software Maintenance Cost Process Model."

Classification: Unclassified

Sponsor: Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Ms. Cheri Cummings, (703) 604-0275

Performer: NCCA in-house and Technomics, Inc.

Ms. Pamela L. Johnson, (703) 604-0294

Mr. Gene Waller, Technomics, (805) 964-9894

Resources:	FY	Dollars	Staff-years
	96	$ 74,000	0.1
	97	$ 50,000	0.1
	98	$100,000	0.1
	99	$ 0	0.15
	00	TBD	0.15

Schedule:	Start	End
	Feb 96	TBD

Data Base: TBD

Publications: TBD

Keywords: Government, Estimating, Software, Data Collection, Statistics/Regression, Data Base, CER, Operations and Support

NCCA-16

Title: Automated Information System (AIS) Software Cost/Technical Database and Estimating Methodology

Summary: This effort will: a) collect AIS software development and maintenance cost data and associated metrics (e.g., number of function points); b) create automated AIS software development and maintenance databases; c) determine what metrics drive AIS software costs; and d) develop cost estimating methodology. This effort will concentrate on developing tools for cost estimating in today's environment of 4GL, COTS, CASE tools, GUI builders, and open systems.

Classification: Unclassified

Sponsor:	Naval Center for Cost Analysis
	1111 Jefferson Davis Highway
	Suite 400, West Tower
	Arlington, VA 22202-4306

Ms. Cheri Cummings, (703) 604-0275

Performer: NCCA in-house and Litton/TASC

NCCA in-house

Ms. Pamela Johnson, NCCA, (703) 604-0294

Mr. John Georges, NCCA, (703) 604-0288

Mr. Fred Blackburn, Litton/TASC, (703) 633-8300

Resources:

FY	Dollars	Staff-years
98	$100,000	0.1
99	$ 90,000	0.1
00	TBD	0.15

Schedule:

Start	End
FY98	TBD

Data Base: AIS Software Development and Maintenance Cost/Technical Databases

Publications: TBD

Keywords: Government, Estimating, Demonstration/Validation, EMD, Operations and Support, Software, Statistics/Regression, Method, CER

NCCA-17

Title: Missile Development Cost Estimating Model

Summary: In the past year NCCA has been pursuing historical data in an effort to update CERs that we have traditionally used to estimate tactical missile development costs. Unfortunately, we have been unable to expand our data base and update our CERs due to the limited number of new programs we were able to collect data on. However, one of the off shoots of our research was compiling Selected Acquisition Reports (SAR), on programs that we didn't previously have data on. Data taken from these reports on the following programs allowed us to develop a statistically significant CER for estimating costs associated with Program Definition and Risk Reduction (PDRR) phase of tactical missiles' life cycle costs: AIM-9X, AMRAAM, BAT, Harpoon, Javelin, JDAM and JSOW.

The CER developed uses the Cumulative Average Cost of T1000 and the Number of PDRR Months as the two independent variables to estimate PDRR Cost/Price. The documentation associated with this research is currently in review.

Classification: Unclassified

Sponsor:	Naval Center for Cost Analysis
	1111 Jefferson Davis Highway
	Suite 400, West Tower
	Arlington, VA 22202-4306

Mr. Bill Stranges, (703) 604-0310

Performer: NCCA in-house

Mr. Jeff Wolfe, (703) 604-0296 (Lead Analyst)

Mr. Jeff Cherwonik, (703) 604-0272

Resources:

FY	Dollars	Staff-years
98		1.0

Schedule:	Start	End
	Mar 98	Sep 98

Data Base: Missile CCDRs and CPRs, ACDB

Publications: Completed study report and cost model.

Keywords: Government, Estimating, Missiles, EMD, Statistics/Regression, Mathematical Model

NCCA-18

Title: Rotary Wing Aircraft Cost Database

Summary: In the course of building cost estimates for aircraft currently in development, it was determined that there is a lack of detailed and normalized data from previous development and production efforts. The Naval Air Systems Command (NAVAIR) Cost Competency (Code 4.2) has initiated a broad effort to organize, analyze, and document historical government and contractor cost data reports for propulsion, avionics, fixed wing airframes, and rotary wing airframes. The Naval Center for Cost Analysis (NCCA) is assisting NAVAIR in developing the rotary wing airframe database.

Classification: Unclassified

Sponsor: Naval Air Systems Command (AIR 4.2)
22347 Cedar Point Road, Unit 6
Patuxent River, MD 20670-1161

Mr. Joe Incorvia, (301) 342-2342

Naval Center for Cost Analysis
1111 Jefferson Davis Highway
Suite 400, West Tower
Arlington, VA 22202-4306

Mr. Bill Stranges, (703) 604-0310

Performer: NAVAIR 4.2 in-house
Mr. Gary Newton, (301) 757-2311

NCCA in-house

Mr. Dave Stem, (703) 604-0298
Mr. Matthew Schmit, (703) 604-0283

Resources:

FY	Dollars	Staff-years (NCCA)
98		0.67
99		0.33

Schedule:

Start	End
Apr 98	Jul 99

Data Base: Historical cost data obtained from the government and aircraft manufacturers including CCDRs and internal contractor reports.

Publications: Detailed, normalized cost and technical database.

Keywords: Government, Estimating, Analysis, Aircraft, Helicopters, EMD, Production, Production Rate, Data Collection, Statistics/Regression, Data Base, Method, CER, Study

Name	Naval Air Systems Command Headquarters
Address	Naval Air Systems Command, HQ. Cost Department (AIR-4.2) 22347 Cedar Point Road, Unit 6 Patuxent River, MD 20670-1161
Director	Ronald J. Rosenthal, (301) 342-3611
Size	Professional: NAVAIR HQ 56 NAWC-AD-LAKE 12 NAWC-AD-PAX 93 NAWC-WD-CL 16
Focus	The Cost Department provides a wide verity of cost analysis products and services. The department's primary focus is providing 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. Primary focus of NAVAIR cost research is in support of the Department of Defense's Total Ownership Cost initiative. Other cost research areas include modification estimating; nonrecurring, non-test engineering hours for aircraft development programs; and a model to assist engineers in performing cost/benefit analysis for engineering investigations.
Activity	Number of projects in process: 7 Average duration of a project: 1 year Average number of staff members assigned to a project: 1–2 Average number of staff-years expended per project: 1 Percentage of effort conducted by consultants: 80% Percentage of effort conducted by subcontractors: 0%

NAVAIR–1

Title: Avionics Obsolescence Model

Summary: Upgrade the AIR-4.2.5 Avionics Obsolescence Model developed by Ketron to incorporate current industry information by classes of Integrated Circuits and circuit cards to identify those types of Navy equipment likely to have near and mid-term obsolescence problems. Build into existing model architecture the ability to input specific types of Naval Avionics SRAs and WRAs to assess potential obsolescence. This effort

involves the collection of data and costs necessary to build more detailed Cost Estimating Relationships (CERs) that can be used to provide both data and estimating support to Avionics Obsolescence Model users who need to do fast turn around estimates.

Classification: Unclassified

Sponsor: Naval Air Systems Command
22347 Cedar Point Road, Unit 6
Patuxent River, MD 20670-1161

Performer: Ketron

Resources:

FY	Dollars	Staff-years
99	$50,000	

Schedule:

Start	End
May 99	Jan 00

Data Base: Title:

Description:

Automation:

Publication: Technical Report

Keywords: Estimating, Analysis, Method, Data Collection, CER, Computer Model

NAVAIR-2

Title: SLAP/SLEP Full Scale Testing Model

Summary: Use the results of existing technical information and inputs from class desk personnel supporting programs currently evaluating SLAP/SLEP efforts to build an estimating model approach to estimating SLAP/SLEP and associated testing efforts. Research cost history for past SLAP/SLEP programs to identify key costs and cost drivers and use existing AV-3M/VAMOSC data to assess airframe maintenance and service bulletin cost trends. Using results of technical inputs and cost data, develop a simple model to aid in quick turn around assessments of the costs and potential O&S benefits of these types of programs.

Classification: Unclassified

Sponsor: Naval Air Systems Command
22347 Cedar Point Road, Unit 6
Patuxent River, MD 20670-1161

Performer: Tecolote

Resources:

FY	Dollars	Staff-years
99	$50,000	

Schedule:

Start	End
May 99	Jan 00

Data Base: Title:

Description:

Automation:

Publication: Technical Report

Keywords: Estimating, Analysis, Method, Data Collection

NAVAIR-3

Title: Environmenta: Impact/Demilitarization/Disposal

Summary: This project involves the collection of data on the costs associated with removing Naval Aviation aircraft and related equipment from active service. Historical data collection on cost elements relative to final removal from inventory include:

- Demilitarization/Disposal of any remaining non-usable production line equipment and tooling;

- Demilitarization/Disposal of platform unique support equipment and spares inventory; and

- Demilitarization/Disposal of the actual end item.

Since in many cases aircraft are removed from inventory and placed in long-term storage at AMARC, associated data and estimating relationships will also be incorporated into this model. Current model for the ongoing Environmental Consequences of Hazardous Operations (ECHO) project may be used in the development of this model.

Classification: Unclassified

Sponsor: Naval Air Systems Command
22347 Cedar Point Road, Unit 6
Patuxent River, MD 20670-1161

Performer: Tecolote

Resources:

FY	Dollars	Staff-years
99	$75,000	
00	$75,000	

Schedule:

Start	End
May 99	Jan 00
May 99	Jan 01

Data Base: *Title:*

Description:

Automation:

Publication: Technical Report

Keywords: Estimating, Analysis, Aircraft, Method, Data Collection

NAVAIR-4

Title: NNTE CER Development

Summary: The contractor will develop Cost Estimating Relationships (CERs) for the EMD engineering design, development and test of tactical aircraft. Emphasis will be placed on understanding the inter-relationship between aircraft technical characteristics, capabilities, and development/programmatic environment with the scope of EMD engineering effort. The contractor will investigate non-recurring and recurring engineering boundaries, Systems Engineering/Program Management engineering activities, and the interaction between Aircraft Design and Development, and Test engineering. Major activities include:

- Collect, normalize, and analyze cost, technical, and programmatic data and information;

- Generate CERs based on statistical and other analytical techniques;

- Document CERs and underpinning analyses; and

- Provide status and final briefings.

Classification:	Unclassified
Sponsor:	Naval Air Systems Command 22347 Cedar Point Road, Unit 6 Patuxent River, MD 20670-1161
Performer:	Naval Air Systems Command 22347 Cedar Point Road, Unit 6 Patuxent River, MD 20670-1161

Resources:	FY	Dollars	Staff-years
	99	$135,000	

Schedule:	Start	End
	May 99	Jan 00

Data Base:	Title:
	Description:
	Automation:
Publication:	Technical Report
Keywords:	Analysis, Aircraft

NAVAIR-5

Title: Aging Aircraft Study Cost Update

Summary: AIR-4.2.5 developed and updated this study in 1995 on aging aircraft cost impacts for 13 major T/M/S aircraft. Given that the data used for this study does not contain the last 3-4 years of usage/cost data (and the interest in aging as a process) recommend that study be updated. This effort would include researching and updating the data for the impacted elements: labor at "O" and "I" levels; consumable materials; Depot Airframe and Engine rework; Fuel usage and Aviation Depot Level Repairable; and developing updated trend projections for future forecasting.

Classification	Unclassified
Sponsor:	Naval Air Systems Command 22347 Cedar Point Road, Unit 6 Patuxent River, MD 20670-1161
Performer:	Naval Air Systems Command 22347 Cedar Point Road, Unit 6 Patuxent River, MD 20670-1161

Resources:	FY	Dollars	Staff-years
	99	$50,000	

Schedule:	Start	End
	May 99	Jan 00

Data Base:	Title:
	Description:
	Automation:
Publication:	Technical Report
Keywords:	Data Collection, Aircraft, Analysis

Name	Cost Engineering and Industrial Analysis Division, Comptroller Directorate Naval Sea Systems Command
Address	2531 Jefferson Davis Highway Arlington, VA 22242-5160
Director	Wilmott Summerall, (703) 602-1209
POC	Joseph W. Klatecki, (703) 602-1308, ext.113
Size	Professional: 52 Support: 1 Consultants: 0 Subcontractors: 16
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
Activity	Number of projects in process: 4 Average duration of a project: 2½ years Average number of staff members assigned to a project: 1 Average number of staff-years expended per project: 1½ Percentage of effort conducted by consultants: 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, requesting their price changes for the current year and their projections of future price changes for the next two years. The results are grouped according to Ship Work Breakdown Structure (SWBS- Cost Groups 1-9), and indices are calculated.

Classification: Unclassified

Sponsor: Naval Sea Systems Command (SEA 0177)
2531 Jefferson Davis Highway
Arlington, VA 22242-5160

John Bissell, (703) 602-1679, ext. 154/DSN 332-1679, ext. 154

Performer:	Naval Shipyard Norfolk Det.
	NAVSEA Shipbuilding Support Office
	3751 Island Avenue, 3rd Floor
	Philadelphia, PA 19153

Joe Neumann

Resources:	_FY_	_Dollars_	_Staff-years_
	Each year	$125,000	

Schedule:	_Start_	_End_
	Oct each year	Sep each year

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

Publications: None

Keywords: Industry, Estimating, Ships, Material, WBS, Economic Analysis, Survey

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NAVSEA-2

Title: Government Furnished Equipment/ Materiel (GFE/GFM) Process Improvement Initiative.

Summary: This project initiative is intended to develop a self-serving database with WEB interface that the NAVSEA community can use to generate, analyze, and estimate the costs of GFE/GFM used on the various ship platforms designed and acquired by the Naval Sea Systems Command.

Classification: Business Sensitive

Sponsor: Naval Sea System Command (SEA 0171B)
2531 Jefferson Davis Highway
Arlington, VA 22242-5160

C. D. Covington, (703) 602-0872, ext. 114/DSN 332-0872

Performer: NAVSEA 00IT

Resources:	_FY_	_Dollars_	_Staff-years_
	98	$100,000	
	99	$ 0	
	00	TBD	

Schedule:	_Start_	_End_
	May 98	Dec 99

Data Base: TBD

Publications: None to date

Keywords: Government, Industry, Analysis, Estimating, Ships, Budgeting, Acquisition Strategy, Production, Data Base, Computer Model

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NAVSEA-3

Title: CVNX Total Ownership Cost Database, Model, and Process Development

Summary: This project is aimed at developing the data, tools and data processes for measuring the Total Ownership Cost (TOC) changes caused by design and programmatic decisions. TOC is defined as all costs associated with the research, development, procurement, operation, logistical support and disposal of an individual weapon system including the total supporting infrastructure that plans, manages and executes that weapon system program over its full life. TOC includes the cost of requirements for common support

items and systems that are incurred because of introduction of that weapon system. It excludes indirect "non-linked" Navy and DoD infrastructure costs that are not affected by individual weapon systems' development, but does include variable indirect costs that are directly linked to NAVY infrastructure. In addition to the process, the project will develop tools necessary for implementation. This will include mapping ship manpower documents and equipment in the NAVY OARS database to the NAVYS standard ship work breakdowns structure. The VAMOSC, OSCAM , and COMET Models will be upgraded to incorporate the data and models developed as part of this program. Currently the project has the capability to portray TOC costs at the system level and is completing several modeling efforts. Major efforts in the future will include development of performance based and product oriented models.

Classification: Unclassified. *Proprietary* and *Business Sensitive* information will be captured and/or developed during the study but will be protected from disclosure.

Sponsor: Naval Sea System Command (SEA 017)
2531 Jefferson Davis Highway
Arlington, VA 22242-5160

Irv Chewning/Steve Moretto, (703) 415-4815/4812

Performers: NSWC Carderock, NSWC Philadelphia, Pera Cv, Naval Center For Cost Analysis, NSWC Dahlgren, NUWC, Nicoles Advanced Marine, Tecolote Research,

Mr. Stephen J. Moretto

Resources:

FY	Dollars	Staff-years
94	$35,000	
95	$135,000	
96	$175,000	
97	$300,000	
98	$400,000	
99	$400,000	

Schedule:

Start	End
Mar 94	Dec 01

Data Base: Database will support development and improvement of TOC, operations and support cost models.

The data base will consist of Acquisition, Manpower, Intermediate, Organizational and Depot Level Aircraft Carrier cost data organized at the first, second levels and third levels of the standard ship work breakdown structure.

Publications: TBD

Keywords: Industry, Estimating, Ships, Overhead/Indirect, Data Collection, Mathematical Modeling, Study, Government, Analysis, Reviewing/Monitoring; Weapon Systems, Aircraft, Land Vehicles, Electronic/Avionics, Facilities, Infrastructure; Life Cycle; WBS, Fixed Costs, Variable Costs, Readiness, Modification; Economic Analysis; Data Base, Method, Computer Model. Production, Labor, Operations and Support, Statistics/Regression, CER

NAVSEA-4

Title: AACEI Cost Model for Aircraft Carriers

Summary: The objective is to update the ASSET ACEIT EXCEL Interface (AACEI) cost modeling process and tailor it for use to estimate the end cost of ship alternatives under study by the Carrier program office(s). A weight-based cost model formulated within the Automated Cost Estimating Integrated Tools (ACEIT) was developed under previous tasks (Sealift, SC21). Weight information for a ship designed in ASSET is electronically transferred by the ASSET user to the ACEIT cost model where the cost of the ASSET ship design is

generated at the two or three digit level of detail. This process is consistent with the SEA 017 Unit Price Analysis and End Cost methodology and provides immediate insight into the cost impact of design changes. For the cost analyst, design engineer, and decision makers, this provides the ability to compare alternatives and better understand the cost consequences of design options. It also provides the ability to identify where effort should be focused (areas of maximum cost impact) and sort the data to rank order cost drivers by 1, 2 and 3-digit levels of the SWBS. Automated graphical and tabular presentations allow both cost and engineering analysts to identify anomalies in the cost and the technical characteristics of each alternative and more readily identify inadvertent errors in the technical or cost inputs. Proposed work will expand the model to incorporate a present value analysis technique (compatible with other such PV modeling of the carrier office projects) and continue the development of aircraft carrier CERs and estimating factors to capture differences from the source CERs to the technologies and ship features under consideration; expand to cover other elements of the ship end cost, e.g., GFE, Escalation and Plans; develop additional automated, tailored graphical and tabular reports; and conduct preliminary work to implement the integration of O&S estimating and other improved estimating techniques and tools (i.e., Performance Based Cost Modeling and PODAC); and add functionality to ACE to improve efficiency in the Navy environment.

Classification: Unclassified

Sponsor: Naval Sea System Command (SEA 01712)
2531 Jefferson Davis Highway
Arlington, VA 22242-5160

Irv Chewning/Steve Moretto/Robin Hull, (703) 415-4815/4812

Performer: Tecolote Research, Inc.
1700 N. Moore Street, Suite 1400
Rosslyn Center Office Building
Arlington, VA 22209

Alfred Smith, (703) 243-2800, ext. 335

Resources:

FY	Dollars	Staff-years
Prior FY	$350,000	
98	$450,000	
99	$200,000	

Schedule:

Start	End
Oct 97	Oct 99

Data Base: Carriers

Publications:

Keywords: Government, Analysis, Review, Ships, Concept Development, Labor, Material, Overhead/Indirect, Engineering, Acquisition Strategy, Data Collection, Mathematical Modeling, CER, Method, Mathematical Model, Study

Name	Cost/Affordability Branch
Address	Code T50 (Warfare Analysis Division) Dahlgren, VA 22448-5000
Director	Amanda Cardiel
Size	Professional: 9 Support: 0 Consultants: 0 Subcontractors: As required
Focus	The Cost/Affordability Branch resides within the Warfare Analysis and Systems Department at the Naval Surface Warfare Center, Dahlgren Division (NSWCDD). The Office has NSWCDD responsibility for providing leadership in the areas of Cost and Operational Effectiveness Analysis (COEA) for Surface Navy Combat Systems and Theater Tactical Ballistic Missile Defense (TBMD). Particular areas of expertise and emphasis include developing and maintaining models, databases, and procedures for performing these functions, technology assessments, life cycle cost estimates, budget and force-level analyses, performance-based cost models, and product-oriented cost models. The current focus of the NSWCDD cost research program is: models to generate cost estimates for complex surface navy combat system equipment and TBMD ordnance during concept formulation and DemVal phases of a program; data collection in preparation for model development to estimate life cycle software maintenance workload during the concept formulation and DemVal phases; performance-based methods for estimating life cycle cost; implementing Cost as an Independent Variable and for analyzing total ownership cost.
Activity	Number of projects in process: 0 Average duration of a project: 2 years Average number of staff members assigned to a project: Average number of staff-years expended per project: Percentage of effort conducted by consultants: Percentage of effort conducted by subcontractors:

No Summaries Submitted.

Name	Cost and Operational Effectiveness Assessments Department, Code 21 Cost and Economic Analysis Group, Code 211 Naval Surface Warfare Center, Carderock Division
Address	9500 MacArthur Boulevard West Bethesda, MD 20817-5000
Director	Robert R. Jones
Size	Professional: 12 Support: 3 Consultants: 0 Subcontractors: 3
Focus	
Activity	Number of projects in progress: 20 Average duration of a project: 2 Average number of staff members assigned to a project: 2 Average number of staff-years expended per project: 4 Percentage of effort conducted by consultants: 0 Percentage of effort conducted by subcontractors: 20%

NSWCCD-1

Title: Product-Oriented Design and Construction (PODAC) Cost Model

Summary: This cost model will incorporate a Product Work Breakdown Structure and be sensitive to changes in shipbuilding strategies, ship construction process, use of common modules, zonal architectures, and equipment standardization. It will assist in assessment of the cost and affordability of design commonality alternatives that have potential for reducing acquisition and ownership costs of ships in conjunction with the NAVSEA Affordability Through Commonality (ATC) Program, the NAVSEA Ship Concept Advanced Design R&D Program and the Mid-Term Sealift Ship Technology Development Program (MTSSTDP). Concept exploration phase was completed with selection of a baseline from conceptual models developed by cost research projects—Development of Product-Oriented Cost Estimating Tools and Near-Term Prototype PODAC model. Partial functionality of the model was demonstrated in February 1997. Version 3.1 has been installed and implemented, by an integrated product team composed of Navy, shipyard personnel, and model developers, at the five surface shipyards and at NAVSEA. Cost model validation testing is being performed at the shipyards. The focus of the cost model development was redirected to primarily support engineering tradeoff studies.

Classification: Unclassified

Sponsor: Naval Sea System Command (SEA 017R)
2531 Jefferson Davis Highway
Arlington, VA 22242-5160

Performer: Carderock Division, Naval Surface Warfare Center (Code 21)
9500 MacArthur Boulevard
West Bethesda, MD 20817-5700

John Trumbule, (301) 227-5570/DSN 287-5570
Robert Jones (310) 227-4012/DSN 287-4012

Designers & Planners, Inc.; SPAR, Inc.; University of Michigan Transportation Research Institute; Avondale Shipbuilding, Inc.; Bath Iron Work, Inc.; Ingalls Shipbuilding, Inc.; National Steel and Shipbuilding Company; and Newport News Shipbuilding

Resources:

FY	Dollars	Staff-years
Prior FY	$295,000	2.0
96	$990,000	2.0
97	$862,000	2.0
98	$800,000	2.0
99	$750,000	2.0

Schedule:

Start	End	
Sep 94	Sep 95	Concept Exploration
Oct 95	Feb 97	Prototype Dem/Evaluation
Apr 97	Apr 98	Model Installation/Implementation at shipyards
Apr 98	Mar 00	Life Cycle Cost Capability
Apr 99	Mar 00	Engineering Tradeoff studies

Data Base: Resident within cost model

Publications: *Production-Oriented Design and Construction (PODAC) Cost Model Plan of Action and Milestones and Functional Specification* (FY 96)

Cost Estimating Relationships Development Plan (1997)

PODAC Cost Model Validation Plan (1997)

Product-Oriented Design and Construction Cost Model (1998)

Product-Oriented Design and Construction Cost Model–An Update (1999)

Keywords: Government, Estimating, Ships, Production, Labor, Material, Overhead/Indirect, Engineering, Manufacturing, WBS, Case Study, Survey, Cost/Production Function, Method, Mathematical Model, Study

NSWCCD-2

Title: Navy Force Affordability Model (NFAM)

Summary: This model replaces the previous NFAM and the Dynamic Investment Balance Simulator (DIBS). It relates future Navy force structures and budgets. It has two principal modes of operation. The first, derived from previous versions of NFAM, calculates budgets based on the user's input of force structure plans, including retirements and new procurements. The second, derived from DIBS, uses a goal-seeking algorithm to determine force structures based on the user's input of budgets. A third, hybrid, mode combines these capabilities, so that force structure decisions may be specified for some systems and not for others. In all modes, the model tracks force structure decisions and funding needs at the SASDT category level as well as the ship class or aircraft type/model/series (T/M/S) level. In the goal-seeking mode, the model allows examination of tradeoffs between acquisition (future force structure) and O&S (maintaining current force structure) in a range of funding environments. The model is also capable of exploring more explicit tradeoffs within limited acquisition categories. The procurement decision algorithm strives to maintain the 'shape' of the force (relative numbers of various platform types) in the event that budgets are inadequate to meet the stated goals. A separate but related macroeconomic model capable of generating a range of future Navy funding streams was

also developed under this effort. The DIBS model has been successfully demonstrated (FY93), and previous versions of NFAM have supported a variety of studies. Proposals have been submitted for further development and enhancements. NCCA-27 is related to this project.

Classification: Database—Secret; Model—Unclassified

Sponsor: Chief Naval Operations (Code N815) (FY99)
The Pentagon (Navy Annex)
Washington, DC 20310

CDR Robert Kallio, (703) 697-0614

ASN (RDA) Acquisition Reform Office (FY96-98)

Chief Naval Operations (Code N812) (FY92-95)
The Pentagon
Washington, DC 20310

Matt Henry, (703) 697-5242

Performer: Carderock Division, Naval Surface Warfare Center (Code 21)
9500 MacArthur Boulevard
West Bethesda, MD 20817-5700

Daniel Platt, (301) 227-2454/DSN 287-2454;
Michael F. Jeffers, Jr., (301) 227-1941/DSN 287-1941;
Anna Wegman, (301) 227-5082/DSN 287-5082

Dahlgren Division, Naval Surface Warfare Center (Code T52)
Dahlgren, VA 22448-5000

Steven Harmon, (540) 653-2111/DSN 249-2111;
Eric Rocholl (T51), (540) 653-5236/DSN 249-5236

Resources:

FY	Dollars	Staff-years
Prior FY	$390,000	2.5
97	$ 0	0
98	$ 50,000	0.3
99	$ 95,000	0.6

Schedule:

Start	End
Feb 93	TBD
Nov 93	DIBS Prototype
Apr 95	DIBS Enhancements
Sep 95	New Relationships, Excel 5.0 (both NFAM and DIBS)
Mar 98	New NFAM, combines old NFAM and DIBS DIBS
Mar 99	Updates to Database; Enhancements

Data Base: *Title*: NFAM Data Base

Description: Model contains a force structure database derived from the SASDT and Ship Management Information System, O&S cost factors derived from VAMOSC-Ships/Air, maintained in Excel. To remain current, databases are periodically updated.

Automation: Microsoft Excel Spreadsheet

Publications: Draft reports of DIBS model and operation. Relationships documented in briefing form.

Keywords: Government, Analysis, Policy, Programming, Budgeting, Weapon Systems, Life Cycle, Acquisition Strategy, Risk/Uncertainty, Mathematical Modeling, Statistics/Regression, Mathematical Model, Computer Model

Title: Aircraft Carrier Performance-Based Life Cycle Cost Model and Present Value Analysis Modeling

Summary: The Carrier performance-based life cycle cost model (PBCM) is being developed in an evolutionary fashion. The FY 98 effort focused on a "pre-prototype" or screening version of the model that estimates procurement costs based on high-level descriptions of (a) performance requirements and (b) system definition. This pre-prototype model served as an initial proof of concept design to assess the feasibility of proceeding to more comprehensive and detailed PBCM. FY99 efforts will concentrate on successful completion and acceptance of the pre-prototype procurement model then expanding the model to estimate the entire life cycle cost impact of a performance feature, i.e., R&D and operating and support, and disposal costs. The model will be used for the CVX Requirements definition process and development of estimates in support of the planned FY 99 Milestone I review. The PBLCCM will aim to: (1) facilitate the development of cost estimates which address the application of technological improvements in the ship design, (2) provide quick ROM cost estimates of aircraft carrier design options, and (3) to investigate the cost implications of survivability enhancements.

The Present Value Analysis Modeling (Cost Benefit Analysis Model) will provide a common analysis technique for assessing the benefits versus costs of design improvements and technology application or insertion for aircraft carrier programs. The FY 98 effort focused on modeling the entire life cycle to provide a total ownership cost perspective. The FY 99 effort will expand the technique for assessment of individual technology impacts or individual design option impacts. The analysis will include estimates of the life cycle costs for all ships of the Nimitz Class including the CVN 77 and the planned CVX class of carriers. The model overlays CVX life cycle costs on the Nimitz profile for various affordability scenarios. The cash flow analysis can reflect user-specified acquisition requirements. Cash flows may be represented by the total life cycle cost or one or more of the five major life cycle cost elements: Manpower, Maintenance, Production, Mid-life Overhaul and Disposal. The cost benefit model can be used to illustrate the life cycle cost scenarios of CVX as compared to a baseline Nimitz Class ship to enable affordability assessments. The model performs cost-benefit analyses, e.g. investment versus net present value savings estimates, by estimating discounted "cost avoidance" of the more affordable CVX design against the discounted investment outlays required to achieve "cost avoidance." The current model provides a top-down perspective of carrier life cycle cost categories, cost drivers and cost objectives. FY 99 effort will expand the model to better reflect program objectives, e.g. RDT&E proposed in the current POM NALG, proposed life cycle profiles for future carrier maintenance, requirements determination process in development of the IRD/ORD, design and acquisition strategy trade-off studies, etc.

Both of the above tools will be utilized as tools to assist in the CAIV and TOC metrics analysis for carrier programs.

Classification: Classified/Business Sensitive

Sponsor: Naval Sea Systems Command (SEA 017)
2531 Jefferson Davis Highway
Arlington, VA 22242-5160

Irv Chewning/Stephen Moretto/Wilmer Alvarado, (703) 413-4913/4935

Performer: Carderock Division, Naval Surface Warfare Center (Code 21)
9500 MacArthur Boulevard
West Bethesda, MD 20817-5700

Marc Greenberg, (301) 227-4716/DSN 287-4716

Resources:	FY	Dollars	Staff-years
	97	$ 65,000	0.5
	98	$470,000	3.0
	99	$225,000	1.5

Schedule:	Start	End
	Dec 96	Sep 99

Data Base: *Title:* None

Description: Aircraft carrier, LHA, and LHD cost, weight, and performance

Automation: Microsoft Excel Spreadsheet

Publications: None to date

Keywords: Government, Analysis, Ships, Concept Development, Life Cycle, Manufacturing, Risk/Uncertainty, Size, Data Collection, Mathematical Modeling, Statistics/Regression, Data Base, Mathematical Model, Computer Model

NSWCCD-4

Title: USCG Performance-Based Life Cycle Cost Model

Summary: The objective is to develop a cost model sensitive to high-level performance parameters for predicting the Life Cycle Cost (LCC) of U.S. Coast Guard (USCG) ship designs. The resulting model is envisioned as a tool to provide quick ROM cost estimates of USCG ship concepts, including icebreakers, high endurance cutters, and medium endurance cutters, during the early stages of ship concept development. This effort is scheduled for completion by the end of FY98.

Classification: Unclassified

Sponsor: United States Coast Guard Engineering Logistics Center (ELC023)
2401 Hawkins Point Road
Baltimore, MD 21226-5000

Mr. Martin Hecker, (410) 762-6706

Performer: Carderock Division, Naval Surface Warfare Center (Code 21)
9500 MacArthur Boulevard
West Bethesda, MD 20817-5700

LCDR Michel J. Guerard, (301) 227-3627

Resources:	FY	Dollars	Staff-years
	98	$104,100	0.70
	99	$ 0	0.20

Schedule:	Start	End
	Mar 98	Dec 98

Data Base: *Title:* None

Description: Cost information for USCG icebreakers, high endurance cutters, medium endurance cutters, and for U.S. Navy oceanographic ships

Automation: None

Publications: *User's Guide–USCG Deep Water Cutter Performance Based Cost Model,* LCDR M. Guerard, April 1999, Unclassified, Pending

Keywords: Government, Estimating, Analysis, Electronics/Avionics, Concept Development, Demonstration/Validation, Labor, Material, Overhead/Indirect, Data Collection, Statistics/Regression, CER, Data Base, Method, Computer Model

Name	Air Force Cost Analysis Agency
Address	1111 Jefferson Davis Highway Suite 403 Arlington, VA 22202-4306
Director	Mr. Joseph T. Kammerer, (703) 697-5312 Mr. John Dorsett, Technical Director, (703) 602-7674 Ms. Debbie Cann, Research Chief, (703) 604-0402
Size	Professional: 57 (authorized); 48 (assigned) Support: 2
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: 16 Average duration of a project: 1 year Average number of staff members assigned to a project: 1 Average number of staff-years expended per project: 0.2 Percentage of effort conducted by consultants: 100% Percentage of effort conducted by subcontractors: 0%

AFCAA-1

Title: ACE-IT / CO$TAT Enhancements

Summary: The primary purpose of this effort is to host CO$TAT cost analysis statistics and regression functions within an Excel spreadsheet. It will use an Excel GUI to drive the current CO$TAT calculation and reporting engine. Since the primary interface will be based on Excel functionality, this effort will improve the use of CO$TAT, incorporating better data manipulation and graphing functions as well as providing significant user interface improvements such as tabbed workbooks, zoom control, etc. In addition, this effort will also result in improved interoperability between CO$TAT and ACDB. FY00 effort TBD.

Classification: Unclassified.

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division

Mr. Eric Plumer, (703) 602-9128/DSN 332-9128
E-mail: Eric.Plumer@pentagon.af.mil

Performer: Tecolote Research, Inc.

Resources:		FY	Dollars	Staff-years
	Past Improvements:	93-5	$646,000	
	Improvements:	96-8	$410,000	
	Enhancements:	99	$170,000	
	Follow on Effort:	00	$220,000	

Schedule:		Start	End
	Improvements:	Jan 97	Sep 98
	Enhancements:	Oct 98	Sep 99
	Follow on Effort:	Oct 99	Sep 00

Database: N/A

Publications: ACE-IT user manuals and supporting documentation

Keywords: Industry, Government, Estimating, Analysis, Weapon Systems, Life Cycle, Method, Computer Model

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AFCAA-2

Title: Military Aircraft Data and Retrieval (MACDAR) System Update

Summary: The objective of this project is to normalize and fully document previously collected Air Force and Navy cost and technical data. The database will be flexible enough to allow for either an analogy-based or CER-based approach for both recurring and non-recurring costs of aircraft systems. The database will contain functional hourly and cost information, as well as technical information for each hardware WBS element. Sources of data and normalization rationale will be completely documented. FY99 efforts include extending the database to include the F-18E/F, developing a data dictionary, developing mapping rules and documentation package, conducting fabrication make/buy analysis, and enhancing the current weight database.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division

Mr. Eric Plumer, (703) 602-9128/DSN 332-9128
E-mail: Eric.Plumer@pentagon.af.mil

Performer:		
	Phase I	RAND
	Phase II	Tecolote Research Inc.
	Phase III-V	Naval Air Systems Command

Resources:		FY	Dollars	Staff-years
	Phase I	93	$100,000	
	Phase II	96	$225,000	
	Phase III	97	$ 25,000	
	Phase IV	99	$ 80,000	
	Phase V	00	$150,000	

Schedule:		Start	End
	Phase I	Complete	
	Phase II	Complete	
	Phase III	Apr 98	Oct 98
	Phase IV	Oct 98	Sep 99
	Phase V	Oct 99	Sep 00

Database: Excel (pivot tables)

Publications: Written report and data dictionary.

AFCAA-3

Title: NAFCOM (NASA/Air Force Cost Model)

Summary: This project develops and integrates specific AF requirements into the NASA Cost Model. The incorporation of AF requirements allows data and cost estimates to be displayed, analyzed, and used in a manner compatible with AF terminology and costing procedures. Phase II included incorporating Air Force specific cost drivers into the Complexity Generator development process. Phase III incorporated phasing, risk analysis, and further generation of complexity factors from Phase II. Phase IV will allow the completion and delivery of the next version of NAFCOM, and adds additional features and utilities that will be contained in a subsequent release of the model. This task includes continuation and completion of the NAFCOM complexity generator, which provides fidelity into the technical cost drivers by major subsystem. Also, the FY99 project includes developing sound methodologies for separating hardware and software costs. This task shall also provide AFCAA with cost model technical support and updated model documentation. Phase V efforts are TBD.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division

Mr. Eric Plumer, (703) 602-9128/DSN 332-9128
E-mail: Eric.Plumer@pentagon.af.mil

Performer: SAIC

Resources:

	FY	*Dollars*	*Staff-years*
Phase I	96	$150,000	
Phase II	97	$150,000	
Phase III	98	$150,000	
Phase IV	99	$150,000	
Phase V	00	$160,000	

Schedule:

	Start	*End*
Phase I		Complete
Phase II		Complete
Phase III		Complete
Phase IV	Nov 98	Oct 99
Phase V	Oct 99	Sep 00

Database: NAFCOM Database

Publications: Normalized Database and NAFCOM Documentation

AFCAA-4

Title: ACDB Missile Database Improvements

Summary: The objective of this project is to collect the necessary data to perform periodic updates of the Automated Cost Data Base (ACDB) to include 665 CCDR reports on missile programs. AFCAA and US Army CEAC fund this project on an alternating FY basis. For FY99, CEAC will provide funds to collect and incorporate new missile cost data from CCDRs, CPRs, contracts, or other sources into the Joint Service Missile Database which

will improve the capability of the cost analysts to estimate the cost of missile systems. FY00 effort is TBD.

Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency, Research & Resource Management Division
	Army Cost and Economic Analysis Center (CEAC)
	Mr. Eric Plumer, (703) 602-9128/DSN 332-9128
	E-mail: Eric.Plumer@pentagon.af.mil
Performer:	Tecolote Research, Inc.

Resources:

	FY	Dollars	Staff-years
Phase I	97	$165,000	
Phase II	98	$100,000	
Phase III	99	CEAC	
Phase IV	00	$100,000	

Schedule:

	Start	End
Phase I	May 97	Apr 98
Phase II	Apr 98	Oct 98
Phase III	Oct 98	Sep 99
Phase IV	Oct 99	Sep 00

Database:	*Title:*	Missile Automated Cost Data Base (ACDB)
	Description:	Missiles and Munitions systems data
	Automation:	PC in FoxPro
Publications:	User Manuals	
Keywords:	Government, Analysis, Programming, Forces, Mathematical Modeling, Computer Model, Life Cycle, Labor, Material, Data Collection, Data Base, Missiles	

AFCAA-5

Title:	Air Force Total Ownership Cost (AFTOC)
Summary:	AFTOC has expanded upon the Visibility and Management of Operating and Support Costs (VAMOSC) management information system. Costs are reported for all appropriations for aircraft and space systems. Commodity level detail (by National Stock Number) is currently available for aircraft. Munitions are partially covered and will be completed by Sep 99. Indirect costs are reported by installation. Standard data products are available on the AFTOC web site, accessible by registered users.
Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency, Force Analysis Division
	Ms Wendy Kunc, (703) 604-0415/DSN 664-0415
	E-mail: Wendy.Kunc@pentagon.af.mil
Performer:	Battelle Memorial Institute, Litton-TASC, and OO-ALC/TISMD

Resources:

FY	Dollars	Staff-years
98	$ 425,000	
99	$3,749,000	
00	$3,551,000	

Schedule:		Start	End
	Phase I	Dec 97	Sep 98
	Phase II	Oct 98	Mar 99
	Phase III	Apr 99	Sep 99
	Phase IV	Oct 99	Sep 00

Database: MS Access, Oracle, and SQL Server 7

Publications: TBD

Keywords: Government, Reviewing/Monitoring, Aircraft, Space Systems, Missiles, Operations and Support, Labor, Material, Data Collection, Data Base

AFCAA-6

Title: Defense Contractor Overhead Rate Analysis Follow-On

Summary: The objective of this project is to provide a primer discussing methods of measuring and predicting business base changes for a prime weapon system contractor; then describing how to calculate alternate overhead rates given different assumptions of that particular contractor's future business base. This effort will allow normalization of current wrap rates to the historical data underlying an estimate; it will also allow normalization of the historical cost data to reflect current wrap rate calculations. This study compiles past CCDR DD1921-3 information, which shows historical cost pools and direct base expenses used in calculating overhead rates, and attempts to project the trends into the future. FY98 deliverables included the following contractors: Boeing, St. Louis; Hughes; TRW; Northrop Grumman and Lockheed Martin, Orlando. FY99 expected deliverables include Lockheed Martin Missiles and Space, Sunnyvale; Lockheed Martin, Marietta, GA; Lockheed Martin, Fort Worth; Boeing Military Aircraft, Seattle; and Raytheon Defense Systems. FY00 effort TBD.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division
Mr. Eric Plumer, (703) 602-9128/DSN 332-9128
E-mail: Eric.Plumer@pentagon.af.mil

Performer: Naval Air Systems Command

Resources:		FY	Dollars	Staff-years
	Phase I	98	$160,000	
	Phase II	99	$ 80,000	
	Phase III	00	$ 50,000	

Schedule:		Start	End
	Phase I	Oct 97	Oct 98
	Phase II	Oct 98	Sep 99
	Phase III	Oct 99	Sep 00

Database: Excel

Publications: Stand-alone documentation on each contractor site.

Keywords: Government, Analysis, Estimating, Aircraft, Production, Labor, Material, Data Collection, Data Base

AFCAA-7

Title: B-2 Database

Summary: The objective of this task is to provide AFCAA information necessary and sufficient to build a comprehensive B-2 strategic bomber database. This database will be built utilizing

Excel pivot tables to incorporate on-hand data for the first 16 aircraft and new data for the last 5 aircraft in the form of contractor resources (cost and hours), technical and programmatic data. The H-2 model will be capable of storing raw CCDR data, data mapping and normalization routines, mapped and normalized data, contractor specific EDIS non-standard resource data, technical data (i.e. weights, performance characteristics, material type, etc.), and quantity data. Information retrieved from the model will support AFCAA's requirement to develop cost estimating methodologies for tactical and strategic aircraft and aircraft components, such as analogy type estimates, parametric CERs or cost factors.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division

Mr. Eric Plumer, (703) 602-9128/DSN 332-9128
E-mail: Eric.Plumer@pentagon.af.mil

Performer: Tecolote

Resources:

FY	Dollars	Staff-years
98	$100,000	

Schedule:

Start	End
Jul 98	Jun 99

Database: Excel

Publications: Written Report

Keywords: Government, Estimating, Analysis, Life Cycle, Spares/Logistics, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression, CER, Computer Model

AFCAA-8

Title: Air Force Inflation Model Tool

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. The converter as well as the tutorial utilizes the use of Excel. The objective of this task is to support the use of the two applications, described above, to calculate and disseminate inflation information in a timely manner to the Air Force Secretariat, Air Staff, commands, and field operating agencies. Two areas of support include reprogramming required to rehost the applications in future upgrades of Excel and Microsoft Windows software; and to provide support with the annual inflation update.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division

Mr. Eric Plumer, (703) 602-9128/DSN 332-9128
E-mail: Eric.Plumer@pentagon.af.mil

Performer: TASC

Resources:

FY	Dollars	Staff-years
99	$20,000	
00	$20,000	

Schedule:

Start	End
Oct 98	Sep 99
Oct 99	Sep 00

Database: Excel

Publications: N/A

Keywords: Government, Estimating, Analysis, Database, Mathematical Modeling, Computer Model

AFCAA-9

Title: Aircraft Avionics Systems Database and Study

Summary: The objective of this effort involves developing an avionics database that will be used to develop cost estimating relationships for estimating both federated and next-generation integrated avionics systems. However, the key element of the effort is to be able to make the bridge between federated and integrated avionics systems. This database is to include cost, technical and programmatic data for a wide range of systems across many different airborne platforms. This effort is being coordinated across service lines to assist in various cost estimating tasks.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division

Mr. Eric Plumer, (703) 602-9128/DSN 332-9128
E-mail: Eric.Plumer@pentagon.af.mil

Performer: Tecolote Research, Inc.

Resources:

FY	Dollars	Staff-years
99	$212,000	
00	$125,000	

Schedule:

Start	End
Mar 99	Feb 00
Mar 00	Feb 01

Database: Excel

Publications: Final Report

Keywords: Government, Analysis, Electronics/Avionics, EMD, Production, Labor, Material, Data Collection, Data Base

AFCAA-10

Title: COTS Open Software Cost Model

Summary: The open software cost model, which is currently under development by Electronic Systems Center (ESC/FMC) and AFCAA through a Memorandum of Agreement (MOA), departs from traditional methods. The model, which has already been prototyped and demonstrated, will realistically and reliably address the costing of COTS intensive software applications. The model addresses total program costs by major activity by using inputs that are easily understood by the software development community such as forms, interfaces, and COTS packages. The inputs are the basis for the core algorithms, which are used to calculate the cost of other applications such as GOTS software, COTS software, external interfaces, fielding and support activities. Therefore, the data collection efforts to populate the model's database and build the model's algorithms will be based on actual software development metrics from as many companies as possible, as well as to incorporate expert opinion for technical and management activities.

Classification: Unclassified

Sponsor: Electronic Systems Center

Air Force Cost Analysis Agency, Research & Resource Management Division

Mr. Eric Plumer, (703) 602-9128/DSN 332-9128
E-mail: Eric.Plumer@pentagon.af.mil

Performer: Tecolote

Resources:

FY	Dollars	Staff-years
99	$200,000	

Schedule:

Start	End
Oct 98	Sep 99

Database: TBD

Publications: TBD

Keywords: Government, Estimating, Software, Estimating, Analysis, Life Cycle, Spares/Logistics, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression, CER, Computer Model

AFCAA-11

Title: Missile CER Development

Summary: This project will apply new missile data from the ACDB missile database to a comprehensive update of a previous study completed in 1994 that has proven very useful in recent cost analyses. This project will also utilize data from a recent Naval Center for Cost Analysis (NCCA) missile data collection effort. This data will then be used to develop cost estimating relationships (CERs), factors and analogs for various missiles and ground based radars for both RDT&E and production. Other subtasks include collecting additional missile and munitions programmatic information, providing more detailed narratives of the database content, and including the detailed spreadsheets with raw and normalized data.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division

Mr. Eric Plumer, (703) 602-9128/DSN 332-9128
E-mail: Eric.Plumer@pentagon.af.mil

Performer: Tecolote

Resources:

	FY	Dollars	Staff-years
Phase I	99	$50,000	
Phase II	00	$130,000	

Schedule:

Start	End
Jan 98	Dec 99
Jan 00	Dec 00

Database: ACDB

Publications: Updated final report showing all relevant analysis and CERs.

Keywords: Government, Estimating, Analysis, Life Cycle, Spares/Logistics, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression, CER, Computer Model, Weapon Systems, Missiles, Training

AFCAA-12

Title: Crosslink Payloads Data Collection and CER Development

Summary: The objective of this task is to initiate an efficient cost effective data collection and database development effort for the purpose of estimating crosslink payloads for space

systems. Continuing advances in microwave monolithic integrated circuits (MMIC) and larger more complex digital and analog integrated circuits have led to improved technologies in satellite communication and electronic systems. This project will focus on U.S military and non-military systems with a priority placed on unclassified programs. All applicable cost and technical data will be collected, the latter being most representative of the crosslink cost drivers. Accurate technology parameters are useful because they allow CERs to be developed on more than simply weight and size variables.

Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency, Research & Resource Management Division
	Mr. Eric Plumer, (703) 602-9128/DSN 332-9128 E-mail: Eric.Plumer@pentagon.af.mil
Performer:	SAIC

Resources:

FY	Dollars	Staff-years
99	$150,000	

Schedule:

Start	End
Oct 98	Sep 99

Database:	Excel
Publications:	Final Report
Keywords:	Government, Estimating, Analysis, Spares/Logistics, Life Cycle, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression

AFCAA-13

Title:	C-5 Aircraft Database
Summary:	This effort involves the collection of all in-house C-5 aircraft data resident at the Air Force Cost Analysis Agency and combine it into a database that will allow easy access and data manipulation.
Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency, Research & Resource Management Division
	Mr. Eric Plumer, (703) 602-9128/DSN 332-9128 E-mail: Eric.Plumer@pentagon.af.mil
Performer:	Naval Air Systems Command

Resources:

FY	Dollars	Staff-years
99	$50,000	

Schedule:

Start	End
Oct 98	Sep 99

Database:	Excel
Publications:	TBD
Keywords:	Government, Estimating, Analysis, Life Cycle, Data Collection, Mathematical Modeling, Statistics/Regression, CER, Data Base, Computer Model

AFCAA-14

Title:	Comprehensive Force Cost Model (CFCM)
Summary:	CFCM is an organizationally-based simulation of the total Air Force structure. It will be designed to provide decision-makers insight into how changes in force and basing

structure will effect support and infrastructure costs. This model will take a unique approach, estimating support and infrastructure costs by modeling the Air Force base structure at wing level. Wing and squadron level cost and manpower requirements, by PE and appropriation, are estimated from CER and planning factors unique to the weapon system based at each location. Requirements are accumulated through the various organizational levels to a total AF TOA roll-up with links to supporting infrastructure organizations such as logistics, training, and recruiting which generate other related costs and capacity metrics. The model output is intended to be used in mid- and long-range planning exercises in support of MAP, QDR, DPP, and BRAC type initiatives. Once this model is fully implemented, it will be able to replace the SABLE model.

Classification:	TBD
Sponsor:	Air Force Cost Analysis Agency, Research & Resource Management Division
	Mr. Eric Plumer, (703) 602-9128/DSN 332-9128 E-mail: Eric.Plumer@pentagon.af.mil
Performer:	TASC/MCR

Resources:

FY	*Dollars*	*Staff-years*
99	$ 60,000	
00	$140,000	

Schedule:

Start	*End*
May 99	Jul 99 (Feasibility Study)
Oct 99	Sep 00

Database:	TBD
Publications:	TBD
Keywords:	Government, Estimating, Analysis, Mathematical Modeling, Spares/Logistics, Life Cycle, Forces, Infrastructure, Acquisition Strategy, Automation, Data Collection, Data Base, Method

AFCAA-15

Title:	Wartime Cost Per Flying Hour Analysis
Summary:	In order to estimate the operating costs for weapon systems, and in particular aircraft weapon systems, the metric "cost per flying hour" is perhaps the most common cost factor currently in use. All variable costs including fuel, POL, depot level repairables, and consumables are collected, normalized, and expressed in terms of a single cost per flying hour for each weapon system. As a result, billions of dollars of annual O&M funding depends on this one critical cost factor which makes the accurate calculation all the more critical. In a wartime scenario the accurate accumulation of flying data becomes even more important; however, it has often been demonstrated that ad hoc reporting requirements are implemented haphazardly without flowing through the normal accounting systems which occurred with other flying missions including Desert Storm. This task will analyze and evaluate AFTOC data and any other data sources in order to provide an independent analysis of the feasibility of implementing alternative cost per flying hour methodologies with particular attention focused on wartime scenarios.
Classification:	Unclassified
Sponsor:	Air Force Cost Analysis Agency, Research & Resource Management Division
	Mr. Eric Plumer, (703) 602-9128/DSN 332-9128 E-mail: Eric.Plumer@pentagon.af.mil
Performer:	LMI

Resources:	FY	Dollars	Staff-years
	99	$70,000	

Schedule:	Start	End
	May 99	Apr 00

Database: AFTOC

Publications: Written Reports

Keywords: Government, Estimating, Operations and Support, Analysis, Life Cycle, Spares/Logistics, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression, CER, Computer Model

AFCAA-16

Title: Unmanned Air Vehicle (UAV) Database

Summary: The objective of this task is to provide AFCAA information necessary and sufficient to estimate UAVs and UAV components similar in design, performance and material composition to existing UAV programs. The task most likely will use an Excel-based model and design attributes to incorporate on-hand and potentially new UAV data in the form of contractor resources (cost and hours), technical and programmatic data into an approved Excel format. The UAV database will be capable of storing raw CCDR data, data mapping and normalization routines, mapped and normalized data, contractor specific non-standard resource data, technical data (i.e. weights, performance characteristics and material type, etc), and quantity data. It is envisioned that AFCAA analysts will use the database to incorporate data from various UAV programs into UAV estimating methodologies developed as analogy type estimates, parametric CERs or cost factors.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division

Mr. Eric Plumer, (703) 602-9128/DSN 332-9128
E-mail: Eric.Plumer@pentagon.af.mil

Performer: TBD

Resources:	FY	Dollars	Staff-years
	99	$50,000	

Schedule:	Start	End
	TBD	

Database: Excel

Publications: TBD

Keywords: Government, Estimating, Analysis, Life Cycle, Spares/Logistics, Data Collection, Data Base, Mathematical Modeling, Statistics/Regression, CER, Computer Model

AFCAA-17

Title: Force Analysis Decision Support System (FADSS) (ACE-IT Enhancements)

Summary: The objective of this effort is to provide enhancements to ACEIT to facilitate force costing and budget analysis. This effort will provide a general-purpose framework for combining weapon system cost estimates at a summary level into an integrated budget analysis utility. This framework will support top level annual budget drills and assist with analysis of alternative Force mixes. In addition, the model will enhance the utility of ACEIT by improving the integration of ACEIT with other Windows applications.

Enhancements will be made to ACEIT Executive to provide more flexibility with using ACE sessions from within Excel. To the extent funding is available, other specific enhancements will be made to CO$TAT and ACE.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division

Mr. Eric Plumer, (703) 602-9128/DSN 332-9128
E-mail: Eric.Plumer@pentagon.af.mil

Performer: Tecolote

Resources:

FY	Dollars	Staff-years
00	$70,000	

Schedule:

Start	End
Oct 99	Sep 00

Database: Product updates shall be included in scheduled ACEIT releases to ensure proper integration between multiple ACEIT development efforts and to reduce distribution expenses.

Publications: Updates to User's Guides may be distributed in electronic or paper format, as required.

Keywords: Industry, Government, Estimating, Analysis, Weapon Systems, Life Cycle, Method, Computer Model

AFCAA-18

Title: Phased Array Cost Database

Summary: The objective of this task is to provide AFCAA information necessary and sufficient to estimate phased array satellite payloads for design, performance and material composition. The task will most likely use an Excel model and design attributes to incorporate new phased array data in the form of contractor resources (cost and hours), technical and programmatic data into an approved Excel format. The phase array model will be capable of storing raw contractor data, data mapping and normalization routines, mapped and normalized data, contractor specific non-standard resource data, technical data (i.e. weights, performance characteristics and material type, etc), and quantity data. It is envisioned that AFCAA analysts will use the model to incorporate data from various phased array payloads to develop analogy type estimates, parametric CERs or cost factors. Information retrieved from the model will support AFCAA's requirement to increase its cost estimating expertise.

Classification: Unclassified

Sponsor: Air Force Cost Analysis Agency, Research & Resource Management Division

Mr. Eric Plumer, (703) 602-9128/DSN 332-9128
E-mail: Eric.Plumer@pentagon.af.mil

Performer: TBD

Resources:

FY	Dollars	Staff-years
00	$150,000	

Schedule:

Start	End
Oct 99	Sep 00

Database: Excel

Publications: Final Report

Name	Aeronautical Systems Center, Air Force Material Command Cost Division, Comptroller Directorate
Address	ASC/FMC Bldg. 14, Rm. 152 1865 4th Street Wright-Patterson AFB, OH 45433-7123
Director	Ms. Kathy A. Ruffner, (937) 255-6483
Size	Professional: 38 Support: 4 Consultants: 0 Subcontractors: 0
Focus	Cost Estimating and Research, Scheduling, Resource Analysis (Source Selection Guidance and Cost Panel Support) Earned Value Management, and Integrated Risk Management
Activity	Number of research projects in process: 5 Average duration of a project: Varies Average number of staff members assigned to a project: 1 Average number of staff-years expended per project: .33 Percentage of effort conducted by consultants: — Percentage of effort conducted by subcontractors: 60%

ASC/FMC-1

Title: Case Study, APG-63 V(1) Radar, F-15

Summary: The objective of this study is to examine the APG-63 (V)1 Program Definition/Risk Reduction and Engineering Manufacturing Development phases and evaluate attributes of successful Program Management. Additionally, the impact of acquisition reform and other initiatives will be analyzed with the purpose of improving cost estimating accuracy. There is substantial interest in quantifiable cost reduction realized through Acquisition Reform, but corroborating empirical evidence is scarce. The APG-63 (V)1 radar program has been managed under an acquisition reform environment and has successfully completed Engineering & Manufacturing Development (EMD). The program entered Low Rate Initial Production (LRIP) in Aug 97.

Classification: Unclassified/Proprietary Information

Sponsor: ASC/FMCE

                Wright-Patterson AFB OH 45433-7123

Performer: ASC/FMCE

                Ms. Janet Wentworth, (937)-656-5484

Resources: <u>FY</u>   <u>Dollars</u>   <u>Staff-years</u>

                                           .33

Schedule:	Start	End
	Apr 98	Jun 99

Data Base: F-15 Development Support Office (DSO) APG-63 program files, ASC Cost & Schedule Data Center program cost estimates and cost performance reports, and contractor's programmatic records.

Publications: TBD

Keywords: Government, Industry, Estimating, Analysis, Aircraft, Electronics/Avionics, Demonstration/Validation, EMD, Acquisition Strategy, Modification, Data Collection, Case Study, Review, Study

ASC/FMC-2

Title: PRICE Model Calibration Studies: F-15 and B-2

Summary: F-15: The F-15 System program Office is sponsoring PRICE Model calibration efforts for their program. The F-15 studies will provide a calibrated data set for utilizing PRICE Hardware (PRICE H) and PRICE Software (PRICE S) for estimating Group B equipment, and a calibrated data set for utilizing PRICE S for estimating object oriented software.

B-2: The B-2 System Program Office is also sponsoring PRICE Model calibration efforts. The B-2 study will provide calibrated productivity factors and global values for PRICE S, and calibrated electronic and structural complexity factors and global values for PRICE H.

Classification: Unclassified/Proprietary Information

Sponsor: ASC/FMCE

Janet Wentworth, (937) 656-5484

Wright-Patterson AFB OH 45433-7123

Performer: PRICE Systems, L.L.C.

Resources:	FY	Dollars	Staff-years
	98	$ 59,930 (F-15)	
	99	$ 59,940 (F-15)	
	99	$192,800 (B-2)	

Schedule:	Start	End
	Jan 98	Dec 99 (F-15)
	Apr 99	Aug 00 (B-2)

Data Base:	Title:	PRICE Calibration Database
	Description:	F-15 and B-2 Data
	Automation:	Access

Publications:

Keywords: Government, Estimating, Analysis, Weapon Systems, Aircraft, EMD, Production, Engineering, Manufacturing, Data Collection, Computer Model

ASC/FMC-3

Title: Integrated Desktop Analysis and Planning System (IDAPS) Concept Evaluation (ICE)

Summary: The ICE system was originally sponsored by ASC/XR and created by Frontier Technology, Inc. It is an integrated environment that is a concept cost analysis tool which enables concept evaluation and total system life cycle cost analysis. The system does this

by integrating approved cost models, CORE, DLR, and SEER. Incorporation of additional models is being worked. (Note: Current ICE needs access to SEER-SEM and SEER-H software licenses). Minimal PC requirements are a 486 or higher platform running Windows 95, Windows 98, or Windows NT.

Classification:	Unclassified/Proprietary Information
Sponsor:	ASC/FMCE Wright-Patterson AFB OH 45433-7123
	Janet Wentworth, (937) 656-5484
Performer:	Frontier Technology, Inc. 4141 Colonel Glenn Hwy, Suite 140 Beavercreek, OH 45431
	Phone: (937) 429-3302, Ext. 22 E-Mail: rshroder@fti-net.com

Resources: FY   Dollars   Staff-years
Completed

Schedule: Initial development complete, future enhancements planned.

Data Base: *Title:*

    Description:

    Automation:

Publications: Training Manual documentation is available.

Keywords: Government, Analysis, Life Cycle, Computer Model

ASC/FMC-4

Title: Avionics Support Cost Factors Update

Summary: This research project updates the ASC/RW Cost Factors Handbook (Estimating Avionics Support Element Costs With Factors). This project is intended to provide the cost estimator with a methodology for estimating the contractor support element costs associated with avionics programs through the use of factors for the Engineering and Manufacturing Development (EMD) phase of the acquisition life cycle. In addition, the study tests the relevance against the original study. These cost factors are to be used for high-level EMD estimating. Data was extracted from CPR and C/SSR reports and includes prime mission equipment (PME), system test and evaluation (ST&E), peculiar support equipment (PSE), systems engineering/program management (SE/PM), data, and training. Included in the PME costs are items such as hardware, software, and integration. ST&E costs also include items such as flight test spares. Programs used in this research include: B-1B, CMUP, F-111, DFCS, F-15 TEWS, F-15 EGI, F-15 Advanced Radar, ICAT, Compass AHRS, F-111C DFS, F-15E GPS, F-15 SFDR, F-15E Digital Map, ASTIE, B-1 Avionics ACMI, F/FM-111 AMP, Intra Flight data Link, AN/ALE 50, ICASS, B-1B SRAM II, IRST, and the Common Missile Warning System. Production efforts were not part of this research. Project is on two disks (word and an excel zip (compressed) file) and can be e-mailed.

Classification:	Unclassified
Sponsor:	ASC/FMCE Wright Patterson Air Force Base, OH
	Ms. Kathy Watern, (937) 656-5491
Performer:	ASC/FMCE
	Mr. Don Wren, (937) 255-3039

Resources:

FY	Dollars	Staff-years
		.33

Schedule: Completed

Data Base: ASC Cost & Schedule Data Center

Publications:

Keywords: Government, Estimating, Analysis, Weapon Systems, Aircraft, Airframe, Electronics/Avionics, EMD, Production, CPR/CCDR

ASC/FMC-5

Title: Automated Model for Integrating Cost with Operational Effectiveness

Summary: This Phase 2 contractual effort is to create a PC based tool to integrate cost and operational effectiveness analysis. The model uses optimal technique algorithms to determine outcome and cost as force mix is changed. PHASE 2 focuses on four primary activities—developing linkage models for BRAWLER and other engineering/engagement models in use by ASC/XR. Optimization algorithms will be integrated with BRAWLER, cost models and linkage models to allow new designs to be specified to maximize performance for a given cost. Existing cost models will be augmented with an aircraft integration model and a modified operating and support model. Software will be developed to interface a PC with the user for cost presentations and for optimization input/output.

Classification: Unclassified

Sponsor: ASC/XP
Mr. Patrick Cyrus, (937) 255-6262

Performer: Technomics, Inc. (Prime)
5290 Overpass Road, Suite 206
Santa Barbara, CA 93111

Mr. Eugene Waller
Mr. John Horak, (805) 964-9894

Toyon Research Corporation (Subcontractor)
75 Aero Camino, Suite A
Goleta, CA 93117-3139

Mr. Mark T. Fennell, (805) 968-6787 ext. 158

Resources:

FY	Dollars	Staff-years
98-00 (Prime)	$441,470	0
(Sub)	$275,002	
	$716,472	

Schedule:

Start	End
Aug 97	Aug 99

Data Base:

System LEVEL:	Number of test aircraft, number of production aircraft, and first flight data.
Hardware LEVEL:	A/C unit weight, material complexity, supersonic or subsonic, maximum engine trust, turbine inlet temperature
Software LEVEL:	Source lines of code, Source lines of reused code, SW Language, Labor Rate, Specific application or types of application
Aircraft Integration:	Types of platform, Installed weight, Removed weight, Type of modification, # of Cables

Publications: Software disk and documentation, user manual, final report and briefing

Keywords: Government, Estimatir g, Electronics/Avionics, Weapon Systems, Life Cycle, Engineering, Manufacturing, Mathematical Modeling

Name	Cost Training & Tools, Cost Division, Electronic Systems Center, Air Force Materiel Command
Address	5 Eglin Street Hanscom AFB, MA 01731-2117
Director	Ms. Ellen Coakley, (781) 377-5226
Chief	Mrs. Margaret Weech, (781) 377-3919
Size	Professional: 2 Support: 2 Consultants: 0 Subcontractors: 0
Focus	Development and fielding of cost estimating tools and databases for C^2 systems. Responsibility for searching out and reviewing the latest C^2 cost and schedule estimating tools available from other government agencies and commercial sources and evaluating for potential use at ESC. Providing timely, quality cost estimating training to ESC analysts and assuring they are up-to-date on new methodologies, tools, estimating approaches and policies.
Activity	Number of projects in process: Average duration of a project: Average number of staff members assigned to a project: Average number of staff-years expended per project: Percentage of effort conducted by consultants: Percentage of effort conducted by subcontractors:

ESC/FMC-1

Title: C^2 Cost Information Center Web Site

Summary: The C^2 Cost Information Center is a Web Site with Government and Industry as joint users and joint contributors. The Web Site includes: Estimating Methodology Knowledge Bases, search capability across the entire web site, Commercial Off-the-Shelf (COTS) directories (by vendors, product, & Government contract), COTS Hardware and Software Primers, links to other appropriate sites and periodic articles written by guest writers (senior Government & industry).

Classification: Unclassified

Sponsor: ESC/FMC

Performer: ESC/FMCT and Tecolote Research, Inc.

Resources: <u>FY</u>   <u>Dollars</u>   <u>Staff-years</u>

Schedule:	Start	End	
	Apr 97	Jul 97(Initial Fielding) On-going	

Data Base:	Title:
	Description:
	Automation:

Publications:

Keywords: Industry, Government, Weapon Systems, Electronics/Avionics, Acquisition Strategy, CERs, Estimating, Method

ESC/FMC-2

Title: "Open" Estimating Tool for Software-Intensive Programs with COTS H/W & S/W

Summary: This tool can be used to estimate programs that are software-intensive with commercial off-the-shelf (COTS) hardware and COTS software. The initial focus of the tool was on estimating Management Information Systems (MIS)/Automated Information Systems (AIS)–type programs. These types of Programs with today's technology are being developed using Fourth Generation Languages (4GLs) and as much COTS software as possible–creating the need for COTS software integration. This tool's primary objective is to be able to estimate this type of environment. The scope of the tool is all acquisition costs for these types of programs, including software maintenance support.

Classification: Unclassified

Sponsor: ESC/FMC and Air Force Cost Analysis Agency

Performer: ESC/FMC (Peggy Wells) and Tecolote Research, Inc.

Resources:	FY	Dollars	Staff-years

Schedule:	Start	End
	Jan 97	Jun 97 (Initial Fielding) On-Going

Data Base: TBD

Publications: TBD

Keywords: Government, Estimating, Analysis, Weapon System, Electronics/Avionics, EMD, Data Collection, Software, Integration, Expert System

Name	Air Force Space and Missile System Center (AFMC/SMC) Acquisition Cost Division (SMC/FMC)
Address	2430 E. El Segundo Blvd., Suite 2010 Los Angeles AFB, CA 90245-4687
Director	Mr. Anthony E. Finefield (GS-15), Chief, Acquisition Cost Division (310-363-1073) LTC Rey S. Carpio, Deputy Chief, (310) 363-6770
Size	Professional: 18 Support: 1 (Aerospace) Consultants: 0 Subcontractors: 3 (Tecolote, EER Systems, MCR Federal)
Focus	Satellites, Launch, and Network and Range
Activity	Number of projects in process: 6 Average duration of a project: 1 year Average number of staff members assigned to a project: 2 Average number of staff-years expended per project: 0.3 Percentage of effort conducted by consultants: 0 Percentage of effort conducted by subcontractors: 95%

AFSMC-1

Title:	FY98 Operating and Support (O&S) Database
Summary:	Populate fields of database and modify automated stand-alone tool to work in windows. Database contains data that can be used for analogy estimates, calibration efforts, and CER development, and is compatible with current Air Force computer systems.
Classification:	Unclassified
Sponsor:	SMC/FMC
Performer:	MCR Federal, Inc. SMC/FMC/Kim Holman, (310) 363-5441

Resources:

FY	Dollars	Staff-years
prior	$1,086,000	0.5
98	$ 70,000	0.1

Schedule:

Start	End
May 98	Apr 99

Data Base:

	Title:	SMC Operating and Support (O&S) Database
	Description:	Contains cost and technical data for O&S ground systems, remote tracking systems, and launch systems

Automation: Access

Publications: *SMC O&S Database Final Report (Phase 4), OSDB User's Manual*, Space and Missile Systems Center/FMC

Keywords: Government, Estimating, Space Systems, Operations and Support, WBS, Data Base, Size, Data Collection

AFSMC-2

Title: FY98 Passive Sensor Cost Model Update

Summary: The methods for estimating space sensor payloads (passive sensors, e.g., infrared) need to be updated. Subsystems reviewed were: focal plane arrays; optical telescope assemblies; cryogenic coolers; servo electronics; gimbals and structures; star sensors; power supplies; and sensor integration, assembly and test.

Classification: Unclassified (Proprietary database separately bound)

Sponsor: SMC/FMC

Performer: EER Systems, Inc.

Aerospace Corporation

SMC/FMC/Phu Nguyen, (310) 363-0071

Resources:

FY	Dollars	Staff-years
prior	$780,000	0.8
98	$100,000	0.1

Schedule:

Start	End
Aug 98	Aug 99

Data Base: *Title:*   Sensor Database

Description: Contains cost and technical and programmatic data by WBS at the sensor subsystem level.

Automation: EXCEL and Access

Publications: *Passive Sensor Cost Model*, (1997) Space and Missile Systems Center/FMC

Keywords: Government, Estimating, EMD, Space Systems, Production, WBS, CER, Statistics/Regression, Data Base, Method, Data Collection, Survey, Electronics/Avionics

AFSMC-3

Title: FY98 Software Database

Summary: Maintained the SMC Software Database by adding new data. Modified automated stand-alone tool to work in windows. Normalized missing parameters.

Classification: Unclassified (Proprietary and Non-Proprietary Versions)

Sponsor: SMC/FMC

Performer: MCR Federal, Inc.

SMC/FMC/Capt Eric Nguyen, (310) 363-3021

Resources:

FY	Dollars	Staff-years
prior	$961,000	0.7
98	$ 70,000	0.1

Schedule:	Start	End
	Apr 98	Apr 99

Data Base:	Title:	SMC Software Database
	Description:	Contains schedule, sizing, effort, and maintenance data from space, ground, mobile, and airborne platforms.
	Automation:	Access

Publications: *SMC Software Database FY96 Data Collection Effort Final Report SWDB User's Manual*, Space and Missile Systems Center/FMC

Keywords: Government, Estimating, Space Systems, WBS, Data Base, EMD, Size, Data Collection, Production, Modification

AFSMC-4

Title: FY99 Software Database

Summary: Maintained the SMC Software Database by adding new data. Modified automated stand-alone tool to work in windows. Normalized missing parameters. DoD's largest software database.

Classification: Unclassified (Proprietary and Non-Proprietary Versions)

Sponsor: SMC/FMC

Performer: MCR Federal, Inc.

SMC/FMC/Capt Eric Nguyen, (310) 363-3021

Resources:	FY	Dollars	Staff-years
	prior	$1,031,000	0.8
	99	$ 58,000	0.1

Schedule:	Start	End
	Apr 99	Dec 99

Data Base:	Title:	SMC Software Database
	Description:	Contains schedule, sizing, effort, and maintenance data from space, ground, mobile, and airborne platforms.
	Automation:	Access

Publications: *SMC Software Database FY96 Data Collection Effort Final Report SWDB User's Manual*, Space and Missile Systems Center/FMC

Keywords: Government, Estimating, Space Systems, WBS, Data Base, EMD, Size, Data Collection, Production, Modification

AFSMC-5

Title: FY98 Unmanned Spacecraft Cost Model (USCM) Update

Summary: Update the 7th edition (1994) of the model with developing, validating, documenting new CERs, and obtaining new data points.

Classification: Unclassified (Proprietary database separately bound)

Sponsor: SMC/FMC

Performer: Aerospace Corporation
Tecolote Research, Inc.

SMC/FMC/Ms. Phu Nguyen, (310) 363-0071

Resources:	FY	Dollars	Staff-years
	prior	$1,649,000	1.1
	98	$ 120,000	0.1

Schedule:	Start	End
	Aug 98	Aug 99

Data Base: *Title:* USMC Database

Description: Includes cost, technical, and programmatic data by WBS at the spacecraft component level.

Automation: The database is contained in Excel spreadsheets and Automated Cost Data Base (ACDB)

Publications: *Unmanned Spacecraft Cost Model*, 7th edition, Space and Missile Systems Center/FMC

Keywords: Government, Estimating, EMD, Space Systems, Production, WBS, CER, Mathematical Modeling, Statistics/Regression, Data Base, Method, Mathematical Model

AFSMC-6

Title: FY99 Non-Recurring to T1 Communications Payload Study

Summary: Study the non-recurring to T1 cost ratio of communication payloads.

Classification: Unclassified

Sponsor: SMC/MCP

Performer: Aerospace Corporation
Tecolote Research, Inc.

SMC/MCP/Major James Gates, (310) 336-4863

Resources:	FY	Dollars	Staff-years
	prior	$ 0	0.0
	98	$100,000	0.2

Schedule:	Start	End
	Feb 99	Oct 99

Data Base: *Title:*

Description:

Automation:

Publications:

Keywords: Government, Estimating, EMD, Space Systems, Production, WBS, CER, Mathematical Modeling, Statistics/Regression, Data Base, Method, Mathematical Model

Name	Special Procurement Services/Cost Forecasting (SPS/CF) An Agency of the MoD UK
Address	Elm 1a #187 MoD Abbey Wood Bristol BS34 8JH UK
Director	Mr. Geoff Hollinrake
Size	Professional: 66 Support: 2 Subcontractors: 10
Focus	Cost Forecasting advice and support to the MoD UK
Activity	Number of projects in process: 135 Average duration of a project: 4 months Average number of staff members assigned to a project: 3 Average number of staff-years expended per project: 0.4 Percentage of effort conducted by subcontractors: 20 %

SPS/CF-1

Title:	Software Support Cost Model Project (SSCMP)
Summary:	The overall aim of the SSCMP is to develop a software package to enable procurers, managers, and designers to estimate the costs of support for software over its in-service life. The program started in 1991 with a theoretical feasibility study, followed by a Software Questionnaire Study and Pilot study completed in April 1995. The Pilot Study suggested that the key factors that influence software support costs are not necessarily size, complexity, or age, which are the factors usually identified in current thinking. A Main Study is now underway with the following objectives: to define the factors and effects that have an impact on software support costs and to develop a concept model of software support based on a study of MoD support activities.
Classification:	Unclassified
Sponsor:	Specialist Procurement Services–UK MOD Mr. D Thombs, 011-44-117-913-2754
Performer:	BMT Reliability Consultants Ltd, Fareham, UK

Resources:

FY	*Dollars*	*Staff-years*
97/99	$200,000	1.0

Schedule:

Start	*End*
Dec 95	Jan 00

Data Base:	Using Microsoft Excel to store and manipulate collected data.
Publications:	Reports on specific activities throughout the program.

SPS/CF-2

Title: Operating and Support Cost Analysis Models. (OSCAM)

Summary: Operating and Support Cost Analysis Models provide a better understanding of operating and support processes and their interaction. In essence, they allow users to access historical data and analyse cost and availability impacts of operating and support policy changes. They use a System Dynamics approach which allows a greater degree of "what if" analysis whilst modelling the business/logistics flow dictating the operation and support costs. Currently 5 versions of OSCAM have been developed for the UK MOD. They are:

- OSCAM(Ship)–Operating and Support Cost model for ships.

- OSCAM(Sys)–Operating and Support Cost model for ship systems.

- OSCAM(Land)–Operating and Support Cost model for land systems/platforms.

- OSCAM(ADGE)–Operating and Support Cost model for Air Defence Ground Equipment (Radar).

- OSCAM (FASH)–Operating and Support Cost model for Future Amphibious Support Helicopter.

OSCAM(Ship),(Sys) were the first to be developed and were closely followed by OSCAM(Land). All three models are currently being used within various UK MoD departments. OSCAM(ADGE) and (FASH) are relatively new models and are currently undergoing validation and verification before can be used to influence procurement and support options for their respective equipment's.

Future developments include:

- Continued upgrading of OSCAM(Ship), (Sys) and (Land) models, including the development of Data Management Tools (DMTs) and Cost Estimating Relationships (CERs).

- Possible development of a Generic Air Platform (GAP) model based on OSCAM(FASH).

- Upgrading of (ADGE) and (FASH) models once validated.

Classification: Unclassified

Sponsor: Specialist Procurement Services–UK MOD

Mr. D B Baggley, 44-117-913-2778

Performer: HVR Consultants, Alton, Hampshire.

Resources:

FY	Dollars	Staff-years
98/99	$250,000	1.0

Schedule:

Start	End
Oct 96	Feb 2000

Data Base: Title: Powersim

Description:

Automation:

Publications:

Keywords: Government, Estimating, Ships, Land Vehicles, Helicopters, Demonstration/Validation, Mathematical Modelling, Computer Model

Name	Graduate School of Logistics and Acquisition Management Air Force Institute of Technology (AFIT/LAS)
Address	2950 P Street, Building 641 Wright Patterson AFB, OH 45433-7765
Director	Jan P. Muczyk, AD-27, Dean LTC Richard A. L'Heureux, Head, Department of Acquisition Management, (937) 255-6280
Size	Professional: 25 Support: 5 Consultants: 0 Subcontractors: 0
Focus	The School's research focus is on logistics and acquisition issues, including cost analysis, cost management, contracting, and acquisition management. Items reported here are a combination of a faculty research and student thesis projects that are directed by AFIT faculty and worked on as an integral part of the academic program leading to Master of Science degrees.
Activity	Number of projects in process: 5–10 Average duration of a project: 15 months Average number of staff members assigned to a project: — Average number of staff-years expended per project: — Percentage of effort conducted by consultants: 0% Percentage of effort conducted by subcontractors: 0%

AFIT/LAS–1

Title: A Return on Investment Model for Air Force Technology Transfer

Summary: Air Force policy states the fundamental reason for participating in technology transfer is to maximize the return on investment (ROI) on research and development (R&D) funds. Public law dictates that federal agencies, including the Air Force, are to spend no less than 0.5% of their overall R&D budget in the pursuit of technology transfer. However, there is currently no ROI model available to the decision-maker in the evaluation of alternative transfer opportunities. This research effort develops a model that measures the ROI of individual cooperative research and development agreements (CRDAs) on the basis of the objective and subjective benefits amassed. The model results assist the decision-maker by providing a relative ranking of each transfer opportunity in comparison to one another. A sensitivity analysis method and results are included which identify definite regions of alternate "optimal" choices depending on the weight given to objective and subjective benefits. Consequently, the decision-maker is provided with a flexible model for use in maximizing ROI, the Air Force's goal for technology transfer.

Classification: Unclassified

Resources: *FY*   *Dollars*   *Staff-years*
Schedule: *Start*   *End*
                Sep 97   Aug 98
Data Base: *Title:*
                Description:
                Automation:
Publications: Thesis available from Defense Technical Information Center: AD-A354206
Keywords: Government, Estimating, Airframe, Propulsion, Electronics/Avionics, Concept
                Development, Fixed Costs, Variable Costs, Data Collection, Survey, Mathematical Model

AFIT/LAS-2

Title: Multinational Communications Satellite Study: Program Management Costs

Summary: In the first decade of the 21st century, experts predict that most of the military
                communications satellites currently orbiting the earth will be approaching the end of their
                service lives and require replacement. In 1991, the French suggested a cooperative
                approach to developing replacement satellites, with the belief that significant cost savings
                could be realized. This suggestion evolved into the Future Military Satellite
                Communication Architecture Study (FMAS). The study, involving U.S. and European
                contractors, culminated in various proposals for the optimal approach to an international
                military satellite (INMILSAT) development. This study examined the costs involved in
                integrating the project management efforts of multiple, international contractors, using
                data from the FMAS study as a starting point. It includes an overview of past international
                efforts, recommendations for a successful program, and current trends in international
                cooperation. This examination is synthesized into a recommendation for the most cost-
                effective management approach to a cooperative INMILSAT effort, based on the
                investigation into multinational cooperative efforts and program management costs. A
                notional method for subjectively quantifying the program management costs associated
                with integrating multiple, international contractors is offered. Although the goal of
                obtaining specific, quantifiable cost data was not met, insight into the complex topic of
                managing international efforts and estimation of their costs was gained.

Classification: Unclassified

Resources: *FY*   *Dollars*   *Staff-years*
Schedule: *Start*   *End*
                Sep 97   Aug 98
Data Base: *Title:*
                Description:
                Automation:
Publications: Thesis available from Defense Technical Information Center: AD-B238900 (Restricted)
Keywords: Government, Analysis, Space Systems, Data Collection, Study

AFIT/LAS-3

Title:	Fighter/Attack Aircraft Production CERS and Seemingly Unrelated Regression

Summary: This study attempts to refine previous estimates by applying a technique to estimate multiple Cost Estimating Relationships (CERs) simultaneously rather than the traditional method where CERs are developed independently. Using a technique of Seemingly Unrelated Regression (SUR), a revised set of CERs is developed and compared to those developed using Ordinary Least Squares (OLS) regression techniques. It was found that the SUR method results in a slight improvement in accuracy of the estimated cost, in the presence of a moderate degree of correlation between the residuals of the independently derived CERs.

Classification: Unclassified

Sponsor: Mr. John Dorsett, Air Force Cost Analysis Agency

Performer: Robert Bickel and Lance Whitfill, advised by Dr. Roland Kankey and MAJ Daryl Hauck

LAS, (937) 255-6280

Resources:	*FY*	*Dollars*	*Staff-years*
Schedule:	*Start*	*End*	
	Sep 97	Aug 98	
Data Base:	*Title:*		
	Description:		
	Automation:		

Publications: Thesis available from Defense Technical Information Center: AD-B238901 (Restricted)

Keywords: Government, Estimating, Aircraft, Statistics/Regression, CER

AFIT/LAS-4

Title: Software Support Cost Estimating Models: a Comparative Study of Model Content and Parameter Sensitivity

Summary: This research entailed a comparison of five software estimating models: PRICE-S, SEER-SEM, SoftCost-OO, SoftEst, and SPR KnowledgePLAN. The objective was to research the differences of the software models as related to software support cost. The following major question areas were addressed: (1) How do the differences between the models impact the resulting cost estimates? (2) To what degree can we explain and adjust for the differences between cost models? All items were for flight avionics of a manned aircraft. The differences between the models significantly impact the resulting estimates. Over the five models evaluated, a range of over $60 million (from approx. $35M to approx. $100M) occurred during a twenty year support cost estimate. The researchers can explain the differences in the models due to the different algorithms used, but were not able to normalize the models to achieve equivalent estimates. The researchers feel a typical user will not be able to normalize separate models and should, therefore, concentrate on learning one or two models in detail. Different models are more appropriate depending on the task or project being estimated.

Classification: Unclassified

Sponsor: Captain Dave Marzo, Air Force Cost Analysis Agency

Performer: Kevin Brummert and Phil Mischler, advised by Dan Ferens and MAJ Daryl Hauck

LAS, (937) 255-6280

Resources:	*FY*	*Dollars*	*Staff-years*

Schedule:	Start	End
	Sep 97	Aug 98

Data Base:	Title:
	Description:
	Automation:

Publications: Thesis available from Defense Technical Information Center: AD-A354293

Keywords: Government, Analysis, Estimating, Operations and Support, Weapon Systems, Software, Case Study, Study

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AFIT/LAS-5

Title: Manned Versus Unmanned Reconnaissance Air Vehicles: A Quantitative Comparison of the U-2 and Global Hawk Operating and Support Costs.

Summary: This research provides a brief history of the advancements in technology that have made unmanned flight for reconnaissance purposes an operational reality. It attempts to provide a good comparison of operating and support costs between the first High Altitude Endurance (HAE) Unmanned Aerial Vehicle (UAV), the Global Hawk, and the system it is slated to compliment/replace, the U-2. The Air Force's Cost-Oriented Resource Estimating (CORE) model and the expertise of the Reconnaissance Mission Area Group (RMAG) located at Wright-Patterson AFB, OH, were used to develop a realistic operating and support cost for a fleet of Global Hawk air vehicles in fiscal year (FY) 1997 dollars. Actual FY97 data was used to develop a U-2 estimate for comparison purposes. It was found that when the Global Hawk was compared to the U-2 on an equal annual flying hour basis, only 14 Global Hawks were needed to provide the same number of reconnaissance flying hours as 35 U-2s. The Global Hawk's smaller fleet size and manpower requirements resulted in a flying hour cost savings of approximately 49 percent as compared to the U-2. In order to address the fact that an hour of Global Hawk flight time is not equal, on a one-to-one basis, with a U-2 hour of flight time, sensitivity analyses were conducted on the Global Hawk point estimate to help provide a range of values for comparison to the U-2 data.

Classification: Limited Distribution / Classified Appendix

Sponsor: ASC/RAV

Performer: Brian Kehl and Mike Wilson, advised by LtCol Terry Adler and MAJ Daryl Hauck

LAS, (937) 255-6280

Resources:	FY	Dollars	Staff-years

Schedule:	Start	End
	Sep 97	Aug 98

Data Base:	Title:
	Description:
	Automation:

Publications: Thesis available from Defense Technical Information Center: AD-B238933

Keywords: Government, Estimating, Analysis, Case Study, Study

AFIT/LAS-6

Title: Predictive Reliability of the Contractor Performance Assessment Report (CPAR) Process

Summary: An Industry trend is to establish long-term relationships with reliable suppliers. One of the criteria used to pick these "reliable suppliers" is past performance. The Department of Defense is also attempting to capitalize on this logical trend to the maximum extent possible by using past performance as an evaluation factor in source selections. Air Force Material Command (AFMC) employs the Contractor Performance Assessment Reporting System (CPARS). This thesis examines the reliability of the CPARS.

This study began with 149 records from the Aeronautical Systems Center CPARS database. The evaluation relied on three basic techniques: correlation tests, a Tukey multiple comparison procedure, and linear regression. This thesis found, despite the fact that policy mandates color ratings be based on period objective measures, the cost color ratings were more consistent with cumulative objective measures. Even so, the strength of this relationship has degraded significantly over time. With respect to schedule, the reliability is improving significantly, but period objective measures are not yet significantly correlated with schedule color ratings. The author recommends that AFMC either change CPARS cost rating policy to reflect the use of cumulative objective measures or provide additional training so evaluators better understand what is assessed during a CPARS rating period.

Classification: Unclassified

Sponsor: Mr. Thomas Fowler, ASC/SYG

Performer: John Odum, advised by LtCol Stephen Giuliano and MAJ Daryl Hauck

LAS, (937) 255-6280

Resources:	*FY*	*Dollars*	*Staff-years*

Schedule:	*Start*	*End*
	Sep 97	Aug 98

Data Base: *Title:*

Description:

Automation:

Publications: Thesis available from Defense Technical Information Center: AD-A354250

Keywords: Government, Analysis, CPR/CCDR, Study

AFIT/LAS-7

Title: Air Refueling Operations In The North Pacific: Is There A More Efficient Method?

Summary: The 1997 Air Force Long-Range Plan states the Air Force will continue to rely on the Air Reserve Component (ARC) in an integrated Total Force. Driven by the desire to maximize efficiency and operational effectiveness within allocated resources, the Air Force will continue to look for new opportunities, to include examining ARC involvement in new mission areas and optimizing the reverse associate unit. The best location to attempt either a KC-135 reverse associate unit or a non-traditional Air National Guard KC-135 squadron might be in the North Pacific Theater. Both options would help reduce the operations tempo of KC-135 squadrons, might help with aircrew retention, and would increase the reliability and cost effectiveness of air refueling operations in the North Pacific. This paper performs a cost-benefit analysis on several proposals to satisfy the air refueling requirements in the North Pacific in a more cost efficient manner than today's current operations. Results of this study reflect an overall cost savings and more efficient use of air refueling resources with an increase in the number of KC-135Rs assigned to or

associated with the 168th Air Refueling Wing. This paper examined several basing options and the associated costs and benefits.

Classification:	Unclassified with references to classified OPLANS, CONPLANS, and Pony Express Taskings
Sponsor:	
Performer:	Mike Rauenhorst, Air Mobility Warfare Center, Ft Dix, NJ, advised by Dr. Roland Kankey, AFIT/LAS

Resources:	*FY*	*Dollars*	*Staff-years*
Schedule:	*Start*	*End*	
	Jan 98	Jun 98	

Data Base:	*Title:*
	Description:
	Automation:
Publications:	Graduate Research Paper available from Defense Technical Information Center: AD-A354268
Keywords:	Government, Analysis, Aircraft, Operations and Support, Case Study, Study

AFIT/LAS-8

Title:	The Adequacy of the Fourteen General System Characteristics in Estimating Software Size Using Function Points
Summary:	The purpose of this research is to assess the adequacy of the fourteen General System Characteristics (GSCs) in deriving a Value Adjustment Factor for calculating final function point counts. The first objective is to determine which methods of adjusting function point counts for applications complexity are commonly being used in practice. Specifically, is there a better alternative to the current International Function Point Users Group (IFPUG) standard? In addition, this research will examine the perceived accuracy and validity of the GSCs, as assessed by the users. The final goal is determine how applicable the GSCs are across various platforms, languages, and environments.
Classification:	Unclassified
Sponsors:	Air Force Research Laboratory / Information Systems Division
	International Function Point Users Group (IFPUG)
Performer:	Capt. Joseph C. Willoughby and 2Lt Michael D. Prater, advised by Mr. Dan Ferens, AFRL/IFSD, (937) 255-2164,ext. 3258, and Maj. Bryan Turner, AFIT/LSS, (937) 255-7777, ext. 3258

Resources:	*FY*	*Dollars*	*Staff-years*
Schedule:	*Start*	*End*	
	Oct 98	Sep 99	

Data Base:	*Title:*
	Description:
	Automation:
Publications:	Thesis will be available from Defense Technical Information Center in Winter 1999.
Keywords:	Industry, Estimating, Weapon Systems, Life Cycle, Software, Survey, Review

AFIT/LAS-9

Title: The Development of Military Laser Cost Estimating Relationships From Commercial Data

Summary: This thesis project/research effort will concentrate on developing a cost estimating relationship (CER) for military lasers using current prices of various commercial lasers. Without many analogous military laser systems and a lack of data to perform a grassroots estimate, the use of parametric cost estimating will play an important role in estimating the price of future military laser systems. Price data, not cost data, is used for two main reasons. First, obtaining cost data from commercial laser manufacturers is next to impossible due to the proprietary nature of that data. The commercial laser market is very competitive--so competitive that some manufacturers refused to even provide pricing data, as we were not prospective buyers. The second reason is the potential interest in price-based acquisition. There are some leaders in the DoD acquisition field who are currently weighing the pros and cons of price-based acquisition as an alternative method of acquiring major weapon systems. Regression analysis will be used to model the price of commercial lasers (dependent variable) against certain laser characteristics that are deemed to be major cost drivers, such as output power, wavelength, efficiency, etc. (independent variables). Some issues still need to be ironed out as our research progresses. One example is normalizing the data to account for the effects of learning. Some types of lasers are more mature than others (i.e., helium-neon lasers vs. neodymium lasers), so the price data we receive may need to be adjusted to account for this phenomenon in order to make accurate comparisons across laser types. The goal of this research project is to provide a useful CER for predicting the price of future military laser systems.

Classification: Unclassified

Sponsor: Air Force Research Laboratory, Kirtland AFB, NM

Performer: Capt. Michael Nolette and Capt. Steven Seeley, advised by Maj. Daryl Hauck, AFIT/LAS, (937) 255-7777, ext. 3381, and Dr. Roland Kankey, AFIT/LSP, (937) 255-7777, ext. 3382

Resources:	*FY*	*Dollars*	*Staff-years*
Schedule:	*Start*	*End*	
	Nov 98	Sep 99	

Data Base: *Title:*

Description:

Automation:

Publications: Thesis will be available from Defense Technical Information Center in Winter 1999.

Keywords: Government, Estimating, Weapon Systems, Production, Advanced Technology, Statistics/Regression, CER

AFIT/LAS-10

Title: Implementing an Activity Based Costing System in an Air Force Laboratory Environment

Summary: This research will assess strengths and weaknesses of implementing Activity Based Costing procedures in a laboratory environment, with a specific case analysis of AFRL/DE at Kirtland AFB, NM. Model refinement and a suggested implementation guide for other AFRL directorates are intended research products.

Classification: Unclassified

Sponsor: Air Force Research Laboratories/Directed Energy, Kirtland AFB, NM

Performer:	Capt. Martin Memminger and Lt. Jayson Wrona, advised by Maj. Mark Caudle, AFIT/LAS, (937) 255-7777,ext. 3370, and LtCol Terry Adler, AFIT/LAS, (937) 255-7777, ext. 3313		
Resources:	*FY*	*Dollars*	*Staff-years*
Schedule:	*Start*	*End*	
	Oct 98	Aug 99	
Data Base:	*Title:*		
	Description:		
	Automation:		
Publications:	Thesis will be available from Defense Technical Information Center in Winter 1999.		
Keywords:	Government, Budgeting, Infrastructure, Demonstration/Validation, Overhead/Indirect, Case Study, Method, Study		

Name	Defense Systems Management College
Address	9820 Belvoir Road Building 206, Room 215 Fort Belvoir, VA 22060
Director	Sharon Richardson, (703) 805-4455
Size	Professional: 10 Support: 2 Consultants: 0 Subcontractors: 0
Focus	Cost Analysis, Budget Process, Funds Management
Activity	Number of projects in progress: 1 Average duration of project: Continuing Average number of staff members assigned to a project: 1–2 Average number of staff-years expended per project: 0.3/yr Percentage of effort conducted by consultants: 0% Percentage of effort conducted by subcontractors: 0%

DSMC-1

Title:	Research on Ongoing Acquisition Research (ROAR)
Summary:	ROAR is an on-line and World-Wide Web system available to DoD and university researchers who currently conduct studies on acquisition-related topics such as cost modeling and pricing concerns, engineering and manufacturing practices, industrial base issues, logistics, contracting, commercial practices, acquisition workforce management, and education, etc. Access is available via the ROAR BBS (703-805-2865) and voice (703-271-5988) for those who contribute from their own ongoing study.
Classification:	Unclassified
Sponsor:	Defense Systems Management College and Defense Acquisition University Fort Belvoir, VA 22060 Mr. James Abellera, (703) 805-2525
Performer:	DSMC Faculty

Resources:	*FY*	*Dollars*	*Staff-years*
Schedule:	*Start*	*End*	
	89	Continuing	

Data Base:	*Title:*	
	Description:	ROAR tracks over 2,500 studies around the world.
	Automation:	ROAR data became accessible via the Internet in the second half of CY 1995. The URL for ROAR is: http://www.dsmc.dsm.mil/roar.html.

Publications: New search results are available electronically every week via the ROAR BBS for registered subscribers until their projects are completed.

Keywords: Industry, Government, Data Collection, Data Base

Name	Cost and Requirements Department, Aerospace Corporation
Address	2350 E. El Segundo Blvd. El Segundo, CA 90245 Mail: M4-021, P.O. Box 92957 Los Angeles, CA 90009-2957
Director	Dr. Steven Glaseman
Size	Professional: 15 Support: 1 Consultants: 1,000 Aerospace Corp. Engineers Subcontractors: 0
Focus	Space-system cost modeling and estimating; Relationship between requirements and cost; Cost-risk Analysis; Commercial practices, Statistical issues in cost analysis; Schedule analysis; cost, schedule, performance, design, architecture trade studies.
Activity	Number of projects in process: 7 Average duration of a project: 1 year Average number of staff members assigned to a project: 2 Average number of staff-years expended per project: 1 Percentage of effort conducted by consultants (Aerospace Corp. engineers): 20% Percentage of effort conducted by subcontractors: 0%

AERO-1

Title: Costs of Space, Launch, and Ground Systems

Summary: Historical costs of space, launch, and ground systems, including non-recurring and recurring costs of military and civil satellites and launch vehicles, payloads, launch processing, launch delays, launch failures, software, ground facilities, learning rates, cost overruns.

Classification: Contractor-Proprietary; Government/FFRDC Eyes-Only

Sponsor: The Aerospace Corporation's Internal Research (IR&D) Program

Performer: The Aerospace Corporation
P.O. Box 92957
MS: M4-021
Los Angeles, CA 90009-2957

S. A. Book, (310) 336-8655
E-mail: stephen.a.book@aero.org

Resources:

FY	Dollars	Staff-years
99	$120,000	0.7

Schedule:	*Start*	*End*	
	FY87	None	
Data Base:	*Title:*	Costs of Space, Launch, and Ground Systems	
	Description:	Contractor-Proprietary Historical Costs ("Actuals" Only)	
	Automation:	Excel Spreadsheets	

Publications: "Costs of Space, Launch, and Ground Systems," The Aerospace Corporation, 180 Briefing Charts and Facing Page Text, April 1997.

Keywords: Government; Analysis; Space Systems; EMD, Production; WBS, Risk/Uncertainty, Schedule, Software; Data Collection; Data Base, Study

AERO-2

Title: Small-Satellite Subsystem Cost Model

Summary: Parametric (CER-based) cost model, including cost-risk capability, for estimating the cost of developing and producing a small-satellite bus.

Classification: Different forms of the model are releasable to government organizations (DoD, NASA, NOAA) and to contributors of proprietary cost data on small satellites.

Sponsor: The Aerospace Corporation's Internal Research (IR&D) Program

Performer: The Aerospace Corporation
P.O. Box 92957
MS: M4-021
Los Angeles, CA 90009-2957

T. J. Mosher, (310) 336-1203
E-mail: todd.mosher@aero.org

Resources:	*FY*	*Dollars*	*Staff-years*
	FY99	$80,000	0.4

Schedule:	*Start*	*End*
	FY90	None

Data Base:	*Title:*	Small-Satellite Subsystem Cost and Technical Data Base
	Description:	Proprietary cost and technical data on current generation of small, low-weight, single-purpose, short-lifetime tactical, research, or experimental satellites, including military, civil, commercial, university, and foreign
	Automation:	Excel Spreadsheet.

Publications: "The Aerospace Corporation's Small-Satellite Cost Model", Corporate Briefing, Updated regularly.

Keywords: Government; Estimating; Space Systems; EMD, Production; WBS, Acquisition Strategy, Advanced Technology; Data Collection, Mathematical Modeling, Statistics/Regression; CER, Data Base, Computer Model.

AERO-3

Title: Ground Systems Cost Model

Summary: A joint project of The Aerospace Corporation's Cost and Requirements Department and The MITRE Corporation's Economic and Decision Analysis Center. A Parametric (CER-based) cost model, including cost-risk capability, for estimating the cost of developing and producing ground-system hardware and software, and the costs of operations and

maintenance, including satellite control facilities and equipment, communications equipment, launch processing, and security.

Classification: Releasable to government organizations (DoD, NASA, NOAA) and to contributors of proprietary cost data on ground systems.

Sponsor: The Aerospace Corporation's Internal Research (IR&D) Program.

Performer: The Aerospace Corporation
P.O. Box 92957
MS: M4-021
Los Angeles, CA 90009-2957

L. B. Sidor, (310) 336-1571

Resources:

FY	Dollars	Staff-years
99	$30,000	0.2

Schedule:

Start	End
FY94	None

Data Base:

Title:	Ground Systems Cost and Technical Data Base
Description:	Proprietary cost and technical data on ground-system hardware and software, and the costs of operations and maintenance, including satellite control facilities and equipment, communications equipment, launch processing, and security.
Automation:	Excel Spreadsheet.

Publications: "G-COST: Ground Systems Cost Model", Corporate Briefing, Updated regularly.

"G-Cost 2.0: Satellite Communication Ground Station Cost Model", MITRE Technical Report Draft, December 1998. Awaiting approval for release.

Keywords: Government; Estimating; Space Systems; EMD, Production; WBS, Acquisition Strategy, Advanced Technology; Data Collection, Mathematical Modeling, Statistics/Regression; CER, Data Base, Computer Model.

AERO-4

Title: Concept Design Center

Summary: Central focal point for applying distributed concurrent-engineering methodology, utilizing broad engineering expertise and in-house cost and performance models to produce near-optimal conceptual architectures and designs for space, launch, and ground systems. Allows rapid tradeoffs of performance requirements and life-cycle costs among candidate architectures and designs.

Classification: Unclassified and classified centers exist at The Aerospace Corporation.

Sponsor: The Aerospace Corporation's Internal Research (IR&D) Program and NASA's Jet Propulsion Laboratory, where a similar facility (The "Product Design Center") was built by JPL and Aerospace.

Performer: The Aerospace Corporation
P.O. Box 92957
MS: M4-021
Los Angeles, CA 90009-2957

A. B. Dawdy, (310) 336-6134
V. M. Canales, (310) 336-8350.

Resources:

FY	Dollars	Staff-years
99	$590,000	3.0

Schedule:	*Start*	*End*	
	FY97	None	
Data Base:	*Title:*	Existing Corporate Cost and Technical Data Bases	
	Description:	Proprietary cost data and technical engineering and physics relationships among design and performance capabilities of space launch, and ground systems. Uses concurrent engineering methodology.	
.	*Automation:*	Excel Spreadsheets transferred among 20 Linked PCs.	

Publications: "The Concept Design Center", Corporate Briefing, Updated regularly.

Keywords: Government; Analysis; Space Systems; Concept Development; WBS, Acquisition Strategy, Advanced Technology; Mathematical Modeling, Computer Model.

AERO-5

Title: Instrument Cost Model

Summary: Parametric (CER-based) cost model, including cost-risk capability, for estimating costs of developing and producing on-board instruments of various kinds for space applications.

Classification: Different forms of the model will be releasable to government organizations (DoD, NASA, NOAA) and to contributors of proprietary data. Otherwise, the model will not be generally available.

Sponsor: NASA's Jet Propulsion Laboratory and The Aerospace Corporation's Internal Research (IR&D) program.

Performer: The Aerospace Corporation
P.O. Box 92957
MS: M4-021
Los Angeles, CA 90009-2957

J. J. Muhle, (310) 336-2672

Resources:	*FY*	*Dollars*	*Staff-years*
	FY99	$20,000	0.1

Schedule:	*Start*	*End*	
	FY99	None	
Data Base:	*Title:*	Instrument "Box-Level" Cost and Technical Data Base	
	Description:	Proprietary cost and technical data on current generation of instruments for space applications	
.	*Automation:*	Excel Spreadsheet	

Publications: None as yet.

Keywords: Government; Estimating; Space Systems; EMD, Production; WBS, Advanced Technology; Data Collection, Mathematical Modeling, Statistics/Regression; CER, Data Base, Computer Model.

AERO-6

Title: Production Cost Anthology

Summary: A compendium of production cost theory and mathematical formulations of it that have been used in estimating costs of space systems.

Classification: Intended for public release.

Sponsor: The Aerospace Corporation's Engineering Methods Research Program

Performer:	The Aerospace Corporation
	P.O. Box 92957
	MS: M4-021
	Los Angeles, CA 90009-2957

J. C. Latta, (310) 336-2503
E-mail: jean.latta@aero.org

Resources:	FY	Dollars	Staff-years
	99	$30,000	0.15

Schedule:	Start	End
	FY99	FY00

Data Base:	Title:	None
	Description:	N/A
.	Automation:	N/A

Publications: Forthcoming report.

Keywords: Government; Estimating; Space Systems; Production; Manufacturing, Fixed Costs, Variable Costs, Production Rate; Mathematical Modeling, Cost/Production Function, Statistics/Regression; Mathematical Model, Cost Progress Curve, Study

AERO-7

Title: Space-based Optical Instrument Cost Model

Summary: Parametric (CER-based) cost model, including cost-risk capability, for estimating costs of developing and producing on-board optical instruments for space applications

Classification: Different forms of the model will be releasable to government organizations (DoD, NASA, NOAA) and to contributors of proprietary data. Otherwise, the model will not be generally available.

Sponsor: NASA Langley Research Center

Performer:	The Aerospace Corporation
	P.O. Box 92957
	MS: M4-021
	Los Angeles, CA 90009-2957

N. Y. Lao
E-mail: norman.lao@aero.org.

Resources:	FY	Dollars	Staff-years
	FY99	$75,000	

Schedule:	Start	End
	FY99	Not yet determined

Data Base:	Title:	Optical Instrument Cost and Technical Data Base
	Description:	Proprietary cost and technical data on current generation of optical instruments for space applications
.	Automation:	Excel Spreadsheet

Publications: None as yet.

Keywords: Government; Estimating; Space Systems; EMD, Production; WBS, Advanced Technology; Data Collection, Mathematical Modeling, Statistics/Regression; CER, Data Base, Computer Model

Name	The MITRE Corporation The Economic and Decision Analysis Center (EDAC)
Address	1820 Dolley Madison Boulevard McLean, VA 22102
Director	Mr. Raymond Haller, (703) 883-7196
Size	Professional: 120 Support: 8 Consultants: 0 Subcontractors: 0
Focus	Cost and applied economic analysis, decision analysis, acquisition analysis, program management, risk management and analysis, life cycle management, logistics engineering, business process reengineering, business and technology case analysis, and information services and technology benchmarking.
Activity	Number of projects annually: 180 Average duration of a project: 6 months Average number of staff members assigned to a project: 2 Average number of staff-years expended per project: 0.5 Percentage of effort conducted by consultants: 0% Percentage of effort conducted by subcontractors: 0%

MITRE-1

Title:	C4ISR Investment Strategies
Summary:	This project is developing a research roadmap for improving MITRE's methods, tools, databases, and guidance for C4ISR investment strategy decisions.
Classification:	Unclassified
Sponsor:	MITRE IR&D
Performer:	MITRE

Resources:

FY	Dollars	Staff-years
99	$300,000	

Schedule:

Start	End
Oct 98	Sept 00

Data Base:	*Title:*	US Weapon Systems and Cost Database
	Description:	A database of US weapon systems technical characteristics and costs to support C4ISR mission assessment and investment studies
	Automation:	Excel initially with a migration to Access
Publications:	Final reports will be written	

Keywords: Government, Analysis, Forces, Weapon Systems, Mathematical Modeling, Economic Analysis

MITRE-2

Title: Integrating Total Ownership Cost Methods with IT Investment Strategies

Summary: This research will bring consideration of the Total Ownership Cost (TOC) into the decision criteria of an IT investment strategy. A TOC methodology, and standard, will be developed that looks to leverage commercial and DOD life cycle management best practice into an enterprise's IT investment and management strategy.

Classification: Unclassified

Sponsor MITRE IR&D

Performer: MITRE

Resources:

FY	Dollars	Staff-years
99	$331,000	

Schedule:

Start	End
Oct 98	Sept 00

Data Base: None

Publications: Final report will be written

Keywords: Industry, Estimating, Infrastructure, Data Collection, Survey, Case Study, Method

MITRE-3

Title: Integrating the Balanced Scorecard with Decision Analytics to Support IT Investment Decisions

Summary: MITRE and sponsors currently use the Balanced Scorecard approach (Kaplan and Norton, HBS, 1996) as a descriptive tool for understanding historical enterprise or project well-being. The objective of this research is to determine how the Balanced Scorecard can be enhanced with decision analytic methodologies to more effectively support sponsor CIO's in IT investment decision-making.

Classification: Unclassified

Sponsor MITRE IR&D

Performer: MITRE

Resources:

FY	Dollars	Staff-years
99	$125,000	

Schedule:

Start	End
April 99	Sept 00

Data Base: None

Publications: Final report will be written

Keywords: Industry, Infrastructure, Data Collection, Survey, Case Study, Computer Model, Method

Name	RAND Corporation Note: There is no formal cost research organization at RAND. Cost analysts are members of the management science group and, like all other research staff members, are assigned to projects in the various divisions (Project Air Force, Arroyo Center, National Defense Research Institute, other domestic).
Address	1700 Main Street Santa Monica, CA 90407-2138
Director	Mr. Fred Timson, (310) 393-0411, ext. 7802
Size	Professional: 11 Support: 0 Consultants: 0 Subcontractors: 0
Focus	Force Costing, O&S Costing, System Costing, Space Systems
Activity	Number of projects in process: 3 Average duration of a project: 1–2 year Average number of staff members assigned to a project: 1–3 Average number of staff-years expended per project: 0.5 to 4 Percentage of effort conducted by consultants: 0 % Percentage of effort conducted by subcontractors: 0 %

RAND-1

Title:	Force Structure and Support Infrastructure Costing for Program Analysis and Evaluation
Summary:	The objective of this research is to design, develop, and implement an automated system for costing force structure and related changes in defense programs. The project includes recommendations for developing a centralized database within PA&E to support the costing system
Classification:	Unclassified
Sponsor:	OD(PA&E)
Performer:	RAND
	Adele Palmer, (310) 393-0411 (Co-PI); Jim Bigelow, (310) 393-0411 (Co-PI); Manuel Carrillo, (310) 393-0411; Gary Massey, (310) 393-0411

Resources:	*FY*	*Dollars*	*Staff-years*

Schedule:	*Start*	*End*
	Dec 90	Sep 98

Data Base:	*Title:*
	Description:
	Automation:
Publications:	*The Force Structure Costing Project: An Introductory Briefing,* WD-5252-PA&E, Adele Palmer, December 1990, Unclassified (distribution of RAND WDs controlled by sponsor)
	Using the Force and Support Costing System: An Introductory Guide and Tutorial; MR-991-OSD; James Bigelow, Manuel Carrillo, H. G. Massey, and Adele Palmer; Forthingcoming.
Keywords:	Government, Estimating, Analysis, Programming, Forces, Expert System, Method, Computer Model

RAND-2

Title:	The Cost of Future Military Aircraft: Historical Cost Estimating Relationships and Cost Reduction Initiatives
Summary:	The project will update three previous RAND studies involving the cost of advanced airframe materials, airframe cost estimating relationships based on historical data, and Very High Speed Electronics avionics costs. It will also assess how new industrial and management practices affect aircraft costs, survey and update operating and support cost estimating methodologies, and update electronics, propulsion, and other subsystem cost estimating methodologies. [This is a new task in FY 1998 and incorporates the Advanced Airframe Structural Materials task reported as RAND-3 in the 1997 catalog.]
Classification:	Unclassified
Sponsor:	SAF/AQ/FM and OD(PA&E)
Performer:	RAND
	Points of Contact: Dr. Michael Kennedy (310) 393-0411 Ext. 7650; Jack Graser (202) 296-5000 Ext. 5293

Resources:	*FY*	*Dollars*	*Staff-years*
	98-99		6 MTS

Schedule:	*Start*	*End*
	Jan 98	Continuing

Data Base:	No separate database anticipated. Reports will have CERs/adjustment factors in the body of the text, with details in appendices.
Publications:	Separate RAND reports anticipated for each major area.
Keywords:	Industry, Estimating, Airframe, Propulsion, Electronics/Avionics, EMD, Production, Operations and Support, Engineering, Manufacturing, Material, Acquisition Strategy, Automation, Advanced Technology, Data Collection, Survey, Statistics/Regression, Method, CER, Study

RAND-3

Title:	Understanding the Sources of Cost Growth in Weapon Systems
Summary:	Building on past research, the objectives are to (1) continuously update RAND's cost growth database and (2) identify and evaluate factors affecting cost growth.
Classification:	Unclassified
Sponsor:	OD(PA&E)

Performer:	RAND		
	Fred Timson, (310) 393-0411; Rob Leonard, (310) 393-0411		
Resources:	*FY*	*Dollars*	*Staff-years*
Schedule:	*Start*	*End*	
	Jan 91	Continuing	

Data Base:	*Title:*	Defense System Cost Performance Database
	Description:	Cost growth histories and assorted program data on 244 weapon systems through December 1994
	Automation:	PC (Excel)

Publications: *The Defense System Cost Performance Database: Cost Growth Analysis Using SARs,* MR-625-OSD, Jarvaise, Drezner, Norton, 1996, Unclassified

Keywords: Government, Analysis, Risk/Uncertainty, Data Collection, Data Base, Study

Name	Institute for Defense Analyses
Address	1801 N Beauregard Street Alexandria, VA 22311
Director	Dr. Stephen J. Balut, (703) 845-2527, E-mail: sbalut@ida.org
Size	Professional: 45 Support: 4 Consultants: 40 Subcontractors: 1
Focus	Cost of Weapon Systems, Forces and Operation
Activity	Number of projects in process: 45 Average duration of a project: 1 year Average number of staff members assigned to a project: 2–4 Average number of staff-years expended per project: 2 Percentage of effort conducted by consultants: 30% Percentage of effort conducted by subcontractors: 2%

IDA–1

Title: Defense Programming Database

Summary: This task is to analyze and document the requirements, recommend improvements and assist with the implementation of Phase II of the Defense Programming Database (DPD). The DPD and its associated databases are currently used to provide senior management and their staffs with the information necessary to make informed program decisions. The primary database used is the Future Years Defense Program (FYDP). Initially, support was provided to affect the transfer of responsibility for updating the FYDP from the Comptroller to PA&E. Now, with that task completed, IDA will:

1. Support PA&E for the continuing FYDP improvement, Phase II effort, with both technical and analytical support necessary to effect the new initiatives of

   - POM-less Program Review

   - Rationalizing Programming and Budget Data, and

   - Harmonizing OSD and Service program data.

2. In support of POM-less Program Review, recommend changes to the Service and Agency data submissions processed by FUSE to update the FYDP. These changes are expected to reduce the data that are requested by the POM Preparation Instructions (PPI) and are collected through the Advanced POM Preparation System (APPS). Suggestions for modification to the data registry and data update systems will be made as appropriate.

3. In support of the task to "Rationalize Program and Budget Data" assist the established working groups to analyze and compare the data displays and requirements of the PPI, FYDP and the FMR. Recommendations will be made for modifying the collection processes to minimize the redundancy caused by separate

submissions. In some cases it is expected that the data request will be modified to include a lower level of detail for one requirement in order to satisfy multiple user requirements with a single data call.

4. Provide the analytical support to PA&E for its initiative to "Harmonize OSD and Service data." The analysis will examine the data requirements of the DPD and relate those requirements to the Service native databases. The goal will be to meet the data requirements of the DPD without placing requirements on the Services to conform to the exact data structure of the DPD. The work will be accomplished in close coordination with the data standardization effort.

5. Make recommendations to improve data standardization across the DPD user community. Analyses will be performed to determine the level of data necessary, (e.g., "budget activity" and "elements of expense") to improve the analytical potential for the user community. Recommendations for modifications and enhancements to the data registry system for standard use throughout the DoD community will be made.

A DoD task force and the sponsor will approve products prior to implementation.

Classification:	Unclassified work dealing with a classified database
Sponsor:	OD(PA&E)
	1800 Defense Pentagon
	The Pentagon, Rm. 2C282
	Washington, DC 20301-1800
	Dr. Bryan Jack, (703) 693-7827
Performer:	IDA
	Mr. Paul Goree, (703) 845-2238

Resources:

FY	Dollars	Staff-years
95	$340,000	2.2
96	$550,000	3.5
97	$475,000	2.9
98	$325,000	2.0
99	$500,000	2.5

Schedule:

Start	End
Jun 95	May 00

Data Base: *Title:*

Description:

Automation: FYDP, APPS, DPD, MDAP

Publications: TBD

Keywords: Government, Programming, Forces, Infrastructure, Manpower/Personnel, Life Cycle, Automation, Data Collection, Data Base

IDA-2

Title: Defense Resource Management Cost Model

Summary: Develop a computer model that permits small—to medium-size countries to estimate the funding requirements of alternative, multi-year force compositions. The model provides cost estimates that are sensitive to the following force characteristics: numbers and types of combat and support units, numbers and types of equipment, unit manning, peacetime training levels (OPTEMPO), equipment modernization, and WRM inventory changes. The model can be tailored to use the currencies, cost accounts, personnel classifications, and a wide variety of force and equipment configurations of any military force. Cost modeling provides the ability to estimate the direct and indirect personnel costs, fixed and

variable operating costs, and multi-year procurement funding. Users have convenient access to all characteristics of the model so they can adjust the model's use to their own practices. Effort includes travel to foreign countries to implement the model as part of the Partnerships for Peace program.

Classification:	Unclassified
Sponsor:	OD(PA&E), Regional Assessment and Modeling Division The Pentagon, Rm. 2C270 Washington, DC 20301
	COL Gary Morgan, (703) 697-6415
Performer:	IDA
	Mr. James L. Wilson, (703) 845-2469

Resources:

FY	Dollars	Staff-years	FY	Dollars	Staff-years
93	$ 25,000	0.2	97	$1,000,000	6.8
94	$ 288,000	1.9	98	$1,100,000	6.9
95	$ 550,000	3.5	99	$1,200,000	7.0
96	$1,000,000	6.8			

Schedule:

Start	End
Sep 93	Indefinite

Data Base:	None
Publications:	DRMM Cost Modules Users Manual
Keywords:	Government, Programming, Forces, Life Cycle, Fixed Costs, Variable Costs, Mathematical Modeling, Computer Model

IDA-3

Title:	FYDP Tracking and Analysis System
Summary:	This task strengthens the DoD's capability to apply FYDP data when conducting analyses in support of PPBS processes through the development of a system of computer-based analytical tools. In FY 1995 the task was changed to support the development of a new operating environment for the IDA Force Acquisition Cost System series of computer-based models.
Classification:	Secret
Sponsor:	OD(PA&E), Force and Infrastructure Cost Analysis Division The Pentagon, Rm. 2D278 Washington, DC 20301
	Mr. Al Leung, (703) 697-4311
Performer:	IDA
	Mr. Timothy Graves, (703) 845-2339

Resources:

FY	Dollars	Staff-years
93	$ 85,000	0.6
94	$150,000	1.2
97	$ 25,000	0.2

Schedule:

Start	End
Jul 93	Sep 98

Data Base:	*Title:*	FYDP
	Description:	FYDP type data for all DoD programs to include Program Element
	Automation:	PC in FoxPro, Visual Basic, Excel, and Visual Basic

IDA-4

Title: Contingency Operations Support Tool (COST)

Summary: The initial estimates of the cost to support military operations in Bosnia (Operation Joint Endeavor (OJE)) proved to be significantly low. The DoD Deployment Model, used to estimate these costs, had been successfully used to estimate costs for other contingency operations in Haiti and Somalia. Cost estimates derived in this manner for the Bosnia operations were in error by more than a factor of two. The first phase of this task examined the initial and subsequent estimates in an attempt to understand why the estimates erred by this amount. Problems were observed in three areas: (1) estimating; (2) operations or policy changes; and (3) not estimated. In this phase of the task, IDA will develop the Contingency Operation Support Tool (COST) for the OSD Comptroller to aid the analyst in the preparation of both planning and detailed estimates for future contingencies. A standard cost breakdown structure has now been approved and will be used for estimating and reporting costs for contingency operations. A logical data model has been developed and a physical model implemented to facilitate the construction of an estimate. COST is being developed using COTS. The concept of operation makes the application and its data available to approved users via the SIPRNet. Initial or planning estimates will be prepared by the OSD (C) and passed to the Services and Agencies where a more detailed estimate can be made. Service and Agency estimates will be passed to OUSD(C) for inclusion in the official estimate for the contingency. Trial periods will be established to verify model operations. A task goal is to secure the endorsement by the OUSD(C), Joint Staff, and Military Departments to use the application for cost estimates during all contingency operations.

Classification: Unclassified

Sponsor: OUSD (Comptroller)
1800 Defense Pentagon
The Pentagon, Rm. 3D868
Washington, DC 20301-1800

Ms. Ann Reese, (703) 697-9317, ext. 19

Performer: IDA

Mr. Paul Goree, (703) 845-2238

Resources:

FY	Dollars	Staff-years
97	$450,000	2.7
98	$700,000	4.1
99	$300,000	1.5

Schedule:

Start	End
Dec 97	Mar 00

Data Base: *Title:* "COST"

Description: The COST database is comprised of separate physical databases the are entitled, "Cost Systems, Cost Factors and Cost Standards, and Cost Contingencies.

Automation: Design will use COTS and desktop computers, possibly using Web technology.

IDA-5

Title:	Reducing Defense Infrastructure Costs

Summary:
This project is designed to find better strategies for managing infrastructure, and thus reducing infrastructure costs. The initial focus is on installation support costs. Service initiatives for developing benchmarks involving the costs and output of different installation support services are being examined. Private sector and other governmental practices are also being studied. The goal is to recommend adoption of an information system and a set of metrics that will allow decision-makers more insight into how to provide the needed installation support at a reduced cost.

Classification: Unclassified

Sponsor: Director, Program Analysis and Evaluation
The Pentagon, Rm. 3E836
Washington, DC 20301

LTC Keith Casperson, (703) 697-4311

Performer: IDA

Mr. Stanley A. Horowitz, (703) 845-2450

Resources:

FY	Dollars	Staff-years
98	$600,000	3.2
99	$300,000	1.6

Schedule:

Start	End
Feb 98	Dec 00

Data Base: TBD

Publications: TBD

Keywords: Government, Analysis, Policy, Infrastructure, Facilities, Overhead/Indirect, Data Collection, Cost/Production Function, Study

IDA-6

Title: Portfolio Optimization Feasibility Study

Summary:
This study investigates the feasibility of applying optimization technology for defense acquisition planning purposes. Specifically, we are focusing on exploring the feasibility of using optimization technology to develop a Master Production Schedule for approximately 80 ACAT1 systems.

Classification: Unclassified

Sponsor: USD (A&T)

Dr. Nancy Spruill
Mr. Phil Rodgers (COTR)

Performer: IDA: Dr. Charles Weber (Project Leader); Dr. Maria Borga; Mr. David Drake; Dr. Matthew Goldberg; Dr. David Hunter; Dr. Tom Frazier; Mr. Ron Porten; Dr. Stephen Balut

Resources:

FY	Dollars	Staff-years
98	$90,000	0.5
99	$450,000	2.4

Schedule:

Start	End
Jun 98	continuing

Data Base: None:

Publications: TBD

IDA-7

Title: Force Aging

Summary: This task has four subtasks: (1) developing data bases and an aging model to assess the effects of aging force structure during the period of the Defense Program Projection; (2) performing case studies of selected weapon systems (i.e., F-16 Service Life and Resource Requirements) and types of weapon systems (i.e., vehicles and Army helicopters); (3) assessing the effects of re-engineering the B-52H; and (4) developing a facilities aging model. Relative to the data bases and tools, the initial focus has been on collecting data on equipment inventories and creating a capital stock data base. The primary case study has been on the F-16, assessing service life and resource requirements needed until the Joint Strike Fighter deploys. The next class of system to be reviewed will be tracked vehicles.

Classification: Secret

Sponsor: OD(PA&E) and USD(A&T)

Performer: IDA

Mr. Waynard C. Devers, (703) 845-2252

Resources:

FY	Dollars	Staff-years
94	$ 53,000	0.4
95	$200,000	1.3
96	$310,000	2.0
97	$255,000	1.6

Schedule:

Start	End
Jan 95	Jun 99

Data Base: *Title:*

Description: Equipment data bases, including inventory, age, service life, and operating tempo by serial number for Army, Navy, Marine Corps and Air Force aircraft, combat vehicles, and selected trucks; and capital stock data base, for selected equipment. Facilities data base, including inventories by facilities categories, age, installation, plant replacement value, target replacement life, and, for selected facilities condition, and readiness codes.

Automation: Equipment Data Base—FoxPro, Capital Stock Data Base—Excel, Facilities Data Base—FoxPro

Publications: Multiple papers providing the results of case studies.

IDA-8

Title: Assessing Defense Funding Supporting Readiness

Summary: Maintaining the readiness of U.S. defense forces is one of the highest budgetary priorities of the Department of Defense. In order to do this, analysts and senior defense executives must be able to evaluate defense budgets and the FYDP to determine if they provide adequate funding for the desired level of readiness. A major portion of this research is identifying and quantifying the accounting changes that have occurred in DoD funding policies over the past two decades. The research also has developed a methodology for identifying the portions of the defense program that have the most impact on readiness

and alternative metrics that describe changes in defense force size. Equations estimating the appropriate amount of readiness spending for a given force size have been developed and estimates of the relationships between readiness spending and readiness levels have been made.

Classification: Secret

Sponsor: Deputy Under Secretary of Defense (Readiness)
Director for Readiness and Training
The Pentagon, Rm. 1C757
Washington, DC 20301

Mr. Joseph Angello, (703) 693-5587

Performer: IDA

Mr. Stanley A. Horowitz, (703) 845-2450

Resources:

FY	Dollars	Staff-years
95	$300,000	1.9
96	$400,000	2.5
97	$350,000	2.2

Schedule:

Start	End
Oct 94	Oct 99

Data Base: FYDP Funding Adjustments

Publications: "Normalizing the Future Years Defense Program for Funding Policy Changes," Paper P-3194, Institute for Defense Analyses, January 1997.

Keywords: Government, Programming, Forces, Acquisition Strategy, Operations and Support, Mathematical Modeling, Computer Model

IDA-9

Title: Force Modernization Metrics

Summary: In building the Defense Program Projection, which looks at prospective defense spending twelve years beyond the end of the FYDP, tools are needed to present ways in which the force will be evolving. Building such tools is the central job of this task. In addition to tracking force age and capital asset value, attention will be devoted to developing indicators of capability for various missions and classes of systems to allow projections of capability to be made for alternative defense programs. The recapitalization of defense facilities will also be addressed.

Classification: Secret

Sponsor: Deputy Director (General Purpose Programs) Program Analysis and Evaluation
The Pentagon, Rm. 2E330
Washington, DC 20301

Mr. Will Jarvis, (703) 697-9132

Performer: IDA

Mr. Stanley A. Horowitz, (703) 845-2450

Resources:

FY	Dollars	Staff-years
97	$340,000	2.2
98	$360,000	2.3
99	$175,000	1.1

Schedule:

Start	End
Oct 96	Dec 00

| *Data Base:* | Equipment inventories over time and potential capability measures. Age and plant replacement value of facilities by type and location. |

Publications: TBD

Keywords: Government, Analysis, Review, Policy, Programming, Forces, Life Cycle, Data Collection, Time Series, Data Base, Computer Model, Study

IDA-10

Title: FYDP Related Studies

Summary: This task supports the conduct of studies to improve the existing FYDP-related taxonomy of missions and infrastructure, to normalize prior years data for funding policy changes, and to maintain and utilize previously developed models for FYDP-related analyses.

Classification: Secret

Sponsor: OD(PA&E), Force and Infrastructure Cost Analysis Division
The Pentagon, Rm. 2D278
Washington, DC 20301

Mr. Lance Roark, (703) 697-4311

Performer: IDA

Mr. Ronald E. Porten, (703) 845-2145

Resources:

FY	Dollars	Staff-years
92	$ 40,000	0.3
93	$220,000	2.4
95	$130,000	1.0
96	$150,000	1.2
99	$250,000	1.5

Schedule:

Start	End
Sep 92	Oct 01

Data Base:

| *Title:* | AMORD, FYDP |
| *Description:* | FYDP type data for all DoD programs to include Defense Mission Categories, Program Element |

Automation:

Publications: TBD

Keywords: Government, Programming, Forces, Mathematical Modeling, Computer Model

IDA-11

Title: Non-major Procurement Funding

Summary: The objective of this task is to investigate available procurement data to determine the adequacy of non-major procurement funding in the FYDP and Defense Program Projection (DPP) periods and to assess the completeness and the fidelity of the MDAP supplemental data submissions. High-level relationships between non-major procurement funding levels and other FYDP funding/manpower levels have been analyzed using FY98 PB DPP data. Note: the Major Defense Acquisition Programs (MDAP) Reporting task was merged with this task in FY98.

Classification: Secret

Sponsor: OUSD(A&T)/API/AR
The Pentagon, Rm. 1E474
Washington, DC 20301

Mr. Steve Dratter, (703) 697-8020

| *Performer:* | IDA |
| | Mr. David A. Drake, (703) 845-2573 |

| *Resources:* | *FY* | *Dollars* | *Staff-years* |
| | 97 | $50,000 | 0.4 |

| *Schedule:* | *Start* | *End* |
| | Jan 97 | Sep 98 |

Data Base:	*Title:*	Min_PROC data
	Description:	FYDP type data for all DoD Procurement programs to include Defense Mission Categories, Program Element, Procurement Annex Line Item for all procurement funding that is not in the DPP detail.
	Automation:	FoxPro, dBASE

Publications: TBD

Keywords: Government, Programming, Forces, Acquisition Strategy, Operations and Support, Mathematical Modeling, Statistics/Regression, Computer Model

IDA–12

Title: Major Defense Acquisition Program (MDAP) Analysis and FYDP Support

Summary: This objective of this task is to investigate ways to improve the effectiveness of OUSD(A&T) participation in the PPBS process. The goal of this task is to provide more accurate and timely MDAP funding data to the acquisition community. This task will improve the process by which the acquisition community is made aware of funding information that is vital to the decision making process. It will assist the Under Secretary of Defense for Acquisition and Technology in his primary responsibilities to safeguard acquisition investment resources.

Classification: Secret

Sponsor: OUSD(A&T)/API/AR
The Pentagon, Rm. 3E1025
Washington, DC 20301

Mr. Steve Dratter, (703) 697-8020

| *Performer:* | IDA |
| | Mr. David A. Drake, (703) 845-2573 |

| *Resources:* | *FY* | *Dollars* | *Staff-years* |
| | 99 | $75,000 | 0.6 |

| *Schedule:* | *Start* | *End* |
| | Jan 99 | Sep 99 |

Data Base:	*Title:*	MDAPs
	Description:	FYDP type data for all DoD RDT&E and Procurement programs to include Defense Mission Categories, Program Element, Procurement Annex Line Item, MDAP Identifier, and OSD OPRs.
	Automation:	FoxPro, dBASE

Publications: TBD

Keywords: Government, Programming, Forces, Acquisition Strategy, Operations and Support, Mathematical Modeling, Statistics/Regression, Computer Model

IDA-13

Title: Program Objective Memorandum (POM) Major Defense Acquisition Programs (MDAP) Reporting

Summary: The objective of this task is to examine the Program Element and Procurement Annex Line Item (PE-PALI) Crosstrack and RDT&E project level data reporting requirements to ensure all Major Defense Acquisition Program (MDAP) reporting requirements can be met with these data. Modifications to the reporting requirements will be proposed as necessary. Programs will be developed to process the raw data into usable formats, check for errors, and build MDAP funding profiles. MDAP reporting in the FY98 PB supplemental submissions have been analyzed and FoxPro programs to process the raw PE-PALI Crosstrack and RDT&E project level data into desired formats have been written.

Classification: Secret

Sponsor: OUSD(A&T)/API/AR, Acquisition Resources
The Pentagon, Rm. 1E474
Washington, DC 20301

Mr. Steve Dratter, (703) 697-8020

Performer: IDA

Mr. David A. Drake, (703) 845-2573

Resources:

FY	Dollars	Staff-years
97	$25,000	0.2

Schedule:

Start	End
Jan 97	Sep 98

Data Base:

Title: MDAPs

Description: FYDP type data for all DoD RDT&E and Procurement programs to include Defense Mission Categories, Program Element, Procurement Annex Line Item, and MDAP Identifier.

Automation: FoxPro, dBASE

Publications: None

Keywords: Government, Programming, Forces, Acquisition Strategy, Operations and Support, Mathematical Modeling, Statistics/Regression, Computer Model

IDA-14

Title: Financial Databases of Defense Manufacturers

Summary: IDA has been collecting overhead and related business data on several defense companies since the early 1980s. IDA uses the data to develop statistical models that estimate future total overhead costs and its fixed and variable components by individual company. The data have also been used to analyze other DoD procurement policies, such as profit, progress payments, and reimbursement of contractor IR&D/B&P. This effort involves updating the financial databases and statistical models of six companies and establishing a new database for one company. These data will be structured to ensure consistency with earlier IDA reports and current company accounting procedures. In addition, IDA is developing an automated database for storage, retrieval, and presentation of all the data to facilitate the analytical requirements of OD Cost Analysis Improvement Group (CAIG).

Classification: Unclassified, Proprietary

Sponsor:	OD(PA&E)
	Weapon Systems Cost Analysis Division
	The Pentagon, Rm. 2C310
	Washington, DC 20301

Mr. Gary Pennett, (703) 695-7282

| Performer: | IDA |

Mr. John Cloos, (703) 845-2506

| Resources: | FY | Dollars | Staff-years |
| | 96 | $100,000 | |

| Schedule: | Start | End |
| | 94 | 99 |

| Data Base: | Normalized Contractor Account Pools |

| Publications: | Numerous company reports and studies. |

| Keywords: | Industry, Estimating, Analysis, Aircraft, Airframe, EMD, Production, Overhead/Indirect, Manufacturing, Fixed Costs, Variable Costs, Data Collection, Survey, Economic Analysis, Statistics/Regression, Data Base |

IDA-15

| Title: | Economic Drivers of Defense Overhead Costs |

| Summary: | The objective of this task is to identify the economic and regulatory factors that drive the overhead costs charged by defense firms. A theoretical model of overhead costs from an economic framework will be developed. The model will be used to analyze the relationship of economic factors and DoD regulations on contractor overhead costs under current business practices. The model will also assess how changes in DoD regulations impact the balance of economic forces. |

| Classification: | Unclassified/Company Proprietary |

Sponsor:	OD(PA&E)
	The Pentagon, Rm. 1D311
	Washington, DC 20301

Ms. Kristine Kolesar, (703) 697-2999

| Performer: | IDA |

Dr. Thomas Frazier, (703) 845-2132
Dr. Maria Borga, (703) 845-2448524
Dr. Bill Rogerson, (847) 491-8484

Resources:	FY	Dollars	Staff-years
	95	$250,000	
	96	$250,000	

| Schedule: | Start | End |
| | Apr 95 | Sep 99 |

Data Base:	Title:	IDA's Defense Contractor Overhead Data Base, Contractor Cost Data Reports
	Description:	
	Automation:	TBD

| Publications: | Renegotiation of Fixed Price Contracts on the F-16 Program, IDA Paper P-3286, December 1996. |

| Keywords: | Industry, Government, Estimating, Overhead/Indirect, Economic Analysis, Study |

IDA-16

Title:	Defense Economic Planning and Projection Systems (DEPPS)
Summary:	Maintain the currency of the Defense Translator within DEPPS by periodically updating the various sections of the translator associated with the appropriations accounts. The Defense Translator accounts for the distribution of defense spending among the industries producing the goods and services that DoD buys, and describes the commodity composition of defense demands.
Classification:	Unclassified
Sponsor:	OD(PA&E)/RA/EARPD The Pentagon, Rm. 2D300 Washington, DC 20301 Mr. Paul Dickens, (703) 697-2999
Performer:	IDA Dr. Thomas Frazier, (703) 845-2132 Mr. Jeff Card, (703) 845-2212

Resources:

FY	Dollars	Staff-years
85	$122,000	1.0
87	$182,000	1.5
88	$ 40,000	0.3
90	$ 75,000	0.6
92	$ 60,000	0.5
93	$ 80,000	0.7
94	$160,000	1.1
97	$ 30,000	0.2
98	$ 30,000	0.2
99	$ 30,000	0.2

Schedule:

Start	End
Jul 85	Dec 98

Data Base:	N/A
Publications:	*A Comparison of the DEIMS and the Department of Commerce Translator Vectors*, IDA Paper P-2647, T. P. Frazier, S. K. Welman, and R. H. White, March 1993, Unclassified. *A User's Manual for the Revised Defense Translator Model*, IDA Document D-796, T. P. Frazier and J. B. Tate, June 1990, Unclassified. *The Revised Defense Translator*, IDA Paper P-2141, T. P. Frazier, C. G. Campbell, and R. T. Cheslow, October 1989, Unclassified.
Keywords:	Industry, Government, Analysis, Budgeting, Mathematical Modeling, Economic Analysis, Study

IDA-17

Title:	Cost of Stealth
Summary:	The objective of this task is to estimate the cost of obtaining signature reduction for tactical aircraft through (1) adaptation of experiences gained by accomplished programs; and (2) technologies that will contribute to reductions in cost or signature in the future.
Classification:	Top Secret/Proprietary Information/Special Access

Sponsor:	USD(A&T)
	S&TS/AW
	The Pentagon, Rm. 3E1081
	Washington, DC 20301

Mr. Mutzelburg, (703) 695-0525

Performer: IDA

Dr. J. R. Nelson, (703) 845-2571
Mr. B. Harmon, (703) 845-2501
Mr. W. Devers, (703) 845-2252
Dr. R. Bontz, (703) 845-2240

Resources:

FY	*Dollars*	*Staff-years*
prior	$500,000	2.8
99	$150,000	0.8

Schedule:

Start	*End*
Oct 96	Continuing

Data Base: *Title:*

Description:

Automation:

Publications: TBD

Keywords: Government, Estimating, Analysis, Aircraft, EMD, Production, Operations and Support, Schedule, Data Collection, Data Base, Method

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IDA-18

Title: Affordable Multi-Missile Manufacturing (AM3)

Summary: IDA will support DARPA/DoD evaluation of missile industry cost reduction initiatives to be submitted in the form of Integrated Portfolio Benefit Analyses. As part of this support, IDA will provide guidance to the industry teams related to analytical ground rules and methods. IDA will comment on the realism of the proposed savings and, where appropriate, recommend adjustments. Summarized findings will be presented as a report, and will be used in the award of Phase III Factory Demonstrations.

Classification: Unclassified

Sponsor: Defense Advanced Research Projects Agency
3701 North Fairfax Drive
Arlington, VA 22203-1714

Dr. Bill Scherun, (703) 696-2224

Performer: IDA

Dr. Thomas P. Frazier, (703) 845-2132

Resources:

FY	*Dollars*	*Staff-years*
96	$200,000	1.25
97	$200,000	1.25
98	$325,000	2.25

Schedule:

Start	*End*
Nov 95	Sep 00

Data Base: *Title:*

Description:

Automation:

IDA-19

Title: Technical and Schedule Risk Assessments for Tactical Aircraft Programs

Summary: This task supports Air Warfare/Strategic and Tactical Systems in providing independent program assessments of technical and schedule risks for tactical aircraft and missiles to the OIPT (Overarching Integrated Product Team) for DAB milestone reviews. This is a continuing project.

Classification: Secret/Proprietary Information

Sponsor: USD(A&T), S&TS/AW
The Pentagon, Rm. 3E1081
Washington, DC 20301

Mr. Dean Gissendanner, (703) 695-7036

Performer: IDA

Dr. J. R. Nelson, (703) 845-2571
Mr. Bruce Harmon, (703) 845-2501

Resources:

FY	Dollars	Staff-years
prior	$500,000	2.8
99	$ 75,000	0.4

Schedule:

Start	End
Feb 92	Continuing

Data Base: N/A

Publications: TBD

Keywords: Government, Analysis, Aircraft, EMD, Production, Schedule, Risk/Uncertainty, Data Collection, Data Base, Method

IDA-20

Title: Methods to Assess Schedules for the Strategic Defense System

Summary: The objective of this task is to develop methods for assessing the acquisition schedules of ballistic missile defense systems. The systems include space-based surveillance and interceptor systems, surface-based interceptor systems, and other surface-based elements.

Classification: Unclassified

Sponsor: BMDO/PDE
The Pentagon, Rm. 1E1037
Washington, DC

Ms. Donna Snead, (703) 604-3584

Performer: IDA

Mr. Bruce Harmon, (703) 845-2510

Resources:

FY	Dollars	Staff-years
prior	$150,000	1.0
99	$65,000	0.4

Schedule:	Start	End
	Jan 91	Jun 00

Data Base:	Title:	
	Description:	Schedule and characteristic data on 26 unmanned spacecraft, 22 missile, and 51 software programs.
	Automation:	None

Publications: *Assessing Acquisition Schedules for Unmanned Spacecraft*, IDA Paper P-2766, April 1993.

Schedule Assessment Methods for Surface-Launched Interceptors, IDA Paper P-3014, August 1995.

Keywords: Government, Schedule, Estimating, Method, Statistics/Regression, Space Systems, Missiles, EMD, Production

IDA-21

Title: Costs & Benefits of Installation of Flight Safety Systems on F-22 Aircraft

Summary: Investigate and assess the incremental life-cycle costs and benefits of potential flight safety-related investments for the F-22A aircraft.

Classification: Unclassified/Proprietary Information

Sponsor: USD(A&T)
S&TS/AW
The Pentagon, Rm. 3E1081
Washington, DC 20301

Mr. Dean Gissendanner, (703) 695-7036

Performer: IDA

Dr. J. R. Nelson, (703) 845-2571

Resources:	FY	Dollars	Staff-years
	99	$395,000	2.0

Schedule:	Start	End
	Jan 99	Sep 99

Data Base:	Title:
	Description:
	Automation:

Publications: Report

Keywords: Government, Estimating, Analysis, Aircraft, EMD, Production, Operations and Support, Schedule, Data Collection, Data Base, Method

IDA-22

Title: Improved Software Cost Reporting Processes for Weapon Systems

Summary: The objective of this task is to identify and define relevant software cost and cost driver data from existing and future software projects and then to develop and implement an efficient reporting mechanism to collect these data.

Classification: Unclassified/Company Proprietary

Sponsor:	OD(PA&E)
	The Pentagon, Rm. BE779
	Washington, DC 20301
	Dr. Vance Gordon (703) 697-2936
Performer:	IDA
	Dr. Thomas P. Frazier, (703) 845-2132
	Dr. John Bailey, (703) 855-4472

Resources:	_FY_	_Dollars_	_Staff-years_
	98	$200,000	1.25

Schedule:	_Start_	_End_
	Jul 98	Jul 00

Data Base:	_Title:_
	Description:
	Automation:

Publications:	TBD
Keywords:	Software, Study

IDA-23

Title:	Assess BMDO Cost Control/Reduction Initiatives
Summary:	The objective of this task is to determine how key cost reduction initiatives affect program costs and how those initiatives should be incorporated into cost models and cost estimating relationships. The objective also requires establishing a baseline cost estimate based on current cost estimating relationships. The PAC-3 program has been the focus.
Classification:	Unclassified
Sponsor:	Ballistic Missile Defense Organization (BMDO)
	1725 Jefferson Davis Highway, Room 12024
	Arlington VA 22202-4102
	Ms. Donna Snead, (703) 604-3584
	Office of Cost Estimating and Analysis
Performer:	IDA
	Dr. John Hiller, (703) 845-6783
	Mr. Bruce Harmon, (703) 845-2501
	Mr. Bernie Retterer

Resources:	_FY_	_Dollars_	_Staff-years_
	98	$240,000	
	99	$ 27,000	

Schedule:	_Start_	_End_
	Nov 97	Jun 00

Data Base:	_Title:_
	Description:
	Automation:

Publications:	
Keywords:	Missiles, CER

IDA-24

Title:	Space and Missile Systems Nuclear Hardening Costs

Summary: Investigate relationships between costs and technical characteristics, including nuclear-radiation hardening and other survivability features of selected military satellite and ground-based missile systems. Develop CERs to estimate the marginal costs to harden satellites and missiles against nuclear weapons effects.

Classification: Secret-Restricted Data, Proprietary Information

Sponsor: DSWA/ETD
6801 Telegraph Road
Alexandria, VA 22310-3398

Mr. Michael Rooney, (703) 325-0456

Performer: IDA

Dr. Daniel B. Levine, (703) 845-2562
Dr. Robert Oliver, (703) 578-2981
Dr. David Hunter, (703) 845-2549
Mr. Bernard McHugh, (703) 845-6781

Resources:

FY	Dollars	Staff-years
94	$275,000	1.7
96	$275,000	1.7
97	$100,000	0.6
98	$125,000	0.7

Schedule:

Start	End
Apr 93	On-going

Data Base: *Title:*

Description: Satellite cost data from the Unmanned Space Vehicle Cost Model Versions 6 and 7 (USCM 6 and 7) and from collection by IDA. Missile cost data from U.S. Army and Navy sources. Satellite and missile RDT&E and production costs segregated by subsystem. Satellite and missile technical data, including performance characteristics and nuclear-hardening specifications.

Automation: Excel spreadsheets and Access database

Publications: Estimating the Costs of Nuclear-Radiation-Hardened Military Satellites, IDA Paper P-2857, Secret/Restricted Data, November 1994.

Estimating the Costs of Nuclear-Radiation-Hardened-Military Satellites (Unclassified Version), IDA Paper P-3120, April 1996.

Costs of Hardening Interceptors Against a Nuclear Threat, IDA Paper P-3333, Draft Final, December 1997.

The Costs of Hardening Satellites Against Nuclear Effects, IDA Paper P-3456, Draft Final, February 1999.

Keywords: Government, Industry, Estimating, Space Systems, Missiles, EMD, Production, WBS, Statistics/Regression, CER, Data Collection, Data Base, Mathematical Model

IDA-25

Title: Resource Analysis for Test and Evaluation

Summary: Analysis of resources devoted to the Major Range and Test Facility Base to include operating cost, investment cost, and personnel resources. Analyses include cost comparisons of alternative approaches to developing test and evaluation capability and

realigning workload within existing infrastructure. Evaluation will include identification of efficiencies in management, operations, and resource processing.

Classification: Top Secret

Sponsor: Acting Deputy Director
Defense Test System Engineering and Evaluation (DTSEE)
The Pentagon, Rm. 3D1067
Washington, DC 20301

Mr. Michael Schuck, (703) 697-5552

Performer: IDA

Mr. Charles T. Ackerman, (703) 578-2714
Mr. Dennis O. Madl, (703) 578-2718

Resources:

FY	Dollars	Staff-years
99	$2,000,000	12

Schedule:

Start	End
Oct 98	Apr 00

Data Base:

Title:	T&E Resources
Description:	Operating Cost, Investment Projects, Real Property
Automation:	Hard copy, floppies or hard disk

Publications: *Cost Comparison of the Navy's Air Combat Environment Test and Evaluation Facility (ACETEF) and the Air Force's Electronic Combat Integrated Test (ECIT)*, IDA Paper P-2727, June 1992.

The Need for Unexploded Ordnance Remediation Technology, IDA Document D-1527, October 1992.

Test and Evaluation Reliance–An Assessment, IDA Document D-1829, June 1996.

Keywords: Government, Analysis, Policy, Programming, Budgeting, Infrastructure, EMD, Test and Evaluation, Operations and Support, Acquisition Strategy, Labor, Overhead/Indirect, Economic Analysis, Study, Data Base

IDA-26

Title: Support for Reserve Component Employment Study

Summary: In this work IDA is supporting a DoD study effort being managed by the Joint Staff and the Office of the Assistant Secretary of Defense for Strategy and Threat Reduction. The study was mandated in the Defense Planning Guidance. It examines and evaluates potential new roles and missions for the Reserve Components in all the Services.

Classification: Unclassified

Sponsor: The Joint Staff, Director for Force Structure, Resources and Assessment

The Pentagon
Room 1E962
Washington, DC 20302

CAPT Paul Baszner, USN, (703) 697-6003

Performer: IDA

Mr. Stanley Horowitz, (703) 845-2450

Resources:

FY	Dollars	Staff-years
98	$700,000	4.0

Schedule:

Start	End
May 98	Sep 99

Data Base: *Title:*

Description: Association of both active and reserve units in all the Services with hypothetical scenarios considered in the Defense Planning Guidance

Automation: Access database

Publications: TBD

Keywords: Government, Analysis, Policy, Manpower/Personnel, Readiness, Data Collection, Data Base, Study

IDA-27

Title: Active/Reserve Integration

Summary: This work is designed to examine alternative ways to integrate active and reserve forces, particularly in the Army. For Army National Guard combat units, a key aspect of successful integration is being able to mobilize, train, and deploy for combat fast enough to effectively carry out its combat mission. The project has examined how long it would take Guard brigades and divisions to deploy. In addition it is looking at how best to provide command and staff training for National Guard combat units and the use of the Reserve Components to help shape the international environment.

Classification: Unclassified

Sponsor: Assistant Secretary of Defense (Reserve Affairs)
The Pentagon, Rm. 2E515
Washington, DC 20301

Ms. Karen McKinney, (703) 697-4223

Performer: IDA

Mr. Stanley A. Horowitz, (703) 845-2450

Resources:

FY	Dollars	Staff-years
96	$175,000	1.0
97	$250,000 '	1.4
98	$300,000	1.6
99	$300,000	1.6

Schedule:

Start	End
Jan 96	Dec 00

Data Base: , *Title:*

Description: Plan for mobilization, training, and deployment of a National Guard armored division.

Automation: Microcomputer zip drive

Publications: *Conference on Force Integration: Seeking Better Reserve Component Capability and Credibility,* Institute for Defense Analyses, Document D-1849, May 1996.

Detachment 1, 28th Infantry Division Artillery in Bosnia, Document D-2083, Institute for Defense Analyses, Draft Final, December 1997.

Keywords: Government, Analysis, Policy, Manpower/Personnel, Readiness, Data Collection, Data Base, Study

IDA-28

Title: Evaluation of TRICARE Program Costs

Summary: The DoD has implemented a congressionally mandated uniform health care benefit, including an HMO option, for beneficiaries eligible for military health care. This new program, called TRICARE, is designed to improve the access to and quality of health

care, while not increasing costs to either the government or covered beneficiaries. The objectives of this task are: (1) to compare the costs, both to the government and to covered beneficiaries, of the TRICARE program with those of the traditional benefit of direct care and CHAMPUS; and (2) determine the impact of TRICARE on the out-of-pocket expenses of military retirees. IDA has been conducting an ongoing evaluation of the TRICARE program, which is administered on a regional basis. Last year's evaluation covered only the Northwest region. This year's study extends the evaluation to seven health service regions.

Classification:	Unclassified
Sponsor:	TRICARE Management Activity (HPA&E)
	5201 Leesburg Pike
	Suite 1511
	Falls Church, VA 22041
	Lt. Col. Thomas Williams, (703) 681-4263
Performer:	IDA
	Dr. Philip M. Lurie, (703) 845-2118

Resources:	*FY*	*Dollars*	*Staff-years*
	99	$933,000	4.5

Schedule:	*Start*	*End*
	Oct 99	Sep 00

Data Base:	None
Publications:	None
Keywords:	Government, Analysis, Policy, Infrastructure, Manpower/Personnel, Test and Evaluation, Variable Costs, Data Collection, Survey, Mathematical Modeling, Economic Analysis, Data Base, Study

IDA-29

Title:	Workload Forecasting for the Veterans Benefits Administration
Summary:	The objective of this task is to forecast the number of veterans who will apply or reapply for VA disability compensation benefits over a five-year horizon. Veterans are eligible for these benefits if they are disabled due to injury suffered or disease contracted while serving in the military. The forecasts will be used to determine the administrative staff required to adjudicate and process VA compensation claims.
Classification:	Unclassified
Sponsor:	Veterans Benefits Administration
	Mr. Robert Haas, (202) 273-7041
Performer:	IDA
	Dr. Matthew S. Goldberg, (703) 845-2099

Resources:	*FY*	*Dollars*	*Staff-years*
	98	$300,000	2.0
	99	$150,000	1.0
	00	$150,000	1.0

Schedule:	*Start*	*End*
	Sep 98	Jun 00

Data Base:	*Title:*	Compensation Workload Forecasting Model

Description:	Demographic data on the actual veteran population; projections of the veteran population for five future years; and factors for disability claim submission rates within demographic cells
Automation:	Visual Basic interface with Microsoft Access database

Publications: Final report due at end of project

Keywords: Government; Budgeting; Infrastructure; Data Collection, Mathematical Modeling; Data Base, Computer Model

IDA-30

Title: DSCA Business Metrics

Summary: The objective of this task is identify and quantify the business process steps being followed in each Service during FMS administration and to relate those efforts to the types of cases being managed. The ultimate goal is to provide the DSCA Comptroller with a way of quantifying the cost of administering each case and of performing additional functions that are not in support of specific cases (such as price and availability quotations). A preliminary objective is to learn more about Service operations by facilitating meetings with Service representatives where approaches to identifying and measuring business process metrics can be designed.

Classification: Unclassified

Sponsor: Defense Security Assistance Agency
DSAA Comptroller

Mr. Bill Johnson, (703) 604-6586

Performer: IDA

Dr. Thomas P. Frazier, (703) 845-2132
Dr. John Bailey, (703) 855-4472

Resources:

FY	Dollars	Staff-years
97	$300,00	2

Schedule:

Start	End
Jul 99	Mar 00

Data Base: Title:

Description:

Automation:

Publications: TBD

Keywords: Government, Estimating, Automation, Software, Study

IDA-31

Title: DSAMS Cost Estimating

Summary: The Defense Security Assistance Agency (DSAA) is responsible for foreign military sales which includes the sale of weapon systems and replacement parts to foreign nations, and for the training of military and civilian personnel from foreign nations. A major project at DSAA is the migration, integration, upgrade and replacement of 12 legacy systems to support the management of foreign military sales. This project, the Defense Security Assistance Management System (DSAMS), will replace twelve existing, MILDEP-specific, redundant systems which are up to twenty years old and which cost a total of about $36.5M per year to operate. Existing cost estimates to complete DSAMS need revision because some of the assumptions on which they were based have changed. Therefore, the DSAA requires a new and independent estimate of the cost, schedule and

benefit analysis to complete the DSAMS project. The objective of this task is to provide an independent cost, schedule and benefit analysis estimate for design, development and implementation of DSAMS.

Classification:	Unclassified
Sponsor:	Defense Security Assistance Agency DSAA Comptroller
	Mr. Jim Pollitt, (703) 604-6586
Performer:	IDA
	Dr. Thomas P. Frazier, (703) 845-2132 Dr. John Bailey, (703) 855-4472

Resources:

FY	Dollars	Staff-years
97	$85,000	0.5

Schedule:

Start	End
Jul 97	Mar 98

Data Base:	*Title:*
	Description:
	Automation:
Publications:	TBD
Keywords:	Government, Estimating, Automation, Software, Study

IDA-32

Title:	Cost & Benefits of Raising the Micro-Purchasing Dollar Threshold
Summary:	The objective of this task is to measure the costs and benefits of the proposal to raise the micro-purchase dollar threshold. The task will specifically include an assessment of the impact that any change in the threshold might have on small business.
Classification:	
Sponsor:	Director, Small and Disadvantaged Business Utilization The Pentagon, Rm. 2A338 Washington, DC 20301
	Mr. Tim Foreman 703 697 9384
Performer:	IDA
	Dr. Thomas P. Frazier, (703) 845-2132 Dr. Maria Borga, (703) 855-2514

Resources:

FY	Dollars	Staff-years
99	$100,000	1

Schedule:

Start	End
Dec 98	Dec 99

Data Base:	*Title:*
	Description:
	Automation:
Publications:	TBD
Keywords:	Government, Estimating, Study

IDA-33

Title:	Science and Technology Models

Summary: In 1992, the Army began the development of a management information system for the management of their Science and Technology Programs. The program, initiated under a separate task order that helped develop the Army's S&T Master Plan, was used by the headquarters and field laboratories to manage the S&T program. The Army Science and Technology Management Information System (ASTMIS) was a distributed application that required monthly updates to data used in the headquarters to manage the program. Using the program, headquarters analyst could assess the details of Army S&T projects and their contribution toward Army objectives. The success of the program was hampered by the distributed data arrangements. A complete redesign of the program has recently been completed and is now on-line using a central server and database. Financial and descriptive information about projects, tasks and work packages are available for review and modification. Reports and charts are available for reviewing the data. Additional capabilities for making ad hoc queries and creating standard reports and update to the Users Manual will complete the planned work on this project.

Classification: Unclassified

Sponsor: DDR&E (Plans and Resources)
1800 Defense Pentagon
The Pentagon, Rm. 3D367
Washington, DC 20301-1800

Mr. Robert Tuohy, (703) 693-2978

Performer: IDA

Mr. Paul Goree, (703) 845-2238

Resources:

FY	Dollars	Staff-years
96	$ 85,000	0.5
97	$265,000	1.6
98	$ 75,000	0.4
99	$100,000	0.5

Schedule:

Start	End
Oct 96	Sep 99

Data Base:

Title:	"ASTMIS"
Description:	The ASTMIS data base is an Access data base that contains information about the Army's S&T Program.
Automation:	Designed using COTS and desktop computers.

Publications: A users guide and model documentation will be prepared.

Keywords: Programming, Budgeting, Data Collection, Computer Model, Data Base

IDA-34

Title: Cost Analysis Education

Summary: IDA collaborated with George Mason University (GMU) in the development and conduct of a graduate-level course in cost analysis during the past seven years. This course is one of two core courses in GMU's Military Operations Research curriculum. Course content is focused on the daily problems confronted by defense cost analysts and approaches to solve them. Government employees are invited to attend lectures free of charge. This project supports the development and updating of lecture materials by IDA cost analysts.

Classification: Unclassified

Sponsor: IDA Central Research Program

| *Performer:* | IDA |
| | Dr. Stephen Balut, (703) 845-2527 |

Resources:	*FY*	*Dollars*	*Staff-years*
	99	$15,000	0.1

Schedule:	*Start*	*End*
	Sep 99	Dec 99

Data Base: None

Publications: None

Keywords: Government, Analysis, Forces, Weapon Systems, Review

[1] DoD Directive 5000.2-R, "Mandatory Procedures for MDAPs and MAIS Acquisition Programs," 11 May 1999.

[2] Stephen J. Balut, Vance Gordon, Deborah Cann, Richard Bishop, and Richard Collins. "Status of DoD's Capability to Estimate the Costs of Weapon Systems: 1999 Update." Institute for Defense Analyses, Document D-2300, April 1999.

[3] Stephen J. Balut and Kathryn L. Wilson. "The IDA Cost Research Symposium." Institute for Defense Analyses, Document D-647, August 1989.

[4] Stephen J. Balut and Kathryn L. Wilson. "1990 IDA Cost Research Symposium." Institute for Defense Analyses, Document D-828, August 1990.

[5] Stephen J. Balut and Kathryn L. Wilson. "The 1991 Cost Research Symposium." Institute for Defense Analyses, Document D-1003, July 1991.

[6] Stephen J. Balut. "The 1992 IDA Cost Research Symposium." Institute for Defense Analyses, Document D-1204, August 1992.

[7] Stephen J. Balut. "The 1993 IDA Cost Research Symposium." Institute for Defense Analyses, Document D-1414, August 1993.

[8] Stephen J. Balut. "The 1994 IDA Cost Research Symposium." Institute for Defense Analyses, Document D-1569, August 1994.

[9] Stephen J. Balut. "The 1995 IDA Cost Research Symposium." Institute for Defense Analyses, Document D-1754, August 1995.

[10] Stephen J. Balut. "The 1996 IDA Cost Research Symposium." Institute for Defense Analyses, Document D-1863, August 1996.

[11] Stephen J. Balut. "The 1997 IDA Cost Research Symposium." Institute for Defense Analyses, Document D-2025, July 1997.

[12] Stephen J. Balut. "The 1998 IDA Cost Research Symposium." Institute for Defense Analyses, Document D-217, August 1998.

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1801 N. Beauregard Street
Alexandria, VA 22311-1772

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Mr. Matthew Schaffer
OSD/PA&E/RA
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13. ABSTRACT *(Maximum 200 words)*

OSD's Cost Analysis Improvement Group (CAIG) is involved in an annual cycle of efforts aimed at improving DoD's ability to forecast future costs. During the DoD Cost Analysis Symposium, the CAIG reviews the status of DoD's capabilities to estimate the costs of forces and weapon systems. At the annual IDA Cost Research Symposium, CAIG representatives discuss ongoing and planned cost research projects with other offices and organizations involved in defense-related cost research. Following these annual events, the CAIG prepares a plan that encourages those who conduct cost research to focus on areas of highest payoff in view of pending acquisition decisions. This document reviews this annual process for the 1999 cycle. It describes the 32nd annual DoD Cost Analysis Symposium and the 1999 IDA Cost Research Symposium, explains OSD CAIG's analysis plan for future cost research, and presents the summaries of current and planned cost research projects at the offices and organizations that participated in this year's IDA Cost Research Symposium.

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