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THE EXECUTIVE WORKSHOP ON COST/PERFORMANCE MEASUREMENT

Volume 1: Executive Summary

Richard T. Cheslow, *Project Leader*
J. Richard Nelson

October 1989

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Office of the Assistant Secretary of Defense
(Production and Logistics)

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On 31 May through 1 June 1989, an executive workshop was held in Alexandria, Virginia, to address problems perceived when applying current cost/performance measurement and management systems to new advanced-technology design and manufacturing methods. The goal was to provide the Department of Defense (DoD) with recommendations for change. This paper is the proceedings of the workshop. Volume 1 contains a summary of findings and recommendations of the attendees. The primary recommendation was that the Under Secretary of Defense (Acquisition) initiate pilot programs to investigate possible changes in cost/performance measurement systems. Continued dialog and cooperation between DoD and industry is also recommended. Volume 2 contains the remarks of the speakers, the panel members, and the discussion team representatives.

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Richard T. Cheslow, *Project Leader*
J. Richard Nelson

October 1989

INSTITUTE FOR DEFENSE ANALYSES

Contract MDA 903 89 C 0003
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PREFACE

This paper was prepared by the Institute for Defense Analyses (IDA) for the Office of the Assistant Secretary of Defense (Production and Logistics), under contract MDA 903 89 C 0003, Task Order T-B7-591, issued 13 April 1988. It documents a workshop designed to bring together leaders in industry, government, and academia to identify barriers to, and make recommendations for improving cost and performance measurement and management in the light of advanced technology application in U.S. defense industry. Volume 1 contains a summary of the workshop together with the background, findings, and recommendations. Volume 2, which contains the presentations, the statements of panel speakers, and the findings of the discussion teams, is intended for distribution only to persons who attended the workshop.

Volume 1 was reviewed within IDA by Dr. James P. Pennell, Mr. Stanley A. Horowitz, and Mr. James D. McCullough. The presentations in Volume 2 were reviewed by the appropriate speakers.

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I. SUMMARY OF FINDINGS AND RECOMMENDATIONS

Current cost accounting practices and outmoded performance measurement systems, together with DoD rules and regulations, are discouraging the introduction of new process technologies into United States industry. This was the view of a group of experts from industry, government, and academia that assembled at a DoD-sponsored Cost/Performance Measurement Workshop held on 31 May and 1 June 1989 at the Radisson Mark Plaza Hotel in Alexandria, Virginia. This paper describes the workshop, documents presentations and comments, and summarizes the findings and conclusions.

A discussion team focusing on cost measurement and management found that today's cost systems do not identify all relevant costs or provide accurate and timely information. Substantial barriers to overcoming these problems include the absence of new, innovative cost measurement systems in industry, inflexible cost accounting standards, obsolete and counter-productive government rules, subjective interpretation of regulations by lower-level government employees, instability in defense procurement, and the need to operate more than one accounting system when doing business with the government. These experts recommended initiation of several pilot programs to demonstrate advanced cost management concepts, reduction of statutory and regulatory requirements, cooperation between industry and government, and expansion of process technology insertion programs (e.g., Mantech and IMIP).

A separate team of experts on performance measurement found that performance measurement systems developed in the past were adequate for their time; however, global competition is forcing industry to change the way it runs the factory and measures performance. The team asserted that the government has not recognized nor facilitated this transition. Industry is confused by the government's insistence on receiving information that appears to be of no value (i.e., the wrong information at the wrong level of detail). The team concluded that the government's understanding of performance measurement is very different from industry's and that the government focuses too much on activities and not enough on results. The team also expressed doubt that the few enlightened government managers would be able to effect significant changes. This team recommended continuation of the dialog initiated at the workshop, development of a practical definition of "performance measurement," reduction in reporting requirements, deletion of obsolete and conflicting government regulations, a comparison of industry and government information needs, and increased educational requirements for certain government managers and administrators.

The third discussion team discussed strategies for implementing new cost/performance measurement systems. This team recommended that the Deputy Secretary of Defense (DEPSECDEF) or the Under Secretary of Defense for Acquisition (USD(A)) sponsor an initiative to implement new cost and performance measurement systems in defense industry, that a DoD/industry task force be formed to steer the effort, and that pilot programs be initiated to test advanced cost management system concepts, improved performance system concepts, and acquisition policy changes.

It is clear that if the defense industry and the government are to achieve their respective goals of becoming "world class" suppliers and customers, modifications to current measurement systems and their implementing regulations are necessary.

II. THE WORKSHOP

A. Background

Defense industry managers say the combination of current cost accounting practices, along with DoD rules and regulations on cost and performance measurement and management, discourage introduction of new technologies into their plants. This opinion is not limited to defense industry executives. It is shared by the academic community and industry representatives in the non-defense sector, as well. These views were revealed during an investigation by the Institute for Defense Analyses (IDA) into the costs of an integrated design-manufacturing-support system.

Current cost accounting practices actually discourage the adoption of new manufacturing technologies. This is because the capital investments associated with the introduction of new technologies are not borne by the products that benefit from the technologies. Rather, these investments are accounted for as indirect costs, which are allocated to all products being manufactured on the basis of their utilization of direct labor. Increases in these investments translate to higher "overhead rates," which the government views as bad and which industry tries to avoid. What's more, these investments tend to reduce the utilization of direct labor, which has the effect of increasing overhead rates even further. These practices not only discourage investments, they result in serious distortions in product costs/prices and performance measurement when applied unfairly to a diverse mix of products. In summary, current systems do not provide adequate information to identify areas that require improvement, justify investment, or monitor results after investments are made.

B. Purpose

Under the joint sponsorship of the Deputy Under Secretary of Defense for Industrial and International Programs and the Assistant Secretary of Defense for Production and Logistics, IDA hosted an executive-level workshop. The purpose was to bring together experts from industry, government and academia to gain a consensus on the nature and extent of the problem, and further, to suggest courses of action by the government to facilitate a solution. The focus was on DoD rules, policies, and practices in cost/performance measurement and their inhibiting effects on process improvement. Prescriptions were desired that would meet the government's needs while removing these inhibitions to industry.

C. Format

The two-day workshop consisted of general sessions with formal presentations, panel discussions, and private workshops on specific topics by assigned teams of experts. The major events that occurred are listed in Table 1.

Table 1. Workshop Schedule

May 31, Wednesday
Administrative Remarks by Mr. Cheslow, IDA
Welcome by General Smith, IDA
Keynote Address by Secretary McCormack
Presentation by Mr. Mosconi, Coopers & Lybrand
Presentation by Mr. Cloudman, IBM Corporation
Presentation by Mr. Morris, General Electric Company
IMIP Presentation by Mr. Woodford, OSD
CAM-I/Air Force Advanced Cost Management System Presentation by Mr. Engwall, Westinghouse Electric Corporation
Remarks of the Performance Measurement Panel by Dr. McGrath, Dr. Sink, Mr. Christle, and Mr. Ponce de Leon
Remarks of the Cost Measurement Panel by Mr. Goldsman, Mr. Melissaratos, and Mr. Sharkey
June 1, Thursday
Performance Measurement Team Meeting, Report, and Discussion
Cost Measurement Team Meeting, Report, and Discussion
Implementation Strategy Team Meeting, Report, and Discussion

On the first day, several industry representatives reported their successes in dealing with cost/performance measurement problems within their firms. Following that, two government programs (Industrial Modernization Incentives Program and Advanced Cost Management System) that are intended to help industry implement advanced process technologies were described. Next, separate panel discussions addressed the subjects of cost measurement and performance measurement. In both cases, viewpoints of industry, government, and academic experts were presented. During these general sessions, questions and comments by workshop participants were encouraged.

On the second day, participants were separated into three teams that met privately to discuss assigned topics. One team discussed cost measurement, another discussed performance measurement, and the third team discussed the combined problem of implementing new cost/performance measurement systems. Following the private meetings, spokespersons for each team reported their findings and recommendations in general session.

D. Participants

Attendance at the workshop was by invitation. Participants were selected for their expertise in subject matter and to provide a balance across institutional viewpoints. Of the 32 participants (listed at the end of this volume), 11 were from industry, 10 from government, and 11 from universities, public accounting firms, professional associations or other research organizations. Industry representatives were from a mix of defense and non-defense firms.

A number of individuals attended the workshop not as participants but rather as observers. These observers (also listed at the end of this volume) were invited to attend all general sessions, but not the private discussion team meetings. This was done to preserve the balance of institutional viewpoints at the discussion team meetings.

The following sections summarize the findings and recommendations of the three discussion teams.

III. FINDINGS

A. Cost Measurement

The members of the cost measurement discussion team are listed in Table 2. The discussion focused first on an acceptable definition of cost measurement and secondly on articulation of the "cost measurement problem."

Table 2. Cost Measurement Discussion Team

Edward Abate	*General Dynamics – Convair Division*
Henry Adamany, Jr.	*Ernst & Whinney*
Geraldine Asher	*Office of the Assistant Secretary of Defense (Program Analysis and Evaluation)*
James Brimson	*Coopers & Lybrand*
Joyce Friedland	*Defense Contract Audit Agency*
Louis Goldsman	*Price Waterhouse*
Richard Johnston	*Ernst & Whinney*
Robert Kaplan	*Harvard University*
Alfred King	*National Association of Accountants*
Aris Melissaratos	*Westinghouse Electric Corporation*
Darrell Oyer	*Touche Ross*
Thornton Parker	*Department of Commerce*
William Sharkey	*Defense Contract Audit Agency*
Baxter Tate	*McDonnell Douglas Corporation*
James Woodford	*Office of the Deputy Under Secretary of Defense (Industrial and International Programs)*
John J. Cloos *(Moderator)*	*Institute for Defense Analyses*

It was agreed that (1) cost measurement and performance measurement are closely related and overlap; (2) the term "costs" means different things to different people; and (3) the reason defense contractors view costs differently from commercial contractors is the practice of cost-based pricing in defense contracting. Where prices are based on cost, cost improvements can result in financial penalties to the contractor.

The discussion team eventually achieved consensus on what "cost" was, and agreed on the following statement of the "cost measurement problem":

> Today's cost measurement systems do not identify all relevant costs or provide reasonably accurate and timely information to improve the process or to make necessary strategic and tactical decisions.

The team identified the following impediments to correcting this problem:

- The absence of successful commercial demonstrations of new cost measurement system concepts. (There are no known models to emulate. Only a few firms have implemented new systems, and these have been partial implementations, not complete.)
- The inflexibility of the Cost Accounting Standards.
- The government's requirements for cost-based, rather than value-based, pricing systems.
- A culture that readily accepts non-value-added work (e.g., reporting, storage, handling, inspection).
- Public accountability, which manifests itself in non-value-added effort (e.g., audit).
- Requirements, embedded in government statutes and regulations, that are obsolete or have not been validated by cost-benefit analyses.
- Inflexible subjective interpretations of statutes and regulations, particularly at lower levels of the government.
- Instability of defense procurement and micromanagement of this process, primarily being caused by the Congress.
- The need to operate more than one accounting system when doing business with the government.

The cost measurement team offered several additional observations that illuminate the problem. First, product costs and prices are distorted by current accounting practices. The practice of allocating overhead costs on the basis of direct labor is the primary cause. These distortions lead, in turn, to misinformed and flawed assessments of new process investments.

Another observation was that the management/control function of industrial managers is different than the monitoring function performed by government reviewers. More to the point, the information needed by each is quite different. This is not to say that two separate information systems should be operated by contractors. Further, the collection of information to meet the needs of one group (i.e., contractor or government) should not inhibit the collection of information to meet the needs of the other. Rather, a single system should be used that provides for the needs of both groups. This would result in increased efficiency and consistency of data.

The term "audit fear" characterizes the current contractor environment. Contractors are afraid that deviation from current practices will bring a stream of government auditors into their plants, causing disruption, scrutiny of financial records, and increasing costs without adding value. A related concern on the part of contractors is that if they were better able to price their products (i.e., increasing the prices of some, decreasing the prices of others), auditors would accept the decreases but not the increases.

Finally, the team agreed that the cost of compliance with government regulations was disproportionate to their perceived benefits. The cost of compliance was estimated to be between 5 percent and 40 percent of system cost. The general impression was that improvements in cost measurement systems could reduce these costs.

B. Performance Measurement

The members of the performance measurement discussion team are listed in Table 3. The team did not come to agreement on a concise definition of the "performance measurement problem." Rather, a family of problems were identified that relate to performance measurement. Before concluding their session, the team formulated the following statement on performance measurement:

> Performance measurement system requirements developed in the past may have been adequate for the time; however, because of global competition, industry is changing the way it runs the factory and measures performance, and the government has not recognized its role in accomplishing that change.

Table 3. Performance Measurement Discussion Team

Karen Alderman	*Office of the Assistant Secretary of Defense (Force Management and Personnel)*
Paul Bennett	*Martin-Marietta Corporation*
Charles Bernstein	*Northrop Corporation*
Gary Christle	*Office of the Defense Comptroller (Program and Budget)*
Hans Driessnack	*United Technologies Corporation*
Michael McGrath	*Office of the Assistant Secretary of Defense (Production and Logistics)*
Ralph Ponce de Leon	*Motorola, Inc.*
Scott Sink	*Virginia Polytechnic Institute and State University*
Carl Thor	*American Productivity and Quality Center*
Thomas R. Gulledge *(Moderator)*	*Institute for Defense Analyses*

The team felt that performance measurement is more general than cost measurement, encompassing cost, schedule, and quality of processes and products. The following were identified as factors that contribute to the current "performance measurement problem":

- The understanding of performance measurement was quite different depending on whether team members were from industry or government. From the government perspective, performance has to do with the product being delivered on time, within cost, and according to specifications. For the contractor, performance has to do with delivering a quality product while making a profit.
- Industry representatives did not understand why the government needs more and different information to measure contractor performance than the contractor needs itself. This led to the following questions: What does industry need to measure to provide information needed to manage and control their performance? What information does the government need to review contractor performance? How are these two sets of information related?
- The team stipulated that more advanced contractor managements systems are five to ten years ahead of government systems. In particular, industry representatives pointed out that government cost reporting systems are not

keeping pace with the changes associated with recent management advances such as Total Quality Management (TQM).

- Industry needs a clarification of what the "single accounting system" regulation means. This is because the information required for performance measurement extends well beyond that provided by traditional accounting systems, implying expanded or even new and possibly parallel management systems.
- Government systems focus too much on activities (e.g., manufacturing labor and engineering labor) and not enough on results (e.g., deliveries). Further, the government systems may be focusing on the wrong activities (i.e., labor is declining, while capital equipment is increasing).
- The team was skeptical that the few "enlightened" government managers would be able to make significant changes in the current bureaucracy.

C. Strategy for Implementation

The members of the team that discussed strategy for implementation are listed in Table 4.

Table 4. Strategy for Implementation Discussion Team

Dean Allen	*Lockheed Corporation*
F. H. "Terry" Cloudman	*IBM*
Margaret Graham	*Boston University*
Theodore Lettes	*Department of Commerce*
Robert Morris	*General Electric Company*
William Mosconi	*Coopers & Lybrand*
Dean Olney	*General Dynamics Corporation*
Susan O'Neal	*Office of the Assistant Secretary of Defense (Production and Logistics)*
Stanley Seigel	*Aerospace Industries Association*
Nelson Toye	*Office of the Defense Comptroller*
J. Richard Nelson *(Moderator)*	*Institute for Defense Analyses*

The team identified three factors that would have important effects on the introduction of any new and improved system for cost and performance measurement. They were:

- Sponsorship: this initiative must have active support at a very high level within the government (e.g., DEPSECDEF or USD(A)) in order to bring about the changes that will be required.
- Communications: forthright, productive dialog between industry and government participants must be established during planning and maintained through implementation.
- Pace: the transition from current to improved systems for cost and performance measurement must be positive and evolutionary.

IV. RECOMMENDATIONS

A. Cost Measurement

The cost measurement team offered the following recommendations for action by the government:

- Initiate pilot projects to demonstrate and validate new cost measurement system concepts. Use CAM-I and the Air Force's Advanced Cost Measurement System (ACMS) as guides, keeping in mind that firms participating in pilot projects will develop unique systems that meet their particular needs.
- Select three to five pilot projects so that broad coverage is provided across military services, weapon system types, and acquisition phases.
- Establish as a long-term goal a fully integrated cost management system.
- In the short run, provide for the development of interim analytical tools to bridge the gap until a fully integrated system is developed.
- Use current cost/pricing system structures as starting points for developing new cost measurement systems.
- Study the feasibility of establishing a Defense Industry Enterprise Program, similar to the successful Model Installation Program used within the government.
- Reduce statutory and regulatory requirements. (MIL-STD 1567A, Work Measurement, in particular, was repeatedly cited as imposing obsolete and unnecessary requirements.)
- In cooperation with industry, establish common terms of reference to facilitate communications and provide for continuing education.
- Expand and strengthen existing technology-insertion programs such as Mantech and IMIP.

The cost measurement team stressed the importance of obtaining high-level sponsorship in both government and industry. Appropriate government sponsors are the Deputy Secretary of Defense and the Under Secretary for Acquisition. Industry sponsors suggested were the Aerospace Industries Association (AIA), the National Association of Accountants (NAA), and the Financial Executives Institute (FEI).

B. Performance Measurement

The performance measurement team offered the following recommendations for action by the government:

- Continue and build on the dialog initiated at this conference.
- Develop a practical definition of performance measurement that is acceptable to both government and industry.
- Reduce industry reporting requirements to level-1 (outcome) measures only.
- Clarify the definition of a "single accounting system."
- Search for and delete obsolete or conflicting regulations, particularly those impacting TQM.
- Identify a stratified sample of world-class global competitors and compare the information needs within these firms to the perceived needs of the government.
- Increase the educational requirements for program managers, contract administrators, and auditors.

C. Strategy for Implementation

The team that discussed implementation had the following recommendations for government action:

- The Deputy Secretary of Defense or the Under Secretary of Defense for Acquisition should act as the sponsor for an initiative to implement new cost and performance measurement systems in the defense industry.
- The sponsor should establish a DoD/industry task force to steer the implementation effort. This task force should have active communications with industry associations and other government advisory boards.
- The DoD/industry task force, under the guidance of the sponsor, should initiate and monitor a number of pilot programs to test and demonstrate (1) advanced cost measurement system concepts, (2) improved performance system concepts, and (3) acquisition policy changes.

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