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DEFENSE SYSTEMS MANAGEMENT COLLEGE

PROGRAM MANAGEMENT COURSE
INDIVIDUAL STUDY PROGRAM

DESIGN-TO-COST
FROM
BUZZWORD TO NECESSITY

Class 77-1

William J. Rustia
GS-13 DAFC

FORT BELVOIR, VIRGINIA 22060

DESIGN-TO-COST: FROM BUZZWORD TO NECESSITY

Study Project Report

Individual Study Program

Defense System Management College

Program Management Course

Class 77-1

by

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GS-13 DAFC

May 1977

Study Project Advisor
Mr. William Cullin

This study project report represents the views, conclusions and recommendations of the author and does not necessarily reflect the official opinion of the Defense Systems Management College or the Department of Defense.

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DEFENSE SYSTEMS MANAGEMENT COLLEGE

STUDY TITLE: DESIGN-TO-COST: FROM BUZZWORD TO NECESSITY

STUDY PROJECT GOALS: To understand the concept of DTC and the methodology for implementation, and to demonstrate the fact that shrinking DOD resources dictate the acquisition of systems at affordable cost.

STUDY REPORT ABSTRACT:

The purpose of this report is to describe DTC from its inception and introduction into the defense systems acquisition process. It demonstrates that DTC is a management concept for early identification and control of costs that requires cost to be a design parameter equal in importance with performance and schedule.

This report was compiled by a survey of existing DOD DTC literature presently available in the DSMC library. Pertinent Defense Management Journals were most beneficial. Also telephone interviews were conducted with ranking DOD officials who were cognizant of the latest emphasis.

The project results clearly demonstrate that DTC is not another "BUZZWORD" but rather a "sine-qua-non" of all future DOD major programs. The implications of the results to potential users are that DTC will be implemented on all programs in all phases that it is applicable, and to be successful, it must be tailored to each application. Inherent to its success is the flexibility to perform the cost-performance trade-offs and design iterations necessary to identify cost as a system parameter and control it.

Subject Descriptors:

1. Design-To-Cost (DTC)
2. Design-To-Life Cycle Cost (DTLCC)
3. DTC Flexibility
4. DTC Attitudes
5. DTC-Buzzword

NAME, RANK, SERVICE	CLASS	DATE
William J. Rustia, GS13, USAF	PMC 771	May 1977

EXECUTIVE SUMMARY

This report demonstrates that a successful Design-to-Cost (DTC) program achieves two objectives: (1) It establishes cost as a weapon system parameter equal in importance with performance and schedule; (2) It forces each program to establish specific cost goals and employ them in performance-cost-schedule trade-offs. Crucial to this process is the flexibility to make trade-offs, the early participation in the process of all interests having an impact on program cost, and of paramount importance is the management commitment, both from Government and industry, to making DTC work.

At present, the services are making performance-cost-schedule and acquisition cost-ownership cost trade-offs during concept formulation, validation-demonstration and full-scale engineering development. Program managers are investigating the effects of every decision on their cost thresholds. Designers, who had been pushing for higher performance, are now undergoing a "cultural revolution" to make cost an equal partner with performance.

As of November 1976, there were 83 major DTC programs in, or about to enter the DCP/DSARC process. Former Deputy Secretary Clements' original memorandum in July 1974, approved DTC goals for 54 major programs. Since that time, DTC has been applied to 37 new programs, and eight have been completed or terminated, for a net gain of 29.

Control of costs must become a "way of life." DTC evolved to assist in achieving better control of costs. Although its early emphasis was on production costs, it now requires rigid thresholds on performance parameters which are drivers of operating and support costs. The ultimate aim is to achieve Design to Life Cycle Cost.

Accordingly, the ultimate aim of this report is to make it perfectly clear that DTC is not another "Buzz Word," but rather an absolute necessity to facilitate force moderniza- tion at a prudent rate, within an increasingly constrained budget.

TABLE OF CONTENTS

INTRODUCTION

Definition

In order to properly address this topic, a fundamental definition of the DTC concept is appropriate. According to DoD Directive 5000.28, DTC is defined as follows:

> A management concept wherein rigorous cost goals are established during development, and the control of systems costs (acquisition, operating and support) to these goals is achieved by practical trade-offs between operational capability, performance, cost, and schedule. Cost, as a key design parameter, is addressed on a continuing basis and as an inherent part of the development and production process.

Current Policy

The Directive states that cost parameters shall be established which consider the cost of acquisition and ownership; discrete cost elements (e.g., unit production cost, operating and support cost) shall be translated into "design to" requirements, and system development shall be continuously evaluated against these requirements. Practical trade-offs shall be made between system capability, cost and schedule. Traceability of estimates and costing factors, including those for economic escalation, shall be maintained.

In essence, the basic objectives as spelled out in DoD Directive 5000.28 (See Fig. DTC) encompass the following:

1. It established cost as a design parameter throughout the life of the program.

LOGIC DIAGRAM OF DESIGN TO COST

OBJECTIVE

TO PRODUCE A WEAPON SYSTEM POSSESSING INTENDED PERFORMANCE CHARACTERISTICS WHERE END ITEM COST IS A FULL PARTNER WITH PERFORMANCE AND SCHEDULE.

ACTIONS

ASSIGN A SIGNIFICANT PORTION OF POSSIBLE PROFITS ON THE DESIGN CONTRACT TO DEPEND ON MEETING THE DESIGN TO COST REQUIREMENT.

MAKE VISIBLE THE DESIGN TO COST COMMITMENT AT EACH DECISION MAKING REVIEW.

REPORT VARIANCES BETWEEN TARGETED COSTS AND PROJECTED PRODUCTION COSTSFOR EACH KEY ASSEMBLY AND SUBASSEMBLY AT EACH DESIGN REVIEW.

DEFINE DESIGN TO COST TARGETS AND COST THRESHOLDS FOR PRODUCT DESIGN CONTRIBUTORS WHOSE DECISIONS WOULD INFLUENCE TOTAL UNIT COST.

REFLECT THE GOVERNMENT'S COST GOAL IN REQUESTS FOR PROPOSALS AND IN THE CONTRACT RESULTING FROM PROPOSALS SUBMITTED.

ESTIMATE PRODUCT COST THAT EACH DESIGN CHANGE WOULD GENERATE.

PERFORM COST ANALYSES OF PRODUCTION PROCESSES REQUIRED BY THE SPECIFIC PRODUCT DESIGN.

DATA SOURCES

USE GOVERNMENT COST ANALYSES TO DEFINE MAXIMUM ACCEPTABLE UNIT PRODUCTION COST AND OTHER COST ASSUMPTIONS RELATED TO THE SYSTEM UNDER DEVELOPMENT.

USE DATA FROM CONTRACTOR RECORDS AND OTHER PUBLIC BODIES OF KNOWLEDGE TO FORECAST UNIT COSTS.

Fig DTC

2. It establishes life cycle cost thresholds and objectives to maintain control of life cycle cost.

3. It directs that costs be rigorously evaluated during design and development, and that trade-offs be considered.

4. Those costs goals developed early in the program will be extended into subsequent phases, and production costs will be rigorously controlled throughout those phases.

5. Any changes made in the program will be evaluated against design to cost principles.

<u>Applicability</u>

It should be noted that the concept of DTC does not have universal applicability. Acquisition programs which are well into the validation phase, or present a high technological risk, or constitute a "one-of-a-kind" procurement, or will most likely be acquired on a sole-source contract are not considered to be potential candidates for DTC implementation.

Furthermore, the following pitfalls of imposing DTC incorrectly must be avoided:

1. Cost goal obviously "patched-on" as an afterthought.

2. Trade-offs not really permitted (Program managed to cost exclusively).

3. Cost goal established as output of concept formulation during which emphasis was on "meeting all the requirements" through optimum engineering design.

4. Cost goals established by Industry assessment of what might sell the customer.

5. Cost goal a "not to exceed" figure for equipment described by a rigorous specification with no trade-offs.

6. Cost goal set and worked in a sole-source environment.

7. Cost goal set too high, and therefore easily met.

One of the most important responsibilities of the Program Manager in regard to the initiation of DTC is to insure that the DTC goal is defined in terms which are auditable, contractually enforceable, and meaningful to both the contractor and the Government. Furthermore, he should make certain that he has contractually established the schedule for performance, and the requirements for system (contract deliverable end-item) performance, and configuration in the scope and depth necessary to protect the interests of the Government, and provide for an enforceable contract, yet allow the contractor latitude to tailor his design to fit the design-to-cost goal.

Moreover, it is the Program Manager's responsibility to define the means by which contractor progress towards the design-to-cost goal will be formally assessed and reported or recorded. He should also see to it that the contract provides incentives which will effectively motivate the contractor to exert himself to achieve the design-to-cost goals.

Contract Requirements

(a) The full-scale development contract must include the unit production cost goal; a definition of the cost elements included, and the planned production quantities and delivery schedules upon which the goal is predicated. The contract should also include the formal requirements for the tracking, reporting and review of status (current production cost estimates) with respect to these goals. The contract should also provide a basis for adjusting the unit production cost goal in the event of changes to the planned quantities and rates.

(b) In order to protect the interests of both parties, the unit production cost goal should be defined in terms of either the cost elements of the contractors cost accounting system, or elements which are directly relatable to those of his system. This establishes a basis for direct comparison of contractor estimates and actuals with the contract goal.

(c) As a minimum, a detailed estimate of unit production cost should be required as part of the final design review and at completion of the full-scale development contract. If this phase includes Low Rate Initial production, the actual cost data for the initial production should be used in formulating the subsequent estimates. These estimates should be subjected to the same rigorous DOD reviews as were earlier estimates, and should be of primary importance in determining the payment of any design-to-cost incentives included in the full-scale development contract. In contracting DTC, there are two things that program management should expect. One is that design-to-cost will probably require more development funds than a non-DTC program. It costs money to iterate designs and if the contractor does not go through cost design iterations, he is probably not working design-to-cost. The second is that a longer development time should be expected...trade-offs take time. An important factor in reducing that time is the program management, both on the military and contractor side. They must be prepared to make their decisions in a timely manner if development time is to be kept to reasonable lengths. As more experience in DTC is gained and tools developed, the extra time and money now usually required to work DTC will be reduced.

Cost Goal Selection

Selecting reasonable cost goals is crucial to the design-to-cost process. There are a number of ways to accomplish this, such as:

1. Estimate the money available for a new system or item and divide by the quantities required, to determine the cost per item.

2. Relate unit costs to actual costs of existing similar systems. The lightweight fighter, for example, had a ceiling price set between the cost of the F-5 and the F-15, since the performance goals of the lightweight fighter fell in between

these two aircraft. Parametric estimating illustrates this approach.

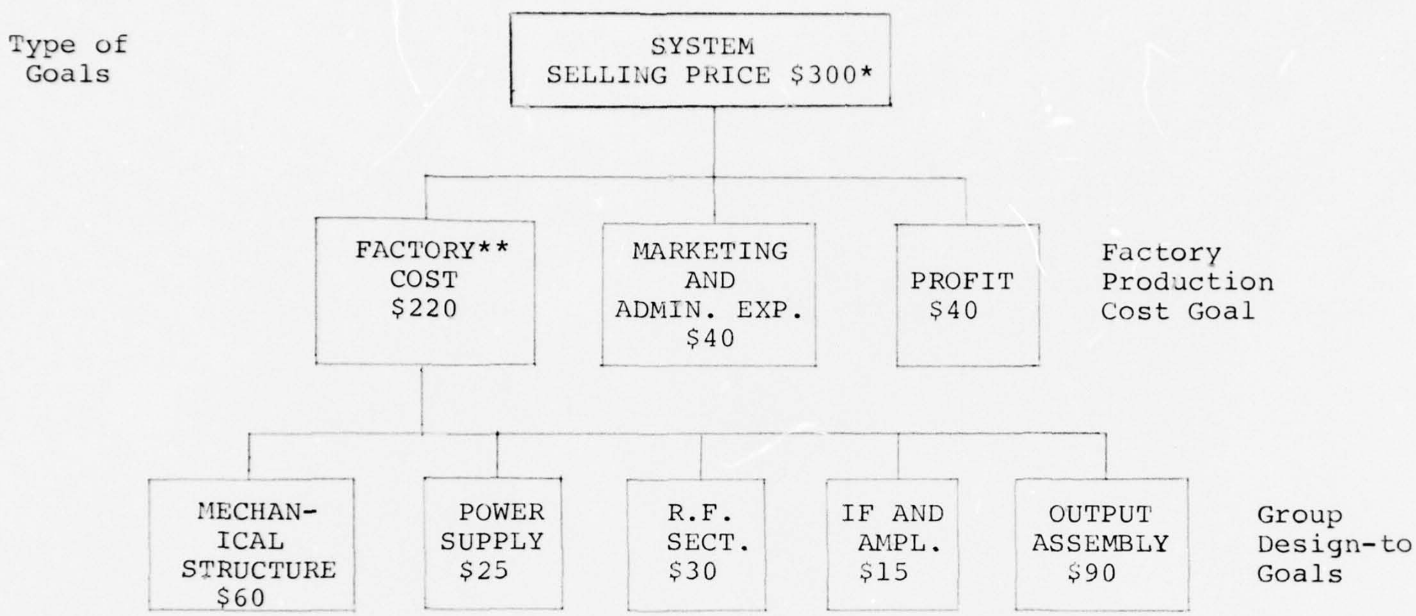
3. Set the cost of the new system at the cost of the system it will replace, challenging designers to use new technology to improve performance at reduced costs.

4. Use a multi-discipline team to effect industrial engineering type estimates to obtain costs of projected details of smaller items to arrive at an overall estimated cost. (See Figures A, B and C.)

After the DTC goal has been established the contractor must be motivated to work toward that goal. One of the best ways to help motivate him is to have a reasonable goal with good incentives. The reasonableness of the goal can be evaluated by a "third party", Government or nongovernment, cost estimate. The goal and the conditions for achievement must be clearly understood by all parties. It is important that the contract be explicit on how adjustments to the goal, schedule, quantity, and production rates will be handled whether they are initiated by the contractor or the Government. In tracking the DTC goal it is necessary to specify what information the contractor will provide and know what the Government will do with it.

Figure 1 provides a pictorial view of the application of the design-to-cost concept to weapon systems acquisition programs. The learning curve will vary depending upon the typical pattern for the industrial area involved. This example illus-

Distribution of Design to Cost Goals Within A System



* Selling price is based on 1,000 units of production at a specified level of reliability and maintainability.

** Factory cost includes direct labor, direct materials and factory overhead (such as tooling).

FIGURE A

Contractors Target Cost Model for Communication Sub-System

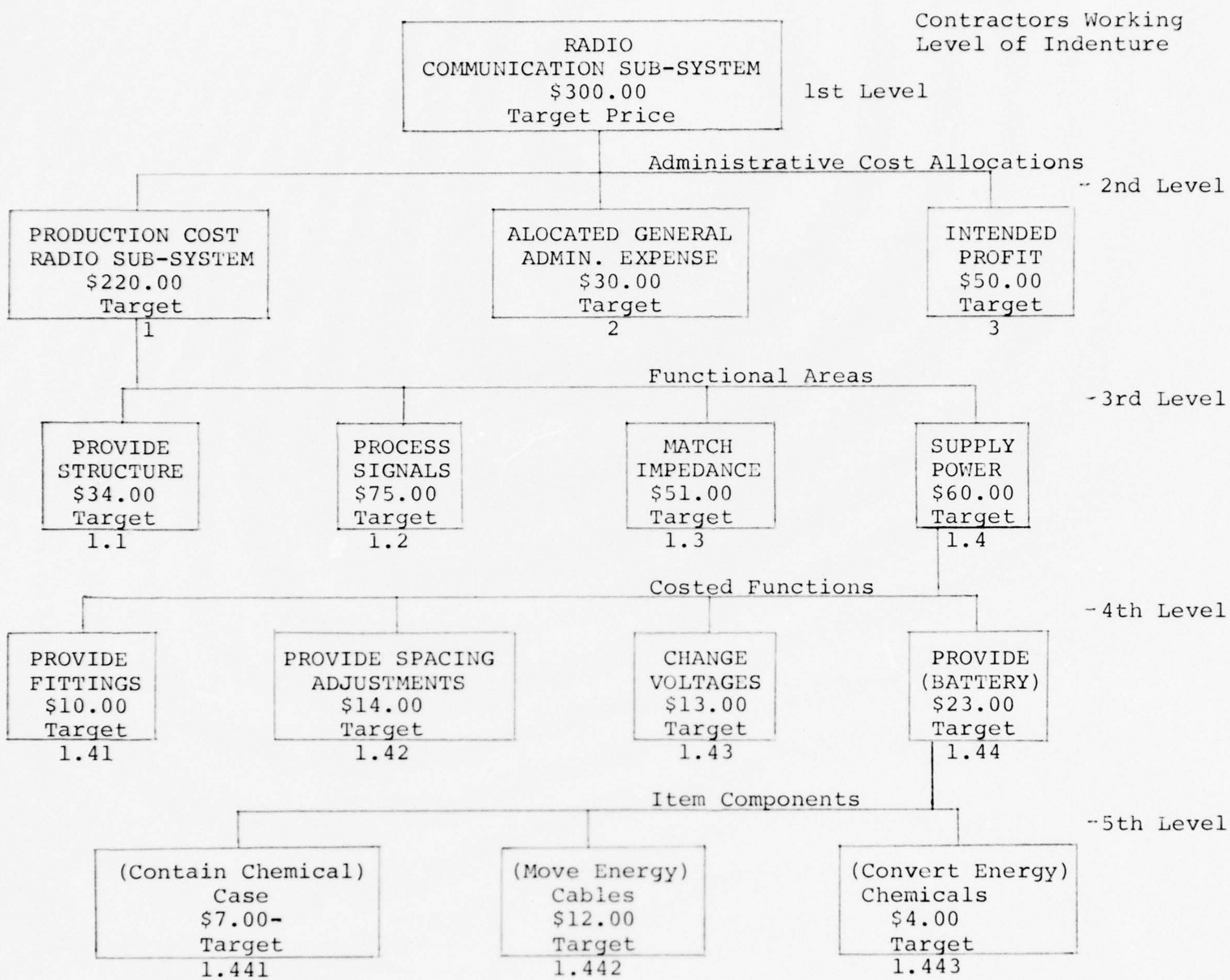


FIGURE B

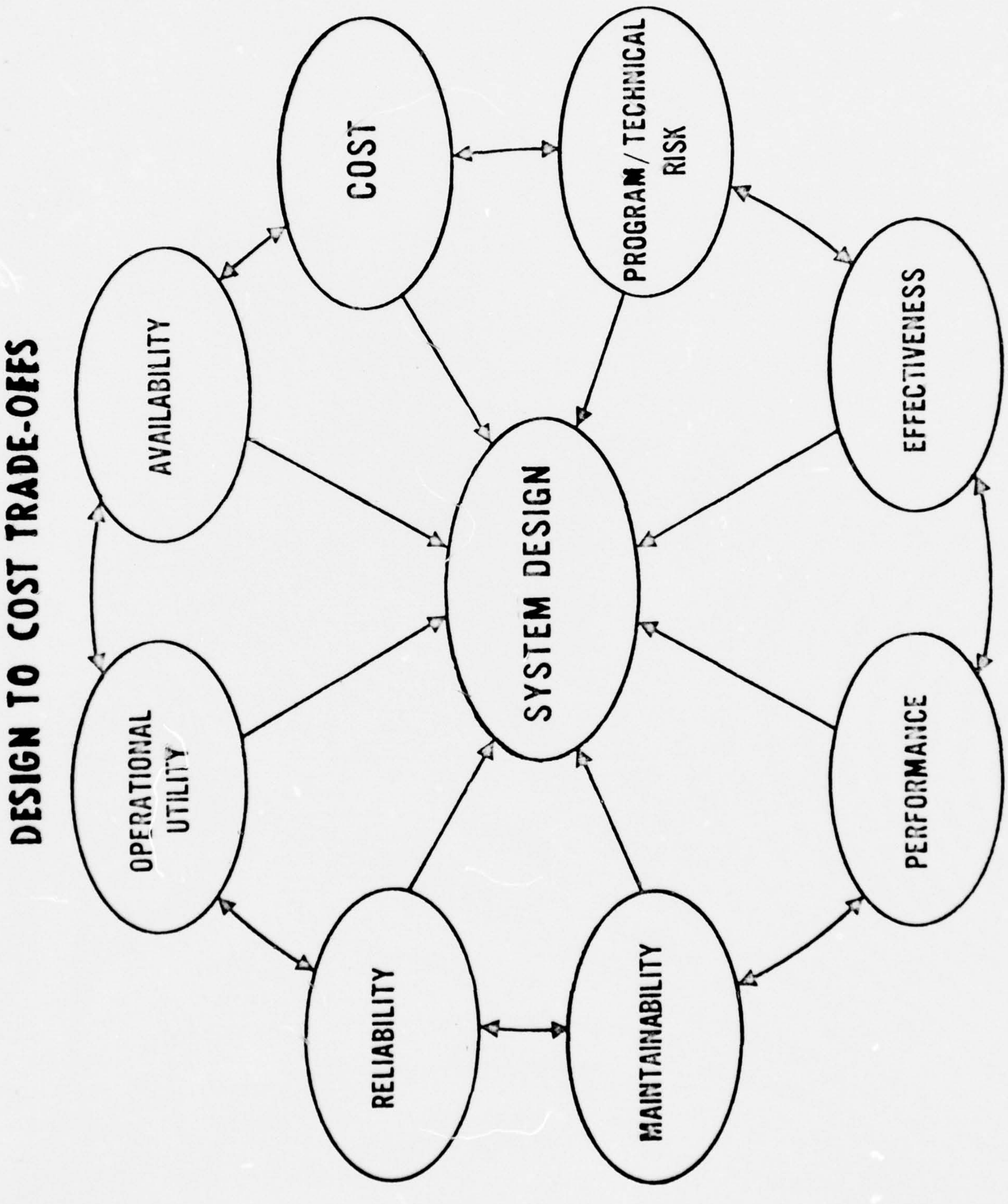

DESIGN TO COST TRADE-OFFS
COST
PROGRAM/TECHNICAL RISK
AVAILABILITY
EFFECTIVENESS
SYSTEM DESIGN
OPERATIONAL UTILITY
PERFORMANCE
RELIABILITY
MAINTAINABILITY

FIGURE C

DESIGN-TO-COST GOAL

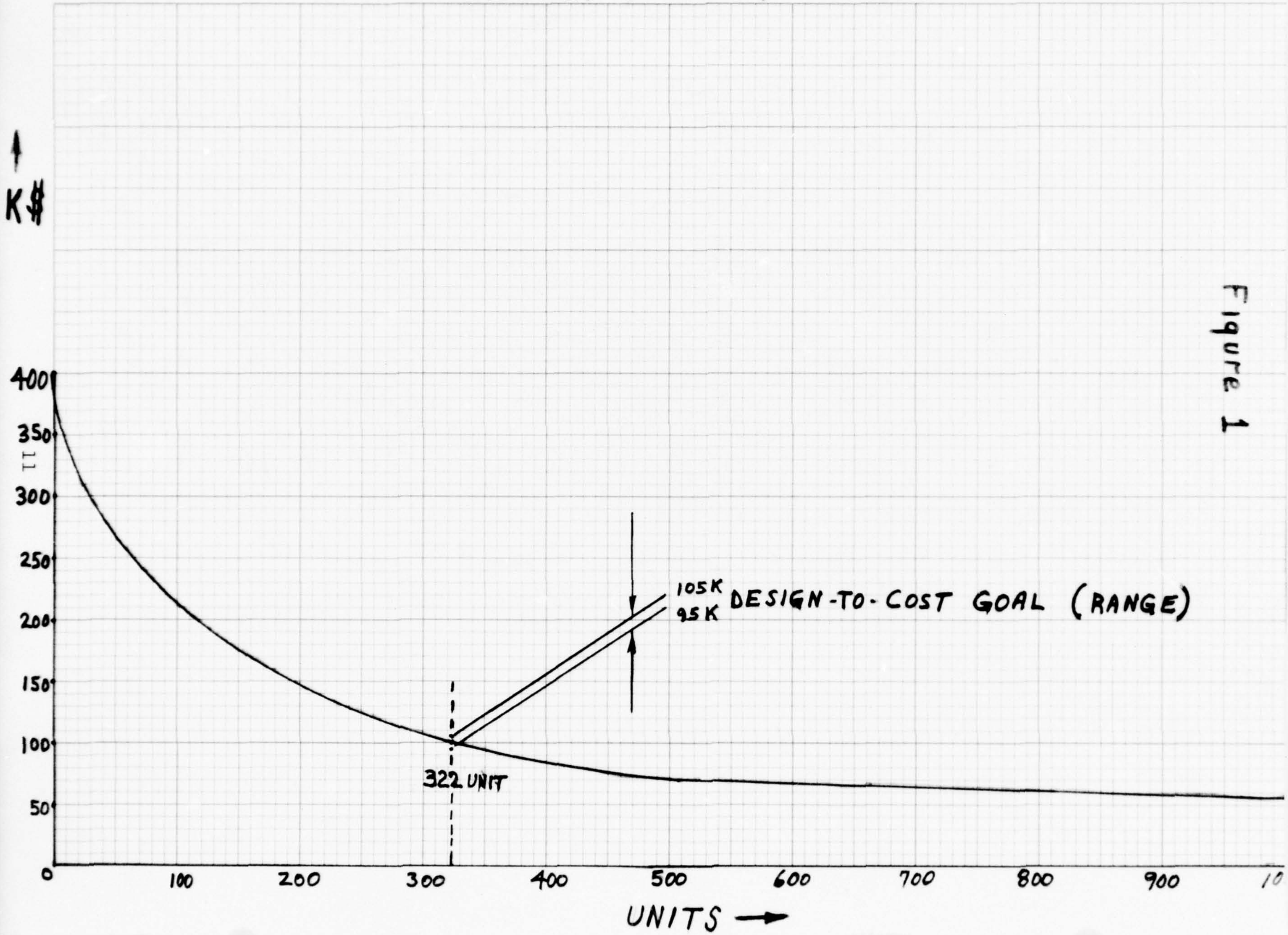


Figure 1

trates the midpoint of a 1,000-unit lot with a design-to-cost estimate of $100,000 for each production unit on an 85-percent unit learning curve. The solicitation will normally contain a design-to-cost range which will provide the designer of the system flexibility in determining his proposal. During contract negotiations, the specification design-to-cost value will be established based upon the contractor's proposed design and the factors which make up the cost. The negotiated design-to-cost will contain adjustments for the trade-offs made in the system.

Inherent in the concept is the element of trade-off - an essential element if the concept is to be effective. DOD must be able to acquire quality products at or below the design-to-cost goals. Further, designs that do not provide a significant cost effectiveness advantage over current systems may be of questionable value. Marginal and inferior products that are just cheap are not acceptable. The Government is looking for the best balance of performance, cost and schedule which produces a system within reasonable limits. The key words here are "reasonable limits."

A contractor should submit a proposal that is both responsive to system requirements and below the established unit production cost ceiling. The offeror is encouraged to submit a proposal that offers what he considers the best buy. He may propose a concept quite different from that envisioned by the Government, e.g., a single rotor in lieu of a tandem rotor; or he may propose a similar concept including reasonable trade-off proposals which, though falling outside the performance standards, will significantly reduce costs, e.g., a trade-off of five miles per hour of speed for a savings in fuel consumption.

In any consideration of trade-off areas, the schedule should be a prime target. Sometimes slips in schedule can result in an improved production cost, directly resultant from state-of-the-art advances, in either technology or production techniques. Another possible reason to slip the schedule would would be the redesign of the equipment to take advantage of a trade-off analysis that indicated a cost reduction. Purchases of more cost-effective material or parts may force a schedule slippage in order to take advantage of lower costs. Capital equipment availability is also an important factor in schedule considerations. A specific piece of equipment might not become available until a date later than originally needed to produce a system. A schedule slip could avoid the cost of buying an alternate or additional set of equipment or facilities.

Figure 2 depicts an example of the trade-off concept. The middle of the chart represents the trade-off area. It is in this middle area or band that contractors are challenged and encouraged to submit proposals. This is the area where trade-offs between performance, schedule and cost are expected.

EXAMPLE TRADE-OFF CONCEPT

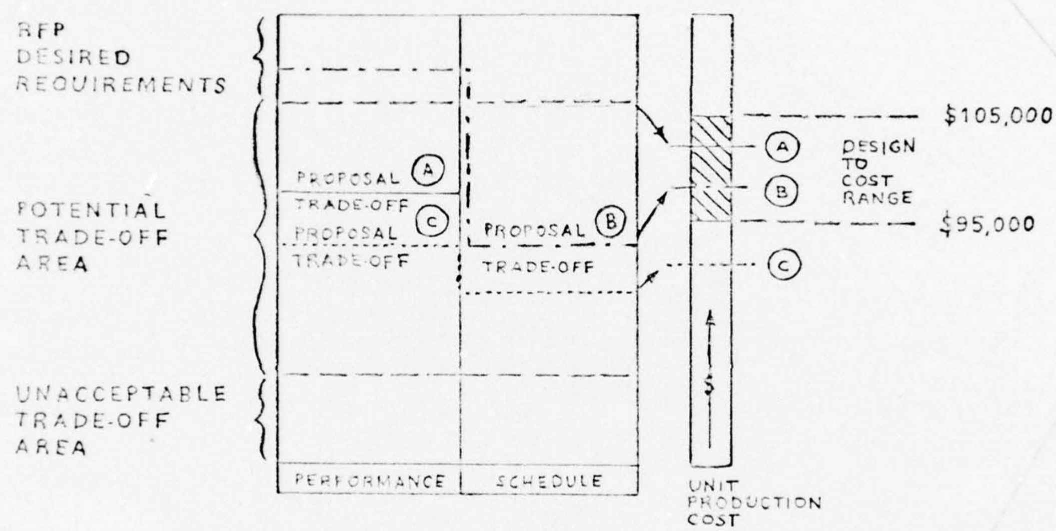


Figure 2

Proposal A illustrates a hypothetical trade-off proposal wherein performance is proposed below the upper band and schedule at the bottom limits of this upper band, with cost falling in the upper portion of the design-to-cost range. In Proposal B performance is within the desired requirements; however, a greater slippage in schedule is proposed resulting in a lower unit production cost but still within the design-to-cost range. Proposal C typifies a trade-off much greater in performance and schedule with cost falling below the design-to-cost range.

All three of the hypothetical trade-off proposals illustrated in Figure 2 are responsive to the request for proposal (RFP) and would receive considerations. The costs shown for these trade-offs are significantly lower than would have been realized without the application of the trade-off concept.

This philosophy is used to challenge industry to exercise maximum ingenuity and flexibility. Potential contractors for developing a required weapon system must be capable of providing proposals that trade off cost, schedule and performance. This is asking the maximum of industry technical and management capabilities in proposing a system that will be the best buy for the Government's dollar. It will result in systems the Government can afford to buy.

The biggest problem of the design-to-cost or production unit cost goal is establishing the right price for the required military capability. Although difficult to answer, it is a question that, in the end, must be answered by the combined efforts of Government and industry.

Contract Incentives

The contract should be structured to require and/or motivate the contractor to introduce producibility considerations into his design, suggest configuration changes which can reduce cost without seriously reducing performance, and recommend elimination of performance requirements or specifications which he considers to be unproductively costly (i.e., those which do not provide capabilities commensurate with their cost.). It is also necessary that the cost objective be subject to adjustment for changes in the definition of the end item. Considerable skill is required on the part of both the contractor and the Government to make proper adjustments to the cost objective to appropriately reflect all changes in the work. Toward this end, trade-off studies will be necessary between production unit cost and other design parameters. In order to make these studies, cost values will need to be established for other design parameters. Such trade-off studies will require cooperation and coordination between the Government and the contractor. The following is an example of contract incentive for an avionics subsystem. That contract contained a design-to-cost clause as follows: "The maximum unit price for which the Government will purchase the RFS/ECM subsystem will be $1,400,000, based upon a total production quantity of 241 units." The figure of $1,400,000 translated to a target average unit production cost of $1,272,500 and a 125% ceiling. At this target cost the contractor does not earn any "design-to-cost" incentive fee. The target cost that starts the contractor at a 10% target profit rate is $1,018,000 per unit and also earns him a $600,000 "design-to-cost" fee. From this point of reference, the contractor can earn up to just over 14% profit on a unit cost of $745,273 down to zero profit at a unit cost of about $1,300,000.

Mandate for Implementation

> "For which of you, intending to build a tower, sitteth not down first, and counteth the cost, whether he have sufficient to finish it? Otherwise, when he has laid the foundation, and is not able to finish, all those who see it begin to mock him."

If anyone requires a directive from higher authority regarding implementation of design-to-cost, attention is invited to the foregoing admonishment from a very early DTC advocate; LUKE, Chapter 14, Verses 28 and 29.

> "Enthusiastic acceptance and disciplined implementation of the (DTC) concept is an absolute must at all levels of the DOD; otherwise, we are going to price outselves out of business."
>
> William P. Clements
> Deputy Secretary of Defense
> 30 September 1975

DTC is mandatory. Rising personnel costs are compressing RDT&E and procurement funds, and realizing that personnel can only be reduced so far, it becomes obvious that other actions are necessary. We must achieve greater effectiveness by employing cost/schedule/performance trade-offs. The budget crunch is not forecast to get any better; in fact, some say that it will probably get worse, as the nation shifts more and more resources toward social programs. It boils down to the fact that except for a very few high priority needs, no matter how good a weapons system is, if costs keep increasing, it may have to be cancelled.

The challenge of trying to meet the country's defense needs is to simultaneously: (1) reduce the acquisition costs; (2) improve the field reliability, because that will, in effect, reduce operating and support costs; and (3) achieve acceptable military performance. Even though the emphasis today is on design-to-cost, it must be remembered that the objective is not to put bad equipment in the field. No matter how cheap a system is, if it will not do the job, it is not needed.

Moreover, it should be recognized that DTC is aimed at designers, in that cost is to be considered as a key design parameter for the system designers. They should address cost on a continuing basis throughout the life of the program as an inherent part of the development and production process.

The definition of a design-to-cost goal encompasses several main points. A design-to-cost goal is a specific cost number. It is expressed in constant year dollars with deflators and inflators. The goal is based on specified production quantity, rate, and schedule, and is established very early in the development process. It is an objective for management and a parameter on which designers are to base their design.

The performance characteristics must be clearly identified. How those performance requirements are specified may very well drive the program in one direction or another. In specifying performance on DTC programs, indicate the minimum acceptable performance needed to accomplish the mission. Any additional requirements should be listed as desired. Enlist the aid of the technical experts and the user to scrub performance requirements down to the basic minimum needs. Identify, in an operational scenario, the way the equipment is to be used so that the contractor is in a better position to make the trade-offs between minimum acceptable and desired performance. Ask the contractor to identify the high cost drivers from the performance characteristics requested. This will give program management a better idea of how to make trade-offs between performance characteristics. The RFP should indicate the priorities that are attached to the performance characteristics needed or desired.

In the past, too many times the schedule and performance have been detailed and narrowly defined so as to box the contractor in to the point he had little room in which to make trade-offs. Therefore, the cost was pretty well driven and defined by both the schedule and requirements specified, and the contractor had little he could do to change that cost.

If the DTC principles are applied early in the development phase when the performance and schedule are being determined, considerable flexibility can be exercised in the design. This flexibility will allow the contractor to optimize the cost/ performance/schedule trade-offs.

The concept in design-to-cost is to keep cost more constant and make the trade-offs in performance and schedule as necessary to meet cost goals while still staying above minimum performance and within the maximum allowable schedule. Do not cut and paste, and blindly attempt to apply Military Specifications and Standards from a previous contract in a DTC program. DTC requires some extra work and innovative thinking. The applicability of each Military Specification called out in the contract should be examined. Control is needed to preclude a "shotgun" application of Military Specifications and Standards to a contract. A helpful approach is to have the contractor identify the high cost drivers that result from the specifications. This should happen in the RFP cycle if possible, to provide early identification of Military Specifications and Standards that may unnecessarily jeopardize the realization of the DTC goal. Wherever possible, design flexibility should be provided through the use of functional rather than detailed design specifications.

Flexibility is the real key to achieving design-to-cost goals. Flexibility must be given to the contractor to recommend, and the program manager to accept, the trade-offs necessary to meet the DTC goal. The potential cost performance trade-offs should be defined along with who has the authority to make them. Changes must be evaluated in the light of their impact on the DTC goal.

Tracking the DTC goal should be kept as simple and direct as possible. Determine what the contractor must furnish and what the Government must do at each scheduled review and test. Avoid scheduling special reviews and tests. The ground rules for changes must be agreed to in advance, and any trade-offs made in these areas and the normal areas of cost-performance should be done openly with no surprises.

Project personnel will be attending design and program reviews. The contractor should include his progress toward meeting the design-to-cost goals in those reviews. Program management will be asked to present DTC information in the DSARC and lower level reviews. If special support from the contractor is necessary to provide that information, the requirement should be included in the contract. Normally, if the program management is making the normal reviews with the contractor, additional support will not be required.

DTC-DTLCC Relationship

In the past, schedule and performance have been the real drivers. A very important point needs to be made - the ultimate goal in DTC is to design to life cycle costs. However, it presently appears that the lack of visibility into O&S costs prevents a meaningful application of designing to life cycle costs at this time. Therefore, as an interim measure, DTC has been aiming at system production costs until visibilities into O&S costs are such that meaningful and measurable DTC goals can be established for LCC.

In the view of high level DOD personnel, DTC/DTLCC is a process--an attitude. It is not a file full of data items. It is not an office down the hall with a DTC manager in it. For DTC to work, everybody on the program must be involved and must believe in making the process work.

There seems to be some confusion as to the difference between DTC and DTLCC. To date, most new programs that have had cost as a design constraint have had unit cost goals. That was done mainly because the ability to estimate probable R&D and procurement cost was better than the ability to estimate operation and support costs. That's only tackling part of the problem, but at least it is better than doing nothing.

Recognizing the need to design to LCC, DOD now has underway a major effort to improve the visibility and management of operating and support costs (VAMOSC), hopefully, VAMOSC will improve the understanding of the true dollar impact of the various factors driving life cycle cost, and thereby put emphasis on the important cost drivers, such as all the "ilities" and "boiler-plate" data requirements. VAMOSC, a major initiative of former Deputy Secretary of Defense Clements, is directed at improving visibility for aircraft first and ships and avionics later. The OSD Cost Analysis Improvement Group, or CAIG, has also issued O&S cost guides as an aid to life cycle cost analysis.

All major programs are planned to have thresholds that relate to O&S costs such as reliability, availability, maintainability, support equipment and the number of personnel related to the system.

Every major program is now required to include, in the early phases, and on a continuing basis, design trade-offs to minimize life cycle costs. Sparing policies are being investigated to provide an improved analytical basis for spares provisioning, rather than some arbitrary funding related to a percentage of acquisition costs.

<u>Example of Successful "DTC" Program</u>

AAH RFP Cover Letter

> Low cost is a principal objective of this program. The Government intends to develop an effective AAH at the lowest possible operating and acquisition cost. In pursuing this objective, the manufacturer should carefully consider design priorities of operating cost, production cost, and performance, in that order. The Army has established a range of $1.4 to $1.6 million as the production unit cost range....
>
> Offerors should place major emphasis on cost reduction through critical examination of operational characteristics, improved producibility and innovative production techniques...(the manufacturer) may offer a design which deviates from those described (characteristics)...(but) should recognize their effect on the Army's priorities.

The Advanced Attack Helicopter Program is a good example of a successful DTC program. First, the AAH RFP cover letter shown above is an excellent model for stating the DTC goal on the first page. This letter was written in 1972, long before any DTC handbooks or a formalized DTC directive, but the desire to make DTC work was there--and the RFP reflected this.

Advanced Attack Helicopter
Contractor Design Flexibility

- "The contractor shall be solely responsible for the design, development and fabrication of the prototype helicopter."
- "The contractor is encouraged to propose changes which are outside the flexibility...which will be advantageous to the Government in cost, schedule and/or performance."
- "The contractor may make deviations...without Government approval provided...(he does) not degrade the air vehicle performance below any of the following (floors)...."

Regarding flexibility, the provisions for it on AAH are a good example of how to do it. The last bullet looks like it may be "Catch 22", but it isn't. The following table shows the AAH approach to the so-called performance "floors."

Advanced Attack Helicopter
Floors

Characteristics	Mission
o Cruise Airspeed	o 145 knots, true
o Vertical Flight Performance	o 450 Ft/Min
o Endurance (Primary Mission)	o 1.9 Hours
(Alternate Mission)	o 2.5 Hours
o Payload (Primary Mission)	o 8 Tow Missiles and 800 Rds of 30MM Ammo

These are all the "floors." Only five! That's the secret--only a few "floors." All the rest of the multitude of "requirements" normally imposed on a program are tradeable. It may be desireable to send out a supplementary list of "desirements", but if this is done the bidders may feel you're not serious about making DTC work and allowing trade-offs.

Of course, this AAH RFP was for the validation phase and room for flexibility lessens in later phases, but there still is room for intelligent trade-offs in Phases II and III and RFPs should encourage these trades.

Example of Poor Implementation

Quote from Recent Computer Solicitation

> (3) Design-to-Cost Plan: The offeror shall prepare a design-to-cost plan which will adhere to the objectives of design-to-cost (DTC) as set forth in DOD directives 5000.1 and 5000.28."

Here is an example of how not to do DTC/LCC. These words are taken from a recent RFP for a major computer system acquisition. Not only was it so stated, but no goal was established by the procuring activity and the proposed response to this "requirement" was specifically limited to 10 pages. Furthermore, everything else was required in the offerors' proposals until it added up to nearly 1,200 pages to be "responsive." Alternate proposals were sought, but only after the offerors wrote a "responsive" proposal. This is how not to do it, in spades!

Another area of concern is industry's lack of responsiveness to requests for candid comments on draft RFPs. To date the response of industry to official program contracting office requests for comment on a draft RFP have been "underwhelming." It is because-industry is apprehensive about revealing "white rabbits" prematurely in the process of commenting on RFPs, and no one wants to tell the customer he is wrong. However, draft RFPs should be issued so that DOD can get meaningful inputs from potential suppliers on the cost drivers in specifications. It behooves program managers to convince industry that they sincerely need their comments and suggestions for improving the RFP and it is in their interest to do so.

Industry can also help DOD to construct a solicitation in such a way that it is possible to offer alternative approaches without having to request deviations. Program managers should also use industry to help DOD win the battle against excessive data requirements. The computer solicitation mentioned earlier, which was for an "off-the-shelf" machine using Government-furnished computer support software, included seven pounds of data descriptions and requirements that translated into deliverable data under the terms of the ultimate contract.

Imagine how many pounds of paperwork those seven pounds of requirements-will generate!

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