THE PROGRAM PLANNING REVIEW (PPR)

"- - MILESTONE OR MILLSTONE" ?

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ABSTRACT

Current Air Force practices invoke the Program Planning Review (PPR) and its associated data submissions and review meetings on all new simulator procurements. The PPR, as defined by Air Force policy, provides both the contractor and Air Force program offices with insight into the program plans to insure successful completion of all contract objectives.

The PPR requirements have been the subject of recent comments, studies, and reviews. The resulting opinions have consistently questioned the "need" for the in-depth planning and related data submissions required to support the PPR Milestone within the first four months after contract award. The arguments both for and against concern the quantity of data submitted, the number of reviews scheduled, and the resulting impact on the contractor.

This paper summarizes the successful completion of the PPR requirements on a current Air Force simulator contract where proper preparation and implementation of the program plans by the contractor, and prompt, explicit review by the government, resulted in a program baseline which has met all cost and schedule objectives to date.

INTRODUCTION

The Program Planning Review (PPR) -- is it a new milestone or another millstone? Technical Reviews conducted in accordance with MIL-STD-1521 to assess the degree of completion of major technical milestones, have been a normal part of Air Force procurement practices for many years. We are all familiar with the System Requirements Review (SRR), the Engineering Design Review (EDR), the Preliminary Design Review (PDR), and the Critical Design Review (CDR). Although many view these technical milestones as the most important events in a design and development project, their success can only be as good as the underlying planning leading up to their execution. The Air Force has formally recognized this planning need within the past couple of years via the implementation of the Program Planning Review milestone.

The Air Force defines the Program Planning Review as a milestone which provides executive level management, in both the Air Force and contractor organizations, with insight into the program planning and overall management approach to be utilized in executing the requirements of a particular contract. Execution of this milestone has now become a standard part of all Air Force simulator procurements. Normally the Air Force requires that the PPR be conducted early in the program, i.e., within the first 110 days of contract award. Successful completion of the milestone is normally defined as submission, review, and approval of several contract data items; the execution of a formal meeting at which the contractor presents his Program Management Plan; and the completion of an executive level session attended by contractor and government management to critique the activities leading up to the PPR Milestone.

PPR DATA REQUIREMENTS

Air Force operating instructions normally specify that certain specific planning documents be delivered, reviewed by the government and deemed satisfactory, before the Program Planning Review milestone can be considered complete. The F-16 Digital Radar Land Mass Simulator (DRLMS) Contract, executed in 1981, included a collection of most of the plans required for the standard PPR milestone as follows:

1. Configuration Management Plan (DI-E-3108)
2. Program Milestones (DI-A-3009/M2)
3. Integration Support Plan (DI-L-30318)
4. System Test Plan (DI-T-3701A/M1)
5. Technical Manual Plan (DI-M-6154)
6. Computer Program Development Plan (DI-F-30567A/M4)
7. Contract Work Breakdown Structure (DI-A-3023/M)
8. Firmware Development Plan (UDI-E-3935-ASD/M3)

9. Systems Engineering Plan (DI-S-3618/M1)

10. Production Plan (DI-P-3460/M)

In addition, the Air Force may also require delivery, review and approval of additional data items involving planning, prior to closing the PPR milestone. These may include the System Safety Program Plan, Reliability and Maintainability Demonstration Plan, the Pre-operational Support Plan, and Training Planning Information.

PLANNING EXPERIENCE

The F-16 DRLMS PPR Milestone was defined to be complete by the fifth month. Although this was beyond the 110 day recommendation of Air Force operating policy, it proved to be a more suitable schedule for a development program scheduled to run for forty months. The contract also required the development and delivery of several other planning documents, in addition to the ten (10) identified above. Although these were not prerequisite to satisfactory completion of the PPR Milestone, they were scheduled to be submitted within the first five months of the contract, thus, adding to the contractor's planning workload. Of the fourteen plans specified for submission within the first five months, ten of the plans were due within the first 90 days with seven of these scheduled to be submitted within the first 60 days!

Why does the Air Force insist upon this extraordinary amount of planning? The record shows that the reason for most program failures over the past several years is due not to weak execution, but to poor planning -- unrealistic, inadequate, and insufficient planning is the most likely cause of program failure. Planning is usually cited as being the first of the five fundamental functions of management; the others being organizing, staffing, directing, and controlling. Planning is of particular importance in research and development project management because usually there is no other experience factor to rely on for comparing actuals versus experience, as there is in manufacturing.

PLAN THE PLANS

Why are so many plans required which seemingly overlap and duplicate each other? A good performance measurement plan provides a thorough definition of all aspects of the contractual effort. Scheduling is an important and integral part of the overall planning effort because the scheduling process forces people to quantify their effort in discrete terms and place their tasks in proper relationship to each other. This task identification is naturally facilitated by using a proper work breakdown structure to progressively identify each element of the item under development, as well as the activities required to accomplish the effort. Since a "Plan for Planning" is necessary to insure integration of all planning/scheduling functions with the contractual schedule constraints, which may be dictated by delivery dates, program milestones, etc., it is only natural that the Program Milestone and Contract Work Breakdown Structure data items, identified above, are usually specified for delivery early in a program.

The Contract Work Breakdown Structure establishes the framework for reporting program schedule, technical performance, and cost. It provides a basis for uniform planning and status reporting and also provides the structure for proper assignment of responsibilities within the contractor's functional areas. The Program Milestones are based upon the work breakdown structure and the contractual constraints.

These two documents provide the foundation for all subsequent planning, to insure that all contractual effort is defined and scheduled to the maximum extent possible, and the resources for accomplishing the work are properly identified and allocated. The planning within each functional discipline is then documented per the requirements of the specific data item description as noted in the previous list of PPR required data submittals.

Each plan forms the basis for effective communication, not only between the contractor and the government, but more importantly, between the responsible individuals at each level within both organizations. Effective communication will lead to effective management, and effective communication must be a dialogue between the responsible individuals within and between each organization, and not merely a series of parallel monologues. Effective plans are most efficiently prepared and reviewed when the responsible individuals within the affected disciplines perform the planning and reviewing.

TOO MUCH DATA?

Now that we understand the reason for the planning, why is it so difficult to complete? The fourteen data items which constituted the planning requirements on the F-16 DRLMS program were just the beginning. During the first five months of this contract, there were 55 data submissions, or approximately one submission every second working day. These data submittals were prepared against a total of 29 different data item descriptions, including the 14 delineated above. These submissions ranged from a relatively straightforward Agenda to, and including, a comprehensive System Test Planning document. Air Force review, comment, and approval were required on 39 of the 55 submissions. The "Plan for the Planning" worked! Over 70% of the 55 submissions were completed on, or ahead of schedule by the contractor, and only four of the deliveries which were late were delinquent by more than a week.

TOO MANY MEETINGS?

The Program Planning Review is not the only meeting scheduled to take place during the first five months of the contract. In addition to planning and preparing data for submission to the government, the contractor must also perform some "real" work. The real work is normally the output of the system engineering process conducted during the first several months of the program. The specifications must be reviewed, the functions analyzed, the requirements allocated, and a design synthesized which will lead to a preliminary system description. These events and activities must also be supported by design and trade studies, and logistics analyses. The results are then reviewed

with the government during the System Requirements Review.

Successful completion of the SRR then leads to the development of conceptual design for subsystem components, with due consideration given to continuing trade studies and technical interface compatibility. Interface agreements are established during Interface Control Working Group (ICWG) meetings and a Part I Interface Spec. developed. One or more Engineering Design Reviews may be conducted following the SRR before holding the first formal Preliminary Design Review.

MEETING EXPERIENCE

During the five month period leading up to the PPR, the F-16 DRLMS Program completed a Post Award Conference (PAC), a System Requirements Review (SRR), two Engineering Design Reviews (EDR), two Program Management Reviews (PMRs), a Provisioning Guidance Conference, a Support Equipment Guidance Conference, a Parts Control Board Guidance Conference, two ICWG Meetings, a Tech Pubs Guidance Conference, a C/SCS Implementation Review, and finally the Program Planning Review (PPR). All of these meetings were completed to the full satisfaction of both the contractor and the government. Fortunately, many of the meetings were conducted "back-to-back" to minimize the impact to both organizations. The F-16 DRLMS contract also required the implementation of coproduction planning to meet the requirements of the F-16 Multi-national Agreement as governed by the Memorandum of Understanding executed in June 1975 by the United States, Norway, Denmark, Belgium, and the Netherlands. The coproduction involvement added a second level of complexity to the planning process and, in turn, required the implementation of Technical Assistance Agreements and data export licenses to ensure that all State Department provisions were satisfied.

PPR MEETING

As noted previously, Air Force operating policy requires that a formal Program Planning Review Meeting be held with contractor and government representatives to review the program management plan. In order to ensure satisfactory and timely review of the pertinent detailed plans prior to their final approval and implementation, the F-16 DRLMS Program conducted the Program Planning Review in two increments. The first increment, which was conducted in the middle of the third month in conjunction with a PMR/EDR meeting, included a review of all applicable plans submitted during the first 90 days. The second and final PPR incremental meeting was conducted during the middle of the fifth month for the purpose of reviewing the remaining planning documents and the contractor's program management plan. The typical Air Force Work Statement identifies the following topics for discussion during the presentation of the program management plan at the Program Planning Review:

1. Risk/problem identification, ranking, avoidance/reduction and control
2. Establishment of cost, schedule and performance baseline (including critical path identification and manloading)
3. Progress tracking and reporting of the baselines
4. Definition and implementation of contingency plans
5. Subcontract management
6. Government/contractor relationships
7. Contractor management information and control systems

Simply stated, these topics provide the contractor with the opportunity to outline his management philosophy and techniques for "doing business."

PLANNING CONTROLS

Program Managers must be concerned with the control of expenditures of money, time, and human resources to achieve the desired system performance. Consequently, Program Managers are interested in having visibility of the progress in achieving the desired technical performance, cost, and schedule objectives. In this effort, they are in turn, dependent upon the quality of data furnished by the management control system. The foundation of the management control system is the program management plan. The program management plan, in turn, is the collective set of functional plans which start with the Statement of Work (SOW) and:

- Determine the nature and scope of work
- Determine the resources to be applied
- Determine the results and/or output to be achieved
- Establish the procedures for consistent-/systematic handling of work
- Establish the policies and rules for routine repetitive tasks
- Define the organizational responsibility-/accountability for accomplishments
- Define the sequence of actions to perform the tasks
- Define the schedule requirements

Although plans provide the Program Manager with the management control device for monitoring progress, the principal mechanism for achieving an integrated plan is the work breakdown structure (WBS). Since an important aspect of program control is the proper definition of the task to be performed, the work breakdown structure is an essential device for identifying the contractual tasks. For program planning and performance measurement purposes, it is desirable that the WBS be structured in accordance with the way the work is actually going to be performed. The Air Force normally specifies that the top three levels of the contract WBS be selected from options contained in MIL-STD-881. The summary level items are normally included in the contract and should provide a useful structure for future contract status reporting. The contractor may then extend the WBS in any manner he chooses in an effort to divide the contractual

tasks into manageable pieces of effort, for which internal responsibility can be assigned. Although such a breakdown is commonly used in manufacturing, it is usually more difficult to establish in engineering, where the tendency is to describe the effort in broad general terms, identifying only near-term effort in detail. This lack of task definition can easily lead to down-stream surprises on projects which appear to be doing well, simply because it is virtually impossible to determine what resources are required for unplanned work. Thus, we see once again the necessity for early, adequate, and proper planning and planning controls.

MANAGEMENT TECHNIQUES

How can the program management team develop the dozens of data submissions, prepare for and attend the dozen or so meetings, and still be able to effectively plan manpower requirements, develop comprehensive schedules and time phase budgets during the same period? They can't -- and they shouldn't attempt to! Just as the work breakdown structure is a formal method for identifying and defining the contractual tasks, so is a contractor's organizational chart a representation of the formal structure which reflects the manner in which the contractor will organize the people who will do the work. Effective program management plans are more realistic if they are prepared "bottoms-up" by the individuals responsible for their ultimate implementation. The F-16 DRLMS contractor employed matrix management techniques, with full delegation of responsibility and authority to the functional organizations and individuals responsible for executing the tasks. This technique was effectively employed during the period leading up to the Program Planning Review to insure that all plans, data item submissions, and formal meetings were properly and successfully completed. The program management staff defined the "big picture" viewpoint to insure that the planning details being implemented throughout the matrix organization were consistent with the overall contract requirements. The creation of a multidisciplined program management staff, capable of "planning the planning" and promulgating the policies, procedures, and philosophies of the program, insured that the functional area specialists worked together for the common set of program objectives.

TEAM WORK

The Program Managers must establish and maintain a relationship of trust and confidence between the government and contractor program management functions. These relationships should be built at all levels of interface between the contractor and government to insure that there is more emphasis on "what" is right, rather than "who" is right. Neither program management team can be successful if the other fails. Therefore, it is essential that the communications channels be established and kept open early in the program. Each of the meetings specified in the work statement provide a vehicle for establishing effective communications. Each of the planning documents prepared and submitted by the contractor for government review and comment, provides a vehicle for understanding by both organizations. The PPR milestone, and the events leading up to it, will be successful if both organizations are equally involved in achieving the program objectives. The contractor must understand the government's program objectives, and the government should also understand the contractor's objectives. Planning is fundamental to the program's objectives. How can you tell if you are going to achieve the program's objectives if you don't have a plan to tell where you are going?

SUMMARY

In conclusion, it is apparent that the innumerable data submissions and meetings -- squares which must be filled before the PPR is scored complete -- could easily be viewed as a "millstone" by the program management team. The F-16 DRLMS Program has proved that the "squares can be filled" with positive program impact. Proper planning will not slow down the "real" work. It will insure its success. In view of the numerous data submissions and formal meeting requirements, the contractor is likely to assign work priorities which will satisfy the most people in the near-term. In doing so, he often gives the planning process far less priority than it needs. Much to his surprise, he may soon find that temporary or inadequate submissions have become the "baseline," thus, a new problem may arise -- explaining why the measured performance does not satisfy the criteria set forth in the "temporary" (and inadequate) plan. If the contractor finds himself in this vicious circle, he may never recover enough to fully develop an adequate plan. Therefore, the Program Planning Review could indeed become a "millstone" to the program management team, if treated lightly. The F-16 DRLMS Program has demonstrated that proper program planning, by both the contractor and the government, leads not only to successful completion of the PPR Milestone, but also to successful implementation of the program and achievement of its objectives.

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