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DEFINITION OF A MANAGEMENT INFORMATION SYSTEM
TO SUPPORT PERFORMANCE RISK ASSESSMENT

THESIS

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Captain, USAF

AFIT/GSM/LSR/89S-43

DEPARTMENT OF THE AIR FORCE
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Wright-Patterson Air Force Base, Ohio

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DEFINITION OF A MANAGEMENT INFORMATION SYSTEM

TO SUPPORT PERFORMANCE RISK ASSESSMENT

THESIS

Presented to the Faculty of the School of Systems and Logistics

of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the

Requirements for the Degree of

Masters of Science in Systems Management

Paul W. Thurston Jr., B.S.

Captain, USAF

September 1989

Preface

The purpose of this study was to determine if a management
information system could be developed to support the performance
assessment process. The immediate need for such a system is to fully
implement the Air Force System Command initiatives for improved use of
past performance information to support source selections. The method
chosen for system development included steps for problem definition,
requirements analysis, and development design.

Although development of a complete operational system was out of the
scope of this research effort, the baseline requirements and conceptual
design have been established. The baseline and conceptual design will
provide a firm foundation for further development and implementation of
the system.

The core of this study was the requirements analysis. Interviews
were conducted with twenty-nine military and civilian personnel who had
experienced a performance risk assessment first hand and eight
individuals who are currently responsible for administration of the
Contract Performance Assessment Reporting System. I am deeply indebted
to these people for their time and patience. Special thanks must go to
Maj Larry Allen, Capt Dan Behne, Lt Kathleen Coombs, Ms Cynthia Keefe,
Ms Pat Olson, Lt Col Gary Poleskey, and Mr David Smith for putting in
that extra effort and providing encouragement when it was really needed.

I would also like to thank Ms Susan Wright who pointed me in the
right direction when this research effort was just beginning. Ms Wright
opened the doors necessary to get this project under way.

I would like to extend my appreciation to Ms Shirley Sawyer for her assistance in developing an automated report form for performance assessments. For this and her continuing support during times of crisis I am truly indebted.

My deepest respect and appreciation are offered to Dr. Charles Fenno who was true partner in this research. His quiet style of motivation and encouragement enabled me to take this project further than I ever thought possible. Dr Fenno's persistence on quality was always present. Because of his persistence, I can honestly say that I feel good about the contents of this book and how it will represent me to its readers.

Finally, I wish to thank my wife Terry and sons Paul and Andrew. Their love and patience kept me going. Without their support this project would never have been completed.

<div align="right">Paul W. Thurston Jr.</div>

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Abstract

Air Force Systems Command has recently put forth two major initiatives for improving the performance evaluation process to support source selection decisions: the Contractor Performance Assessment Reporting System (CPARS), a system for recording and distributing contractor performance information; and the Performance Risk Assessment Group (PRAG), a panel of seasoned acquisition experts chosen for each source selection to provide a performance risk assessment for each proposing contractor.

CPARS exists as identical sets of contract assessment reports located at each of the product divisions. The files are updated as new reports are mailed by the originating agency to each of the other product divisions. Data requests to support the PRAG are responded to with copies of the existing assessment reports. There is no automated capability to extract, reduce, or transform the CPARS data into information which can be readily used by the PRAG.

The purpose of this study was to determine if a management information system based on the CPARS could be developed to support the performance assessment process.

A tailored approach to the traditional method for software systems development was chosen to design an automated system to support performance risk assessment. This approach included steps for problem definition, requirements analysis, and development design.

Requirements of the system were determined through structured interviews with PRAG members and CPARS focal points. CPARS focal points are individuals in each product division who are responsible for the administration of the CPARS data base.

Implementation of the requirements analysis step resulted in a complete description of the procedures used and the information required to support the performance risk assessment process. The role of the CPARS as a primary source of information to support this process was described and assessed. The administrative procedures used to collect, process, distribute, and protect contractor performance assessment reports were determined.

The information collected from PRAG members, CPARS focal points, and applicable regulations was synthesized into a concise statement of the required capabilities for the automated information system to support performance assessment.

The research process followed the tailored methodology through the development of a conceptual model for the system. The conceptual model developed describes the applications necessary to support the required functions. The conceptual model demonstrates how the applications of the information system can assist the user in the various steps of the assessment process.

Sufficient time allowed for the development of an initial capability which demonstrates selected applications described in the conceptual model. The software operates on an IBM XT compatible computer system using Enable (Version 2.15). A copy of the software can be obtained from the Director of Research, AFIT/LSC Wright-Patterson AFB OH 45433-06583.

DEFINITION OF A MANAGEMENT INFORMATION SYSTEM

TO SUPPORT PERFORMANCE RISK ASSESSMENT

I. Introduction

Background

The primary objective of the source selection process is to choose the offeror who can best be expected to meet the government's requirements at the lowest possible cost (20:3). An important consideration in this process is the determination of contractor effectiveness through analysis of prior performance.

Over the past 25 years, contractor past performance has been evaluated in source selections as either a specific criterion, an assessment criterion, or a general consideration. Significant deficiencies have been found with each of these approaches (39; 3) Several attempts at data base systems for tracking contractor performance have also proven unsuccessful (31; 35; 3).

Effective use of contractor performance information was emphasized in a 1986 report to President Reagan, as one of the critical elements in the source selection process. Part V of A Formula For Action, A Report to the President on Defense Acquisition by the President's Blue Ribbon Commission on Defense Management, April 1986, calls for "increased use of commercial-style competition, emphasizing quality and established performance as well as price" (46:62). This report, better known as the

"Packard Commission" report, states that government procurement should

mimic those practices which have been highly successful in industry.

> Typically, an industrial company will keep lists of qualified
> suppliers that have maintained historically high standards of
> product quality and reliability. As long as these standards are
> maintained, industrial buyers do not require exhaustive inspection,
> and thereby save expense on both sides. Suppliers are highly
> motivated to get and stay on lists of qualified suppliers by
> consistently exceeding quality control standards. (46:62-63)

In May 1988, General Bernard P. Randolph, Commander of Air Force

Systems Command, issued his support of the Packard Commission findings

and described how the Air Force acquisition community would implement

them.

> Until now, the military didn't rely too heavily on past
> performance evaluations; but, the "hit and run" approach doesn't
> make sense. Past Performance will be a key factor in our source
> selections from now on. This initiative implements a Packard
> Commission finding, uses a well-founded commercial practice that
> prime contractors employ in their vendor rating systems, and
> recognizes good performers. The idea is to take a systematic look
> at contractors' past performance as a risk consideration. Just as
> we assign *technical* risk to a contractor's proposal in source
> selection, we'll now assign *performance* risk based on a company's
> track record on past contracts. (48:2)

Air Force Systems Command has recently put forth two major

initiatives for improving the performance evaluation process: the

Contractor Performance Assessment Reporting System (CPARS), a

centralized, manual system for recording and distributing contractor past

and present performance information; and the Performance Risk Assessment

Group (PRAG), a panel of seasoned acquisition experts chosen for each

source selection to provide a performance risk assessment for each

proposing contractor.

Air Force Systems Command's Contractor Performance Assessment

Reporting System (CPARS) is the most recent initiative for tracking

contractor past and present performance. Annually each program manager is required to prepare an assessment of the contractor's performance based on ten criteria (product/system performance, software development, engineering design/support, schedule, cost performance, product assurance, test and evaluation, management responsiveness, integrated logistics support, and subcontract management). These criteria represent a determination of performance made by the government program manager based on a four-level scale ranging from unsatisfactory to exceptional. Each assessment must be supported by objective evidence which is supplied in the program manager's narrative (1:1,6). A copy of Air Force Systems Command Form 125, "Contractor Performance Assessment Report" is presented in Appendix A.

Each evaluation must go through a rigorous process to ensure objectivity and fairness. The program manager initiates the process by probing the functional experts for objective evidence to assess the contractor's performance. After performing the initial assessment, the "preliminary assessment report" is sent by the program manager to the contractor for review. The contractor's response is optional. If provided, the reply should focus on the objective portion of the program managers' comments. The contractor's response should be limited to the space provided on the assessment report plus one additional page. The response must be returned to the program manager within 30 days after transmittal (1:2).

After reviewing the contractor comments, the program manager has the opportunity to revise the initial assessment. This must be accomplished on a new form which will be attached to the preliminary report. The

program manager signs the assessment report and submits it for review.
The reviewing official, at least one level higher than the program
manager, examines the assessment to make sure that it is consistent with
other evaluations for that contract, and that all ratings are
substantiated with objective comments (1:1). Copies of the assessment
report are sent by the product division CPARS focal point to each of the
other product divisions for input into the command wide data base. The
original is kept by the local CPARS focal point for the originating
product division (1:2).

The initial version of CPARS has been limited to concept definition,
full-scale development, and full-rate production contracts costing five
million dollars or more. The system collects assessments on projects
currently under contract with any of the five Air Force Systems Command
product divisions (Aeronautical Systems Division, Ballistic Systems
Division, Electronic Systems Division, Munitions Systems Division, and
Space Systems Division) (1:1). CPARS, in its current state, exists as
identical sets of contract assessment reports located at each of the five
product divisions. The files are updated as new reports are mailed by
the originating agency to each of the other product divisions. Data
requests to support source selections are responded to with copies of the
existing contract assessment reports. There is no automated capability
to extract, reduce, or transform the CPARS data into information which
can be readily used by the PRAG.

According to Air Force Systems Command Regulation 800-54,
Acquisition Management, Contractor Performance Assessment:

> The sole purpose of the CPARS is to provide program management
> input for a command-wide performance data base used in Air Force

Systems Command source selections. Performance assessments will be
used as an aid in awarding contracts to contractors that
consistently produce quality products that conform to requirements
within contract schedule and cost. (1:1)

The Performance Risk Assessment Group (PRAG) uses information

derived from the CPARS data base to provide a performance evaluation and

risk assessment. Risk assessment is a confidence measure associated with

the contractor's ability to perform the proposed effort (2:1). The

performance evaluation and risk assessment will consider the frequency

and severity of problems, types of corrective actions taken by the

contractor, and trends of past and present performance. It is not the

intent of the performance risk assessment to be a "simple arithmetic

function" of a proposing contractor's performance, but rather a

collection of the most relevant information with regard to that contract

(4:10).

The PRAG relies on several different sources for information,

including CPARS, to make its risk assessment. Each source of information

can be categorized by one of three types of data provided: contract-

specific, contractor-plant, or contractor self assessment, as depicted in

Figure 1-1.

Contract-specific data provides information about a single program.

The primary method of collecting this data in the past has been through

questionnaires or interviews with program managers within Air Force

Systems Command, the Air Force, or other services. Recently the standard

source for information on contract performance has become the CPARS.

However, the lack of historical data stored in the CPARS has limited the

use of the CPARS in the PRAG process. The CPARS data base contains

performance assessments for contracts which were ongoing in 1988 or
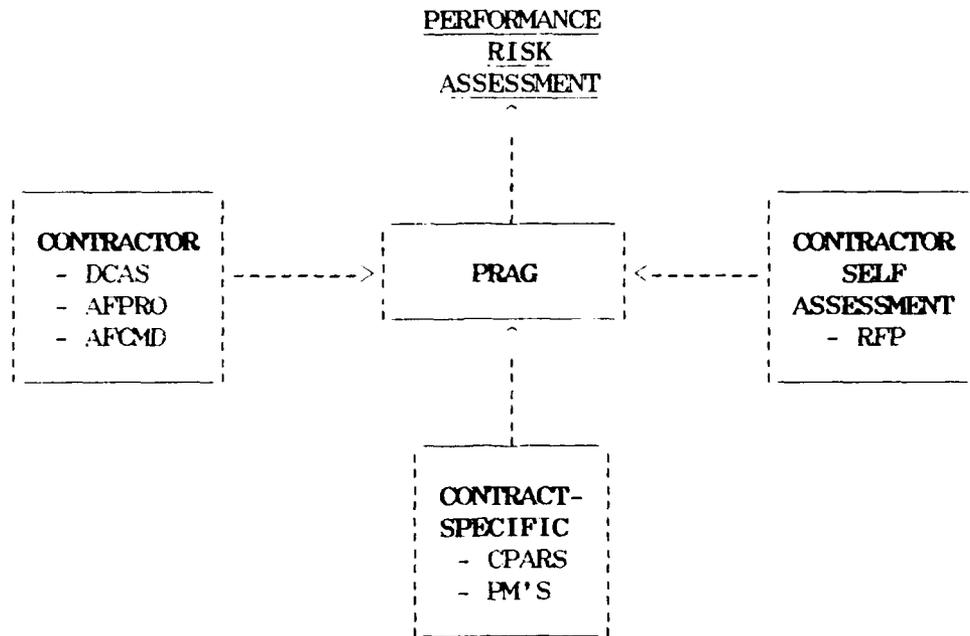
Figure 1-1.   Information Sources For PRAG

later.   No attempt was made to update the data base for prior years.
This has forced the PRAG, in the short run, to continue its reliance on
questionnaires with program managers (PM's) for contract-specific data.
It is anticipated that, as the CPARS matures, it will be the primary
source for programmatic information to support source selections.

Contract-plant data is provided by the contract administration
offices.   These include Defense Contract Administration Services (DCAS),
Air Force Plant Representative Offices (AFPRO), and Air Force Contract
Management Division (AFCMD).   The contract administration offices provide

global assessments of the contractor's internal operations and management functions (3:Sec II,6). Reports are standard within organizations, but are not standard across the contract administration offices.

Contractor self assessment is the information provided by the contractor in response to the Request For Proposal. This information is proposal specific and provides the offerors the opportunity to express their relevant experience to the type of work involved in the program.

General Issue

CPARS, in its current state, exists as five identical sets of contract assessment reports located at each of the product divisions. The files are updated as new reports are mailed by the originating agency to each of the other product divisions. Data requests to support the PRAG are responded to with copies of the existing contract assessment reports. There is no automated capability to extract, reduce, or transform the CPARS data into information which can be readily used by the PRAG.

Specific Problem

The research reported in this document had four objectives:

1. Define the information required and procedures used by the Performance Risk Assessment Group (PRAG) to institute the current policy for providing a risk assessment to support the source selection decision process;

2. Determine the extent to which information derived from a fully operational Contractor Performance Assessment Reporting System (CPARS) could support the performance risk assessment process;

3. Determine the administrative procedures used to collect, process, distribute, and protect contractor performance information under the CPARS;

4. Establish the requirements baseline and conceptual design for an automated information system, based on the CPARS, to collect, process, protect, and disseminate contractor performance assessments.

Investigative Questions

To meet these objectives, it was necessary to answer the following research questions.

1. What procedures are currently used and what types of information are required by all PRAGs to prepare performance risk assessments on proposing contractors?

2. What portion of the required information can be derived from the data resident in CPARS, and how can the data resident in CPARS be processed to provide this information?

3. What are the administrative procedures for collecting, processing, and distributing contractor performance information and how do these processes affect the architecture for an automated system?

4. What system capabilities are dictated by the information requirements of PRAGs and the implementation procedures of the CPARS?

5. How do the established requirements affect the architecture for the automated information system?

II. Literature Review

Secondary source material reported in this chapter describes the current implementation of the source selection process, establishes a historical perspective on the use of past performance information in source selections, and develops an approach to information system design. The first topic presented in this chapter is an overview of the source selection process as currently practiced in Air Force Systems Command.

Source Selection

Definition and Purpose. The strictly controlled process of evaluation and negotiation for competitive award is called source selection.

> The primary objective of the source selection process is to choose the source whose proposal has the highest degree of credibility and whose performance can be expected to best meet the government's requirements at an affordable cost. (20:3)

The two basic methods used to award government contracts in other than emergency circumstances are by sealed bids and by negotiation. The differences between these methods are highlighted in Table 2-1 (4:II-5).

Sealed bidding is the preferred choice when all of the following criteria can be met: time permits solicitation; award is based on lowest price; purchase is for standard items or services; and there is not a sole source situation (4:II-4). If any one of the last three conditions does not exist, then the contract must be awarded by method of negotiation.

The negotiation method is used when required items or services are not as determinate as those in sealed bidding, or when contracts are to

Table 2-1

Sealed Bidding Verses Negotiation Method

Sealed Bids	Negotiation
- Solicitation	- Solicitation
- Advertisement	- Advertisement
- Receive *Bids*	- Receive *Proposals*
- *Examine*	- *Evaluate*
	- *Negotiate*
- *Award to lowest responsible bidder*	- *Award to offeror most advantageous to the government*

be awarded on some justification other than price. The basic steps in the negotiation process remain the same whether performing a one-time purchase of a low cost item or of high cost items and services over a period of many years.

Every type of contract let by negotiation involves the selection of a source for award. However, the term "source selection" is normally reserved for the more formal process which involves the establishment of a structure for the sole purpose of awarding a contract to one or more bidders for a specific service. In this paper, source selection will refer to the structured process in which competing proposals are accepted and evaluated by a structure specifically established to choose one or more offerors for a single purpose. As stated earlier, the primary objective of the source selection process is to choose the offeror who provides the most credible proposal and can best be expected to meet the government's requirements at an acceptable cost.

Policy. Part 15 of the Federal Acquisition Regulations "Contracting by Negotiation," provides the criteria for establishing source selection procedures. The Federal Acquisition Regulations leave much discretion to the acquiring agency to determine appropriate evaluation factors and their relative importance.

The Federal Acquisition Regulations explicitly state that both cost and quality factors must be evaluated in every source selection. For cost, evaluation factors center around cost realism and completeness. Quality evaluation factors "may be expressed in terms of technical excellence, management capability, personnel qualification, prior experience, past performance, and schedule compliance" (54:16,925-6). More detailed guidance is provided by Department of Defense directives and service specific regulations.

Air Force Implementation. Air Force Regulation 70-15, Formal Source Selection For Major Acquisitions and Air Force Regulation 70-30, Streamlined Source Selection Procedures are the primary guidance for conducting source selections within the Air Force. Air Force Regulation 70-15 states that contract award is based on an integrated assessment of proposal contents and general considerations. Proposal contents are evaluated with respect to cost, specific criteria, and assessment criteria (20:14). Specific criteria relate to the characteristics of the program. They can include technical, management, logistics, testing and security. Assessment criteria relate to the offeror's understanding of the program and inherent abilities. Assessment criteria can include reasonableness of approach, understanding of requirement, and compliance with requirements. The subjective assessment criteria are applied in

matrix fashion to the more objective specific criteria (20:14). General

considerations include factors external to the proposal, such as pre-

award surveys and past performance. The current version of Air Force

Regulation 70-15 states that past performance can be evaluated as either

an assessment criterion for proposal evaluation, as a general

consideration, or both (20:14). Recent initiatives, especially in the

past performance area (CPARS and PRAGs), have changed the manner in which

information is addressed for the decision process.

The current implementation is depicted in Figure 2-1 below. Source

selection is based on the integrated assessment of performance risk,

proposal rating, proposal risk, and other general considerations as

applicable. Specific criteria are organized according to areas, items,

and factors. The offeror's proposal is evaluated based on specific and

assessment criteria. A proposal rating and risk are assigned for each

item and area. Past performance is included in the integrated assessment

as a performance risk. Performance risk may or may not be assessed

according to the same areas, items, and factors as the proposal rating

and proposal risk. The assessment criteria are applied to each specific

criterion.   .

The Source Selection Process: Planning and Solicitation. Source

selection is an integral part of the acquisition process. Selection

activities must be considered up-front in both the procurement planning

and the requirements documenta on phases of the process to ensure that

proper selection can, in fact, be made when the time comes. The

acquisition process can be broken down into seven different phases as

shown in the Figure 2-2. As part of that process, source selection
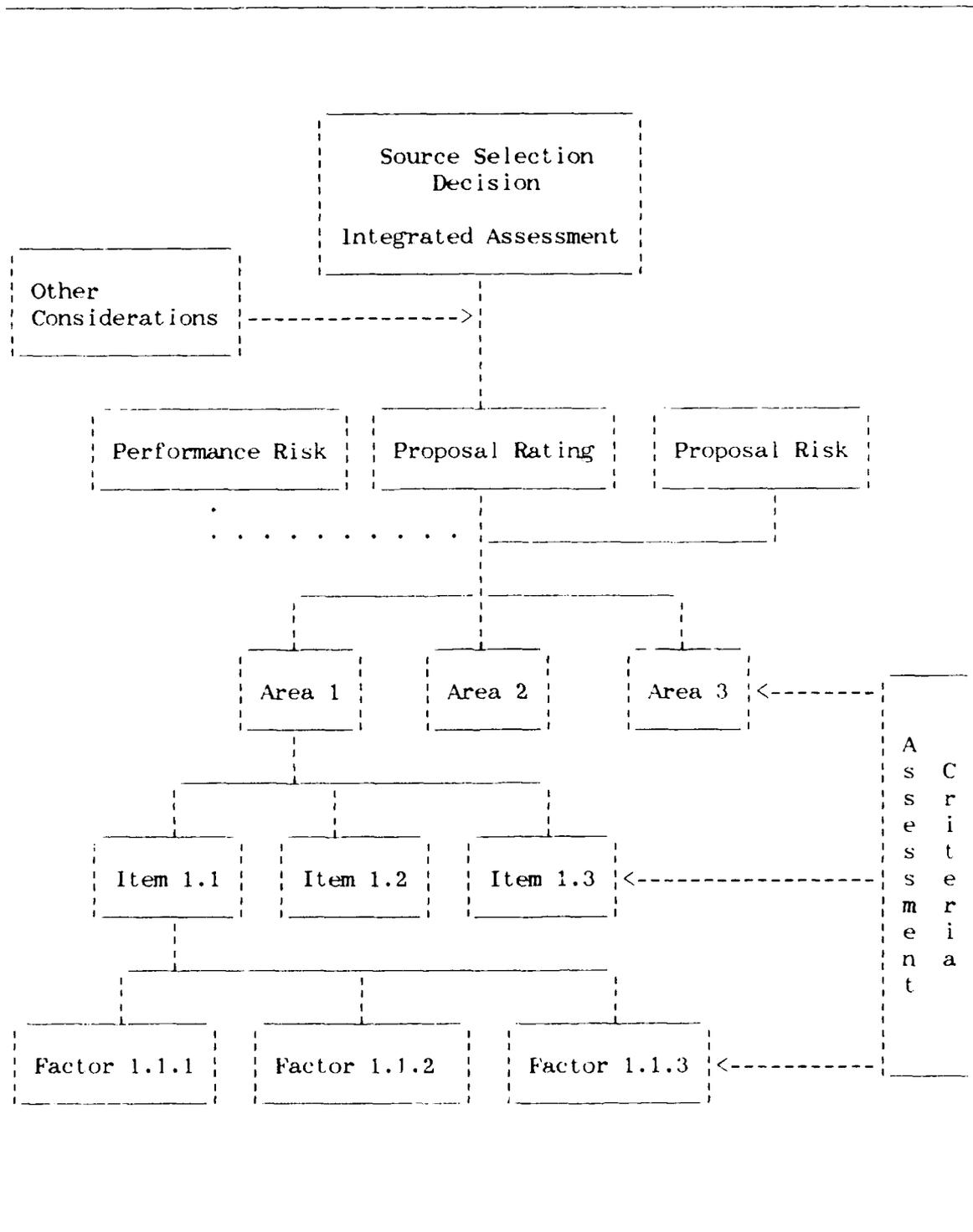
Figure 2-1. Basis for Source Selection Decision

```
                          ┌──────────────────────────┐
                          │Procurement Planning      │
                          │                          │
                          │Acquisition    Source     │ ┌─
                          │Plan      ->   Selection  │ │   ┌─────────────┐
┌──────────────┐          │               Plan       │ │   │Solicitation │
│Requirements  │ ┌────────┐└──────────────────────────┘ │   │             │
│Determination │ │Acqui-  │                            │-  │ Draft RFP   │
│              │-│sition  │─┌──────────────────────────┐│   │             │
│ Direction    │ │Strategy│ │Requirements              ││   │ RFP         │
│ & Funding    │ └────────┘ │Specification             ││   └─────────────┘
└──────────────┘            │                          │└─        │
                            │         -> SPECs         │──────    │
                            │                          │     ┌──────────────┐
                            │         -> CDRL          │     │   Source     │
                            │                          │     │  Evaluation  │
                            │ WBS   -> SOW             │     │      &       │
                            └──────────────────────────┘     │  Selection   │
                                                             └──────────────┘
      RFP    -  Request For Proposal                               │
      SPECs  -  Specifications                             ┌──────────────┐
      CDRL   -  Contract Data Requirements List            │    Award     │
      WBS    -  Work Breakdown Structure                   │      &       │
      SOW    -  Statement Of Work                          │Administration│
                                                           └──────────────┘
```

Figure 2-2. The Acquisition Process

encompasses the procurement planning, solicitation, and source
evaluation/selection phases of the process and is highly dependent on the
acquisition strategy and clear/complete requirements documentation.

Procurement Planning. The key people in the procurement
planning process are the program manager and the procurement contracting
officer. Planning for source selection begins up front with the
development of the Acquisition Strategy Document. The acquisition
strategy document is the program manager's guide to provide the required

capability to the user. This document is program oriented and may encompass many different contracts. According to Air Force Regulation 70-15, the first two steps of the source selection process are development of the Acquisition Plan and the conducting of an Acquisition Strategy Panel (20:18). Contracting strategy, competition, decision for source selection, recommendation of delegation for Source Selection Authority and type of selection procedures must all be documented in the Acquisition Plan. For the contracting officer and program manager, source selection must be a consideration from the very beginning of procurement planning.

Another major task for the program manager is to develop the Source Selection Plan. The Source Selection Plan is the key to ensuring a successful selection process. It documents every activity from preparation of the Request For Proposal to contract award. According to Air Force Regulation 70-15, the Source Selection Plan must contain the following sections (20:7-8):

1. Introduction: This is a description of the system or subsystem which is being acquired, and how it satisfies the approved requirement. The introduction should be tied closely to the Acquisition Plan.

2. Source Selection Organization: The organization structure chosen for the source selection should be described. This can take on the characteristics of one of two basic types depending on whether formal or streamlined procedures are used. The two organizational structures are shown in the figure below. Names of key members, if known, should be identified with their position title or functional area. This section should include other government organizations which will participate in

```
Source Selection                          Source Selection
   Authority                                 Authority
       |                                         |
       |---- Performance Risk                    |---- Performance Risk
       |     Assessment Group                    |     Assessment Group
       |                                         |
Source Selection                                 |
 Advisory Council                                |
       |                                  Source Selection
       |                                  Evaluation Team
       |                                         |
Source Selection                                 |
 Evaluation Board                                |
       |                                         |
 _____|_____                 _____|_____
 |      |        |       |                 |            |
Cost Management Technical Other          Contract    Technical
Panel Panel      Panel   Panels          Team        Team
 |      |        |       |                 |            |
 |_____|_____|_____|                 |_____|
         |                                        |
      Advisors                               Advisors


   Formal Source Selection            Streamlined Source Selection
```

Figure 2-3. Source Selection Organization

the process, and an estimate of the total number of personnel involved, including advisors.

3.. Screening Criteria: This section must include a description of the method for soliciting sources and ensuring competition. Criteria must be set up to make sure that the prospective contractors/contracting teams have adequate security clearances; and sufficient management, financial, technical, and manufacturing capabilities necessary to perform the task at hand.

4. Evaluation Procedures: This section describes the process or methodology by which the proposals will be evaluated. Much emphasis is

placed on the procedures used to evaluate cost and provide the best estimate of the total cost to the government.

5. Evaluation Criteria: This is a description of the types of information which the contractor will be evaluated by. It includes specific criteria broken down to areas, items, factors, and subfactors, as applicable; and a description of assessment and general criteria. The criteria will correspond to the evaluation factors listed in the Acquisition Plan. This section should also state the relative importance of each criterion to the overall evaluation.

6. Acquisition Strategy: This is a summary of the strategy associated with the specific phase and contracting effort under consideration, rather than the program view which the section name might imply. It should identify contract type, incentives, major milestones, and special contract clauses intended for use. In reality it is a summary of the information included in the Acquisition Plan.

7. Schedule of Events: A list of significant source selection activities and the time each is to be completed. A chronological list of 30 different activities is included in Attachment 1 of Air Force Regulation 70-15.

The Source Selection Authority must approve the Source Selection Plan before the solicitation phase can begin.

Solicitation. The solicitation phase begins with advertisement in the Commerce Business Daily by the contracting officer, and involves three major tasks: development and release of a DRAFT Request For Proposal, Approval of final Request For Proposal by the Solicitation Review Panel, and development of the evaluation standards.

The Request For Proposal is the government document used to solicit response from industry to satisfy a particular requirement. It describes the what, where, when, and how of the government's need. It is critical that this document be an accurate representation of the government's needs, because many of its elements will be drivers for the life of the contract. Often, a draft copy of the Request For Proposal will be sent to industry for initial comments. The additional effort of sending out a draft copy can pay off large dividends. Industry comments may point out inconsistencies, potential cost drivers, and unclear areas which could cause misunderstanding. Prior to release, the final Request For Proposal must be approved by the Solicitation Review Panel. The purpose of this review is to make sure that the Request For Proposal is a solid foundation for a workable contract.

Two sections of the Request For Proposal which are very important to the actual evaluation are Section L - "Instructions For Proposal Preparation" and Section M - "Evaluation Factors for Award." These two sections describe to industry the type of information the government is looking for (Section M) and the format it wants it in (Section L). Section M provides the actual evaluation· criteria which will be used, and the relative importance of each. The offeror must address each evaluation criteria in order to provide a responsive proposal. The only way prospective contractors can be differentiated from each other is through the evaluation criteria.

The evaluation standards developed by the program manager are the actual gauge against which the contractor's proposals will be measured. They are measures of minimum acceptable levels of conformity to the

specified requirements. The standards can be both qualitative and quantitative (4:Vll-6). The evaluation standards must correspond to the evaluation criteria listed in Section M of the Request For Proposal.

The evaluation standards are not released to any potential offeror nor any one else who is not directly involved in the source selection (20:9). Prior to receipt of proposals, the standards must be approved by the Source Selection Advisory Council or Source Selection Evaluation Team. Even though it is possible not to start working on the standards until after the Request For Proposal is released, this practice is not recommended. It is important to know that standards can be developed to measure the evaluation criteria supplied to the contractor in the Request For Proposal.

Key Players. To understand the evaluation process, it is important to be able to recognize the key players in the source selection organization and what their basic responsibilities are.

Source Selection Authority. The Source Selection Authority is the decision authority for the selection of the contracting source. "The Source Selection Authority is responsible for the proper and efficient conduct of the entire source selection process encompassing proposal solicitation, evaluation, selection and contract award" (20:5). This person approves the Source Selection Plan, appoints the chairperson and members of the Source Selection Advisory Council, authorizes release of material, and provides necessary guidance to the Source Selection Advisory Council and Source Selection Evaluation Board (20:5).

Source Selection Advisory Council. The Source Selection Advisory Council reviews and approves the evaluation standards,

determines appropriate weighting of evaluation factors, and designates the chairperson and members of the Source Selection Evaluation Board. The Council is responsible to review and evaluate the analysis performed by the Evaluation Board, compare competing offeror's proposals, prepare the Source Selection Advisory Council Analysis Report and provide guidance as needed to the Source Selection Authority (20:5).

Source Selection Evaluation Board. The Source Selection Evaluation Board conducts a detailed review of the proposals and evaluates the offeror's submission based on the evaluation criteria and measured by the evaluation standards. It must submit evaluation reports to the Source Selection Advisory Council for its analysis and be prepared to provide guidance when necessary. The Source Selection Evaluation Board will also establish a Contract Definitization Team (20:6).

Source Selection Evaluation Team. In a streamlined source selection, the functions performed by the Source Selection Advisory Council and Evaluation Board are combined and performed by the Source Selection Evaluation Team. The Source Selection Evaluation Team has also been referred to as a Source Selection Evaluation Group or a Proposal Evaluation and Analysis Group (4:V-12). The Source Selection Evaluation Team is divided into two teams, one responsible for the technical evaluation and one responsible for the contractual and cost evaluation (4:V-12).

Performance Risk Assessment Group (PRAG). The PRAG consists of a panel of seasoned acquisition experts chosen for each source selection to provide a performance risk assessment for the proposing contractors.

Performance risk is assessed at the item and/or area level and is briefed by the PRAG Chairman to the Source Selection Authority.

Program Manager/Program Office. The program office is responsible to develop the Acquisition Strategy, assist in preparation of the Acquisition Plan, and develop the Source Selection Plan. The program office needs to develop the evaluation criteria (or factors) and the evaluation standards. The program office is also responsible for all the administrative details of the source selection and protection of the sensitive data.

Contracting Officer. The contracting officer is responsible for authoring and maintaining the Acquisition Plan, issuing the solicitation, determining which contractors are within the competitive range, negotiating definitive contracts with all offerors in the competitive range, and conducting all correspondence between the government and the contractor. The contracting officer is appointed the leader of the Contract Definitization Team (20:6).

The Source Selection Process: Proposal Evaluation and Selection. The process is described in the terms of the formal source selection organization. The primary difference between what is described below and the streamlined process is that the responsibilities of both the Source Selection Evaluation Board and Advisory Council are combined and performed by a much leaner Source Selection Evaluation Team.

Proposal Evaluation. The key players in the proposal evaluation process are the members of the Source Selection Evaluation Board and their technical advisors. As stated earlier, it is the responsibility of the Source Selection Evaluation Board to perform the

detailed analysis of the offeror's submission. The foundation of the

evaluation process is the source selection criteria as described in

section M of the Request For Proposal. The people performing the

evaluation (Board members and advisors) are organized according to a

hierarchical structure of AREAS, ITEMS, FACTORS and when necessary, SUB-

FACTORS. An example of the organization structure is presented in Figure

2-4. Actual evaluation criteria will differ depending on the

requirements of program.
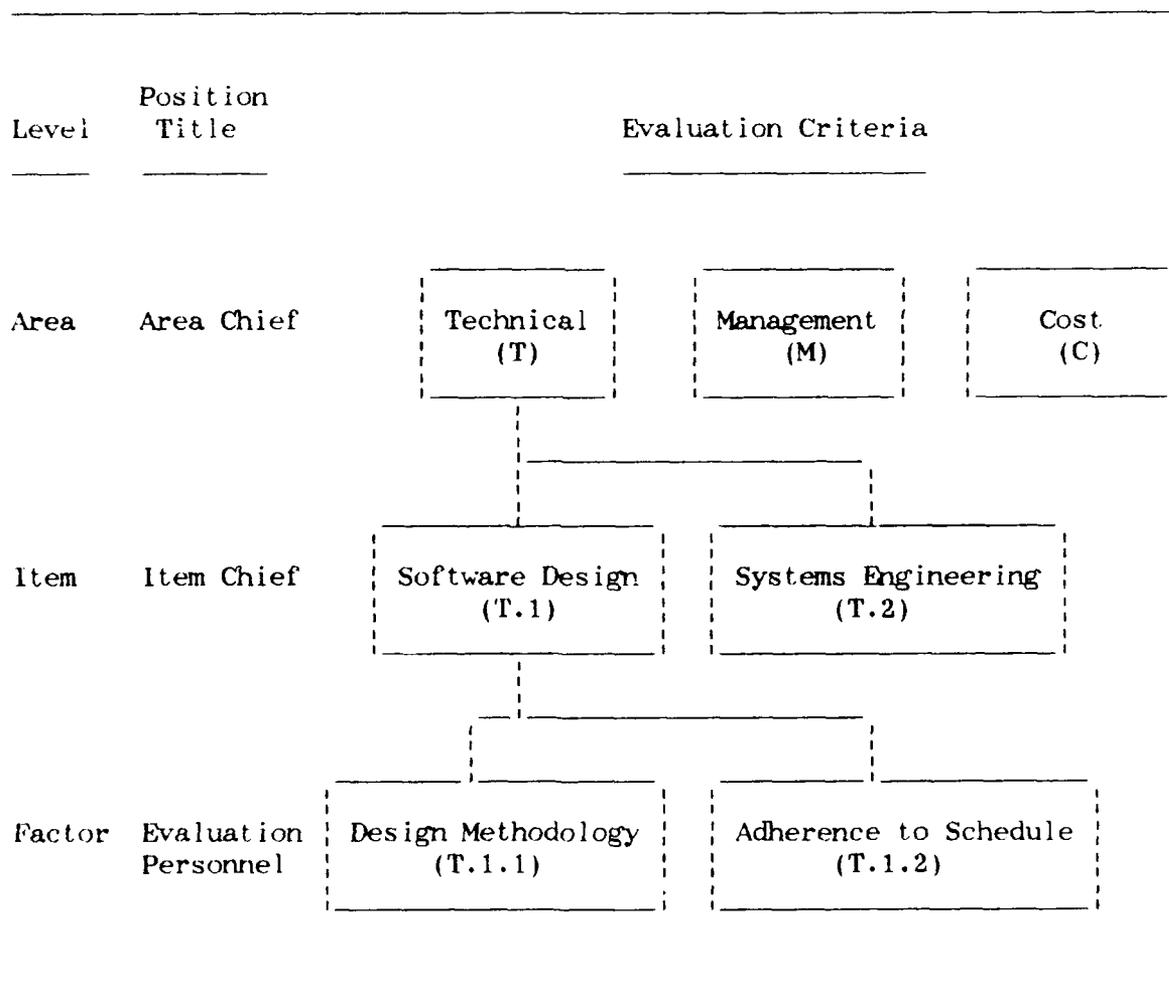
Figure 2-4. Evaluation Structure

Each factor (and, when applicable, subfactor) is measured against the evaluation standards (which were developed by the program manager/program office and approved by the Source Selection Advisory Council). Factors and standards correspond to each other. For example, standard T.1.1 will correspond to "Design Methodology" as shown in Figure 2-4. A rating of +, /, or -, indicating whether the offeror's proposal exceeds, meets, or does not meet minimum requirements is assigned to each of the factors (20:12). Narrative must be provided to support each rating, and should include specific examples and references to government documents and the offeror's proposal. Evaluations are grouped at the item level and documented on factor summary work sheets.

The Item Chiefs are responsible to review the factor evaluations and develop an item summary and assessment. The Item Chief must determine how well the offerors strategy, organization, or proposed design meets the specified requirements. The Item Chief describes the offeror's proposal, as it applies to that item, and lists both the strong and weak points. Each item is assigned a rating of Blue, Green, Yellow, or Red. The ratings are described in Table 2-2. The assignment of ratings is a subjective process based on the objective factor evaluations.

Finally, the Item Chief assigns to each item a proposal risk of Low, Moderate, or High. Risk assessments are described in Table 2-3. The proposal risk assessment is a determination of how likely the offeror is to meet specified requirements given the proposal presented and the level of government intervention necessary to make him succeed. An excellent or Blue proposal rating for a given item could very well have a high risk associated with it due to the difficulty of what has been presented.

Table 2-2	Table 2-3
Proposal Ratings (20:12)	Risk Assessment (20:8)

Color Code	Performance Level	Risk Rating	Assessment
Blue	Exceptional. Performance exceeds contractual requirements.	Low	Not likely to disrupt schedule, increase cost or degrade performance. Only normal government monitoring is required.
Green	Satisfactory. No problems, or only minor problems for which solutions are in hand.		
		Moderate	Has potential to disrupt schedule, increase cost and degrade performance. However, difficulties can be overcome with close monitoring.
Yellow	Marginal. Problems for which some question exists as to whether solution is adequate, but resolution appears to be within the contractor's ability.	High	Likely to disrupt schedule, increase cost and degrade performance even with close government monitoring.
Red	Unsatisfactory. There is serious problem which may be outside the contractor's ability to solve.	N/A	Not Applicable.

Similarly a Marginal or Yellow item rating given because the offeror barely meets or is just below specified requirements, could have a low risk assessment because what the offeror is attempting is simple and has been accomplished before.

A similar process is conducted by the Area Chiefs to combine the individual item summaries into an area summary. The Area Chiefs look at the strengths and weaknesses, ratings and risks at the item level, and the proposal descriptions in order to assign proposal ratings and risk assessments.

Often an offeror's proposal will contain wording which is difficult to comprehend, or sections which are not well explained or supported. For these cases an individual can write a clarification request (CR) to allow the offeror a chance to clear up the understanding. In instances where the offeror's proposal is unacceptable, a deficiency report (DR) can also be written. Issuing deficiency reports to the offerors provides them the opportunity to correct their deficiencies. Because all communication must flow through the contracting officer, clarification requests and deficiency reports cannot be sent directly from the initiator to the offeror. The specific process in which clarification requests and deficiency reports flow to the offeror is depicted below. In this process, duplicate reports and requests are eliminated and only the most critical are sent forward.

```
Initiate
CR/DR      ->   Item
                Chief    ->   Area
                Review        Chief    ->   CR/DR
                              Review        Review    ->   Contracting
                                            Board         Officer      ->   Offeror
```
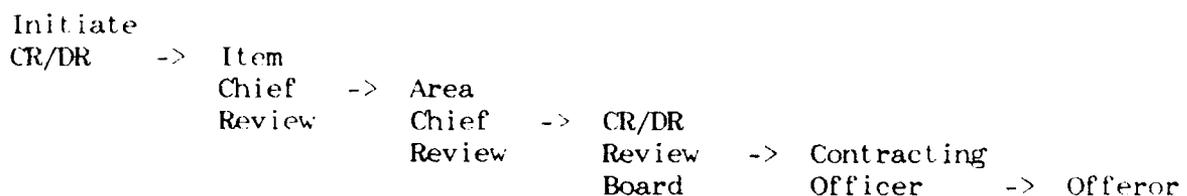
Figure 2-5. Clarification Request/Deficiency Report Process

Based on the evaluation by the Source Selection Evaluation Board, guidance by the Contract Definitization Team, and approval by the Source Selection Advisory Council, the Contracting Officer determines which offerors are in the "Competitive Range" (i.e., those offerors which have a reasonable chance of being selected) (20:12). Written (clarifications requests and deficiency reports) and oral discussions are conducted only

with contractors which are in the competitive range. Those offerors which are not in the competitive range are promptly notified by the Contracting Officer. Discussions are held with all remaining offerors through the Contract Definitization Team and the Contracting Officer. The Source Selection Authority has the option to award the contract without discussions if a clear winner can be seen.

Comparison. Up until this point, the offerors' proposals have been compared only to the evaluation standards which were set up prior to receipt of the proposals. Selection procedures begin with the comparison of the offerors by the Source Selection Advisory Council. The comparison of proposals is based on the analysis of the evaluations prepared by the Source Selection Evaluation Board (20:13). The process involves looking across proposals to ensure ratings have been used consistently. Very often a + or - is added to the color score to indicate the high and low range. Significant differences between proposals should be highlighted. Results of this process are documented in the Source Selection Advisory Council Analysis Report (20:13).

Performance Risk Assessment. The Performance Risk Assessment Group reviews relevant contract performance information (contractor performance assessment reports or questionnaires), pre-award surveys, and the offeror's past performance proposal in order to make an assessment of the risk for selecting the offeror based on its track record. A very detailed description of this process will be presented in Chapter IV.

Selection. The Source Selection Advisory Council analysis, supported by the Source Selection Evaluation Board evaluation, is transformed into a standard briefing format and presented to the Source

Selection Authority for decision. The proposal evaluation for each contractor and assessment of the proposal risk are presented to the Source Selection Authority by the Source Selection Advisory Council Chairperson. The evaluation and proposal risk are presented at the area level and supported by the corresponding items. The PRAG Chairperson presents a risk assessment of the offerors' past performance to the Source Selection Authority using the same areas and items as the Source Selection Advisory Council briefing.

Based on the proposal rating, proposal risk assessment, performance risk assessment, and any applicable general considerations, the Source Selection Authority will make an integrated assessment of the offerors' capability to perform the task at hand. If the process has been successful, the Source Selection Authority will select the source "whose proposal has the highest degree of credibility and whose performance can be expected to best meet the government's requirements at an affordable cost" (20:3).

The emphasis on past performance information to assist the Source Selection Authority has varied over the last 25 years. The following section presents a historical perspective on the use and collection of past performance information to support source selections.

Historical Use of Performance Information

The CPARS is not the first attempt to develop a data base of past performance information. In 1961 President Kennedy tasked David Bell, then Director of the Bureau of the Budget, to conduct a study of the government's expertise on Research and Development contracts (31:3). The "Bell Report," 30 April 1962, raised the possibility of establishing a

"central and fairly formal means of reporting methods and experiences and recording these permanently" (31:3,4). The large dollar-value development and production program, more commonly referred to as the Contractor Performance Evaluation Program, was initiated by Department of Defense Directive 5176.38 on 5 October 1964. The Contractor Performance Evaluation Program collected performance information on all Department of Defense programs with projected costs of two million dollars or more. The data base consisted of semiannual reports created by the government program managers (35:4-6). The development process and format of the reports were very similar to those used today for the CPARS. The central file for the Contractor Performance Evaluation Program was located at the Defense Documentation Center (35:15).

An October 1968 report, conducted by the Logistics Management Institute for the Assistant Secretary of Defense for Installations and Logistics, described three fundamental problems with the Contractor Performance Evaluation Program:

1. There were too few reports to provide a credible description of a contractor's performance (35:10);

2. A lack of summarizing and organizing caused reports that could be generated to be too cumbersome to provide the person evaluating them with the necessary information (35:12);

3. There were problems associated with ensuring objectivity of the program manager evaluations (35:15).

In 1970, less than six years after the Contractor Performance Evaluation Program's inception, the Assistant Secretary of Defense for

Installations and Logistics requested an evaluation of the program, and on 21 December 1970 released a letter officially cancelling it (31:8).

In July 1978, Air Force Systems Command initiated a test to evaluate the use of past performance information in source selections. Fourteen programs were selected from four product divisions (Armament Division, Aeronautical Systems Division, Electronic Systems Division, and Space Division). Past performance was rated and scored as a specific criterion in half of the programs and used as a general consideration in the other (3:Sec III,3). Three conclusions were drawn from this test:

1. Neither method, as a specific criterion or general consideration, was considered to be satisfactory for evaluating performance. The recommended use of past performance was as an assessment criterion relating to the offeror's understanding of the program and inherent abilities (3:Sec III,3). The subjective assessment criterion could be applied in matrix fashion to the more objective specific criteria.

2. Air Force Systems Command should establish procedures to validate information provided by the proposing contractor, handle situations when there is no relevant past performance, and resolve disagreements between offeror and government information (3:Sec III,3).

3. Contractor performance evaluation should be limited to "relevant performance" which must be specified at the time of solicitation (3:Sec III,3).

In 1979 Air Force Systems Command issued policy changes which required that past performance information be used as both a general consideration and an assessment criterion. Relevant performance was

defined to include, but not be limited to, comparable work for the same or similar item, in the same or similar acquisition phase, performed by the same company or division/profit center. Direction was also provided that an offeror not be penalized for lack of recorded performance, that disagreements be settled during negotiations, and that information provided by the contractor be checked with the appropriate government point of contact (3:Sec III,4).

In 1981, as a result of a protest lodged against the government for considering past performance as both a general consideration and an assessment criterion, Air Force Systems Command issued a letter change to Air Force Systems Command Regulation 80-15 discontinuing the use of past performance information as an assessment criterion and mandating its use as a general consideration (39:viii).

As described previously, the current Air Force direction, Air Force Regulation 70-15, dated 22 February 1984, states that past performance can be used as an assessment criterion, a general consideration, or both.

According to research performed by Major Jeffery Norton in July 1986, these contradictions in direction have led to inconsistent use of performance information by the Air Force Systems Command product divisions (39:ix). Based on interviews with the source selection officers at the five product divisions, Major Norton concluded:

> Specific confusion was found in the interpretation of the applicable regulations. . . . The validity of past performance as an assessment criterion appeared to be directly affected by the relevancy and recency of previous contractor effort and indirectly by the fear of protest/litigation. All five source selection officers were aware of one or more of the previous protest/ litigation problems associated with application of past performance as a hard decision criterion. If there is questionable relevancy or questionable data supporting a less-than-satisfactory assessment,

there is a tendency to avoid making hard source selection decisions based on past performance. (39:x)

In 1982 Air Force Contract Management Division initiated a program to collect, document, and report information on programs exceeding $100 million or designated as a major system acquisition. The program was initially designed to collect information from the Air Force Systems Command system program offices, Defense Logistics Agency, contractors, and other services on ten functional areas. This information could then be provided to aid source selections. Support was never garnered from the other agencies, and the concept was tested using Air Force Contract Management Division input only. The program was cancelled in 1984 because the information it collected was unnecessary and costly when compared to other sources, and it did not provide the information needed by the source selection authority to make his decision (3:Sec III,4).

Electronic Systems Division established its own program for collecting and documenting performance information. The Contract Performance Evaluation Program described in Electronic Systems Division Regulation 178-1 collects periodic reports using the Air Force Systems Command Form 64. This program was recently reduced in scope, and is now used to collect information only on programs not included in the CPARS (11).

For the Contract Performance Assessment Reporting System to be successful, it must overcome problems associated with previous systems. It must provide a credible description of a contractor's performance in a manner which is not cumbersome to the Performance Risk Assessment Groups, the program managers, or the CPARS administrators.

The last section in this chapter describes the potential use of a management information system as an automated form of CPARS to meet the past performance objectives set by Air Force Systems Command.

Information Systems Design

Management Information Systems. An automated system based on the CPARS to support the risk assessment process can be included in the general category of management information systems. A management information system represents an orderly method for collecting data, and processing and disseminating past, present, and predictive information relative to the internal operations and external environment of an organization (14). The management information system is used to support the operations, analysis, planning, and decision making functions in an organization (18:6). The potential use of the management information system in an organization can be described as a hierarchy of functions ranging from transaction processing to strategic planning. Gordon B. Davis and Margrethe H. Olson's Management Information Systems: Conceptual Foundations, Structure, and Development uses a pyramid structure to describe the four levels of use of a management information system (Figure 2-6).

Each level in the hierarchy can use information generated at the lower levels and has the capability to introduce new information from external sources. The CPARS as currently planned represents the bottom three layers of the management information system pyramid.

Transaction processing is characteristic of the data administration tasks of the CPARS focal point. It includes data input, maintenance, report generation, and protection of information.

```
              . _____ .
            .               .
          .    Strategic    .
          .  planning and   .
          .  decision making .
         ._____.
        .                       .
        .  Management planning  .
        .    and decision making .
       ._____.
       .                          .
       .   Operational planning,   .
       .  decision making and control .
      ._____.
      .                               .
      .  Transaction processing, inquiries .
      .       and data administration       .
     ._____.
```
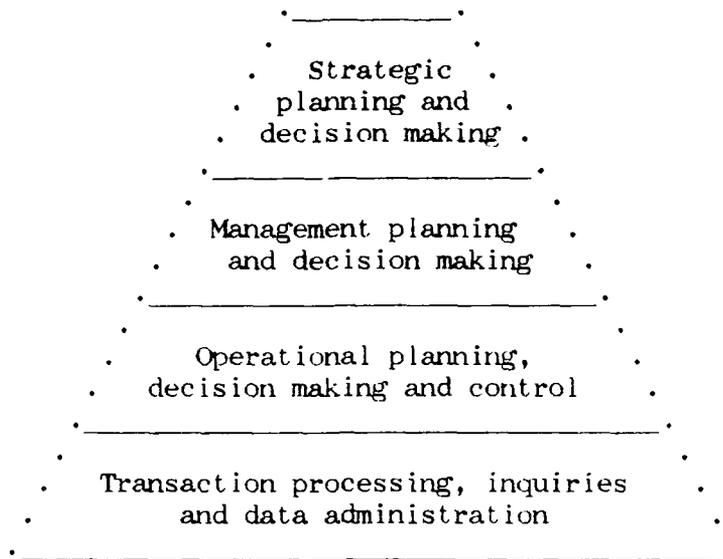
Figure 2-6. Management Information System Pyramid

Operations planning and control represents the interaction between the government and industry program managers. The data acquisition tasks associated with the program manager's evaluation, the contractor's response, program manager's update, and verification/validation by the reviewing official are representative of tasks which could be supported by a management information system.

Because of the tactical nature of the PRAG's tasks, providing a performance risk assessment on potential contractors fits into the management planning and decision making tier.

There are no current plans for use of CPARS information to support strategic planning and decision making. Air Force Systems Command

Regulation 800-54 specifically prohibits use of CPARS information except to support source selections (1:1). However, use of the CPARS as an essential part of the Air Force Acquisition Information System might provide the necessary information to support trend analysis of various corporations and provide insight in the long range productivity of the Air Force/industrial complex.

An important distinction to make is the difference between data and information. Data is defined as unstructured elements which have been acquired through direct observation, experimentation, or questioning; while information is data which has been transformed so that it has meaning and usefulness to the recipient (14). However, this difference is relative to the recipient of the information. That is, information at one level of the pyramid may be considered unstructured and overwhelming data at a higher level. The use of a management information system provides the structure necessary to perform the transformation from data to information for the recipient.

The management information system pyramid and the relative nature of differences between information and data can provide insight into the operations of CPARS and its various uses. The institution of the CPARS had two major objectives: provide feedback, during the processing of the assessment report, from the government program manager to the industrial manager on specific contract performance; and provide performance information across many contracts to assist the PRAG in developing performance risk assessments during source selections. Each of these objectives supports the goal to motivate the contractor to consistently deliver quality in order to ensure future business. The assessment

report for a given contract represents information to the government and industrial managers for that effort. The assessment report tells them exactly where they stand for that period of time. However, the individual assessment report, or more than likely, a stack of assessment reports may represent an overload of unprocessed data to the PRAG. In fact, this was one of the biggest problems with the now defunct Department of Defense Contractor Performance Evaluation Program which, as discussed earlier, did not provide information in a format useful to the recipient.

Approach to System Development. The choice for system development strategy is critical to the acceptable completion of the project. The strategy must consider uncertainty associated with users' stating and analysts' extracting the information requirements; uncertainty of the requirements' validity; proper implementation of the development/design of the system; and confidence that the system meets the users' needs. According to Davis and Olson,

> Development should encompass a process to accommodate requirements changes and provide assurance that the application is an accurate and complete reflection of user requirements. (18:564)

One strategy which attempts to satisfy these problems is the traditional method for a software systems development. It is a systematic process involving the five stages shown in Table 2-4.

The completion of each stage is marked by the acceptance of the user that the system (as defined at that point) meets the operational requirements. A firm set of requirements must be established prior to entering the Development/Design stage.

Table 2-4

Traditional Systems Development Approach (27)

I. Problem Definition	IV. Implementation

- Set Objectives
  - Determine Feasibility
	- Testing
	  - Conversion
	  - Operations

II. Requirements Analysis	- Maintenance
- Determination - Documentation	V. Evaluation

- Alternatives
  - Establish Baseline
	- Cost/Performance Audit
	  - Upgrade/Replacement

III. Development/Design	

- Conceptual Design
  - Physical Design
  - Applications Development	

Requirements Analysis. Determining user requirements is the most difficult aspect of information system development. Davis and Olson describe several factors which affect the analyst's ability to determine an accurate set of requirements. These include natural constr nts on humans to process information and solve problems (limits of short-term memory, bias caused by recency or traditional ways of doing business, and inability to define the problem space), and complexity of the information requirements (18:474-9).

Four strategies which can be used to determine users' information requirements are described below (18:480-8). These strategies can be used singularly or in combination with each other.

1. **Asking users directly.** Users are interviewed by the analyst to determine the system's requirements. One or more of several methods can be used to carry out the process. These include closed and open

questions, brainstorming, and group consensus. The basic assumption underlying this process is that users can overcome the natural constraints described above (18:481).

2. **Deriving requirements from an existing system.** The system can be a replacement for another, or a like system may exist which can be used as the requirements base (18:482).

3. **Determine requirements through object system analysis.** Information systems produce output to support some other object system or function. By analyzing the applications of the object system, the information system's requirements can be defined. Davis and Olson describe eight different methods for determining requirements in this manner (18:482-8).

4. **Experimentation with an evolving information system.** Customary procedures demand that a firm set of requirements exist before the start of system development. In the experimentation strategy, an initial set of requirements is extracted from the user and a prototype system is developed. The prototype system is then used as a basis for the user and analyst to further refine requirements (18:488).

Chapter Summary

This chapter provided an overview of the source selection process as currently practiced in Air Force Systems Command, established a historical perspective on the use and collection of past performance information to support source selections, showed the potential use of a management information system as an automated form of CPARS to meet the past performance objectives set by Air Force Systems Command, and developed an approach to information system design.

III. Methodology

As stated in Chapter I, the research reported in this document had

four primary objectives:

Objective 1. Define the information required and procedures used by the Performance Risk Assessment Group (PRAG) to institute the current policy for providing a risk assessment to support the source selection decision process;

Objective 2. Determine the extent to which information derived from a fully operational Contractor Performance Assessment Reporting System (CPARS) can support the performance risk assessment process;

Objective 3. Determine the administrative procedures used to collect, process, distribute, and protect contractor performance information under the CPARS; and,

Objective 4. Establish the requirements baseline and conceptual design for an automated information system, based on the CPARS, to collect, process, protect, and disseminate contractor performance assessments.

A tailored approach to the traditional method for software systems

development was chosen to design an automated information system to

assist the contractor assessment and performance risk assessment

processes. The methodology used for this research followed the first

three steps of the five step process depicted in Figure 3-1. Development

and design was completed through the conceptual design of the system.

Step 1. **Problem Definition**	Step 3. **Development/Design**
– Define Scope – Set Objectives	– Conceptual Design – Physical Design
Step 2. **Requirements Analysis**	Step 4. Implementation
– **Determine Requirements** – **Establish Baseline**	Step 5. Verification/Validation

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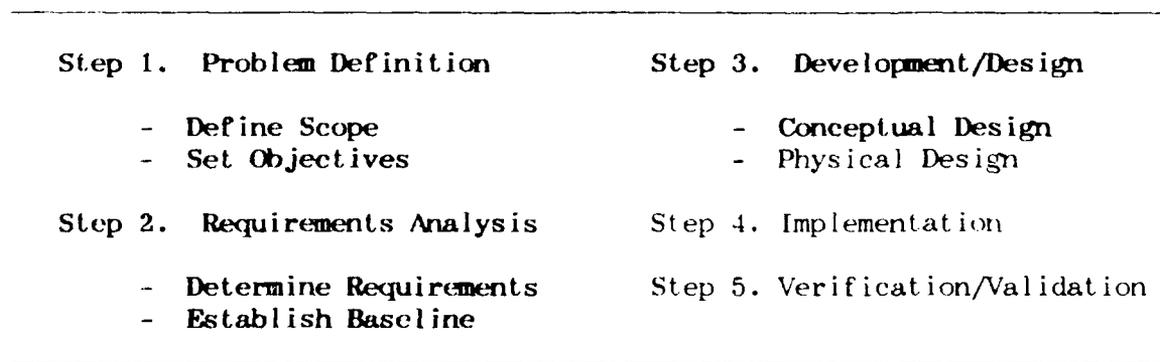
Figure 3-1. Tailored Approach to Systems Development

Primary data was collected through structured interviews with selected experts on performance risk assessment, source selection procedures, and CPARS administration. Two specific populations were identified:

1. Performance Risk Assessment Groups. Individuals in the acquisition business who have actively participated in the formal risk assessment for contractors in a source selection. Two representatives were identified for each PRAG which had looked at CPARS as a source of information.

2. CPARS Focal Points. Individuals in each product division, usually assigned to the source selection office, who are responsible for the administration of the CPARS data base.

Step 1. Problem Definition

A complete understanding of the acquisition and source selection processes was required before this project could be undertaken. Knowledge of the historical use and collection techniques provided the opportunity to identify similarities and differences between prior uses of contractor performance information and the current concepts of performance risk assessment. This investigation also provided the opportunity to look at problems/successes of previous attempts to centralize contractor performance data.

This research began with an investigation of the Federal, Department of Defense, and Air Force regulations governing use of past performance information to support the source selection process. Air Force Systems Command's Project STAR (Strategies and Techniques for Acquisition Responsiveness) Report, and other technical papers were examined to

establish the historical use of past performance information. A complete description of source selection procedures, the Contractor Performance Assessment Reporting System, and the Performance Risk Assessment Group was accomplished through analysis of Air Force System Command regulations and discussions with experts in the acquisition field.

Step 2. Requirements Analysis

Requirements Analysis was the second step in the five-step system development methodology. It was in this stage of the research process that a valid set of requirements was determined. The compilation of requirements through interviews and investigation of regulations fulfilled the first three objectives of this research project. The needs described by the various sources were synthesized into a baseline of system level requirements. The development of the "requirements baseline" completed the first part of the final objective of this research project.

Performance Risk Assessment Process. Investigative Question 1 focused on describing the procedures and information requirements associated with the current implementation of PRAGs. The purpose of Investigation Question 2 was to determine the effect the CPARS has on the performance risk assessment process.

Investigative Question 1. What procedures are currently used and what types of information are required by all PRAGs to prepare performance risk assessments on proposing contractors?

Investigative Question 2. What portion of the required information can be derived from the data resident in CPARS, and how can the data resident in CPARS be processed to provide this information?

Structured interviews with representatives from PRAGs identified by the product divisions were conducted to answer the first two

investigative questions. Each product division provided names of senior individuals (PRAC chairman or other member) who actively participated in the formal risk assessment and junior individuals (PRAG assistant or secretariat) responsible for the actual collection and transformation of the performance data.

Two representatives were identified for each PRAG which had completed source selection under the new format and had looked at CPARS as a source of information. A complete description of the PRAGs investigated and the specific responsibilities of PRAG representatives interviewed is presented in Appendix B: Description of PRAGs and PRAG Representatives. Appendix B also provides insight into the differences across the five product divisions.

A mix of closed and open ended questions was used to collect information from PRAG representatives (Appendix C: Survey Instruments). The questions were designed to avoid yes/no type answers and to encourage the persons being interviewed to share their experiences freely and to the fullest extent possible. Primary data collected during these interviews was compiled and entered into a text data base to facilitate documentation and grouping of like requirements.

Performance Assessment Reporting Process. The purpose of Investigative Question 3 was to determine the administrative procedures which are currently used to collect, process, and distribute contractor performance information.

Investigative Question 3. What are the administrative procedures for collecting, processing, and distributing contractor performance information.

Structured interviews were conducted with the CPARS focal point for each of the five product divisions to determine the administrative procedures and constraints involved in the current performance assessment reporting process. A mix of closed and open ended questions was used (Appendix C: _Survey Instruments_). The questions were designed to encourage the persons being interviewed to describe the detailed steps and the peculiarities of the process, and to share their experiences freely and to the fullest extent possible. Primary data collected during these interviews was compiled and entered into a data base to facilitate documentation and grouping of like requirements.

Requirements Baseline. The purpose for Investigative Question 4 was to establish the requirements baseline for an automated information system, based on the CPARS, to collect, process, protect, and disseminate contractor performance assessments.

Investigative Question 4. What system capabilities are dictated by the information requirements of PRAGs and the implementation procedures of the CPARS?

The requirements baseline represents the system level capabilities which must be provided in order to meet the user's needs. The administrative procedures and the information and analysis requirements determined through interviews with the PRAG representatives and the CPARS focal points were synthesized into seven different activities describing the performance assessment process: data collection, data input, maintenance, analysis, output, reporting, and protection.

Step 3. Development/Design

During the development/design stage of the process, a conceptual and physical design for the system must be established. The conceptual

design represents the system as a set of interactions and data flows. It is a user orientation of the system design. The physical design maps the capabilities described in the conceptual design to the specific hardware and software components of the system.

Conceptual Design. The purpose of Investigative Question 5 was to develop the conceptual model of the automated system. The development of the conceptual design fulfilled the final objective of this research project.

Investigative Question 5. How do the established requirements affect the architecture for the automated information system?

To an wer this question the requirements organized by the seven activities of the system had to be described in terms of user applications of the automated system. Based on a review of software engineering principles, an appropriate model was chosen to describe the different applications of the system. Concentration was placed on describing the interactions among the various functions of the system.

IV. Results Of Requirements Analysis

Chapter IV describes the implementation of the second step in the system development process and the fulfillment of objectives 1 through 4 of this project. For clarity, each objective and investigative question has been repeated just prior to the section to which it pertains.

Requirements Analysis is the second step in the five-step system development methodology. This is the stage of the research process where a valid set of system level requirements was established. Requirements for the system were determined from three primary sources: existing regulations, interviews with PRAG representatives, and interviews with CPARS Focal Points.

The first part of this chapter reports the information obtained from the interviews with the PRAG representatives and the CPARS Focal Points. The final portion of this chapter describes the accumulation of requirements from all three sources into a requirements baseline.

Analysis of Interviews w rh PRAG Representatives

Interviews with PRAG members were used to describe the current implementation of the performance risk assessment process. A summary of the results for each question is presented below. The actual questions have been included in Appendix C: Survey Instruments.

Objective 1. Define the information required and procedures used by the Performance Risk Assessment Group (PRAG) to institute the current policy for providing a risk assessment to support the source selection decision process;

> **Investigative Question 1. What procedures are currently used and what types of information are required by all PRAGs to prepare performance risk assessments on proposing contractors?**

Performance Risk Assessment Process. This section provides an overview of the actual steps the PRAGs went through during the performance risk assessment process. Representatives were asked to discuss the events which took place from the time they were notified of their participation through the final briefing to the Source Selection Authority.

Although many aspects of the process differed across PRAGs and product divisions, all PRAGs seemed to follow the same seven steps: plan, obtain data, support the competitive range briefing, compile and evaluate information, assess risk, identify concerns to the procurement contracting officer for discussions with the contractor, and brief the Source Selection Authority.

Planning. Four parts to the planning step were identified: establish responsibilities and methodology; provide instructions to offerors; develop the questionnaire; and establish relevancy criteria.

Establish Responsibilities and Methodology. The very first step identified by the PRAG members was to gather all the information that was available (CPARS regulation, Air Force Regulation 70-30, product division supplements, other pertinent regulations, and experiences from other PRAGs) to find out what a PRAG did and what the responsibilities of the PRAG were (5; 10, 33; 34; 49; 52). PRAGs would then set up a methodology to identify what data needed to be collected and how; to identify criteria to determine what data would be useful; and to describe how the data would be analyzed (5; 6; 7; 34: 38; 49; 52).

Another task identified was to make sure the correct words were in the Request For Proposal, and look at the source selection plan to make

sure performance risk has been addressed. PRAG members stated that it is absolutely critical that the Request For Proposal and the Source Selection Plan track meticulously since these documents contain the evaluation criteria for the entire source selection (5; 38).

Provide Instructions to Offerors. At all product divisions, as part of the Request For Proposal, offerors are informed that they are to be evaluated on their past performance and (at Aeronautical and Electronic Systems Divisions) are told the specific criteria which would be looked at (5; 7; 10; 15; 23; 24; 38; 44). The offeror provides, as part of the proposal, the contracts that demonstrate their capability, including any experience by major subcontractors. The offeror must submit a volume titled "Past Performance" citing information on all the programs they had worked on during the last three (and for some programs up to five) years (5; 7; 10; 15; 16; 23; 24; 29; 32; 38; 44; 45; 49; 57). At Aeronautical Systems Division this volume had to be submitted two weeks prior to due date of proposals in order to allow a head start for mailing questionnaires (7; 10; 15; 23; 24; 44).

The "Past Performance" volume should include for each example of relevant experience, the

- contract number (5; 7; 10; 15; 16; 23; 24; 29; 32; 38; 44; 45; 49; 57);

- acquisition agency (5; 38; 45);

- program name (5; 7; 10; 15; 16; 23; 24; 29; 32; 38; 44; 45; 49; 57);

- name/address/phone number of the contractor officer and program manager (5; 7; 10; 15; 16; 23; 24; 29; 32; 38; 44; 45; 49; 57);

- contract administration office and the administrative contracting officer's address and phone number (5; 38; 45);

- original contract cost, ultimate contract cost, and reasons for deviation (5; 7; 10; 15; 23; 24; 38; 44; 45);

- original contract schedule, ultimate contract schedule, and reasons for deviation (5; 7; 10; 15; 23; 24; 38; 44; 45); and

- a description of the project and how each contract is a relevant example of the offeror's ability to perform against the criteria stated in the Request For Proposal (5; 7; 10; 15; 23; 24; 38; 44; 45).

The only difference among the product divisions in the information requested was the number of relevant examples requested: Space Systems Division- 5 examples (52), Electronic Systems Division - 10 to 15 examples (5), and Aeronautical Systems Division, which did not provide the offeror a limit, but expected anywhere between 15 and 60 (44).

Develop Questionnaire. The purpose of the questionnaires developed by the product divisions was to get information on contracts which were not represented in the CPARS (44). Questionnaires developed took several different forms.

At Aeronautical, Ballistic and Electronic Systems Divisions, many questionnaires focused on the criteria specified in the Request For Proposal (5; 7; 10; 12; 13; 15; 44; 56). For one PRAG at Aeronautical Systems Division, a more generalized questionnaire was created in an deliberate attempt to get better answers (24). In all cases, the questionnaires were more specific than the assessment reports (5; 7; 10; 12; 13; 15; 24; 36; 44; 57). At Space Systems Division and for one PRAG at Electronic Systems Division, the actual CPARS form was used as a questionnaire (42; 45; 52). For Munitions Systems Division, the CPARS format was used to create a checklist of questions (29; 49; 57).

Establish Relevancy Criteria. Relevancy Criteria were used for two purposes: to screen examples of performance before

questionnaires were sent to make sure they were applicable to the solicitation, and to determine the impact of specific examples of past performance when formulating the risk assessment.

The following criteria were identified by the PRAG members:

- Division/profit center (6; 36)

- Product Division (37)

- Dollar thresholds (5; 25; 33; 38)

- Type of contract (37; 52)

- Nature of the program (6; 12; 25; 32; 33; 36)

- Technical description (5; 33; 38)

- End items (52)

- Phase of acquisition cycle (52)

Obtain Data. The second step identified by the PRAG representatives was to obtain the necessary data to support the risk assessment. The primary sources for information were the past performance volume provided by the contractor, the CPARS, interviews or surveys with government points of contact for each program, and information provided by contract administration personnel. The "Past Performance" volume was reviewed to see what contracts were offered as examples of relevant performance by the offeror (7; 10; 15; 24; 28; 37; 42; 49; 52). Contracts identified by the offerors were screened so that only the most applicable would be looked at (32; 42).

Nearly every PRAG member stated that the CPARS was checked for reports which were relevant to the program in source selection (5; 6; 7; 10; 12; 15; 16; 23; 24; 28; 29; 32; 33; 36; 37; 42; 44; 45; 49; 52; 56; 57). The fact that the assessment reports are written by program mangers

who are on the program at the time, and that the reports must be shown to the contractor makes the CPARS a very credible source of information (5).

In only one case did a PRAG have enough assessment reports to not need to augment them with additional surveys (33). In all other cases PRAG members would conduct interviews or distribute questionnaires to other government agencies. PRAGs contacted program managers and procurement contract officers for each contract identified by the offeror and any other organizations that they may know from prior experiences.

In many cases, questionnaires were mailed to the government point of contact (6; 7; 10; 12; 13; 15; 24; 25; 36; 37; 44; 51; 56). Several different methods were used to help ensure questionnaires were returned quickly with a quality response. Questionnaires were sent out at the director level in order to get commitment from management to help ensure a quality review (23). Before the questionnaire is sent, the organization would be called to establish a point of contact as high up in the chain as possible to make sure that the right person is identified and that the job is given the right priority (5; 38). To speed up the process, facsimile machines were use to send the questionnaire out and to receive the completed forms (5; 38).

Often a tight source selection schedule would not allow time to send out written questionnaires, and PRAGs chose to conduct interviews by telephone instead (16; 28; 29; 32; 42; 45; 49; 52; 57). Because the interview was done on the telephone, it turned out that it was difficult to validate the things that were being said (29; 49). To increase the "validity" of the telephone interview, one PRAG used the CPARS form as a

questionnaire, had the form typed, and then used a facsimile machine to send it to the government point of contact for signature (45).

Interviews/questionnaires were also used to get an independent evaluation from administrative contracting officers (45; 57) and other representatives from the Defense Contract Administration Service (10; 13; 51) and Air Force Plant Representative Office for each contractor (56). One PRAG elected to travel to the contractor locations and meet with the government plant representatives (49; 57) The PRAG talked not only to administrative contracting officers, but also to the quality assurance, configuration, and manufacturing people (49; 57).

PRAG representatives stated that obtaining data through interviews and questionnaires was the most difficult part of the performance risk assessment process. Problems identified included finding the right address/person to send the questionnaire to (24), waiting for the surveys to come back, contacting government representatives (10; 19; 24; 28; 44; 57), hesitation of people to discuss contractor performance over the phone (32), inability to tell whether the person being interviewed was being totally objective (29) and asking questions in such a way so that the other services can understand what the PRAG was looking for (19).

Other sources of information were the Defense Logistics Agency Contractor Alert Lists (28; 37; 45; 49; 52; 57), Defense Contract Administration Service Annual Reviews (7; 10), Air Force Plant Representative Office Contractor Operation Reports (5; 34; 42) and Preaward Surveys (7; 16; 24; 28; 44; 57).

Competitive Range Briefing. At some point prior to the end of the assessment process and normally before all the data is even

collected, the competitive range must be briefed to the Source Selection Authority. The competitive range is the determination by the procurement contracting officer of the offerors which have a reasonable chance of being selected. Discussions are conducted only with contractors in the competitive range, and the Source Selection Authority has the option to award the contract without discussions if a clear winner can be seen.

Two strategies have been used by the PRAG to support the competitive range briefing. One PRAG chose to brief only the methodology chosen to implement the performance risk assessment process and not to present any assessment information (49). Other PRAGs attempted to gather as much data as possible and perform an initial assessment based on the offeror's proposal and the available assessment reports (10; 33; 37; 42; 52). Many PRAG members did not even mention the competitive range briefing as a step in the process.

Compile and Evaluate Information. Once collected, the data had to be compiled and processed in order for the PRAG to develop the performance risk assessment. The implementation of this step differed greatly across the product divisions.

Aeronautical Systems Division. At Aeronautical Systems Division, the secretariat (PRAG assistant) was responsible to build a set of books for the PRAG members. The organization of these books evolved over several different PRAGs. The first attempt divided data up by item, a process which involved a lot of copying, cutting, and pasting. Each book had item specific information from the offeror, followed by the government data for each relevant contract to that item (15). Lieutenant Kathleen Coombs, the PRAG secretariat for that program, stated that it

was a very time-intensive process (15). There could be as many as sixty examples per contractor or as few as fifteen (7; 15; 19; 24; 44).

The process evolved into a system of three books with separate sections for offeror and government supplied data (15). The first book, which was the offeror's Past Performance Proposal, had the contractor's description for each of the identified contracts, the administrative data, and the offeror's own assessment of its relevant experience. A second book included all the assessment reports and questionnaires for the contracts that the offeror had worked on. The questionnaires and assessment reports were organized in the same manner as the offeror's proposal. Pages were numbered for the second book in such a way so that the assessment reports and questionnaires coincided to the contracts identified by the offeror. A third book was put together for each PRAG member for taking notes and facilitating the assessment process (7; 15; 19; 23; 24; 44).

According to Lieutenant Coombs, feedback was mixed over the two approaches. There were those who would have the secretariat decide which information was relevant to each item, and others wanted to see the full evaluation and how the different elements interrelate (15). In Lieutenant Coombs' opinion, the second approach was better, because there were times when she did not have the experience to decide which information was relevant to each item. Colonel Wayne Frey agreed with Lieutenant Coombs:

> The original method of organizing the data by item involved a lot of useless cut and paste work. Although it seemed to be convenient on the first time through, we later found out that it caused us to do a lot of page flipping. (23)

Each PRAG member would sit down with copies of the first and second books and turn the pages together. The members would read the contractor's input, read the government's input, make their assessment for each item, and then move on to the next example (7; 15; 19; 24; 44). Each PRAG member would read the entire set of forms to determine the salient information. Members wanted to read each report in its entirety because so much of the information was overlapping (7; 24). Members did not want data averaged or in any way processed for them, although many used their own weighting techniques (7; 24). Evaluations were documented on forms which included lines to write comments and a box to identify the risk (7; 15; 19; 24; 44). Examples of the forms used are shown in Figure 4-1. Item Assessment Sheet and Figure 4-2. Final Risk Ratings.

Offeror: _____ Contract No: _____
Program Title: _____

Item	CPAR/ Questionnaire	Member Rating and Remarks
T.1		
T.2		
M.1		
C.1		

Figure 4-1. Item Assessment Sheet

```
                      Offeror: ___

  ITEM      RISK                    REMARKS

  T.1       ....        ....................................
                        ....................................
                        ....................................


  T.2       ....        ....................................
                        ....................................
                        ....................................


  M.1       ....        ....................................
                        ....................................
                        ....................................


  C         ....        ....................................
                        ....................................
                        ....................................
```

Figure 4-2.   Final Risk Ratings

In some cases the PRAG members were divided into teams to evaluate

each area.   Members would sit on two different area teams.   Meetings were

held for each area team to consolidate the item assessments (7; 19; 24;

14).   A consensus would result of either high, moderate, or low risk for

each item.   If there was not enough information to support an item, an

assessment of Not Applicable would be appli d.   The item assessments were

then discussed and rolled up to an area assessment.   The discussions

revolved around the strengths or weaknesses of the contractor (7; 15; 19;

21; 14).

In a less formal PRAG, the assessment reports and questionnaires were simply placed into folders; one for each offeror (10). Members reviewed each item within their area of expertise and presented their assessment to the rest of the PRAG. Other members asked questions and added information resulting in a group consensus (10; 15).

Ballistic Systems Division. At Ballistic Systems Division a matrix was used to catalogue the information and as a tool to do the assessment (6; 12; 36). An example is shown below.

TITLE	CONTRACT NUMBER	PERIOD OF PERFORM-ANCE	VALUE/ TYPE	RISK C	T/M	SOURCE	COMMENTS

Figure 4-3. Ballistic Systems Division Performance Data Matrix

PRAG members worked either individually (36; 37) or as a group (12) to evaluate the data from the CPARS and from questionnaires. Folders were created for the offerors and their subcontractors to sort the questionnaires (37).

When reviewing the assessment reports and questionnaires, each PRAG member looked at the description, the color ratings, and the narrative. The descriptive information was used to separate the questionnaires and assessment reports according to the screening criteria (6). Each member read through the assessment reports and questionnaires to find relevant pieces of information that pertained to the effort and wrote them down in bullet format on the matrix (6; 12; 36). It was a subjective process based on the judgement of the PRAG member. The colors were not averaged, but rather the description and narrative were used to get at the heart of what the person who evaluated the contractor was driving at (36).

Electronic Systems Division. At Electronic Systems Division, a slightly different format of a matrix was used (Figure 4-4). Under the three areas (cost, technical, and management), comments from assessment reports and questionnaires were consolidated with succinct statements describing how the offeror had performed (5; 38). Information was extracted from the assessment reports according to the items which were in the questionnaire (5).

Program Name	Dollar Value	Period of Performance	Cost	Technical	Management
.....	.....	......	-	-	- ....
.....	....	......	-	-	- ....
.....	.....	......	-	-	- ....

Figure 4-4. Electronic Systems Division Performance Data Matrix

PRAG members looked at data subjectively using their best experience and judgement (5; 38) and highlighted any areas which showed outstanding or less than satisfactory performance (45).

Munitions Systems Division At Munitions Systems Division the data collected was compiled using one of three different methods. In one case, the PRAG members sat down together and completed a CPARS form from the data gathered during the interview (29; 49). The PRAG then used Block 14 from the CPARS form to come up with the overall ratings for the evaluation areas (49).

In another PRAG, the individual who performed the interview rated the contractors performance (blue, green, yellow, or red) for each question and then wrote a short paragraph summarizing the key points for that contract (41). The PRAG members would look at notes and identify the rating and any derogatory or other pertinent comments from the interviews (41).

In the last case, assessment reports and questionnaires were grouped according to contractor and the PRAG met and discussed the differences based on the various sources of information (57). Members looked at ratings given on each assessment report and the grading scales from surveys. PRAG members then rated the contractors on the specific areas identified on the CPARS form with a scale similar to that used on CPARS (28; 57). An example of the form used to document the ratings is shown in Figure 4-5: Munitions Systems Division Contractor Rating Sheet.

PRAGs looked for trends across ratings (16; 29; 32). If all ratings were green, the offeror was given the benefit of the doubt; however, if a red, yellow, or blue rating appeared, PRAG members tried to find good,

```
┌─────────────────────────────────────────────────────────────┐
│                            Cost                              │
│  ┌──────────────────────────────────────────────────────┐   │
│  │                    Management                         │   │
│  │  ┌────────────────────────────────────────────────┐  │   │
│  │  │               Technical                        │  │   │
│  │  │                                                │  │   │
│  │  │             ACO      PCO     PM     CPARS       │  │   │
│  │  │                                                │  │   │
│  │  │  Product System Performance                    │  │   │
│  │  │                                                │  │   │
│  │  │  Engineering Design Support                    │  │   │
│  │  │                                                │  │   │
│  │  │  Software Development                          │  │   │
│  │  │                                                │  │   │
│  │  │               :                                │  │   │
│  │  │               :                                │  │   │
│  │  │                                                │  │   │
│  │  └────────────────────────────────────────────────┘  │   │
└─────────────────────────────────────────────────────────────┘
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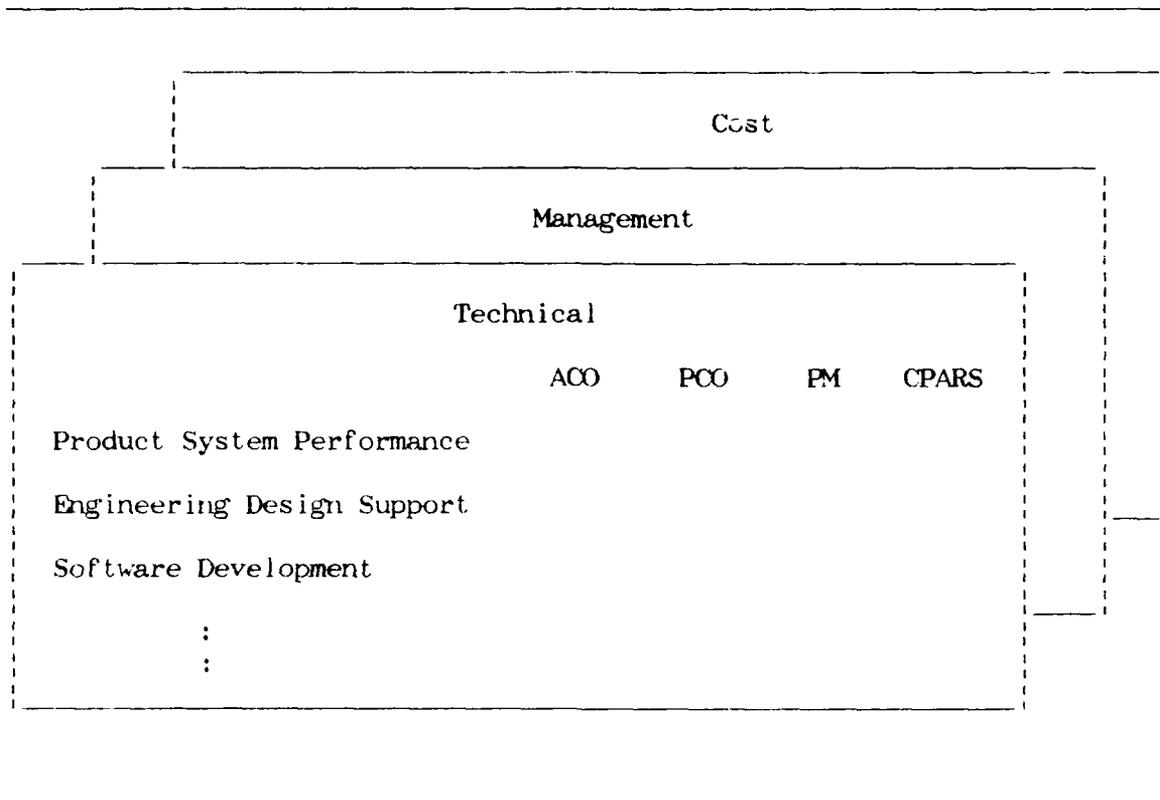
Figure 4-5. Munitions Systems Division Contractor Rating Sheets

solid justification. A yellow or red rating would have to appear more
than once for it to be significant (16; 32). One member found that a
company may be very sound in one area, but weak on another, and that the
strengths and weaknesses would be consistent across interviews (29).

According to Lieutenant Colonel Donald Hutcheson:

> The entire team was involved in the process. The first part of
> the process was to understand what the scope of the contract was
> that the [assessment report] or survey was pertaining to. We needed
> to understand the contract's relevance to the effort being
> considered. Then we needed to understand the meaning of the rating;
> was there one thing that caused a rating to be a green verses a
> blue? To do this one would have to read very closely through the
> narrative. (28)

Space Systems Division. At Space Systems Division each
member looked at the different sources of data (CPARS, "Past Performance"

volume, interviews) (33), and highlighted the strong and weak points (42; 52). According to one individual, there were no hard and fast guidelines to go about the process. The member stated that it was a subjective evaluation of the data (52). Trends were identified across programs and the government representatives for a program were contacted when questions arose (42; 52).

Perform Risk Assessment. The final performance risk assessment occurred at either the area level (5; 6; 12; 25; 28; 32; 36; 37; 38; 41; 45; 49; 51; 56; 57) or both the area and item levels (7; 15; 19; 23; 24; 44). The PRAG representatives described the Performance Risk Assessment as a two-step process which first checked to determine each program's relevance to the effort being considered (15; 23; 28; 42; 57) and then subjectively summarized across all contracts so that a risk assessment for each area could be assigned (5; 6; 7; 19; 28; 36; 38; 42; 44).

One PRAG at Ballistic Systems Division took a different approach to the performance risk assessment. It chose not to provide an overall performance risk assessment across contracts. Instead, screening criteria were used to sort the data in several different ways and risk assessments were shown at the area level for each contract (6; 36).

The first cut looked at full scale development programs from all sources. The relevant data was extracted and written on a summary form, similar to the one shown below, (Figure 4-6) with supporting information on a second form (Figure 4-7) (6; 36).

For the second cut the screening criteria were more specific. The screening criteria were firm fixed price contracts which were software intensive and in full scale development. The more specific criteria

Summary						
					Ratings	
Contract Number	Description Of Effort	Contract Type	Dollar Amount	Technical	Management	Cost
...	....	.....	.....	G	Y	G
...	....	.....	.....	B	G	G

Figure 4-6.   Ballistic Systems Division Risk Assessment Summary

Remarks			
	Technical	Management	Cost
Contract Number			

Figure 4-7.   Risk Assessment Supporting Information

provided for a much smaller data base.   Again the data was extracted and put on the forms.   This provided both a broad and refined cut at the performance data (6; 36).

The final cut was to include only the CPARS information.   PRAG representatives stated that they found that CPARS was a better source of data to evaluate past performance.   A corporate-wide look at the

contractors (a look beyond the particular profit center which had submitted the proposal) was taken. For the corporate view, cost, management, and subcontractor management were examined (6; 36).

Identify Concerns to Procurement Contracting Officer for Discussions With Contractor. As part of the discussion process, areas of concern were submitted to the offeror by letter from the Procurement Contracting Officer. Concern could be based on poor/marginal performance or inability to find any experience relative to a given item. Lack of relevant experience was listed as a concern only to make sure that the PRAG's research had not missed anything. The letter was processed just like a clarification request or deficiency report, although it was typically processed after the clarification requests and deficiency reports had been sent (7; 15; 19; 23; 24; 44; 45; 49; 57).

Concerns which were highlighted in assessment reports were not sent to the contractor because the contractor had already had the opportunity to respond (44).

The offeror was given between one (15; 23; 19; 24) and two weeks (44) to provide a response. Contractor's response was limited to one double-spaced page on each concern (7; 15; 19; 23; 24; 44).

PRAG representatives stated it was essential that once the government made its evaluation, it got these concerns back to the contractor. When the contractor's response was received, the entire PRAG (15; 23; 19; 24), or a smaller group such as chairman, assistant and team leaders (7; 44) would look at the assessments and determine whether modifications were necessary.

Brief Source Selection Authority. The Source Selection

Authority is most often briefed by the PRAG chairman (5; 6; 7; 10; 12;

13; 15; 19; 25; 32; 33; 34; 38; 41; 42; 44; 49; 52; 57). At Aeronautical

Systems Division, a rigorous process for the development of the final

briefing has been established. Comparable levels of detail were not

captured through the interviews with representatives from the other

product divisions. The process as described by representatives from

Aeronautical Systems Division is presented below (7; 10; 13; 15; 19; 44).

At Aeronautical Systems Division, the PRAG chairman and secretariat

develop a preliminary set of charts. The entire PRAG meets to review the

final assessments. The chairman and the secretariat then polish the

charts and script for the presentation to the Source Selection Authority.

The PRAG typically meets one more time for a dry run briefing to make

sure that all the right words and examples have been captured. The final

briefing to the Source Selection Authority provides the assessment of the

offerors' past performance for each area. Supporting information is

provided at the item level. The same areas and items used to evaluate

the offeror's proposal are used for the performance risk assessment.

Lieutenant Colonel Poleski stated:

> It is not important that the Source Selection Authority get the
> message that the offeror is a low, moderate, or high risk based on
> its past performance. What is important, is that for specific items
> or areas, an assessment of the offeror's experience base shows the
> offeror to be high, moderate, or low risk. The performance risk
> assessment, combined with the proposal rating and risk, should
> provide the Source Selection Authority with the information needed
> to make an integrated assessment of the offeror's capability to
> perform the work at hand. (44)

Computer Support. PRAG representatives were asked to describe what

computer system capabilities were currently being used to support the

performance risk assessment process. Computers were primarily used for word processing (identified by 25 of 29 interviewed) and briefing preparation (identified by 23 of 29 interviewed). Other functions identified were data base management for questionnaire tracking (12); on-line templates for building reports, sections of the Request For Proposal, and matrices (37); and use of spreadsheets to create contractor lists (15). The only software package identified by more than one PRAG member was Harvard Graphics (named by 9 of 29).

Objective 2. Determine the extent to which information derived from a fully operational Contractor Performance Assessment Reporting System (CPARS) can support the performance risk assessment process;

Investigative Question 2. What portion of the required information can be derived from the data resident in CPARS, and how can the data resident in CPARS be processed to provide this information?

Information Requirements Supported by CPARS. The PRAG representatives were asked to list each of the specific types of information which were needed to perform a risk assessment. Each member was then asked to determine if the identified types of information could be supported by the CPARS.

The different information types have been listed in Tables 4-1 through 4-5 according to the evaluation area to which they pertained. Some of the information types could be traced to the CPARS; others could not. Those types which directly correlated with the areas in Block 14 of the CPARS form have been boldfaced. Information types which might be traceable to the CPARS form have been grouped under the boldfaced items. Information types which could not be traced directly to a category on the CPARS form have been listed beneath the heading "Other."

Table 4-1

Technical Evaluation Area Information Types

Engineering Design/Support (5; 15; 16; 23; 25; 28; 29; 41; 44; 45; 49; 57)

- Alternative solutions to problems (52; 56)
- Correction of deficiencies (56)
- Engineering Change Proposal processing time (56)
- Initiate solutions to problems (19; 52)
- Level of competence (37)
- Requirements Analysis (5; 19; 36)
- System Design (5)
- Systems Engineering (7)
- System Integration (6; 36)
- Technical analysis (37)

Product Assurance (7; 10; 13; 15; 16; 19; 23; 28; 29; 41; 44; 45; 49; 57)

- Environmental Performance (10; 13)
- Installed System Performance (13)
- Quality Engineering (10; 13)
- Quality of product (37)

Software Development (5; 6; 15; 16; 23; 28; 29; 36; 41; 44; 45; 49; 57)

- Computer Resources (7)

Test and Evaluation (5; 16; 19; 25; 28; 29; 37; 41; 45; 49; 56; 57)

Other

- Course development (24; 44)
- Incorporation of commercial off the shelf and non development items into the overall design (6; 36)
- Instruction System Development (24)
- Plan for Reliability/Maintainability/Producibility (5; 44)
- Prototype Management (5)
- Training Delivery (7; 24)
- Training System Concept Definition (7; 24)
- User involvement (6; 36)

Table 4-2

Management Evaluation Area Information Types

Responsiveness (6; 16; 24; 28; 29; 36; 41; 42; 44; 45; 49; 52; 56)

- Flexibility (52)
- Initiative (37)
- Proactive approach (37)
- Promptly resolves issues (19)

Schedule (5; 6; 13; 16; 24; 28; 29; 36; 37; 41; 42; 44; 45; 49; 51; 56)

- Master Integrated Schedule (7; 19)
- Meeting Major Milestones (19)

Subcontractor management (5; 6; 16; 19; 24; 25; 28; 29; 36; 37; 41; 42; 45; 49; 57)

- Competent resources (5; 52)

Other

- Acquisition Support (7; 15; 23)
- Configuration/Data Management (10; 13; 19)
- Engineering Change Proposal Process (24)
- Focus on key problem areas (52)
- Organizational Control (24)
- Organizational Resources (7)
- Overall planning and management (37; 42; 56)
- Quality of Contract Data Requirement List deliveries (19; 42)
- Risk Management (5; 7; 19)
- Technical Management Planning (52)
- Timely Contract Data Requirement List delivery (19; 42)
- Top Management Participation (37)

Table 4-3

Manufacturing Management Evaluation Are. Information Types

- Manufacturing (10; 15; 23)
- Producibility (13; 56)
- Program Management (13; 15; 23)
- Quality Assurance Program (10; 56)
- Second Sourcing (13)
- Warranty Management (10; 13)
- Work Measurement (56)

Table 4-4

Logistics Supportability Evaluation Area Information Types

Integrated Logistics Support (16; 28; 29; 41; 45; 49; 57)

- Facilities (37)
- Implementation (24)
- Maintenance Planning (5: 44)
- Spares Availability (19)
- Support (5; 19)
- Support Requirements (10)
- Planning (10; 15; 19; 23; 24)
- Technical Data (15; 23; 56)

Other

- Field Availability Rates (indication if availability is greater or less than what the contract calls for) (44)
- Life Cycle Costs (10; 13; 56)
- Logistics Support Analysis (15; 23; 56)
- Service Reports and Material In-processing Review Boards (reporting mechanism once an item is in the field) (56)
- Supportability (7; 13)

Table 4-5

Cost Evaluation Area Information Types

Cost Performance (6; 10; 16; 28; 29; 36; 41; 42; 45; 49; 56)

- Cost (7; 15; 23; 24; 44)
- Cost control (37)
- Cost management (19)
- Elements of cost proportional to targets (37)
- History of buy-in's (37)

Cost Variance (5; 16; 28; 29; 37; 41; 45; 49; 52; 57)

Other

- Show cause or stop work activities (19)
- Use a reasonable and rational budget (5)
- Engineering change proposals well prepared (5)

As can be seen in the tables, there were many different types of information which could not be traced to one of the categories listed in Block 14 of the CPARS form. This same finding was expressed by several individuals during the interviews (5; 7; 10; 56). According to Mr. Edward Wallace:

> Other than the few information types which are substantial and general enough to have a close match with a block on the assessment report, these information items are the sort of things that would not be in the CPARS. Assessment reports are written at a much higher level than the questionnaires. The only time you might get these types of information is if the Program Manager thought it was important enough to write it up in the narrative section. (56)

To get around the problem associated by the mismatch between the required information and that which could be supplied by CPARS, PRAG members had to adapt to the system and take advantage of its features.

According to the PRAG representatives, the descriptive blocks, color ratings, and narrative sections of the assessment report must be used together to develop the risk assessment (7; 10; 13; 23; 24; 36; 42; 56). When evaluating an offeror, PRAG members would read the description block to determine relevancy and gauge the complexity of the program (23; 56). Members would then search the ratings and narrative sections for information which was relevant to the specific evaluation items and areas (7; 10; 13; 23; 24; 56). The PRAG representatives stated that they found inconsistencies in the assignment of color ratings from evaluator to evaluator which made the narrative even more important (a blue rating to one person may be a green rating to someone else) (24; 56). The PRAG representatives used colors to find trends in the information but relied heavily on the narrative portion to substantiate the ratings and show relevancy (7; 10; 13; 15; 23; 24; 36; 42).

<u>Assessment</u> <u>Reports</u> <u>and</u> <u>Questionnaires</u>. Each PRAG representative was asked to describe the extent which CPARS supported the performance assessment process and identify any differences between the information supplied by assessment reports and questionnaires/interviews.

Information extracted from the CPARS provided 60% or less of the total information requirement in 14 of the 16 PRAGs investigated (5; 6; 7; 10; 12; 13; 15; 16; 23; 23; 28; 32; 36; 37; 38; 41; 44; 45; 49; 51; 56; 57). The remainder of the information was gathered through questionnaires, interviews and other sources. PRAG members anticipated continued use of questionnaires and interviews for collecting information on contractors which are not tracked by CPARS and on contracts which are managed by other services (12; 13; 44). Also, questionnaires are useful to collect information from the contract administration offices (13).

Several individuals called for continued use of questionnaires because CPARS did not provide the type or depth of information required to perform an assessment.

> The CPARS provides performance information in a general nature. We needed to develop the questionnaire to get as specific an input as possible. The [assessment reports] did not lend themselves to any specific area. An assessment report may give a general look at management and performance, but would not get down to the detail needed. (10)

> Questionnaires will remain useful even if there were very many assessment reports in the data base, the reason being to verify things on the assessment report which may not be explicitly spelled out. (42)

> Comments on assessment reports were not at a level low enough to make the assessment. We would have been hard pressed if CPARS was the only source of information. The questionnaires went into a lot more detail than the reports from the CPARS. (12)

Several of the PRAG members interviewed indicated that there was some difference in the frankness of comments between an assessment report

and a questionnaire for the same contract. For many PRAGs, interviews or questionnaires were not sent when an assessment report existed. In these cases a general comparison across contracts was made by the PRAG representative.

PRAG representatives observed differences in comments made during interviews or on questionnaires and those made in the narrative sections of the assessment reports. Several individuals felt that the process which the assessment report must go through causes a filtering of the comments (42). Some PRAG members stated that comments on the assessment reports appeared "watered down" (10; 16; 24; 42), while information collected directly from the people involved was very candid. One member stated that through interviews and questionnaires, the government points of contact stated exactly what the problems were and who was responsible (42). Another representative felt the assessment reports were "polished" or "inflated" when compared to questionnaires and that they didn't provide all the "between the lines" type of comments (7).

In contrast, other PRAG members felt that the CPARS, because of the process involved, was the most credible of all the sources (23; 37; 49). Two representatives stated that, in their opinion, sometimes a government point of contact would have an "axe to grind" and the emotionalism could be seen in the words (23; 49). Comments from interviews and questionnaires would have to be "taken with a grain of salt" (23). Another individual stated that the fact that the contractor had an option to rebut or support the program manager's comments increased the assessment report's credibility (37).

Many members felt that it was the depth of information which could be extracted from the source rather than frankness of comments that made CPARS more or less valuable. PRAG members were divided as to which source provided more information. Several individuals felt that a greater understanding could be achieved in an interview or questionnaire (12; 28; 52; 57), while others felt the assessment report provided more information (6; 19; 24; 36).

System Capabilities. Each individual was asked what capabilities an automated version of CPARS should have, and also to identify any items that a designer of such a system should either concentrate on or avoid.

The system capabilities as described by the PRAG representatives take several different forms. Requirements fall into six of the seven activities inherent in the performance assessment process as well as general considerations for the operation of th system. In order to maintain clarity and facilitate insertion irto the Requirements Baseline. capabilities have been grouped into one of the specific activities for which they apply: Data Collection, Data Input, Maintenance, Analysis, Output, and Protection of Information, or the broad category of Considerations and Goals of the System.

Data Collection. There are two major points which must be considered when looking at the capabilities required to support the data collection function of the system. They are ease of input, and adequate depth of information.

Lieutenant Colonel Harrington described ease of input as the need to "make sure that there are easy ways to get the information into the system" (25). He further stated that "it is going to be a big enough

problem just to get the program managers to fill out the assessment
report." (25).

The key to providing an adequate depth of information is emphasis on
the importance of the Program Director/Program Manager narrative (7; 24;
44). The PRAG must know the basis for color ratings and their relevance
in order to make an assessment (6; 16; 19; 36; 38; 42; 57). Ensuring
that the system captures the narrative is only part of the solution. The
other part requires some method to motivate Program Directors/Program
Managers to provide a greater level of information in the narrative
block. Two suggestions include

> use of standard type questions that could be answered to
> provide a greater amount of detail in the remarks (41), and

> an on-line description of the CPARS evaluation areas. This
> would allow a comparison of the item descriptions to the individual
> blocks on the CPARS form. (15)

Another problem associated with depth of information is the ability
to determine the nature and phase of the program (6; 28; 37). This
information is not always discernable from blocks 12 and 13 of the CPARS
form (28). A suggested solution to this problem is to use key words
which would describe the type of contract (28), the phase of the process
(37), and the type of work performed (6).

Data Input. Two points were ..... pertaining to the input of
the data into the system. The first concerned the need to make sure the
reports in the database were the most current (25; 28). One
representative noted that the members knew of assessment reports which
were in the system, but were not in the files yet (28). The second point
concerned the need to update the system and how the database at each
product division could be updated (32).

Maintenance. There were two basic maintenance functions which were identified by the representatives interviewed. The first deals with the problem created by firms changing names because of mergers, takeovers, and buy-outs (15; 23). One individual stated that such changes make it very hard to know whom you are talking about anymore (23). The system needs to provide a way to keep track of name changes so that the individual PRAG member does not have to (15; 23)

The second maintenance capability looked at some sort of automatic purge of old assessment reports. It was suggested that the information would not be useful after five years, and the value of a historical record would be questionable (56).

Analysis. Two broad analysis capabilities need to be provided by the system. These are the ability to determine which assessment reports are relevant, and the ability to provide a description of the data available on each contractor.

Relevancy. In order to determine if an assessment report is relevant to the program under consideration, the PRAG representatives suggested the capability be provided to search through the CPARS by various criteria. The requested search capabilities would locate information which is identified in standard fields and on information which may or may not be provided within certain fields on the CPARS form.

Key fields already identified by the CPARS form include:

- Parent Corporation (23; 37; 45)

- Contractor Division (23; 37; 44; 45)

- Type of Report (25)

- Contract Number (15)

- Product Division (42; 45)

- Period of Performance (16; 45)

- Range of Dollar Value (6; 37; 42; 52)

- Contract Type (6; 12; 28; 32; 37; 42; 49)

Information that may be provided within a field on the CPARS form but which does not have a preset standard format includes:

- Nature of Program: software verses hardware intensive effort, integration type contract (12; 28; 32; 44; 52; 57)

- Phase of Acquisition Process: Production, Full Scale Development, Demonstration/Validation, Concept Definition (6; 16; 28; 32; 37; 38; 42; 44; 45; 49 52; 57)

- Program Description: Aircraft, Missile, Radar, Command Control and Communications, Space, Training (6; 12; 28; 32; 33; 37; 38; 44; 45; 52; 57)

- Unique Aspects Within the Narrative: Quality Assurance, Use of Special Software Languages, Training (10; 16; 51)

Data Base Description. The other broad analysis capability requested by the PRAG representatives was the ability to provide a description of the data base for each contractor. Suggested descriptive capabilities are listed below.

- For each parent corporation and division/profit center:

  -- Provide frequency of reports by contract type (44; 45; 49)

  -- Provide frequency of reports by phase of acquisition (45; 49)

  -- Provide frequency of reports by program description (45)

- For each parent corporation, division/profit center, and contract:

  -- Provide an average overall rating across assessment reports for each evaluation area (42)

  -- Provide a frequency of ratings across assessment reports for each evaluation area (42)

-- Provide a frequency of assessment reports within preset cost and schedule variance ranges (44)

- Capability to describe trends over initial, intermediate, and final assessment reports for one contract (25; 28; 51)

- Capability to describe trends across many contacts (28; 42; 45; 49; 51)

Output. The following types of output capabilities were requested by the PRAG representatives. Output should be available both for display on the computer screen and in hard copy.

- Provide entire copy of assessment reports which have been determined to be relevant (7; 13; 15; 19; 24; 28; 37; 42; 44; 56)

- Provide copy of summary reports based on relevant fields of the assessment report (19; 32; 37)

- Provide copy of descriptive statistics defined in analysis section (19; 32; 49)

- Download information to the Performance Data Matrix and briefing charts (12)

Protection of Information. One of the key features in the conception of the CPARS was its confidentiality. Any automated system developed to support CPARS and the PRAG needs to maintain this (7). An automated data base, must consider the protection of data since it is source selection sensitive (7; 23; 49). It should have appropriate control features (7; 49) to make sure that the data cannot be changed (56) or retrieved by someone who should not have access. According to Mr. Mutrie:

Security of the system is absolutely essential. There has to be some kind of control system to allow free access to people who need the information. but not allow them to change any of the information. (38)

Considerations and Goals of the System. An important

consideration for the development effort raised by Lieutenant Colonel

Poleski is that the mechanisms purposely put into the CPARS to ensure the

integrity of the information must not be sacrificed. These include the

four step assessment report development process of Preliminary

Assessment, Contractor Review, Program Manager Update, and examination by

the Reviewing Official. Lieutenant Colonel Poleski states:

> The Department Of Defense Contract Performance Evaluation
> system did not have the checks and balances which the current system
> now has, and thus the information was less reliable. We can't lose
> any of these checks and balances. (44)

Lieutenant Colonel Poleski was referring to one of the problems

discussed earlier which plagued the now defunct Contractor Performance

Evaluation program. That is, there were problems associated with

ensuring objectivity of the program manager evaluations (35:15). It is

vital that any automation attempt help assure the information objectivity

and integrity.

These sentiments are reinforced by comments made by other PRAG

members (2; 38; 52). Mr. Mutrie of the MITRE corporation stated:

> The contractor's comments are very important because it
> provides a closed loop. The PRAG member can feel confident with the
> information on the form. [We] need to make sure this still works
> when automating [the system]. (38)

An important consideration raised by Colonel Frey concerned the

amount of work necessary to transfer the existing data into the automated

data base (23). He stated that the justification for development and

institution of the new system must keep this significant effort in mind

(23). Since the life of an assessment report is relatively short (five

years), a phased implementation similar to what is currently being

accomplished with the CPARS and use of questionnaires could effectively diminish any potential problem.

Several requirements for an automated system were identified by the PRAG members which cut across all boundaries of the system and describe the attributes a workable system should have. For this reason, the requirements have been listed below as general goals of the system.

The system must be user friendly (19; 23; 25) and "Murphy Proofed" (25). It should be menu driven (32), and provide the right tools and amount of hardware to do the job (19; 45). It cannot make the task of the PRAG any more tedious than it already is (23).

The system must provide as easy access to the data as the PRAG members have now using paper copies or the system of notebooks (19; 25; 45). Any automated system should ensure that it does not hold up the PRAG member (19; 45).

The system needs to be flexible enough so that it can be expanded as the system matures (56).

The system should limit the amount of paper necessary for the PRAG to get its job done (23). Effort should be put into the printed product and the system should provide the capability to see the finished product on the screen (25).

Other comments made which do not actually fall into the requirements domain, but are relevant to the development effort and the final acceptance of the system have been included below. According to Mr. Raymond Albert from Electronic Systems Division, the CPARS should not be automated. He was not very enthusiastic about putting copies of assessment reports into a computer system, stating that the process is too subjective.

Everything is available at a glance, and I would not try to automate that. A data base is useful only if the information is requested often, or if it has to be sorted, reshuffled back and forth, or analyzed somehow. But none of that's true with these assessment reports. I looked at that a long time ago when someone wanted to automate [Electronic Systems Division's Contract Performance Evaluation Program] data base. All that you're going to

do is spend a whole lot of time typing them all in and they're going to sit there for months and some even for years, and nobody is going to look at them. So just take originals and put them into a file. Then when you want to look at them, you look at them. (5)

When asked whether he felt that an automated system could have any merit at all, Mr. Albert replied:

I would not categorically say that it is a bad idea; some people may have good reasons that I don't know about. But I don't have any reasons right now why I would want to do it. (5)

A slightly more positive but still reserved view of an automated system's capacities was presented by Lieutenant Colonel Poleski:

The contractor input and any questionnaires necessary to augment the existing assessment reports will be on paper. Both of these could somehow be put into the system, but I'm not so sure that it would be cost or time effective just to have the information on the computer. If the assessment reports were on the computer, then you would have to read a little bit here and there. I'm coming to the conclusion that the information would have to be all on the system or all off. Some of the summarizing of the CPARS information could be done on a computer system, but I'm not sure it would be all that much of a savings. If there was a way to sort through the information in the data base, then it would be convenient for the secretariat [PRAG assistant]. (44)

User of System. Given that an automated CPARS could be developed, the PRAG representatives were asked who the actual user of the system should be.

The response to this question varied greatly. Potential users of the system identified were: an administrative assistant (6; 12; 36; 49; 56), the PRAG assistant (secretariat) (6; 7; 10; 12; 13; 15; 24; 25; 51; 56), both the PRAG assistant and the PRAG chairman (25), the PRAG chairman (16), any PRAG member (23; 25; 28; 36; 37; 38; 41; 42; 45), and a representative from the CPAR focal point's office (33; 52). One member stated that as long as the system is "user friendly," the ultimate user should not matter (32).

Analysis of Interviews with CPARS Focal Points

Interviews with the CPARS focal points were used to describe the implementation of the performance assessment reporting process. Results from these interviews fulfill the third objective of this research project. A summary of the results for each question is presented below. The actual questions have been included in Appendix C: Survey Instruments.

> *Objective 3. Determine the administrative procedures used to collect, process distribute, and protect contractor performance information under the CPARS;*

> **Investigative Question 3. What are the administrative procedures for collecting. processing, and distributing contractor performance information.**

Administration of the CPARS. Each focal point was asked to describe how administration of the CPARS was organized at their product division.

At Aeronautical, Munitions and Space Systems Divisions, there is one central person responsible for the CPARS. These divisions also have established a point of contact in each of the two-letter offices to keep track of contracts requiring assessment reports. The two-letter points of contact make sure the program manager initiates an assessment report and that all contracts which need to be reported on are (9; 17; 55). At Munitions Systems Division each point of contact provides a quarterly report to the CPARS focal point on the status of reports (55).

At Ballistic Systems Division there is a CPARS focal point and an administrative assistant. There are no other points of contact (40, 50). Electronic Systems Division has a CPARS focal point, an administrative assistant, and points of contact in each two-letter office (11; 30).

Contractor Performance Assessment Process. The CPARS focal points were asked to describe the contractor performance assessment process as it is currently implemented. The focal points were asked to provide the detailed steps and the peculiarities of the process which would not be found in the CPARS regulation. To facilitate the discussion, the process was categorized by five different activities: **data collection, data input, maintenance, output, and, reporting.**

Data Collection. Data collection is the most complex of the performance assessment process activities. Five steps (initiation, evaluation, contractor comments, update, and review) were provided to the focal points as a guide to help them explain how the actual assessment report is developed. Each focal point was asked to describe any local policies or practices which were distinctive to their product division.

Process Initiation. The program manager is notified to initiate an assessment report on a contract either directly by the CPARS focal point (40; 50) or through the two-letter points of contact (9; 17; 26; 55).

At Electronic and Munitions Systems Divisions the CPARS focal point keeps a suspense file so that the program manager can be given 75 days notice before the assessment report is due. This provides 30 days for preparation, 30 days for contractor to respond, and 15 days for review and approval (9; 11; 30).

At Munitions Systems Division the focal point gets a quarterly report from the Acquisition Management Information System of all contracts written which are over five million dollars. The two-letter points of contact determine which of those programs require assessment

reports and inform the program manager when one is due. The points of contact give the program manager the CPARS focal point's name and phone member. The CPARS focal point then gives the program manager a copy of the regulation and provides any necessary assistance (9).

Once an assessment report is initiated the focal point keeps a list of the day that it is due out to the contractor, the day it is due back to the government, and the day it should be signed by the reviewing official. The focal point keeps track of the assessment reports through the two-letter points of contact (9).

At Aeronautical Systems Division, the focal point sends a reminder to the two-letter points of contact 120 days before the assessment reports are due. The reminder states which assessment reports were submitted last year and provides a schedule of milestones which should be met. The two-letter focal point then informs the program manager to initiate an assessment report (17). The assessment reports are written only three times a year in April, August, and November (17).

At Space Systems Division updates are due when the period of performance covered by the report has expired (26; 55).

At Ballistic Systems Division, the review cycle begins in April of each year. Using the Acquisition Management Information System and the established manual CPARS filing system, the focal point makes a determination of which contracts are candidates to be included in CPARS.

A clerk at Ballistic Systems Division has developed a template that works with WordPerfect to complete the front page of the CPARS form. Due to problems with the quality of the reports during the first cycle, the focal point intends on retyping each assessment report. According to Mr.

David Smith and Ms. Pat Olson, having a copy of the report in an automated form will shorten the processing time during the next cycle. The program managers are prohibited from keeping a copy of the assessment report, and having the template and the prior year's assessment report will help them. Also, the automated form will maintain consistency in the program descriptions during the life of the contract (50).

At Ballistic Systems Division, the Air Force System Command Form 125 is sent for each contract from the focal point to the program director (40; 50). The front page of the assessment report has already been completed through the identification of the past color in block 14 by a member of the focal point's office using the WordPerfect template. The evaluator makes appropriate changes to the existing information and completes the assessment. Someone from the focal point's office will then update the information in the word processing template so that it can be used again during the next cycle.

Program Manager's Evaluation. At each product division the program manager has access to Air Force Systems Command Regulation 8oo-54, and the product divisions local supplement to assist the evaluation process (9; 11; 17; 26; 30; 40; 50; 55). Aeronautical Systems Division is also establishing a training program for program managers (17). At Ballistic Systems Division specific instructions are given in the letter to the program directors.

The program manager narrative is limited to the space provided in Block 16 plus one additional page (17). The person performing the initial assessment and the person signing the form as the program director/manager may be different. The level of this initial signature

also differs across the product divisions, as does the coordination necessary prior to the report being sent to the contractor.

At Space Systems Division the person actually responsible for tne contract performs the evaluation and signs the form in Block 17. The program manager then sends the form under a cover letter to the contractor. The CPARS focal point does not see the report prior to its being sent to the contractor (26; 55).

At Aeronautical Systems Division, the program manager or project officer actually in charge of the contract will fill out the assessment report. The person who signs Block 17 as the program director/manager differs between programs. It could be the actual program manager, the three-letter, or two-letter. It is very flexible. What has become inflexible is that the reviewing official must be a general officer (17).

For Ballistic Systems Division the lead project officer for each contract provides the initial evaluation, the form goes through the project officer's boss (the Director of Engineering) for review, and then is reviewed by the program director before being submitted to the contractor. The office from which the assessment report is sent to the contractor depends on the program office. For some the program director will sign a transmittal letter which has been prepared by the focal point's office. Other program offices will prepare their own transmittal letter. In all cases, the focal point or the administration assistant will review the assessment report prior to its being sent to the contractor (40; 50).

At Munitions Systems Division, the program manager evaluates the contractor and then submits the initial assessment report to the

two-letter office for review prior to its being sent to the contractor for comment. The evaluator is the program manager in charge of the specific contract while the actual individual who signs the form as program director/manager is the two-letter chief (9).

Contractor Comments. The assessment report is sent to the contractor by certified mail to ensure time and date of receipt. At that point the contractor's 30 day clock starts. Contractors are asked to provide at least a signature and date on the form. Comments are limited to block 18 plus one additional page (9; 11; 17; 26; 30; 55).

The program manager (26; 55), program director (17; 40; 50), two-letter chief (9) or the CPARS focal point (40; 50) may sign the transmittal letter to the contractor. At each of the product divisions, sample letters have been developed.

Program Manager Update. The program manager reviews the assessment report and determines if revisions are necessary. If the program manager decides to update the initial assessment, it is done on a new form which is attached to the original. If a revision is necessary, the top portion of the new form is completed (items 1 through 5) and the following statement is entered in Block 12 "Revision to CPAR for period (insert period covered)." Blocks requiring revision are then updated (11; 17; 26; 30; 40; 50; 55).

The responsible party then signs the form in Block 17 and transmits it to the reviewing official. As stated earlier, this initial signature may be that of the program manager, a three-letter supervisor, the program director or two-letter officer.

Review Process. There is only one reviewing official at Ballistic, Electronic, and Munitions Systems Divisions. The reviewing official for Electronic Systems Division is the vice commander. From the program manager, the assessment report goes to director of contracting for coordination prior to going to the reviewing official for signature (11; 30). The reviewing official for Ballistic Systems Division is the commander (40; 50). The reviewing official for Munitions System Division is the vice commander (9).

At Space Systems Division, the two-letter director signs the form as the reviewing official. The reviewing official has the opportunity to make comments in Block 20 (26; 55).

According to the focal point at Aeronautical Systems Division, the signature in Block 21 of the assessment report must be a general officer. The reviewing official may be the two-letter officer, vice commander, or commander depending on the program. The reviewing official makes comments and then signs the form (17).

Data Input. Each focal point was asked to describe how and how often each report was entered into the command wide data base. The focal points were also asked whether there were any attachments in addition to the continuation pages for the program director/manager narrative or the contractor's comments.

After the reviewing official signs the form, four copies are made and one copy is sent to each of the product divisions (11; 17; 26; 30; 40; 50; 55). In most cases the assessment reports are mailed to the other product divisions as they are completed; however, the focal point

at Aeronautical Systems Division waits until 10-12 are completed, and then sends them out as a batch (17). Each assessment report is double wrapped. The inner envelop is marked "Source Selection Sensitive - For Official Use Only". The outer envelope is marked "To Be Opened By Addressee Only" (9; 11; 17; 30; 40; 50).

At Munitions Systems Division the focal point makes five copies of the assessment reports as they come in and sends a copy to each product division plus one to Air Force Systems Command (9). The other product divisions send a quarterly or more frequent report to Air Force Systems Command describing the latest assessment reports rather than sending the actual assessment reports (11; 17; 30; 40; 50). These reports contain the contractor name, subsidiary of division, contract number, period or performance, and a brief description of the contract (11; 17; 30).

Each focal point must maintain a local data base of the assessment reports originated by their own product division plus copies of assessment reports initiated by the other product divisions. The method of filing assessment reports differed between product divisions.

At Ballistic and Electronic Systems Divisions, assessment reports are filed by parent corporation and sequentially by contract number. The reports are separated within each folder according to the originating product division (11; 30; 40; 50). A problem was raised ' 'he Ballistic Systems Division focal point concerning what name to use t. ie the assessment reports. PRAG members may know a contractor by one name even though the contractor is referred to in the CPARS regulation as something else. The potential problem is that someone may come looking for a

report and not find it. The focal point and the administrative assistant have chosen to go with the names referred to in the regulation and put the division name in parentheses. A master listing of the contractors' names and addresses is maintained, and within that listing cross references are made (40; 50).

At Space Systems Division the original report is filed according to parent corporation and division/subsidiary (26; 55).

At Munitions Systems Division, the focal point files the original in a file folder in the source selection vault by parent corporation. Assessment reports are not filed by any other means; however, plans are being made to color code the assessment reports by year and also segregate them by contractor division or subsidiary (9).

At Aeronautical Systems Division, portions of the assessment report are first entered into a data base on the Wang computer system. Fields include a nine-digit reference number, the parent corporation, contractor division or subsidiary, address, DODAAD, period covered by the initial assessment report and the latest interim or final report, contract number, two-letter organization responsible for the assessment, and a brief description of the program. The focal point stated that it takes approximately two minutes to enter the information into the computerized data base. The data base is used for generating reports for Air Force Systems Command and to show the PRAG members which assessment reports are on file (17).

The Aeronautical Systems Division focal point then makes copies of the report and files the original. The focal point files the forms by parent corporation, contractor division, and in order by contract number.

The nine digit reference number xxx-yyy-zzz is an integral part of the filing system. The first three digits (xxx) correspond to the parent corporation. The next three digits (yyy) correspond to a division within the parent corporation. The final three digits show the sequential order of the actual contract within a division/subsidiary. The parent corporation number corresponds with the order in which the name is presented in the CPARS regulation. For example 012-yyy-zzz will be the twelfth contractor listed in Air Force Systems Command Regulation 800-54. The focal point was not sure how (or if) the numbers would be updated if Air Force Systems Command added more contractors to the list (17).

Several focal points stated that there were attachments other than the continuation sheets for Blocks 16 and 18 which may accompany the assessment report (26; 30; 40; 50; 55). The attachments could be a letter from the contractor or comments made by the reviewing official or program manager. In all cases the attachments were not included with the copies of the assessment reports sent to the other product divisions. At Electronic and Space Systems Divisions, the attachments were kept with the original assessment report (26; 30; 55). At Ballistic Systems Division, a separate folder has been established to file any working papers or other attachment which support the evaluation (40; 50).

Maintenance. Four basic maintenance functions were identified by the CPARS focal points: update the data base when a company merges or is bought out by another; identify assessment reports which are to be retained longer than five years by direction of the program manager; remove expired assessment reports; and maintain correct descriptive information on each contractor (name, address, points of contact).

Contractor Name Changes. Two methods were suggested for handling the merging of contractors. The first method involves resorting all existing assessment reports into a new folder. Assessment reports for two companies which may merge together could be combined under the new contractor name. Notes would then be made of the name change so that there was a way to trace the assessment reports (11; 17; 30). In the second method suggested, assessment reports would remain in their original folders, and each folder would be cross referenced to the other and to a third folder with the new contractor name (9; 26; 55).

Obsolete Assessment Reports. The suggested method for removing expired reports and the time when reports actually became obsolete differed among the product divisions. If a program manager wanted to keep a particular assessment report for more than five years then notification would need to be given to the focal point (9; 26; 55). The focal point would make a record of the conversation and put a cover letter on the assessment report explaining that it must be retained (9).

The focal point from Munitions Systems Division plans on removing the assessment reports that are five years old and microfiche them (9).

Ballistic Systems Division plans on maintaining a manual suspense log. When the final assessment report is written the contract would be written in a suspense log. The clock would then be started and all reports for that contract would be kept for five years (40; 50).

At Space Systems Division the five year period is counted from the date of the reviewing official's signature. After five years the report will be removed (26; 55). Aeronautical and Electronic Systems Divisions have not made plans for the removal of obsolete reports.

Update of Information. Ballistic Systems Division

maintains a computer data base of names and addresses for those

contractors on which they originate assessment reports. In May of each

year, the focal point sends out a list to all the contractors requesting

confirmation on the names, addresses, and points of contact for which the

assessment reports should be delivered. Each year they find that there

are many changes which need to be made (40; 50).

Output. The manner in which the PRAG members obtain

information from the CPARS differed across the product divisions.

Differences included the way PRAG members requested information, access

allowed to the original file folders, and whether copies are made of the

assessment reports.

PRAG members at Electronic Systems Division must send a letter

requesting access to the CPARS to the focal point. Only members named in

an access letter may see the assessment reports (11; 30).

At Electronic and Space Systems Divisions, the PRAG members give the

name of contractors, programs, and contract numbers which they are

interested in (11; 26; 30; 55). Space Systems Division has developed a

form so that the focal point has all the information available to search

through the assessment reports (26; 55). According to the focal point at

Electronic Systems Division, the entire folder for a given contractor is

not usually given to the PRAG member, but there is nothing prohibiting

the PRAG member from seeing the entire folder (11; 30).

At Electronic and Space Systems Divisions, no copies of the

assessment reports are made to support the PRAG analysis. The original

reports are given to the PRAG members, who then take them to the area

which they are working on the source selection (11; 26; 30; 55). PRAG members are only given access to the contractor files which they are interested in (11; 30).

At Munitions Systems Division PRAG members give the focal point the name of the contractor and the specific division. PRAGs look at all assessment reports for a specific division and then for the entire company. The focal point does not perform any sorting of the forms. No copies of the reports are made. The PRAG members review the original copies of the assessment reports in the source selection facility. This has not been a problem since the PRAG members are working in the same facility when performing the risk assessment (9).

At Aeronautical Systems Division PRAG members look at a list which shows all the reports in the file. The list, generated by the Wang data base, shows the parent corporation, reference number, number of intermediate reports and final report if applicable, contract number, contractor division, and a brief description of the program. The PRAG members look at the list and identify which assessment reports they would like to see. Copies are then made and given to the PRAG member. According to the Aeronautical Systems Division focal point, the PRAG members do not have access to the original files. However, if a computerized data base for the CPARS could be developed there would be no problem with PRAG members searching through the reports as long as the system could limit access to only the contractor of interest (17).

At Ballistic Systems Division, the PRAG members ask for all the assessment reports for a given contractor, and also look at specific divisions within a company. PRAG members sort through the contractor

folder for relevant assessment reports, and make copies. PRAG members are allowed to take them back to the source selection area where they are working. The copies of the assessment reports used become a permanent part of the source selection record (40; 50).

Reporting. Each person interviewed was asked what reports they need to generate as the CPARS focal point.

As stated earlier, four of the five product divisions submit quarterly or more frequently to Air Force Systems Command a report describing the latest assessment reports (11; 17; 30; 40; 50). These reports contain the contractor name, subsidiary of division, contract number, period or performance, and a brief description of the contract (11; 17; 30).

In addition, Air Force Systems Command Regulation 800-54 (1:3) requires each focal point to submit annually a report which states the name and address of the contract division or subsidiary; the parent corporation; the number of times the contractor has submitted proposals; and any new offerors for inclusion in the data base (9; 11; 26; 30; 40; 50; 55).

The focal points also had to prepare reports for local use within the product divisions.

At Electronic Systems Division occasionally the focal point must prepare a talking paper stating the number of assessment reports on file, the number of contractors, number of assessment reports per contractor, and the number of programs which have had PRAGs and looked at the CPARS (11; 30).

The focal point at Munitions Systems Division builds a report that goes to the commander on incomplete assessment reports from information gathered while tracking their progress. One chart is prepared which has a list of contracts, the date assessment reports were due out, the actually mailing date, the date reports were returned by the contractor and the date of approval by the reviewing official (9).

Problems Inherent to the Process. Each focal point was asked if they had found any problems inherent to this process and whether they had any suggestions for recommended improvements.

Ms. Irene Biddy from Electronic Systems Division stated that the only problems were with educating the people and getting the process started (11).

Ms. Gail Vranicar from Space Systems Division stated that there is a mandate to streamline the process; reduce the number of evaluators and the time for evaluation. At the same time, there is the need to have a PRAG. To keep the number of people down, Space Systems Division often makes members of the evaluation team perform double duty with the PRAG, which stretches out the time. Dedicating people to the PRAG function also happens, but at a cost of increased personnel requirements. Ms. Vranicar emphasized that the PRAG process was added value to the selection decision and is worth the extra effort (55).

A second problem identified by Ms. Vranicar was that prior to the CPARS, Space Systems Division generated detailed questionnaires tailored to the specific programs. In terms of relevancy, Ms. Vranicar was not sure that an assessment report from CPARS could provide the necessary information without follow-up interviews. She stated that the CPARS was

great in that there is a standing body of data and PRAG members have some place to start (55).

The only problem identified with the process by Mr. Michael Cushing of Aeronautical Systems Division was that there have been requests to use the CPARS information for other than source selections. Air Force Audit Agency, system program managers, and Air Force Systems Command have asked for copies of assessment reports (17).

A problem identified by Mr. David Smith from Ballistic Systems Division involves the identification of the corporate chief executive officer or authorized person for a company who must submit letters requesting authorization access to review assessment reports in the CPARS (50). The guidance provided in Air Force Systems Command Regulation 800-54, paragraph 9.b, (1:3-4) states that a CPARS access letter from the corporate chief executive officer, or a letter by the corporate chief executive officer designating other approval officials, in addition to a CPARS access letter signed by the designated person must be presented to the CPARS focal point. The basic question is whether the initial corporate official must be from the parent corporation or whether the official can be the chief executive of the division or subsidiary.

At Ballistic Systems Division each assessment report is being entered on a word processing template by the administrative assistant. Ms. Pat Olson, the CPARS administrative assistant from Ballistic Systems Division, stated that Ballistic Systems Division is approximately one third through this cycle and it has been very labor intensive so far. Ms. Olson also stated that she expects the worst is yet to come (50).

Mr. George Bates, the CPARS focal point for Munitions Systems Division, identified several problems with the current process. Two problems are the reluctance of program managers to complete an assessment report, and getting the assessment report mailed to the contractor on time.

> For program managers, preparing the assessment report is a low priority item when compared to their other functions. Also the two-letter officers are busy people and review of the assessment report takes time. (9)

The real problem, according to Mr. Bates, occurs once the assessment report has been returned by the contractor. The wait between the time the two-letter receives the assessment report and the point where the reviewing official signs it is unacceptable. Mr. Bates stated that there are eight different coordination blocks to get a single assessment report to the reviewing official (9).

Protection of Information. According to the CPARS regulation, all information contained in the system is considered source selection sensitive. Each focal point was asked what special constraints, for the transportation, protection, and storage of this data was currently being exercised.

The Air Force Systems Command Form 125 is marked "Source Selection Sensitive -- For Official Use Only (when filled out)" (17). According to the Aeronautical Systems Division focal point, there could be several different interpretations as to when the form is actually filled out and becomes source selection sensitive. It could be when the program manager provides the initial evaluation or when the reviewing official finally signs the form in Block 21. Once it is filled out and gets to the focal point, it is protected at all times. There is no instructions in the

current supplement which describe how to handle the assessment report prior to it being completed (17).

The assessment reports are kept in a file drawer in a locked room or vault with controlled access and are only released to PRAG members with authorized access (9; 11; 26; 40; 50; 55). At Munitions Systems Division no one can get to the CPARS unless they deal directly with the CPARS focal point (9). While in transit between offices, the assessment report is hand carried and kept underneath a source selection sensitive cover sheet. The assessment report is never left unattended (9; 11; 26; 40; 50; 55). When assessment reports are mailed, they are double wrapped and appropriately marked (11; 26; 40; 50; 55). The transmittal letter to the contractor highlights the fact that the report is source selection sensitive and the restrictions on its use (26; 55).

With the exception of Ballistic Systems Division, the assessment reports are not prepared using word processors but are being typed on typewriters. Ms. Irene Biddy, from Electronic Systems Division, stated that if the program managers were to use word processors there would have to be some special type of protection constraints. She further stated that this may require the implementation of an automated CPARS to use a full time data input clerk whose responsibility would be to key in assessment reports (11).

Sizing the CPARS Data Base. Focal points were asked to identify the number of assessment reports which originated from their product division and to estimate how that number would increase based on new contracts and addition of new contractors. The existing number of assessment reports for each product division is listed in Table 4-6.

Table 4-6

Number of Assessment Reports Currently in the CPARS

Product Division	Number of Assessment Reports
Aeronautical Systems Division	130
Ballistic Systems Division	50
Electronic Systems Division	63
Munitions Systems Division	34
Space Systems Division	47

	324

Focal points from Aeronautical, Ballistic, Electronic and Space Systems Divisions expect an increase in over five times the amount of assessment reports currently in the system in the next five years. However, the focal points felt that the increase would not be substantially more than five times the amount unless the system expands to include service contracts (11; 17; 26; 40; 50; 55).

These same focal points recognize that there has been some interest to add other contractors to the list. However, they do not anticipate the number of contractors increasing unless the CPARS is expanded to include other type contracts (11; 17; 26; 40; 50; 55).

Mr. George Bates from Munitions Systems Division anticipates the number of reports to grow much larger than five times the number of reports in the system (9). Mr. Bates also expects the number of players to increase dramatically. Mr. Bates stated that he has about eight new companies which Munitions Systems Division would like to add to the list. Each year he expects that they would add more names (9).

If there were a ten-percent increase in the number of contracts each year (which seems appropriate and also conservative considering the information provided by the focal points) the number of reports which could be expected in the system is shown in Table 4-7. The figures shown in Table 4-7 are based on the assumption that reports would be held for a full five years and that a negligible number of contracts would be completed during that period. It is expected that sometime after the initial five years, the number of initial assessment reports written on new contracts would not exceed the number of contracts expiring for a given period. At that point in time the number of contracts in the system would remain fairly constant.

Table 4-7

Growth of CPARS

	1989	1990	1991	1992	1993	1994
*Number of Added Assessment Reports	324	356	392	431	474	521
Total Number of Assessment Reports	324	680	1072	1503	1977	2498

*Interim or final reports plus initial reports for new contracts.

Existing Computer Systems. Each focal point was asked to identify the computer systems and software packages currently in use in their offices. Their response is summarized in Table 4-8. The small computer technical centers at Eglin and Hanscom Air Force Bases were contacted to determine whether Zenith Z-248 or other MS-DOS based computers were

currently in use. All five product division locations currently use and support the Z-248 computer, although not all focal points have access to Z-248 computers.

Table 4-8

Existing Computer Systems

Product Division	Computer Systems	Software Packages
Electronic Systems	Wang	--
	[1] CPT	--
Space Systems	Z-248s	WordSTAR Lotus 1-2-3 [R] MultiMate Enable™
Aeronautical Systems	Z-248s	--
	Wang	--
Ballistic Systems	Z-248s	WordPerfect [R] Lotus 1-2-3 dBASE III [R] Harvard Graphics™
Munitions Systems	[2] --	--

[1] Only the CPT is used for CPARS related information. Z-248 computers are currently in use at Hanscom Air Force Base.

[2] Does not have any computers as the CPARS focal point. Z-248 computers are currently in use at Eglin Air Force Base.

Capabilities Expected From an Automated System. The focal points were asked to think about the performance assessment process and explain how an automated information system would apply to each activity. The

activities are listed below with the focal points suggested capabilities. Suggestions were made for six of the seven activities.

Data Collection. Electronic Systems Division keeps a suspense file so that the program manager can be given 75 days before an assessment report is due. This provides 30 days for preparation, 30 days for a contractor to respond, and 15 days for review and approval. Ms. Irene Biddy and Ms. Cynthia Keefe stated that it would be nice if a computerized system provide that capability. They also stated that there would have to be a manual backup because the system that they have is notorious for being down (11; 30).

According to Mr. Michael Cushing, an automated system would help the focal point and the PRAG members, but would probably make life for the program offices more difficult (17). Mr. Cushing stated that it would be up to the program offices to input the data. He anticipates the program manager would provide a disk with everything on it. The disk could then be put on the Z-248 to update the data base (17).

Data Input. Mr. Cushing stated that he would expect to receive a disk with an entire assessment report on it. He wanted to make it clear that the source selection office at Aeronautical Systems Division did not have the resources to enter the entire assessment report into a computer data base. Mr. Cushing also stated that the time to get the whole assessment report into the data base should not exceed ten minutes (17). Mr. Cushing currently spends between two and three minutes to update the Wang data base when each assessment report is received (17).

Ballistic Systems Division is already using the Acquisition Management Information System and the data base of contractor names and

addresses to help the initiation of the process. Mr. Smith and Ms. Olson also stated that the word processing template created using WordPerfect or something similar could be used for data input (40; 50).

Maintenance. No capabilities were suggested for this activity.

Analysis. According to Mr. Smith, a sorting capability to help the PRAG members find relevant reports would be a big benefit (50). Mr. Smith also suggested that if there was a central data base, then one office could look at the reports and come up with a corporate trend. This would then provide PRAGs across all the product divisions a consistent corporate profile for each contractor (50).

Output. An automated system could help with the quality of the reports. With reproduction of the forms, there is an opportunity to get poor copies (26; 55). An automated system could help with transmission of the reports. Space Systems Division has people working source selections in Florida and throughout the state of California. Under the current system, it is difficult to get the information to these people. For the source selection in Florida the focal point needed to make copies of the assessment reports, which was against Space Systems Division policy (26; 55). The capability to download information directly from the assessment reports to the charts that need to be briefed to the Source Selection Authority would also be helpful (40; 50).

Reporting. All five focal points and their assistants felt that an automated system could very easily generate the types of reports which must be provided by the CPARS focal point.

Protection. The focal points stated that the system must be able to provide protection of the data in such a way that a PRAG member

or contractor could be limited access to a specific contractor. There needs to be some way to segregate the data base so that access can be controlled (11; 30).

User of the Automated System. Given that an automated information system could be developed to help collect, process, and disseminate contractor performance information to assist PRAGs in their performance risk assessment each focal point was asked who would be the appropriate person to sit in front of the computer terminal and generate the product.

At Aeronautical, Ballistic, Munitions and Space Systems Divisions, the focal points felt that the PRAG members would be the best users of the system (9; 17; 26; 40; 50; 55). Mr. Smith from Ballistic Systems Division stated that he could not see any benefit in having a representative from the focal point's office perform the sorts.

> The PRAG members know what is relevant and so it would be in their best interest to sit down at the system. I believe that it would save a lot of time if the reports could be sorted through in some automated fashion. (50)

Ms. Keefe from the Electronic Systems Division felt that a representative from the CPARS Focal Point's office would be the most efficient user of the system.

> This way only one person would be going into the system. It would require a change of duties for the administrative assistant, but it would result in the most efficient way of doing business. The PRAG could provide instructions and the assistant could create an information product. (30)

Ms. Keefe stated that she did not know of any reason why a PRAG member could not perform the sorts and build reports themselves as long as the data could be protected to limit access to only contractors for the instant source selection (11). This same concern for isolation of the data was expressed by individuals from Aeronautical and Space Systems

Divisions (17; 26; 55). Mr. Cushing from Aeronautical Systems Division also felt that the focal point should control any printing of CPARS data by the PRAG members (17).

Development of the Requirements Baseline

The requirements baseline represents a synthesis of all requirements determined to this point. The capabilities expressed during the interviews with PRAG members and CPARS focal points, the procedures necessary to support the PRAG process and CPARS administration functions, and the regulatory constraints applied to the information and to the system all had to be consolidated into a concise set of system level requirements. The development of the requirements baseline implements the first part of the final objective of this research project.

Objective 4. Establish the requirements baseline and conceptual design for an automated information system, based on the CPARS, to collect, process, protect, and disseminate contractor performance assessments.

Investigative Question 4. What system capabilities are dictated by the information requirements of PRAGs and the implementation procedures of the CPARS?

The requirements baseline represents the system level capabilities which must exist in order to meet the user's needs. The baseline will include both *expressed* and *derived* requirements.

Expressed requirements are the specific attributes of the system which have been stated by the user. In this case, the expressed requirements are the system capabilities which have been identified by the PRAG representatives and the CPARS focal points.

Derived requirements represent those which have not been explicitly stated, but are essential to make the system operable. The primary

sources for the derived requirements are the procedures used and types of information required by past PRAGs, and the administrative procedures in effect to collect, process, and distribute contractor performance information. Lower level derived requirements will also appear during the design process as specific interfaces are identified.

Each detailed step, activity, and desired capability as described by every one of the PRAG members and CPARS focal points was carefully analyzed to extract the system level requirements. The intent of this process was to identify all requirements independent of the number of individuals who recognized them. A common thread through the process was sought to maintain coherence and consistency. No effort was made to prioritize requirements.

The primary reason for developing the requirements baseline was to support the construction of the conceptual model of the system. The conceptual model replicates much of the content of the requirements baseline while providing a user orientation to the system design. Since the conceptual design will be described in detail, the requirements baseline has been presented as an appendix. The interested reader may want to review Appendix E: Requirements Baseline prior to Chapter V in order to follow the complete process of this project.

V. Development/Design

Conceptual Design

The conceptual design is a user oriented description of the required capabilities of the system. The conceptual design describes the applications of the system as the user sees them (18:577). The basis of the conceptual model was established early during the requirements analysis stage with the characterization of the performance assessment process as seven different activities. These activities are data collection, data input, maintenance, analysis, output, reporting, and protection. The purpose of this section is to describe the relationships among the seven activities, and the interaction of the activities with the core of the system, the data base of performance assessment reports.

> **Investigative Question 5. How do the established requirements affect the architecture for the automated information system?**

To answer this question, the expressed and derived requirements specified in the requirements baseline had to be allocated to the architecture of the automated system. A transactional model as described by Dr. Roger Pressmen in Software Engineering, a Practitioner's Approach, was chosen for this purpose (47:262-265). The model consists of a hub or decision center which can start one or more of the many different transactions required by the system. Each of the requirements established by the user needs to be allocated to one or more transactions within the system.

Top-level Conceptual Design. The top-level transactional model for the CPARS is shown in Figure 5-1. The transaction center acts as the
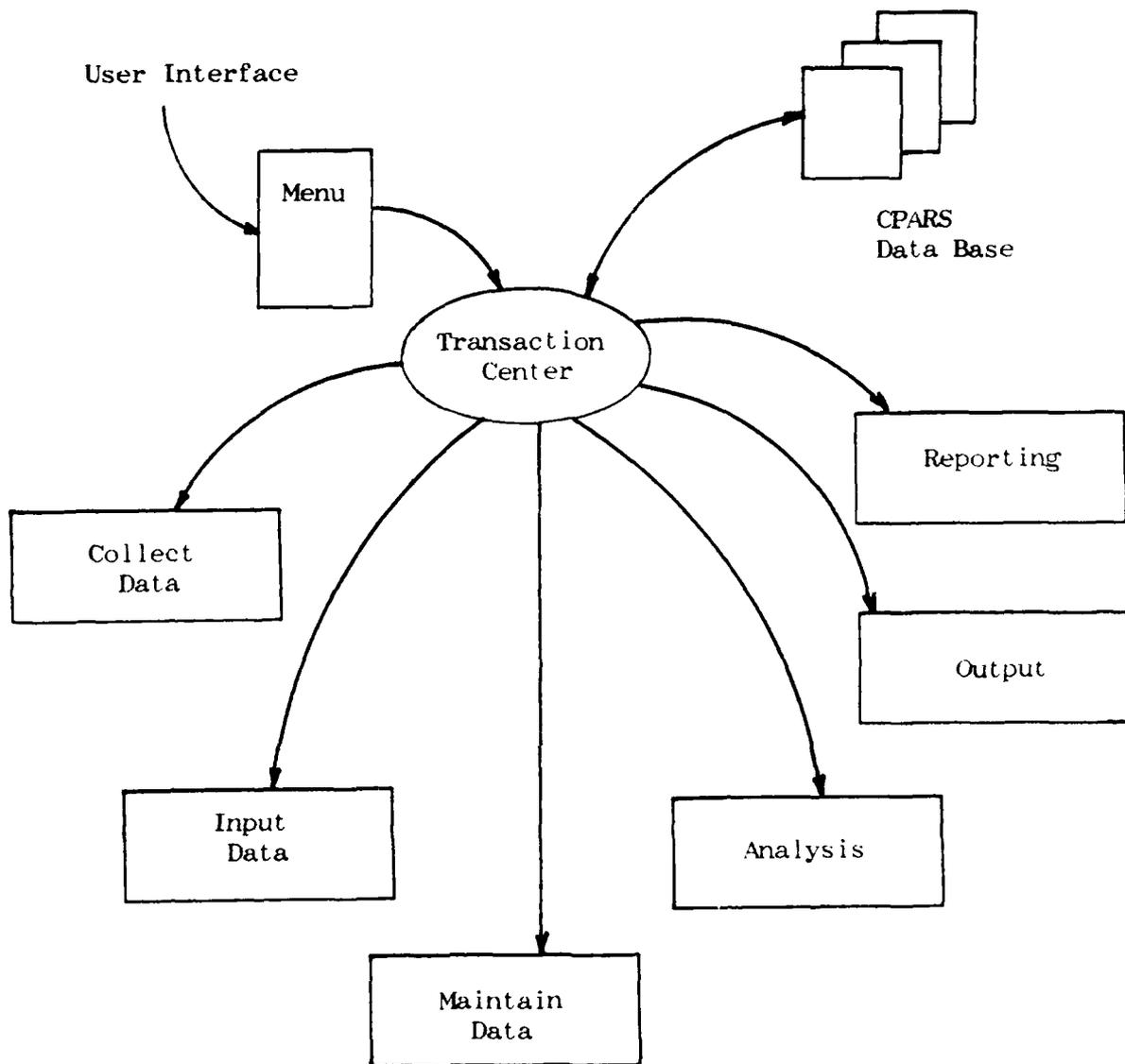
Figure 5-1. Top Level Transaction Flow Diagram For CPARS Automation

interface to the external world for all applications of the system. The

hub also acts as a protection mechanism for the sensitive performance

information. In much the same way as the focal point restricts access to

the files of assessment reports, the transaction center will control the interface to the CPARS data base.

The user, through some interface to the system, will select one of many different transactions. This is portrayed as a menu in the transaction flow diagrams. The system will perform requested functions based on the access allowed to the particular individual. Access to the system would be defined and controlled by the CPARS focal point. Because protection of the sensitive information must be an inherent part of every action in the system, it is not depicted as a separate activity.

Lower-level Conceptual Design. The following series of transaction flow diagrams allocate the requirements stated in the baseline to the conceptual design. In many instances, the requirements overlap more than one of the seven activities and the boundaries tend to blur. This is especially true for data collection and data input, analysis and output, and output and reporting activities. Four summary transaction flow diagrams and eleven detailed transactional flow diagrams will be discussed in the remainder of this section.

Perform Data Collection and Data Input Activities. Due to the close relationship of the data collection and data input activities they have been combined and will be described together. The summary transaction flow diagram for data collection and input is shown in Figure 5-2.

The statement in the top right corner of the diagram represents an option from the main menu for the CPARS automated system. The seven transactions shown beneath the center represent options from a lower level menu for data collection and input.
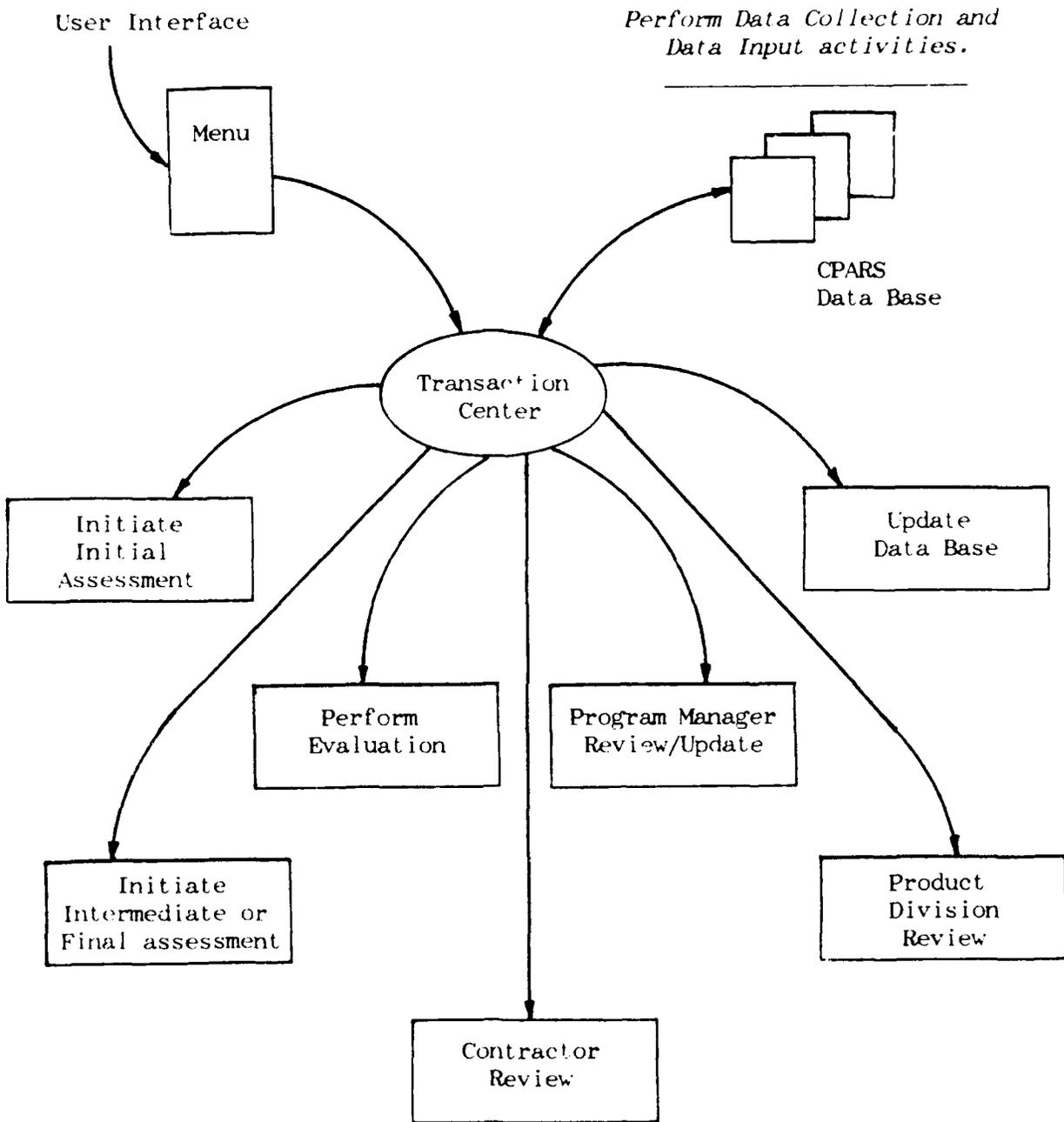
Figure 5-2. Data Collection and Input Summary Transaction Flow Diagram

<u>Identify Contracts Which Require Initial</u> and <u>Intermediate</u> <u>or Final Assessment Reports</u>. The first two options for the data collection and input tasks are to initiate the assessment process. The transactional flow diagrams are depicted in Figures 5-3 and 5-4.

The user of the system for these transactions is the CPARS focal point or the two-letter point of contact. Initiation processes of selecting contracts for initial assessments (Figure 5-3) and intermediate or final assessments (Figure 5-4) are nearly identical. The only differences are the source which is checked to identify contracts to report on for a given period and the amount of preparation necessary to create new records. The Acquisition Management Information System (AMIS) or a similar source should be checked to identify contracts for initial assessments.

Once an assessment has been written for a given contract, the CPARS data base can be checked for interim and final assessment reports. The CPARS focal point will use information extracted from the Acquisition Management Information System or the CPARS data base to create new records for each of the contracts identified and then notify the program manager that an assessment is due. When initializing the record, the name/address data base should be checked for corrections (see the maintenance transaction flow diagram for further information on this data base). When the program manager is notified, the focal point will make an entry into the tracking log.

CPARS
Focal Point

*Identify contracts which
require an assessment report
initiated this period.*

Menu

Transaction
Center

CPARS
Data Base

Check AMIS
for New
Contracts

Contracts
Identified

Create
New Records

Notify
Program
Manager

Initialize
With Data
From AMIS

Update
Tracking
Log
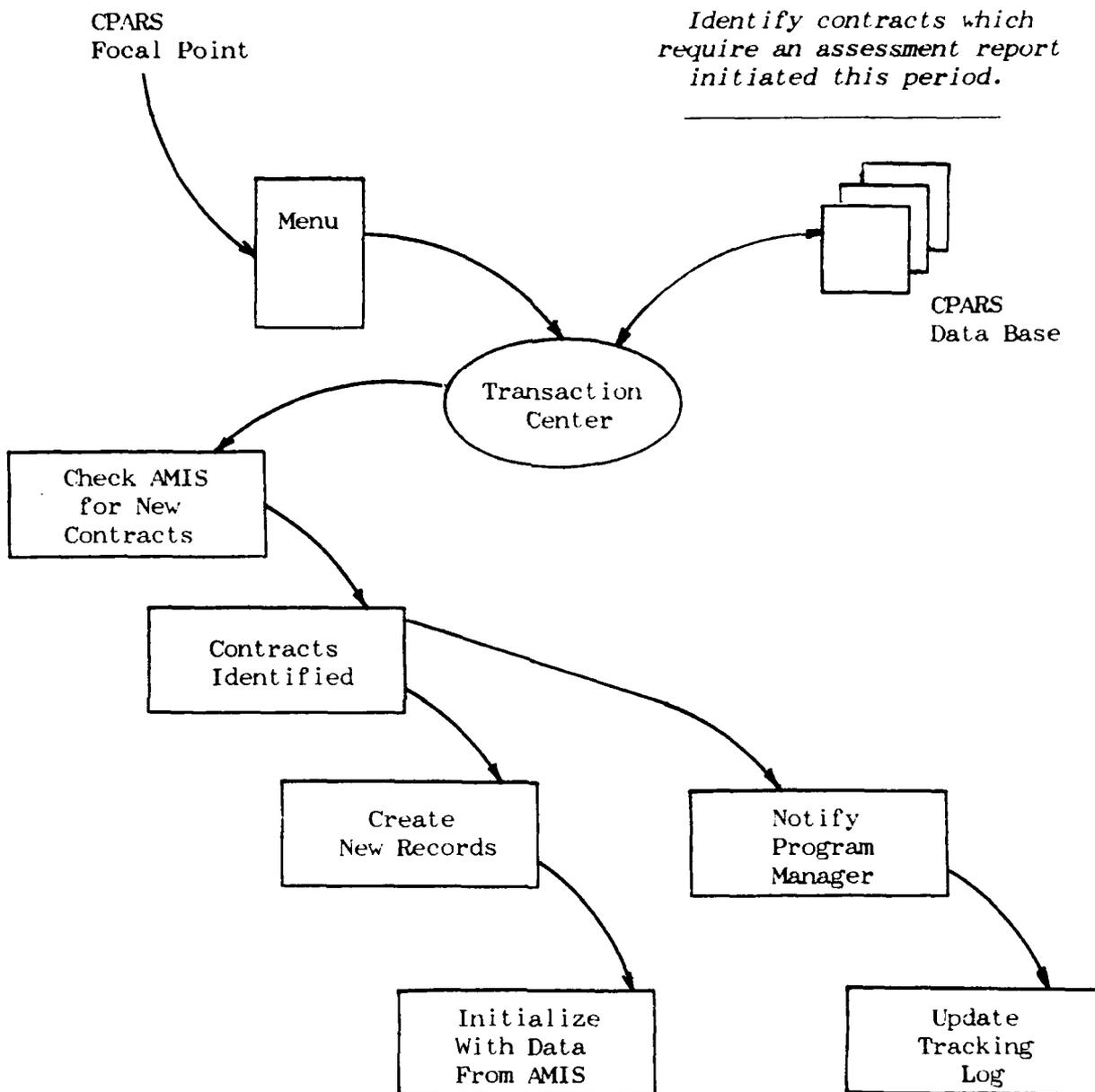
Figure 5-3. Identify Contracts Requiring Initial Assessment Reports
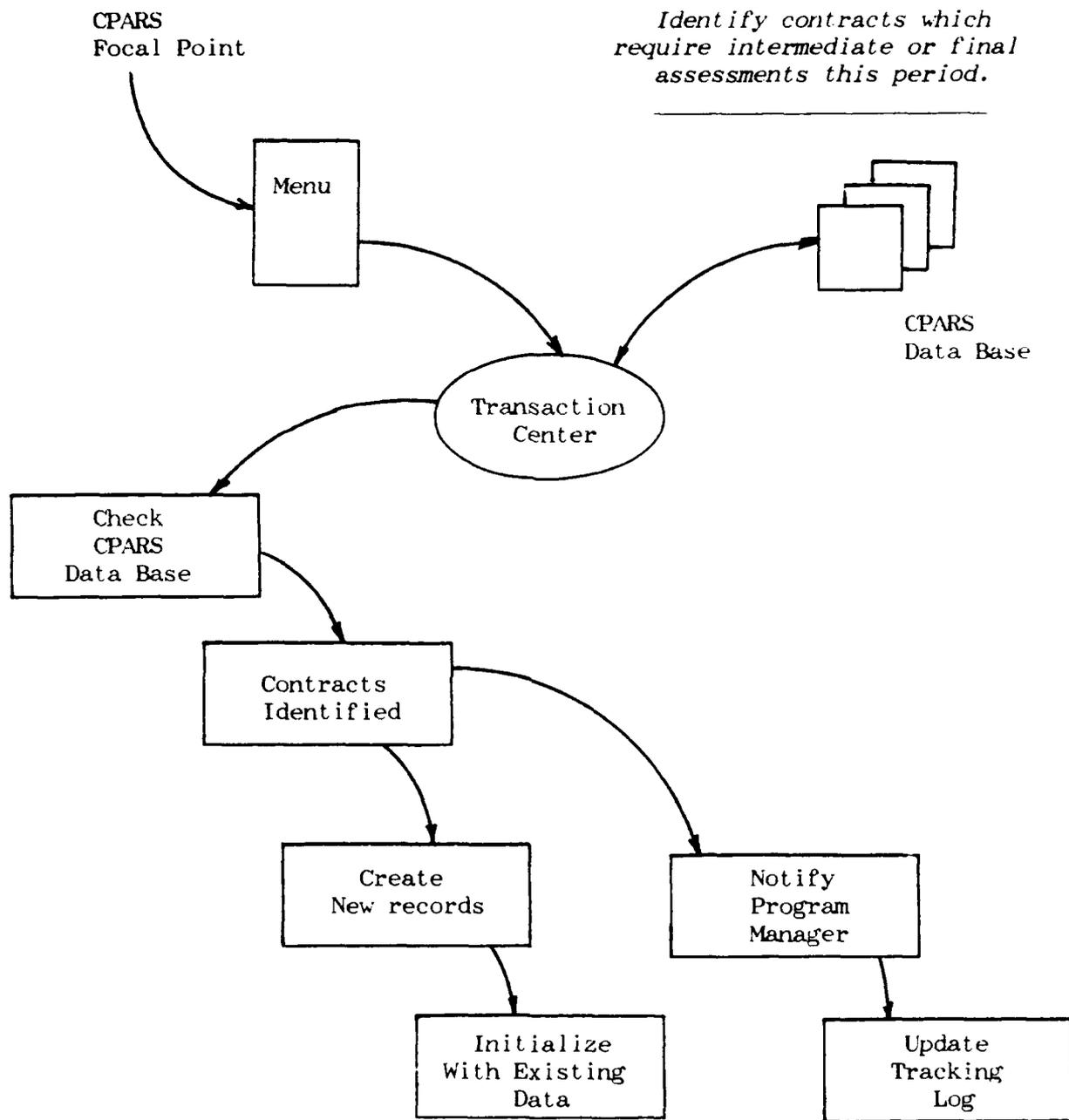
Figure 5-4. Identify Contracts Requiring Intermediate or Final Assessment Reports

Perform Initial Evaluation. Once notified that an assessment is due, the program manager selects the "perform initial evaluation" option from the data collection and input menu. The transaction flow diagram for this process is shown in Figure 5-5. The program manager should have the option to key the information directly into the data base input form or to enter into an interactive environment with the system.

When program managers choose the interactive environment, they will be asked probing questions for each item in Blocks 14 and 15 of the report. The purpose of the questions is to help the program manager provide the level of detail in the narrative section required to support the PRAGs. The program manager's answers to the probing questions will be annotated in the portion of the record reserved for the narrative section (Block 16) of the CPARS form. Examples of standard language or key words to describe the phase of the process, type of technology, and type of work performed should be available to the program manager. Upon completing the assessment, the program manager would enter into a word processing function and edit the comments. The program manager should be able to review any prior period's assessment report for that contract.

Once the evaluation is complete, the record in the data base is updated. A transmittal letter is prepared by either the CPARS focal point or the program manager. The assessment report and letter are then readied to be sent to the contractor. At any time prior to the assessment report's being sent to the contractor, the focal point should have the option for review.
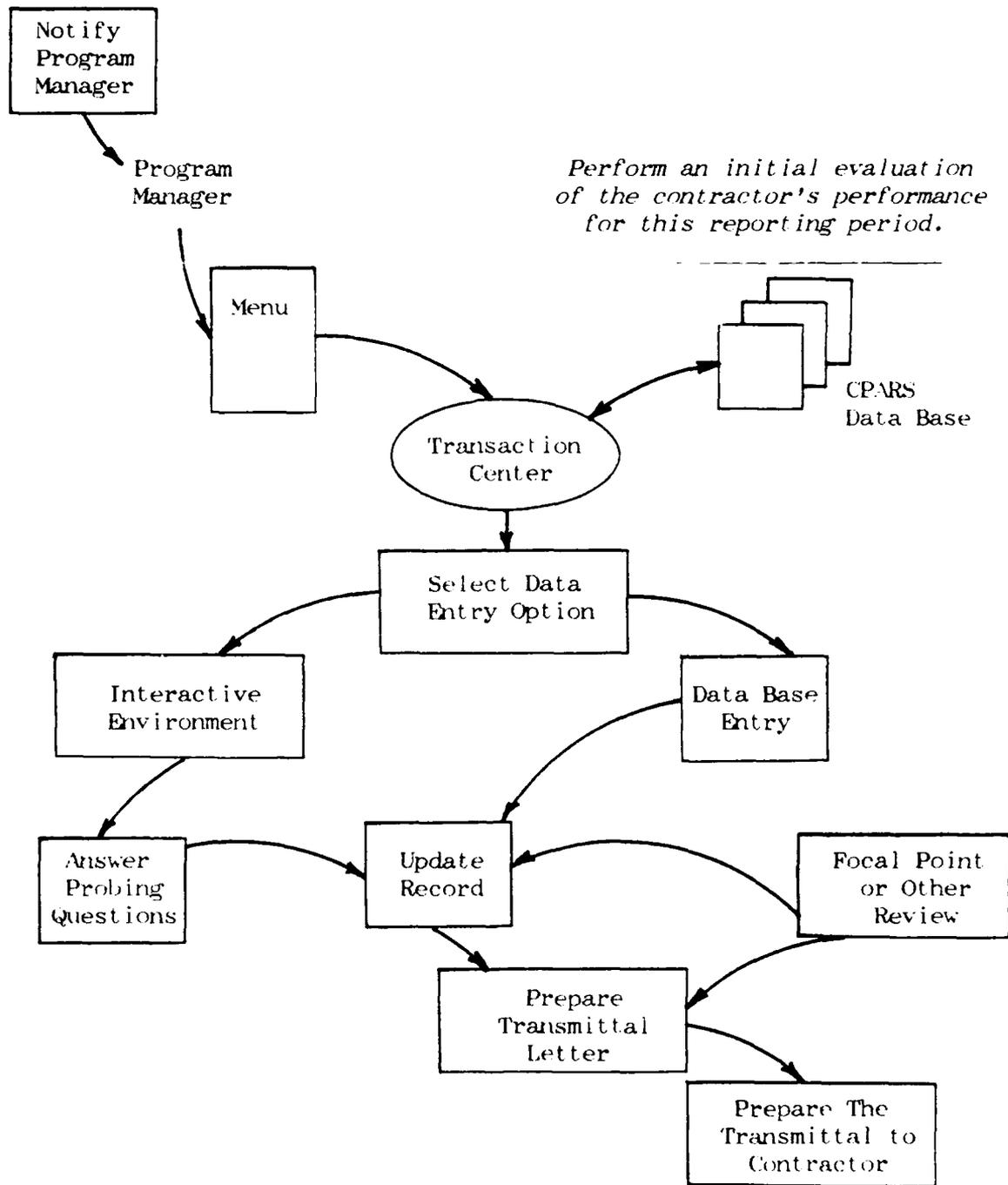
Figure 5-5.   Perform an Evaluation of the Contractor's Performance

Contractor's Comments. The program manager or CPARS focal point sends the assessment and transmittal letter to the contractor by certified mail or some other method. When the contractor receives the assessment, the tracking log is updated and the 30-day clock for contractor comments is set. Upon receipt of the response from the contractor or 30 days after receipt by the contractor, the focal point will update the tracking log. The record containing the preliminary assessment is updated with the contractor's comments, at which time the program manager's review and revision process begins. The transaction flow diagram for this phase of the data collection/data input process is shown in Figure 5-6.

Review and Revise Assessment. The transaction flow diagram for this activity is presented in Figure 5-7. The program manager reviews the assessment report and determines if revisions are necessary. If revisions are not necessary, the report is validated and submitted to the product division reviewing official.

If revisions are necessary, the information in Blocks 1 through 5 of the assessment report is transferred to a new record and the statement "Revision to CPAR for period dd/mm/yy to dd/mm/yy" is entered in Block 12 of the new record. Ratings or comments requiring revision are then updated. Reasons for the changes are entered in the remarks section. The program manager or other responsible party validates the assessment and submits it to the reviewing official. When action is complete the tracking log for that contract is updated.

Program Manager or
CPARS Focal Point

*Transmit letter and assessment
to the contractor, and receive
contractor comments.*

```
                  ┌─────────┐
                  │  Menu   │
                  └─────────┘

                                              CPARS
                    ⬭ Transaction              Data Base
                      Center ⬭

  ┌─────────────┐
  │ Send Assessment │
  │ and Letter to │
  │  Contractor   │
  └─────────────┘

              ┌─────────────┐        ┌─────────────┐
              │ Acknowledge │        │   Update    │
              │   Receipt   │───────▶│  Tracking   │
              │ by Contractor │      │    Log      │
              └─────────────┘        └─────────────┘

  ┌─────────────┐                ┌─────────────┐
  │   Receive   │                │ 30-Day Cycle│
  │ Response from │              │   Lapsed    │
  │  Contractor   │             └─────────────┘
  └─────────────┘

  ┌─────────────┐  ┌─────────────┐  ┌─────────────┐
  │   Update    │  │   Update    │  │    Begin    │
  │  Tracking   │─▶│ Record With │─▶│ Review/Revision │
  │    Log      │  │  Comments   │  │   Process   │
  └─────────────┘  └─────────────┘  └─────────────┘
```

Figure 5-6.   Transmit Assessment and Receive Contractor Comments
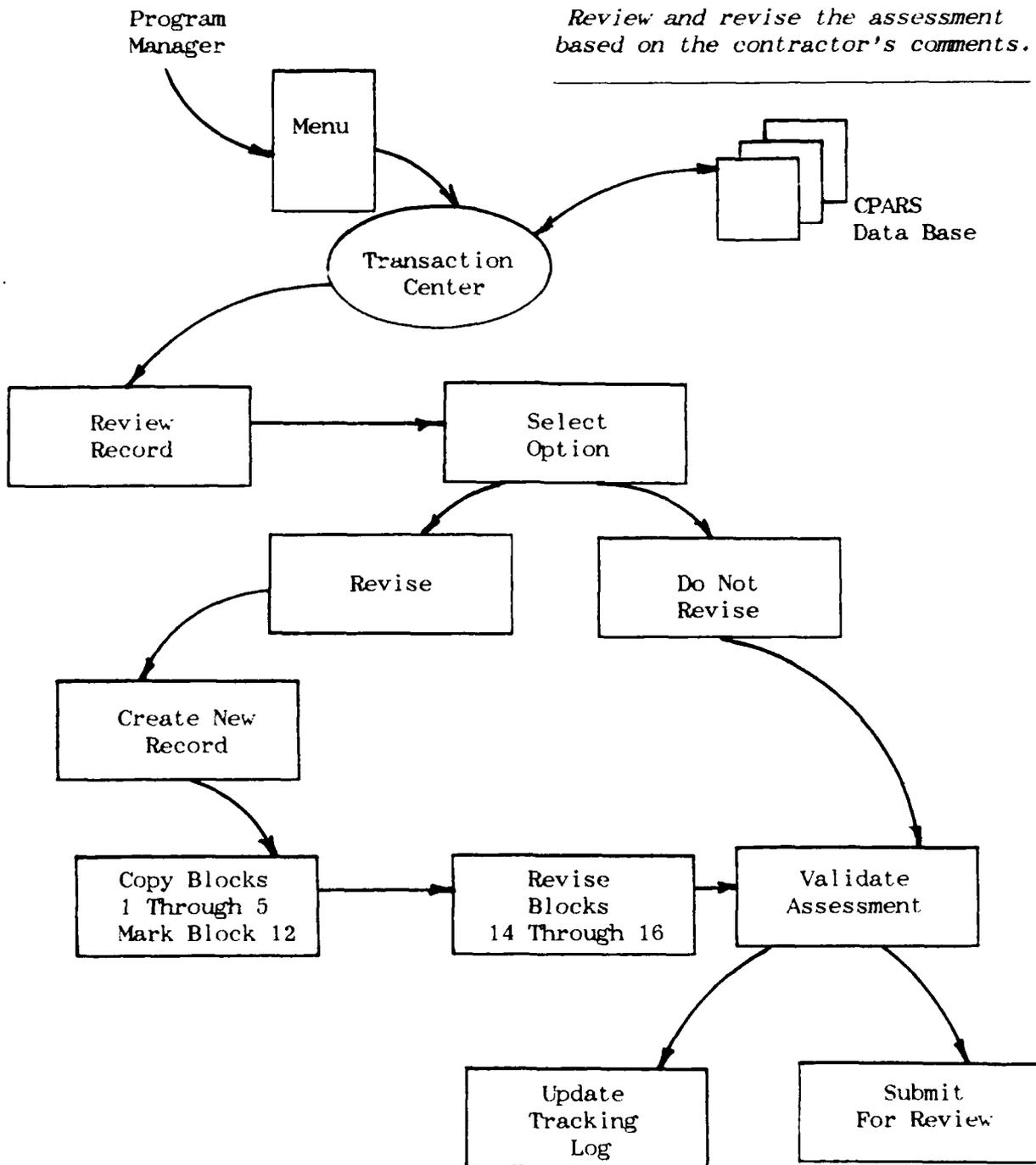
Figure 5-7.   Review and Revise Assessment

Product Division Review. The product division reviewing official examines the assessment report and makes any comments in Block 20. The assessment report is then validated by signature in Block 21 or by some other method. If the review is performed on-line, the record can be sealed as part of the validation process so that it is forever write protected. If a hard copy is presented to the reviewing official, the sealing step must be performed as part of updating the local and command wide data bases. The transaction flow diagram is shown in Figure 5-8.
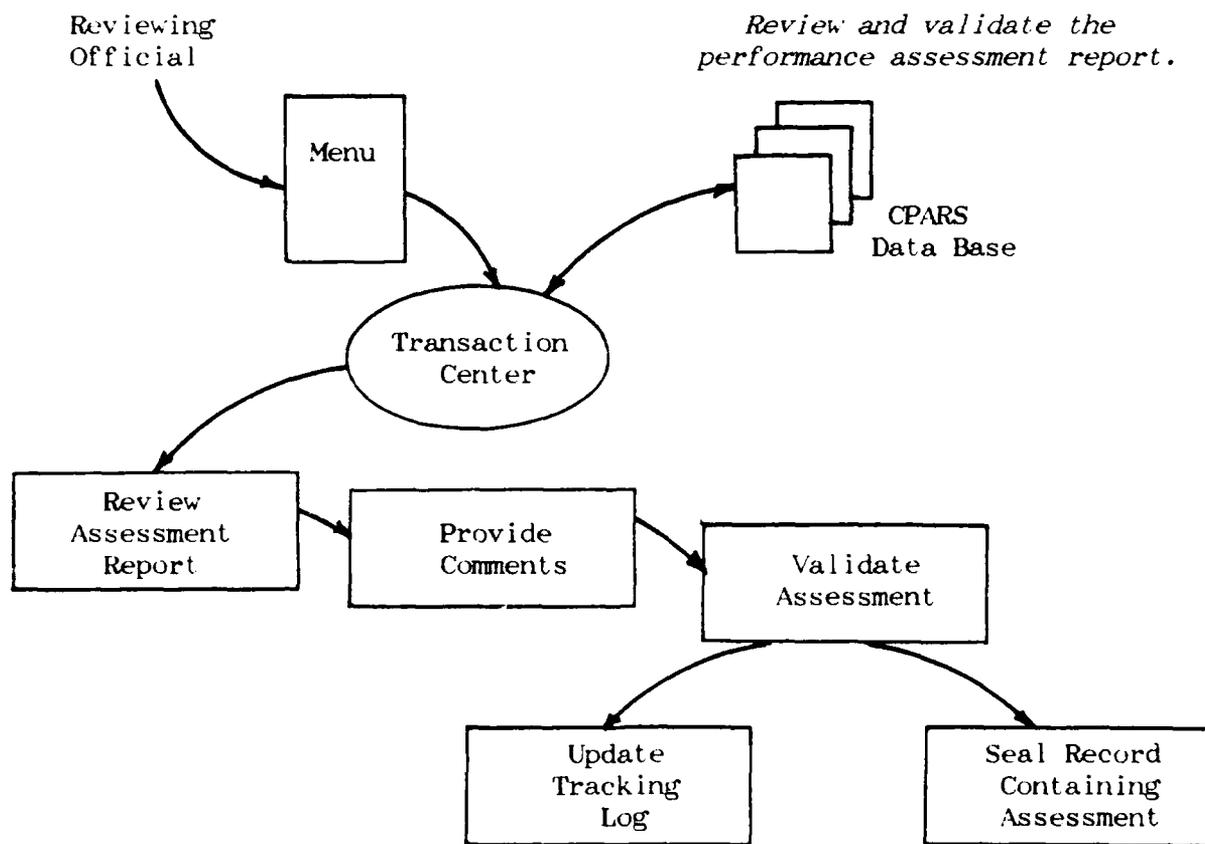
Figure 5-8. Product Division Review

Update Local and Command Wide Data Bases. If not
accomplished during the previous transaction, the reviewing official's
comments must be inserted into the record. The record should then be
sealed so that it cannot be altered in any manner. A sealed record will
permit read access only. The record will then be inserted into the local
and command wide data bases. After each assessment is inserted into the
CPARS data base, or at some regularly scheduled interval, the focal point
will prepare a report of assessments added and submit it to Air Force
Systems Command. This activity is depicted Figure 5-9.
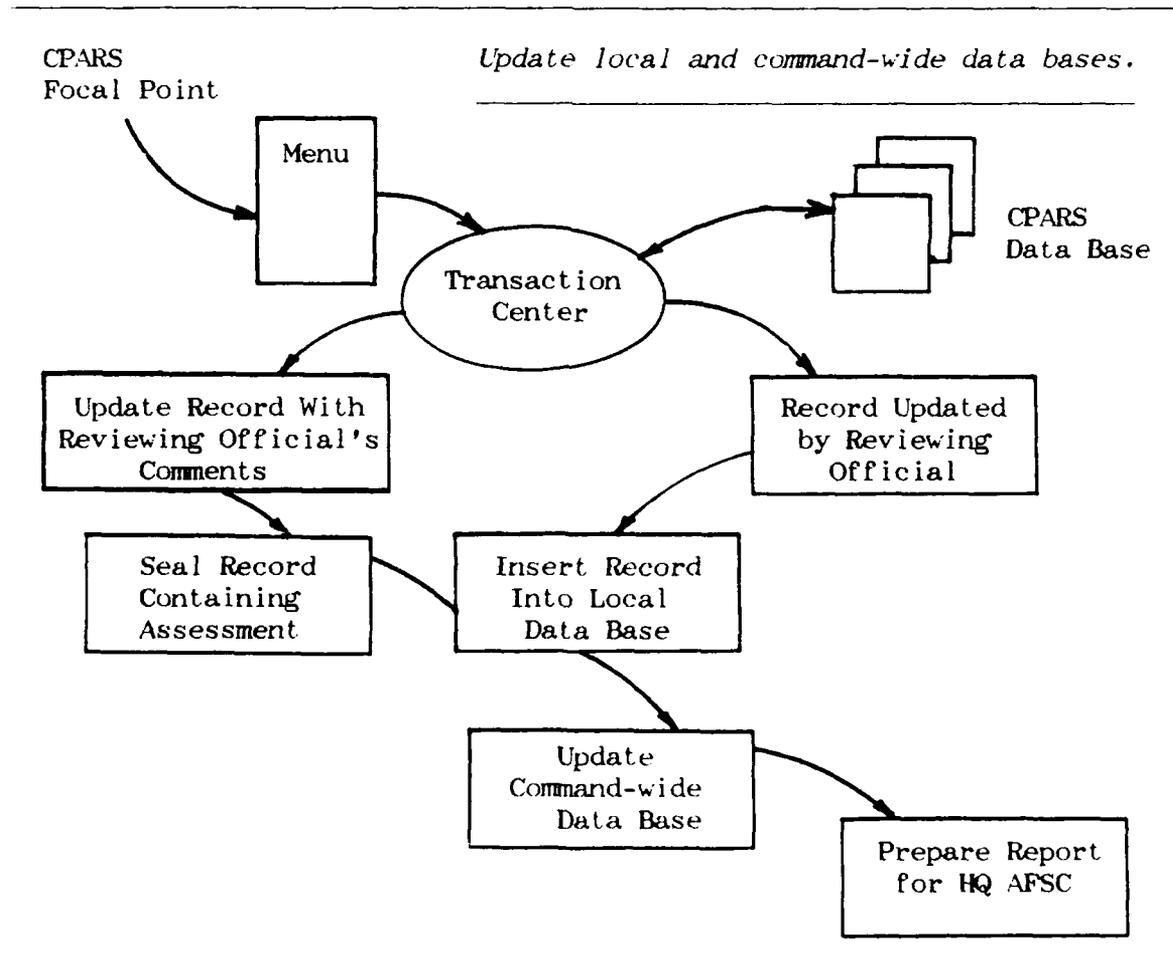
Figure 5-9. Update CPARS Data Base

Maintenance Activities. The user for this function is the CPARS focal point. There are four primary transactions for the maintenance activity as depicted in Figure 5-10.
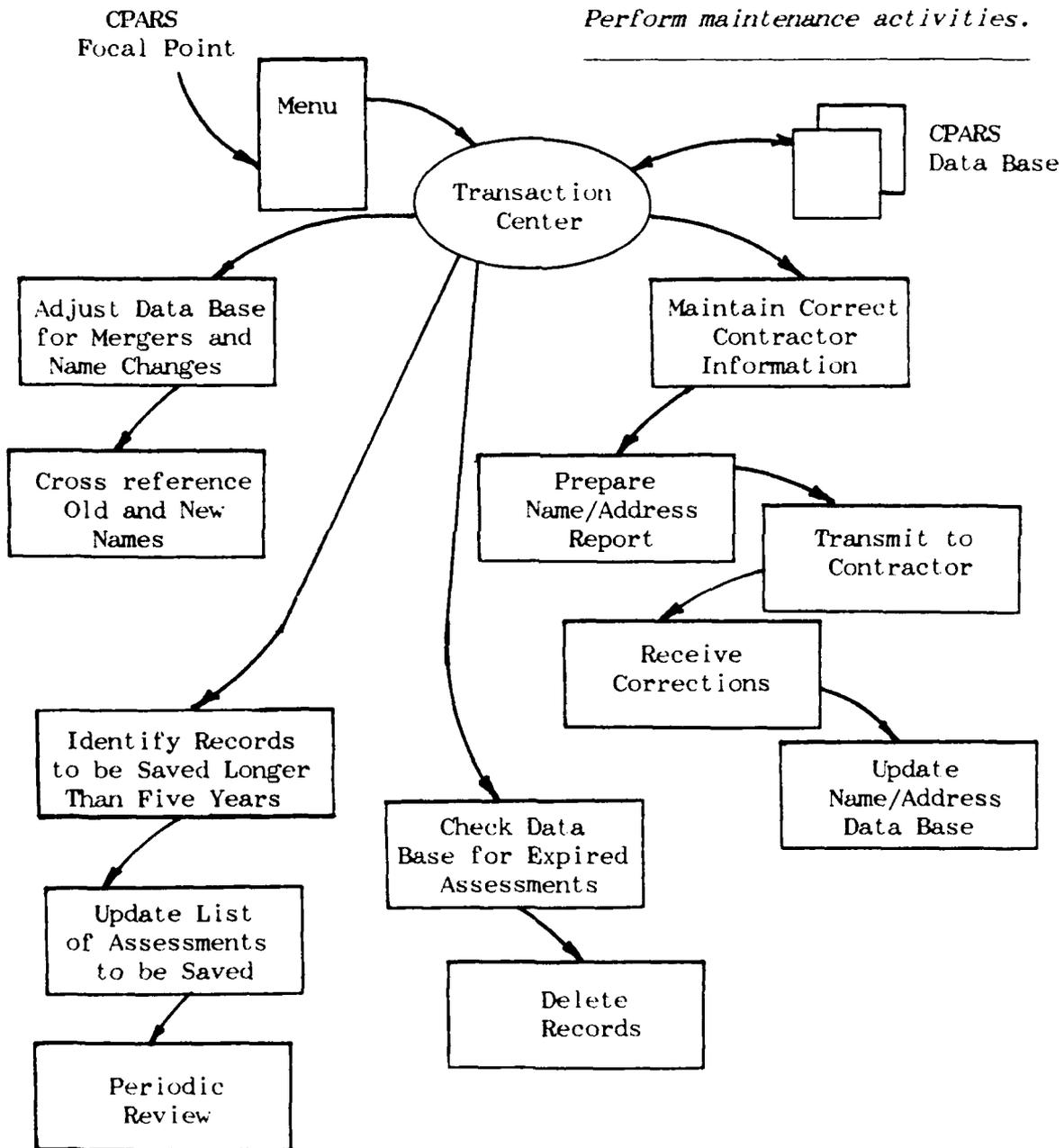
Figure 5-10. Perform Maintenance Activities

The system should provide the capability required to adjust for mergers, or contractor name changes. By choosing this option the CPARS focal point should be able to cross reference records in the data base between the old contractor names and the new contractor names. Once accomplished, a user of the system will be able to query for an assessment report on a contractor and not have to worry what name it is listed under in the data base.

The next two options provide the focal point the ability to search for and remove expired reports, and to annotate and save assessment reports which have been selected by program managers to keep for longer than five years.

The final maintenance option is for maintaining a data base of correct names, addresses and points of contact for contracts in which a final assessment report has not been written. Each product div. on would track the contractors for which they originate assessment reports. Once each year, the CPARS focal point would send out a list to all the contractors requesting confirmation of the information. When corrections are received the name/address data base is updated. The information in this data base can be checked to make sure records for intermediate and final assessments are correct when initiated.

Analysis Activities. The primary users for the analysis activities are the PRAG members. The CPARS focal point will have to prepare the data base so that access by the PRAG members is limited to the contractors for the immediate source selection. The summary transaction flow diagram for analysis activities is shown in Figure 5-11. Each of the four transactions is presented in lower level diagrams.
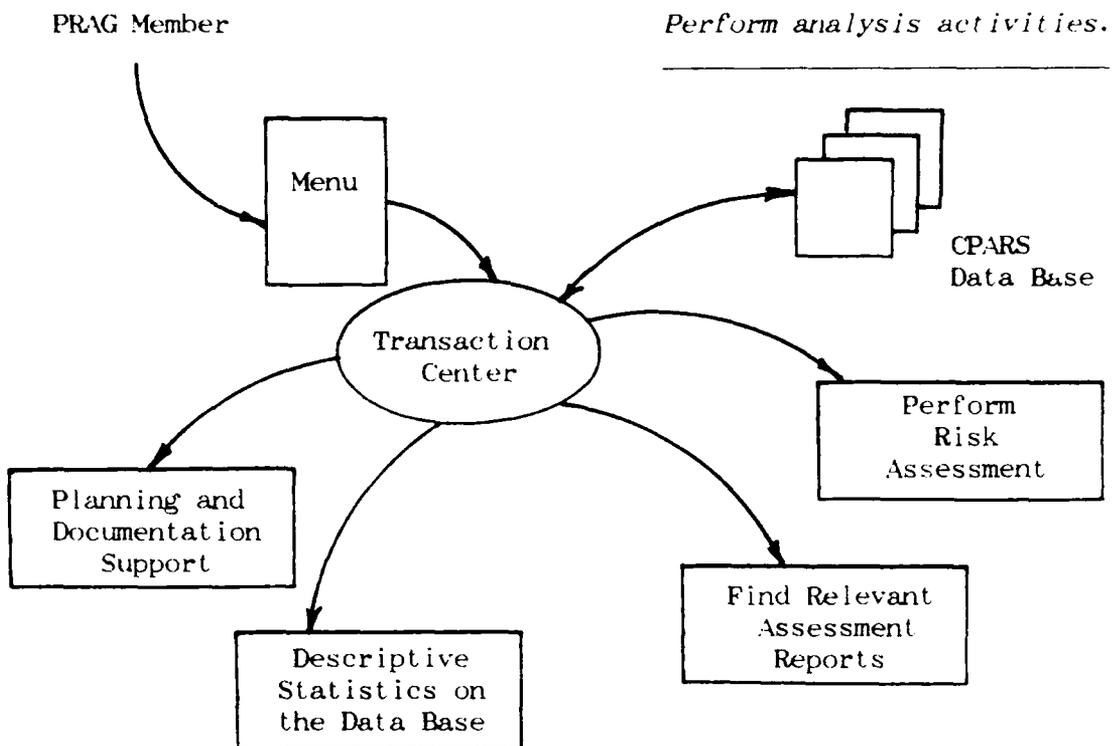
Figure 5-11.   Analysis Activities

Planning and Documentation Support.   The PRAG members and

the program manager will be able to access the system for information on

regulations, instructions, local supplements, sample formats, and word

processing templates to help establish the responsibilities and

methodology; and make sure correct words and format are used for required

documentation.

PRAG members can use the system to review frequently used criteria

for determining relevancy.   The PRAG member will choose the criteria

based on the common examples and any unique criteria for that program.

The criteria chosen will be available for screening examples of

performance for relevancy, and determining the impact of specific examples on the performance risk assessment. The transaction flow diagram for planning and documentation support is shown in Figure 5-12.

PRAG Member

Planning and documentation support.
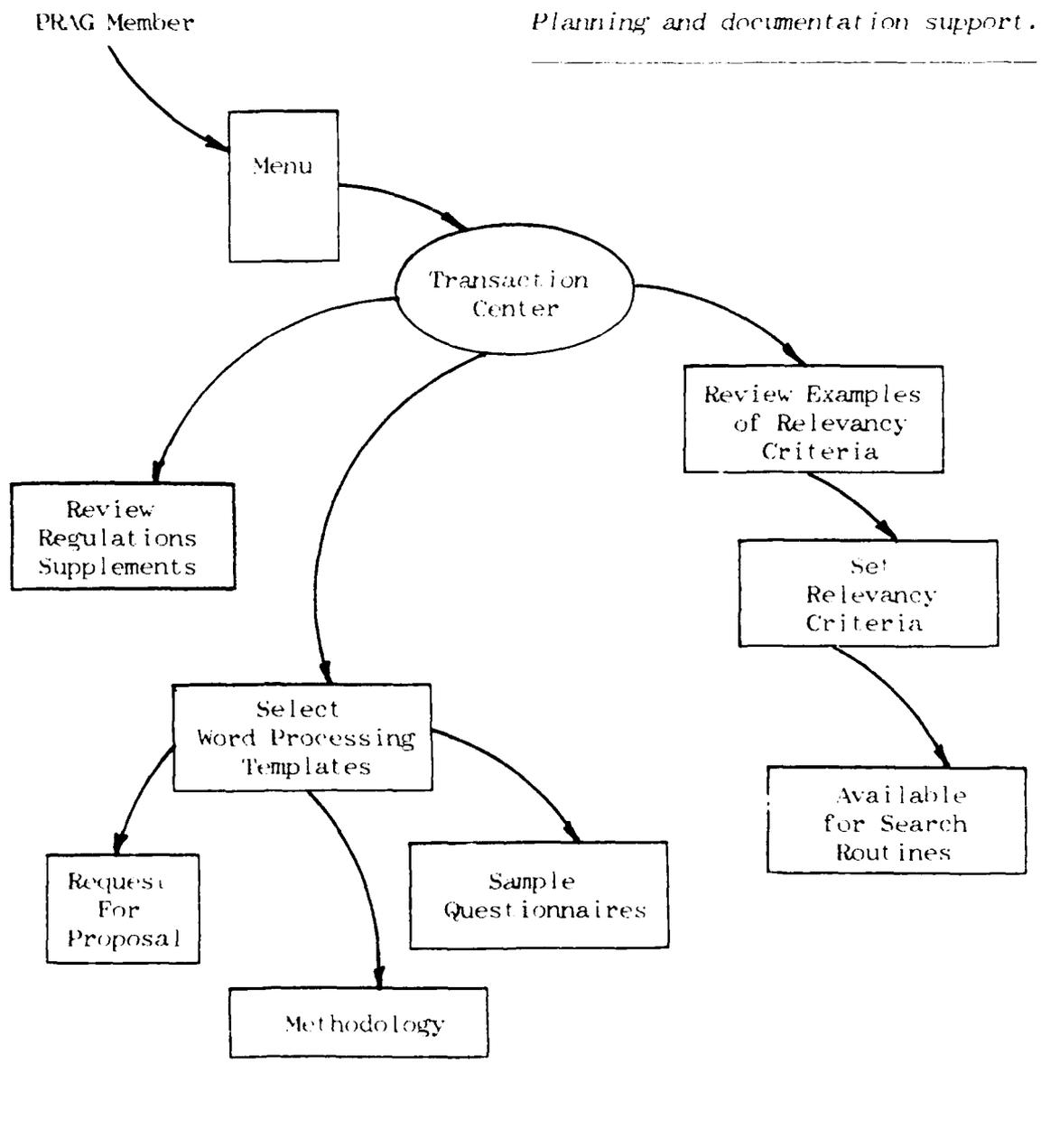
Figure 5-12. Planning and Documentation Support

Provide Descriptive Statistics. Two basic options are presented to the PRAG member for descriptive statistics on the CPARS data base. The PRAG member can select a description of the trends for Block 14 and 15 items over initial, intermediate, and final assessments for a selected contract; or the PRAG member may select a parent corporation or division/subsidiary name and receive descriptions of the information across many contracts. The transaction flow diagram for this activity is pictured in Figure 5-13.

When choosing the second option the PRAG member may use any of the relevancy criteria set during the planning process to limit the size of the data base. Reports can be viewed on the monitor or made available for printing.

Find Relevant Information. Using the selected relevancy criteria, the PRAG member can search through the CPARS data base for assessment reports which are pertinent to the program under evaluation. The search capability will key on information which is identified in standard fields and on information which may or may not be provided within certain fields on the assessment report.

The PRAG member has three different options for the format in which information from the CPARS data base will be presented. The PRAG member can choose to view/print the entire assessment report as the Air Force Systems Command Form 125, create a unique report format, or select one of the standard report forms provided by the system. When viewing the report on the monitor, the PRAG member will be able to move both backward and forward through the document and leave the report from any location
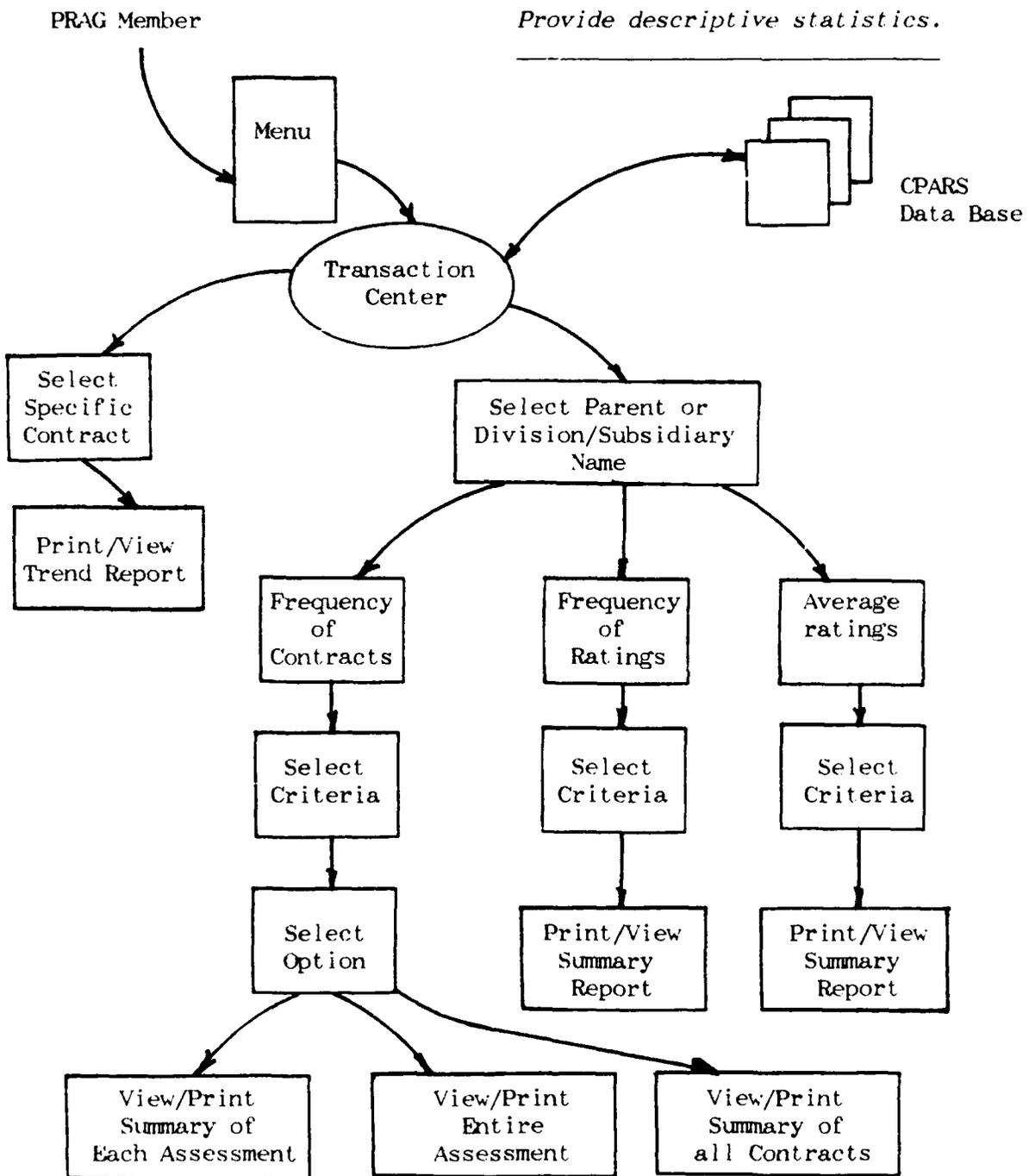
Figure 5-13. Provide Descriptive Statistics

within the document. The system should allow the PRAG member to search and sort assessment reports, scan descriptive information and color ratings, and focus on specific comments in the program director/manager narrative.

The PRAG member also has the option to extract key information elements into a word processing file where they can be summarized and then transferred to a standard or unique report format. The transaction flow diagram for this activity is depicted in Figure 5-14.

Perform Risk Assessment. Performance Risk Assessment is a two step process which first checks to determine each programs' relevance to the effort being considered and then subjectively summarizes across all contracts so that a risk assessment for each area could be assigned. Although not specifically requested by any PRAG member, this process seems to lend itself to the use of a decision support system.

The PRAG member would first consolidate all the pertinent comments and ratings from the relevant assessment reports. Using the decision support software, the PRAG member would assign the relative importance of each of the source selection evaluation criteria to the performance risk assessment. Depending on the program, this could be at the area or item level. The PRAG member then looks at the information which he determined to be relevant. Using the decision support software, the PRAG member determines the relative importance of each example of contractor performance to the evaluation criteria.

The support software in no way would be making the decision for the PRAG member; rather, it simply provides a way to organize the various elements of information. This activity is depicted in Figure 5-15.

PRAG Member

Find relevant assessment information.

Menu

Transaction
Center

CPARS
Data Base

Select
Criteria

Select
Option

View/Print
Assessment
Report

View/Print
Standard
Report

Create
Unique
Report

Extract
Key
Information

View/Print
Unique Report
Format

Select Items

Transfer to
Word Processing
File

Modify and
Format
Comments

Transfer to
Standard or Unique
Report Format

Figure 5-14.   Find Relevant Assessment Information

5-22

PRAG Member   *Perform risk assessment.*

```
          ┌────────┐
        ↗ │        │                          ┌───────┐
          │  Menu  │                          │┌───────┐
          │        │                          ││┌───────┐
          └────────┘                          └││       │
                   ↘                           └│       │
                     ╲                          └───────┘
                    ╭───────────╮                  CPARS
                    │ Transaction│               Data Base
                    │   Center   │
                    ╰───────────╯
                         │
                         ↓
                  ┌──────────────┐
                  │ Consolidate Comments │
                  │ and Ratings for Each │
                  │ Relevant Contract    │
                  └──────────────┘
                         │
                         ↓
                  ┌──────────┐
                  │ Decision │
                  │ Support  │
                  │ Software │
                  └──────────┘
```

| Determine Importance of Each Example of Performance to the Evaluation Criteria | Determine Importance of Each Evaluation Criteria to the Performance Assessment |

```
                  ┌──────────────┐
                  │ Performance  │
                  │    Risk      │
                  │ Assessment   │
                  └──────────────┘
```
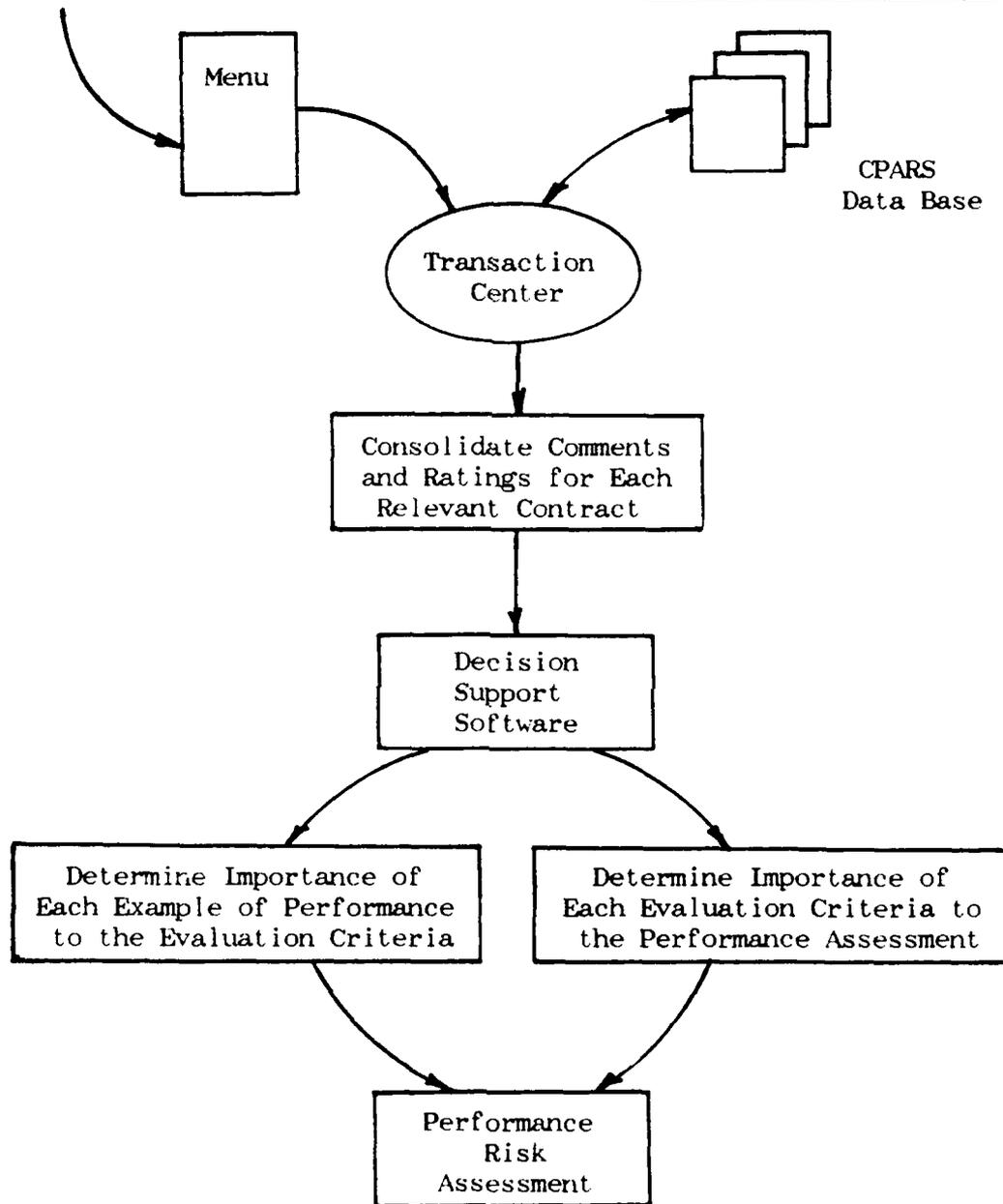
Figure 5-15.   Perform Risk Assessment

Generate Reports and Prepare Output. The transaction flow diagram shown in Figure 5-16 addresses the required output to support PRAG analysis and the reports needed to support CPARS administration.

Output will be available both for display on the computer screen and in hard copy. The system will provide copies of assessment reports, standard format summary reports, output of descriptive statistics, and user defined formats to support the PRAG member's tasks.

The CPARS focal point has three basic reports which must be created to support the administration of the CPARS. The first type includes the reports submitted quarterly or more frequently to Air Force Systems Command describing the latest assessment reports entered into the system. These reports must state the contractor name, subsidiary of division, contract number, period or performance, and a brief description of the contract. All of this information is available directly from the CPARS data base. Also included in the first type of report is the requirement for each focal point to submit annually a report which identifies the name and address of contractor divisions and/or subsidiaries; parent corporations; the number of times each contractor has submitted proposals; and any new offerors for inclusion in the data base.

The second type of report captures information from the tracking log which is consistently updated during the data collection and input processes. The report will be used for identifying slow points in the system and to provide information to support local requirements.

The final type of report which can be generated by the CPARS focal point captures information from the contractor name/address data base. Reports are sent to contractors yearly to correct the information.

CPARS
Focal Point

Generate reports and prepare output.

```
                Menu
```

CPARS
Data Base

Transaction
Center

Print Air Force
Systems Command
Form 125

Prepare
PRAG
Output

Create
Unique
Reports

Prepare
CPARS Focal Point
Reports

Capture Information
from CPARS Data Base
and Other Sources

Capture Information
from Name/Address
Data Base

Print/View AFSC
Routine and
Annual Reports

Capture Information
from CPARS
Tracking Log

Print/View
Name/Address
Reports

Print/View
Tracking Log
Reports

Figure 5-16. Generate Reports and Prepare Output

VI. Conclusions and Recommendations

This chapter describes the conclusions reached as a result of this research effort and offers recommendations for additional steps to ensure the successful implementation of an automated system which can support the performance risk assessment process.

The four objectives established early in this study are printed below. The objectives proved to be an invaluable tool for maintaining the focus of this project through the research process.

Objective 1. Define the information required and procedures used by the Performance Risk Assessment Group (PRAG) to institute the current policy for providing a risk assessment to support the source selection decision process;

Objective 2. Determine the extent to which information derived from a fully operational Contractor Performance Assessment Reporting System (CPARS) can support the performance risk assessment process;

Objective 3. Determine the administrative procedures used to collect, process, distribute, and protect contractor performance information under the CPARS; and,

Objective 4. Establish the requirements baseline and conceptual design for an automated information system, based on the CPARS, to collect, process, protect, and disseminate contractor performance assessments.

Implementation of Objectives

A tailored approach to the traditional method for software systems development was chosen to design an automated information system to assist the performance risk assessment process. This research effort implemented the first three steps of the tailored development methodology. The five steps which comprised the methodology for information systems development is described in Figure 6-1.

Step 1. Problem Definition   Step 3. Development/Design

- Define Scope   - Conceptual Design
- Set Objectives   - Physical Design

Step 2. Requirements Analysis   Step 4. Implementation

- Determine Requirements   Step 5. Verification/Validation
- Establish Baseline
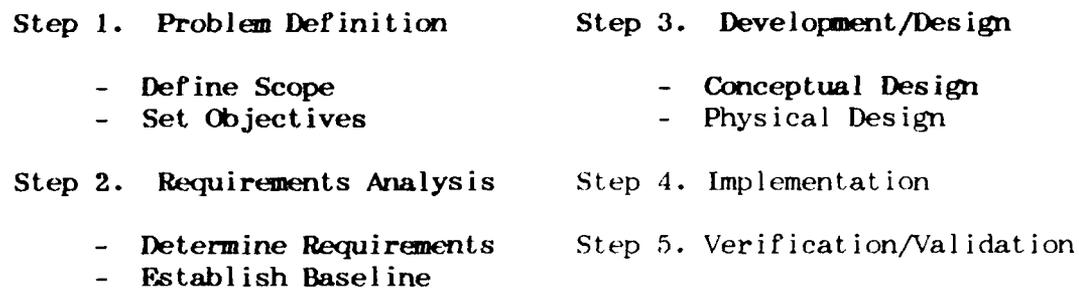
Figure 6-1. Tailored Approach to Systems Development

Implementation of the requirements analysis step resulted in a complete description of the procedures used and the information required to support the performance risk assessment process. The role of the CPARS as a primary source of information to support this process was described and assessed. The administrative procedures used to collect, process, distribute, and protect contractor performance information were determined. The completion of these steps fulfilled the first three objectives of the research process.

The information collected from PRAG members, CPARS focal points, and applicable regulations was synthesized into a clear statement of the required capabilities for the automated information system to support performance assessment. The requirements baseline provides a sound foundation for the future development and implementation of the CPARS automated information system.

The research process followed the tailored methodology through the development of a conceptual model for the system. The conceptual model developed describes the applications necessary to support the performance

assessment process. The focus of the conceptual design was the user
of the system. The conceptual model demonstrates how the applications of
the information system can assist the user in the various steps of the
assessment process.

The completion of the requirements baseline and the conceptual
design for the automated information system fulfilled the final objective
of this research project.

Although the physical design and actual implementation of
applications were beyond the scope of this research effort, sufficient
time allowed for the development of an initial capability which builds on
and enhances the tools currently in use at Aeronautical and Ballistic
Systems Divisions.

An initial capability was developed using the integrated software
package Enable (Version 2.15) and an IBM XT compatible computer system.
Enable was used to create a data base, input forms, and several report
forms which combine the basic functions of the automated capabilities at
both Ballistic and Aeronautical Systems Divisions. Functions were
designed to allow for flexibility and growth, considering that
implementation may be dependent on the eventual capabilities of this
system. A description of the system design and the operating procedures
is presented in Appendix G. A copy of the software can be obtained from
the Director of Research, AFIT/LSC Wright-Patterson AFB OH 45433-06583.

Conclusions and Recommendations

State of the Performance Assessment Initiatives. The results
achieved by meeting the first three objectives provide an account of the
performance risk assessment and contractor assessment reporting processes

as they have been implemented across the five product divisions. This assessment of the current state of the system comes at a critical point, approximately one year after the processes were initiated. Differences in procedures, methodology and results, problems with current implementation, lessons learned, and suggested changes have carefully been reported. The performance assessment initiatives, although still relatively new, have become an integral part of the source selection process throughout Air Force Systems Command.

There is diversity in the implementation of the performance assessment initiatives among the five product divisions. In some cases the differences are driven by the unique requirements and considerations of each product division. However, differences can also be attributed to a lack of definitive central guidance. Air Force System Command supplements to Air Force Regulations 70-15 and 70-30 have still not been updated. These documents, when final, will provide official guidance for Air Force Systems Command source selections and for the use of Performance Risk Assessment Groups as part of the source selection process.

Recommendation. Each product division should compare and assess the varied procedures used to implement the performance risk assessment and performance assessment reporting processes. The best procedures should be selected to ensure an accurate assessment of a contractor's past performance is provided to the Source Selection Authority.

Development of an Automated Information System. This research showed that a baseline of system level requirements could in fact be

determined which would accurately describe an automated system based on CPARS to support the performance risk assessment process. This research also demonstrated that the requirements identified could be conceptualized into a design for the automated information system.

Recommendation. The capabilities reported in the requirements baseline should be validated and prioritized for implementation. Standardization of procedures and methodologies where applicable should be sought across product divisions in order to simplify the development process. The information system development methodology should be carried through to the implementation and validation of an automated capability to support the performance assessment process.

Collecting Pertinent Information to Support Performance Risk Assessment. The rigorous process which an assessment report must go through before it is entered into the system is a key factor in the use of the information to support source selection decisions. The contractor and product division review, along with the practice of retaining both preliminary and revised assessments, add to the assessment report's credibility.

The effort expended by program managers when developing contractor performance assessments is extremely important to the success of the CPARS to provide pertinent information to the PRAG members. The level of detail in the evaluations and the overall quality of comments in the narrative sections were frequently mentioned by both PRAG members and the CPARS focal points as areas which need to be monitored.

Recommendation. Discussions should be held with program managers to determine their personal needs when executing a performance

assessment. Identified needs should be incorporated into the requirements baseline and conceptual design. Continued use of training and supporting materials are necessary to ensure adequate attention is focussed on the program manager's narrative. Applications for the automated system, such as use of key words and probing questions, should be investigated to assist the program manager when writing a performance assessment report.

Support for Automation. Development of an automated system based on CPARS to support the performance risk assessment process appears achievable. It is reasonable to conclude that an automated information system would provide benefit to both the PRAG members and CPARS focal points. In fact, this has been demonstrated in the field with the existing capabilities at Aeronautical and Ballistic Systems Division.

Nearly every person interviewed indicated that the CPARS should be automated. The conditions appear right to implement the automated system as long as the question of how assessments can be easily entered into the system is answered.

Recommendation. An analysis should be accomplished to make sure that the benefits associated with an automated information system exceed the amount of work which will be expended for development, implementation, and maintenance of the system. A specific point which must be looked at is whether the time required to enter the performance assessment report into the system is offset by time savings on developing future assessments and benefits to CPARS administration and PRAG analysis. This activity should be done in combination with a demonstration of a prototype system. A microcomputer based system

similar to the one developed using the integrated software package Enable could be used to demonstrate the concepts and provide actual data to support the analysis.

Consideration of the Acquisition Management Information System for a Centralized CPARS. The Acquisition Management Information System (AMIS) is an existing network of computers located at all Air Force System Command buying activities and Air Force Plant Representative Offices. AMIS provides Air Force Systems Command with an immediate access management information system, an automated contracting function, and automated administration and payment function (8).

AMIS is right in the middle of a major upgrade to enhance user support, increase development and maintenance productivity, and provide distributed data base applications (8). This is being accomplished with the addition of a state of the art relational data base and through the use of a 4th generation language. The Integrated Distributed System upgrade is a phased approach which will add enhanced capabilities over the next several years.

The Integrated Distributed System upgrade will provide additional capability which may be beneficial to contractor performance assessment. The fact that AMIS is an existing network which ties together all Air Force Systems Command assets is a positive point which should not be overlooked. It is possible that the PRAG's entire information requirement may be satisfied by a performance assessment automated information system which connects to or is an integral part of the Acquisition Management Information System.

6-7

According to Mr. Bailey, the CPARS automation could possibly be a "tag-along" effort to Phase IV of the Integrated Distributed System upgrade which is scheduled for implementation sometime in the middle of 1991 (8). Mr. Bailey is in charge of the Functional Systems Division within the Acquisition Management Information System Organization.

Recommendation. The automation concept developed during this research effort should be formally presented to the AMIS Automation Working Group. The features of AMIS should be carefully looked at to determine if there is a logical match to the CPARS automation requirements. If a significant match exists, the AMIS organization should be directed to prepare an impact statement for including these requirements into the Integrated Distributed System upgrade scheduled for implementation in mid 1991.

Closing Remarks

The Contract Performance Assessment Reporting System and the Performance Risk Assessment Group were introduced as part of Air Force System Command's initiative to emphasize commercial-like practices for awarding contracts to responsible sources. The members of the team who developed CPARS had a complete understanding of the problems with previous attempts at performance evaluation and tracking systems, and purposely designed the system to counteract some of the past problems.

The success of CPARS will depend on its ability to provide credible information in a manner which is not cumbersome to the Performance Risk Assessment Groups, the program managers, or the CPARS administrators. The results of this research effort provide a foundation for an automated information system which may help achieve these objectives.

Appendix A: Air Force Systems Command Form 125, CPAR

CONTRACTOR PERFORMANCE ASSESSMENT REPORT *(CPAR)*

1. NAME ADDRESS OF CONTRACTOR *(Division)*	2.		INITIAL		INTERMEDIATE		FINAL REPORT
	3. PERIOD COVERED BY REPORT						
	4. CONTRACT NUMBER						
DODAAD CODE	5. PRODUCT DIVISION						

6. LOCATION OF CONTRACT PERFORMANCE *(If not in item 1)*	7. CONTRACT PERIOD OF PERFORMANCE			
	8. CONTRACT PERCENT COMPLETE			
	9. CURRENT CONTRACT DOLLAR VALUE			
	10.	COMPETITIVE	FOLLOW ON	NONCOMPETITIVE

11. CONTRACT TYPE

	FFP		FPI		FPR	CPFF		CPIF		CPAF		MIXED			OTHER

12. PROGRAM TITLE AND PHASE OF ACQUISITION

13. CONTRACT EFFORT DESCRIPTION *(Highlight key components, technologies and requirements)*

14. EVALUATE THE FOLLOWING AREAS	PAST COLOR	RED	YELLOW	GREEN	BLUE	N/A
a. PRODUCT/SYSTEM PERFORMANCE *(Overall)*						
(1) ENGINEERING DESIGN/SUPPORT						
(2) SOFTWARE DEVELOPMENT						
b. SCHEDULE						
c. COST PERFORMANCE						
d. PRODUCT ASSURANCE						
e. TEST AND EVALUATION						
f. ILS PROGRAM						
g. MANAGEMENT RESPONSIVENESS						
h. SUBCONTRACT MANAGEMENT						
i. OTHER *(Specify)*						

15.	VARIANCE			CURRENT	COMPLETION
COST VARIANCE *(%)*					
SCHEDULE VARIANCE *(%)*					

AFSC Form 125, MAY 88

FOR OFFICIAL USE ONLY - SOURCE SELECTION SENSITIVE *(When Filled In)*

16. PROGRAM DIRECTOR MANAGER NARRATIVE

17. TYPED NAME AND TITLE OF PROGRAM DIRECTOR MANAGER	SIGNATURE	OFFICE SYMBOL	DATE
		TELEPHONE	

18. CONTRACTOR COMMENTS (Contractor's option)

19. TYPED NAME AND TITLE OF CONTRACTOR REPRESENTATIVE	SIGNATURE	DATE
		TELEPHONE

20. REVIEW BY PRODUCT DIVISION REVIEWING OFFICIAL (Comments optional)

21. TYPED NAME AND TITLE OF PROD DIV REVIEWING OFFICIAL	SIGNATURE	OFFICE SYMBOL	DATE
		TELEPHONE	

Appendix B: Information Describing PRAGs and PRAG Representatives

The information presented in this appendix describes the PRAGs investigated, and the background and specific responsibilities of PRAG representatives interviewed.   This section also provides insight into the differences across the five product divisions.

Tables B-1 and B-2 describe the distribution by product division of individuals interviewed, and number and size of PRAGs. The latter part of this section describes the actual responsibilities of individuals according to position held in the PRAG.

In order to preserve the confidentiality of source selection sensitive information, individual PRAG representatives are not attributed to a specific PRAG, source selection, or program. Also, no specific program or source selection information will appear in this text.

Distribution of Representatives. Table B-1 depicts the distribution, by product division, of PRAG representatives who participated in the research process. Three of the 16 PRAGs which had looked at CPARS as a source of information had only one representative identified to participate in this research. All others were represented by both a senior and a junior representative.

Size of PRAGs. Table B-2 presents the number of participants of PRAGs by product division. Aeronautical Systems Division had by far the largest number of members per PRAG. Of the five looked at, four PRAGs at Aeronautical Systems Division had more than seven participants. A more detailed representation of this is presented in Appendix D, Table D-1 PRAG Attributes (Demographics).

Table B-1

Distribution Of PRAGs and PRAG Representatives By Product Division

Product Division	Number of PRAGs	Number of PRAG Representatives Interviewed
Space Systems	2	3
Munitions Systems	4	8
Electronic Systems	2	3
Ballistic Systems	3	5
Aeronautical Systems	5	10
	—	—
	16	29

Table B-2

PRAG Attributes (Size)

Product Division	Average Number of PRAG Members	Largest	Smallest
Space Systems	5	7	3
Munitions Systems	3.5	4	3
Electronic Systems	2.5	3	2
Ballistic Systems	3	4	2
Aeronautical Systems	7.8	10	4
	—	—	—
Across All Product Divisions	4.8	10	2

PRAG Responsibilities. Responsibilities of individual
representatives differed depending upon the position in the PRAG.
Participants in PRAGs could be characterized by one of three positions:
PRAG Chairperson, PRAG Assistant, or other PRAG member. The
responsibilities of each position appeared consistent across the product
divisions. A detailed description of responsibilities has been included
in Appendix D, Table D-2 Responsibilities of PRAG Members by Position.

The PRAG chairperson is generally responsible for the overall
"orchestration" (19) of the risk assessment process. The chairperson is
usually a senior ranking individual (Lieutenant Colonel, Colonel, or
civilian equivalent) who operates at the director or deputy director
level in either the System Program Office or Contracting Office (5; 13;
19; 23; 25; 28; 36; 41; 49; 52; 56). However, there were exceptions to
this (32; 34). It is the chairperson's responsibility to make sure the
right people and the appropriate resources are available to perform the
risk assessment. The PRAG chairperson is normally the individual who
briefs the Source Selection Authority.

PRAG assistants are members with additional administrative
responsibilitics. The primary responsibility of the PRAG assistant is to
make sure there enough information is collected and that it is
effectively presented to the people performing the assessment (7; 10; 15;
19; 24; 51). At Aeronautical Systems Division these individuals are
referred to as the "PRAG Secretariat". PRAG assistants are normally more
junior in grade (Lieutenant, Captain, or civilian equivalent) than the
chairperson, and other PRAG members (6; 7; 10; 15; 24; 33; 37; 51).

The assistant's responsibilities include both administrative and evaluation functions. Assistants are responsible for performing all correspondence, sending out questionnaires, conducting interviews, scheduling meetings, and acting as a full participating member in the risk assessment (6; 7; 10; 15; 24; 33; 37). Of all PRAG representatives interviewed, there was only one case in which the assistant was not involved in assessment of information (51).

In general, PRAG members are responsible for evaluating all sources of available information, and providing a performance risk assessment. With the exception of Aeronautical Systems Division, grade of members varied widely. At Aeronautical Systems Division PRAG members were typically director level personnel, while at the other product divisions PRAGs would comprise a mix of junior, mid-range, and director level personnel. PRAG members bring experience and knowledge from their functional backgrounds to the group.

At Ballistic, Electronic, Space, and Munitions Systems Divisions, each member would likely participate in the actual gathering of the information. This was not the case for four of the five PRAGs at Aeronautical Systems Division where information was collected, collated, and organized by the PRAG Secretariat and then presented to the PRAG members (7; 10; 13; 15; 19; 23; 23; 44).

Additional Source Selection Responsibilities. Nearly all representatives interviewed at Aeronautical Systems Division (8 of 10) and all at Electronic Systems Division (3 of 3) had responsibilities dedicated to participation in the PRAG only. This was not the case at the other product divisions. Often PRAG representatives would have

source selection duties in addition to their PRAG responsibilities. At Space Systems Division all of the PRAG representatives had additional source selection responsibilities. Half of the PRAG representatives from Munitions Systems Division (4 of 8 interviewed) and just less than half of PRAG representatives interviewed from Ballistic Systems Division (2 of 5) had additional source selection duties. Overall, 11 of the 29 PRAG representatives had source selection responsibilities in addition to the PRAG. A detailed description of additional source selection responsibilities by PRAG has been included in Appendix D, Table D-3 Additional Responsibilities Matrix.

Appendix C: Survey Instruments

PRAG Members Questionnaire

Your name was supplied by your Product Division Source Selection Office as a participant in a Performance Risk Assessment Group. The purpose of this project is to find out what types of information are required by the PRAG and to see if an automated version of the Contractor Performance Assessment Reporting System can help meet these needs.

I'd like to say right up front, that I'm aware of the sensitivity of source selection material, and I'm not interested in specific program information. What I really need to find out are the general procedures associated with the performance risk assessment process. To do this I am interviewing knowledgeable persons like yourself who have experienced a PRAG firsthand.

1. For the PRAG which you participated in, what were your specific responsibilities? Did your position have a title? (What was it?) How many other participants were there? How did their responsibilities differ from yours? Did you have any other source selection responsibilities beside the PRAG?

2. Could you step me through the order of events which took place from the time you were notified of your participation -- to the briefing of the results to the source selection authority? Could you describe what happened at this first meeting? Were there any organizational instructions? How often did you meet and for how long? Were the responsibilities divided among you?

3. I'm particularly interested in whether there was any computer support to assist the group during this process. (That is, did you use computers for any of the following: word processing, graphics, spread sheet or statistical analysis, or data base manipulation?)

4. I'd like now to pin down the kinds or categories of information which were required in order for the group to provide a performance risk assessment. What kinds of contractor performance information were provided to the group to make the risk assessment? What were the sources for the information? What kinds of information, other than performance related, were provided? Where did this information come from?

Would you describe each of the categories of information categories as being common to all programs, or were they specific to this particular effort?

Assuming that any constraints provided by current regulations are not changed, what other types of information could have assisted the risk assessment process but were not presented to the PRAG? (In other words, was there any information missing, that is not restricted by current

regulations, which you would have liked to have?) Where would you go to find this information?)

5. The information gathered from the various sources you identified earlier had to be compiled and organized in some way in order for it to be useful to the PRAG members. Obviously someone put a lot of work to put this folder together for the group, did you participate in this process?

Yes   No

If Yes:

Starting with each of the sources you identified earlier, could you describe the step by step process in which the data from the various sources were compiled and organized to facilitate the risk assessment. Was information from more than one source ever combined? Was there adequate time available to organize the data collected? How much time did this entire process take? Did you have any difficulties associated with the compiling and organizing process? (Could you please describe them?) Were there any types of information that would have been useful to the PRAG, but were not included in the folder presented to them because the processing of the available raw data was too difficult or you simply did not have the means? What were they?

If No:

As the recipient, it is critical that the information be presented to you in a useful manner. Do you know who prepared the information used by the PRAG? (Who?) Are you aware of any difficulties they may have had with the compiling and organizing process? (Could you please describe them?) How useful was the information, in the format which it was presented?

6. Could you please describe the kinds of physical evidence (charts, graphs, tables, etc.) you had in front of you while making the risk assessment? Could you please describe the types of output used by the PRAG brief the final risk assessment to the Source Selection Authority?

7. Since it's only been a short while since the CPARS was officially established, I'm interested to know which of the following phrases describes how much you know about the Contract Performance Assessment Reporting System?

Nothing   A little bit   Quite a bit   A lot

For the PRAG which you participated, was the CPARS looked at as a potential source for information supporting the performance risk assessment?

Yes   No

If YES, then, approximately what percentage of the PRAG's total information requirements were supported by data that was in the CPARS?

If you could, look at the AFSC Form 125 now, to help jog your memory, and tell me if there are any specific fields of the CPAR which you think would **not** be very useful as a source for information to support the PRAG's tasks? (What are they?)

The first few people I talked to indicated that there was some difference in the frankness of the comments between the questionnaires and the CPARs for the same contract. I was curious if you had the same perception and if you could possibly expand on this?

8. Referring back to the first half of the interview, you identified the following different types of information needed to support the performance risk assessment process. ...... Can these types of information be supported from data in the CPARS? Comparing this to the AFSC Form 125, could you please identify the specific fields of the CPAR which could support this type of information needed? Can the data in these fields be used directly in the CPARS format, or must they be processed in some way? (Can you identify the processing steps necessary to transform each of the data elements to the information required?) How is the narrative section used to augment the ratings supplied on the front of the form?

9. Based on your experience with this process are there any things which you think a designer for an automated information system based on the CPARS should concentrate on? How about things to avoid?

10. How would you expect an automated information system to work for you in providing a performance risk assessment? What capabilities should it have? What functions should it perform? Can you describe an example of how it would be used?

11. If an automated information system were developed which could provide information to assist PRAGs in their risk assessment, who do you think would be appropriate to sit in front of a computer terminal and generate the product? Would it be a PRAG member, CPARS focal point, or someone else? Please explain.

12. After experiencing this process all over again, can you think of any changes which could be made, within the constraints of the current regulations, that may have made the risk assessment process more effective or more efficient? What I'm really looking for are lessons learned.

Contractor Performance Assessment Reporting System
Focal Point Questionnaire

Your answers to the following questions will help me determine what administrative procedures you use to collect, process and distribute contractor performance information; and, how these procedures would affect the architecture for an automated performance assessment reporting system.

Respondent Information:

Full Name:_____ . Date:__/__/__ .

Duty Title:_____ .

Address:_____ .

CPARS Related Responsibilities:_____

1. Please describe how the administration of the CPARS is organized at your product division? Is there one central office for CPARS administration? Is there a CPARS representative located in each system program office? What are the responsibilities of each of the different elements?

2. During our conversation I would like to talk about the contractor performance assessment process as it is currently implemented. I'm interested in the detailed steps and the peculiarities of the process which would not be found in the CPAR regulation. To facilitate the discussion, I've categorized the process into five different phases: **data collection, data input, maintenance, output, and, reporting.**

    a. Data collection: Using the guide below please describe how the actual assessment report is developed. Include any local policies or practices which are distinctive to your product division.

       (1) Process initiation: Where is the process initiated? That is, who notifies the program manager to begin a CPAR? Is it the system program office, source selection office, CPAR focal point, or somewhere else?

       (2) Program manager's evaluation: Are there local supplements to the CPAR regulation or other guidance available to assist the program manager? Is there a continuing training program for program managers? Where do the program managers go for information? Does "Program Director/Manager" mean the overall Program Director or is it the program/project manager for the individual contract?

       (3) Contractor's comments: Who actually sends the CPAR to the contractor? How is the information controlled during the process? Who does the contractor send the CPAR back to?

(4) **Program manager update:** If the program manager decides to update the initial assessment, this is done on a new CPAR and attached to the original. Is the entire form retyped, or just the modifications? Is the new CPAR sent back to the contractor for additional comments? If so, is there a limit to the number of iterations?

(5) **Review Process:** Is there one or more than one reviewing official for the product division? Where are they typically located in the organization? Does the reviewing official look at the CPAR prior to its being sent to the contractor? What happens if the reviewing official disagrees with the program manager's assessment -- does the process start over again?

b. **Data input:** Describe how and how often each CPAR is entered into the command-wide and local data bases. Are CPARs filed according to parent company, division/profit center, other, or some combination of the prior categories? Is the Department of Defense Activity Address Directory Code (DODAAD) used in this process?

c. **Maintenance:** How are CPARs updated or removed? If a corporation is merged into another, how would the data base be updated? How are contractor name changes handled? What would happen when an assessment becomes obsolete after five years? The regulation allows a program manager to determine when a CPAR should be kept on a contractor for longer than five years. How is this implemented? Are there other maintenance actions which must be performed on the data base?

d. **Output** (information product to support the PRAG): When a PRAG member requests information from the CPARS, what are they typically looking for? Do they request CPARs for a corporation or for a specific division or profit center? Do they ever request you to sort through for a specific type of contract or program? Does the PRAG representative have access to the original files or are copies made by the focal point?

e. **Reporting:** What reports do you need to generate as the CPARS focal point? What do they look like? How are they put together? How often?

3. Have you found any problems inherent to this process? If yes, what are they, and do you have any suggestions for recommended improvements?

4. According to the CPAR regulation, all information contained in the system is considered Source Selection Sensitive. What special constraints, for the transportation, protection, and storage of this data exist? Are there any regulations prohibiting transfer of this information over electronic media?

5. Are there ever any attachments other than the continuation of the narrative which will need to remain with the form? If so, what are they? What are they used for?

6. How many reports currently exist in the CPARS? How large, in terms of number of reports, do you anticipate the data base to get?

7. There are approximately 80 contractors being reported on with the CPARS. Do you expect this number to increase significantly? By how much? How many division/profit centers does this mean?

8. Do you know of any on-line data source which has a complete listing of contractor-division addresses and identifies the parent company? Can this be tapped into to get the information?

9. What type of computer system do you have in the office? What software packages are on the system?

10. The five phases of the CPAR process which you have described in detail are printed again below. I'd like to ask you to step back and think about each phase for a moment. How would you expect an automated information system to work for you in each phase of this process? What capabilities should it have? What functions should it perform?

    a. Data collection:

        (1) Process initiation:

        (2) Program manager's evaluation:

        (3) Contractor's comments:

        (4) Program manager update:

        (5) Review Process:

    b. Data input:

    c. Maintenance:

    d. Output: ·

    e. Reporting:

11. In talking with several PRAG members, they have suggested various capabilities which an automated version of CPARS might have to support their information needs. One of these is the ability to search the CPARS to identify relevant assessment reports.

    If an automated information system were developed which could help collect, process, and disseminate contractor performance information to assist PRAGs in their performance risk assessment, who do you think would be the appropriate person to sit in front of the computer terminal and generate the product? Would it be a PRAG member, CPARS focal point, or someone else? Please explain.

Appendix D: Detailed Data From PRAG Interviews

Table D-1

PRAG Attributes (Demographics)

Product Division	Number Of PRAG Members	Grade Range Of Personnel	Functions Represented
Space Systems	3	Mid-range	Program Manager and Contracting
Space Systems	7	Director-level, Mid-range and Junior	Program Manager, Contracting, Test and Engineering
Munitions Systems	3	Mid-range	Program Manager, Contracting and Engineering
Munitions Systems	4	Director-level and Mid-range	Program Manager, Engineer, Contracting and Test
Munitions Systems	4	Mid-range	Program Manager and Engineering
Munitions Systems	3	Mid-range	Program Manager, Buyer and Contracting Officer
Electronic Systems	2	Deputy Director	Support Systems and Contacting
Electronic Systems	3	Director-level and Junior	Deputy Program Director and Program Control
Ballistic Systems	4	Director-level, Mid-range, and Junior	Program Manager and Contracting,
Ballistic Systems	3	Director-level, Mid-range, and	Project Officer and Program Control Junior
Ballistic Systems	2	Mid-range	Project Officer

Table D-1 (Continued)

PRAG Attributes (Demographics)

Product Division	Number Of PRAG Members	Grade Range Of Personnel	Functions Represented
Aeronautical Systems	7	Director-level and Mid-range	Represent all functional areas, (Engineering, Program Control, Contracting, Manufacturing, Test, Logistics, Program Manager)
Aeronautical Systems	9	Director Level and Junior	Represent all Systems functional areas
Aeronautical Systems	4	Director Level and Junior	Technical, Logistics Manufacturing and Program Management
Aeronautical Systems	9	Director level and Mid-range	Represent all functional areas
Aeronautical Systems	10	Director Level	Represent all functional areas, (Engineering, Test/Configuration, Logistics, Contracting, Manufacturing, Tactical Product, Strategic and Airlift)

Table D-2

Responsibilities of PRAG Members by Position

Chairperson	Responsibilities
Space Systems	Ensure that the group was able to research as many sources of information on past performance as practical and available, and develop an analysis for the benefit of the Source Selection Authority an assessment of the past performance (52).
Munitions Systems	Report to the Source Selection Evaluation Team and Source Selection Authority what the performance of the contractor had been on previous contracts. Organize the team seeing that the process is executed properly and prepare final report (28; 49).
Electronic Systems	Report to the Source Selection Evaluation Team or Source Selection Advisory Council as regulations prescribe. Make sure everything gets done. Act as communicator with the source selection organization. When all information is received, determine what information is relevant, and what comments should go into the brief and what should not. Presented briefing to Source Selection Evaluation Team/Advisory Council and Source Selection Authority (5).
Ballistic Systems	Take an active role in the assessment process. Ensure that the sources of information are available, and provide the necessary feedback (36). On one program the Chairman assisted in the assessment, but performed mostly in an advisory capacity (37).
Aeronautical Systems	Organize the group which was going to do the job, define the process, execute the process, perform final briefing to Source Selection Authority (23; 56). Ensure that appropriate expertise is pulled together to thoroughly evaluate the offerors past performance. Make sure the entire process is orchestrated, that the questionnaires are sent to the appropriate people. Select a Secretariat to perform administrative functions (13; 19).

Table D-2 (Continued)

Responsibilities of PRAG Members by Position

Assistant	Responsibilities
Space Systems	In charge of getting the contractor proposal appraisal reports, summarizing them and putting everything together. (33).
Ballistic Systems	Primary responsibility was to make sure there was enough information collected to perform the evaluation, evaluate the information, perform the assessment, and brief the Source Selection Authority (37). Collect data, collate data, performed analysis, and compile briefing (6).
Aeronautical Systems	Secretariat performs administrative tasks so that the information is effectively presented to the people performing the assessment (15; 24; 19). Responsible for getting CPAR information and distributing information to other panel members. Develop questionnaire to reflect areas and items of the proposal evaluation criteria. Send questionnaire out to other government organizations. Consolidate responses and distribute them to the other panel members (10), plus act as a full participating member in the risk assessment (7; 24). The Secretariat becomes the most knowledgeable person for that PRAG. Acts as a focal point for all questions by the other PRAG members (15). Helped things get done on time. Administration of procedures. Was not involved in assessment of information (51).

Table D-2 (Continued)

Responsibilities of PRAG Members by Position

Members	Responsibilities
Space Systems	Evaluated CPARS on Contractor, conducted verbal questionnaire over the phone (42). Once all the material was gathered together, each person reviewed it and came up with their own assessment, and then the group met and came up with a general consensus (33).
Munitions Systems	Provide experience from the contracting field. All members were assigned a number of surveys to send out and interviews to conduct. Conducted interviews with program managers, procurement contracting officers and administrative contacting officers and assessed risk. Responsibilities were split among the members (41). Look at other sources of information and evaluate the contractors past performance (57). Need at least 3 people on the team in order to break deadlocks (29). Members had very little interface with the Source Selection Evaluation Team and Source Selection Authority, but all three members shared responsibility for assessment (49).
Electronic Systems	Evaluate each offerors past performance, concentrating on functional expertise (38; 45). Considerable amount of time making charts, keeping records, contacting people and sending out questionnaires (38).
Ballistic Systems	Reviewed questionnaires and CPARs, assess risk, and prepare briefing (12).
Aeronautical Systems	Participated on PRAGs under both individual assessment and team assessment approaches. Responsible to go through all data and assign risk from own prospective to each item assigned for all the offerors. Responsible for reviewing all information and assign risk to each item assigned for all offerors. Each member also must be prepared to supply support each assessment. Under teaming approach members were assigned along the lines of their functional expertise (44). Members bring specific expertise and knowledge to the group and are responsible to review contractor provided information and government provided information and perform analysis based on their area of expertise (7; 10; 13; 15; 23; 24).

Table D-3

Additional Responsibilities Matrix

Product Division	PRAG Position	Additional Source Selection Responsibilities
Space Systems	PRAG Chairperson	Contracting Officer, Head of Cost Team
Space Systems	PRAG Member	Also responsible for source selection evaluation at the factor level and was an item chief
Space Systems	PRAG Member	Also a member of the technical and management evaluation teams
Munitions Systems	PRAG Member	Program Manager
Munition Systems	PRAG Chairperson	None
Munition Systems	PRAG member	Procurement Contracting Officer for the contract
Munition Systems	PRAG Chairperson	None
Munition Systems	PRAG Member	None
Munition Systems	PRAG Chairperson	None
Munition Systems	PRAG Chairperson	Source Selection Evaluation Committee Chairperson
Munition Systems	PRAG Member	Chairperson Cost Committee and Procurement Contracting Officer
Electronic Systems	PRAG Chairperson	None
Electronic Systems	Advisor to PRAG	None
Electronic Systems	PRAG member	None
Ballistic Systems	PRAG Chairperson	None
Ballistic Systems	Assistant to PRAG Chairperson	None

Table D-3 (Continued)

Additional Responsibilities Matrix

Product Division	PRAG Position	Additional Source Selection Responsibilities
Ballistic Systems	PRAG Chairperson	Source Selection Evaluation Team Chairperson
Ballistic Systems	PRAG Member	None
Ballistic Systems	PRAG Vice Chairperson	Source Selection Evaluation Team Vice Chairperson
Aeronautical Systems	PRAG member	None
Aeronautical Systems	PRAG Chairperson	None
Aeronautical Systems	PRAG Secretariat	None
Aeronautical Systems	PRAG Chairperson	Source Selection Evaluation Board Chairperson
Aeronautical Systems	PRAG Assistant	Source Selection Executive Officer
Aeronautical Systems	PRAG Chairperson	None
Aeronautical Systems	PRAG Secretariat	None
Aeronautical Systems	PRAG Chairperson	None
Aeronautical Systems	PRAG Secretariat	None
Aeronautical Systems	PRAG Member	None

Table D-4

Past Use of Computers to Support PRAGs

Space Systems	Used for word processing and chart making; mostly used for the preparation of the briefings. (33; 42; 52)
	Availability on the computers was tight. Had to get there on off hours because there was always someone using them. (42)
Munitions Systems	Word processing used to type the questionnaire, otherwise none. (16; 29)
	Computer support used for word processing and chart making (28; 32; 49; 57)
	Computers there, but were not used. (41)
Electronic Systems	Used computers for word processor and graphics (5; 38)
	No computer support at all, CPAR-questionnaires typed up on electric typewriters (45)
Ballistic Systems	Computer support limited to word processing and chart building. (6; 25; 36)
	Word Perfect was used for the questionnaire tracking data base, word processing and slide preparation. (12)
	Computers used for word processing and graphics (Harvard Graphics). Templates were made up for charts and some of the sections of RFP and reports. Sending copy of floppy disk. (37)
Aeronautical Systems	Secretariat used Z-248 for word processing and briefing development (7; 10; 19; 23; 23; 33; 51; 56)
	Used spreadsheets for own work (PeachCalc). Used contractor lists for many different purposes. Data received verses contractor supplied data verses relevant data. Need for notebooks for the members. Administrative assistants used Harvard Graphics for Final Briefing. (15)

Table D-5

PRAG Representatives' Lessons Learned

1. Dedicated PRAG teams, separate from source selection evaluation. (42)

2. To add credibility need more specifics on the performance. Take more care to document. Need to expand the CPARS data base. The SPO which this individual works looks at many contractors which are not on the list. Would like to have a local system for these small contractors, but there is resistance to do that. In process of trying to add contractors to overall system. They have found that CPARS is great for providing past performance information, but also the report card aspect of it is really get the contractors attention. It is a helpful tool to motivate the contractor. (49)

3. Would have been nice to have description of process up front. Also be more organized so that each member performs the functions in same ways. Responsibilities for the PRAG should be better defined. On the makeup of the PRAG, suggest that at least 50% of members should come from an organization outside of the SPO. Provide an independent input. Having members work both on proposal evaluation and the PRAG created some problems. Whether the members do not have source selection duties in addition to PRAG members should be a function of the size and complexity of the program. (57)

4. Found that there were varying degrees of compliance with the CPARS requirement to include remarks on all the ratings. Need to make sure that the individual filling the CPAR out knows that it will be used, and what it will be used for. Need to provide comments describing why the area was evaluated as it was. (28)

5. Need to have careful wording in the RFP to make sure the instructions are clear so that you get the information you really need. As part of the proposal have the offeror describe why each contact is relevant to the particular items. It would help if there were standard instructions that could be put into the proposal. (32)

6. Make sure you reach up in the agencies as high as possible when soliciting responses to the questionnaires. Want somebody's name besides the lowest level buyer on it. Would also help to get an earlier jump on the process. (5)

7. When establishing POCs to fill out questionnaires need to go in at the senior management level rather than the working level. Need to tailor the questionnaire to the source selection. Have all people review past lessons learned before starting the PRAG process. (38)

8. Use CR/DR process to handle concerns. (45)

9. Need better policy/operating instructions before you begin; spent a lot of time spinning wheels. (36)

Table D-5 (Continued)

PRAG Representatives' Lessons Learned

10. One lesson learned would be that the questionnaire, if used, should be very close to the CPAR format and if possible simply using the CPAR form would be great. The other would be to have your methodology established upfront. (6)

11. Important to get the surveys out early. Get information on subcontractors. (25)

12. The names of focal points, addresses, and phone numbers provided by the offeror were out of date. Suggest having the offeror verify the information before it is put into the past performance proposal. Second, need to make sure that in the RFP you instruct the offeror to provide relevant past performance information on its subcontractors. Finally, during this process they did not have the performance assessment completed prior to the competitive range briefing. If past performance is to be included in the determination for direct award (award without discussion) then it needs to be completed sooner. (12)

13. Get questionnaires out earlier. Asked for different information in the RFP. Have the offeror address each individual item. (10)

14. PRAG members broken into teams, with at least 3-4 members to cut down on the amount of reading. (15; 23)

15. Have 3-ltr chiefs perform assessment rather than panel chiefs. Panel chiefs were very busy doing proposal evaluation tasks, and 3-ltr chiefs have a larger experience base to work with. (51)

16. Need to get information from contractor early. PRAG is on the critical path of the source selection. SSA has authority to award without discussions which speeds up the process considerably. After initial evaluation, the competitive range is determined and the SSA has opportunity to award to best contractor. This initial evaluation is completed after about 5 weeks. Comparing this to the PRAG schedule, the questionnaires are just coming in. If SSA decides to award without discussions, the past performance risk is never completed. (7; 24)

17. Have been applying lessons learned. This was the fourth program to go through the process. In retrospect more up front work could have been done on the questionnaire. Army, Navy, and Air Force just don't think alike. (19)

18. Make sure quality of the response to the questionnaire is verified. Tried to send it through a high enough level (0-6) so that the response is reviewed and that it bears some resemblance to reality. Very important that the contractor provides you with the correct name

Table D-5 (Continued)

PRAG Representatives' Lessons Learned

that when you are reviewing past performance it is the same division
that is bidding on the effort under consideration. Make
sure that you are reviewing contracts that are truly relevant to the
profit center/division that is bidding. Do a good job up front of
delineating what the item is. It shouldn't be confusing that this
experience is relevant to item #1 or item #2. Assessment points must
be independent of each other. (44)

Appendix E: Requirements Baseline

1.0 Data Collection.

1.1 Process initiation.

1.1.1 Interim and Final Assessment Reports. The capability should be provided to track dates due of interim and final performance assessment reports in order to give program managers advance notice. The tracking capability should key on either the date of the reviewing official's signature (Block 21), the period covered by report (Block 3) or the program manager's organization (Block 17).

1.1.2 Initial Performance Assessment Reports. The capability should be provided to check the Acquisition Management Information System or other source for all contracts written during a given period which were for concept definition, full-scale development, or full-rate production and cost five million dollars or more.

1.1.3 The capability should be provided for the focal point to keep track of when an assessment report is due, the day that it is due out to the contractor, the day it is received by the contractor, the day it is due back to the government and the day it should be signed by the reviewing official.

1.2 Program manager's evaluation.

1.2.1 The program manager should be provided with all information necessary to complete the assessment report. Items should include a copy of the CPARS regulation, local supplements, and any other pertinent information or training material.

1.2.2 The program manager should be presented the prior period's assessment report. Descriptive information in Blocks 1 through 13 from the front of the assessment report should be transferred from one year to the next. This will ensure consistency of the information.

1.2.3 Standard Language. Examples of standard language or key words to describe the phase of the process, type of technology, and type of work performed should be provided to the program manager.

1.2.4 Program Director/Manager Narrative. Assistance should be provided to the program manager to ensure an adequate depth of information is captured. Possibilities should look at a list of more detailed categories of information for each of the evaluation areas in Block 14, and an on-line interactive environment in which the program manager would be probed with questions. Many of the product divisions have sample questionnaires which attempt to achieve similar results during interviews and surveys. Detailed categories of information identified by PRAG members are provided in Appendix F.

1.2.5 The program manager narrative is limited to the space provided in Block 16 plus one additional page.

1.3 Contractor Comments

1.3.1 The program director/manager should be provided access to sample letters for transmittal of the assessment report to the contractor. Examples have been developed by each product division.

1.3.2 The CPARS focal point should have the ability to review the package before it is sent to the contractor. This is an existing requirement for at least one of the product divisions.

1.3.3 The capability should be provided to capture the contractor's comments for insertion into the data base.

1.3.4 The contractor comments are limited to the space provided in block 18 plus one additional page.

1.4 Program manager update.

1.4.1 The program manager reviews the assessment report and determines if revisions are necessary. If revisions are necessary the information in Blocks 1 through 5 of the assessment report should be transferred to a new form. The statement "Revision to CPAR for period mm/dd/yy to mm/dd/yy" must appear in Block 12. Blocks requiring revision are then updated and the form is appended to the original.

1.4.2 The responsible party signs the form in Block 17 and transmits it to the reviewing official.

1.5 Review Process. The capability should be provided for the reviewing official to make comments in Block 20 and sign in Block 21.

2.0 Data Input.

2.1 The capability must be provide to insert the assessment report into the data base at the originating product division and each of the other product divisions.

2.2 Reports are currently filed according to different variations of name of parent contractor, division/subsidiary, originating product division, and sequentially according to contract number. At one product division a nine-digit referencing system has been established which encompasses the name of the parent contractor, division/subsidiary, and sequence of contract number.

2.3 Because of limited resources, the system needs to provide the most simple procedure possible for input of information. The goal should be to achieve the best mix of simplicity, ease of input, and increased quality of information.

3.0 Maintenance.

3.1 The system should provide the capability required to adjust for mergers, or contractor name changes. The PRAG member needs to be able to ask for an assessment report on a contractor and should not have to worry what name it is listed under in the data base.

3.2 Assessment reports expire after five years. The capability should be provided to search for and remove expired reports.

3.3 The capability to annotate and save assessment reports should be provided to handle requests by program managers to keep reports longer than five years.

3.4 Correct information on names, addresses, and points of contact should be maintained on contracts for which a final assessment report has not been written. One product division has implemented a computer data base of names and addresses for those contractors which they originate assessment reports. Once each year the CPARS focal point sends out a list to all the contractors requesting confirmation on the information.

4.0 Analysis. The system should provide capabilities to support the performance risk assessment process.

4.1 Planning.

4.1.1 Instructions, information, sample formats, and word processing templates should be provided to the program manager and the PRAG to help establish responsibilities and a methodology; make sure correct words are in the Request For Proposal; identify data needed to be collected and how; and determine in what manner the data will be analyzed.

4.1.2 The system should provide a sample format or word processing template to assist in the preparation of the past performance portion of section M of the Request For Proposal, "Instructions to Offeror." The format or template should remind the program manager and PRAG that the specific criteria to be looked at should be identified and the following information be requested from the offeror for each contract: contract number; acquisition agency; program name; name/address/phone number of both the contractor officer and program manager; contract administration office plus the administrative contracting officer's address and phone number; original contract cost, ultimate contract cost, and reasons for deviation; original contract schedule, ultimate contract schedule, and reasons for deviation; description of the project and how that contract was a good (or bad) example of their ability to perform against each of the criteria stated in the Request For Proposal.

4.1.3 The capability should be provided to allow the PRAG to establish criteria for screening examples of performance for relevancy, and determining the impact of specific examples on the performance risk assessment. Criteria used in past risk assessment groups include the: parent corporation; division/profit center; type of report (initial,

intermediate, final); contract number; period of performance; product division; dollar thresholds; type of contract; nature of the program; end items; phase of acquisition cycle; program description; and unique aspects within the narrative (quality assurance, training, use of special software languages).

4.2 Obtain Data.

4.2.1 For some time in the future there will be a continued reliance on surveys and interviews to supplement information which can be extracted from the CPARS. The capability should be provided to assist the PRAG members in the development or tailoring of questionnaires. Attention should be given to wording of sample questions which can be used to contact Department of Defense personnel outside of the Air Force.

4.2.2 The system should be able to provide a description of the CPARS data base for each contractor. Suggested descriptive capabilities are listed below.

4.2.2.1 Provide the capability to describe trends over initial, intermediate, and final assessment reports for a selected contract or across many contacts.

4.2.2.2 Provide the capability to describe for each parent corporation and division/profit center a frequency of reports by contract type, phase of acquisition, and program description.

4.2.2.3 Provide the capability to describe for each parent corporation, division/profit center, and contract: an average overall rating across assessment reports for each evaluation area; a frequency of ratings across assessment reports for each evaluation area; and a frequency of assessment reports within preset cost and schedule variance ranges.

4.2.3 The capability should be provided for a single office to look at the reports and develop a corporate trend from the information contained in CPARS. This would then provide PRAGs across all the product divisions a consistent corporate profile for each contractor.

4.3 Compile and Evaluate Information. Each PRAG member reads the entire set of forms to determine the salient information. The descriptive blocks (12 and 13), color ratings, and narrative sections of the CPAR must be used together to develop the risk assessment. When evaluating an offeror, PRAG members check the description of the program to see if the information was relevant and gauge the complexity of the program. Members then search the ratings and narrative sections for information which was relevant to the specific evaluation items and areas for their program. PRAG members use colors to find trends in the information but rely heavily on the narrative portion to substantiate the ratings and show relevancy.

4.3.1 In order for the PRAG representatives to determine if an assessment report is relevant to the program under consideration the

capability should be provided to search through the CPARS based on various criteria. Search capabilities key on information which is identified in standard fields and on information which may or may not be provided within certain fields on the assessment report. Examples of criteria were listed in paragraph 4.1.3. The system should allow the PRAG member to search and sort assessment reports; scan descriptive information and color ratings; and focus on specific comments in the program director/manager narrative.

4.3.2 Information should be presented in any combination of the following formats, a copy of the original assessment report, a printed copy in the original format, some preset format or a user designed report. The PRAG member should have the option of working in a paperless environment if desired. Two examples of report formats are presented in Figures E-1 and E-2.

TITLE	CONTRACT NUMBER	PERIOD OF PERFORM- ANCE	VALUE/ TYPE	RISK C	T/M	SOURCE	COMMENTS

Figure E-1. Ballistic Systems Division Performance Data Matrix

```
Past Performance Assessment

  Offeror:                              Overall Rating:

                              Red    Yellow    Green   Blue

  Product System Performance            X

  Engineering Design Support                              X

  Software Development                           X

  Schedule                              X

  Cost Performance                               X

  Product Assurance                                       X


        .
        .
        .
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Figure E-2. Munitions Systems Division Contractor Rating Sheets

4.3.3 A search and sort capability based on the Block 14 color ratings
should be provided. This should allow the PRAG member to search and sort
assessment reports based on assessment color rating for each category, or
provide frequencies of ratings for each assessment category.

4.4 Perform Risk Assessment.

4.4.1 Performance Risk Assessment is a two step process which first
checks to determine each programs relevance to the effort being
considered and then subjectively summarizes across all contracts so that
  risk assessment for each area could be assigned. Although not
specifically requested by any PRAG member, this process seems to lend
itself to the use of a decision support system.

4.4.2 Another method used was to show area ratings for individual
contracts. PRAG members choose screening criteria and sort through
available information to get several different views of the contractor's
performance. The information is display information in a figures similar
to those shown below.

				Ratings		
				Summary		
Contract Number	Description Of Effort	Contract Type	Dollar Amount	Technical	Management	Cost

Figure E-3. Ballistic Systems Division Risk Assessment Summary

Remarks

Contract Number	Technical	Management	Cost

Figure E-4. Risk Assessment Supporting Information

5.0 Output. Output should be available both for display on the computer screen and in hard copy. The capability should be available to: provide entire copies of assessment reports which have been determined to be relevant; provide copies of summary reports based on relevant fields of the assessment report; provide output of descriptive statistics defined in paragraph 4.2.2; and download information to the Performance Data Matrix (Figure E-1) and briefing charts.

6.0 Reporting. Capability should be provided to assist the CPARS focal points in generating the administrative type of reports described below.

6.1 The product divisions submit quarterly or more frequently to Air Force Systems Command a report describing the latest assessment reports stating the contractor name, subsidiary of division, contract number, period or performance, and a brief description of the contract.

6.2 Air Force Systems Command Regulation 800-54, requires each focal point to submit annually a report which states: the name and address of the contract division or subsidiary; the parent corporation; the number of times the contractor has submitted proposals; and identify any new offerors for inclusion in the data base (1:3).

6.3 The focal point at Electronic Systems Division prepares talking papers stating the number of assessment reports on file, the number of contractors, number of assessment reports per contractor, and the number of programs which have had PRAGs and looked at CPARS.

6.4 The focal point at Munitions Systems Division builds a report that goes to the commander on incomplete assessment reports. Using information gathered while tracking assessment reports a chart is prepared which has a list of contracts, the date assessment reports were due out, the actual mailing date, the date reports were returned by the contractor and the date of approval by the reviewing official.

7.0 Protection Of Information. Any capability developed to support CPARS and the PRAG should consider the protection of data since it is source selection sensitive.

7.1 The Air Force Systems Command Form 125 is marked "Source Selection Sensitive-For Official Use Only" when filled out. Any output generated by the system should be appropriately marked.

7.2 When transmitting by mail, each assessment report is double wrapped. The inner envelop is marked "Source Selection Sensitive - For official Use Only". The outer envelope is marked "To Be Opened By Addressee Only". The transmittal letter to the contractor highlights the fact that the report is source selection sensitive and the restrictions on its use.

7.3 Appropriate control features should make sure that the data cannot be changed or retrieved by someone who should not have access.

7.4 At Electronic, Munitions and Space Systems Divisions no copies of the assessment reports are made. The original reports are given to the PRAG members who work with them within the source selection facility.

7.5 The system should be capable to provide protection of the data in such a way that a PRAG member or contractor could be limited access to a specific contractor. There needs to be some way to segregate the data base so that access can be controlled.

7.6 As currently implemented assessment reports are kept in a file drawer in a locked room or vault with controlled access and are only released to PRAG members with authorized access. Any capability developed should not degrade this level of protection.

7.7 While in transit between offices the assessment report is hand carried, kept covered with a source selection sensitive cover sheet and is never left alone.

Appendix F: Information Types.

Engineering Design/Support

- Present alternative solutions
- Engineering Change Proposal processing time
- Requirements Analysis
- Systems Engineering
- Technical analysis

- Correction of deficiencies
- Initiate solutions to problems
- Level of competence
- System Design
- System Integration

Product Assurance

- Environmental Performance
- Performance
- Quality of product

- Installed System
- Quality Engineering

Software Development

- Computer Resources

Management Responsiveness

- Flexibility Initiative
- Prompt resolution of issues

- Proactive approach

Schedule

- Master Integrated Schedule

- Meeting Major Milestones

Subcontractor Management

- Competent resources

Integrated Logistics Support

- Facilities
- Maintenance Planning
- Support
- Planning

- Implementation
- Spares Availability
- Support Requirements
- Technical Data

Cost Performance

- Cost
- Cost Management
- History of Buy-in's

- Cost control
- Elements of cost proportional to targets

Other Categories

- Course development
- Instruction System Development
- Plan for Reliability, Maintainability and Producibility
- Training System
- User involvement
- Configuration/Data Management
- Focus on key problem areas
- Organizational Control
- Overall planning and management
- Risk Management
- Technical Management Planning
- Top Management Participation
- Manufacturing Producibility
- Quality Assurance Program
- Warranty Management
- Field Availability Rates
- Logistics Support Analysis
- Supportability
- Show cause or stop work activities
- Engineering change proposals well prepared

- Incorporation of commercial off the shelf and non development items into the overall design
- Prototype Management
- Training Delivery
- Concept Definition
- Acquisition Support
- Engineering Change Proposal Process
- Organizational Resources
- Quality of Contract Data Requirement List deliveries
- Timely Contract Data Requirement List delivery
- Program Management
- Second Sourcing
- Work Measurement
- Life Cycle Costs
- Service Reports and Material In Processing Review Boards
- Use a reasonable and rational budget

Appendix G: Description of Initial Automated Capability

Overview. Actual development, test and implementation of the
operational CPARS automated information system will take some time and
significant effort. At the same time, the ability for PRAG members to
determine which assessment reports are relevant and the need for
simplified CPARS administration should be met as soon as possible. For
these reasons an interim capability was developed using the integrated
software package Enable (Version 2.15) and an IBM XT compatible computer
system.

Enable was used to create a data base, input forms, and several
report forms which combine the basic functions of the automated
capabilities at both Ballistic Systems Division and Aeronautical Systems
Division. Functions were designed to allow for flexibility and growth,
considering that implementation may be dependent on the eventual
capabilities of this system.

Setting up the system will require some prior knowledge of Enable or
at least the willingness to learn. Having the Getting Started volume of
the Enable users manual may help.

Enable. Enable is an integrated software package containing five
different applications: word processing, data base management,
spreadsheet, graphics, and telecommunications (22:Sec 1,1). The Enable
data base management application in combination with the word processing
functions provide the necessary capability to complete, store, search,
print, and maintain CPARS information. Enable's report generating
functions provide sufficient tools to create complex reports such as the

Air Force Systems Command Form 125, and is simple enough to quickly develop "user defined" reports as needed. By taking advantage of Enable's menu driven environment and through the use of macros and windows, a tolerant atmosphere could be developed to put at ease even the most novice of computer users.

Data Base Organization. The primary data base for the automated capability was designed to simplify data input and to allow as much flexibility for search/sort routines as possible. A total of 124 different fields were used to capture and store the information required to complete the front page of the CPAR form. The data base definitions are contained in the data base definition file called CPARS.DBF.

Stating that a primary data base was developed is a bit of a misnomer. In reality four different data bases are used to accumulate the final assessment reports which appear in the CPARS data base. The data bases and their relationships to each other are shown in Figure G-1.

The NAMES.DBF data base contains the parent corporation name, division/subsidiary, address, Department of Defense Activity Address Directory Code (DODAAD), and contractor point of contact. Each combination of parent corporation and division/subsidiary is represented by a single record. No duplication of division/subsidiary names are accepted. Information resident in this data base is independent of the specific contract, product division, or type of assessment (initial/intermediate/final). This data base is similar to the name/address data base discussed earlier in Chapter 5. A field for contractor point of contact at the division/subsidiary level was added to the data base definition to support maintenance functions. Because the

```
  ____NAMES.DBF_____
 ,------------------------,                          _____CONTRACT.DBF_____
 |  Parent Corporation    |                ,-------------------------------------------,
 |  Division/Subsidiary   |-------------->|       Fields included in                   |
 |  Address               |               |          NAMES.DBF                          |
 |  City State Zip        |               |             +                               |
 |  DODAAD                |               |   Contract Number                           |
 |                        |               |   Location of Performance                   |
 '------------------------'               |   Contract Period of Performance            |
                                          |   Type of Competition                       |
      ----------------------------------- |   Contract Types                            |
      |                                    |   Title and Phase of Acquisition           |
      |   ___ASSESSMENT.DBF_____        |   Contract Effort Description               |
      V  ,----------------------------,    |   Product Division                          |
         |     Fields included in     |    '-------------------------------------------'
         |        CONTRACT.DBF         |
         |           +                |
         |  Initial/Intermediate/Final|        _____REVISED.DBF_____
         |  Period Covered by Report  |    ,-------------------------------------,
         |  Contract Percent Complete |--->|      Fields included in              |
         |  Current Dollar Value      |    |        NAMES.DBF                      |
         |  Area Assessments (Block 14)|   |           +                          |
         |  Cost/Schedule Variance    |    |  Initial/Intermediate/Final          |
         '----------------------------'    |  Period Covered by Report            |
              |                            |  Contract Number                     |
              |                            |  Product Division                    |
              |  ___CPARS.DBF_____        |  Notice in Block 12                  |
              V ,-------------------,<-----|  Revisions to Blocks 14, 15          |
                | Includes all      |      '-------------------------------------'
                | assessment reports|
                | and revisions to  |
                | assessment reports|
                '-------------------'
```

Figure G-1:   CPARS Automated Information System Data Bases.

name/address information is contained in an independent data base,

information can be easily updated without altering any existing validated

assessment reports.

The CONTRACT.DBF data base contains information from the

name/address data base as well as information pertaining to a specific

contract. Fields included in this data base are contract dependent, but

independent of the type of assessment. Information is retrieved from the name/address data base as new contracts are added to CONTRACT.DBF. Each contract number is represented by a single record. No duplication of contract numbers are accepted.

The ASSESS.DBF data base contains the information elements relevant to the actual assessment for a given year. The information contained in this data base is dependent both on contract and on the actual assessment from the prior period. The assessment data base is used for a storage mechanism until a given assessment is validated.

The REVISED.DBF is used to develop and temporarily store a revision to a preliminary assessment. The revision data base contains information elements from blocks 1 through 5 of the Air Force Systems Command Form 125, as well as a message in Block 12 stating that it is a revised report. Adjustments are made in Blocks 14 and 15, and a record is saved for later transmission to the CPARS data base.

After the assessment report and the revisions are reviewed and validated by the product division reviewing official, they are copied to the CPARS data base for permanent storage. The data bases are set up so that no changes can be made to an assessment report once it is entered into the CPARS data base. This was accomplished by specifying for each field in the CPARS input form that no update was allowed. When an assessment report is transferred to the CPARS data base for permanent storage, the corresponding records in the assessment and revision data bases are removed and destroyed.

Getting Started. The CPARS Automated Information System disk should be copied to a directory named C:\CPARS prior to operation. The system

can be operated from a floppy disk drive but it is not recommended due to the slower responsiveness, and the eventual storage problems which will occur. Enable Version 2.15 should be installed in a directory named C:\ENABLE. The CPARS automated system is started by typing "CPARS" at the C:\CPARS prompt. The instructions contained in the CPARS.BAT file will initialize Enable and execute a macro which presents the CPARS Automated Information System (AIS) Main Menu.

Enable uses profiles to establish the default settings for operation. Default values can be set for printers, plotters, page format, screen format, word processing, etc. The default settings for the CPARS AIS are included in the profile named CPARS. The CPARS profile is automatically executed with the start up procedure.

Any of the default values in this file can be changed except for the default ruler. The ruler options provide an automatic left and right margin for all documents. The current settings in the CPARS profile have the default ruler off. This should remain off to protect the format of existing reports. Nearly every output form generated by the system is greater than 80 characters wide. A default value le~ nan that will destroy the format of these reports.

Two default values which the user may want to change are the printer being used and the type of monitor. Current settings for these are an unidentified printer and an EGA compatible color monitor.

Operating Procedures. Instructions for successful operation of the system are listed at the bottom of the CPARS Automated Information System menu. Pressing [ESC] will exit the AIS Main Menu and enter Enable. Pressing [Shift/F10] will cause the system to return to the AIS Main

Menu. After selecting an application from a menu, and unless otherwise instructed, the user should follow the Enable prompts in the status line at the bottom of the screen. In most cases the system will automatically return the user to the menu from which the option was selected. For some applications the user is required to follow the system prompts to return to the Enable system menu. The user can then press [SHIFT/F10] to return to the CPARS AIS Main Menu.

There are two methods for executing options on any of the system menus. The first method, using the up and down arrow keys, should be practiced until familiarity of the system is established. Options are highlighted when touched by the cursor. Many of the options have information windows which further describe the function. Once highlighted, options are executed by pressing the [Enter] key. The more familiar user of the system can execute applications with a single keystroke by entering the number which directly proceeds the option on the menu.

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The purpose of this study was to determine if a management information system based on the Contractor Performance Assessment System (CPARS) could be developed to support the performance assessment process.

A tailored approach to the traditional method for software systems development was chosen to design an automated system to support performance risk assessment. This approach included steps for problem definition, requirements analysis, and development design.

Requirements of the system were determined through structured interviews with Performance Risk Assessment Group (PRAG) members and CPARS focal points.

Implementation of the requirements analysis step resulted in a complete description of the procedures used and the information required to support the performance risk assessment process. The role of the CPARS as a primary source of information to support this process was described and assessed. The administrative procedures used to collect, process, distribute, and protect contractor performance assessment reports were determined.

The information collected from PRAG members, CPARS focal points, and applicable regulations was synthesized into a concise statement of the required capabilities for the automated information system to support performance assessment.

The research process followed the tailored methodology through the development of a conceptual model for the system. The conceptual model developed describes the applications necessary to support the required functions. The conceptual model demonstrates how the applications of the information system can assist the user in the various steps of the assessment process.

Sufficient time allowed for the development of an initial capability which demonstrates selected applications described in the conceptual model. The software operates on an IBM XT compatible computer system using Enable (Version 2.15). A copy of the software can be obtained from the Director of Research, AFIT/LSC Wright-Patterson AFB OH 45433-06583.