EDP engagement: systems planning and general design

American Institute of Certified Public Accountants. MAS Technical and Industry Consulting Practices Subcommittee
EDP Engagement: Systems Planning and General Design
NOTICE TO READERS

MAS Practice Aids are designed as educational and reference material for the members of the Institute and others interested in the subject. They do not establish standards or preferred practices. The standards for MAS practice are set forth in the Statements on Standards for Management Advisory Services (SSMASs) issued by the AICPA. However, since the services described in this series of practice aids are management advisory services, the standards in the SSMASs should be applied to them, as appropriate.

During the preparation of this document, various members of the 1981-82 AICPA MAS Technical and Industry Consulting Practices Subcommittee, functioning in an advisory capacity, provided information, materials, and comments to the staff. The members of that subcommittee are listed below.

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Preface

This MAS practice aid is one in a series intended to assist practitioners to apply their knowledge of organizational functions and technical disciplines in the course of providing management advisory services. The Summers and Knight study, *Management Advisory Services by CPAs*, published by the AICPA in 1976, has subdivided such knowledge into seven areas: executive planning, implementation, and control; finance and accounting; electronic data processing; operations (manufacturing and clerical); human resources; marketing; and management science. Although these practice aids often will deal with aspects of those seven areas in the context of an MAS engagement, they are also intended to be useful to practitioners who provide advice on the same subjects in the form of an MAS consultation. MAS engagements and consultations are defined in Statement on Standards for Management Advisory Services 1, issued by the AICPA.

This series of MAS practice aids should be particularly helpful to practitioners who use the technical expertise of others while remaining responsible for the work performed.

MAS technical consulting practice aids do not purport to include everything a practitioner needs to know or do to undertake a specific type of service. Furthermore, engagement circumstances differ, and, therefore, the practitioner's professional judgment may cause him to conclude that an approach described in a particular practice aid is not appropriate.
Scope of This Practice Aid

The phrase *EDP engagement* is used in this practice aid to refer to any MAS study or MAS project in which a client is given advice or technical assistance related to the use of EDP equipment in any function.

The use of the computer is so pervasive in business and government today that many engagements—no matter what the objective—will touch on the client's use of EDP in some fashion. For example, an engagement to develop a cost accounting system will probably involve use of the client's computer to process, store, and retrieve data. Consequently, many engagements in which the primary objective is not EDP-oriented become EDP engagements in part.

Common Types of Activities in EDP Engagements

EDP engagements may conveniently be divided into two major categories: (1) those involving assistance to a client in developing an EDP system and (2) those involving advice to a client concerning the acquisition or operations of a computer installation. The following list contains a number of EDP-related activities that fall into each of the major categories.

1. **EDP Systems Development**
   - Long-range systems planning
   - General systems planning and design
   - Detail systems design
   - Program specifications
   - Implementation planning
   - Programming and testing
   - Systems testing
   - Conversion and volume testing
   - Implementation
   - Postimplementation evaluation

2. **EDP Acquisition or Operations**
   - Request for proposals (RFP) development and vendor evaluation and selection
   - Vendor contract negotiation
   - EDP operations review
• Computer performance evaluation
• Specific systems evaluations
• EDP security review
• Software package evaluation and selection
• Standards for EDP system design and development
• EDP departmental accounting systems development

Five major activities in the EDP system development process are discussed briefly in the following section to provide an overview: systems planning, general systems design, detail systems design, program specifications (and file design), and programming. Because a practitioner may assist a client through the entire system development process or may be asked to assist with only one or more of those activities, EDP engagements may differ significantly in scope.

This practice aid focuses on the two initial design activities, systems planning and general systems design. For illustrative purposes, it discusses an engagement in which the practitioner is to develop an EDP purchasing and receiving system for a company that buys and sells items without further processing. For purposes of the illustration, it is assumed that an existing computerized inventory system is based on manually prepared receiving slips and withdrawal slips and a manual sales forecasting system.

The new computerized purchasing/receiving system is to be designed to provide—

• Weekly preparation of purchase orders based on inventory amount compared to sales forecast and known lead times, purchase prices, price breaks, economic order quantity, vendor performance factors, and freight charges.
• Matching of inventory receipts with purchase orders outstanding.
• Determination of cash requirements based on forward purchase orders and planned stock purchases.
• Updating of inventory files based on receiving reports.
• Vendor evaluation reports based on performance versus commitments.

Concept and Aspects of Systems Design

The design of a system, from systems planning through computer program coding, is accomplished as a series of design decisions over time.
Because user participation is vital, the user must understand and par­
ticipate in these decisions. As the design process moves forward, de­
cisions are made that progressively limit the alternative methods avail­
able for performing the system.

Consider a proposed system whose objective is to provide timely
information to key members of management regarding cost performance
versus budget. Such a general objective can be met by a large number
of alternative methods. For example, the processing of data can be per­
formed manually or by computer. The reports can be issued daily or
weekly. The reports can be delivered in hard-copy form or on video
display (CRT). The comparison of budget with actual cost can be dis­
played in account number sequence or size-of-variance sequence.

In the course of the design process, these and other general deci­
sions will be made. In time, within the framework resulting from these
decisions, more detailed alternatives will be considered. For example,
if data processing is to be performed by computer rather than manually,
which computer should be used? If reports are to be issued weekly, to
whom and at what level of detail will they be provided? If reports are to
be provided in hard copy, will they be provided in actual size or re­
duced?

Toward the end of the design process, when a detailed framework
has been established, there still will be design decisions to be made.
For instance, if all editing of input transactions is to be performed within
one computer program, in what sequence will each stage of editing be
made? Finally, even with the user aspects of the system decided and
the general computer system defined, the programmer will still need to
make programming design decisions as the work progresses.

This, in concept, is the design process. It can be represented graph­
ically by the following figure, in which five design steps are shown as
segments of a continuous process of decision-making in progressively
finer detail.

In general, the orientation and knowledge of the people involved in
the design process differ at each stage. For example, the first three steps
generally require extensive user participation and detailed understand­
ing of what the system is to accomplish, whereas the last two require
greater involvement of individuals with an in-depth understanding of
hardware capabilities and programming techniques.

At several points in the design process, management will need to
examine the design recommendations and the projected time and cost
to complete. Consequently, the process must provide stages at which
decisions and outlook are brought into focus and documented so that
management can examine them and make decisions about the future
direction of the project. Such points usually occur at the end of both
systems planning and general systems design, as well as at other points
in the process. Different design situations will, of course, require different treatments.

The Design Process

Typical Engagement Situations

The systems planning and general systems design type of engagement can occur under a number of different circumstances, of which the following are representative:

- A client, having decided that the computer revolution is passing him by, wants to investigate possible computer applications that would improve productivity and/or management controls.
- A client has a small number of applications on a computer already but wishes to expand its use.
- A client is currently using a computer for a number of systems that overlap and use many of the same data and wishes to integrate them into a combined system with a common data base.
- A client is dissatisfied with his present computer system because it performs only the basic functions of each subsystem and does not
provide the meaningful management information reports that could be derived from those subsystems.

- A client is considering a new business venture and needs to define the systems that will be required.
- A client faces new or revised legal or contractual requirements or constraints that must be incorporated into applicable systems.

The EDP purchasing and receiving system development engagement that is used as an illustration in this practice aid involves a combination of these circumstances, as is often the case.

Engagement Considerations

Systems design engagements often involve a client that is relatively uninformed about computers, including what must be done, how it must be done, and what will result. Through lack of practical experience and/or technical expertise, client personnel may think of the computer as a machine that responds to every request immediately and without difficulty. This simplistic view of EDP can cause many misunderstandings, if not outright failure, in a systems design engagement.

It is essential that the client be supportive of the implementation of a computer system. Consequently, while the client should be willing to consider and understand the process, the practitioner should try to describe it in terms the client can grasp. The chances for success of an engagement are greatly enhanced when the client understands the objective and how it can be achieved, the nature and amount of the contribution to be made by client personnel, and the role of the practitioner throughout the process.

Practitioners need to consider whether they can make available the necessary technical competence (from within or outside their organizations) within the time period during which the client will need it. Different types and degrees of skill may be needed on an EDP engagement to perform planned tasks with maximum efficiency, and making each skill available at the appropriate time can be demanding and complex.

A systems planning and general design engagement is very common among MAS practitioners and one that often leads to additional work. Potential pitfalls, however, can complicate or limit the accomplishment of the objective. Listed below are some pitfalls to be avoided.

- Inadequate definition of user requirements
- Inadequate level of user involvement
Engagement Objectives and Client Benefits

The objective of an engagement involving systems planning and general systems design is generally to set in motion and carry to a specified completion point an action that will ultimately lead to the achievement of client benefits similar to those identified below. The engagement objectives statement for the sample engagement dealing with a purchasing/receiving system described in the section on the scope of this aid might be worded in the following way for the purposes of a proposal or engagement letter:

1. To conduct a study and document the requirements of a computerized purchasing/receiving system providing purchase orders, receiving reports, vendor evaluation, and cash requirement forecasting

To identify EDP systems design alternatives and to select the most advantageous for further study

To document the general work flow of the proposed system; the types and frequency of inputs and outputs; and the equipment, software, personnel, and other resources necessary to convert and operate the system

To identify special conversion considerations

To communicate findings, recommendations, and overall schedules and budgets covering subsequent phases

Well-designed EDP systems have the potential of providing any or all of the following benefits:

- Greater accuracy of information

1. For further information about proposal and engagement letters, see AICPA, Sample Engagement Letters for an Accounting Practice (CPE Self-Study Manual, 1974) and the appropriate Statements on Standards for Management Advisory Services (SSMASs).
Improved timeliness of information
Additional information for management purposes
Increased productivity
Reduced processing cost

Overstatement or misrepresentation of a client’s benefits can imperil the effectiveness of an engagement. To prevent misunderstanding, the practitioner needs to be precise and exercise caution when stating the expected benefits of the engagement. Achievement of these potential benefits depends heavily on the client’s future actions.

Beyond the primary benefits, there are others of obvious value that a client may gain during an EDP engagement. The most common is increased understanding of the new EDP systems and, consequently, more effective use.

Engagement Scope

Defining the scope of an engagement for an EDP system usually involves consideration of three factors: the functions, the organizational components, and the phases of the project. Though the scope of an EDP engagement is usually defined in these terms, there are instances in which scope is defined not only by what is included but also by what is excluded. For example, if a particular engagement task is to be performed independently by client personnel or by a different consulting organization, it would be identified as being excluded from the scope of the engagement. If some of the functions normally associated with the system under review are to be excluded from processing because of special handling requirements, these also would be identified as excluded.

For the purchasing/receiving system described in preceding sections, the scope of the engagement might be defined in a proposal or engagement letter in the following way:

The scope of this engagement will include the planning and general design of a computerized purchasing and receiving system. This system will use existing sales forecasting and inventory systems to produce purchase orders, receiving reports, vendor evaluation reports, cash requirement reports, and input to the inventory system. The design will include purchasing and receiving functions performed within the purchasing and receiving department in the XYZ facility only and will not include changes to the inventory system. The inventory system must be revised to accommodate input from the purchasing/receiving system, but such changes are not part of this engagement.
Engagement Approach

The approach is an overview of the steps in the engagement process. Appendix A (see page 15) illustrates, in considerable detail, steps that might be used in the systems planning and requirements analysis and in the general systems design activities. The approach for a specific engagement is generally defined by the steps to be accomplished for a specific engagement, how they will be accomplished, and in what sequence.

A general systems design engagement usually requires that considerable information be gathered from within the organization about pertinent existing operations, inputs and outputs, and requirements for the system to be designed. If the approach involves extensive interviews with client management and other personnel, problems of access to needed data could arise if the client is not so advised.

The section about approach in a proposal or engagement letter for a systems planning and general design engagement might describe the process as in the following illustration:

This engagement will undertake systems planning and general design in a two-phase approach.

Steps in the systems planning phase include—
- Organizing and defining members of the project team and identifying their specific responsibilities.
- Gathering additional data related to the current system and system requirements by interviewing key personnel and users.
- Reviewing relevant documentation covering system plans and procedures, as well as current system costs and reports of deficiencies related to the system under study.
- Planning in detail the tasks to be performed during system planning and reviewing them with the project team.
- Identifying deficiencies related to the system under study.
- Identifying requirements and classifying them in terms of "must have" and "like to have."
- Developing criteria for the system to be designed.
- Identifying major systems design alternatives.
- Preparing and presenting findings and recommendations.

Steps in the general design phase include—
- Planning in detail the tasks to be performed during general design and reviewing them with the project team.
- Assisting in the selection of those alternatives most feasible for further study.
- Preparing a general work flow indicating generic types of input and output for the selected alternatives.
• Estimating the resources needed (equipment, personnel, software) and the costs for selected alternatives, including matters such as implementation, conversion, operation, maintenance, site preparation, forms, file conversion, and education and training of personnel.

• Preparing a comparative analysis of selected alternatives versus the criteria selected in the earlier stage and presenting recommendations.

Depending on the size and nature of the engagement, the steps described in the proposal or engagement letter would be less or more detailed than in the above illustration.

Engagement Output

The end products of the work described in the approach essentially define the extent of the engagement. That is, the engagement, by definition, is the work necessary to produce the agreed-upon outputs. The term general design implies certain outputs, but the implications of the phrase may differ greatly for the practitioner and the client.

Engagement output usually consists of the practitioner's documentation as well as engagement report documents provided to the client. Appendix A, as already noted, illustrates steps, or tasks, that might be performed in an EDP general systems design engagement and the output that could result from each step.

The end product of an EDP general systems design engagement is generally a document or report that might include the following elements:

• System narrative
• System flowchart
• Input documents
• Output reports
• Description of all files
• Data entry description for automated systems
• System benefits and cost analysis
• Project schedule and budget

In this type of engagement, the documentation of the proposed system and a transmittal letter often constitute the report. The transmittal letter generally recapitulates pertinent background and engagement conduct information. Worksheets, charts, memos, letters, interview notes, questionnaires, and other materials that led up to the development of the system specifications generally become part of the practitioner's record of the engagement.
For a systems planning and general design engagement, typical outputs might be described as follows in a proposal or engagement letter:

The output of these two phases would be a documentation manual for each system, containing the following elements:

- A general system flowchart
- Sample reports and transaction documents
- Tentative file descriptions
- A general system development plan showing development priorities and the time frame over which the system realistically can be developed

The outputs of an EDP general systems design engagement are not yet so standardized that the technical terms for them, such as systems flowchart or systems narrative, mean the same to all who read them. Illustrations of segments of certain outputs for a purchasing/receiving system, as discussed in this text, appear in detail in the next section. The following material describes some of these outputs in more general terms:

A systems flowchart indicates who has what information, in what form or format, and of what quality, when, where, why, and as a result of what processing steps.

A statement of system requirements identifies "must have" and "like to have" items and indicates the reason, such as "legal requirements," "needed to ensure sufficient operating capital on hand," "president wants," and so forth.

A comparison of system alternatives matches alternative systems against client management's selection criteria.

For the selected system alternative there may be the following:

- A system narrative describing the system objectives, types of inputs and outputs, processing controls, and any user hardware, such as executive terminals, anticipated for use in the system
- A system flowchart indicating the flow of paper to and from the processing center and the timing of the flow
- A description of the anticipated file content—not organization—of any new master files that must be developed for the system
- A system installation plan for the remaining phases showing estimated costs
In addition, there may be the following materials as part of the engagement output:

- A system planning phase report covering the recommendations developed during that phase
- A general design phase report covering the recommendations developed during that phase
- Worksheets, charts, memos, letters, interview notes, questionnaires, and other supporting materials

As noted in the section on concepts and aspects, the systems design process starts with a perceived potential for improvement and ends when all computer programs have been completed. The practitioner has a professional responsibility to define, with the utmost practical precision, the point in that process at which he proposes to end the engagement. At this stage the client would be requested to acknowledge that the agreed-upon work has been completed.

The following section illustrates portions of typical data (outputs) developed during a systems planning and general design engagement relating to a purchasing/receiving system.

Illustrative Segments of Engagement Outputs

Objective Statement

The objectives of the computerized purchasing/receiving system are to facilitate and make more economical the functions of purchasing and receiving, to reduce inventory stock-outs without increasing inventory carrying charges, to reduce expediting requirements, to facilitate most-favorable-vendor selection, and to forecast with greater accuracy cash requirements for purchased items.

Types of Inputs

Vendor input. Number, name, and address of vendor; identification of items normally purchased from vendor; performance rating; lead time and price breaks by item purchased; payment conditions of vendor.

Item nomenclature. Thirty-character description of item; item number.
Receipts input. Vendor number; purchase-order number; line-item number; quantity; item number; disposition code.

Types of Outputs

Purchase order. Stock number; stock description; quantity ordered; unit cost; total cost; vendor name and address; purchase-order number; purchase-order date.

Content of Master Files

The items shown below may appear within several different files. File organization will ultimately determine which redundancies are to be retained or dropped.

Purchase-Order Detail File (for each line item)
Stock number
Quantity ordered
Stock description
Unit of measure
Unit cost
Vendor number
Vendor name and address
Freight rate
Purchase-order number
Purchase-order date

Receiving Detail File (for each receipt)
Date of receipt
Packing-slip number
Purchase-order number
Line-item number
Vendor number
Stock number
Quantity received
Unit cost
Freight rate
Vendor lead time
Processing Controls

For receiving reports. For each receiving report input to the system, verification will be made by the system of the correct purchase-order number and item number. For each batch of receiving reports, batch control will be performed against a hash total of receiving-report numbers.
APPENDIX A

Systems Planning and General Design Task Outputs

The tasks and outputs illustrated here are not intended to establish engagement requirements, since each engagement is different. The chart serves only as a reference for developing the unique task and output requirements that in the practitioner's professional judgment are appropriate for a specific engagement.

Phase I  System Planning (including Requirements Analysis)

<table>
<thead>
<tr>
<th>Task</th>
<th>Output and Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify the problem or new requirements in their present or future context</td>
<td>Initial statement of requirements. To define potential benefits, to provide a formal means of communicating the scope of the project, and to provide a document for continuing reference. Work program for Phase I. To record plan for Phase I evaluation effort.</td>
</tr>
<tr>
<td>Define project objectives, scope, and approach</td>
<td>Scope and objectives memorandum. To communicate to top management scope, objectives, and the general nature and cost implications of the development project.</td>
</tr>
<tr>
<td>Define the time/priority elements</td>
<td>Section of scope and objectives memorandum. To identify any absolute timing requirements and to determine the priority of various aspects of the project.</td>
</tr>
<tr>
<td>Evaluate consistency with and impact on the organization's long-range planning</td>
<td>Development plan and consistency memorandum. To reconcile the project's objectives and time frame with the long-range plan, either reinforcing the long-range plan or updating it.</td>
</tr>
<tr>
<td>Prepare proposal</td>
<td>Proposal letter. To present to client management a clear statement of the requirements and the proposed approach to the project.</td>
</tr>
<tr>
<td>Establish project control system</td>
<td>Employee time report. To provide a means for reporting time worked by individuals assigned to the project. Project analysis. To provide cumulative time summaries and task completion data for project control purposes.</td>
</tr>
<tr>
<td>Task</td>
<td>Output and Purpose</td>
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<tr>
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</tr>
<tr>
<td>Study system flow and existing documentation, noting discrepancies</td>
<td><em>Personnel analysis.</em> To provide information on the progress of the project personnel by providing an estimated completion date and work load analysis for all assignments.</td>
</tr>
<tr>
<td>Determine present volumes</td>
<td><em>Project status.</em> To summarize the status of the major steps in the work program and to identify areas requiring review, action, or decision by management.</td>
</tr>
<tr>
<td>Cost out present system</td>
<td><em>Current system documentation evaluation.</em> To document observations and results of interviews and to reconcile existing system documentation with actual system operation. Discrepancies will be noted in order to update existing documentation and to provide a starting point for future systems development.</td>
</tr>
<tr>
<td>Identify any external influences and constraints including other system interfaces</td>
<td><em>Volume analysis.</em> To analyze the volume and flow of system inputs and outputs, including source documents for each application, recycled errors, output reports, turnaround documents, control listings, and so forth.</td>
</tr>
<tr>
<td>Define advantages and disadvantages of existing system</td>
<td><em>Analysis of equipment costs.</em> To provide a basis for economic evaluation by summarizing the equipment costs of the present system by department and function.</td>
</tr>
<tr>
<td></td>
<td><em>Analysis of personnel costs.</em> To provide a basis for economic evaluation by summarizing the personnel costs of the present system by department and function.</td>
</tr>
<tr>
<td></td>
<td><em>Analysis of other costs.</em> To provide a basis for economic evaluation by summarizing all significant costs other than personnel and equipment by department and function.</td>
</tr>
<tr>
<td></td>
<td><em>Current system influences and constraints (detail).</em> To document existing system influences and constraints related to data flow, reporting frequency, other system interfaces or dependencies, hardware/software availability, and the like.</td>
</tr>
<tr>
<td></td>
<td><em>Current system influences and constraints (summary).</em> To ensure adequate consideration in design of new system by highlighting design interfaces with other systems, special processing conditions, and so forth.</td>
</tr>
<tr>
<td></td>
<td><em>Current system evaluation.</em> To document the advantages and disadvantages of the existing system for use in this and subsequent phases.</td>
</tr>
<tr>
<td>Task</td>
<td>Output and Purpose</td>
</tr>
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<td>----------------------------------------------------------------------</td>
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<tr>
<td>Start development of specialized glossary if terminology is unique to this industry or the system</td>
<td><em>Glossary file.</em> To serve as a ready reference for &quot;jargon&quot; peculiar to the particular industry, the firm, or the system being studied.</td>
</tr>
<tr>
<td>Prepare analysis of existing system</td>
<td><em>Current system analysis.</em> To analyze aspects of the existing system, including documentation, volume analysis, costs, interactions, constraints, and advantages/disadvantages. This memo will communicate the work performed to management and serve as a basis for deciding on future system development.</td>
</tr>
<tr>
<td>Determine system requirements</td>
<td><em>System requirements statement.</em> To document the system requirements, including business functions served, service levels (frequency of processing, availability of reports or data, and so forth), processing approach, and the like.</td>
</tr>
<tr>
<td>Develop criteria for evaluating business system alternatives</td>
<td><em>System evaluation guide.</em> To provide a comprehensive list of the evaluation criteria, such as operating cost, response times, and the like.</td>
</tr>
<tr>
<td>Identify alternative solutions</td>
<td><em>Alternative solution analysis.</em> To record the potential practical methods available (manual/mechanical, batch/on-line, and so forth).</td>
</tr>
<tr>
<td>Develop conceptual system flows and gross cost approximations for alternative solutions</td>
<td><em>System flow (overview).</em> To portray the processing flow of the alternative systems, showing inputs, outputs, and major functions.</td>
</tr>
<tr>
<td>Present recommendations to management, reviewing available alternatives and estimated requirements of the recommended program</td>
<td><em>System recommendation.</em> To outline to management the recommendations for future system development based on the analysis made to date.</td>
</tr>
<tr>
<td>Obtain authorization to continue, to rework, or to terminate</td>
<td><em>Cost/benefit analysis.</em> To present gross costs and benefits related to the long-range plan and to the specific problems identified.</td>
</tr>
<tr>
<td></td>
<td><em>Requirements and work program.</em> To present the recommended system development work program, including specific tasks, man-days required, and timetable.</td>
</tr>
<tr>
<td></td>
<td><em>Authorization memo.</em> To obtain management's evaluation of progress to date and authorization to continue, to rework, or to terminate.</td>
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## Phase II General System Design

<table>
<thead>
<tr>
<th>Task</th>
<th>Output and Purpose</th>
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</table>
| Define systems requirements in greater detail | *Functional specifications.* To facilitate system design by summarizing application system requirements in terms of—  
  - Major business functions, service levels, concepts, and objectives;  
  - Possible additional improvements in present business functions;  
  - Output requirements;  
  - Input requirements;  
  - File requirements;  
  - Control requirements; and  
  - Processing and timing requirements. |
| Prepare general work flow of the application system design and EDP design alternative(s) | *Work flows.* To provide a basis for explaining the system to key personnel and for evaluating alternative flows. |
| Identify any special conversion considerations required for the EDP design alternative(s) | *Special condition analysis.* To provide an analysis of special conversion considerations for alternative systems. |
| Determine equipment, personnel, utility software, outside service, and other resources necessary to implement, convert, operate, and maintain the EDP design alternative(s) | *Equipment, personnel, and other cost analyses for the most probable alternative(s).* To provide an updated picture of steps and costs necessary to implement the most probable alternative(s).  
*Equipment, personnel, and other cost analyses for other alternatives.* To provide comparative data on less-probable alternatives. |
| Determine the benefits and limitations of each EDP design alternative | *Alternative system benefits and comparisons.* To facilitate subsequent analysis and decision by documenting the benefits and limitations of each alternative system. |
| Prepare comparative analysis of EDP design alternative(s) | *Alternative system comparisons and cost/benefit analysis.* To provide a systematic analysis and comparison of alternatives. |
Present recommendations to management and obtain authorization either to continue with detailed systems design of selected EDP design alternative, to rework, or to terminate EDP design specifications. To present the EDP system specification to client management for evaluation and analysis.

Authorization. To obtain management authorization to continue into the design phase, to rework the tasks previously completed, or to terminate the project.
APPENDIX B

Sample Engagement Letter

Many sections of this practice aid contain examples of language that might be used in a proposal or engagement letter to describe aspects of the engagement. They refer to a systems planning and design engagement for a computerized purchasing/receiving system.

As an additional aid to practitioners, an outline for a complete engagement letter is illustrated here, using, where appropriate, the language from the text. There is no intent to establish a standard format. In practice, proposals and engagement letters differ widely, depending on the circumstances of the specific engagement.

Introduction and Background

(As appropriate for the engagement.)

Engagement Objectives

The objectives of our engagement would be to—

• Conduct a study and document the requirements of a computerized purchasing/receiving system providing purchase orders, receiving reports, vendor evaluation, and cash requirement forecasting.
• Identify EDP systems design alternatives and select the most advantageous for further study.
• Document the general work flow of the proposed system; the types and frequency of inputs and outputs; and the equipment, software, personnel, and other resources necessary to convert and operate the system.
• Identify special conversion considerations.
• Communicate findings, recommendations, and overall schedules and budgets covering subsequent phases.

Engagement Scope

The scope of this engagement will include the planning and general design of a computerized purchasing and receiving system. This system will utilize existing sales forecasting and inventory systems to produce purchase orders, receiving reports, vendor evaluation reports, cash requirement reports, and input to the inventory system. The design will include purchasing and receiving functions performed within the purchasing and receiving department in the XYZ facility only and will not include changes to the inventory system. The inventory system must be revised to accommodate input from the purchasing/receiving system, but such changes are not part of this engagement.
Engagement Approach

This engagement will undertake system planning and general design in a two-phase approach.

Steps in the system planning phase include—

- Organizing and defining members of the project team and identifying their specific responsibilities.
- Gathering additional data related to the current system and system requirements by interviewing key personnel and users.
- Reviewing relevant documentation covering system plans, procedures, and current system costs and deficiencies related to the system under study.
- Planning in detail the tasks to be performed during system planning and reviewing them with project team.
- Identifying deficiencies related to the system under study.
- Identifying requirements and classifying them in terms of "must have" and "like to have."
- Developing criteria for the system to be designed.
- Identifying major systems design alternatives.
- Preparing and presenting findings and recommendations.

Steps in the general design phase include—

- Planning in detail the tasks to be performed during general design and reviewing them with project team.
- Assisting in the selection of those alternatives most feasible for further study.
- Preparing a general work flow indicating generic types of input and output for the selected alternatives.
- Determining the resources and costs required to implement, convert, operate, and maintain the selected alternatives (needed resources would include equipment, personnel, software; cost consideration would include recurring costs as well as site preparation, forms, file conversion, education and training, and other pertinent cost factors).
- Preparing a comparative analysis of selected alternatives versus the criteria selected in the earlier stage and presenting recommendations.

Note: Depending on the nature and complexity of the engagement, the steps described in the proposal or engagement letter may be less or more detailed than in the foregoing illustration.

Engagement Output

The output of these two phases would be a documentation manual for each system, which would contain the following elements:

- A general system flowchart
- Sample reports and transaction documents
- Tentative file descriptions
- A general system development plan showing development priorities and the time frame over which the system realistically can be developed
Project Staffing and Schedule
(As appropriate for the engagement.)

Fee and Billing Arrangement
(As appropriate for the engagement.)
Bibliography


