A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE--TITLE PAGE

A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE

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FOREWORD

The General Services Administration (GSA) is issuing this guide to assist Federal agencies in acquiring commercial software. It should be used in conjunction with existing regulations. This is one of a series of acquisition guides under development by the Policy and Regulations Division of the Information Resources Management Service (IRMS). The Office of Technical Assistance (OTA) is providing technical assistance in developing the series. This guide was written by American Management Systems, Inc., Arlington, Virginia. The GSA Project Manager was Rosalind Campbell. Acknowledgment is made to the following members of the Interagency Acquisition Guide Advisory Group who assisted in the review of the guide: Art Cohen, Defense Logistics Agency; Craig Goral, Defense Logistics Agency; Don Nicholson, Department of the Air Force (AFCAC); Larry Schreier, U.S. Department of Agriculture; and Valerie Wallick, Department of the Navy. Agencies may request a limited number of copies by writing to: General Services Administration (KMPP) Washington, DC 20405 A Standard Solicitation Document for acquiring software is also available and may be obtained by writing to: General Services Administration (KMPR) Washington, DC 20405 We welcome your comments regarding this guide and the Acquisition Guide Series. Please contact the Policy and Regulations Division on 202-501-2462 or FTS 241-2462 with your suggestions or questions. Thomas J. Buckholtz Commissioner Information Resources Management Service U.S. General Services Administration A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE--EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The General Services Administration (GSA), Information Resources Management Service (IRMS), develops Governmentwide policies and guidance for automated data processing, records, and telecommunications. IRMS' objective is to ensure that Federal agencies acquire, manage, and use Federal Information Processing (FIP) resources that meet their requirements in an economical and efficient manner. This Guide provides Government program, information resources management, and contracting officials with an introduction to the acquisition of commercial software. Commercial software is software that is already "built," not software an agency develops from scratch. The Guide, written for readers unfamiliar with the Federal software acquisition process, is not a complete reference work or a regulation and, as such, directs the reader to other sources for detailed information and guidance. The information, advice, and techniques provided in the Guide will help agencies acquire commercial software that meets their information needs more cost-effectively and economically. A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE--TABLE OF CONTENTS

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CHAPTER 1: INTRODUCTION

1.1 THE ACQUISITION GUIDE SERIES

The General Services Administration (GSA) initiated the Acquisition Guide series to help promote effective and efficient acquisition of Federal Information Processing (FIP) resources. The Policy and Regulations Division (KMP) of the Office of Information Resources Management Policy (KM) in GSA is responsible for developing and issuing the guides.

a. Background

The guides resulted from a survey of Federal agencies by GSA to determine the types of guidance that agencies would find helpful in acquiring FIP resources. In addition to guidance on approaches and techniques, the guides also address laws, regulations, directives, and policies that affect Federal acquisitions.

b. Audiences

GSA developed the guides for Government professionals who are new to or unfamiliar with the process of acquiring FIP resources. While other groups may also find them useful, the guides are directed to the three staffs most involved in the acquisition of FIP resources: o Program personnel (users supported directly by the FIP resources being acquired) -- for functional expertise o Information Resource Management (IRM)/Technical personnel -- for FIP technical expertise o Contracting personnel -- for acquisition expertise In discussing each phase of the acquisition life-cycle, the guides outline the roles and responsibilities for each of the three staff disciplines.

c. Objectives

The guides are intended to provide basic advisory and factual information to acquisition team members. They are not intended to be encyclopedias of acquisition information. Where applicable, they refer to the most commonly applied laws, regulations, and guidance and then direct the reader to other sources for more complete information.

1.2 SCOPE OF THE COMMERCIAL SOFTWARE GUIDE

This Guide, entitled A Guide for Acquiring Commercial Software, includes all phases of the acquisition life-cycle, from the first consideration of software as a solution to an agency's need to contract closeout, and the entire range of commercial software, from "shrink wrapped" microcomputer software to mainframe applications (e.g., financial management) which may require some customization. While this Guide does not describe every activity of every step of the commercial

software acquisition process, it does provide an overview of these steps and the key success factors for completing them and the overall acquisition successfully.

a. The Complete Acquisition Life-Cycle

This Guide covers the four phases of the acquisition life-cycle process: o Planning -- This phase consists of the early steps of a commercial software acquisition, including identification of an automation need, planning to meet that need, and budgeting the resources for it. o Acquisition -- This phase consists of those activities necessary for acquiring the commercial software, including developing a solicitation, if appropriate. These include the requirements analysis, the analysis of alternatives, and, if a contract is issued, other documentation to support the acquisition strategy. The analysis of alternatives examines both technical options (i.e., what will be acquired) and acquisition options (i.e., what source will provide it, including both contractual and noncontractual options). o Implementation -- This phase consists of tasks from contract award to establishment of a fully operational system. o Operation and Maintenance -- This phase includes the tasks required to keep the commercial software functioning properly from the time installation is complete until disposition of the software, including contract closeout. Chapter 4 provides additional information about the acquisition life-cycle, such as typical tasks for each phase.

b. Range of Commercial Software

This Guide covers the entire range of commercial software. Commercial software is defined as software that is available now through lease or purchase in the commercial market from a concern representing itself to have ownership of marketing rights in the software. Software furnished as part of an ADP system but separately priced is included. Software embedded in equipment or included in the price of equipment is not considered commercial software. Commercial software ranges from shrink wrapped microcomputer software to highly customized large application packages and provides functions ranging from general systems support to applications focused on end-users. Systems software includes operating environment software such as system utilities and applications development tools. Applications software includes both generalized tools, such as office automation products (e.g., spreadsheets), and specialized applications (e.g., financial management, payroll, inventory control). Shrink wrapped software is completely self-contained. Everything required for using it arrives with the package and little or no modification is required to the target system (i.e., the microcomputer) to install it. The user normally installs it with no support beyond a shared user hotline and the documentation provided. Other commercial software requires installation by technical personnel but no modification to the package itself. This is typically multi-user software on a shared platform, such as a minicomputer or a mainframe. It tends to be more complex and typically requires periodic technical support from the vendor or a third party. Customized packaged software is commercial software that provides certain functions "already built," but requires additional software development to provide all the required functions. This kind of commercial software often requires significant vendor services, such as: o Software customization o Initial and ongoing training o Ongoing maintenance.

c. Limitations

This Guide is not intended to be the complete source for information about commercial software acquisitions. The range of commercial software is so broad and agencies' requirements so varied that one guide could not properly support every possibility. In addition, the restrictions that apply to Federal agencies are subject to change. Rather than duplicate the sources which articulate these restrictions (i.e., the FIRMR, the FAR, OMB Circulars and Bulletins, FIPS PUBs, agency-specific directives), this Guide directs the reader to the appropriate sources for current information.

1.3 ORGANIZATION OF THE COMMERCIAL SOFTWARE GUIDE

a. General Information

In Chapters 1 and 2, the Guide provides the overall context for commercial software acquisitions, including key terms, roles of each staff discipline, the regulatory environment for acquisition, and the key factors for successful acquisitions. The Guide first defines the key terms that will be commonly used throughout the Guide (additional terms are also provided in Appendix A: Glossary and Acronyms). Following these are broad descriptions of the overall roles and responsibilities of each staff discipline over the course of the acquisition and how the three groups should interact as a team. More specific duties are described in subsequent chapters as each explains the steps in the acquisition process. Chapter 2 also describes the Federal regulatory environment for acquisition. Several agencies provide oversight and guidance for acquisition of FIP resources. Most of this direction is mandatory, such as the FAR and FIRMR. Chapter 3 describes special characteristics of commercial software.

b. Life-Cycle Focus

The remainder of the Guide focuses on the acquisition life-cycle, beginning with an overview of the life-cycle in Chapter 4 and then proceeding chronologically through other acquisition activities in Chapters 5 and 6. The requirements analysis in Chapter 5 determines the agency need for commercial software. The analysis of alternatives in Chapter 6 examines both technical (what to acquire) and acquisition (how to acquire) options. The Guide provides general guidance in Chapters 7, 8, and 9 for those activities common to all acquisitions of FIP resources by a contractual method. It covers the specific contractual methods in Chapters 10, 11, 12, and 13. Finally, it describes contract administration and implementation and operations activities in the remaining chapters, Chapters 14 and 15. For convenient reference, the appendices provide additional information. Appendix A provides a glossary of commonly used terms and acronyms. Appendix B describes GSA assistance programs for both information and support services. Appendix C provides a list of contacts for more information. Appendix D provides a list of publications from the National Institute of Standards and Technology (NIST), called FIPS PUBS, that commonly apply to software. A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE-- CHAPTER 2

CHAPTER 2: GENERAL INFORMATION

This chapter provides the following important background information to facilitate the use of the Guide: o Definition of key terms used throughout o Discussion of commercial software products o Roles and responsibilities of various Government staff who participate in the acquisition process o Legislation and regulations that govern the acquisition process o Some important rules that will help make the acquisition a success

2.1 DEFINITION OF KEY TERMS

Most terms associated with the acquisition of Federal Information Processing (FIP) resources are defined in the Federal Acquisition Regulation (FAR) and the Federal Information Resources Management Regulation (FIRMR).

a. Federal Information Processing (FIP) Resources

Federal Information Processing (FIP) resources means automatic data processing equipment (ADPE) and any equipment or interconnected system or subsystems of equipment that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception, of data or information-- (1) by a Federal agency, or (2) under a contract with a Federal agency which--(a) requires the use of such equipment, or (b) requires the performance of a service or the furnishing of a product which is performed or produced making significant use of such

equipment. Such term includes computers; ancillary equipment; software, firmware, and similar procedures; services, including support services; and related resources as defined by regulations issued by the Administrator of General Services.

b. Acquisition

According to the FAR, acquisition is "the acquiring by contract with appropriated funds of supplies or services (including construction) by and for the use of the Federal Government through purchase or lease, whether the supplies or services are already in existence or must be created, developed, demonstrated, and evaluated. Acquisition begins at the point when agency needs are established and includes the description of requirements to satisfy agency needs, solicitation and selection of sources, award of contracts, contract financing, contract performance, contract administration, and those technical and management functions directly related to the process of fulfilling agency needs by contract." This Guide expands the definition of acquisition to include not only contractual means of obtaining software, but also non-contractual means (e.g., sharing with another agency).

c. Requirements Analysis

A requirements analysis establishes the agency's need for software, as well as other types of FIP resources. It includes the early stages of determining automation needs that are based on the agency's mission and its "business" functions, planning for projects which will provide FIP resources to meet these needs, and budgeting funds for the projects. The requirements analysis also identifies detailed functional, technical, and other requirements for the software which will be acquired.

d. Analysis of Alternatives

While the requirements analysis establishes the agency's software need, the analysis of alternatives establishes how the need will be met. The analysis of alternatives is designed to permit the agency to choose both the best technical solution and the best acquisition solution for its need. The analysis of technical options focuses on "architectural" choices, distinguishing among software products. One key decision of this analysis is the choice between using commercial software as is, customizing it, or developing new software from scratch. The acquisition of software development services is outside the scope of this Guide. The analysis of acquisition options includes both non-contractual (e.g., sharing with another agency) and contractual choices. However, only the procedures for acquiring FIP resources from contractual sources are covered in this Guide.

e. Acquisition Strategy

The end result of the analysis of alternatives is an acquisition strategy that provides a systematic approach to acquiring software economically and efficiently. The strategy defines, in detail, the mechanisms and methodology used to acquire the needed software. It includes architectural decisions (e.g., software that runs on microcomputers), contract vehicle decisions (e.g., negotiated procurement), and decisions about the degree of competition, the contract duration and delivery schedule, and the pricing structure. The acquisition strategy also covers licensing requirements.

2.2 WHAT ARE COMMERCIAL SOFTWARE PRODUCTS?

Commercial software covers a wide variety of products. It is available for the entire range of computer systems, from the smallest home computer to the largest supercomputer, and also supports communications networks.

a. Commercial Software

The FIRMR defines commercial software as "software that is available through lease or purchase in the commercial market from a concern representing itself to have ownership of marketing rights in the software. Software that is furnished as part of the ADP system but that is separately priced is included." Commercial software is software that is already "built" in contrast to software that is custom developed

to meet a particular agency need. Commercial software is sometimes referred to as "packaged" software, although some commercial software (particularly in the mainframe environment) may be customized to particular agency requirements. Although the FIRMR defines commercial software as software available in the commercial market, this Guide expands the definition to include software that has no market outside the Government (e.g., national security software) as long as the software already exists and has been acquired by another agency. The following items are excluded from the definition of commercial software: o Software not available for lease or purchase by the date set for bid closing/receipt of proposals. o Public domain software, including software (sometimes referred to as "shareware") available from Special Interest Groups (SIGs), unless a commercial vendor assumes responsibility for documenting and maintaining the software. o Embedded software, such as software used in weapons systems and machinery. This type of software is typically not priced separately from the equipment it supports. To make full use of commercial software, the agency may also require related services such as training, conversion, software maintenance, and user support. Many software vendors offer these additional services, especially for complex mainframe software packages. If the agency can obtain these services from the same source as the software, the services are also included in the definition of a commercial software acquisition.

b. Categories of Commercial Software Products

Commercial software products fall into two broad categories: o Systems Software -- This supports the operation of the hardware "platform" on which the software runs, as well as the development and operation of applications software (see below). The basic classes of systems software include-- oo Operating Environment -- operating system, security, job scheduling, transaction processing, and performance monitoring software. oo Applications Development -- programming languages, database management systems, text editing, computer-aided software engineering (CASE), debugging tools, and test data generators. oo Utility -- code conversion, copying, disk management, tape management, backup, archiving, recovery, printing, chargeback, and configuration management. o Applications Software -- This provides the capabilities needed to meet the software users' computing needs and support their job activities. The basic classes of applications software include-- oo Office Tools -- word processing, spreadsheets, electronic mail, graphics, and desktop publishing. oo Functional -- financial management, project management, and inventory control. The acquisition process described in this Guide covers all these types of commercial software.

2.3 ROLES AND RESPONSIBILITIES

A successful acquisition requires involvement of program staff, IRM/technical staff, and contracting staff. Some responsibilities are specified by regulation. Others, however, may vary from acquisition to acquisition and from agency to agency. For these, the nature and degree of involvement varies with the complexity of the acquisition and the point in time in the acquisition life-cycle. A large, complex acquisition involving multiple mainframe software products and customization will probably require a formal project team with the full participation of all three staff disciplines. A small acquisition of a single microcomputer package may be a temporary assignment for a single program staff member who may need only to consult with the other staff disciplines before submitting the paperwork to the contracting organization for processing. For large, complex software acquisitions, a senior official in the agency should designate a team with responsibility for the acquisition early in the process. The acquisition team should consist of representatives from each staff discipline (program, IRM/technical, contracting). The team is responsible for ensuring that the acquisition-- o Successfully meets the agency's needs, o Satisfies all legal and regulatory requirements, and o Remains on schedule and within budget. Teamwork is an important factor in successful acquisitions of FIP resources. Although team members have specific assignments, success requires both cooperation and consultation among the three staff disciplines. By conducting their assignments in parallel (e.g., reviewing solicitation documents) rather than serially, they can shorten the acquisition lead-time significantly. Most large, complex acquisitions involve six staff roles: End User, Program Manager, IRM Representative,

Contracting Officer, Contracting Officer's Representative, and Contracting Officer's Technical Representative. Representatives from the three staff disciplines take these roles.

a. End User

The end users are the Government employees who will interact with and use the software on a day-to-day basis. The ultimate success of the acquisition will be judged by how well it supports the end users' needs. End users are typically program (i.e., line) staff, although they could be IRM or contracting staff for particular applications of FIP resources. End users should always be consulted for their requirements at the beginning of every software acquisition. In addition, they should participate throughout the acquisition process, both to provide advice and to concur with acquisition decisions. This has particular importance because significant time lags may develop between the initial consultation and the installation of the software.

b. Program Manager

The Program Manager (PM) represents the end users throughout the acquisition and is responsible for ensuring that the agency's long- and short-term software needs are met. Initially, the PM may be involved in strategic and tactical planning that leads to the development of specific FIP resource programs. The PM will typically complete analyses and documents (e.g., analysis of alternatives) required by the FIRMR. For acquisitions by contract, the PM may also help prepare some of the supporting documentation (e.g., justification for other than full and open competition, program-related portions of the solicitation document).

c. Information Resources Management (IRM)/Technical Representative

The IRM/technical organization provides technical expertise to the PM and the CO throughout the acquisition process. One of the key functions performed by IRM/technical staff includes translating end users' functional requirements (i.e., requirements for automated support of particular business functions) into particular types of FIP resources (e.g., commercial software). As acquisition requirements dictate, the IRM/technical staff may be called upon to assist in the software acquisition process by-- (1) determining user requirements; (2) conducting market research; (3) writing statements of work, specifications, and technical material for the solicitation; (4) performing the technical evaluation of proposals, including performance measurement (e.g., benchmarks); and (5) supporting acceptance testing and inspection procedures.

d. Contracting Officer

Part 1 of the FAR places authority and responsibility with agency heads to contract for authorized supplies and services. Agency heads, in turn, delegate to Contracting Officers (COs) the authority to enter into, administer, and terminate contracts. Agency heads (or their designees) issue "warrants" to COs stating the limits of their authority. Thus, the CO is the individual with the authority to acquire FIP resources, including commercial software, by contract. The CO has responsibility for a variety of pre- and post-solicitation activities that ensure that the Government enters into equitable arrangements with contractors. The CO may delegate some of these responsibilities.

e. Contracting Officer's Representative

Since the CO usually has several contracts to administer at the same time, he or she usually designates a Contracting Officer's Representative (COR) and authorizes that person to perform certain functions. The COR is usually a contract specialist assigned to the contracting organization, but may also come from the program office or IRM/technical organization. The contract must identify the COR, who is limited to the activities specifically authorized in the contract and identified in writing by the CO. These activities might include monitoring the contractor's technical, schedule, and cost performance against the terms of the contract; approving invoices; and formally accepting deliverables. The COR does not have authorization to change (add, delete, or modify) contract terms, conditions, or

requirements, or to take any action that might give this appearance. The CO alone has the authority to make changes, which must be in writing.

f. Contracting Officer's Technical Representative

The CO may also delegate specific contract administration functions to an individual with technical expertise concerning the software being acquired. This individual, who is typically associated with the program office but may also be from the IRM/technical organization, is identified in the contract as the Contracting Officer's Technical Representative (COTR). The contract specifies the COTR's duties. In some cases, the COTR and the COR are the same person. Typically, the COTR serves as a technical liaison between the Government and the contractor and determines whether the software meets functional, technical, and performance specifications.

2.4 LEGISLATIVE AND REGULATORY REQUIREMENTS

The Federal acquisition process is a highly regulated activity, affected by numerous public laws, regulations, and directives. This regulatory framework has been established to protect the interests of the Government and the taxpayers. Each person involved in the software acquisition process must understand the constraints imposed by this regulatory framework.

a. Legislation

Federal laws that most directly impact the acquisition of FIP resources include the Brooks Act, the Warner Amendment, the Paperwork Reduction Act (and its reauthorization), the Competition in Contracting Act, and the Computer Security Act. Other laws that impact software acquisitions include the Copyright Act, the Privacy Act, the Trade Secrets Act, and the Patent and Trademark laws.

(1) Brooks Act (P.L. 89-306)

The Brooks Act, enacted in 1965, established the basic policy for the management of ADPE. Public Law 99-500, the Paperwork Reduction Reauthorization Act of 1986, expanded and clarified its scope to include telecommunications resources, software, and computer-related services such as computer service bureaus and contract programming. The Brooks Act granted specific authority and responsibility to the General Services Administration (GSA), the Office of Management and Budget (OMB), and the Department of Commerce (DOC). Footnote: This section of the Guide uses the terms in the original legislation or regulation. However, the term "Federal Information Processing (FIP) resources will be used throughout the rest of this Guide.

(2) Warner Amendment (P.L. 97-86, P.L. 99-500)

The Warner Amendment, enacted in 1981, exempted the Department of Defense (DoD) from the Brooks Act for certain applications. The same exemption was subsequently incorporated into the Brooks Act, as amended by Public Law 99-500 in 1986.

(3) Paperwork Reduction Act (P.L. 96-511)

The Paperwork Reduction Act was enacted in 1980 to ensure that ADP and telecommunications technologies were acquired and used in a manner that improved service delivery and program management, increased productivity, reduced waste and fraud, and -- wherever practicable and appropriate -- reduced the information processing burden for the Federal Government and for persons who provide information to the Government. OMB's Office of Information and Regulatory Affairs was assigned overall authority for implementation of the Act and defined paperwork reduction requirements in OMB Circular A-130.

(4) Paperwork Reduction Reauthorization Act of 1986 (P.L. 99-500)

The Paperwork Reduction Reauthorization Act significantly expanded the Brooks Act definition of automatic data processing equipment (ADPE) to reflect the merging of automatic data processing,

communications, and related technologies. The law defined ADPE as any equipment or interconnected system or subsystems of equipment that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching interchange, transmission, or reception of data or information. This includes (1) computers; (2) ancillary equipment; (3) software, firmware, and similar procedures; (4) services, including support services; and (5) related resources as defined by regulations issued by GSA. The Act combined the old ADP and Federal Telecommunications Funds into one Information Technology Fund (ITF). Also under this Act, the General Services Board of Contract Appeals (GSBCA) was given permanent jurisdiction over ADP protest resolution.

(5) Competition in Contracting Act (P.L. 98-369)

The Competition in Contracting Act (CICA), enacted in 1984, mandated a policy of full and open competition. It required collection of market research data, costs, and pricing information before preparing a solicitation. CICA also required that proposals be evaluated only on factors included in a solicitation. CICA provided exceptions to the use of full and open competition. These exceptions are discussed in Chapter 7, Competition Requirements. CICA also reinforced the Government's policy to place a fair proportion of its acquisitions, including contracts and subcontracts, with small businesses and small disadvantaged businesses.

(6) Computer Security Act of 1987 (P.L. 100-235)

The Computer Security Act of 1987 amended several laws to add provisions relating to the protection of computer-related assets (e.g., hardware, software, and data). The Act assigned responsibility for the development of computer security guidelines and standards to the National Institute of Standards and Technology (NIST). The Act also required agencies to identify systems which contain sensitive data and develop a security plan for each of them.

(7) Privacy Act of 1974 (P.L. 93-579)

The Privacy Act of 1974 provided for the protection of information about individuals maintained in Federal information systems. It established specific criteria for maintaining the confidentiality of sensitive data and guidelines for determining which data are covered. According to the Act, Federal agencies and employees are responsible for (1) maintaining the confidentiality of data covered by the Act and (2) taking actions necessary to reasonably ensure that data concerning individuals and maintained in Federal information systems are accurate. OMB Circular A-130 implemented provisions of the Privacy Act. Another resource for assistance in complying with the Privacy Act is FIPS PUB 41, Computer Security Guidelines for Implementing the Privacy Act of 1974.

(8) Copyright Act of 1980 (17 USC)

The Copyright Act of 1980 amended the copyright laws to recognize the realities of modern data processing systems. Section 117 permitted copying of copyrighted software for backup or archival purposes if a copy is required to install the software. Management must ensure that procedures are in place to prevent unauthorized use or duplication of copyrighted programs. These procedures must include appropriate disciplinary action.

(9) Trade Secrets Act (18 USC 1905)

The Trade Secrets Act established specific penalties for the improper disclosure of trade secrets entrusted to Government agencies.

(10) Patent and Trademark Laws (35 USC)

When an application contains or uses patented software, users have the responsibility to protect the rights of the patent holder. Specifically, the user must ensure that the patented software is not improperly disclosed, used, or copied.

b. Regulations and Directives

Regulations and directives related to the acquisition of FIP resources include the FAR, the FIRMR, the FPMR, OMB Circulars, and agency-specific guidance.

(1) Federal Acquisition Regulation (FAR)

The FAR, established in 1984, is the primary regulation used by all Executive agencies for the acquisition of supplies and services with appropriated funds. It was developed in accordance with the requirements of the Office of Federal Procurement Policy (OFPP) Act of 1974, as amended by Public Law 96-83, to consolidate the procurement regulations of GSA, DoD, and the National Aeronautics and Space Administration (NASA) into a single regulation providing for coordination, simplicity, and uniformity in the acquisition process.

(2) Federal Information Resources Management Regulation (FIRMR)

The FIRMR, established in 1984, governs the acquisition, management, and use of ADP and telecommunications resources. The FIRMR combined aspects of the Federal Property Management Regulation (FPMR) and the Federal Procurement Regulation (FPR) (which preceded the FAR) into a single directive to help ensure that information resources are acquired, managed, and used in a manner that improves service delivery and program management, increases productivity, reduces waste and fraud, and minimizes paperwork burdens. The FIRMR is used in conjunction with the FAR to support the acquisition of FIP resources. The FIRMR relies on the FAR's general policies and procedures and, where necessary, contains policies and procedures that are either in addition to, or take precedence over, the FAR. The FIRMR also requires Federal agencies not subject to the FAR to follow the FAR when acquiring FIP resources subject to the FIRMR.

(3) Office of Management and Budget (OMB) Circular A-130

OMB Circular A-130, Management of Federal Information Resources, contains consolidated policy for the management of FIP resources in Executive agencies. In addition, it assigns responsibilities to specific agencies and contains information regarding-- o Agency responsibilities for maintaining records about individuals; o Cost accounting, cost recovery, and interagency sharing of information technology facilities; and o Security of agency automated information systems.

(4) Agency-Specific Guidance

Some agencies are subject to special regulations or have internal directives concerning acquisition of FIP resources. In preparing a commercial software acquisition, contact both the agency's contract and IRM staff for agency-specific guidance.

c. Oversight Organizations

The following three Government organizations have primary authority for overseeing the acquisition of FIP resources.

(1) General Services Administration (GSA)

The Brooks Act directs GSA to coordinate and provide for the economic and efficient purchase, lease, and maintenance of automated data processing equipment by Federal agencies. GSA has exclusive authority to procure FIP resources, with the power to delegate procurement authority to Federal agencies to the extent GSA determines necessary or desirable. The Brooks Act prohibits GSA from impairing or interfering with an agency's determination of its data processing requirements, including developing specifications and selecting types and configurations of equipment. GSA also cannot control an agency's use of the equipment. GSA issues changes to the FIRMR and conducts other acquisition activities such as issuing delegations of procurement authority (DPA's). GSA also issues and maintains the Federal ADP and Telecommunications Standards Index.

(2) Office of Management and Budget (OMB)

Under the Brooks Act, OMB was charged with fiscal control and the development of administrative and management policy for FIP resources. OMB has assigned the day-to-day management functions to GSA. Under the Paperwork Reduction Act (and its reauthorization), OMB was granted broad authority concerning the planning, budgeting, organizing, directing, training, promoting, controlling, and other managerial activities involving the collection, use, and dissemination of information.

(3) National Institute of Standards and Technology (NIST)

NIST, formerly the National Bureau of Standards (NBS), is an agency of the Department of Commerce. Under the Brooks Act, NIST is responsible for providing scientific and technological services to agencies for ADPE and for developing and maintaining standards to maximize agencies' ability to share computer programs and data. The Federal Information Processing Standards (FIPS), generally called FIPS PUBS, are published by NIST to fulfill this purpose. FIPS PUBS include standards, guidelines, and program information documents. They are classified into seven categories: 1) General Publications 2) Hardware Standards and Guidelines 3) Software Standards and Guidelines 4) Data Standards and Guidelines 5) ADP Operations Standards and Guidelines 6) Related Telecommunications Standards 7) Conformance Tests The FIPS PUBS most commonly applied to commercial software are in the General Publications and Software Standards and Guidelines categories, as listed in Appendix D. However, the applicable FIPS PUBS depend on the kind of software being acquired. For example, some of the FIPS PUBS in Software Standards and Guidelines apply only to specialized software such as data management or Electronic Data Interchange (EDI) software. Also, the publication(s) that apply may depend on agency requirements. For example, an agency may require the software to conform to one or more of the data representation standards in Data Standards and Guidelines that otherwise would not apply. In addition to the list in Appendix D, check the FIPS PUBS Index published by NIST to identify which are relevant and most current.

2.5 KEYS TO SUCCESSFUL ACQUISITION

There are several basic characteristics of successful acquisitions. By following the rules below, agencies will avoid the majority of situations that can hamper the software acquisition process.

a. Define Functional Requirements Instead of Product Solutions

Avoid presupposing a specific solution to the agency's information needs. With the tremendous growth in end user computing over the last decade, most Government personnel have had at least some direct exposure to FIP resources, especially software. Every office develops its own computer "experts" who have their own favorite packages. Numerous trade journals review software and offer advice on what to buy. These factors can lead agencies to think of their information needs in terms of a particular product. Avoid this pitfall, especially for large acquisitions. Acquiring software products on a name basis is unwise for several reasons: o An in-house "expert's" particular favorite may not be well suited for less sophisticated users in the organization. o The agency may simply be unaware of other software products that not only have the same functionality as the software specified, but also offer additional capabilities or are more cost-effective. These other software products may offer better overall value to the Government. o Naming specific software precludes full and open competition, which is mandated by statute. o In some cases, real or perceived bias towards a particular vendor's software has resulted in contract protests, adverse publicity, and Congressional investigations. Instead of picking specific software, the agency should focus on its underlying functional needs -- the features and capabilities that the commercial software should provide. This functional approach to requirements is described in detail in Chapter 5, Requirements Analysis. Occasionally, it may be appropriate to specify a software product by name; e.g., when an organizational standard has already been established by careful study and competition and a few additional copies of the software package are required. However, such action must be justified using the procedures discussed in Chapter 7, Competition Requirements.

b. Obtain Full and Open Competition

As mandated by statute, contracting officers must promote and provide for full and open competition when soliciting offers and awarding contracts. Permitting the free market to work serves the best interests of the agencies, the taxpayers, and the vendor community. Agencies' interests are best served because full and open competition provides them with the widest possible product offerings to meet their information needs. The taxpayers' interests are best served because full and open competition encourages vendors to offer their lowest prices. Vendors' interests are best served because their access to Government business is maximized. Although the contracting staff is usually sensitive to the need for full and open competition, program and IRM/technical staffs sometimes fail to recognize its benefits. Therefore, the acquisition team should periodically take time for a deliberate, objective review of the requirements, alternatives, solicitation documents, source selection plan, and other materials to ensure that they do not unnecessarily limit competition. Although full and open competition is generally in the agency's best interests, occasionally circumstances may arise in which it is necessary to restrict competition to a degree. This is discussed in more detail in Chapter 7, Competition Requirements.

c. Guard Procurement-Sensitive Information

One essential element for maintaining full and open competition is ensuring that all potential offerors have access to the same information about the acquisition. At the same time, offerors do not need to have access to all information about the acquisition. Some information, such as the Government's independent cost estimate or the source selection materials, must be withheld from offerors so as not to influence their proposals. No offeror should be given information about the number or identity of other offerors or the nature of their technical offerings or cost, as this might influence their offers. An offeror with access to information that others lack has an unfair advantage. This offeror could use the information to change its proposal and win the contract, even though another offeror's software would have provided more value to the Government. Most often the disclosure of information is accidental: an overheard remark, a report lying open on a desk, a slip during a phone conversation. However, release of "procurement-sensitive" information (i.e., information giving an offeror unfair advantage) has sometimes led to protests, scandal, adverse publicity, and criminal penalties.

d. Distinguish Between Mandatory and Desirable Features (Capabilities)

Agencies have information needs which must be met. To meet these needs, the agency needs software with certain capabilities. Some of these capabilities are so central to supporting the agency's mission or work products that they can properly be classified as mandatory. If the agency cannot have these capabilities, it would be better not to have the software at all. For example, a mandatory capability of a word processing package might be support of the agency's installed printers. However, not all capabilities are mandatory. Some are more properly classified as "desirable" or "nice to have." The agency could discard desirable capabilities if the cost and/or technical risk of providing them is too high or if including them unnecessarily limits competition. For example, a desirable word processing capability might be "What-You-See-Is-What-You-Get (WYSIWYG)" screen display. One good test to determine whether a required software capability is mandatory or desirable is to ask whether the agency would be willing to pay for it no matter the cost. Another test is to ask whether the agency could live without the capability and still support its essential missions and job responsibilities. The distinction between mandatory and desirable capabilities is particularly important when analyzing technical and acquisition options. Chapter 5, Requirements Analysis, and Chapter 6, Analysis of Alternatives, describe this in more detail.

e. Involve All Three Staff Disciplines

Chapter 1, Introduction, points out that this Guide has been written for three audiences: program, IRM/technical, and contracting personnel. All three staff disciplines bring knowledge and skills to the acquisition process. Program staff understand the functional requirements to be met. IRM/technical staff help translate these functional requirements into software to be acquired, are familiar with the

capabilities provided in the marketplace, and can identify technical constraints imposed by the need to integrate the new software with existing FIP resources. Contracting staff provide the liaison with the vendor community and understand the legislative and regulatory constraints affecting the software acquisition. Although one staff discipline may have the lead responsibility for a particular step in the acquisition life-cycle, the advice and counsel of the other two should be sought during that step. In addition, each discipline should be kept informed of the status of the acquisition throughout its life-cycle. This information sharing will help keep the acquisition running smoothly and identify any potential problems or constraints early on, when they are easier to handle. Parallel involvement and review can also shorten the acquisition lead time.

f. Be Aware of Agency-Specific Requirements or Restrictions

This Guide is written for Governmentwide use. It describes legislative and regulatory constraints and acquisition procedures that apply to every agency. In addition, an agency may have its own specific requirements for documenting needs, review and approval, technical compatibility with existing systems, or contracting mechanisms (e.g., an agency-wide software contract already in place). Review and understand the agency's internal procedures before acting on the advice and guidance provided in this Guide.

g. Begin the Acquisition Process Early

The software acquisition process may be a lengthy one because of the legislative and regulatory framework in which it operates. To protect the interests of the taxpayers, the Government, and industry, needs must be fully analyzed and documented. The benefits and costs of technical and acquisition alternatives must be weighed and documented. Review and approval procedures -- both internal and external to the agency -- must be followed. In a competitive acquisition, bids/proposals must be solicited, offerors must be given time to respond, and bids/proposals must be evaluated carefully. If there is a protest of the solicitation or the contract award, it must be resolved before the contract is awarded or the software installed. Each of these steps takes time. Even in a simple small purchase of ten copies of a microcomputer software package, three months or more may elapse between the initial determination of needs and the installation of the software. For a large negotiated procurement, the elapsed time could be as much as 18-24 months. Funds must also be available to purchase or lease the software. The budget lead time is two years. Take these lead times into account in acquisition planning. Program and IRM/technical staff are often surprised at the length of time an acquisition requires. Frustration can be minimized by beginning the process early, before the need for the software becomes acute, and anticipating the documentation needs for future acquisition phases during the early phases of the process.

2.6 PROTESTS

Protests challenge contract awards or other actions of agencies on specific acquisitions. The number of protested contracts has increased dramatically since the passage of CICA. Protests occur when an offeror disagrees with the Government about a contract award or a perceived procedural violation in the contract award process. A protest may be made on any type of Government procurement. Most protests assert that an offeror has been or will be wrongfully excluded from consideration for award. Protests can be filed with the agency, the General Accounting Office (GAO), or the GSA Board of Contract Appeals (GSBCA). While the procedures and remedies of each of these organizations differ, a successful protest could result in: o Suspending, revoking, or revising the agency's procurement authority o Terminating the contract o Withholding exercise of options under the contract o Asking for new Best and Final Offers o Issuing a new solicitation o Awarding protest costs, bid or proposal preparation costs, and attorney's fees o Awarding the contract to the protestor These are serious consequences and may prevent the agency from acquiring and using software until the protest is resolved. Thus, the agency must consider how to prevent or defend against a protest during every phase of the acquisition process. Every major decision and requirement must be reviewed in terms of a potential protest. Many protests can be avoided by intelligent analysis and anticipation of the potential

impact of the decisions made in developing and executing the acquisition. To avoid protests, the agency should: o Eliminate unnecessarily restrictive software requirements o Clearly state what the contractor must provide o Develop fair and meaningful evaluation criteria o Provide all potential offerors with the same information o Develop and follow an explicit source selection plan o Document all decisions made throughout the acquisition life-cycle o Follow all pertinent Government and agency laws, regulations, and procedures o Review past GSBCA and GAO protest rulings A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE--CHAPTER 3

CHAPTER 3: SPECIAL CHARACTERISTICS OF SOFTWARE ACQUISITIONS

Software acquisitions have special characteristics that set them apart from other acquisitions of FIP resources. Agencies must understand and consider these characteristics to plan and implement a successful acquisition. Because of their importance, they are highlighted in this chapter rather than discussed in the section of the Guide dealing with a specific phase of the acquisition life-cycle. The special characteristics discussed in this chapter include: o Characteristics affecting commercial software requirements oo Deciding between buying commercial software and developing software from scratch oo Licensing the use of software oo Software accessibility for individuals with disabilities oo Software integration and portability o Characteristics affecting implementation and use of commercial software oo Software "viruses" oo Data and program conversion oo Training oo Upgrades and revisions

3.1 CHARACTERISTICS AFFECTING COMMERCIAL SOFTWARE REQUIREMENTS

a. Deciding Between Buying Commercial Software and Developing Software from Scratch

This Guide covers commercial software, software that is already "built." However, in certain circumstances, acquiring commercial software might not be most advantageous to the Government. In these circumstances, it may be more appropriate to develop new software from scratch.

(1) Ability to Meet Agency Requirements

To determine if commercial software is most appropriate, the acquisition team must examine whether it meets the agency requirements. To do this, the agency must first define in detail the capabilities and features the software must have. Chapter 5 discusses how to conduct software requirements analyses. The agency must then determine if software packages available in the marketplace can meet its requirements. The software must not only provide all the features and capabilities that the agency needs, but must also operate in the agency's current FIP resources environment (e.g., with the existing hardware and systems software). Chapter 6 provides details on surveying the market. If software available "off-the-shelf" meets all the agency's requirements at a reasonable price, the agency should acquire the commercial software rather than develop new software. Even if the agency can find no package that meets all its requirements, it may be possible to customize an existing package so it meets the requirements. If customization is required, the agency should determine if the degree is within acceptable limits.

(2) Risks of Customizing Commercial Software

Before it decides to customize a commercial software package rather than build new software from scratch, the agency should assess the risks involved. Footnote: This guide uses the terms "customize" and "customization" to cover changes in commercial software's capabilities and features. Most commercial software packages require some "personalization" (e.g., telling the software what type of

monitor and printer it will work with). SAome type of commercial software (e.g., financial systems) also require the agency to enter organizational-specific information (e.g. charts of accounts) before they can be fully functional. Personalization and adding organization-specific data are not customization. Among the benefits of commercial software packages are: o Ease of training, maintenance, and support o Using a proven package with an established track record o Compatibility and integration with other packages o The ability to use standard documentation and training materials When a significant portion of a package's capabilities is altered, many of these benefits may be lost or reduced. Another risk of customization is that the new custom code may affect the software's performance or introduce errors into the standard code. In addition, later versions of the package may be incompatible with the customized code or require a significant rewrite of it. The agency should weigh these risks and their costs against the benefits of customizing a package to meet agency requirements. If the cost or risk is too high, developing new software from scratch may be safer and cheaper.

b. Licensing the Use of Software

Most commercial software is protected by copyright, and some packages may also be patented, which gives them added protection. When an organization "purchases" a commercial software package, it usually only purchases the right (the "license") to use the package. The ownership of the "intellectual property," the underlying program code, usually remains with the author or publisher. Since licensing defines the Government's rights to use commercial software, it is one of the most important issues in software acquisition. Both the interests of the Government and the vendor must be protected. Program, IRM/technical, and contracting staff should all become familiar with the particular terms and conditions covered by software licenses and should carefully craft all license analyses, specifications, and contract terms to avoid problems after contract award.

(1) The Range of License Provisions

License rights can range from broad to narrow. An agency could acquire a world-wide license that permits it to use the software however it wants on an unlimited number of machines at an unlimited number of sites, although this kind of license is rare in the Government. Most software used in the Government comes with a single machine or single site license. Licensing can be exclusive (the licensee is the only organization in the nation or world allowed to use the software) or non-exclusive (multiple organizations can have rights to use the software). Government use is usually non-exclusive. The term of a license can also be perpetual (a one-time payment grants rights of use forever) or for a limited term of months or years. Microcomputer commercial software typically comes with a non-exclusive, single machine perpetual license. This license restricts the software use to only one machine at a time and usually restricts copying of the software for backup only. However, the use of "site" licenses - permitting the agency to copy the software onto an unlimited number or a specific number of machines - is increasing. Local area network (LAN) versions of software may also permit simultaneous use by a limited number of users. Minicomputer and mainframe software is usually also licensed for a single machine or site, and many of the licenses are "term," rather than perpetual, and require a monthly or annual license fee.

(2) Government Licensing Provisions and Clauses Versus Standard Commercial Licenses

Most commercial software comes with a standard license agreement, which the vendors expect their commercial customers to sign without question. The license may be a separate document to sign or the software may have provisions that state, for example, that by opening the seal on shrink-wrapped packaging, the user agrees to abide by the license agreements. The Government cannot accept standard commercial licensing agreements, but must negotiate its own provisions. The reasons for this include: o State laws -- The license may state that its provisions are subject to the laws of a specific state. However, state laws do not govern Federal contracts. o Entire agreement clauses -- The license may state that it is the entire agreement among the parties and no prior written or oral agreement can modify its terms and conditions. These clauses would render FAR and other contract clauses inoperative. o Non-disclosure clauses -- The license may prohibit providing information on the software to other

parties. However, Government contractors may need access to the software to fulfill the obligations of their own contracts. o Warranties -- The license may state that it provides no warranties or guarantees of any kind. The FIRMR has a specific warranty clause, reserving the "implied warranty of merchantability" and waiving all others, that must be included as part of the warranty provisions of a FIP resources contract. o Overly restrictive clauses -- The license may include clauses that prohibit needed uses of the software, restrict the use of output from the software, or inappropriately burden the operation of computer facilities. o General contract clauses -- The license's clauses on disputes, default, payment, delivery, etc., may be inconsistent with the FAR, FIRMR, and agency clauses that must be included in the contract. The agency must specify in the solicitation and negotiate in the contract the license clauses required by the FAR, FIRMR, and agency requirements. It cannot merely accept the terms of the standard license. No agency staff should sign any statement agreeing to abide by the terms of the standard commercial license. An end user should never sign or return any mail-in cards implying that he or she agrees to the terms of the license. Licensing issues for shrink-wrapped microcomputer software should already have been resolved by agency contracting staff (or, in the case of commercial software on GSA Nonmandatory ADP Schedules, by GSA). However, an end user may not know this, seeing only the language on the shrink-wrapped package that says the act of opening the package means the purchaser agrees to the commercial license terms. The user should forward the license materials to the CO who will then take appropriate action.

(3) Areas Covered by Commercial Software Licenses

License agreements vary from vendor to vendor. However, most standard commercial licenses cover the areas below. The CO should review these areas and, if necessary, alter the license through negotiation. In making such alterations, the CO should enlist the aid of the agency's legal counsel. o Disclosure -- This provision specifies the extent to which the software (especially the source code) may be disclosed to others. In modifying disclosure clauses, the CO should be sure that ambiguous or careless wording does not inadvertently strip the software's copyright protection by placing it in the public domain. Disclosure provisions also address whether the software may be given to another party after the first licensee no longer needs it. o Modify or combine -- This provision states whether the licensee will be able to modify the software or combine it with other software. Licenses typically state that modifications void all warranties. If the Government must modify the software, the CO should ensure that the vendor still warrants the unmodified portions. o Exclusive versus non-exclusive -- This provision states whether the vendor may license the same or similar software to others. Most Government licenses will be non-exclusive. o Perpetual versus term -- This provision specifies whether the license is granted in perpetuity (i.e., as long as the purchaser holds the software) or for a limited period. o Transferability -- This provision specifies whether, and under what conditions, the license may be transferred to sites or equipment other than those originally specified in the contract. o Single site versus multiple sites -- This provision specifies the geographic location where the software can be used. It can be very narrow (e.g, a single office) or very general (e.g., city, country). It may include or exclude provisions for office relocations. o Single product versus product line -- This provision specifies whether the license applies to only the current version of the product or to future versions as well. A product line license will generally be more expensive but may be worth considering if new versions are issued frequently and the agency has long-term requirements for the product. o Machine specific versus machine independent -- This provision defines the hardware on which the software can be used. It may be very specific (e.g., use is permitted on only one machine perhaps identified by the serial number) or more general (e.g., simultaneous use is permitted on up to a certain number of machines). o System documentation -- This provision specifies whether the licensee will have access to the source code (the programming language statements that underlie the software package) or only the object code (the operation package as the operators and end users see it). Most vendors do not want to grant access to the underlying source code. This is usually acceptable for packages that will not be modified or customized for the Government's needs. However, lack of source code documentation makes it difficult, if not impossible, for the agency to maintain the software itself. Instead, maintenance must be arranged with the vendor. o User documentation -- This provision specifies whether the licensee will be authorized to copy user manuals or instructional texts, and how these materials will be

disposed of at the end of license. Although this documentation is generally under copyright protection, vendors may permit licensees with many users to copy the manuals for internal use only. o Software copying -- This provision specifies whether or not the software may be copied by the licensee and for what purposes. Copying may be prohibited, permitted for backup or archival purposes only, or permitted for use on a given number of machines. o Rights -- This provision addresses both the licensee's and the vendor's ownership and access rights to the software and to the data the software manipulates or produces, including the licensee's right to provide access or use of the software to a third party. In typical Government contracts, the vendor retains the ownership of the software as delivered and the Government retains the ownership of the data and all output produced. If the Government chooses to customize the software, it usually holds the rights to the customized code and also retains rights to the data that the software manipulates. o Disposition -- This provision specifies what happens to the software at the end of the license period. The license might require the Government to return the software to the vendor, destroy it, or remove it from the software inventory.

(4) Government Licensing Provisions and Clauses to Include in Contracts

Although the FAR license provisions and clauses will usually suffice, the agency should first determine exactly how it plans to use the software, including: o Will the software be customized to meet the Government's requirements? o Will the software be linked or combined with other software, either commercially available or custom-built? o Will the vendor's rights be restricted (e.g., for security reasons)? o Where will the agency use the commercial software? o How long will the agency use the commercial software? The answers to these questions may mean that special license provisions and clauses, over and above the ones in the FAR, need to be added to the solicitation and contract. Most often, the clause in FAR Part 52 dealing with "Commercial Computer Software - - Restricted Rights" is sufficient to define the Government's rights. The clause states that it takes precedence over any standard commercial license. However, commercial licenses sometimes state that they take precedence. Because FAR and FIRMR clauses sometimes contain language such as "unless otherwise provided," the CO should be sure to insert a clause that subordinates the vendor's license to the Government contract and Federal laws and regulations. Two important license areas are not addressed by the FAR clause: o Term -- The length of time (months, years, or perpetual) the license will be in effect. In setting the license term, the agency must decide whether it will still need to use the software acquired even after the contract expires. o Error correction and updates -- Although few vendors will guarantee in the license that their software is free from error, most reputable vendors will correct errors identified by users within a reasonable time and issue an update. Error correction should be included in any commercial software solicitation. Updates to software, adding new features and improving performance, are addressed in more detail in Section 3.2.d below.

c. Software Accessibility for Individuals with Disabilities

In 1986, the Rehabilitation Act of 1973 was revised to add a new section that requires that Federal electronic office equipment be accessible to individuals with disabilities. Guidelines on how to best meet the requirements were established in October 1987, based on input from Government and industry accessibility experts. The most important factor in providing software accessibility is awareness by program, IRM/technical, and contracting personnel of the requirements of disabled workers and the technologies available to meet their needs. GSA operates a Clearinghouse on Computer Accommodation (COCA) that provides publications, advice, and other help. In addition, the Government's Interagency Committee for Computer Support of Handicapped Employees (ICCSHE) has representatives from most major agencies. Agencies should consider the following issues when determining the requirements for software for use by disabled individuals: o Retain capability for character-based interfaces -- Commercial software is making increasing use of graphic user interfaces (GUI) such as windows and icons. However, information presented in graphical formats cannot currently be read by automated screen readers and other devices that aid blind users. The agency should make sure that disabled individuals can bypass the GUI and operate the program using character-based interfaces. o Obtain electronic versions of software documentation -- If the software documentation (e.g., user manuals, tutorials) is available in electronic form, automated tools can

convert the text to synthesized speech or braille output for sight-impaired or blind users. o Be sure that special terminal-and-stay-resident (TSR) programs supporting disability access are compatible with network software -- Many of the special automated tools supporting access for the disabled operate in TSR mode. This means they are loaded into a portion of random access memory (RAM) for use with any underlying applications software. Some local area network (LAN) programs also use TSR modules for user access, and these may be incompatible with other TSR programs. If disabled individuals need to use LAN functions, the agency should be sure that the network software is compatible with the disability access TSR software. Contact COCA or the agency ICCSHE representative for more information about software accessibility and the special tools available for disabled users.

d. Software Integration and Portability

Two software topics of increasing importance to purchasers and users are integration and portability. Integration (as this Guide uses the term) focuses on the similarity of user interface and the sharing of data among commercial software applications. Portability focuses on the movement of commercial software applications among hardware platforms.

(1) Software Integration

The marketplace contains thousands of commercial software applications from thousands of vendors. These applications use many different user interfaces and an even greater number of data formats. As a result, users must be retrained for every new software package and data resident in one package must be rekeyed for use in another package. Both of these cause considerable loss of productivity. Thus, software integration has been increasingly emphasized with the growth of end user computing during the last ten years. Software integration has two aspects: o Common user interface -- How similar the command structure and screen presentations are among the various software applications. o Data sharing -- How numeric and text information are shared among the various applications. The software industry has responded with various integrating mechanisms. They can address one or both aspects of software integration, as shown in Figure 3-1. The primary integrating mechanisms include: Figure 3-1, Integration Provided by Various Mechanisms o File conversion utilities -- Certain applications have emerged as the de facto leaders or standards in their application groups. Because of the large number of these packages already installed, vendors may provide utilities to convert data between the de facto standard and their own proprietary format as part of their offering. o Intermediate file formats -- Even if the conversion utility cannot work with a de facto, vendor-specific format, several standards have been published that can serve as intermediaries among packages. Package A can convert from its proprietary format to the intermediary, and Package B can then convert from the intermediary to its proprietary format. These intermediaries vary in their ability to retain formatting and other aspects of the application files. For microcomputer applications software, the intermediate standards include: oo Word processing -- ASCII, Document Content Architecture (DCA), and U.S. Navy Document Interchange Format oo Spreadsheet -- Data Interchange Format, SYLK o File import/export -- Vendors respond to the de facto standards by giving their packages the ability to read and write data files directly from or to the de facto standard format. Entire files or portions of files can also be imported or exported in ASCII format from inside the application. o Data linking -- In this form of integration, the user can embed reference to data used with another application within the current application's file. For example, a word processing document discussing quantitative data could reference a cell or group of cells in a spreadsheet. Links can exist in three forms: oo Dead links -- In this form of linkage, the data is copied from one application to another. The receiving application does not know where the data came from, and if the data changes in the original application, the receiving application file will not reflect the changes. oo Live links -- In this linkage, the receiving application contains a "pointer" to the sending application data file. Whenever the first data file is changed, the second file is updated. This updating typically occurs each time the second file is read into memory. Most packages only link in one direction. For example, if a word processing document has a live link to a spreadsheet, changing the spreadsheet will cause the document to change. However, changing the document will not cause the spreadsheet to change. oo Objects -- Another method of providing links is through object oriented programming (OOP). Entire text, data, or graphics files can be considered self-contained "objects" that

users can "point to" for inclusion in their application. The users do not have to know the internal details of the objects to do this. One implementation of OOP is the Dynamic Data Exchange (DDE) messaging protocol that has been implemented in the OS/2 operating system. DDE provides live links as described above. o Software "families" -- Some vendors have responded to the need for better integration by providing a family of applications that use similar interface and command structures (e.g., tree-like embedding of commands, same function key always used for help) and identical file formats to facilitate data exchange and sharing. Another family concept results when a single vendor offers versions of its applications to run in multiple vendors' hardware environments. Often, the underlying data files are compatible among environments. o Integrating operating environment -- This is currently the most popular strategy for software integration. Vendors of these products offer an integrating set of software tools and routines that applications developers can use in the packages they are developing. The environment offers: oo Window management -- Permitting multiple applications to be opened simultaneously. Many of these windowing systems provide GUIs operating with a "mouse" pointing device. The GUIs use "icons" to represent applications and files, and permit users to move and size the various application windows. GUIs also display messages to users in standard formats, permit users to respond by clicking on-screen "buttons," and use "pull-down" menus for commands. oo Programming routines -- Many of the integrating environments offer applications program interfaces (APIs) to ease development of applications that run under them. These APIs provide a common set of rules that ease the development, appearance, and cooperation among applications. oo Data exchange -- The operating environments provide capabilities for both dead and live linking of text, data, and graphics among applications. Dead links are typically accomplished through cut-and-paste using a "clipboard" as an intermediary. For the environments operating with GUIs, both text and graphics can be exchanged among applications. Live links make use of methods such as DDE. o All-in-one integrated packages -- These programs offer multiple applications (e.g., word processing, spreadsheet, graphics, database management) within a single package. These programs offer a single command structure for all the applications and typically offer live data linking.

(2) Software Portability

Agencies are not only concerned about how well their commercial software packages integrate with other packages, but also whether those applications will run on existing hardware and systems software. Because the FIP resources marketplace is rapidly changing and has no universal standards, most agencies have a variety of hardware and systems software environments. They are also concerned about their ability to continue to use the packages in the future as the underlying hardware and systems software technologies change. The capability to use software acquired for one platform on another platform is referred to as "portability." Portability, or the lack of it, affects the cost of both replacement software and software conversion.

A. Proprietary versus Open Operating Environments

One issue affecting portability is proprietary versus open environments: o Proprietary -- The details of the hardware or operating system are completely controlled and kept secret by the vendor. Software written for a proprietary environment can only run on that environment. Proprietary operating systems are offered primarily by hardware vendors. o Open -- The vendor publishes the details of the hardware commands or operating system routines so other vendors can use them in developing their applications. Most of the open environments have been issued by particular vendors (e.g., MS-DOS, OS/2, UNIX) although industry groups and standards organizations also work to increase commonality and standardization. The Government is also encouraging open environments through initiatives like the Portable Operating System Interface (POSIX), described in FIPS PUB 151. POSIX compliance is now a requirement for all new acquisitions. These standards address many, but not all, aspects of the operating environment. Some of the details are left to vendors to implement, so proprietary aspects still exist even in ostensibly open environments. Thus, agencies should not assume that an operating system/applications software combination running on one hardware platform can be moved (or "ported") to another platform with no adjustment required. For example, the POSIX standards are broad enough that both UNIX and MS-DOS qualify, yet UNIX software cannot run under the MS-DOS

operating system or vice versa. What POSIX means is that porting is easier and less costly between POSIX-compliant environments than between completely proprietary environments.

B. Multi-platform Software Strategies

Open operating environments make it easier to port applications software among them. However, some conversion will probably still be required. Another way to continue to use data in multi-vendor environments is to use commercial software vendors whose products run on multiple platforms. For example, vendors of some mainframe packages have developed special PC versions offering similar functions and especially designed to download from or upload data to organization-wide databases running on the mainframes. Also, as discussed in Section 3.1.d.(1), some vendors have pursued a deliberate strategy of offering their products on a wide range of platforms. In these situations, although there are still costs for buying platform-specific copies of the applications software, there are no conversion costs since the data can be exchanged among and used immediately on all platforms. Despite the move among some vendors to multi-platform offerings, most other vendors' products operate on only one or two environments. This is especially true for minicomputer and mainframes, where most of the operating systems (except UNIX) are proprietary. In this case, the act of choosing a particular commercial software package will have a major effect on the agency's hardware acquisition strategy. Agencies should avoid unnecessarily restricting competition (e.g., dictating a compatibility-limited procurement -- see Chapter 7) or increasing their costs (e.g., by requiring data and program conversion -- see Section 3.2.b below) for hardware acquisitions by the software choices they make.

3.2 CHARACTERISTICS AFFECTING IMPLEMENTATION AND USE OF COMMERCIAL SOFTWARE

Some special characteristics of commercial software deal with the implementation and use of the software.

a. Hostile Software

One of the unfortunate byproducts of the tremendous growth in end user computing has been the appearance of hostile or destructive software. The most widely known is the "virus." Like a human virus, the software virus lies hidden from view until it begins reproducing and wreaking havoc with the software and data. Hostile software can: o Damage, erase, hide, or copy applications software or data files o Disrupt processing by consuming computing time and disk space o Take over a computer or screen display unexpectedly and display messages that delay the user or cause needless worry

(1) Categories of Hostile Software

Hostile software can be grouped into the following categories. A particular hostile software program can fall into more than one category. o Virus -- A virus infects programs already in existence by inserting new code. The virus' primary function is to reproduce. It may also have a secondary function such as destroying data. When the target program is executed, the virus infects another program or file. The secondary viral function is then performed at some later time, perhaps using a "bomb" as a trigger. o Worm -- A "worm" differs from a virus in that it reproduces on its own, rather than requiring a program "host." o Bomb -- A "logic bomb" goes off when a program being used normally arrives at a pre-specified event (e.g., a financial calculation exceeds a certain dollar amount). A "time bomb" goes off at a pre-specified time. o Trap Door -- A "trap door" allows a user to gain more access to more system functions than are normally available. These access privileges can be obtained through a keyboard sequence or system condition (e.g., an aborted system startup). Once the access is obtained, the user can then manipulate, change, or destroy data. The remainder of this section uses the generic term "virus" to refer to all hostile software.

(2) How a Virus Infects a System

A virus typically "infects" a system through a floppy disk or network, copying itself undetected onto the user's hard disk under the cover of another legitimate system operation. The virus may then lay dormant until a predetermined date or action occurs. Then it begins reproducing and carrying out any other actions programmed into it. Viruses can be introduced through internal or external sabotage or even unintentionally by inexperienced programmers. With the rapid growth in computer networks and the emphasis on ease-of-use over security, the potential for viruses to disrupt and potentially damage hundreds of systems in multiple locations before detection and eradication continues to increase.

(3) Detecting a Virus

To detect viruses and prevent them from infecting a computer, several vendors offer anti-viral software. These packages operate one of three ways: o Execution Monitors -- These monitor all potentially damaging system operations, such as writing to a hard or floppy disk. Only the programs that the user specifies are allowed to perform these operations. o File Monitors -- These record the state of files in the system using checksums, file size, data encryption, or date/time stamping. The user can compare the reports at intervals to detect unexpected changes. o Virus Detectors -- These scan files for blocks of code used in known viruses. Because virus developers will change their viruses or develop new ones to work around detection schemes, update the virus protection software frequently.

(4) Preventing Infection

A key factor in preventing infection is knowing where viruses come from. The three most common entry points are: o Electronic bulletin boards -- Bulletin boards often offer free, downloadable software macros, routines, or games. These can serve as hiding places or "Trojan horses" for software viruses. Oftentimes, computer games are used as a cover for viruses. o Floppy disks -- Viruses often copy themselves onto every floppy disk inserted into a microcomputer, then copy themselves onto the hard disk of each new system in which the floppy is inserted. o Network access -- Many computers are logged onto local or wide area networks through which the virus can spread. Most times, a computer containing the virus logs on (unauthorized) to another computer on the network and transfers the virus. Agencies should take the following precautionary measures to prevent infection: o Use only trustworthy sources for new software oo Deal directly with vendors and distributors -- Whenever possible, obtain software directly from the publisher or from a well-established, reputable wholesale or retail distributor. Check the firm's reputation with other users or agencies and examine the product's warranty and liability statements. oo Use reputable sources for "free" software -- When software must be obtained through bulletin boards or "shareware" diskettes, deal only with distribution mechanisms operated by vendors, established user groups, or special interest groups. These organizations often test products posted on bulletin boards for virus contamination. oo Test new software off-line -- Use a standalone system running virus detection software to test downloaded files or floppy diskettes before distributing them to users. o Limit the copying of software oo Acquire shrink-wrapped software for each user -- Acquire sealed or shrink-wrapped copies of the software diskettes for each user, even if the agency is granted a site license. Most vendors conduct rigorous anti-virus protection programs for their products. Another viable but less effective strategy would be to make all copies from one "official" copy that is licensed to be copied and is constantly checked for viruses. oo Do not put virus-susceptible software on networks -- When acquiring public-domain software, install it only on the systems of users who need access to it. Do not place the software on a common data storage device. o Protect hardware and software oo Limit access to hardware -- Allow only authorized users, with training in virus prevention techniques, to use Government computers. Keep the offices or rooms containing the computer equipment locked or otherwise secured, especially outside normal working hours. oo Install only authorized software -- Do not permit users to install software from home or obtained from questionable sources on their work computers. oo Use write-protect tabs -- Most floppy diskettes can be "locked" with a write-protect tab. Make a habit of installing or using these tabs, removing them only when it is necessary to write to the diskette. oo Protect master diskettes -- Keep the original diskettes provided by vendors in a secure location. For dual-floppy microcomputers, use a copy of the master to start up applications, not the original. Make sure this "boot" copy is clearly labeled, write-protected, and has been tested for viral infection. oo Backup data frequently -- Backup data files frequently and

keep backups for weeks or months. A virus that scrambles data slowly can destroy a considerable amount before it is discovered, and short-term backups may contain some data that has already been damaged. oo Use system security measures -- If the operating system permits, set to "read-only" status any data files that users do not need to change. This includes most operating system files, applications program software, and any supporting files such as screen overlays or help files. oo Limit network access -- If possible, use the commercial software within a "trusted computing environment" that controls outside access with user I.D. and password. Where users dial-in to the system from outside, consider using a call-back scheme for all incoming modem connections.

(5) Eliminating a Virus After Infection

If an agency computer becomes infected with a virus, carry out the following steps: o Isolate the system -- Disconnect the system from any network, and do not copy files from the infected computer to any other computer. o Backup all data -- Copy the data (but not the applications software) onto diskettes or tape. o Reinitialize the system -- If the infection is serious, reformat the hard disk, using a low-level format program that destroys all data and file allocation tables. o Reboot the system -- Start up the system again from the master operating system diskette delivered with the hardware, with a write-protect tab in place. o Copy viral protection software onto the system -- Install execution monitoring, file monitoring, and virus detection software onto the system. o Reinstall applications software -- Reinstall each packaged application, using the original master diskettes that came with the package, with write-protect tabs in place. o Reinstall data -- Reinstall the data from the backup diskettes or tape, ensuring that the virus detection software is operating.

b. Data and Program Conversion

Conversion is the act of modifying programs and data used on one system so they can be used on another system. Conversion concerns arise when an agency replaces one commercial software package with another to support a specific agency function. Conversion may be a concern for systems software replacements (especially for systems software used for applications development) and is almost always a concern for applications software since these utilize data. Why is conversion necessary? The software being replaced may have been in use for some time, and the agency may have generated considerable data using it. In addition, the agency may have developed custom software programs (e.g., a correspondence tracking system) with commercial software development tools (e.g., a database management system). If users require continued availability of these data and programs after the new software is in place, conversion of the old data and programs becomes essential.

(1) How Conversion Can Be Accomplished

Agencies can use several alternative mechanisms to convert their data and programs: o Automated conversion utilities -- For office software tools (e.g., word processing, spreadsheets), especially those operating on microcomputers, the vendors will often include conversion utilities with the software package. These utilities typically support other best-selling products. However, if the agency has been using a less well-known software package, the conversion utilities may not cover their existing software. For minicomputer and mainframe software and for applications packages such as financial management systems, conversion utilities (if available at all) are usually not included with the product and must be acquired separately from the vendor or a third party. Often, vendors do not develop or provide pre-written utilities. In such cases, the agency must make alternative arrangements for conversion. o Custom-developed conversion utilities -- If pre-written conversion utilities are not available, frequently the agency can custom develop a utility. This mechanism is typically used for converting large data files from one database management system to another and, less frequently, to convert software programs that manipulate the data base (e.g., report queries). The agency can ask for conversion services in the same solicitation package it uses to acquire the commercial software, or it can acquire the services separately from a third party. Custom-developed conversion utilities are usually expensive and may be many times the cost of the new software package. o Rekeying data -- If automated conversion utilities cannot be acquired off-the-shelf or developed, the agency can rekey the

old data into the new software. This approach makes sense for relatively small amounts of old data. However, agency data entry staff may be preoccupied with learning and supporting the new software, and the agency may have to rely on temporary staff or contractors to rekey the old data. Rekeying data is labor-intensive and is often much more expensive than automated data conversion. o Maintaining parallel systems -- Agencies sometimes find it most cost-effective to enter only new data into the replacement system and to keep a copy of the old software for maintaining the old data until the need for it disappears. This approach is useful if the old data are accessed only occasionally, if there is little need to integrate the new and old data for reporting purposes, and if the capacity and expertise to operate the two systems in parallel are available.

(2) Estimating the Cost of Conversion

The cost of converting a large amount of data can be much larger than the cost of acquiring the new commercial software. Conversion costs and/or risks can be part of the justification for a compatibility-limited acquisition, although it is usually not sufficient justification by itself. The Federal Software Management Center (see Appendices B and C) provides an automated software conversion cost model that agencies can use to estimate conversion costs. However, the model's use must be tempered by the following considerations: o Conversion versus rewriting -- When agencies convert software programs, the conversion cost model assumes that the old and new programs will have exactly the same functions and capabilities. However, several years may have elapsed since the original programs were developed, and they may either be inefficient or not take advantage of capabilities (e.g., Structured Query Language data retrievals) that came on the market after they were written. Thus, it may make sense for the agency to rewrite the programs, making them more efficient and adding capabilities, rather than converting them. Software programs or data that will not be converted should not be used in the conversion cost analysis. Another factor that may affect this decision is whether the agency has changed its programming languages. If the old program was written in COBOL and the new program will be written in a fourth generation language, major differences in structure may require rewriting most of the code even for a straight conversion of functions. o Accurate assessment of input factors -- The model asks the agency to estimate the complexity of files and programs, the completeness of documentation, and other factors. The input factors have a major impact on the cost. IRM/technical personnel knowledgeable about the system should estimate these factors. In addition, the agency should test the sensitivity of the bottom-line costs to changes in these factors.

c. Training

Training is particularly important to the successful implementation and operation of commercial software. Software, more than any other FIP resource, affects the end users directly. The users may not know about the underlying communications network or the planned maintenance of tape drives, but they see and interact with the software. Agencies can devote extraordinary effort to defining requirements, analyzing alternatives, crafting specifications, and selecting the best vendor. However, if users resist using the commercial software acquired or can take only limited advantage of its capabilities, this effort may be wasted. Some software packages, especially office tools, come with training materials built into the documentation and may also include an automated tutorial. For some users, this packaged training will be enough. However, many users (especially program staff without much direct exposure to FIP resources) are intimidated by the prospect of learning the software. For these users, classroom training is more effective. Designing a training program is beyond the scope of this Guide. However, agencies should keep the following considerations in mind when designing their training: o Schedule training close to software delivery -- Users should receive training close to the time that the commercial software becomes available for their use. In this way, they can immediately begin applying what they have learned and solidify their skills. If the training occurs too far in advance, users forget much of what they learned. If training is delayed, the anticipated benefits of the software will also be delayed even though the software has already been paid for. o Provide hands-on training -- Wherever possible, the training should permit the users to key in commands and data, view the screen, and use supporting equipment (e.g., printers). Hands-on training can be conducted for all levels of software, from microcomputers to mainframes. o Remember on-going training needs --

Agencies typically schedule training when the software is first installed. However, needs for training continue. For example, novice users may absorb only basic functions during initial training. The agency may want to wait to schedule advanced courses until the users feel comfortable with these basic functions. Users may also benefit from refresher training. They can fall into bad habits or not pick up "tricks" discussed in the initial training sessions. Refresher training will help correct these situations. In addition, all organizations experience some staff turnover. New staff members may need training to use the software. Computer-aided instruction (i.e., on-line tutorials) is particularly appropriate for refresher and new staff training since the agency can schedule it at any time.

d. Upgrades and Revisions

A commercial software package is rarely static. Competition, feedback from users, advances in technology, and similar factors push vendors to modify their packages regularly. These modifications can correct errors, resolve incompatibilities, add features and capabilities, and improve performance.

(1) Definitions

Most vendors classify these modifications into two groups: o Version -- A version is typically used for major changes in functions (e.g., turning two-dimensional spreadsheet packages into three-dimensional ones, adding desktop publishing features to a word processing package). o Release -- A release is typically used for correcting errors, resolving incompatibilities, or improving performance. Releases are also referred to as "interim updates" or "maintenance fixes." For existing commercial customers, vendors usually charge an upgrade fee (less than the full price) for new versions. New releases are generally free (especially for error corrections) or available for a nominal charge. For Government customers, charges for versions and releases are established in the contract. Releases are generally provided at no cost, although there may be exceptions to this for small volume, low-dollar acquisitions. However, vendors usually charge for new versions. They are usually acquired through engineering change and technology substitution clauses established in the contract (see Chapter 14 for more details). Vendors' upgrade policies are subject to negotiation. If the solicitation document requires a vendor to provide new versions at no separate cost, the vendor will most likely increase its initial price to cover its costs for providing the upgrades.

(2) Potential Upgrade Costs and Risks

An agency can accrue significant benefits by upgrading to new software versions. They typically offer more capabilities and have improved performance. However, agencies should consider potential costs and risks when deciding to upgrade. The agency should compare the upgrade cost to its potential dollar benefits. There may be no monetary benefits (e.g., for increased productivity) if the current version of the software package is fully meeting users' needs and if they have no use for the new features the upgrade provides. The advice "If it ain't broke, don't fix it" applies here. However, if potential benefits justify upgrading, the agency should proceed. Agencies should also be aware of the risk that they take by not upgrading. For example, vendors may provide hot-line support only for the most recent versions of their products, not for old versions. Also, failure to upgrade one software product may prevent the upgrade of others. For example, some software products may require the latest version of the operating system. Although new versions of commercial software can usually use data files created by older versions (upward compatibility), the reverse is not usually true (downward compatibility). Agencies need to be aware of maintaining cross-organizational compatibility when upgrading. For example, it may be unwise to upgrade users in only part of an organization since this will restrict their ability to share files across offices. It is usually best to upgrade an entire organization at once. However, this may entail significant acquisition cost, as well as personnel resources, to order and install the upgrades, train users in the new features, and update inventory and configuration management records. Finally, agencies should be aware that if they continue to use a single vendor's product, upgrading to each new version, they will not be able to take advantage of features that other vendors have added to their products but the existing vendor has not. Agencies should periodically reassess their requirements (as described in Chapter 5) and conduct a market survey (as described in Chapter 6) to determine whether

upgrading to a new version is still better than acquiring new software. A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE--CHAPTER 4

CHAPTER 4: OVERVIEW OF THE ACQUISITION LIFE-CYCLE

Acquisition begins when the need for automation is established and ends at contract closeout. Thus, it involves much more than just the issuance of a Request for Proposals and the award of a contract. The acquisition life-cycle has four phases, and each phase is divided into several steps. This chapter introduces these phases and steps, which are then discussed in more detail in the remaining chapters of this Guide. Figure 4-1 summarizes the acquisition life-cycle. Figure 4-1, The Acquisition Life-Cycle

4.1 PLANNING PHASE

During the Planning Phase the agency first identifies the need for software. Although the agency will usually already have completed this phase, it is important to understand what occurred during it. The Planning Phase consists of three steps.

a. Identifying Automation Needs

The agency first identifies its "business profile," including its mission, day-to-day functions, and existing automated and manual systems. After analyzing its profile, the agency identifies opportunities for using automation to solve problems or to improve the efficiency and/or the effectiveness of its operations. These opportunities will typically include all types of FIP resources, not just software.

b. Planning

The agency then plans specific automation projects that include one or more of the automation opportunities. The projects will generally include all types of FIP resources, not just software. As part of this process, the agency submits a five year automation plan to OMB and GSA. The agency should decide whether to proceed with each project by comparing the costs and benefits of the project over the life-cycle. These should include not only the agency's own costs and benefits but also those the agency believes would accrue to other agencies, industry, and the public.

c. Budgeting

The agency budgets funds for implementing the approved projects. Some projects can be accomplished in a single fiscal year, others stretch over several years.

4.2 ACQUISITION PHASE

The Acquisition Phase begins with a software requirements analysis and ends with either contract award or utilization of a noncontractual source.

a. Requirements Analysis

A successful commercial software acquisition begins with a comprehensive requirements analysis. The agency identifies functional, technical, and other requirements for both the software itself and any support services (e.g., training). Functional requirements focus on the needs of users and the agency. Technical requirements describe the FIP environment in which the software must operate. Other requirements (e.g., delivery schedule) address how the agency will implement the software.

b. Analysis of Alternatives

After the requirements analysis, the agency determines the best means for meeting the software requirements. The alternatives analysis usually begins with a market survey to gather technical and cost

information needed for the analysis. Next, the agency analyzes both technical and acquisition options. The technical options focus on the physical implementation of the software, such as whether to use commercial software or to develop software from scratch. The acquisition options include choosing between noncontractual and contractual options for obtaining the commercial software.

c. Developing the Solicitation

For sealed bidding and negotiated procurements, the agency develops a solicitation package that specifies the Government's software requirements and asks the vendor community for bids or proposals. The package may be a either an Invitation for Bids (IFB) or a Request for Proposals (RFP), depending on the contracting method chosen. The agency assembles all background information needed to inform vendors fully (e.g., technical details about the ADP environment) and includes the documents as attachments to the solicitation or places them in a solicitation library that vendors may visit. For small purchases and acquisitions from established sources of supply, refer to the procedures described in Chapters 10 and 11.

d. Developing the Source Selection Plan

The agency also develops a source selection plan for negotiated procurements. The plan, designed for internal use by the agency, describes how offerors' proposals will be evaluated and a winning contractor selected. The plan describes the organization of the source selection team, the steps in the source selection process, and the schedule. It includes the evaluation criteria used to score technical proposals and the relationship between cost and technical considerations used in making an award.

e. Issuing the Solicitation

For small purchases less than $25,000 and GSA nonmandatory ADP schedule acquisitions less than $50,000, the agency will usually contact vendors by phone for technical information and price quotations. For sealed bidding and negotiated procurements, the agency will advertise the solicitation in the Commerce Business Daily (CBD) and distribute the written solicitation document (IFB or RFP) to vendors who request it. While the solicitation is "on the street," potential offerors may ask for clarifications and changes. The agency will answer questions and may amend the solicitation.

f. Receiving Bids or Proposals

Bids or proposals are due on or before a fixed date and time. Late bids or proposals can be considered only under very limited circumstances.

g. Source Selection

(1) Evaluating Bids or Proposals

After the quotations, schedule information, bids or proposals are received, the agency will evaluate the offers, checking to ensure that all mandatory requirements are met. For small purchases, established sources of supply, and sealed bids, the Contracting Officer (CO) can usually make an award at this time to the vendor meeting all requirements at the lowest cost. For negotiated procurements, the agency must conduct the additional steps described below before awarding the contract. For negotiated procurements, technical proposals will be "scored" using evaluation criteria established in the source selection plan. The CO may ask offerors to clarify their proposals to correct minor deficiencies or to provide additional information for the evaluation team. Other evaluation activities, such as a demonstration of the software by the offeror for the evaluation team, may also be conducted. The CO will establish a "competitive range" to eliminate unacceptable offers and CO will usually conduct negotiations with the remaining offerors. Finally, the CO will ask the remaining offerors for a Best and Final Offer (BAFO).

(2) Selecting the Winner

For negotiated procurements where a formal Source Selection Official has been designated, the CO will recommend an award to one of the offerors, using the methodology established in the source selection plan (which includes the relationship between technical and cost considerations). An offeror must also meet the standards in FAR Part 9.1 to be determined a responsible contractor. The Source Selection Authority (SSA) designated in the plan will review the evaluation results and the CO's recommendation, and then select the winning offeror.

(3) Awarding the Contract

For negotiated procurements, the contract will be awarded to the offeror whose proposal is in the best interest of the Government, as determined by the source selection process.

4.3 IMPLEMENTATION PHASE

During the Implementation Phase, the commercial software is installed and made operational.

a. Installation

The contractor will deliver the software to the agency. If the software needs to be customized to meet agency requirements, the installation process will include the customization. Either the agency or the contractor will install the software, depending on the complexity of the software and the installation itself.

b. Testing and Acceptance

After the software is installed, the agency will conduct formal acceptance tests as specified in the solicitation document. The Government will usually pay for the software only after it is accepted.

c. Training

A key factor in making the software operational is enabling the users to use it to support their day-to-day activities. This is particularly important for software since it, more than any other FIP technology, affects the end user directly. User training should begin upon installation and should continue over the life of the contract.

d. Conversion

If the newly acquired commercial software is replacing existing software, the agency may require conversion of data and/or software programs so that the new software can use them. Conversion typically occurs as part of the implementation phase to reduce interruptions in the agency's services.

4.4 OPERATION AND MAINTENANCE PHASE

In this last phase of the acquisition life-cycle, the agency and/or the contractor support the on-going use of the software.

a. Maintenance

Software maintenance involves correcting any errors uncovered by users or operators. This is particularly important for the customized portions of software packages.

b. Support

Both users and operators will have questions about the capabilities and features of the software for which they cannot find answers in their training materials or documentation. The contractor and/or agency may provide telephone "hotlines" or on-site technical experts to answer these questions.

c. Enhancement

Vendors will typically issue new versions and releases of their products, and the agency may want to take advantage of the new capabilities these offer. If the contract provides for "technology refreshment," the agency will be able to upgrade the capabilities of the software throughout the contract.

4.5 ACTIVITIES AT THE END OF THE ACQUISITION LIFE-CYCLE

a. Contract Closeout

The contract duration is established in the solicitation document. At the end of this period, the agency will close out the contract if it has received and accepted all software and related services specified. The agency will then make final payment to the contractor.

b. Disposition

If the agency acquired a perpetual license for the software, it may continue to use the software even after the contract has been closed. Otherwise, the software is returned to the contractor. When the software is no longer required, the agency will dispose of it, consistent with the terms and conditions of the license under which it was acquired. For example, the software may be transferred to another organization or discarded under agency procedures. A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE--CHAPTER 5

CHAPTER 5: REQUIREMENTS ANALYSIS

5.1 OBJECTIVE

The requirements analysis is an early step in the acquisition life-cycle. Its objective is to define the user's need for automated support and, specifically in this Guide, the need for new or additional software.

5.2 KEY FACTORS FOR SUCCESSFUL REQUIREMENTS ANALYSES

A successful commercial software acquisition begins with a comprehensive and unbiased requirements analysis. Following the rules below will help make the requirements analysis a success.

a. Define Requirements Functionally

Define requirements "functionally" wherever possible, describing what the software must do (its "capabilities" or "features"). Resist the temptation to think of requirements in terms of specific products. For example, describe the requirement as "I need a tool that will permit me to easily create tables of numerical data with subtotals and totals," not as "I need Spreadsheet XYZ." Describing the requirement as "I need Spreadsheet XYZ" restricts competition. This not only violates the law, but it may not be the most advantageous solution for the agency. Even when not defining requirements by naming a specific commercial software package, program and IRM/technical staff sometimes define their functional requirements by describing the capabilities of software products they like or are familiar with. Avoid this trap. After creating an initial list of capabilities, double check to see if all of them are needed to support the agency's mission and day-to-day activities.

b. Distinguish Between Mandatory and Desirable Features and Capabilities

When identifying required features and capabilities, distinguish between those mandatory to the mission and day-to-day activities, and those that, while valuable, are only desirable. For example, an

ability to create documents with multi-page footnotes may be essential for legal organizations, and thus would be considered mandatory. However, the ability to generate tables of contents automatically might not be as essential, and thus would be classed as desirable.

c. Identify and Agree on Assumptions and Constraints

Because the requirements analysis is an early step in the acquisition life-cycle, the individuals conducting it must make assumptions about the future. For example, they must project the workload the installed software will support based on a combination of the current workload, expected growth, and anticipated changes in laws or regulations. These assumptions need to be stated explicitly in the requirements analysis documentation so they can be discussed, analyzed, and agreed upon. Ideally, the assumptions should be reviewed by program, IRM/technical, and contracting staff. In addition, software acquisitions occur within a technical, organizational, political, and budgetary framework, not in a vacuum. Almost always, constraints are placed on software acquisition, such as available funding, technical expertise of users, and the need to integrate with and/or operate on existing systems. The agency should highlight these constraints in the documentation and seek agreement on them as well.

d. Devote an Appropriate Level of Effort to the Requirements Analysis

The time and effort devoted to the requirements analysis should be in proportion to the expected size and importance of the acquisition. For example, the agency should be willing to devote considerable resources to a requirements analysis for a new agency-wide applications development environment (including database management system, computer-aided software engineering (CASE) tools, programming languages, and debugging aids), but should not devote the same level of effort to a requirements analysis for word processing for a 25-person office.

e. Reassess Requirements Periodically

Because the requirements analysis is done so early, the agency may obtain new or more detailed information during later steps (e.g., the analysis of alternatives) that might affect the initial definition of the requirements or the distinction between mandatory and desirable capabilities. The agency, therefore, should reassess its requirements periodically. For example, during the analysis of alternatives, a market survey may show that only one or two software products offer a particular feature. If this feature were defined as mandatory in a solicitation document, competition could be unduly restricted. Armed with this new knowledge, the agency should reassess the capability and decide either to change it to desirable or to delete it. Similarly, the market survey may reveal that a software feature is available only for a very high price. The agency should determine whether to eliminate or redefine the requirement based on the available budget or the perceived value of the feature to the agency's mission or activities. Requirements should be reassessed at other points in the acquisition life-cycle, also. For example, in a negotiated procurement, the agency might issue a Request for Comment (RFC) containing draft specifications. In their comments, potential offerors might point out requirements that they feel restrict competition, offering alternative ways to achieve the same result. The agency should use these comments to reassess the requirements. Finally, the agency's mission, responsibilities, and FIP resources environment will change over time. The FIP resources marketplace will also change, offering an ever-expanding range of capabilities, usually at decreasing prices. For a complex software acquisition, a long period may elapse between the initial broad definition of requirements and issuing a solicitation document. The agency should periodically reassess its requirements in light of these internal and external changes.

5.3 ROLES AND RESPONSIBILITIES

In all phases of the acquisition life-cycle, program, IRM/technical, and contracting staff have well-defined roles they perform individually and overlapping roles they share with the other staff disciplines. The three groups should work together toward common acquisition goals and to facilitate the acquisition process.

a. Program Personnel

The program manager may take the lead in preparing the software requirements analysis documentation or may request assistance from IRM/technical staff. Even if the IRM/technical staff prepares the documentation, the program manager is responsible for specifying the organizational missions and activities and making the final decisions about which of these should be supported by software. End users should also be actively involved in identifying requirements. This is particularly important for software, which the users interact with more directly than other FIP products. Mechanisms to involve the users include interviews, workshops, written surveys, and prototyping.

b. IRM/Technical Personnel

IRM/technical personnel sometimes take the lead in the requirements analysis task, especially when the software to be acquired is systems software (e.g., an operating system). Even if they are not leading the task, IRM/technical personnel can still assist in identifying the classes of software that provide the functional capabilities needed by users. This is described in Section 5.5.a below.

c. Contracting Personnel

Contracting personnel's active involvement in a software requirements analysis is limited because the activities are performed primarily by program and IRM/technical staff. However, since the requirements analysis document should be completed and approved before the agency issues a solicitation, the program or IRM/technical staff that prepared the analysis should send it to the contracting staff for comments about its adequacy.

5.4 PRELIMINARY STEPS

The agency should have completed the planning steps for acquiring FIP resources before beginning the software requirements analysis. If not, the agency should conduct them now. For that reason, the planning steps are described in this section.

a. Determining the Overall Information Needs

The first planning task is to look at the overall information needs of the agency.

(1) Determining the Agency's "Business Profile"

To ensure that all automation needs are identified, don't worry initially whether an information need is met by hardware, software, communications, or services. Don't focus on the "trees," look at the "forest" in this first task. The easiest way to keep the "forest" focus is to concentrate on the agency's "business profile." This is also called a "baseline" and includes: o The agency's mission o Work products produced o Day-to-day job functions and activities o Information flows to, from, and within the agency oo Source oo Destination oo Frequency and timeliness oo How data are stored oo How data are manipulated or processed oo The form (i.e., paper, electronic) in which data are received and reported oo How data must be protected (i.e., security and privacy needs) o Current and potential users of FIP resources oo Who they are oo Where they are located oo What their skills and experience are oo What their current exposure to automation is Program staff are the chief sources of this information.

(2) Describing the Current Systems

As part of establishing the baseline, examine and document the current systems -- both automated and manual -- supporting the agency's mission and activities. The automated systems include both office systems and internal and external application systems (e.g., a payroll system). Determine how well the current systems support the mission and activities. Ask users about real or perceived problems with: o The efficiency or effectiveness of activities supported by the system o Reliability of equipment and software o Timeliness of data or turnaround times for reports o Difficulty in finding data o Access to FIP resources

(3) Identifying Opportunities for New Automation

Once the agency's profile or baseline is established, the next subtask is to identify opportunities for further automated support. These opportunities can take two forms: o Problem Solving -- problems the agency is experiencing in achieving its mission or conducting its activities. o Efficiency and Effectiveness -- agency activities that, although not suffering problems, could be improved. IRM/technical staff can assist program staff in identifying these opportunities by working with them to understand the agency's business functions and by knowing how FIP resources have been used in this and other agencies. In some cases, the agency will find that the existing automated systems adequately support agency activities. Do not replace these systems solely for the sake of something new. Keep in mind also that not every activity will benefit from automation. In some cases, changes in procedures or organizational focus can solve problems. Activities that typically benefit from automated support include: o High volume repetitive tasks (e.g., transaction processing) o Analysis and reports of quantitative data o Dissemination of ideas in writing or graphics o Inter- and intra-office communications o Maintaining and accessing large amounts of information (i.e., databases)

b. Planning and Budgeting for Automation Projects

The second part of planning involves grouping the automation opportunities into projects and budgeting funds to implement them. These planning and budgeting tasks are described in the Overview Guide, the first guide in this series.

(1) Developing Automation Projects

After the agency has identified opportunities for automation, it groups them into automation projects. These might include a new financial management system, automated office tools, or an electronic mail network.

(2) Preparing Plans

The Paperwork Reduction Act of 1980 requires each Federal agency to prepare five year IRM plans listing major projects. OMB Circular A-11 requires agencies to submit these plans annually to OMB. The FIRMR requires submission of related planning documents to GSA.

(3) Budgeting

To implement an automation project, funds must be available. Therefore, the agency needs to include funding for the acquisition in its budget requests to OMB. The budget cycle begins two years before funds become available for obligation. This long lead time emphasizes the importance of beginning planning and budgeting early, long before the need for the FIP resources becomes critical. Often detailed requirements for FIP resources have not been identified at the time of the initial budget submission. Thus, the agency must estimate the likely cost. The IRM/technical staff can assist with these estimates. A review of GSA nonmandatory ADP schedule contracts and consultation with other agencies that have acquired similar systems and software can also help.

(4) Deciding Whether to Continue

At this point in the life-cycle, the agency needs to decide whether or not to continue the project. Many organizations neglect this step because they get caught up in the momentum of the acquisition. Nevertheless, this important step should not be neglected, and it should be based on a benefit-cost analysis. This benefit-cost analysis should not be confused with the comparative cost analyses described in Chapter 6, which are used to choose among technical and acquisition options. Nor should it be confused with the Independent Government Cost Estimate discussed in Chapter 13. The objective of this benefit-cost analysis is to support the "go/no go" decision. It is beyond the scope of this Guide to explain in detail how to conduct a benefit-cost analysis. FIPS PUB 64, Guidelines for Documentation of Computer Programs and Automated Data Systems for the Initiation Phase, provides useful guidance on the subject. However, keep the following considerations in mind while conducting

the analysis. o Include ALL costs for the project -- This includes not only the cost of the FIP resources (e.g., software), but also the cost of-- oo Communications oo Maintenance oo Training oo Documentation oo User and operator support oo Data and application conversion oo Personnel costs for conducting the rest of the acquisition steps Include not only one time costs (e.g., purchase of the software, installation), but ongoing costs (e.g., user support) as well. Take into account also the tendency for software to become less expensive and more powerful over time, while services become more expensive. o Consider costs to be borne by parties outside the agency -- For example, if the agency replaces its communications package with another that uses a different file transfer protocol, other agencies that communicate with the agency's systems may have to acquire new communications packages also. o Consider both quantitative and qualitative benefits -- There are three categories of benefits: oo Benefits that can be expressed in monetary terms (e.g., salary savings from increases in employee productivity after new software is installed; prevention of property loss from a new inventory control system) oo Benefits that can be expressed in other quantitative terms (e.g., a new correspondence control system permitting the agency to respond 30 percent faster to inquiries) oo Benefits that can be expressed in qualitative terms (e.g., decision support system software that makes it easier for managers to understand the implications of particular decisions, thus permitting them to make better ones). o Compare ALL benefits and ALL costs -- Don't just compare the monetary benefits with the costs. This understates the total benefits of the project. o Conduct a sensitivity analysis -- Test the results of changes in the assumptions used to estimate the benefits and costs. If the total benefits appear to exceed the total costs under a reasonable range of assumptions, proceed with subsequent acquisition tasks. If the benefits do not exceed the costs, consider scaling back either the requirements or the scope of the acquisition (e.g., only automating the functions with the highest payoff).

5.5 IDENTIFYING CATEGORIES OF SOFTWARE NEEDED

The next task is to identify detailed requirements for each type of FIP resource in the project. This Guide addresses only requirements for commercial software.

a. Matching Information Needs to Software Categories

First, match the functional information needs to categories of software (e.g., word processing, spreadsheet, database management system). IRM/technical staff, who are familiar with a wide range of software products, can assist, particularly for systems software projects. Figure 5-1 provides advice on matching office activities with office software tools. Figure 5-1, Matching Activities to Office Software

b. Identifying Functional, Technical, and Other Requirements for Each Software Category

Defining a requirement as a category of software product (e.g., "a word processor") is not sufficient. Also identify the specific features and capabilities (this Guide uses the terms interchangeably) the software must provide. At this point in the acquisition life-cycle, don't focus on features that every product in the class is likely to offer (e.g., word wrap at the end of a line). In other words, do not write the requirements as though they were RFP specifications. Instead, focus the analysis on those features and capabilities critical to the agency or that may not be available in every product (e.g., on-line, context sensitive help). The initial set of requirements that the agency identifies may change later in the acquisition life-cycle as a result of the analysis of alternatives, organizational or mission changes, budget constraints, etc. Some uncertainty about the exact requirements is normal at this stage. When this occurs, keep the requirements flexible. The end result of the requirements analysis should be a detailed list of functional, technical, and other requirements for each software category to be acquired. These requirements are discussed in Section 5.6.

5.6 TYPES OF REQUIREMENTS

Software requirements fall into three categories: o Functional -- focus on the needs of users and the agency. o Technical -- describe the FIP resources environment in which the software must operate. o

Other -- address how the agency will implement the software. These requirements are summarized in Figure 5-2. Figure 5-2, Types of Software Requirements

a. Functional Requirements

Functional requirements focus on the functions the software provides to support the mission needs of the agency and the day-to-day activities of the users. They address not only the software itself, but also services (e.g., training) that support its use.

(1) Capabilities

Capabilities describe the functions the software must support and the features it must offer. An example of a functional capability requirement for a spreadsheet is "must provide at least fifty columns and one thousand rows of cells." When the software is for a more complex application (e.g., an inventory control system), describe the processes the software will support (e.g., "recording deliveries"), the nature of the data to be maintained (e.g., "numbers up to 12 digits and free-form text fields of 64 characters"), and other characteristics of the activity supported.

(2) User Interface

This defines both the degree to which the user interacts with the software and how this interaction should occur. Define whether the software should be controlled interactively by the user (also referred to as "on-line") or by predefined commands stored in the software (also referred to as "batch"). Interactive mode is most appropriate for office software and any other software that each person will use in a unique way. Batch mode is most appropriate when the software processes data repetitively. Ease of use is a concern for interactive software. For example, if a software package will be used by staff with little previous exposure to FIP resources, users may require a menu-based command structure so they can point to commands listed on the screen to execute them. Other user interface requirements might deal with on-line, context sensitive help; pull-down menus; and a mouse or pointing device for input in addition to a keyboard. Batch software is typically controlled by IRM/technical personnel familiar with computer language. For batch software, ease of use may not be a primary concern.

(3) Workload

The workload is the amount of data and processing the software must support. Workload measures include both volume (e.g., number of records to be managed or reports to be produced) and throughput (e.g., number of transactions to be processed per hour). For minicomputer or mainframe software, another workload measure is the number of people and/or locations using it at the same time.

(4) Growth

Growth describes how the workload may change during the life of the software. Express these requirements quantitatively, and document the assumptions underlying the estimates. Growth also addresses adding capabilities after the software is installed and/or taking advantage of improvements in technology. For these, the agency may wish to define requirements for technology refreshment (e.g., engineering changes and technology substitution) as described in Chapter 14.

(5) Performance

This describes how quickly the software must complete specific operations. For example, a performance requirement for a spreadsheet is "must be able to recalculate a 2,000 cell spreadsheet containing 130 formulas within 2 seconds." A performance requirement for a database management system is "must be able to retrieve a 300 byte record from a file of one million records, based on a SQL query using two keyfields, within 20 seconds."

(6) Reliability

Reliability describes how much error in the software code the agency can accept. Although reliability is usually thought of in terms of FIP hardware (e.g., "downtime is no more than six hours during any calendar month"), software reliability requirements are also important. For example, when commercial software must be customized, the agency may have minimum acceptable standards for quality control of the customized code. Reliability requirements will also affect the warranty terms of a contract for commercial software.

(7) Availability

This describes how accessible the software must be to the users. An example of an availability requirement is "word processing functions must be accessible at each professional's desk." This category of requirement is also related to the number of users, as described in 5.6.c.(2) below.

(8) Accessibility by Individuals with Disabilities

The law requires that FIP resources be accessible to individuals with disabilities. This topic is addressed in Chapter 3, Special Characteristics of Software Acquisitions.

(9) Control

For some application software, control requirements may be an issue. For example, a multi-user database management system might require a record locking feature so that two users cannot alter a record at the same time.

(10) Security and Privacy

These describe how the software must control access to data and, perhaps, functions. One important element of security is the requirement for user IDs and passwords. Other elements could include requirements for audit trails of transactions and changes to records, and protection of sensitive and classified data. The Defense Department has issued Trusted Computing System Evaluation Criteria, commonly known as The Orange Book, that describes levels of computer security. Other security-related guidance has been issued by NIST and OMB, and is also included in the FIRMR. The Privacy Act of 1974 sets requirements for protection of data related to individuals, such as employee records or tax returns. Identify any applicable privacy requirements.

(11) Training

Training is vital if an agency is to benefit from new software. Training requirements might include number of users to be trained, how the training should be delivered (e.g., classroom, computer-aided instruction), location (e.g., Government site, vendor site), and what subjects should be covered. Training is discussed in more detail in Chapter 3.

(12) Conversion

The agency will not know whether conversion will actually be required until after a software conversion study is conducted during the analysis of alternatives; however, the magnitude of potential conversion should be determined during the requirements analysis. The conversion requirements should describe the potential number of records and/or programs to be converted and the automated environment in which they currently operate. Conversion requirements are also discussed in more detail in Chapter 3.

(13) Documentation

This describes the written documents that will be required to support users (e.g., explaining how to use each command), operators (e.g., describing data recovery procedures after a system crash), and programmers (e.g., explaining the coding of customized changes). Identify the required features of the documents (e.g., indices, sample screens, quick reference cards).

(14) User and Operator Support

These requirements describe necessary additional, non-written support. For example, users may need toll-free telephone support during regular business hours, or they may require both telephone and in-person assistance. The requirements also describe the nature of the assistance (e.g., assistance in database performance "tuning").

b. Technical Requirements

Technical requirements describe the existing FIP resources environment in which the software must operate.

(1) Hardware Environment

Commercial software is often acquired separately from the hardware on which it operates and the hardware is usually in place first. Describe the hardware environment (e.g., a 386 microcomputer with 2 megabytes of random access memory and a 60 megabyte hard disk). Some software must operate in multiple hardware environments. For example, the agency may need a database management system that operates on micro-, mini-, and mainframe computers and permits data to be shared among the three levels.

(2) Systems Software Environment

Commercial applications software operates not only on a hardware platform, but also with specific systems software. Therefore, describe the underlying systems software environment (e.g., MS-DOS version 3.3 operating system) when identifying requirements for applications software.

(3) Telecommunications Environment

Some commercial software interacts with remote users or with other computer systems. Describe the telecommunications environment to be supported (e.g., FTS 2000).

(4) Integration with Other Systems

If the software must interact with other computer systems (e.g., a microcomputer-based correspondence tracking system in a regional office must feed a mainframe-based tracking system at headquarters), describe the interface requirements of these other systems as completely as possible (e.g., accepts asynchronous input through terminal emulation).

(5) Compliance with Government and Industry Standards

Identify the Government or industry standards the software should meet. For example, by specifying compliance with the Portable Operating System Interface (POSIX), defined in FIPS PUB 151, the agency will find it easier to move the software to other hardware environments. Similarly, requiring the software to support the Government Open Systems Interconnection Profile (GOSIP), defined in FIPS PUB 146, will permit it to communicate with a large number of other systems.

(6) Configuration Management

Identify how changes to the software (and the supporting system environment) should be managed. For example, if the customized portion of a commercial software package is modified, documentation, training, and other computer systems might also require modification. Configuration management requirements also address how new releases of a software package should be distributed and installed. Configuration management can include both procedures and automated tools.

c. Other Requirements

"Other" requirements describe how the agency will implement and use the software.

(1) Budget

This describes the anticipated funds that will be available to acquire the software (and any supporting services such as training), and when the funds will be become available. Since some software comes with a single-fee perpetual license, while other software licensing fees must be paid annually or monthly, the agency may also require flexibility in the type of funds (e.g., purchase, lease) it will use.

(2) Number of Users

This describes how many users will require access to the package. The agency may be able to determine this number exactly or only a minimum/maximum range. Access can be provided by individual copies (each with its own license), individual copies covered by a site license, a LAN copy that can be downloaded to computer, or a multi-user version (e.g., on a minicomputer or mainframe). Selecting the best access method is part of an analysis of alternatives.

(3) Delivery Schedule

This describes when and where the copies of the software are to be delivered and installed.

(4) Installation

This describes who will install the software (e.g., users, IRM/technical staff, the contractor). When one software package is replacing another, address requirements for "cutting over" from the old software to the new.

(5) System Life

This describes how long the agency expects to use the software after it is installed. Base the determination on the rate of change in FIP resources technology, how long the underlying hardware and systems software will be in place, how long vendors are expected to support their current software offerings, and the lead time for follow-on acquisitions. For commercial software, the system life will generally be no longer than three to five years.

d. Documenting the Requirements Analysis

The FIRMR requires that agencies complete a written requirements analysis document before a solicitation can be issued. The document can also serve as a mechanism to achieve agreement among program, IRM/technical, and contracting staff working on the software acquisition and is used in developing the technical specifications for a solicitation. FIPS PUB 38, Guidelines for Documentation of Computer Programs and Automated Data Systems, recommends the contents of a functional requirements document. According to FIPS 38, the document should address the agency's existing manual and automated systems, improvements and impacts resulting from the new software, and functional, workload, and performance characteristics the new software must have. A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE--CHAPTER 6

CHAPTER 6: ANALYSIS OF ALTERNATIVES

6.1 OBJECTIVE

The objective of an analysis of alternatives is to determine the acquisition alternative that is most advantageous to the Government, including commercial or custom-developed software. Acquisition alternatives include two major components on which most of the agency's effort will be concentrated: the technical solution and the acquisition solution. Figure 6-1 illustrates the process. In following this Guide, be careful to match the scale of the analytical effort to the scope, size, and criticality of the acquisition. Figure 6-1, Overview of the Analysis of Alternatives Process

a. Choosing the Best Technical Solution

As a first step in examining its acquisition alternatives for commercial software, an agency must define the acceptable technical options. Many different technical approaches can solve the same problem. However, some of these approaches might place an unacceptable burden on the agency (e.g., additional training, organizational redesign, additional staff requirements, or replacement of part of the technical platform). Or the agency may have specified a capability that is not yet technically feasible. Therefore, an agency needs to identify and examine the technical options available, consider their possible positive and negative impacts, and then recommend the options that would be acceptable to the agency. If the agency does not anticipate the technical approaches (i.e., the kinds of software products or combination of products) that the offerors may propose, problems may arise later in the acquisition process. The agency may inadvertently eliminate promising solutions or receive a proposal that they do not know how to evaluate fairly. By determining in advance which technical options will be acceptable, an agency can structure its specifications and evaluation process to avoid technically unacceptable proposals.

b. Choosing the Best Acquisition Solution

Once the technical options have been chosen, the agency must decide among its options for acquiring the software. The agency can acquire commercial software or comparable functions using either noncontractual or contractual methods. Each method has advantages and disadvantages that must be considered against the agency's requirements and available resources. For some software products, not all methods will be practical or feasible. However, the agency needs to consider each and select the most appropriate method from which to acquire the software.

6.2 KEY FACTORS FOR SUCCESSFUL ANALYSES OF ALTERNATIVES

Several key factors can help an agency successfully select the best technical and acquisition options. Some are dependent on the type of software being acquired; however, the six listed in Figure 6-2 are important regardless of the type of software. These factors keep the analysis objective and ensure that all the key decision factors and relevant points of view have been incorporated into the results. Figure 6-2, Key Factors for Successful Analyses Alternatives

a. Complete the Analysis Before Deciding on the Solution

Completing the analysis before deciding on the solution is critical for determining the recommended solution that is in the best interest of the Government. Often during an analysis, the team conducting it has a specific solution in mind or finds that one has become the front-runner. Since acquisitions are often done within tight time constraints, the team may be tempted to stop looking once they find an apparently acceptable solution. This can make the agency vulnerable to surprises from the marketplace. Also, the selected solution may not meet requirements from all perspectives (program, technical, and contractual) and so may not be in the best interest of the Government. For example, if a solution is decided on before the analysis is complete, certain solutions may not be accommodated in the source selection plan. Should an offeror propose one of these solutions, the Government would be ill-prepared to evaluate it, which might provide grounds for a protest. Once a tentative decision is reached, it frequently develops its own momentum. As a result, key issues may not be seriously considered. For example, program personnel may find a software package that offers the features they need and decide it is the proper choice without fully considering support or maintenance issues. Or a software package may be chosen because it is easy to obtain rather than because it is the best functional match. Typically, these shortcomings become evident after the commitment to acquire the software has been made. The acquisition effort should take a comprehensive approach to the alternatives and examine issues important to each of its three audiences so that any tradeoffs are deliberate decisions and not forced by events.

b. Reach Consensus On, and Document, All Assumptions and Constraints

Be certain to reach consensus on, and document, all the assumptions and constraints used in the analysis. In addition to the assumptions and constraints considered during the agency's requirements analysis, assumptions must also be made to analyze technical and acquisition alternatives such as: o The type of software product or combination of products the offerors will bid/propose o The relationships between cost components, such as an assumption that annual maintenance charge estimates should be based on a fixed percentage of the software's purchase price o The expected life of the software o The level of involvement and cost of agency personnel in acquiring, installing, converting to, and operating the software o The ability to acquire the software within the set of noncontractual options (e.g., obtaining software from another agency) These assumptions must be stated explicitly. Unlike unstated assumptions, explicitly stated assumptions can be discussed, assessed, validated for consensus, then documented. The team then is working from the same assumptions based on a team consensus. Without this consensus, serious miscommunication can occur on the team, affecting the analysis and possibly its results. Also document the constraints under which the analysis is conducted. These include factors which limit scope, depth, or complexity, including agency policies, funding, schedule, staff availability, and the condition of the current technical environment. Constrained decisions are often quite different from unconstrained decisions. Therefore, documenting the circumstances under which the acquisition team conducted the analysis is valuable.

c. Use a Limited Set of Key Criteria to Distinguish Among Options

Using a limited set of key criteria to distinguish among options helps focus the analysis on the most important discriminating factors. As the number of criteria increases, the impact of each criterion is reduced, thus diffusing rather than focusing the analysis. The selection criteria should include no more than six to eight factors that are among the most important to the agency and also will distinguish among the alternatives. Researchers have found that people have difficulty processing more than that number. If more than eight criteria are identified, they should be re-examined to see if they each: o Represent the most important concerns of the agency o Represent different concerns and not just different aspects of the same concern o Distinguish the alternatives from each other so that not all alternatives meet the criteria to the same degree Remember these are selection criteria, not specifications. If all the options meet a criterion equally well, it is not a good criterion even though it is important to the agency. Usually, a re-examination will result in either the consolidation of two or more criteria into broader ones or the elimination of some altogether.

d. Do Not Automatically Eliminate Options That Cannot Provide Desirable Features

Since requirements may be reassessed periodically, do not automatically eliminate options that cannot provide desirable features. When new information arrives about the software products available, the numbers of sources, or industry practices, an agency may ease or modify its requirements. For example, too few suppliers may be available to offer adequate competition as required by the Competition in Contracting Act (CICA) or a software product may offer features so valuable to the agency that they more than compensate for its deficiencies in the desirable features. Do not eliminate an option until the agency has examined all relevant factors and its requirements have stabilized. Because desirable features are not mandatory, they can be sacrificed to gain other advantages, such as lower cost or easier integration with the existing technical environment. Although the ability of a vendor to provide desirable features must be considered in evaluating its suitability, the agency should weigh these features against the other selection criteria before deciding to reject an option. Such tradeoffs should be made deliberately, considering all factors, rather than by accident or by default. This allows the acquisition team to select the option that is most advantageous to the Government.

e. Recognize that Software Requirements and Alternatives Evolve Over Time

Although it would be simpler if the analysis process were linear, in practice, it is circular. Agency requirements, as well as the alternatives available to meet these requirements, evolve over time as more information becomes known. As illustrated by Figure 6-3, each of the steps in the process can be

affected by changes in the others. Prepare to revisit past decisions and documents to reflect the practical realities of this evolution process, such as: Figure 6-3, The Analysis Process o Advances in software technology provide new opportunities that agencies can and should exploit -- The acquisition team may be unaware of new technical developments even though they would be useful. For example, several years ago, no one would have thought to require a "spelling checker" on a word processing package. Today, it has become such a popular feature that all word processing packages include one. Commercial software technology is moving too quickly to keep abreast of all new developments on an on-going basis. Be willing to refine the requirements to include new developments. o Changes in technical options or requirements may affect which acquisition option is best -- As the technical requirements are refined, the acquisition team may find that options for the software change. For example, relaxing a requirement may make an existing source of supply available where before it was not. On the other hand, a new technical requirement might eliminate some options that would have been available before. o Constant refinement and review are necessary to keep agency requirements synchronized with the alternatives analysis -- Each refinement in requirements has the potential to create a ripple effect in the other areas. For example, when a survey of the market causes a refinement in the agency software requirements, the team must re-examine the alternatives analysis to validate its results. o No decision is final until a comprehensive decision has been reached that satisfies all areas -- It must: oo Be consistent with what is available in the market oo Be consistent with the requirements of the agency oo Present an acceptable acquisition option

f. Test the Sensitivity of An Analysis to Changes in Assumptions and Constraints

To avoid surprises, the acquisition team should test the sensitivity of an analysis to changes in key assumptions. Usually, three or four of the assumptions documented at the beginning of the analysis are pivotal to its results. For example, suppose an agency assumes rapid growth in the number of cases or permits it handles. What would be the effect if this is incorrect? Suppose an agency assumes the expected life of the software package is seven years. What if the software life is shorter? The sensitivity analysis can be used to alter a decision resulting from the original analysis, to prepare contingency plans, or both. For example, a slightly less attractive but less risky software solution might be chosen or contingency plans developed to reduce the possible impact if the assumption is incorrect.

6.3 ROLES AND RESPONSIBILITIES

Everyone involved in the acquisition - program, IRM/technical, and contracting personnel - serves a distinct and crucial role in analyzing the alternatives. Throughout the acquisition process, decisions in these three areas are highly interrelated. They usually require making tradeoffs among each area of expertise. Therefore, all three groups should be actively involved in the process from the very beginning to ensure balanced decisions. For example, program support issues involving functionality may be balanced against technical performance, capacity, or complexity issues. Once the technical cost of a function is known (i.e., resource commitment in time, staff, machines, and funds), the program staff may decide the function is no longer required. Similarly, contract personnel can help determine if technical or program requirements limit competition. Tradeoffs should be made deliberately rather than by accident or by default. Only by collaboration can the team ensure selection of the software options that are in the Government's best interest.

a. Program Personnel

Program personnel represent the end-user viewpoint, and they must ensure that the decisions reached will support the users' requirements. The program staff must consider how the software will be used, who will be most affected, what level of user expertise one can expect, which program staff will use it, and where they are located. Program personnel must also address factors that may be specific to their program, such as security restrictions and control requirements. They should determine to what extent they would consider altering the way they conduct their business to use the proposed software. Specific responsibilities include: o Identify available program resources and constraints (i.e., staff, equipment, funds, and time) for the analysis o Conduct or direct analyses, including market surveys, related cost

studies, and analysis of alternatives o Assist in justifying other than full and open competition, if appropriate o Assist in selecting the most advantageous alternative

b. IRM/Technical Personnel

IRM/technical personnel represent the technical viewpoint and must ensure that the technical decisions support the user requirements and are technically sound. The IRM/technical staff also takes the lead on analyses for systems software and utilities. They should be aware of the functional, performance, and capacity implications of the available software products. If necessary, they should educate the program and contract staffs about the technical and support implications of the available software options. Specific responsibilities include: o Provide oversight assistance in acquiring the software o Assist in identifying available resources suitable to support the program's FIP objectives o Assist in conducting or directing analyses, including market surveys and related cost studies o Assist in justifying other than full and open competition, if appropriate o Assist in selecting the most advantageous alternative

c. Contracting Personnel

Contracting personnel ensure that actions taken comply with all relevant laws and regulations and produce results in the Government's best interest. The CO, head of the contracting team, is responsible for seeing that an acquisition is conducted within applicable regulations, offers maximum competition, and pursues a course most advantageous to the Government. The contract staff assigned to the analysis must keep these responsibilities in mind. They must make sure that each step of the process is well documented both for regulatory compliance and for preparation of a protest defense, should that become necessary later. Specific responsibilities during the analysis of alternatives include: o Identify and assist in evaluating feasible contracting alternatives o Assist in conducting or directing analyses, including market surveys and related cost studies o Assist in justifying other than full and open competition, if appropriate o Assist in selecting the most advantageous alternative

6.4 SURVEYING THE MARKET

The market survey should provide the acquisition team with extensive knowledge of what software is available from both private industry and from other parts of the Government. The market survey is the cornerstone of any alternatives analysis, but even more so for commercial software because the pace of change is so fast. The team should broaden its survey to include background materials on the software industry if it knows relatively little about the available products. The survey should include all sources of information, including industry and Government publications, trade show literature, product demonstrations, vendor presentations, and user comments or references. The market survey has four objectives: o To verify the technical feasibility of the agency's requirements o To determine the amount of competition available to provide the capabilities required o To collect pricing information for cost estimates and comparative cost analyses o To determine the industry norms and business practices for this type of software product Both program and IRM/technical personnel must be directly involved in the surveys. To compare market products against agency requirements properly, the program and IRM/technical personnel must be working from a common understanding of the software technologies available and the terminology used to describe them. Program personnel cannot evaluate the tradeoffs they will be asked to make if they do not understand the technology. Similarly, IRM/technical personnel cannot advise the program personnel about technical tradeoffs if they are unfamiliar with what the software market offers. Contracting personnel must also be familiar with software terminology and technology. Their primary concerns will be ensuring that all reasonable sources have been considered and, if a contracting option is chosen, that sufficient competition is available to meet regulatory requirements.

a. Look at Both Industry and Government Sources

Examine both industry and Government sources in the survey. The FIRMR requires that agencies consider other Government sources for software before considering sources outside the Government.

(1) Government Products and Services

The agency may maintain a list of excess software. Also, GSA can provide information about agencies that provide access to software products. This allows an agency to use software products on an "as needed" basis without purchasing or leasing its own.

(2) Industry Products and Services

Vendors provide a wide variety of commercial software products and software services. The names of these products and the terms used to describe different functions will vary from vendor to vendor, brochure to brochure, and technical bulletin to technical bulletin. However, most published information contains common classifications that help identify the products the team should investigate.

(3) Overlapping Products and Services

Some commercial software products or services may be available from both Government and industry sources. For example, an agency could access a database management system either by acquiring its own copy or by timesharing with an agency that has a copy of it. If so, the acquisition team must determine what, if any, support will be required beyond simple access to the software and whether the Government source is willing and able to provide it. In most cases, the Government source would provide access to the software "as is," without customization and with only minimal technical support, frequently in-house experts. If the basic software meets most of the agency's requirements, this could be acceptable. Potential users must check the source agency's licensing agreement to be sure that the agency has permission to share the software. Some agencies routinely offer software services to other agencies under licensing agreements with those vendor that permit it. If a shared-access licensing agreement does not exist, sharing the software may constitute a violation of the licensing agreement.

b. Sources of Information

A variety of market information sources are available to the acquisition team. As Figure 6-4 illustrates, they provide a wide range of data with varying degrees of objectivity. Vendors present data about their software products in the most favorable terms possible. Research services provide more objective data, but may not provide the same technical detail as the vendors. Each source provides a slightly different kind of information. Figure 6-4, Information Sources for Software Market Survey

(1) Trade Publications

Trade publications provide product announcements and often compare similar software products. Sometimes they provide user surveys that rank key characteristics of the software. This can help distinguish key characteristics among these products and help the agency decide which they require. However, except for user surveys, trade magazines generally rely on manufacturers and retail vendors for information about their products. This information, therefore, should be treated the same as vendor claims received from other sources (e.g., trade shows, vendor literature).

(2) Vendor Marketing Literature

Vendors produce publications and advertisements to promote their products by describing capabilities and features. These generally emphasize the advantages (real or perceived) of their products over competing products. Vendor literature is useful for identifying the bases on which software products of this specific type compete. For example, vendors of database management systems might emphasize the retrieval speed of their products knowing this is important to potential customers. On the other hand, literature for a word processing package might emphasize ease-of-use or low training requirements. Knowing the basis on which products compete can be helpful in refining an agency's requirements. Promotional material presents the vendor's product in the most favorable light. It is unlikely to identify significant weaknesses in the product. Also, comparisons with competitors' products are probably skewed in favor of the vendor's product. Therefore, the claims made in these materials should not be taken at face value.

(3) Other Publications

Some companies offer information services that provide independent research on specific software products as well as general reports on types of products. They typically describe each product in terms of functions provided, level of complexity, approximate cost, and perhaps some idea of its ease of use. This data is a mix of vendor-provided and user survey information. Information from a software vendor should be treated as vendor advertising and not accepted at face value. These information services also provide special reports about software products or the industry itself that help the team develop a fundamental understanding of the products and the industry. For example, a report on "text retrieval" would discuss the common definitions of text retrieval and related terms, how text retrieval products have evolved over time, and the different levels of complexity that current products provide. It might also describe common licensing practices. These facts prepare the team for discussions with software vendors and product users.

(4) Trade Shows and Exhibitions

Trade shows and exhibitions represent worthwhile sources for information about software. Their times and locations are usually published in trade magazine calendars. If a calendar is unavailable, contact a vendor for the necessary information. Although these shows are excellent places to collect general software information, the crowds may make it difficult to get a vendor's undivided attention. Also, the personnel in the booths are generally sales staff, not technical experts. As a result, they may not be able to answer in-depth questions.

(5) Demonstrations

Vendors frequently schedule demonstrations to illustrate the capabilities of their software. These can be at their location or the agency's, provided the facilities are adequate to support their product. These forums are good for observing the software's features and asking detailed questions. However, keep in mind that the vendor's representative is making a sales pitch, is probably working from a carefully prepared script, and has set up the demonstration with the best technical staff available. Thus, the demonstration, while educational, may not be a true measure of how the software will perform on a day-to-day basis. An agency may want to lease a copy of a software package to see how well it fits into its operating environment and meets organizational needs. A trial copy allows the agency to explore areas of the software that a vendor demonstration might not feature and so provides a more objective and complete picture of the software's capabilities. Program personnel (e.g. end users) should operate the package to assure that all requirements are addressed. A trial should answer the following basic questions: o Is the package easy to use? o Is all output accurate and in conformity with organizational standards? o Are report and file formats acceptable? o Is the response time acceptable?

(6) User Groups and Other Professional Associations

User groups and professional associations provide opportunities to learn how software performs through conversations with users who have similar applications and a similar technical environment. Users with similar environments and applications can help identify key success factors for the kind of software being sought. Users can commonly provide information about extended performance, multiple user support, suitability, reliability, and the software's shortcomings that the vendor would not provide.

(7) Other Government Users

Other Government users can provide insight into the software's suitability for the Federal market. Government agencies are subject to special restrictions that clients in the private sector do not face, such as OMB requirements concerning financial controls and computer security. Government users can provide information about whether products comply with these requirements.

(8) Request For Information (RFI)

A Request For Information (RFI) can also collect considerable information about software capabilities and availabilities. The RFI contains a set of requirements/needs or questions that loosely describes the agency's intent and asks the vendor community to comment about the feasibility of these specifications and their approach to the problem. Agencies announce RFIs in the Commerce Business Daily (CBD), which has a wide readership among vendors. In addition to gathering information, the RFI also notifies the vendor community that a software acquisition is under consideration. This raises vendor awareness and can result in a better response to the solicitation when it is issued. One drawback to the RFI is that it is issued so early in the process that industry has little incentive to devote significant resources (time and staff) to respond. Unlike a Request for Comment (RFC), which usually contains draft specifications, an RFI may be far removed in time, often over a year, from the issuance of the Request for Proposal (RFP) and may not state specific requirements. Thus, industry is not certain that an RFP will follow the RFI. The agency's requirements may be met through noncontractual sources, or the requirements and issues addressed in the RFI may be completely different from those in the RFP. As a result, vendors often respond with prepackaged marketing materials and cursory answers. While these are useful, they may not provide much insight for the agency.

c. What Information to Gather

In a market survey, the acquisition team should gather information in four areas: technical feasibility, competition, pricing, and industry practices. These areas dictate whether a packaged software solution is viable and the kind of business arrangements the Government can reasonably expect.

(1) Technical Feasibility

A market survey should determine the technical feasibility of satisfying the agency's software requirements. The initial statement of requirements may sometimes exceed current capabilities. For example, image processing software applications require the ability to transfer large quantities of data (i.e., images) quickly. This implies the need for high speed data communications. Until recently, these software applications would not have been feasible because the available telecommunications bandwidths were too narrow to support this kind of processing. Now suitable telecommunications capabilities are available and image processing software applications are feasible. Only a survey of current capabilities can identify requirements that are not feasible, as well as new technical developments that may make new applications possible.

(2) Degree of Competition Available

A survey should also determine the degree of competition available to satisfy the agency's requirements. Government agencies are required by CICA to obtain full and open competition. If an agency specifies a software requirement that limits competition, it must provide justification to prove that another approach would not satisfy the requirement and that it is not in the Government's best interest to relax the requirement. While the Government benefits from competition, it must also avoid technically inferior solutions. The market survey may reveal that a different statement or a minor relaxation of a software requirement would allow more vendors to bid and thereby provide more competition. This allows the Government to meet its mandatory needs without giving up the benefits of competition (e.g., lower costs, more possible solutions).

(3) Pricing Information

A survey should collect preliminary pricing information for both contractual and noncontractual options (e.g., interagency agreements). The information should include unit prices, as well as common pricing strategies used by commercial software vendors (e.g., bundling, volume discounting) and available pricing terms (e.g., purchase only, lease only, lease to purchase). Based on this information, the acquisition team develops preliminary Government cost estimates and conducts comparative cost analyses. Agencies should use per unit prices to evaluate the number of software packages and support services the agency can acquire and information about vendor pricing strategies to plan for the kind of proposals they might receive in response to a solicitation.

(4) Industry Support and Contractual Practices

A survey should also produce information about common industry support and contractual practices. These may vary according to the type of software being acquired. For example, on-site maintenance is rare for shrink wrapped software, but is common for large customized applications such as financial management systems. Industry practices may differ in: o Pricing (e.g., by copy, by number of users, by "class" of computer) o Levels of user or technical support available o Upgrade practices (e.g., how often they issue releases or new versions) o Licensing arrangements o Purchase or lease arrangements

6.5 ANALYSIS OF TECHNICAL OPTIONS

The objective of the analysis of technical options is to allow only those classes of technical solutions acceptable to the Government for further consideration. The team should not attempt to arrive at one optimal solution although, in some limited circumstances, that may be the result. Many different technical approaches can be used to solve the same problem. For the sake of competition and the Government's best interest, consider as many technical solutions as possible so long as they do not place unacceptable burdens on the Government to implement, operate, or support them. For agencies considering commercial software, at least two major technical decisions need to be made: o How to distribute and integrate the software to meet users' access requirements (i.e., architectural options) o What software product to select based on the agency's technical requirements In examining these and other questions, the analysis of technical options would include: o Reducing the feasible options to those meeting mandatory requirements o Identifying the discriminating criteria or characteristics that separate the remaining options o Selecting the most advantageous option(s) o Documenting the analysis and its results.

a. Choosing Among "Architectural" Options

In addition to examining which functions and packages meet agency requirements, the acquisition team must consider the "architectural" options. For packaged software, the architectural options focus on the distribution of the software (i.e., how many copies and where) and integrating the new software package with the application and systems software architecture that the package must either be a part of or support. For example, users may need access from headquarters only, from the regions and headquarters, or from all field levels. These access requirements might be met using a variety of distribution options, ranging from giving each user a copy of the software to all users sharing access to one central copy. Shared copies might be available through a direct connection to a shared computer or through a Local Area Network (LAN). The distribution options will affect: o User and operator support requirements o Configuration management (maintaining current versions) o Telecommunications traffic o Accessibility (e.g., contention for shared software) o Licensing (number and type of software licenses required) Another architectural consideration is how the new package(s) would integrate with the agency's existing software. The agency must consider to what degree the new software will be required to interact with existing software. The functionality of a package or a set of package features is often traded off against their ease of integration. That is, packages which are very rich in functionality are often too specialized to be integrated easily. On the other hand, packages that are well integrated or easy to integrate often accomplish this by curtailing the amount of functional capability they provide. The acquisition team should consider different approaches which could be used and determine which is most appropriate to meet the agency's needs.

b. Selecting the Best Technical Software Product

If a number of different software products could meet the agency requirements, the analysis of technical options may need to provide an additional level of detail to select the type of software package most appropriate for the requirements. Sometimes different products can be used to solve the same problem. For example, some word processing packages offer simple spreadsheet capabilities and some spreadsheet packages can perform simple statistical analysis. The agency must determine which approach would best meet its requirements software dedicated to a required function or a more

generalized package. Eliminating marginal solutions early allows the agency to provide more specific information to potential offerors about the features required.

c. How to Choose Among Options

The first phase of choosing among available technical options is to determine which of them merit further consideration and what characteristics distinguish among the remaining ones.

(1) Identifying the Options That Meet All Mandatory Requirements

First, the acquisition team should identify the technical options available and eliminate all those that cannot meet the mandatory requirements. The initial set of technical options should be based on the results of the market survey that identified possible software products. This set is then reduced to those meeting the mandatory requirements. These represent definitive, pass/fail criteria that the options clearly can or cannot meet. If this initial cut results in too many options being eliminated (e.g., all but one), the team should revisit the mandatory requirements to see if some can be relaxed. For example, if the issue is how well an option meets a criterion, such as performance, rather than pass/fail, that criterion should not be mandatory since most options can meet it at some level. Instead, it should be considered later in the analysis.

(2) Identifying the Key Discriminators

Next, the acquisition team must identify the key discriminators. Although they will vary based on the objectives of the agency, these are the characteristics of the software that would cause the agency to choose one option over another. They must be discriminators, not just important requirements because their function is to separate the options from each other. If they are important, but all the options meet them equally well, then they are not discriminators. The following are examples of key discriminators: o Support for user requirements o Degree of customization required o Life-cycle cost o Availability o Risk o Effect on competition The key discriminators should be tied to the factors that are most important to the agency. The options that perform best against these factors will be the preferred options.

(3) Comparison Factors

Once the acquisition team determines the key discriminators, the team needs to describe them in terms of factors that can then be applied to the options. These factors fall into three areas: cost, benefit or risk. The first two elements, cost and benefit, can be quantifiable monetary items, quantifiable non-monetary items, and nonquantifiable items. Figure 6-5 provides examples of each type of cost and benefit. They should focus on the ability of the options to meet any desirable features since all options must meet the mandatory requirements. The acquisition team should agree on how cost-savings or cost-avoidance effects will be treated: as benefits or as cost effects. Some analyses inadvertently double-count the impact of a new system by counting the benefits of a characteristic then reducing system costs for the same characteristic. Figure 6-5, Examples of Costs and Benefits by Type A comparative cost analysis, comparing the options' performance against cost, benefit(s), and risk criteria, is used to chose among options. It is similar to the benefit-cost analysis conducted earlier in the requirements analysis to decide if the project was worth while. It has the same general cost elements although the required level of detail is much higher.

A. Costs

The costs included in the analysis must be full life-cycle costs and include both non-recurring (e.g., the package purchase price) and recurring costs (e.g., maintenance). Be sure to include all related costs and look for hidden costs. For example, if a package requires an upgrade to the underlying database system, the cost of the upgrade and its installation should be included in its costs. GSA also requires a software conversion study if the new software affects any existing software or data. Be careful not to overlook data conversion. Most new applications require data loading before they can be used, but sometimes this is not recognized as data conversion. Converting paper files to electronic files is a

different kind of data conversion than converting purely electronic files, but both processes require significant resources.

B. Benefits

Benefits include both program and system benefits. Program benefits are improvements that use of the software will produce in an agency's effectiveness and ability to complete its mission. System benefits are non-cost improvements in the system, such as improved reliability or data integrity. These benefits would not include cost-related items, such as lower maintenance costs. Descriptions of these benefits should be related to the organization's goals, objectives, mission, functions, and operating environment, and wherever possible expressed in quantifiable terms. While both quantifiable and non-quantifiable benefits are important, quantifiable benefits carry more weight and will strengthen the agency's position. Also include the ability to meet desirable features in the benefits criteria.

C. Risk

In any project, some risk is involved: risk that benefits will not materialize or that costs will exceed those expected. Some major risk factors to consider when evaluating technical options are: o Instability of requirements -- If the requirements are likely to change (e.g., changes in programs, pending legislation, increase or decrease in activity), the risk of not meeting them increases. o Project scope -- An increase in the number of organizations involved and the number of people involved increases the risk. o Project management ability -- Risk decreases when the project manager has full control over resources and the authority to commit the resources needed. o Project staffing levels and skills -- If the mix of project staff and skill does not match the project requirements, the risk of failure increases. o Technology experience and degree of innovation -- In general, unproven or unfamiliar technologies increase risk. However, automated tools designed specifically for the kind of project at hand may reduce risk by eliminating the opportunity for error. o Availability of funds -- Inadequate funding can cause project managers to make poor decisions in the name of economy. It is important to scale the effort to the funding available. o Senior management support -- Risk decreases as senior managers become more involved. o Number and types of products being coordinated -- The more diverse products the software package must interact with, the less likely it is that it can interact with all of them well. In discussing the costs and benefits of the technical options, the acquisition team should consider both the risks that are associated with each option as well as the general risks that the project faces regardless of the option chosen.

d. Documenting the Technical Choice

When the technical option(s) has been chosen, the acquisition team must document its choice. Two documents should be prepared: o The technical options portion of the analysis of alternatives document -- Describes the software options considered, the methodology used, the assumptions and constraints, the rationale for selecting the key discriminators and developing the evaluation criteria, a benefit-cost analysis, the recommended alternative, and a sensitivity analysis for the key assumptions; and o A software conversion study -- If necessary, this study documents the applications programs and/or data to be converted; the characteristics of the current environment; and a model presenting approximate conversion costs, effort, and schedule. It also provides a description of the conversion strategy and how future conversions might be made more easily. At the same time the team documents the analysis of technical options, it should also document refinements to the agency's requirements in an addendum to the requirements analysis. Since the subsequent acquisition steps will be based on these refined requirements, they should be documented and kept with the original requirements. This will help defend the option selection process if that becomes necessary.

6.6 ANALYSIS OF ACQUISITION OPTIONS

In addition to the technical options, the acquisition team must consider acquisition options, including both noncontractual and contractual approaches to acquiring the software.

a. Noncontractual Options

The FIRMR requires that the acquisition team consider noncontractual options before considering contractual options. Important factors to consider when evaluating noncontractual options are: o Long-term viability -- Often noncontractual options can provide short-term relief but not the resources required for the long-term. For example, one agency is not obligated to maintain resources to support another agency's requirements. Therefore, an agency currently providing software services may not continue doing so. If long-term viability is a concern, consider whether the resources spent on pursuing the noncontractual option might be better spent pursuing a long-term contractual solution. o Adequate range of resources available -- Frequently, support services or systems resources are required together with software packages. Before sharing software or acquiring it from noncontractual sources, determine that all the services and resources you require will be included, especially maintenance and availability. o Customization requirements -- Software acquired from noncontractual sources is generally on an "as is" basis. If customization is required, the agency must be prepared to arrange both for the customization and for its support. o Control and priority over resources -- Typically, when an agency agrees to share its software resources, it retains control of them and the right to establish priorities for their use. If the software application is critical to the agency sharing an other agency's resources, its lower priority may prove unacceptable. Consider the control and priority requirements for the application before deciding to share resources. Noncontractual options include the following:

(1) Do Nothing

The acquisition team should be prepared to do nothing further if the analysis shows the benefits of solving the problem are not worth the cost.

(2) Reassigning Software within the Agency

Existing software within the agency might be reassigned to support a specific office's requirements. Other parts of the agency with surplus copies of software could reassign them as long as this does not violate any licensing provisions.

(3) Rescheduling Software Use

Existing software might be shared with other users by rescheduling software use to accommodate each group and also spread its cost among them. One user group could process its workload in a designated time window while the others wait their turn. This would only be feasible if the work were of low enough volume to be completed in the limited time available.

(4) Changing Work Shifts

Agencies could rearrange work shifts to make software available to more staff members and share it among groups that need it. This is a logical extension of the previous alternative.

(5) Re-engineering existing software

The current software, if any exists, might be re-engineered to meet requirements by using existing agency resources or a software development or support services contract. In some cases, this can provide the needed additional software functions at lower cost than acquiring new software.

(6) Obtaining Software from Another Agency

Existing software might be obtained from another agency to support the program that needs it, as long as this does not violate contractual provisions, such as licensing agreements.

(7) Sharing With Another Agency

Existing software might be shared with another agency on a timeshare arrangement. Some agencies, such as the National Institutes of Health (NIH), offer timesharing arrangements to other Federal

agencies. This usually includes access to the software at those facilities on a reimbursable basis. This kind of sharing is not feasible for single-user microcomputer software.

b. Contractual Options

If noncontractual options have been eliminated, the following four contractual options are available. Additional information about each is provided in separate chapters of this Guide.

(1) Small Purchases

Small purchase procedures are open market acquisition procedures that can be used to acquire goods and services that cost less than $25,000. Generally, small purchases are reserved for small businesses. Chapter 10 provides details about these procedures.

(2) Established Sources of Supply

Several established sources of supply, both mandatory and non-mandatory, are available for commercial software. Mandatory sources are contracts put in place by GSA or by an agency itself that agency organizations must use to fulfill their requirements, if possible. For GSA mandatory contracts, agencies either must use these sources or fully justify and document that the programs do not meet their needs. Agencies usually require similar justification if an agency-wide mandatory source is not used. Nonmandatory sources can be used at an agency's discretion to fill its software needs. GSA's IRMS manages all GSA nonmandatory ADP schedule contracts. These provide a simplified process for obtaining FIP equipment, software, and services. The contracts are awarded to a variety of vendors and each establishes terms, conditions, and prices for stated periods of time. Although convenient, use of the schedules is situational and may not always be appropriate. An agency may have agency-specific regulations or guidelines for using the schedules. Sometimes better prices may be obtained by using another contracting method. However, it may be appropriate, in some cases, to revise requirements somewhat (without compromising true need) if a schedule item can be acquired with minimal time and effort versus going through major acquisition steps. Chapter 11 provides details about Established Sources of Supply.

(3) Sealed Bidding

Sealed bidding (FAR Part 14) uses sealed competitive bids, opened in public, to determine awards. An agency prepares and distributes an Invitation for Bid (IFB), announces it in the CBD, opens the bids in public, evaluates them with no discussion, and awards the contract to the offeror whose bid meets the IFB requirements and is most advantageous to the Government, considering only price and price-related factors included in the IFB. When software specifications are not precise enough to ensure technically equivalent proposals, the CO may use a two-step sealed bidding procedure to allow for discussion of technical proposals. Sealed Bidding is described further in Chapter 12.

(4) Negotiated Procurement

If sealed bidding is not appropriate, the CO conducts a negotiated procurement. For procurement by negotiation, the acquisition team specifies the Government's requirements in an RFP, announces the RFP in the CBD, receives both technical and cost proposals, conducts discussions with offerors to clarify proposals as necessary, and usually allows offerors to revise proposals before contract award. Negotiations may apply to price, schedule, technical requirements, type of contract, or other terms of a proposal. Chapter 13 provides details about Negotiated Procurement.

c. Choose the Acquisition Option Most Advantageous to the Government

After the acquisition options have been identified and examined, choose the option most advantageous to the Government. Be sure to consider noncontractual options before contractual options. To choose the best contractual option, follow the guidance provided in the FAR.

d. Document the Analysis of Acquisition Options

The team should document the acquisition option chosen in the analysis of alternatives document. Include documentation for decisions such as: o Consideration of noncontractual options and, if rejected, the rationale for not using them o Consideration of the contractual options and rationale for selecting the recommended one o Documentation of cost estimates to show compliance with small purchase or schedule cost limits (if appropriate)

6.7 DOCUMENTING THE ACQUISITION STRATEGY

Document the acquisition strategy carefully and completely. It provides the rationale for all major decisions about the acquisition. A well-documented strategy helps maintain internal momentum if the composition of the acquisition team changes. The agency can also use the documentation to defend its decisions to oversight committees and agencies and to defend itself against protests. The FIRMR requires the following documentation for the acquisition strategy: o Requirements Analysis o Analysis of Alternatives (including a comparative cost analysis) o Software Conversion Study (if appropriate) o Justification for Limiting Competition (if appropriate) During oversight agency reviews (e.g., a GAO audit, an OMB review, or GSA consideration of an agency procurement request), any or all of these documents may be requested. A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE--CHAPTER 7

CHAPTER 7: COMPETITION REQUIREMENTS

One of the basic objectives of contract acquisitions is to ensure that the Government realizes all the benefits of full and open competition. The term full and open competition means that all responsible sources are permitted to compete for a contract to the maximum extent practical.

7.1 CONTRACTING UNDER FULL AND OPEN COMPETITION

Full and open competition is not just the law. It makes good sense. Permitting the free market to work serves the best interests of Government agencies, the taxpayers, and the vendor community. The Competition in Contracting Act (CICA) established requirements for full and open competition. The FAR implements these requirements. Agencies are in violation of CICA and FAR Part 6 if they do not provide for full and open competition, full and open competition after exclusion of sources, or justify the use of other than full and open competition. Unless one or more of the specific conditions described under Other Than Full and Open Competition (see Section 7.2.c) exist, the agency must provide for full and open competition. Program, IRM/technical, and contracting staff all have responsibility for ensuring that every potential qualified source of commercial software that can meet the requirements is sought, considered, and permitted to participate. The acquisition team needs to examine carefully all documents containing requirements to determine whether they restrict competition and, if so, remove unnecessary restrictions.

7.2 DEGREES OF COMPETITION

The FAR defines three degrees of competition.

a. Full and Open Competition

Full and open competition results from using a competitive procedure or a combination of competitive procedures best suited to the circumstances of the contract action. In this process, the CO is responsible for using "good judgment" in selecting the competitive procedure that "best meets the needs of the Government" (FAR 6.1).

b. Full and Open Competition After Exclusion of Sources

Under certain circumstances, an agency may exclude a source or sources from participating in a contract action. These circumstances fall under the following categories: o Establishing or maintaining alternative sources o Set-asides for small business and labor surplus area concerns o Small Business Act, Section 8(a) competition Generally, when acquiring commercial software, an agency will be concerned only with set-asides for small businesses and 8(a) contractors. FAR Part 19 establishes the policies and procedures for set-asides and the 8(a) program. Footnote: Sole source 8(a) awards are considered to be awarded under other than full and open competition (see Section 7.2.c).

c. Other Than Full and Open Competition

Under certain conditions, contracting for commercial software without providing for full and open competition may be allowable. FAR Part 6 contains the policies and procedures and identifies the statutory authorities for this kind of contracting.

(1) Circumstances Permitting Other Than Full and Open Competition

Circumstances that permit contracting without full and open competition are: o Only one responsible source and no other supplies or services will satisfy the agency's requirements. o Unusual and compelling urgency exists and the Government would be seriously injured if the number of sources were not limited. o The work to be done is industrial mobilization or experimental, developmental, or research work for which the Government must award a contract to a specific source to maintain a source of supply in a national emergency or to establish and maintain essential engineering, research, or developmental capacity by an educational or nonprofit institution. o An international agreement, treaty, or the written direction of a foreign government exists under which the U.S. Government will be reimbursed for the purchase of supplies and services. o A statute expressly authorizes or requires the acquisition be made through another agency or from a specified source. o National security will be compromised unless the number of sources is limited. o An agency head, on a non-delegable basis, determines that it is in the public interest to use noncompetitive procedures. For this, a written notice must be furnished to Congress. Under the Brooks Act, the use of a specific make and model specification is considered to be other than full and open competition even if more than one source can supply the item.

(2) Justification for Other Than Full and Open Competition

Justification for other than full and open competition must reflect the specific requirements defined in the requirements and alternatives analyses. If program or IRM/technical personnel define specific make and model or sole source requirements, the contracting officer must prepare a justification for other than full and open competition and obtain the necessary agency approvals. The justification and its completeness and accuracy must be certified by the program and IRM/technical personnel in accordance with FAR 6.3 and the FIRMR. The justification for other than full and open competition must contain sufficient facts and rationale to support the use of the specific FAR authority cited and must be approved in writing. The level of approval (i.e., CO, agency competition advocate, agency senior procurement executive) usually depends upon the proposed contract dollar value established by FAR 6.3.

d. Impact of Specifications On Competition

The following types of specifications can impact competition.

(1) Compatibility-Limited Specifications

Compatibility-limited requirements for an augmentation or replacement of commercial software are restricted to those compatible with the installed Federal Information Processing (FIP) capabilities. The need for compatibility-limited commercial software, however, must be kept to a minimum to permit the greatest amount of competition. For example, if replacing a file management software package

allows for the removal of all restrictions on the contemplated acquisition of a DBMS, replacing it should be considered. Compatibility-limited requirements tend to restrict competition and, therefore, may not be used solely for reasons of economy or efficiency and must be justified according to the FIRMR. Compatibility-limited requirements must be supported by a software conversion study where applicable. Examples include implementation or replacement of an application or data base management system or migration from one operating system to another. Agencies must justify the compatibility-limited specifications on the basis of at least one of the following: o An agency decision that replacing a portion or modifying the installed software base is not advantageous to the Government. o The cost of conversion is not in the Government's best interest. o A conversion study finds that the risk of conversion failure to the agency's critical mission is so great that acquiring non-compatible software is not in the Government's best interest.

(2) Brand Name or Equal Specifications

A brand name or equal specification describes a commercial software product or its equivalent. Equivalency is generally determined by comparison with a description of the brand name product's salient features or characteristics.

(3) Specific Make and Model Specifications

Specific make and model specifications describe the exact commercial software product required. Although this specification is usually associated with hardware acquisitions, it can also be employed for commercial software. As prescribed by the FIRMR, this can be used only when no other type of specification can satisfy the needs of the Government. Justifications must also include how the agency will ensure that any follow-on contract does not perpetuate a contract for obsolete equipment as the required platform for the software. Requiring the "ABC" word processing package is an example of a specific make and model specification.

7.3 COMPETITION ADVOCATES

FAR 6.5 establishes competition advocates for each agency and for each procuring activity of the agency. They question barriers to full and open competition. The acquisition team must notify the competition advocate of an acquisition according to the agency's policies and procedures. Competition advocates report the following to the agency's senior procurement executive: o Opportunities and actions taken to achieve full and open competition o Conditions or actions that unnecessarily restrict competition They should also submit annual reports on: o Competition advocate activities o New initiatives required to increase competition o Any barriers to full and open competition o Recommendations of goals and plans to foster competition o Recommendations to increase organizational responsibility for competition A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE--CHAPTER 8

CHAPTER 8. REVIEW AND APPROVAL PROCESS

Contract acquisitions for commercial software may require an agency level review and approval and, possibly, GSA review and approval. The need for GSA review depends on the dollar value of the procurement and the agency's regulatory delegation of procurement authority (DPA). The typical commercial software procurement is within an agency's regulatory authority; therefore, it will not require a DPA from GSA.

8.1 THRESHOLD LEVELS

GSA has delegated a prescribed level of procurement authority to all agencies for acquiring commercial software. This authority is referred to as a regulatory DPA. Agencies may also receive specific agency blanket delegations from GSA for higher dollar limits. Both types of delegations allow agencies to acquire software below a specific dollar limit without GSA's prior approval. At and above that limit, agencies must request a DPA from GSA for a specific acquisition. An agency may acquire

commercially available software under a regulatory delegation when the dollar value does not exceed $250,000 for a specific make and model specification; $250,000 for software available from only one responsible source; or $2,500,000 for other software requirements.

8.2 AGENCY-LEVEL REVIEW AND APPROVAL

Each agency has a Designated Senior Official (DSO) who is accountable for acquisitions of FIP resources. The DSO is responsible for reviewing internal documentation and submitting agency procurement requests (APRs) to GSA when required. For most commercial software procurements, the DSO delegates these responsibilities. Check with the GSA Authorizations Branch (KMAS) for identification of the agency's DSO and/or designees. Software acquisition review and approval policies and procedures vary from agency to agency. In addition, the procedures and level of review and approval within agencies depends upon an agency's size and the scope of the software acquisition (e.g., smaller procurements may be handled by the contracting office while large complex or critical ones may require the additional involvement of program and IRM/technical personnel). An agency review and approval process normally occurs during the pre-solicitation, evaluation, and pre-award phases of the acquisition. Figure 8-1 summarizes, for a typical agency, the types of documentation, determinations, and guidance needed and the personnel responsible for their preparation and review during these phases. Figure 8-1, Typical Agency-Level Reviews Even though the specific policies and procedures for conducting internal reviews and approvals may vary by agency, all acquisitions must comply with Federal regulations. This compliance dictates the types of analyses conducted and the documentation reviewed and approved by the agencies (and GSA, if applicable). A software acquisition will typically include the review and approval of the following documents: o Requirements Analysis -- Process for determining and documenting the agency's need for FIP resources. o Analysis of Alternatives -- Investigation and consideration of alternatives for satisfying a need for FIP resources. The purpose of the analysis is to determine which technical and acquisition options will best meet the Government's needs. o Software Conversion Study -- A study to determine the impact on cost and time of relocating software from one hardware/operating system environment to another. o Performance Evaluation for the Currently Installed ADP System -- Provides a baseline for evaluating proposed alternatives to meet data processing needs. When applicable, the results of the following findings must also be formally approved by the agency as described in the FIRMR: o Findings to Support the Use of Compatibility-Limited Requirements -- Provides justification for compatibility limitations for the software, such as the need to use a specific operating system or brand of equipment. o Certified Data to Support a Contemplated Requirement Available from Only One Responsible Source -- Provides justification for a sole source award. o Certified Data to Support a Contemplated Requirement Using a Specific Make and Model Specification -- Provides justification for specifying a commercial software package by name. Whenever competition is limited or restricted, the agency must prepare a Description of Planned Actions Necessary to Foster Competition for Subsequent Procurements. It describes the actions to be taken to foster future full and open competition.

8.3 GSA REVIEW AND APPROVAL

If the estimated cost of the commercial software is above the agency's regulatory or specific agency DPA, it must request a procurement-specific DPA. To obtain this, the DSO or designee must submit an agency procurement request (APR) to GSA. Specific APR guidance is given in the FIRMR (see FIRMR Bulletin C-5). The DPA issued will be limited to the resources described in the APR. Figure 8-2 gives sample content and organization outline for an APR. GSA reviews the APR for compliance with regulations on overly restrictive specifications, evaluation factors, sole source justifications, piece-mealing requirements, and other areas of concern. GSA has 20 working days (plus 5 days for mail) to process the APR. Agencies can assume the DPA has been granted after the 25 days if GSA has not requested additional information. If GSA requests additional information, the clock starts again when they receive it. Figure 8-2, APR Contents After review of the APR and any additional documentation submitted, GSA may-- o Delegate to the agency the authority to conduct the contracting action, o Delegate to the agency the authority to conduct the contracting action with GSA participation to the

extent GSA considers necessary under the circumstances, o Conduct the contracting action itself or otherwise obtain the requirement on behalf of the agency, or o Restrict approval until all conditions identified by GSA have been met. Check the latest FIRMR and its procedural bulletins for guidance. Direct questions about preparing an APR to the GSA Authorizations Branch (KMAS). A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE--CHAPTER 9

CHAPTER 9: GENERAL CONTRACTING CONSIDERATIONS

The success of an acquisition depends on several key contracting considerations. They fall into three areas: (1) sound acquisition planning and execution; (2) adherence to applicable Government regulations, policies, and guidelines; and, (3) the proper assignment and understanding of roles and responsibilities by all individuals involved in the acquisition process.

9.1 SOUND ACQUISITION PLANNING AND EXECUTION

Successful selection of the commercial software package that best meets the needs of the organization is dependent on the development and execution of the acquisition plan. If the plan is faulty, the possibilities exist that the best software package may not be selected, the delivery of the software may be untimely, or some other action may result which is not in the Government's best interest. The following general acquisition planning and execution considerations should be followed regardless of the type of acquisition.

a. Level of Effort

Base the level of planning, resources, and detail of the various analyses on the size, scope, and complexity of the acquisition. The effort spent to acquire copies of an off-the-shelf word processing package should be far less than the effort to acquire a large mainframe-based DBMS and its associated suite of application development and maintenance capabilities. In developing an acquisition plan, the level of effort should be equal to the estimated cost and complexity of the software to be acquired. Unfortunately, no hard and fast rules exist for determining the level of effort required. Each acquisition has its own profile. The level of effort and resources required for an acquisition will increase as its complexity increases.

b. Maximize Competition

The Government requires full and open competition whenever possible. Through this process, the Government obtains competitive prices for the product capabilities and/or services it requires at terms and conditions that are in its best interest. Competition also allows consideration of more innovative and effective solutions. Agencies limiting competition may face problems such as: o An increased potential for protest by vendor(s) who cannot compete due to unnecessarily restrictive requirements. o GSA disapproval of the acquisition based on unnecessary constraints on competition. o OMB or Congressional intervention. o Acquisition of commercial software that is not most advantageous to the Government (e.g. prices may be too high). The acquisition team can maximize competition and reduce the potential for these difficulties by considering the following: o Ensure that the translation and expansion of requirements into the detailed specifications do not unnecessarily reduce the potential number of qualified offerors -- The detailed specifications, derived from the results of the requirements analysis and analysis of alternatives, can potentially limit competition. Any one software capability or function identified as required by the Government, if not met by an offeror, will eliminate that offeror from further consideration. o Clearly state what the contractor must provide -- This reduces the potential for misinterpretation of the requirements and, as a result, the need for offerors to clarify their proposals. Common ways to improve clarity include: oo Use consistent wording in specifying requirements -- For example, always use "shall" when referring to a requirement to be met by the contractor and "will" when referring to an item the Government will provide or do. Establishing this

convention removes any doubt about what the Government requires. It alerts the offeror to the fact that it must reply to all statements containing the word "shall" in order to be considered responsive to the solicitation. The contractor also knows that the Government will provide or do whatever is in a statement containing "will." oo Use terms "and" and "or" properly -- "And" is inclusive. It means "plus" (i.e., a, b, and c means all three). "Or" permits an alternative, a substitute (i.e., a, b, or c means any of the three). oo Avoid terms that may have different meanings to different people -- Terms such as "when applicable" or "as necessary" can mean very different and valid things to each party involved. oo Avoid the use of industry jargon or advertising catch words to describe software features or characteristics -- Industry jargon, such as "fully integrated" or "user friendly," tends to describe features too broadly for use in specifications. To avoid misinterpretation and possible disputes, define precisely the technical terms that describe software requirements. For example, "user friendly" should be replaced with the specific characteristics, such as a consistent command set or a context-sensitive help function, that would make software "user friendly." oo State specifications once -- This eliminates the possibility of listing contradictory specifications. For example, requiring a system response time of less than one second 95% of the time in one section of the RFP and a system response time of less than or equal to one second 99% of the time in another section is contradictory. To eliminate this possibility, state the requirement in one place and cross-reference it in the rest of the solicitation document. oo Develop a comprehensive glossary with exact definitions -- This reduces the potential for misinterpreting requirements. o Develop fair evaluation criteria -- Such criteria, in addition to making it easier to select the offer that is most advantageous to the Government, provide a fair and equal opportunity for the offerors to compete. Some common pitfalls to avoid are: oo Establishing, without justification, criteria that can be met only by a limited group of offerors (e.g., prior installation in five organizations of similar size). oo Weighting criteria in favor of one or two potential offerors. oo Borrowing criteria from another procurement because it was successful.

c. Avoid Providing Information to Potential Offerors Unless Authorized

By law, all potential offerors must have equal access to available Government information. Giving information to one or all potential offerors unless authorized to do so by the Contracting Officer (CO) can result in cancellation of the acquisition. It can also result in the suspension or dismissal of those responsible. In some circumstances, it may be a criminal offense. Any information that might be sensitive should be discussed with and approved by the CO before it is given to potential offerors. If approved for release, the decision should be documented in the contract file. Interacting and exchanging information with potential offerors can be in the Government's best interest at various stages in the acquisition process; for example, during market surveys. However, even at this stage, take care to provide every potential offeror with the same information. When the survey stage is completed and development of the requirements begins, contact with potential offerors should end for everyone except the CO or the CO's designated representatives. Protecting information from being inadvertently given to a potential offeror is especially difficult when a current contractor is involved. In this instance, Government personnel need to take extra care to avoid inadvertently giving information to the incumbent contractor which is not given to all potential offerors. Measures to be considered include: o Performing all procurement-related work in an area physically separated and secure from the contractor's personnel o Ensuring all information available to the contractor is also available to every potential offeror o Limiting the number of Government personnel involved in the acquisition process who must interface with the contractor's personnel

d. Document and Follow the Source Selection Process

A clear, comprehensive, well-documented source selection plan is essential to selecting the offer that is most advantageous to the Government. It will help the acquisition team avoid most of the common problems encountered in the source selection process (e.g., protests, problems in evaluating proposals, etc.). The Source Selection Plan includes descriptions of the following: o Tasks, procedures, and schedule sequence to be followed o Roles, responsibilities, and organization of the Source Selection Evaluation Board (the contracting, IRM/technical, and user personnel involved in the source selection process) o Evaluation criteria and scoring process to be used The process should rigorously follow the

plan. This not only increases the likelihood of a fair and equal evaluation of all proposals received, it also protects the agency from potential charges of bias during the evaluation process. If the plan isn't followed, an offeror may claim that a deviation was detrimental to its proposal and subsequently file a protest. Protests based on this type of claim, if substantiated, are usually resolved in the favor of the protestor.

e. Involve Each Staff Discipline Throughout the Procurement Process

The experience and expertise of program, IRM/technical, and contracting personnel should be used throughout the procurement process. Each group has the ability to make a unique contribution to a successful acquisition. In addition, the interactions among diverse disciplines can result in the selection of a more effective software package. Without this interaction, the software acquired may not fully meet the needs of the user community, may adversely impact other FIP resources, or may not have the contractual terms and conditions that are in the Government's best interest. A second important benefit of involving all three disciplines from start to finish is that the acquisition team members assume ownership of the software acquired. Thus, its subsequent implementation and operation will also be supported by the three disciplines.

f. Identify Government Resources and Responsibilities

Commercial software will usually require Government-furnished resources (e.g., the hardware, telecommunications, data, support staff). The agency should ensure that these resources are accurately described in the solicitation and provide sufficient capability to support the functions required. For example, a software package may rely on features only available in the latest version of an operating system or require a large number of function keys on the workstation. In some cases, providing these resources may require agency action before the software is installed, such as arranging for an upgrade to the operating system. Failure to provide the correct or sufficient resources may prevent the software from performing correctly.

g. Actively Seek Parallel Reviews and Approvals

Perform as many of the required agency reviews and approvals in parallel as possible. This technique, identified in the GSA "Go-For-Twelve" initiative, can shorten the procurement process. The process is a technique that brings together the principals and materials needed to make the source selection decisions. It follows a general-to-specific sequence of decision-making. The areas to be examined are first reviewed for general information, with successive examinations becoming more detailed and complete (i.e., a top-down process). This allows attention to be focused on the decision material which results in reducing typical review and approval delays.

h. Document the Bases for Decisions

The acquisition team should document the basis for every decision both to serve as a history and to support a review by agency officials or oversight organizations. Many decisions about the development of the RFP and the conduct of the procurement are made throughout the source selection process. Changes in circumstances, such as technical developments, assumptions, and constraints, may cause the team to revisit its decisions. Also the potential exists for review by officials in the agency or by an oversight organization. The acquisition team should document its decisions to a level of detail appropriate to the size, scope, and mission criticality of the required software. For example, if the acquisition is for a relatively small number of copies of a PC spreadsheet package, the documentation need not be extensive. On the other hand, if the acquisition is for a large application system affecting the ability of the agency to perform its mission and projected to cost a significant amount of money, documentation of the decisions and rationale for the evaluation results should include substantially more detail.

i. Assign a Team with a Level of Expertise Equal to the Size and Scope of the Acquisition

The acquisition team must have the necessary expertise in each discipline (e.g., technical, program, and contracting) to conduct the acquisition successfully. Therefore, the team's level of expertise must be equal to the size and scope of the acquisition. When the software to be acquired can significantly affect an agency's ability to perform its mission effectively, more senior and experienced personnel should be assigned to the acquisition team. When acquiring relatively standard commercial software, such as a spreadsheet package, the level of expertise required may not be as senior. Individuals in the agency who possess the necessary skills and expertise to support the acquisition should participate. An alternative to consider when these individuals are not available is to obtain the required expertise from other Government or industry sources.

9.2 APPLICABLE REGULATIONS AND GUIDANCE

Many applicable policies, procedures, and guidelines must be followed throughout the acquisition process no matter which contracting method is employed. These include the FAR, FIRMR, GSA guidelines, and rules for benchmarking (e.g., FIPS PUB 42-1). Internal agency policies and procedures must also be followed. These might address: o Acquisition policies and procedures o Agency-specific standards required in the solicitation. These might include programming documentation standards or life-cycle methodologies to be followed for modifying the software o Approval levels Members of the acquisition team must become familiar with both Government-wide and agency-specific policies and procedures and ensure adherence as applicable. In addition, the GSA Board of Contract Appeals (GSBCA) and the General Accounting Office (GAO) rule on protests made by vendors and offerors. These protest decisions are based on interpretation of Government policy and rules. The acquisition team (usually the CO) should review these rulings to ensure that the RFP, Source Selection Plan, and source selection process are consistent with the rulings. One source of recent GSBCA rulings is the ADP Protest Report published quarterly by the GSA Information Resources Management Service. For further information contact GSA's Acquisition Evaluation and Analysis Branch (KMAD).

9.3 ROLES AND RESPONSIBILITIES

Each staff discipline on the acquisition team has major and complementary roles and responsibilities that contribute to the successful acquisition and operation of commercial software.

a. Program Personnel

Program personnel ensure that the acquisition meets the mission and functional needs of the organization. In performing this role, program personnel: o Participate in the development of the specifications included in the RFP to make certain they meet program requirements. o Participate in the development of the source selection methodology, including representative benchmark tests that verify the software meets the needs of the program. o Participate in the development of the criteria used to select the contractor. o Participate in the source selection process that results in identifying the recommended contractor. o Support the CO in negotiations with the offerors (as requested by the CO).

b. IRM/Technical Personnel

IRM/technical personnel ensure that the acquisition results in the implementation of a commercial software package that meets all technical requirements. In this role, IRM/technical personnel have the same general responsibilities as the program personnel (e.g. participation in the development of the specifications and evaluation criteria, and participation in the evaluation process). However, they provide the required technical expertise with FIP resources to complement the functional expertise provided by the program personnel. In acquisitions for system software such as a DBMS or CASE tools, they may also assume many of the roles and responsibilities of the program personnel (e.g. defining requirements).

c. Contracting Personnel

Contracting personnel ensure that the acquisition meets the procurement policies and procedures of the FAR, FIRMR, and the agency. The CO acts as the official interface with offerors for all acquisitions. The CO is the only individual with the authority to negotiate on behalf of and commit the Government to contract awards or modifications. The CO: o Ensures that all necessary agency and GSA (as required) approvals are obtained. o Ensures that the source selection process is conducted in compliance with Federal and agency regulations and procedures. o Ensures the source selection process is conducted as specified in the solicitation document. o Recommends or selects the contractor (depending upon the Source Selection Plan). A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE--CHAPTER 10

CHAPTER 10: ACQUISITION BY SMALL PURCHASE

10.1 PURPOSE OF SMALL PURCHASE PROCEDURES

Small purchase procedures can be used to acquire commercial software when the total cost of the software and any support services to be provided by the contractor (not necessarily the total life-cycle costs) does not exceed $25,000. FAR Part 13 contains the policies for using small purchase procedures. Small purchase procedures were designed for the following purposes: o To lower the administrative cost of small dollar value acquisitions -- The acquisition process for small purchase procedures is simpler than contracting methods for larger acquisitions. It consists of receiving written or verbal price quotations and awarding the contract based on this information. Because of its simplicity, a small purchase requires less detailed acquisition planning, documentation, and oversight than contracting methods for larger acquisitions, thus resulting in lower administrative costs. o To improve opportunities for small businesses and small disadvantaged businesses -- Channeling purchases under $25,000 to small businesses increases the opportunities for these firms to receive a fair proportion of Government contracts.

10.2 ACQUIRING SMALL PURCHASES

Agencies may use either small business-small purchase set-asides or unrestricted small purchase procedures when acquiring commercial software within the $25,000 small purchase limitation.

a. Small Business-Small Purchase Set-asides

Small business-small purchase set-asides are acquisitions reserved exclusively for small businesses. They must be considered first for all small purchase acquisitions. The CO, however, must determine whether there are responsible small business suppliers that can provide the required commercial software and supporting services. The effort spent on this activity should be proportional to the size of the acquisition. To facilitate this effort, the agency's contracting office maintains a small purchase source list to ensure that small businesses are given equal consideration. Using this list as a starting point, FAR Part 13 recommends using telephone surveys or other informal means (e.g., consulting trade magazines, contacting the Small Business Administration (SBA)) to ascertain the ability of these firms to meet the commercial software requirements. The results of identifying potential small business suppliers must then be reviewed to determine how many are likely to participate in the acquisition. If the CO determines there is a reasonable chance of obtaining quotations from two or more responsible small businesses, the CO will proceed with a small business-small purchase set-aside as the method of acquisition. If the CO determines that it is not reasonable to expect quotations from two or more responsible small businesses, the CO may proceed with the small purchase on an unrestricted basis. The CO must document the findings leading to this decision.

b. Unrestricted Small Purchases

Unrestricted small purchase acquisitions are small purchases which may be awarded to any responsible vendor whose proposal is in the best interest of the Government.

10.3 COMPETITION

The degree of competition depends on the dollar amount of the purchase.

a. Purchases of $1,000 or less

Purchases of $1,000 or less may be made without obtaining competitive quotations if the CO considers the price(s) reasonable. However, the CO should distribute these purchases equally among qualified suppliers.

b. Purchases between $1,000 and $25,000

For purchases between $1,000 and $25,000, the CO should solicit quotations from a reasonable number of sources to promote maximum competition. Generally, quotations from three sources will suffice. The CO should obtain oral quotations unless it is not economical or practical. When obtaining written quotations, the CO should issue a Standard Form 18 to obtain price, delivery, and other information. The CO reviews this information, determines price reasonableness, and awards a purchase order. A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE--CHAPTER 11

CHAPTER 11: ACQUISITION FROM ESTABLISHED SOURCES OF SUPPLY

11.1 DEFINITION

Acquisition from established sources of supply is one of the contracting options that might be chosen as a result of the analysis of alternatives. Commercial software can be acquired from both mandatory and nonmandatory sources of supply.

11.2 MANDATORY SOURCES

Mandatory sources of supply for commercial software are contracts which must be used by agencies when their needs can be met by the products and services provided. They include GSA and agency-specific sources.

a. GSA Mandatory Sources

GSA mandatory sources of supply currently in place which may be applicable to the acquisition of commercial software include: o FTS 2000 Services o Financial Management Systems Software (FMSS)

(1) FTS 2000 Services

The FTS 2000 Service program provides a single source for the implementation and operation of wide area communication network services Governmentwide. FTS 2000 impacts the acquisition of commercial software only if the software uses wide area communications. Contact the FTS 2000 Services Contracting Officer (CO) through GSA's Telecommunications Procurement Division (KET) for further information about the program.

(2) Financial Management Systems Software (FMSS)

OMB has mandated Governmentwide standardization for financial management systems software. To assist agencies in implementing this program, GSA established the FMSS Multiple Award Schedule (MAS) program. The FMSS MAS consists of contracts awarded to multiple vendors who supply generic financial systems that meet the OMB requirements and which can be customized to agencies' specific needs. This allows agencies the flexibility and selectivity to satisfy requirements by choosing among vendors on the schedule. Additional information and assistance may be obtained from GSA's FMSS CO in GSA's Information Resources Procurement Office (KE). For schedule information, contact GSA's Schedules Division (KES).

b. Agency-specific Mandatory Sources

An agency may have mandatory ADP contracts in place for use by its bureaus/divisions. Check with the contracting office for a list of any mandatory contracts and for agency-specific procedures.

11.3 NONMANDATORY SOURCES

A nonmandatory source of supply, as defined in the FIRMR, provides another mechanism for agencies to acquire commercial software. Agencies are not required to use these sources.

a. GSA Nonmandatory ADP Schedule Contracts

Two of the three GSA nonmandatory ADP schedule contracts, A and C, provide for acquiring commercial software. GSA awards these contracts to a variety of vendors with established areas of expertise and/or capabilities to provide and support commercial software. Each contract establishes individual terms, conditions, and prices for the software and related services. Schedule A is a general purpose schedule used to acquire on-line ADP hardware and software. Schedule C deals with the purchase and maintenance of end user computers and software. Contact the GSA's Schedules Division (KES) for a list of vendors on Schedules A and C; then contact appropriate vendors directly for individual schedule contracts.

(1) Using GSA Nonmandatory ADP Schedule Contracts

Agencies should use these schedules when a CO determines that placing an order against a schedule contract will result in a lower overall cost than using other contracting methods and is most advantageous to the Government. Agencies are not required to set aside orders below $25,000 for small businesses when using these schedules. Although the GSA nonmandatory ADP schedule contracts provide a convenient mechanism for acquiring commercial software, the CO must ensure the cost or quantity of the order does not exceed the Maximum Order Limitation (MOL). GSA sets MOLs for each schedule contract. The MOL for each schedule is listed in the schedule documentation.

(2) Acquisition Process

The following two examples illustrate the acquisition process using GSA nonmandatory ADP schedule contracts. Example 1 illustrates the procedures for a software acquisition costing less than $50,000. Example 2 illustrates the procedures for a software acquisition totaling more than $50,000.

A. Example 1: Less Than $50,000 Cost

An agency needs multiple copies of a spreadsheet package, and there is no mandatory agency-specific contract in place. Because the agency currently has a standard spreadsheet package, the requirements analysis specifies the use of this specific package. The agency estimates the dollar amount for the needed copies to be less than $50,000. Because the acquisition is small and straightforward, the documentation supporting the requirement and justification for the specific package is kept to a minimum. After reviewing the documentation, the CO determines that the software can probably be obtained through the use of a GSA nonmandatory ADP schedule contract. In this example, the CO does not have a current list of GSA nonmandatory ADP schedule contract holders who can provide the specific spreadsheet package. Therefore, the CO contacts GSA's Schedules Division (KES) to obtain a

list of the vendor(s). The CO considers the specific software version numbers and any hardware compatibility requirements and contacts a representative sample of vendors from the list to obtain individual line item information and price lists. The CO then analyzes the information to determine which firm provides the lowest overall cost, obtains any required agency approvals, and then completes, signs, and forwards a delivery order to the vendor.

B. Example 2: Greater Than $50,000 Cost

In this example, an agency needs to purchase a mainframe data base management system (DBMS). The CO, with assistance from an acquisition team, if necessary, reviews the requirements and, after obtaining a list of schedule vendors and reviewing their literature, determines that the software can be obtained through a vendor on the GSA nonmandatory ADP schedule contract. The CO prepares a synopsis announcement to be published in the Commerce Business Daily (CBD). The synopsis, a formal announcement of the agency's intent to purchase the software, is published at least 15 calendar days before placing the schedule order. The FIRMR describes the information which must be included in the synopsis. The CBD announcement serves as a notice of the agency's need for and intent to acquire commercial software. Both schedule vendors and those not on the schedule have the opportunity to respond to the notice, indicating they can provide the same or comparable software at better prices. If there is no response to the CBD notice, the CO documents that fact and procures the software from the vendor originally identified in the synopsis. If a responsible nonschedule vendor or a schedule contractor responds to the CBD notice, the CO must determine which, if any, response provides the lowest overall cost alternative and take one of the following actions: o If the respondents' items do not meet the requirements or if the synopsized schedule items are the lowest overall cost alternative, then the CO will place an order against the synopsized schedule contract. o If a respondent's schedule offering is the lowest overall cost alternative, then the CO will place an order against that schedule contract. o If it appears that ordering from a GSA nonmandatory ADP schedule may not result in the lowest overall cost alternative, then the CO should issue a solicitation document. The FIRMR provides additional details on the use of GSA nonmandatory ADP schedule contracts.

b. Agency-specific Nonmandatory Contracts

An agency may award its own nonmandatory ADP contracts for commercial software for optional use by its bureaus/divisions. Check with the agency contracting office for a list of these contracts and for agency-specific procedures.

c. Office of Technical Assistance (OTA)

OTA has two programs in place to assist agencies in acquiring services supporting commercial software.

(1) Contract Services Program (CSP)

The CSP provides separate contracts in the various IRMS regions for services supporting the entire system life-cycle. All Federal agencies may use these contracts (e.g., for customized portions of the software) through GSA with no further contracting needed. Services applicable to commercial software are software maintenance and program and data conversion. Obtain more information about the CSP from the applicable IRMS region.

(2) Federal Software Management Support Center (KRSS)

The Center offers technical, managerial, and procurement services to meet software requirements. The Center may provide assistance in the acquisition process or may provide software support services itself, such as: o Software conversion o Software tools o Software improvement o Software engineering Contact KRSS for more information. Footnote: Even if one vendor's price for software is lower than another's, this does not mean that the first vendor necessarily offers the lowest overall cost to the Government. Other costs (e.g. for conducting a negotiated procurement or for upgrading hardware)

must also be factored in. A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE--CHAPTER 12

CHAPTER 12: ACQUISITION BY SEALED BIDDING

12.1 OBJECTIVE

The objective of a sealed bidding acquisition is to select the lowest priced offer that meets the requirements contained in the agency's Invitation for Bid (IFB). This process entails opening the bids in public, evaluating them to ensure they meet the requirements of the IFB, and awarding the contract to the responsible offeror whose bid is the most advantageous to the Government. FAR Part 14 describes sealed bidding procedures and policies in detail.

12.2 CONDITIONS FOR USING SEALED BIDDING

For sealed bidding to be feasible and practical, FAR Part 6 states that all the following conditions must exist: o Time permits the solicitation, submission, and evaluation of sealed bids. o The award will be made only on the basis of price and other price-related factors such as staff required to maintain the software, installation requirements, and configuration management requirements. For example, given two software packages, one may require the Government to convert data or add memory to the system. These costs must be considered in addition to the price of the software in comparing the bids. However, the relative sophistication of the two products would not be considered because it is not price-related. o It is not necessary to conduct discussions with the responding offerors about their bids. o There is a reasonable expectation of receiving more than one sealed bid.

12.3 USING SEALED BIDDING

Procedures for using the sealed bidding process, as stated in FAR Part 14, include: o Preparing the IFB -- The invitation includes all specifications and data (whether attached or incorporated by reference) prospective offerors need to prepare their bids. The IFB should describe the Government's requirements as clearly, accurately, and completely as possible to avoid misinterpretation. Contracting Officers (COs) must use the Uniform Contract Format (UCF) when preparing the IFB. o Publicizing the IFB -- The agency announces the IFB to prospective offerors by posting it in public places, newspapers, trade journals and, as required by the Competition in Contracting Act (CICA), publishing a synopsis in the Commerce Business Daily (CBD). o Submission of Bids -- Bidders must submit sealed bids to be evaluated. o Evaluation of Bids -- The sealed bids are opened in public at the time and place specified in the IFB and are evaluated without discussion on their compliance with the requirements. o Contract Award -- The award is made to the responsible bidder meeting all IFB requirements and offering the lowest overall price.

12.4 USING TWO-STEP SEALED BIDDING

Agencies occasionally use a two-step sealed bidding method. This method is used when adequate specifications are not available, definite or complete, or may be too restrictive without technical evaluation. Two-step sealed bidding procedures also require that definite criteria exist for evaluating technical proposals and the expectation that more than one technically qualified source will be available. In the two-step process, bidders first submit only technical proposals. These are evaluated and, if necessary, discussed to clarify compliance with the requirements. In step two, bidders who submitted acceptable technical proposals then submit sealed price bids. The bids are evaluated, and the offeror whose bid has the lowest overall price receives the contract award. The two-step sealed bidding method is used much less frequently than the sealed bidding method because commercial software can be generally acquired with clearly written specifications.

12.5 ACQUISITION PROCESS

The following is an example of using the sealed bidding contracting method: An agency needs 500 copies of a "shrink-wrapped" word processing package to operate on microcomputers. The requirement is fully documented in a requirements analysis and approved by the agency authorizing officials. Because of the size of the procurement, small purchase procedures and the use of GSA nonmandatory ADP schedules are not appropriate. In addition, the agency has no existing internal contracts that can provide the software. Since all requirements can be specifically stated and research completed by the acquisition team indicates that several vendors can meet them, sealed bidding is a viable contracting method. The acquisition team prepares the IFB following the UCF which includes the following (See FAR Part 14 for details): o Part I - The Schedule o Part II - Contract Clauses o Part III - List of Documents, Exhibits, and Other Attachments o Part IV - Representations and Instructions When the IFB is complete, it is announced in the CBD 15 days in advance of its release. The IFB is then distributed to bidders requesting it. They must be given a minimum of 30 days to respond with sealed bids. The time and place of the public bid opening must be specified in the IFB. As bids are received, all materials must be recorded as received and secured until the public opening. At the bid opening, bids are read aloud, if practical, and recorded. The bids are then examined to ensure: o There is no reason to reject an individual bid -- For example, a bid would be considered nonresponsive and rejected if the IFB asked for maintenance of the software by the contractor and the bid indicated that the contractor could not provide maintenance services. FAR 14.4 contains a list of the reasons for rejecting bids. The CO must ensure none of them exists. o There are no mistakes in the bid -- If the CO believes a mistake has been made, the CO must request verification of the bid from the offeror. FAR 14.4 contains the procedures used when mistakes in a bid are found. The contract is awarded to the responsible bidder whose bid conforms to the invitation and will be most advantageous to the Government, considering price and price-related factors only. The CO makes the award by written notice within the time frame specified in the IFB and also notifies (either orally or in writing) unsuccessful bidders that their bids were not accepted. The CO must also document all aspects of the procurement in the contract file. A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE--CHAPTER CHAPTER 13

CHAPTER 13: ACQUISITION BY NEGOTIATED PROCUREMENT

Approximately two-thirds of all Government acquisitions are made by negotiated procurements. The major characteristics of negotiated procurements are (1) issuing a Request for Proposal (RFP), (2) negotiating with vendors whose proposals are acceptable or can be made acceptable, and (3) usually affording offerors an opportunity to revise their proposals before contract award. The contract is awarded to the offeror whose proposal is most advantageous to the Government after all factors, which were in the solicitation, are considered. Negotiated procurements can be used for almost any type of acquisition. However, this chapter is geared towards the high dollar, complex acquisition. For simple, low dollar acquisitions, some of the processes described in this chapter can be simplified. An agency may provide guidance for the level of effort required for a specific acquisition.

13.1 ATTRIBUTES OF NEGOTIATED PROCUREMENTS

A negotiated procurement has the following attributes: o Allows evaluators of proposals to consider technical merit and/or value added above the minimum required by the specifications -- A negotiated procurement allows the Government to consider the technical merit of proposals exceeding minimum mandatory requirements. The quality of the proposal, therefore, can be considered, which frequently is in the Government's best interest. o Facilitates full and open competition -- All qualified offerors can propose their best technical approach and price and be considered for a contract award. o Allows the Government to acquire additional value -- During negotiations, offerors can change their proposals to make them more valuable to the Government. o Allows award for reasons other than lowest cost -- Technical excellence can be a significant factor for award. The Government has the flexibility to

determine which proposal is most advantageous, trading off technical merit, cost, terms and conditions, etc. o Allows greater latitude in specifying functional requirements -- The specifications in the solicitation document can be broader and functionally-oriented. o Requires significant time and personnel to develop solicitations, evaluate proposals, and award a contract -- Negotiated procurements require more resources to (1) develop evaluation factors, (2) score technical proposals, (3) compare technical and cost proposals, (4) execute performance and capability validation (P∧CV) tests, and (5) debrief offerors not awarded the contract. o Requires acquisition expertise from all disciplines -- Program and IRM/technical staff must assist contracting staff in identifying the technical elements that provide the greatest value, determine how to measure their value accurately, and then evaluate proposals accordingly. This is especially true when using criteria for which expertise is required to predict the impact of new software. For instance, the effect of a DBMS on processing resources (i.e., CPU, channels, storage) should be projected when determining the technical excellence of the DBMS. Without the appropriate level of expertise to identify and project the impact, identification of the proposal that is in the best interest of the Government is hampered. o Requires significant offeror resources to respond -- Offerors often invest more resources responding to a negotiated procurement than they do for other contractual methods. For example, offerors must evaluate additional capabilities they might propose, how they will demonstrate technical quality, and, if necessary, develop and execute a P∧CV test. All these activities require additional time and personnel (and FIP resources if a P∧CV test is specified). o Is more complex than other acquisition methods -- More steps are needed to complete a negotiated procurement than in other methods. These include, for example, technical scoring of the proposals, interaction with the offerors to execute P∧CV tests when applicable, conducting the Best and Final Offer (BAFO) process, and comparing technical value to price, to name a few. Each of these steps complicates the source selection process. o Is more susceptible to protest than other methods -- In general, the more complicated and subjective the proposal evaluation process, the more susceptible it is to protest because the results may be questioned more easily.

13.2 THE SOURCE SELECTION PLAN

A key element for a successful procurement is a comprehensive, detailed, and realistic source selection plan. The objective of the source selection process is to ensure selection of the offeror whose proposal is in the best interest of the Government, all (technical and cost) factors considered. The Source Selection Plan describes this process. It describes the planning and management that need to be done before starting the activities involved in issuing a solicitation, evaluating proposals, and awarding a contract. It also indicates how proposals will be solicited, evaluated, and scored; who will evaluate the proposals and how the evaluation team is organized; and a timetable for contract award that meets the objective. FAR Part 15 prescribes the policies and procedures for selecting a contractor in negotiated competitive procurements. The level of detail and comprehensiveness of the required plan is dependent upon the size, scope, and complexity of the acquisition. For smaller acquisitions of industry-standard software such as 500 copies of a word processing package, the plan need not be developed to the same level of detail as for the acquisition of a large and/or complex software package such as a DBMS or financial system. The acquisition of a commercial software package may be large and complex. For example, a personnel system requiring (1) addition of significant specialized functionality, (2) training, and (3) maintenance of the package once installed is a large complex acquisition. The major elements of a Source Selection Plan for this type of acquisition include: o A statement of the acquisition requirements -- what is to be acquired. This provides a brief and concise statement describing the software. o A statement of the acquisition strategy -- how the negotiation will be conducted and the requirements met. This description identifies the type of contract to be used (e.g., firm-fixed price, cost reimbursement) and the nature of incentives to be included in the contract. o A description of the Source Selection Team organization, roles, and responsibilities -- an organization chart or brief statement describing how the team (individuals who will evaluate proposals and select the contractor) will be structured. The names and titles of the individuals nominated must be included. o A discussion of the technical, cost, and performance risks associated with the project, if any -- a brief description of the risks inherent in the project (e.g., this might include the risk to the agency of being able to perform

its mission or meet Congressional mandates if the acquisition is delayed or the cost to the Government in terms of additional staffing required if specific performance criteria are not met). o Identification of the proposed evaluation factors, subfactors, and elements -- a description of the relative importance of these elements (e.g., a response time equal to or less than 1 second) and how they will be used to select a contractor. o A discussion of the methods and techniques to be used in the evaluation process -- a description of the source selection approach and evaluation methodology. This might include identifying the use of P∧CV techniques, employment of subjective evaluation criteria (e.g., current client experience with the product in terms of reliability, performance), and samples of the forms to be used during the evaluation process. It should also include the general scoring approach for the evaluation. o A milestone schedule -- indicates significant events in the source selection process and the individual (position in the organization) responsible for their accomplishment. o A discussion of the need for a preproposal conference and/or other proposed activities (e.g., issuance of a Request for Comment) -- the FIRMR indicates it is advisable to let industry comment on the draft specifications. o A signature page -- to indicate the approval of the senior individuals responsible for the conduct of the source selection process.

a. Management and Documentation Procedures

A number of management and documentation procedures must be followed during the Source Selection Process. These should be identified and briefly described in the Source Selection Plan. Potential topics include the procedures for obtaining vendor clarifications, documenting the evaluation results, conducting P∧CV tests (if applicable), source selection review, and approval requirements. o Vendor clarifications -- Vendor clarifications for both technical and cost proposals may be requested by the CO during most of the source selection process. The procedures for requesting and receiving clarification should be defined in detail before beginning the process. o Documenting the evaluation results -- The methodology and forms used to document the results of the source selection process must be identified before beginning the process. Standardized forms and instructions speed up the evaluation process, help ensure the complete evaluation of proposals, support the review process, and aid in ensuring a fair and equitable evaluation of proposals. o Forms to be signed -- These are samples of the formats to be used for such things as making source selection appointments, confidentiality statements, and conflict of interest statements o Procedures to ensure fairness -- These include the minimum number of evaluators assigned to each proposal, how results will be documented and approved (as specified in the Plan), and restrictions on comparison of proposals. o Conduct of P∧CV Tests (if applicable) -- Document when and how P∧CV tests will be conducted, its components, and the composition of the Government team. o Source selection review and approval schedule and procedures -- Includes both contract and legal review processes.

b. Source Selection Team (SST) Organization, Roles, and Responsibilities

The SST is composed of all individuals involved in the proposal evaluation process. Generally, the SST organization is similar to the structure shown in Figure 13-1. Although this organization will vary, the roles and responsibilities identified in Figure 13-1 should be considered in the organization of any evaluation team. Figure 13-1, Potential Source Selection Team Organization The SST's roles and responsibilities must be clearly defined. More than one role or responsibility may be assigned to the CO or IRM/technical personnel, depending upon the Source Selection Plan. Assignments usually vary according to the size and scope of a procurement. Members of the SST must not participate in the source selection process if they have an actual or apparent conflict of interest with the proposed acquisition. Nondisclosure and conflict of interest statements must be completed by all SST members prior to their involvement in the acquisition. Presented below are the potential roles and responsibilities for a large and complex procurement. Some of these roles, such as the Source Selection Board (SSB), may be eliminated and the SSB's duties are then assigned to an individual on the SST. Usually the Source Selection Authority assumes the oversight roles assigned to the Source Selection Board. A documented up-to-date identification of the SST members must be maintained in the contract file.

(1) Source Selection Authority (SSA)

The SSA, sometimes called the Source Selection Official, is responsible for the overall conduct of the source selection process and usually has, subject to Federal laws and policies, full authority and responsibility for making the final source selection. The head of the agency usually designates the SSA. For large, complex acquisitions, the SSA is usually a high level management official with no direct interest in the acquisition. In most other software acquisitions, the CO is the selecting official. The SSA must ensure the selection decision reflects each offeror's relative quality and suitability according to the stated requirements and the criteria of the evaluation. In performing this function, the SSA may wish to review and approve the Source Selection Plan and interim results of the Source Selection Process. The SSA's responsibilities may also include: o Ensuring the selection plan and evaluation factors are consistent with the requirements of the acquisition. o Appointing or replacing members of the Source Selection Evaluation Team.

(2) Source Selection Board (SSB)

Some of the larger commercial software acquisitions may employ a SSB, sometimes called a Source Evaluation Board, to support the SSA and provide review and oversight of the source selection process. This Board acts as the SSA's staff. Its responsibilities and authority include: o Review and concur with the results and recommendation of the Source Selection Evaluation Board (SSEB) o Review and concur with the CO's determination of the competitive range (when applicable) o Review and concur with the CO's recommendations for contract award o Ensure the evaluation process is documented to the prescribed levels of details, comprehensiveness, and substantiation of the findings of the source selection process o Brief the SSA on source selection activities o Assist the CO in conducting debriefings of unsuccessful offerors

(3) Source Selection Evaluation Board (SSEB)

The SSEB is responsible for conducting the technical and cost evaluation of the proposals. This Board is usually composed of IRM, program, and contracting personnel. The number of Board members depends on the types of expertise required, the number of proposals anticipated, and the time allotted for completion of the source selection process. In most instances, the CO chairs the SSEB. The SSA appoints SSEB members in writing. The SSEB acts as an autonomous body. Although it does not have authority to make the source selection, the SSEB recommends source selection actions to the CO. The SSEB is usually composed of two separate panels: the Technical Evaluation Panel (TEP), sometimes called the Technical Evaluation Board, and the Cost Evaluation Panel (CEP), sometimes called the Cost Evaluation Board. Each panel has its own chairperson and, in some larger procurements, a nonvoting secretary. The TEP is usually composed of both program and IRM/technical members of the acquisition team, plus specialists as necessary, to provide needed expertise. A senior individual, sometimes called the Technical Evaluation Panel Leader (TEPL) chairs the TEP and is responsible for the results of the technical evaluation process. In this role the TEPL is responsible for team assignments; review, approval, and documentation of the technical evaluation results; TEP consensus; and support of the CO as requested. The CO usually chairs the CEP. This panel may employ the services, as necessary, of cost and price analysts, IRM/technical and program representatives, and specialists in finance, law, and contract management. In performing their functions, the two panels must not interact directly. Technical and cost evaluations must be performed independently to prevent influencing one another. Instances may occur, however, when information must be transmitted between these two panels. This would include ensuring that offerors' cost proposals match their technical proposals and identifying any additional impacts on Government costs for such things as additional Government personnel to support the proposed implementation plan or additional software required by the Government to interface with the offerors' proposed software package. This communication must be strictly controlled by the CO to ensure no direct interaction between the technical and cost evaluation teams.

c. Technical Evaluation Considerations

The source selection plan must also identify the approach which will be used to perform the technical evaluation of proposals. Two approaches are:

(1) Lowest-priced Acceptable Proposal

In this approach, award is made to the offeror with the technically acceptable proposal having the lowest life-cycle cost to the Government. No evaluation of a proposal for technical merit is conducted once all requirements of the SOW are met. This approach is best suited to acquisitions where the commercial software requirements are fairly well known and the performance differences between the software packages are well defined.

(2) Greatest Value

Award is made to the offeror whose proposal is most advantageous to the Government, cost and other factors considered. As a result, the award could be made to an offeror with the higher price if the proposal's combined price and technical merit best meets the needs of the Government. This approach requires development and use of technical evaluation factors and criteria that determine the technical excellence of the proposed software. A greatest value technical evaluation is conducted for all proposals that meet the RFP's minimum mandatory requirements. A successful technical evaluation depends heavily on the selection of factors, subfactors, items/elements, and criteria/standards used. o Criteria/Standards -- The measures to be used by the SSEB to evaluate the factors/subfactors/elements. The objective of these measures is to provide the SSEB with the standards to determine how well an offeror's response meets the evaluation requirements of the solicitation. The CO, in combination with the acquisition team, may prepare criteria/standards for any level (e.g., factor, subfactor, item or element). The minimum requirements of a criterion/standard must not exceed those specified as minimally acceptable in the solicitation and must not address requirements not included in the solicitation. Quantitative criteria/standards are preferred, but qualitative ones may also be employed. o Factors -- define broad evaluation categories (e.g., technical plan, installation plan, staffing plan, etc.). o Subfactors -- break down the factors to more measurable units (e.g., adequacy of staffing, qualifications of key personnel, logical completion of all tasks on schedule, etc.). o Items/Elements -- break down the subfactors to lower level (e.g., experience of proposed application software expert, software error recovery procedures, etc.). This level of definition may not be necessary for acquisitions of relatively simple and less expensive commercial software. Generally, the number of technical evaluation factors should be limited to between three and five factors. Too many evaluation factors can create a situation in which the factors do not have a significant impact on the results and may lead to a leveling of scores, thus making discrimination among offerors more difficult. The degree to which the factors chosen are relevant, measurable, and without overlapping elements is critical; not their number. In developing the factors, consider those used in the requirements analysis and analysis of alternatives. They are usually valid factors for determining a proposal's relative technical merit and formed the basis for identifying what is critical to the success of the procurement. The Program Manager is responsible for the review and approval of the factors and their proposed relative importance to each other. The manager must also ensure that the relative importance of factors accurately reflects the Government's needs. The RFP must include the identification of all the evaluation factors and a narrative discussion of their relative importance. Detailed evaluation procedures, including identification of subfactors and criteria/standards, do not have to be described in the RFP. By law, price or cost to the Government must be included as an evaluation factor in all procurements except those with no cost to the Government. The CO has broad discretion in developing and applying other evaluation factors (see FAR Part 15). Evaluation factors for most acquisitions fall into two categories: factors relating to the manner of performance and factors relating to the characteristics of the offeror. Factors relating to the manner of performance may include: o Technical excellence -- How well the work, techniques, processes, and tests that the offeror plans to use will be done o Schedule and detailed plan -- The realism, comprehensiveness, and technical soundness of the contractor's schedule (e.g., for customizing software) and detailed plan for accomplishing the work. The sequence and timing of various phases of

the work may bear significantly on the risk of technical failure and contract delay. Also, some times the value to the Government of early delivery may warrant selection of a more costly proposal o Management plan -- The merit of the offeror's plan for managing the project and performing related contract administration. This may include: oo The proposed lines of authority, responsibility, and communication oo Subcontractor management oo The speed the organization can mobilize to resolve problems and perform configuration management tasks oo Ability of the offeror's management techniques to identify performance problems at an early stage Factors relating to the characteristics of the offeror may include: o Availability of resources -- The adequacy and availability of resources (financial stability, personnel, etc.) o Corporate experience -- The offeror's record in resolving problems in the software or providing qualified personnel to maintain and/or modify it o Key personnel qualifications -- The availability, competency, pertinent education, and related experience of the proposed management and technical personnel.

d. Schedule

The Source Selection Plan must contain the acquisition's projected schedule, indicating the significant events of the source selection process and the individual (or position) responsible for their accomplishment. The level of detail required depends upon the size and scope of the acquisition. At a minimum, the schedule should include those steps in the acquisition process identified in Section 13.4.

13.3 PREPARATION AND ISSUANCE OF THE SOLICITATION

A direct relationship exists between the quality of the RFP and the quality of the offers received. Therefore, the RFP must be carefully prepared to generate both maximum competition and industry's best efforts to meet the agency's needs. While the CO has the primary responsibility for the RFP, all personnel (CO, IRM/technical, and program) must work together to develop a quality solicitation package.

a. Use of Other RFPs

One effective means of developing an RFP is to base its contents on RFPs already used successfully by the Government to acquire similar software capabilities. These documents can be obtained from an agency's contracting office. Additional sources for copies of RFPs might be identified through the Commerce Business Daily (CBD) or other periodicals, such as the Government Computer News or Federal Computer Week. Another potential source for representative RFPs are COs who have conducted acquisitions for similar products. These individuals can provide copies of the RFPs they developed.

b. Purpose of Each RFP Section

The RFP is composed of 13 Sections, A through M, which should contain all the information necessary for prospective contractors to prepare their proposals properly. The FAR requires that solicitations and resulting contracts use the Uniform Contract Format. As shown in Figure 13-2, the Uniform Contract Format divides the RFP into four parts; o Part I, Schedule o Part II, Contract Clauses o Part III, List of Documents, Exhibits, and Other Attachments o Part IV, Representations and Instructions Figure 13-2, Uniform Contract Format Sections A to M, which are discussed below, make up these four parts. All sections except L and M become part of the contract when awarded, as does the contractor's proposal.

(1) Section A - Solicitation/Contract Form (also referred to as Standard Form (SF) 33)

Section A, the first page of the RFP, provides general information including names of issuing office, solicitation number, CO's name and telephone number, date of issue, and a table of contents. The CO and the contractor complete appropriate items.

(2) Section B - Supplies or Services, Prices, and Costs

Section B contains a brief description of the supplies and services required by the agency. It identifies the specific supplies and services being acquired, plus quantities, if applicable. This information is usually in the form of schedules to be completed by the offeror, explanatory narratives describing the contents of the schedules, and instructions to the offerors for providing this data. The Government uses this data to perform the life-cycle price/cost analysis. In complex commercial software acquisitions, Section B frequently includes cost tables for all products and services to be completed by the offerors.

(3) Section C - Description/Specifications/Work Statement

Section C, commonly called the Statement of Work (SOW), describes the specifications for the required software products plus any additional tasks to be performed by the contractor. The SOW is an extremely important section of the RFP. It is used extensively during proposal preparation and evaluation, contractor selection, and contract administration. The SOW defines the scope of work; i.e., tasks the contractor must undertake, types and stages of work, sequence of effort, and reporting requirements. It also serves as a basis for the technical evaluation of proposals because evaluation criteria are related directly to the requirements specified in the SOW. In addition, the SOW provides the standards for contractor performance during the contract administration phase, and provides an objective measure by which both the Government and the contractor will know that the work is complete and payment is justified. Some SOWs are easier to prepare than others. For example, in SOWs for smaller, less complex off-the-shelf software products, simple specifications and state-of-the-art capabilities are known quantities and can be defined relatively easily. On the other hand, SOWs for large, complex commercial software application systems involving significant modifications to the software packages are more difficult to define. Planning for all the requirements and contingencies may be difficult, but care must be taken to ensure that all requirements are included.

(4) Section D - Packaging and Marking

Section D provides specific instructions about how to package, pack, preserve, and mark the contract's deliverables.

(5) Section E - Inspection and Acceptance

Section E describes the inspection, acceptance, quality assurance, and reliability requirements of the software. It also defines Government and contractor responsibilities during the delivery, inspection, and acceptance and identifies the place of inspection and acceptance for all software ordered under the contract.

(6) Section F - Deliveries or Performance

Section F specifies the time, place, and method of delivery and/or the performance of the requirement(s) defined in the SOW. Delivery or completion schedules are stated as specific calendar dates or work days elapsed after contract award. Performance specifies such things as levels of availability and warranty of the software after acceptance, maintenance response time, liquidated damages if contract is breached, and variation in quantity requirements.

(7) Section G - Contract Administration Data

Section G provides instructions about contract administration. It identifies the contracting office, contracting authority, Contracting Officer's Representative (COR) and Contracting Officer's Technical Representative (COTR) responsibilities, and billing and payment information.

(8) Section H - Special Contract Requirements

Section H includes special clauses that are required, but have not been included in Section I or other sections of the uniform contract format. It includes information about ordering, licensing, warranty exclusions and limitation of damages, site access, technology refreshment, and engineering changes.

(9) Section I - Contract Clauses

Section I contains, either in full text or by reference, the clauses required by law, the FAR, and other regulations.

(10) Section J - List of Attachments

Section J contains all RFP exhibits that are too lengthy to be conveniently inserted into the main body of the SOW (e.g., FIPS PUB Compliance List, detailed supplemental data/information to be used by an offeror in preparing proposals, a Glossary of Terms). This section must list the title, date, and number of pages for each attached document, exhibit, or other attachment.

(11) Section K - Representations, Certifications, and Other Statements of Offerors or Quoters

Section K contains provisions that require representations, certifications, or the submission of other information by offerors as specified in the FAR. Offerors are asked to provide information about their type of business and certify that they have complied with applicable Federal laws and regulations.

(12) Section L - Instructions, Conditions, and Notices to Offerors or Quoters

Section L provides instructions to the offerors about preparing and submitting their proposals. For example, prospective offerors may be instructed to submit separate technical and cost proposals. Other information appropriate to this section includes: o Proposal format o Restrictions about disclosure and use of data o Site visits o Offeror's proposed milestone schedule for the project o Technical and cost questionnaires o Page restrictions (as appropriate)

(13) Section M - Evaluation Factors for Award

Section M provides information about the way the Government intends to select the contractor. This section identifies the factors (e.g., price or cost, technical, management) and other significant subfactors that will be considered in evaluating and awarding the contract. It also states the relative importance the Government places on these factors and the relative importance of cost or price to the combined weight of the other award factors.

c. The Solicitation Library

In large, complex commercial software acquisitions, a solicitation library containing related background documents should be made available to the offerors for use in preparing their proposals. For example, if the acquisition is for application system software that must interface with numerous other application systems, the solicitation library might contain documentation describing these other application systems. This library should be set-up in a controlled area. The Government may also elect to provide photocopying facilities (including an applicable charge mechanism) to allow the potential offerors to copy data they deem necessary while maintaining the integrity of the library. Usually, access to this library is by appointment. This ensures that only one offeror uses the library at a time and prevents easy identification of a competitor.

d. Defining RFP Terminology for Functional and Other Requirements

In developing the RFP, the language used to describe the functional requirements in the Requirements Analysis and Analysis of Alternatives must be expanded to a different and more precise language for inclusion in the solicitation document.

(1) State minimum mandatory requirements

Requirements must be precisely specified only in terms of what is minimally necessary to perform the function or support the performance and workload. If the quantity required is not definite, the mandatory requirements may be stated in terms of a range in which the Government indicates the minimum and maximum amounts of business the contract winner can expect. The offeror must provide

the commercial software capabilities necessary to meet these requirements to be considered responsive to the RFP. o Desirable optional features -- These are features/capabilities the Government would like; however, an offeror does not need to provide them to be considered responsive to the RFP. They might range from a complete software package, such as a set of CASE tools, to specific capabilities within a package, such as specific security-related capabilities incorporated into the operating system. Although these features can be used to acquire capabilities above the minimum mandatory requirements, the FIRMR requires that all features identified in the RFP be evaluated. Therefore, the Government must indicate the evaluation criteria and relative worth (dollar value) of the optional features in the solicitation.

(2) Define all terminology used in the document

All terms, definitions, or phrases that might be interpreted in more than one way must be defined to prevent confusion.

(3) Be precise in specifying requirements

Avoid subjective terms that cannot be accurately measured, defined, or identified by either the Government or the offeror/contractor. Examples include "as necessary," "where feasible," "an unacceptable level of performance," "an appropriate response time."

(4) Specify requirements as broadly as possible

The following specifications provide for the widest range of solutions: o Functional specifications -- These describe what the Government wishes to accomplish in terms of mission and program needs. Examples include descriptions of the functions to be provided by a "help" facility or the types of database queries to be supported. o Performance specifications -- These describe the performance characteristics that the software must provide. Examples of software performance specifications could include interactive response times and amount of workload to be completed within a specified period of time. These do not specify how the workload will be supported nor are they tied to a specific set of FIP resources.

e. Other Types of Specifications May Be Included

Other types of specifications may also be included in a solicitation document when they have been substantiated in the Requirements Analysis and Analysis of Alternatives. Some agencies require approval of these types of specifications before their inclusion in an RFP.

(1) Software and equipment plug-to-plug compatible functionally equivalent specifications

These specifications are based on specific hardware and software. The key distinction is usually that the software must operate within given compatibility constraints (i.e., interface with a particular DBMS). The requirements are then considered competitive among vendors who market the software for the prescribed environment.

(2) Brand name or equal specifications

These specifications are often used to replace or augment existing software. To be responsive, the vendor must offer either the brand name software package or a package that is determined equal to it by comparing the salient characteristics identified in the item description.

(3) Specific make and model specifications

These describe a specific software package that must be provided. No substitute is permitted. Because this type of specification limits competition, it must be justified and approved in accordance with the FAR and FIRMR.

f. Contract Type

Two general categories of contracts are "fixed-price" and "cost-reimbursement." They differ in the degree of risk assumed by the contractor for the costs of performance and the amount and kind of profit incentive offered the contractor to achieve or exceed specified standards or goals. These two basic contract types are modified to permit the proper degree of cost responsibility and profit for the risks of the procurement. In terms of contractor risk and responsibility, the contractor assumes maximum risk in a fixed-price contract, and minimum risk in a cost-reimbursement contract. FAR Part 16 identifies the factors to be considered in deciding the contract type(s). These are: o Type and complexity of the software item and service being contracted for o Urgency of the requirement o Period of contract performance o Concurrent contracts and extent and nature of proposed subcontracting o Price competition o Price and cost analysis o Contractor's technical capability and financial responsibility o Adequacy of the contractor's accounting system Other factors to consider are: o The difficulty of estimating the package modification costs because of imprecise specifications and lack of prior experience with the contractor. o Incentives the contract can provide to ensure the contractor meets schedule or other requirements. o Administrative cost to both parties for the contract type selected. After considering the appropriate factors, the CO determines the proper type(s) of contract to be used. Those most frequently used to acquire commercial software are: o Firm fixed-price (FFP) contracts -- The contractor agrees to provide the commercial software package or perform a service for a price that is either specified in the contract or calculated from its terms. The contractor agrees to furnish specified supplies and services at a stipulated price that is not subject to adjustment because of performance costs. This type of contract carries the greatest degree of risk, as well as the maximum potential for profit, to the contractor. Regardless of costs, the contractor collects the agreed-upon price for acceptable performance. Thus, there is a maximum reward for efficient performance and the potential for significant loss for inefficiency. Fixed-price contracts are appropriate for customized commercial software if a design for the customization has been established and costs can be accurately predicted by the contractor. This contract type is the one most commonly used as the contractor assumes all the cost risk and contract administration efforts are small. o Cost-reimbursement contracts -- The contractor is paid allowable costs incurred for performance to the extent prescribed in the contract. This type of contract estimates total costs to obligate funds and sets a ceiling the contractor may not exceed, except at its own risk, without prior approval. Under cost-reimbursement contracts, with limited exceptions, the Government takes all the cost risks of performance; the contractor takes no more than a minor risk and is generally guaranteed a profit. However, the advantages of a cost-reimbursement contract include: oo The Government pays for only the costs incurred. oo The contract provides more flexibility for the Government to revise specifications and requirements as long as the changes remain within the scope of the original contract. A cost-reimbursement contract is suitable only when the uncertainties involved in contract performance are such that cost of performance cannot be estimated with sufficient accuracy to permit use of any type of FFP contract. A cost-reimbursement contract may be used only when: oo An adequate contractor cost accounting system exists for determining costs applicable to the contract; oo Appropriate Government surveillance during performance will reasonably assure efficient methods and effective cost controls are used; and oo A determination and findings, in accordance with agency procedures, has been executed and shows that contract type is less costly than any other type and is the only practical type to obtain the software capabilities required. A combination of contract types may be specified in the RFP by individual requirement area. A composite approach is frequently used when the commercial software requires significant customization or technical support. The commercial software package is acquired at a fixed price since this portion of the acquisition fits the criteria for that pricing strategy. The customization services or technical support are then usually acquired under a cost-reimbursement strategy.

g. Conduct Individual and Acquisition Team Reviews

The RFP must be as concise and complete as practical. Part of the process for ensuring this is to conduct numerous reviews throughout its development. A methodology, appropriate to the size and scope of the acquisition, should be developed and implemented so that all individuals in a discipline and all disciplines are involved in the review process. The Source Selection Plan, evaluation criteria,

and evaluation process should also be developed and reviewed by individuals representing all disciplines to ensure that they are complete, practical, and meet the acquisition's objectives. The individuals involved in these efforts, however, should be limited to only those who will be involved in the source selection process.

h. Development of an Independent Government Cost Estimate (IGCE)

FAR Part 4 specifies that the Government must develop an independent projected cost for the contract to be awarded as a result of the solicitation. This estimate, which must be in the contract file, is usually prepared by the PM. The IGCE should be submitted to the CO before issuing the RFP. It should be organized by Contract Line Item Number (CLIN), as described in Section B or according to the instructions in Section L of the RFP. The IGCE should also include: o The rationale used in deriving the estimate. o Assumptions o Constraints o Sources of or basis for the cost data.

i. Obtaining Industry Comments On Draft Specifications

The FIRMR allows an agency the option to provide potential offerors with a copy of the proposed specifications before release of the formal solicitation by issuing a Request for Comment (RFC) to industry. Its objective is to obtain industry comment on contemplated specifications. Use of an RFC allows the Government to assess the SOW's clarity, completeness, and competitiveness. It also permits the Government the opportunity to obtain input about additional modifications it may want to make to the SOW (or terms and conditions) that it considers in its best interest. Notification of an RFC is published in the Commerce Business Daily (CBD) allowing all potential offerors, as well as those on a bidder's mailing list, to be given a copy of the proposed specifications. Offerors should be given a minimum of 30 calendar days to submit their written comments unless the acquisition is complex. Then they normally should be given at least 60 calendar days to submit their comments. The agency then evaluates the comments and takes appropriate action. The Government's action on the comments is final. The Government is not required to discuss the comments received or actions taken. FAR Part 15 allows COs to release a solicitation for information or planning purposes when the information desired cannot be obtained by more economical and less formal means. This action must be approved at a level higher than the CO. Although it usually adds both time and resources to the acquisition process, it frequently results in clarification of the SOW and may reduce the number of amendments required for the RFP. Allowing for this additional time in the acquisition plan is generally worth while in terms of improved clarity, completeness, and competitiveness of the RFP.

j. Publicizing the Requirement in the Commerce Business Daily (CBD)

FAR Part 5 permits specific exceptions to publication requirements. Unless one of these exceptions applies, the CO must announce proposed acquisitions in the CBD (usually in Section 70), which is published in five or six daily editions each week. The CBD serves as the principal means of publicizing the Government's requirements. The notice must appear at least 15 days before issuance of the RFP. The CBD notice should provide sufficient information about the procurement to enable vendors to decide if they want to respond. The CO must ensure that potential offerors receive a copy. The CO issues presolicitation notices to potential sources and places a synopsis of the notice in the CBD. A presolicitation notice must: o Define as explicitly as possible the information required in the response o Indicate whether the presolicitation notice will be followed by a presolicitation conference and a formal solicitation o Set a deadline for an expression of interest

k. Issuing the Solicitation

The RFP is issued upon approval from all required internal agency oversight organizations and receipt of the delegation of procurement authority (DPA) from GSA, if required. The CO is responsible for issuing the solicitation document when it is complete and correct. Unless a restricted competition has been justified and approved, the CO should issue the solicitation to all vendors who are on the mailing lists and/or who expressed an interest in the procurement. Once the RFP is issued, agencies must, by statute, allow a minimum of 30 days response time from the date of issuance for receipt of proposals.

In complex acquisitions involving P∧CVs, a longer time for receipt of proposals should be specified.

(1) Preproposal Conference

The acquisition plan may identify a preproposal conference before submission of proposals. The conference objective is to explain and clarify requirements, reduce potential misunderstandings, and ensure maximum uniform communication of the Government's requirements to the potential offerors. Potential offerors are generally requested to submit questions prior to the conference so that the CO and SST members can prepare appropriate answers. Questions raised during the conference may require research or consideration beyond the practical limits of the conference. If this occurs, the Government can elect to answer those question(s) in writing at a later date. This should be done as soon as possible. A formal record of the conference is usually prepared and mailed to each potential offeror.

(2) Answering Questions and Amending the RFP

As stated, the Government must allow a minimum of 30 days for offerors to respond to an RFP. During this time, offerors may ask the Government to clarify information in the RFP. This can happen during the preproposal conference or by written comments and questions submitted to the CO. The Government, through the CO, responds in writing and may amend the RFP, depending upon the issue raised. The RFP can be changed only by amendment and not by publishing answers to industry comments or questions. These amendments are usually developed by the SSEB and CO. A number of clarifications/amendments may occur on a large, complex acquisition. After a reasonable time, determined by the CO, no more questions or requests for clarification are accepted. At this point, a final date and time are set for receipt of proposals. Proposals received after the deadline are usually not considered unless the rules governing late proposals are met.

13.4 PROPOSAL EVALUATION AND SELECTION

Proposal evaluation and selection are conducted by SST members, supported by various agency organizations as required (e.g., the Office of the General Council).

a. Receipt of Proposals

Proposals must be received by the designated date and time to be considered responsive to the RFP. All proposals received, via mail or hand-delivered, must be marked with the time and date of delivery. If requested, the agency must provide a receipt for hand-delivered proposals. The Source Selection Plan may also include logging in proposals on a separate form that would then be used to track them through the evaluation process.

b. Proposal Control and Security

Proposal control and security rules and procedures should be followed for both proposal contents and communications with offerors. o Proposal security -- All proposals, classified and unclassified, should be handled in accordance with agency regulations. At a minimum, proposals should be stored in locked facilities before opening and when not actually being evaluated. A secure area should be set aside for the team's evaluation of the proposals. o Disclosure of information -- During the acquisition process, communication with vendors must be carefully controlled to treat all offerors equally and fairly, as well as to minimize the risk of protest. The FAR states that only the CO (or other individuals having either specific contractual authority or other specific authority) may conduct discussions with offerors regarding the solicitation and their proposals and transmit technical or other information. Before contract award, the CO must furnish identical information about the proposed acquisition to all prospective contractors. Either before or after receipt of proposals, the CO may, if requested, provide information or clarifications to all offerors in writing and/or by amending the RFP. Such information might include explanation of a contract clause or a functional requirement to be provided by the

software. o Technical clarifications must be controlled -- At any time during the solicitation phase, vendors may submit questions about the acquisition and the Government's requirements. All questions should be directed to the CO who, in consultation with the PM, IRM, and legal advisors, will take appropriate action (e.g., issue written responses, amend the RFP). The CO will provide the Government's responses to questions from one vendor to all potential offerors, although the responses should not give the name of the questioning vendor. o Number of proposals -- No information about the proposals received, the number or identity of offerors can be made available to the public or to anyone in the Government not having a need to know. o Security during the proposal evaluation process -- Only the CO or other authorized individual may transmit technical or other information to prospective contractors and conduct discussions. No information will be furnished to an offeror if, alone or together with other information, it may afford that offeror an advantage over others.

c. Steps In the Evaluation Process

The steps in the evaluation process, as depicted in Figure 13-3, are described below. Although stated in rough chronological order, all proposals do not necessarily have to complete each stage in the evaluation process before the next stage can begin. Figure 13-3, Representative Evaluation Process

(1) Source Selection Team Orientation

A brief training program should be conducted to prepare the SST to conduct the source selection process. Members should be familiar with the process, evaluation criteria, responsibilities, and evaluation materials (handbooks for documenting the results) before beginning the evaluation process.

(2) Evaluation of Compliance with RFP Instructions

The CO must first validate that each proposal received meets the RFP's format and content requirements. If any are not in compliance, the CO may: o Request clarification as to the reason for the inconsistency(ies), then determine if the offeror has a reasonable chance of correcting the deficiency(ies). If so, the CO will usually allow the offeror to do so. The proposal is not forwarded for evaluation until it is corrected. o Notify offerors of deficiencies in their proposals and request additional materials or corrections to be submitted to remove them. o Notify the offeror the proposal is non-compliant and eliminate it from further consideration.

(3) Evaluation of Mandatory Technical Requirements

The TEP then evaluates each proposal to determine whether it meets the minimum mandatory requirements specified in the RFP. This is a pass/fail process. An offeror whose proposal initially fails this evaluation may, at the discretion of the CO, be given a chance to modify/clarify/correct the proposal. If attempt(s) to clarify and/or correct deficiencies of a proposal are unsuccessful and an offeror still doesn't meet the requirements of the RFP, the CO may consider the offeror non-compliant. If this determination is made, the CO must immediately notify the offeror and no further evaluation of its proposal will be conducted. All results of this process must be fully justified and documented for each offeror.

(4) Clarifications

Clarification means communication with an offeror for the sole purpose of eliminating minor irregularities, informalities, or apparent clerical mistakes in a proposal. A clarification request does not give an offeror the opportunity to revise or modify its proposal except to the extent that correction of apparent clerical mistakes results in a revision. An example of a clarification would be a missing representation in an offeror's proposal. During the evaluation process, the Government may require clarification of an offeror's representations or substantiations on any aspect of the technical or cost proposals. Usually the CO allows a minimum of one week for a response to a request for clarification.

(5) Technical Evaluation and Scoring

Proposals meeting minimum mandatory requirements will then be further evaluated to determine and score the technical advantages, disadvantages and risks to the agency (e.g., determine the technical value of the proposal to the Government). In this process, the Technical Evaluation Panel (TEP) will analyze each offeror's proposal in areas (factors and subfactors) identified in Section M of the RFP to determine the proposal's technical score. This process is defined as the "greatest value" evaluation approach. It permits the award to be made to an offeror with a higher price if the combined price and technical merit of the proposal best meets the needs of the Government. In this approach, evaluation of technical merit must be considered throughout the evaluation process. The technical evaluation uses the approved factors, subfactors, items/elements, and criteria/standards in accordance with the procedures established and documented in the Source Selection Plan and identified in Section M the RFP. Scoring of proposals may be accomplished in a number of ways, depending on the degree of technical detail in the specification, knowledge of industry offerings likely to be proposed, and the degree of confidence in the offerors who may submit proposals. Each evaluation factor/subfactor/item must have an assigned worth that indicates its importance to the Government. This set of relative importance is the standard against which the proposals will be evaluated. Source Selection Plans may specify not telling the SSEB the relative weights of each of the evaluation factors/subfactors/items. This is usually done to increase the objectivity of the TEP. In this approach, members of the TEP determine a technical score for each factor, subfactor, and item according to preestablished criteria. The CO then determines their weighted scores based upon their relative worth. The technical scoring process described in Section M of the RFP may be based upon subjective or discrete criteria. Regardless of the criteria used, the scoring must be justified and documented. o Subjective criteria -- Allow the TEP to analyze each offeror's proposal to determine strengths, weaknesses, and risks in relationship to the factors (and subfactors, and elements as applicable) identified in the RFP. The strengths and weaknesses are then reviewed and a consensus score (which may be a raw score if the TEP doesn't know the actual worth) developed by the TEP to indicate the factors' value to the Government. Scores may be indicated by various means: numbers (e.g., 1 through 10), adjectives (e.g., excellent, good, etc.), plus/minus/checks, or color coded (green = excellent, red = poor, etc.). o Discrete criteria -- A set of values given to specific capabilities within each area (factor/subfactor/element). For example, the use of English text to identify input errors might be a discrete criterion. The capability is usually assigned a predetermined score/weight. The results of the technical evaluation process must be fully justified and documented for each offeror.

(6) Initial Cost Evaluation

Cost evaluation usually takes place after a proposal meets minimum mandatory requirements and at the same time as the technical evaluation. The CO is responsible for this evaluation. Performed by the Cost Evaluation Panel (CEP), the cost evaluation determines the Government's life-cycle costs using a "present value of money" factor. (OMB Circular A-94 describes the "Discount Rates to be Used in Evaluating Time-Distributed Costs and Benefits.") The initial prices in the offeror's proposals usually are different from those in the BAFO's. Additional input about these costs, such as a list of all software components proposed, may be received from the TEP only through the CO. The results of the cost evaluation must be documented for each offeror. If other than a fixed price contract is specified, the cost evaluation process must address cost realism. This process includes consideration of such things as the offeror's assumptions and constraints made in its proposal, unbalanced pricing for software modification support, etc.

(7) Establishing the Competitive Range

The CO establishes the competitive range for the acquisition based upon review of both the technical score and costs of each proposal. In this process, the CO will identify those offerors whose combination of technical scores and cost has a "reasonable" chance of being awarded the contract, all factors considered. This is the first time a proposal's technical aspect and associated costs are examined together. The CO has broad discretion to determine whether to place a proposal in the competitive range. When there is doubt, the proposal should be included. The CO notifies offerors not in the competitive range as soon as practical. The CO may, if stated in the RFP, choose to award the contract

without further written or oral discussion. FAR Part 15.6 identifies the conditions upon which such an award can be made.

(8) Performance and Capability Validation (P∧CV)

P∧CVs are Government-constructed tests that verify the performance and/or functional capabilities of a proposed system or software package. Performance validations ensure that the offered software can satisfy the performance requirements specified in the solicitation document (e.g., process x transactions within y period of time). Because overall system performance results from many interactions of various hardware and software components, accurately and fairly isolating the effects of the software package can be difficult. The following techniques are among those commonly used to validate performance: o Timed execution of existing agency data o Benchmarks executed with synthetically generated workloads o Benchmarks with remote terminal emulation with simulated on-line workload o Acceptance testing with the present complement of operational software, data files, and workloads o "Stress testing" with exaggerated workload volumes o Manual modeling the interaction of the new software and its workload o Simulation modeling using computer programs Capability validation ensures that the offered software provides the required functions. Examples of capability validation techniques include: o Operational Capability Demonstrations (OCDs) or Live Test Demonstrations (LTDs) of the software o Verification of conformance with pertinent ADP standards o Expert examination of technical literature supplied with the offer o Contacts with other users of the proposed software o Vendor certification of conformance with the functional requirements The P∧CV should be designed to test performance, capability, or both depending on their criticality to the agency's requirements and the resources available to conduct P∧CVs. Similarly, the agency should match its P∧CV techniques to these criteria. While some techniques are more effective than others, they often require a larger commitment of resources from both the Government and the offeror. GSA has published A Guide for Performance and Capability Validation, another guide in this series, to help agencies select the most appropriate P∧CV techniques. If specified in the RFP, a P∧CV may be required of the offerors in the competitive range. (A modification of this process is to specify that only the apparent winner will be required to perform a P∧CV.) The RFP may require all or a portion of the results of P∧CVs to be provided with offerors' proposals to initially verify the performance capabilities of the proposed software. When the results are submitted with proposals, the Government will verify them during the Government-witnessed P∧CV. Government-witnessed P∧CVs are scheduled and conducted at each offeror's site or at an agency-designated location. In conducting a Government-witnessed P∧CV, the CO, supported by selected members of the SST, will visit each offeror's facilities or the selected site to witness the execution of the validations. The RFP must state how the P∧CV will be evaluated. It is usually a pass/fail process. There are instances, however, when P∧CV results can modify a proposal's technical score. Government witnesses must fully document the validation results.

(9) Discussions and Negotiations

Discussion means any oral or written communication between the Government and an offeror that (a) involves information essential for determining the acceptability of a proposal or (b) provides the offeror an opportunity to revise or modify its proposal. FAR 15.6 describes the content and extent of the discussions permitted and when written or oral discussions need not be applied. The CO conducts individual discussions and negotiations with each offeror in the competitive range to resolve outstanding proposal issues (e.g., deficiencies in the proposal, suspected mistakes, etc.) and provides each a final opportunity to submit revisions to their technical and cost proposals. In this process, the Government must be careful not to engage in: o Technical leveling -- helping an offeror bring up its technical score through successive rounds of discussions by pointing out technical weaknesses o Technical transfusion -- disclosure of technical information that allows a proposal to be improved o Auction techniques -- indicating a cost or price which must be met to obtain further consideration, the relative price standing, or furnishing information about another offerors' prices.

(10) Best and Final Offers (BAFO)

After discussions, all offerors in the competitive range are given a final opportunity to submit revised (technical and cost) proposals. Although offerors can change their technical proposal, BAFOs usually focus on price, only changing the technical approach (and/or assumptions) to meet requirements or reduce the price. The CO notifies all offerors in writing of a specific date and time to submit their BAFOs. When this notification is issued, no further discussions with the offerors are permitted. Offerors may elect not to submit a BAFO. If so, their original proposal must still be considered further. Repeated requests for BAFOs are discouraged as they undermine the integrity of the procurement process. Calling for a new round of BAFOs on the theory that successive rounds may reduce price is both improper and ultimately self-defeating.

(11) Rescoring Proposals

Upon receipt of the BAFOs, the TEP and the CEP must reevaluate and rescore the affected portions of the original proposals. Care must be taken to ensure each proposal still meets the mandatory requirements of the RFP. The CO may eliminate from the competitive range proposals not meeting these requirements. In the event that the relative scores and standing of the offerors have changed because of BAFO submissions, the SSEB must document the basis for the revised scores. The results of this process are then submitted to the CO for approval.

d. Selection of the Apparent Winner

The CO, upon review of the results of the evaluation of the BAFOs, selects the apparent winner by using the method described in the Source Selection Plan. The CO then prepares a final selection package containing the justification for the recommended award and all the pertinent evaluation documentation necessary for SSA review. In justifying the recommendation, the CO will: o Provide a summary of the results of the technical and cost evaluation processes, noting the major strengths, weaknesses, and risks associated with each offeror's proposal. o Provide a rationale why the recommended offer is most advantageous to the Government.

e. Responsibility and Legal Reviews

When the apparent winner is selected, both a responsibility and a legal review of the recommended contract may be required.

(1) Responsibility

The CO, as part of the final pre-award review process, must determine that the proposed contractor is financially sound and responsible. To support this determination, the CO usually enlists an auditor's services (usually the Defense Contracting Audit Agency (DCAA) for larger contracts) to ensure that a Government-approved financial accounting system is in place and that the recommended contractor is financially stable and uses sound financial controls to conduct its business. The auditing organization might also look at other areas of financial interest, such as the organization's salary structure or principal's interests in the company. Upon the auditors' recommendation, the CO will then sign a determination statement.

(2) Legal Review of the Contract Document

An agency's legal counsel generally reviews the proposed contract to ensure that it meets all legal and regulatory requirements of the Government and the agency. The legal counsel should also ensure that the terms and conditions of the contract are in the Government's best interest.

f. Award

The selection package containing the CO's recommended awardee is forwarded to the SSA for review and approval. In order not to violate applicable statutes or regulations, the SSA will ensure the required reviews by agency contracting and legal organizations are completed before the selection is finalized. If in the SSA's review of the CO's recommendations, the SSA elects to award the contract to an offeror

different than the one recommended by the CO, the SSA must fully justify and document the decision by providing a full and complete rationale for the selection of the contractor. The basis for this justification must be defensible to both the offerors and oversight organizations.

g. Notifying Unsuccessful Offerors

The FAR requires prompt notification be sent to all unsuccessful offerors. The FAR requires pre-award notification to offerors when (1) the value of the procurement is greater than $25,000 and the proposal evaluation period exceeds 30 days or (2) when a limited number of offerors were in the competitive range. The FAR requires a post-award notification be sent to each unsuccessful offeror for procurements over $25,000. This notice should include: o The number of proposals received o The name and address of offeror(s) receiving the award o The items, quantities, and unit prices as applicable or total contract price of the winning offer o The general reason(s) an offeror was not selected. An offeror's costs, processes, techniques, or other confidential business information must not be disclosed to any other offeror.

h. Debriefing Unsuccessful Offerors

FAR Part 15 outlines the requirements for debriefing unsuccessful offerors. The regulation requires that, when a contract is awarded on a basis other than price alone, the CO, upon written request, must debrief an unsuccessful offeror. The specific information that can be provided during debriefings is governed by the provisions of the Freedom of Information Act (FOIA). This debriefing should be limited to the specific strengths and weaknesses of an offeror's proposal and a general explanation of the evaluation methodology. Detailed comparisons of proposals are not permitted. A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE--CHAPTER 14

CHAPTER 14: CONTRACT ADMINISTRATION

Administration of a contract officially begins at contract award and concludes when work is completed and accepted, any disputes are resolved, and final payment is made. The purpose of contract administration is to ensure that the Government receives the products and services in accordance with the terms of the contract. Contract administration can be simple or complex, depending on the contract and the nature of the work performed by the contractor. For example, procurement of "shrink-wrapped" software (e.g., spreadsheets or word processing packages for microcomputers) may require only inspection and acceptance when delivered. On the other hand, a cost-reimbursement contract for customized commercial software may involve daily administrative actions including subcontract and overtime approvals, continuing oversight of contract performance, and interpretation of specifications.

14.1 ROLES AND RESPONSIBILITIES

The Contracting Officer (CO) has responsibility for ensuring that both the contractor and the Government comply with the contract terms and is ultimately responsible for all areas of contract administration as defined in FAR Part 42. However, one person rarely possesses all the necessary expertise to monitor all areas of the contractor's performance. The CO, therefore, typically delegates responsibilities based on the expertise required to perform them, as shown in Figure 14-1. The delegated duties are recorded in the contract and maintained in the contract file. Figure 14-1, Division of Contract Administration Tasks

a. Contracting Personnel

In addition to the CO, most contracts have a COTR and/or a COR. The COTR is usually from the program office, while the COR usually comes from the contracting office. If both are assigned, the COR takes an administrative role (preparation of payment vouchers, overseeing contractor compliance with delivery/performance, and maintaining contract files). The COTR takes a performance-oriented role (inspecting the contractor's work, answering technical questions, and interpreting software

specifications). Specific duties will vary from contract to contract. Figure 14-2 lists examples of CO, COTR, and COR responsibilities. Figure 14-2, Typical Contract Administration Responsibilities Agencies may designate a Procuring Contracting Officer (PCO) for solicitation development and contract award and an Administrative Contracting Officer (ACO) to administer the contract after award. This division of responsibilities is normally reserved for large, complex procurements and would not usually be warranted for acquisitions of commercial software. An agency's policy and procedures normally specify the most appropriate delegations of responsibility.

b. IRM/Technical Personnel

IRM/technical personnel help administer the contract by providing technical expertise and are delegated authority for specific technical or administrative tasks. The extent of the delegated authority should be described in the contract and by formal correspondence. Typical tasks performed by IRM/technical personnel may include inspection and acceptance, software performance evaluation, and quality assurance reviews.

c. Program Personnel

The Program Manager (PM) normally assists the CO to ensure that the software provided meets the users' requirements as specified in the contract. The CO may delegate COTR responsibilities, such as inspection and acceptance duties, to the PM or to other representatives of the user organization. This is most appropriate when software functions are so specialized that only the program staff can assess whether they are being performed properly. The extent of this delegation should be documented in the contract file. PMs with officially delegated duties are usually found on larger, more complex projects. Typically, a procurement for shrink-wrapped software would not have a formal PM.

14.2 PROJECT INITIATION MEETING

The relationship between an agency and its contractor is extremely important to the success of the contract. A project initiation meeting helps establish that relationship. The purpose of the meeting is to achieve a mutual understanding of all the administrative and performance requirements of the contract. The meeting provides an opportunity to refine minor points, to introduce the players and describe their roles in the project, and to establish an effective working relationship between the Government and the contractor. It is not intended as a forum for lengthy discussions concerning project requirements. The CO, together with the COTR and/or PM, decides if a project initiation meeting is needed when the SOW does not specify one. On small or low-cost contracts, this orientation is often achieved via a letter from the Government to the contractor. On larger efforts, a face-to-face meeting may be warranted. Example agenda items are shown in Figure 14-3. Figure 14-3, Sample Agenda Items

14.3 CONTRACT MONITORING

Monitoring begins immediately after the contract has been awarded and ends when disputes, if any, are resolved and the contract is closed-out. Its main purpose is to verify that a contractor's performance fulfills the contract requirements in terms of: o Work conforming to the specifications (e.g., the software is performing as promised and documentation is complete and accurate), o Satisfactory progress (e.g., software modifications or error corrections are being made in a timely manner, training is proceeding as planned), o Delivery or performance on time, and o Costs within the estimated range. Routine contract monitoring includes communicating with the contractor, obtaining performance, determining awards and incentives, and closing out the contract. Other less common monitoring tasks occur when changes in the contract terms or termination of the contract is required. These include contract modifications, liquidated damages, disputes, and contract terminations.

a. Communicating with the Contractor

The contract should describe arrangements for all contract-related communications between the contractor and Government personnel, and specific communication lines should be established. For

example, the COTR should address technical performance matters while the CO should address any questions about contract terms or conditions. In addition, both the Government and contractor should clearly define the authorities of their personnel. All direction, agreements, and deliverable approvals should be documented and signed by the appropriate Government individual. Throughout contract administration, Government representatives must not exceed their approved level of delegated authority. A fine line exists between technical instructions and contractual discussions/changes. For example, if a COTR instructs the contractor to perform extra work, the contractor may make a claim for additional payment. The CO should ensure that the contractor is fully aware of the scope of the contract and that any assigned work stays within this scope.

b. Obtaining Performance

The contract is the measurement device used to determine whether contractor performance is meeting technical, schedule, and cost criteria. It consists of the RFP (including amendments) and the contractor's final proposal. If conflicts arise in interpreting requirements for contract performance, the requirements stated in the RFP normally override the contractor's proposal. Exceptions include contractor assumptions accepted by the Government before contract award. In addition, certain sections of the Uniform Contract Format take precedence over others (e.g., Section F overrides Section C).

(1) Technical Performance

Generally, the COTR determines whether the contractor is meeting the technical requirements of the contract. Inspection and formal acceptance are the keys to the Government's ability to enforce the contract requirements and monitor technical performance. Types of inspections used to monitor the performance of commercial software include review of documentation and Government-witnessed functional and performance tests. Key considerations include: o Functional, design-based, or performance specifications -- The type of specifications contained in the SOW determines responsibility for ensuring an acceptable product. If the SOW contains functional or performance-based specifications, the contractor is responsible. If the SOW contains design specifications, the Government is responsible. o Compliance with specifications -- Specifications must be interpreted in the context of the technical environment and the contract, not in isolation. Specific performance or design-related specifications (e.g., compatible with a specific hardware configuration) usually require "strict" compliance by the contractor. Functional or more general performance specifications (e.g., process 100 payroll checks biweekly) require "substantial" compliance; i.e, a reasonably comprehensive solution to the requirement. o Defective specifications -- Defective specifications are usually defined as those that are deficient, erroneous, illegible, or contain internal conflicts. Upon identification of defective specifications, the CO must try to resolve the problem as soon as possible. Generally, the General Services Board of Contract Appeals (GSBCA) and the courts will rule in favor of the contractor when specifications are determined to be defective because the contractor cannot be held accountable for misdefined requirements.

(2) Cost Performance

The CO, usually with assistance from a COTR or a COR, is responsible for monitoring contract costs. Firm Fixed Price (FFP) contracts are typically easier to monitor than other contracts. Under FFP contracts, the contractor has an incentive to perform economically because every dollar beneath the contract price becomes additional profit. This eliminates the need to track the contractor's costs. However, under most labor hour, time and materials, and cost reimbursement contracts, the same sort of incentive does not exist. The contractor receives payment based on a fixed amount per hour or the costs incurred in doing the work. The COTR or COR should track the costs to determine whether they are reasonable. FAR Part 31 defines reasonable costs as costs that "in nature and amount do not exceed that which would be incurred by a prudent person in the conduct of competitive business." If the COTR or COR thinks they are not reasonable, the burden of proof is on the contractor to demonstrate that they are. Until the contractor can do so, the costs are not reimbursable and the Government is not responsible for payment. If contract changes occur, the Government may have to adjust contract

price/cost limitations. Determining equitable payments, satisfactory to both parties, has historically been a problem. In a cost reimbursement contract, if the authorized reimbursable costs are not defined well, problems concerning appropriate compensation may arise. No precise formula exists for calculating the exact amount of an equitable adjustment in every situation. The analysis of previous changes by the contractor and market sources should be used to determine a fair price.

(3) Schedule Performance

Usually the COTR or COR determines if the contractor is performing on schedule and whether the contractor's own progress monitoring system is adequate. The effort needed to monitor schedule performance depends on the size and nature of the overall contract requirements. It is much easier to determine if a contract for delivery of shrink-wrap software is on schedule than one for customizing a commercial software package. To be a useful management tool, delivery schedules must be realistic. If a contract falls too far behind schedule, the Government may terminate for default. However, the CO should give the contractor time to correct problems before moving to default procedures. To get back on schedule, the contractor may try working overtime and/or multiple shifts. If the contract is cost based (e.g., labor hour, time and materials, or cost reimbursable), the CO or COR should pay close attention to overtime or premium pay.

c. Determining Award and Incentives

Contracts containing award and/or incentive plans provide the contractor with an incentive to improve performance (e.g., cost, schedule, management, expertise). The CO has responsibility for determining if the contractor has met the requirements necessary to receive the award. Some contracts require the CO's subjective evaluation of the contractor's performance (i.e., cost-plus-award-fee), while others require objective evaluation of cost data (i.e., cost-plus incentive-fee, fixed-price-incentive).

(1) Cost-Plus-Award-Fee (CPAF)

The Government pays allowable cost, base fee, and award fee. The contractor earns a base fee that does not vary with performance and, in addition, earns all or part of an award fee based on the CO's subjective evaluation of the contractor's performance. The CO (with input from program and IRM/technical staff) unilaterally determines the amount of the award fee. Evaluation of the contractor's performance occurs at stated intervals and corresponding partial payments of the fee are made.

(2) Cost-Plus-Incentive-Fee (CPIF)

Under this type of contract, the Government pays allowable cost and an incentive fee. Determination of the incentive fee results from comparing actual cost to target cost. The target fee is then calculated by applying a fee adjustment formula (share ratio) to the difference between the target and actual cost. The adjustment fee is limited by the minimum and maximum negotiated fees.

(3) Fixed-Price-Incentive (FPI)

The Government pays a price equal to the sum of the final negotiated cost and final profit. Final profit is determined by comparing final negotiated cost and adjusted target profit by applying a formula (share ratio). The final price cannot exceed the ceiling price.

d. Exercising Contract Options

A contract option gives the Government the unilateral right, at a specific time and price, to purchase additional supplies or services or to extend the contract's period of performance. The Government will exercise a contract option only if-- o Funds are available; o The requirement covered by the option meets an existing need of the Government; and o Exercising the option is the most advantageous method of fulfilling the Government's need, price and other factors considered. The contract specifies the time frame in which the Government will decide about exercising options. The CO exercises contract options in writing and includes these documents in the contract file. Failure to exercise an

option does not obligate the Government to pay any charges other than the contract price, including already exercised options.

e. Contract Modifications

Modifications are authorized changes made to a contract after award. A contract needs some flexibility to allow response to the Government's changing requirements. The Government's authority to make modifications to a contract is defined in its clauses or provisions. Some clauses allow the contractor administrative relief in case the Government does not perform its contractual obligations. A contract modification can be either unilateral or bilateral. A unilateral modification is signed only by the CO. A bilateral modification (supplemental agreement) is signed by the contractor and the CO. Common modifications to a commercial software contract include:

(1) Administrative Changes

An administrative change is a unilateral contract change that does not affect the contractual rights of the parties (e.g., a change in the paying office).

(2) Changes in Requirements

A change in requirement is a bilateral contract modification that normally results in modification of the Government's cost obligations, performance schedule, and/or inspection and acceptance criteria. For example, adding, changing, or deleting a functional capability specified in the RFP may require modification of the contract.

(3) Technology Refreshment Provisions

The cycle of changes in information resources is likely to be much shorter than the procurement cycle and is likely to remain so, especially for large and complex acquisitions. Therefore, the Government may choose to substitute new products as they become available for the comparable products specified in the contract. In response to this situation, agencies now include technology refreshment provisions in their solicitations in the form of engineering change and technology substitution clauses.

A. Engineering Change Clauses

Engineering change clauses allow the Government to upgrade technology already installed under the contract. These clauses are a variation of the value engineering clauses discussed in FAR Part 48. Engineering changes may be solicited and proposed by the contractor to save money, improve performance, or satisfy increased requirements (usually by no more than a set percentage of the original contract). Engineering change proposals submitted by the contractor should include: o A description of the difference between the existing contract requirements and the proposed change and the comparative advantages and disadvantages. o Itemized requirements of the contract that must be changed if the proposal is adopted and the proposed revision to the contract for each such change. o An estimate of the changes in performance and cost, if any, that will result from adoption of the proposal. o An evaluation of the effects the proposed change would have on collateral costs to the Government, such as costs of related items and costs of maintenance and operation. o A statement of the time by which the change order adopting the proposal must be issued to obtain the maximum benefits of the changes during the remainder of the contract. Also, any effect on the contract completion time or delivery schedule should be identified.

B. Technology Substitution Clauses

Technology substitution clauses are used to upgrade contract items not yet installed. If some of the products originally contained in the contract no longer represent state-of-the-art, the Government has the option to substitute newer items using this contractual clause. However, the following requirements must be met: o The need for the software must be specified in the original RFP. o The new software must satisfy all of the original mandatory specifications. o Using the technical proposal evaluation criteria of the original RFP, the technical score determined for the new software must be equal to or

higher than the scores assigned to the original software. o The new software must pass performance validation or demonstration tests, if used in the original evaluation. o The substitute software must conform to the current version of Federal, national, or international standards required for the original software. New technologies that arrive in the marketplace long after the RFP is written and the contract is awarded cannot be added.

f. Liquidated Damages

If the contractor burdens the Government in any way except for excusable delays, the Government can seek liquidated damages or charge the contractor for a justifiable loss. The right to and a formula for computing liquidated damages must be included in the contract and be directly related to the harm incurred. Liquidated damages may not be punitive. Most ADP contracts contain some form of liquidated damages coverage. The damages are usually assessed at a fixed daily rate for late deliveries. These rates may range widely, depending on how adversely the late delivery affects operations of the activity. Liquidated damages may be appropriate if the contractor fails to deliver or install the software on time or the software does not pass the acceptance test within the stated time period. The COTR is responsible for monitoring deliveries closely so that the Government does not lose its control over the collection of liquidated damages or its right to terminate. Pursuit of liquidated damages is not appropriate if the contractor's nonperformance results from excusable delays or if the Government has used the software operationally after installation. If neither of these situations exists, the Government should pursue collection as allowed in the contract.

g. Disputes

A dispute is a disagreement between the contractor and the CO about changes in the contract which have financial implications. The Contract Disputes Act of 1978 (41 USC 601-613) establishes procedures and requirements for asserting and resolving claims by or against contractors. The Act also provides for the payment of interest on valid contractor claims and for a civil penalty if claims are fraudulent or based on a misrepresentation of fact. The Government's policy is to try to resolve all contractual issues by mutual agreement at the CO's level without litigation. If a claim cannot be settled by mutual agreement, the CO prepares a written decision that documents the facts pertinent to the claim, the areas of agreement and disagreement, and the CO's decision with supporting rationale. The contractor can then appeal the CO's decision to either the appropriate Board of Contract Appeals within 90 days or the U.S. Claims Court within 12 months.

h. Contract Terminations

Termination of a commercial software contract can have serious consequences for the agency, as well as the contractor, if the agency implemented the software before determining that it would perform properly. While the contractor obviously loses the Government's business and may be liable for damages, the agency may also lose a great deal in time and effort invested in implementation preparation activities such as data conversion and training. It may also incur additional costs and delays in reverting to the old system or method. Even if the costs are eventually recovered, the agency can never recover the time lost. The agency, therefore, should avoid committing to a software package until its performance is proven. If the software has already been implemented, the agency should try to reach an accommodation with the contractor to avoid termination. If accommodation is not possible or not in the Government's best interest (e.g., the agency no longer needs the software), the contract should be terminated. The two types of terminations are (1) termination for the convenience of the Government and (2) termination for default. The CO is responsible for making the decision to take either of these actions. FAR Part 49, Termination of Contracts, sets forth the policy and procedural guidelines for terminating contracts.

(1) Reasons for Termination

Under the Termination for Convenience clause, the Government has the unilateral right to cancel work under a contract, in whole or in part, whenever it determines that such action is in its best interest. This

generally occurs when the Government no longer needs the work. When exercising this clause, the Government agrees to pay the contractor's costs of termination, plus a reasonable profit for the work done and the preparations that were made to perform the terminated portion of the contract. However, when the undelivered balance of the contract is less than $5,000, the contract should not normally be terminated for convenience but should be permitted to run to completion. Under the Termination for Default clause, the Government has the right to completely or partially terminate a contract because of the contractor's actual or anticipated failure to perform contractual obligations. The Government invokes the termination for default when the contractor fails to meet the technical requirements of the specifications or the delivery or performance schedule. When exercising this clause, the Government is entitled to relief for damages suffered as a result of the contractor's failure to perform. The contractor must pay any additional costs incurred in reprocuring the terminated work, including any losses because of the delayed completion of the work. The Government may take over the work and complete it by awarding another contract, by using Government personnel, or by other means.

(2) Procedures for Termination

A. Termination for Convenience

The CO must give written notice to the contractor stating the contract clause authorizing the termination, the effective date, the extent of termination, any special instructions, and how the contractor may minimize the impact on contractor personnel if the termination results in a significant reduction of the work force. Upon receipt of the notice, the contractor must comply with the termination clause and the terms of the notice. The contractor submits a proposal for settlement. The CO must direct the actions of the contractor, review the contractor's settlement proposal, and promptly negotiate a settlement. When possible, all terminations should be settled by negotiation. FAR Part 49 provides specific procedures for use in calculating a settlement.

B. Termination for Default

The CO must advise the contractor, in writing, of the reason(s) for a default termination and allow the contractor at least 10 days to correct or cure its failure. This notice is referred to as the "10-day Cure Notice." If the time remaining in the contract is less than 10 days, a "Show Cause Notice" should be issued. This notice gives the contractor a chance to show that failure to perform the contract was a result of causes beyond its control. FAR Part 49 provides procedural guidelines for writing both notices. If the contractor fails to cure the situation or to provide a satisfactory explanation for the delay within the 10 days, the Government may take termination action. The CO would issue a Notice of Termination for Default. Upon receipt of the notice, the contractor must stop work immediately on the terminated portion (all or part) of the contract.

i. Contract Closeout

Contract closeout includes all final contract activities (e.g., ensuring completion of all requirements, making the final payment). For a contract to be closed out, two conditions must exist: o The Government must have received, inspected, and accepted all required products and services in a manner that satisfies the needs of the Government as specified in the contract; and o After the Government is satisfied, a final payment is made to the contractor. If the contractor accepts final payment as such, indicating no further claims, and the Government completes its final contract audit, the contract can be closed out. Final payment is important not only because it completes the obligation of the Government, but also because it cuts off certain claim activities on the part of the contractor. Once final payment is made with no exceptions or qualifications, the contractor gives up its rights to engage in any claims against the Government. The CO should make an effort to settle any contractor claims before final payment. In addition, the CO should proceed carefully if the contractor submits a claim after what appears to have been the final payment because the CO's actions might be interpreted as an admission that final payment was not intended to be final. A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE--

CHAPTER 15. IMPLEMENTATION, OPERATION, AND MAINTENANCE

15.1 OVERVIEW

Implementation, operation, and maintenance include all activities from contract award to disposal of the software except contract administration. These activities fall into two groups: (1) implementation and (2) operation and maintenance. Implementation includes all activities required to make the software operational. Operation and maintenance include all activities from that point until software disposal. Responsibility for implementation varies by agency and by the complexity of the software. If it is a shrink-wrap package, the program personnel will normally implement it themselves. For complex implementations, the program personnel will generally rely on the IRM/technical personnel who are software experts. A major part of implementation is the testing required before acceptance. By testing, the Government fully examines the software package to determine whether it conforms to the contract requirements. After this determination is made, the Government accepts, or assumes ownership, of the software. A separate section is provided to give additional details about testing.

15.2 IMPLEMENTATION

The objectives of commercial software implementation are to successfully: o Install the software o Test and accept the software o Ensure that users are ready to use the software

a. Implementation Steps

Implementation can be very complex because it involves simultaneous performance of different but interrelated activities. Formal planning, with conscientious follow-through, is the only way to ensure that implementation progresses smoothly. Implementation activities are divided into the following three steps: pre-installation, installation, and post-installation. o Pre-installation activities -- These take place between contract award and the arrival of the software. o Installation activities -- These begin when the software package is delivered to the agency. After the software is installed, post-installation activities begin. o Post-Installation activities -- These begin after the software is installed. During this step, the agency starts using the software to support its mission and functions. The sequence, timing, and complexity of activities in each group depend on many factors such as the following: o Complexity of procurement oo Contracting method oo Size and scope of acquisition o Complexity of package o Number of package copies o Delivery dates of the packages o Distribution of packages For example, training for the use of a simple spreadsheet package may be deferred until installation. However, for a more sophisticated package, such as a database management system (DBMS), initial training may begin during the pre-installation activities. Furthermore, training for the spreadsheet package might entail only an online tutorial and/or a one day hands-on course, whereas training for a DBMS might include extensive course instruction for various levels of personnel (e.g., operators, programmers, users).

(1) Pre-Installation

The primary objective of pre-installation activities is to plan the implementation to minimize its effect on current processing. Detailed plans for the following should be made: o Cutover approach -- Determine how abruptly the agency will move from the old system to the new. o Site Preparation -- Arrange for any new hardware to be installed and tested before the software installation. Arrange for reconfiguration of the workplace, if necessary. o Training -- Train operators, system support personnel, and users. o Disaster Recovery -- Develop a plan for backing-out of the new package and returning to the old process in case the installation fails. o Testing and Inspection -- Document the materials, resources, methods, and criteria for use in the tests and establish the test schedule. Prepare testing

packages (i.e., scripts, test data, test programs) to support the scenarios developed in the plans. Under some procurements, copies of the software package may be delivered in stages. For this situation, one-time pre-installation activities will take place before any software arrives, then a smaller set of activities will be performed before each subsequent delivery. For example, if the software package will be installed at multiple sites, determining the best cutover approach needs to be done only once. Then, for each delivery the agency may need to plan and schedule testing and file conversion site by site. This division of activities is more common when acquiring large, complex, software packages. Similar activities are performed for simpler packages but on a smaller scale.

(2) Installation

Installation should be scheduled during a slow work period to minimize disruption. Demands on system resources (staff, hardware) during this time are likely to be high. If possible, install the software at night or over a long weekend. Installation involves reading the package from magnetic disk or tape into the computer system, then testing its fundamental capabilities (e.g., all basic functions exist, required files are accessible, software/hardware interface is compatible, appropriate access by user class, etc). Do not confuse an installed software package and an operational package. Installed software must still go through extensive testing and evaluation before it becomes operational. Operational means the software not only correctly performs all the desired functions, but also that everything needed to use it, including data and users, is ready. With a carefully developed plan, installation testing should be a straightforward task. The test team conducts the tests, then documents and relays problems to the vendor for correction. To ensure the problems are corrected, the team repeats the tests. This continues, possibly with several cycles, until the software reaches an acceptable level of performance and reliability.

(3) Post-Installation

Post-installation covers the transition from an installed package to an operational package. During this period, further testing may occur. Also training, data conversion, implementing new procedures, and obtaining user feedback occurs throughout this timeframe. The software is accepted during this period. Section 15.4 contains further information on acceptance. When the installation is complete, user feedback about the software and the installation process can help develop better plans for future software implementations.

b. Implementation Considerations

Numerous activities/tasks are associated with the implementation process and need to be considered when planning. Figure 15-1 provides a synopsis. Each task is discussed below, grouped by topic area. Figure 15-1, Sample Activities of Software Implementation

(1) Cutover Approach

Selecting the implementation cutover approach depends on the nature of the new software and the tradeoffs involved in the installation alternatives (e.g., cost, time, resources, risks). The approach selected influences the entire implementation process and provides a framework around which to plan the other implementation activities. Figure 15-2 summarizes the advantages and disadvantages of each approach. The basic alternatives include: Figure 15-2, Advantages Disadvantages Cutover Approaches o Abrupt Cutover -- This approach involves simultaneous dismantling of the old software and start-up of the new. At a predetermined time, use of the old software stops and the new software processes all transactions. This approach costs the least; however, it has the highest risk. If the new software fails, there is no fall back. In addition, a high level of coordination is required since software, users, data, and support all must be ready at once. o Version Installation -- Version installation involves breaking the installation into a series of incremental steps. A basic set of capabilities is implemented in the first increment and additional capabilities are addedin subsequent increments. Each increment goes through a complete implementation and installation cycle. This approach is normally reserved for big custom software with discrete subsystems for which increments can be easily identified (e.g., if one group is

responsible for only data entry, bring up that increment). Most commercial software packages do not have these characteristics. o Parallel Operation with Single Cutover Point -- In this approach, both old and new systems operate concurrently for a period of time. During this period, all input transactions update the files that support both the systems. If problems arise in the start -up of the new software, the agency simply switches back to the old. This approach also provides an opportunity to test and correct the new software. However, operating both systems concurrently can become costly. In addition, improvements or changes to the programs are limited. If the agency's activities are dynamic or subject to frequent legislative changes, this can present problems. o Parallel Operation with Gradual Shift from the Old System to the New -- In this approach, both systems are operated concurrently, with the old system discontinued gradually. Like version installation, this approach is good if the user base can be easily segmented. This approach minimizes operational risks. The old system can be discontinued as quickly or as slowly as management feels comfortable using the new software. However, the cost of operating both systems concurrently remains, with the chance of confusion among users about which system to use. If not carefully planned, an agency could find itself straddling two systems.

(2) Customization

Installing customized commercial software tends to be difficult and risky, depending on its complexity. Custom modifications to a package should be completed and tested before installation. During post-installation, these modifications should be monitored regularly. The installation should not be considered complete until all customized pieces are in place. Thorough and accurate documentation of package modifications should be provided before installation, and IRM/technical personnel should review it for comprehensiveness. Good documentation is critical for later package enhancement and modification.

(3) Test Planning

The agency should match the level of testing to the kind and critical nature of the software being acquired and the acquisition size. For example, standard shrink-wrapped software is generally reliable. Because of the large number of users, most major software errors have been found and corrected; therefore, the agency need not perform extensive testing. However, only the agency itself can find the errors in customized software, so it requires more extensive testing. Also, software critical to the agency's mission merits more extensive testing than less critical systems. Once the test team has been organized, its initial goal is to design the test strategy to ensure that the software meets agency requirements. The team must: o Decide what to test o Decide how to test o Determine available resources o Decide when to test o Prepare test packages o Test methods Section 15.3 provides details on testing.

(4) Site Preparation

Site preparation may be required to install new software. Because of lag times, most site preparation activities should be initiated as soon as possible during the pre-installation. Most of them must be completed before actual installation can begin. Site preparation activities include: o Preparing the hardware environment o Ordering new supplies o Reconfiguring the workplace for the new package (e.g., to permit two users to share a single copy)

(5) Conversion

As discussed in Chapter 3, conversion is a key concern when implementing commercial software. Conversion is a time consuming and resource-intensive part of installation. The conversion process includes data and sometimes existing computer programs. Relevant organizational files and records must be converted into the form required by the new package. For some classes of software (e.g., a new DBMS), computer programs which use it may also have to be converted. Conversion strategies vary with the complexity of the software and the installation method used (e.g., abrupt cutover, parallel, version). Typically, conversion problems center around supporting data for both systems or parts of both systems concurrently. Planning for conversion includes the following: o Determine

conversion needs oo Existing computer files. All master files should be up-to-date and accuracy should be verified. oo Existing manual files. System users could enter the data required to convert the manual files. This will supplement their training. oo Existing computer programs. o Schedule the conversion o Develop and test conversion programs o Run conversion program and enter manual data o Check new files for format and accuracy

(6) Procedural Changes

Changes in procedures and polices should be determined before implementation of a new package. For example, implementation of a new financial management system may require the agency to institute a new reporting relationship. If changes require approval, it should be obtained early enough so that the rest of the installation is not delayed. Changes in job assignments should be identified and employees notified as early as possible. Organizational procedure manuals should be revised to reflect policies or procedures to be used after the package is installed. Implementation of a new software package often requires changes in organizational procedures when the application is large and complex. Procedural changes are less likely for shrink-wrap packages.

(7) Documentation

Documentation provided with the software package should be checked for the following: o Indexed in a comprehensive manner o Written at an appropriate level of technical complexity for intended readers o Discusses commands and features that relate to application tasks o Reflects changes or customizations made to the package

(8) Preparing the Users

Introducing the package into the workplace needs to be handled carefully and diplomatically. Some of the most persistent problems result from users' reactions to a new package and the procedural changes that it requires. Consult users throughout package selection and implementation. They can provide valuable input on day-to-day procedures that will help the agency select the most appropriate package. If employees see that their counsel is taken seriously, they are less likely to feel that a package has been arbitrarily imposed on them. In turn, they will "take ownership" and support the new software. A formal mechanism for user comments should be implemented for an indefinite period or, at least, until they are comfortable and content with the package.

(9) Training

As described in Chapter 3, training is particularly important when acquiring commercial software. End-users will work directly with the product, and they are likely to be unfamiliar with it. The training program defined in the requirements analysis is set in motion during implementation. During the requirements analysis, the program and IRM/technical staff on the acquisition team should have determined and documented the agency training requirements (e.g., who, when, where, how). During the implementation, these requirements are transformed into concrete training plans. Training may include hands-on courses, automated instruction, and reading the documentation. Training should be scheduled so that regular work is not disrupted. If possible, training should begin during pre-installation, especially for personnel required to assist in the installation or who need to use the software immediately. When the system is installed, users can begin hands-on training using test data. During the first few months after installation, users will learn/use the basic software features. After the basics have been mastered, follow-up training should be scheduled for the more sophisticated features. Too often software packages are not used to their full potential because users were not trained to take advantage of the advanced features. During and after the installation process, the user training program should be followed by a series of discussions at all levels. These will help determine the effectiveness of the training and when and where additional training is needed.

(10) Back-up Procedures

Procedures should be developed for contingencies such as computer failure, file loss, and unanticipated software problems. At the minimum, this includes copying computer records onto tape or disk so that current file information can be reconstructed, if necessary. The agency should document the frequency that file back-ups are to be made, the storage location of back-up records, and the personnel responsible for performing back-ups. If operations must be continuous, manual procedures should be prepared for use in case of system failure.

(11) Security

Security procedures and standards need to be developed to prevent unauthorized or inadvertent access to or destruction of information. They should include the following areas: o Physical security -- The security of hardware, software, and supplies o Software access -- Person or group allowed to obtain and use a software program o File access schemes -- Person or group allowed to read, copy, and edit a file o Communications -- Security of information as it is transmitted to and from remote locations via a communications network. The sensitivity level of the data being processed is the first thing to determine in planning for system security. There are two types of data sensitivity: (1) data difficult or impossible to replace and (2) data valuable to other people. Back-up and security procedures can limit the destruction of data difficult or impossible to replace. Protecting valuable data from outsiders should have been addressed in the requirements analysis. System Security Officers in each agency can help define the security level required. Do not design a security scheme that inadvertently prevents people from performing their jobs.

15.3 TESTING

Post-award testing confirms that the product continues to meet the agency requirements as it is installed and used in the agency's environment. Although considerable pre-award testing was done to determine the winning vendor, those tests usually can only simulate the agency's environment and workload. Similar tests should be used after award to ensure proper software performance in the working environment.

a. Decide What to Test

The team must define the boundaries of the tests. From a practical viewpoint, not all features of the software can or should be tested. Testing should focus on the features most important to the agency. The logical starting point is the specific requirements that the vendor is obligated by the contract to support. The test team should then narrow these to a number that can reasonably be tested, given the resources and time available. Since everything cannot be tested, test critical elements first, then work down the list of required features and characteristics as far as resources permit. Before contract award, the vendor may have demonstrated these required features, which now become the basis for acceptance testing. The test plan formulates the requirements into testable increments. It should also allocate resources to test the technical requirements in addition to the functional features to ensure that technical issues have been adequately addressed. All test team members should be completely familiar with the plan and requirements. Figure 15-3 summarizes the areas to include in the tests: Figure 15-3, What to Test o Processing time -- Measure the time required to perform a function. Two common areas in which processing time might be a concern are file/data retrieval and report generation. In these tests, the team measures specific response times and marks them as acceptable or unacceptable. o Accuracy and reliability -- Check that the software output is accurate and produces consistently reliable results. These tests include all functions from data entry and manipulation through error-checking functions and internal processing. o Human interface -- Determine how easily users can learn and use the package's procedures. To improve this, vendors can provide training, on-line help, documentation, and a consistent instruction set (e.g., the HELP key is always the same no matter what subsystem the user is working in). o Conformity to specifications -- Measure whether the software meets specifically stated requirements, such as location of files, file search criteria, and file space limitations. o Organizational integration -- Measure how well the package fits into the organization. Modified work

flow or procedures must be acceptable and work for the benefit, or at least not to the detriment, of the agency.

b. Decide How to Test

Deciding how to test the software can affect the usefulness of the test results, as well as how much testing can be accomplished with available resources. Certain methods are better suited to achieve a test's objective than others. Other methods may be less expensive or time consuming, but also less comprehensive. Factors such as the scope of the test effort and resource restrictions (e.g., personnel, time, hardware) may determine test methods.

c. Determine Available Resources

Determine the resources available for software testing, including personnel, time, and equipment. These must be consistent with the scope of the features to be tested and the testing techniques planned. Sufficient personnel from program and IRM/technical staffs must be available during the time allotted for conducting the test and assessing the results. The team must include staff with skills appropriate for conducting the tests, as well as senior personnel to maintain momentum and proper focus on the agency mission. The team should be aware of the agency's funding commitments for testing hardware, personnel, and other test services (e.g., software performance monitoring systems and analyzers) to ensure that availability and approval are sufficient before testing starts. At predetermined checkpoints and at the conclusion of testing, members of the team report findings to the CO.

d. Decide When to Test

Decide the best time to test and the most efficient sequence, then schedule the tests accordingly. Testing should have as little negative effect on agency operations as possible but still meet the original test objectives.

e. Prepare Test Packages

After defining the testing approach, prepare test packages to support it. Preparing these may include: o Writing test scripts o Generating test data o Writing or acquiring test programs Depending on the size and scope of the acquisition, some of this work may have been completed before contract award. It is likely that extensive testing was conducted before award. Investigate the possibility of using previously developed test packages, allowing enough time for modifications, if necessary. The scripts are step-by-step instructions used by the team to conduct the tests. During each step, the team marks items successfully completed or repeats the test, as necessary. Test data should be representative of agency data the software must process. Using test data allows manipulation without risk of corrupting actual data. A large system may be too complex to manually develop the test cases necessary to adequately test it. Therefore, computer test programs can be used. Programs may automate a test script (e.g., posting entries into an accounting system) or capture keystrokes entered by an operator and simulate many operators using this as a base. Still other programs assist in determining code efficiency and/or whether tests conducted have covered all test scenarios. If data or program conversion is necessary, the agency should also test the conversion programs using test data or programs. This avoids inadvertently introducing data errors that might be mistaken for software errors.

f. Test Methods

Several test methods are available. They include: o System walk through o Benchmark testing o Testing with sample data

(1) System Walk-Through

A system walk-through consists of tracking each command used by a software package with the package documentation as a guide. The test team may use test scripts and test data to track the inputs and outputs, marking successful completion of each test. This helps identify potential processing

problems with less investment than other methods, such as benchmarking. However, for complex software, it is not very practical and subject to human error.

(2) Benchmark Testing

Benchmark tests use a sample set of transactions to check a package's performance against predetermined parameters to ensure that it conforms to specifications. It is particularly appropriate for large, complex packages. A benchmark test should have been conducted before award, but additional benchmark tests should be completed as part of acceptance testing to ensure proper performance. Prior to award, the vendor probably used some of its best technical staff to "tune" the software to run as well as possible. They will probably not be the same staff who install the software. Thus, performance may not be as high. Benchmark programs are used to enter data into the package and check the accuracy of basic calculations, the timing and accuracy of data storage and retrieval functions, and file and memory limitations. Custom benchmarks require significant resources to develop. If the software is commonly used, existing benchmarks may be available from other agencies or industry. These may be used "off-the-shelf" or may require customization to the agency's circumstances. Shrink-wrapped packages have usually undergone benchmark testing before release and have also been tested by the user community, making additional benchmark tests unnecessary. Generally, it is safe to forego benchmark testing if the software is widely used and has a sound reputation.

(3) Testing with Sample Data

In this test, program personnel use the new software package to process sample information and the test team checks output. The test team decides if the output conforms to the output of current manual and/or automated procedures. If the new package has error-checking features, test data should be entered to check that the software catches the errors. These data must test error conditions as well as the normal processing tested by the specifications matching method. Therefore, the test data should be much more extensive than that used for specifications matching.

15.4 ACCEPTANCE

Acceptance is the acknowledgement that the software fully meets contract requirements. This is the CO's responsibility and may occur at or after installation, depending on contract terms. The contract conditions should specify how and when the Government will notify the vendor of acceptance. This may be based in part on the amount of testing planned. Acceptance of standard shrink-wrapped software may only require checking the shipment for the correct number of copies. Acceptance of other software may require the testing team to recommend acceptance to the CO based on test results. In either case, the CO must also determine that the vendor has fulfilled any other contractual obligations before accepting the software. The package should not be accepted if vendor has not met the contract specifications. If the vendor proposes to deal with problems at a later date, acceptance should be deferred accordingly. The CO and the testing team should be aware of vendor conditions that may imply acceptance prematurely. As discussed in Chapter 3, licensing is an important concern for commercial software. Some licenses for shrink-wrapped software state that the user has accepted the product when the package is opened. These licenses may also state that users must obey copyright laws (i.e., not copy the software), limit use of the package to what it was designed for, and/or clear the manufacturer of any loss that might occur due to the software. If these conditions exist, the CO should communicate them to the testing team. Failure to do so could cause serious problems. For example, the team might inadvertently provide a basis for the vendor to claim the software has been accepted, such as using it in production before the CO officially accepts it.

15.5 OPERATION AND MAINTENANCE

When implementation is complete, operation and maintenance begin. Objectives include: o Maintain packaged and custom developed software. o Provide on-going support services such as user support, documentation, and training o Provide operational support such as data entry, disaster recovery/backup, performance tuning, and configuration management Operation and maintenance

support services help ensure that software will remain useful and appropriate to the organization. These services include: o Warranty Services -- Usually a package's developer or vendor warrants that it will be substantially free of programming defects for a specified period after it has been installed. If defects are discovered during this period, the vendor or developer will generally repair them or install a modified version of the program for no additional charge. The warranty period can often be extended for an additional annual maintenance charge. o Enhancements/upgrades -- Developers generally continue to enhance their packages. New features and capabilities are sometimes added, response times improved, or data storage capabilities changed or enlarged. These upgrades are frequently made available to licensees of earlier versions at no or reduced costs. o Modification Services -- Changes in laws or circumstances governing an application might change processing needs. For example, changes in tax rates, length of zip codes, or length of employee identification numbers on a payroll program would require package modification. Changes in data base configuration and parameter values are often included in a maintenance contract. o On-site Repair -- Services are often available to repair software on short notice. This usually requires a qualified programmer or technician to arrive on-site shortly after problems are reported. The need for this kind of service depends upon how critical the software is to performing organizational functions, how tightly operations are scheduled, and whether replacement of the computerized services can be found.

15.6 ROLES AND RESPONSIBILITIES

a. Program Personnel

During installation, program personnel are responsible for decisions that directly affect the users' and agency's daily functions. Depending on the size and complexity of the installation, these might include: o Developing a strategy for package introduction and acceptance o Developing and documenting procedural changes o Scheduling installation tasks o Scheduling user training o Evaluating effectiveness of training program o Participating in functional tests Responsibility for installing the software varies by agency and complexity of the package. If it is a shrink-wrapped package, the program personnel will normally install it themselves. Should problems occur, IRM/technical personnel would troubleshoot. For more complex installations, the program personnel will generally rely on IRM/technical personnel software experts. During operations and maintenance, program personnel are responsible for ensuring the software meets functional needs. These activities include: o Monitoring data quality o Monitoring system outputs o Reviewing proposed enhancements

b. IRM/Technical Personnel

IRM/technical personnel are responsible for ensuring the technical quality of the software installation, operation, maintenance, and protection of other FIP resources from any effects of the new installation or enhancements. Typical IRM/technical personnel responsibilities include: o Evaluating technical merit of installation procedures o Estimating and coordinating file conversion and testing efforts o Evaluating technical merit of proposed software enhancements o Evaluating system performance IRM/technical personnel are an integral part of the testing process. Because of their expertise, IRM/technical personnel can perform highly technical testing (e.g,. benchmark tests), stress tests, and system utilization tests. This group also ensures that the program personnel communicate test results to the CO accurately. When the vendor installs complex application or system software, IRM/technical personnel will provide the technical support.

c. Contracting Personnel

The Contracting Officer's Representative (COR) or the Contracting Officer's Technical Representative (COTR) must ensure that all procedures are followed during testing and acceptance and report all findings to the CO. Only the CO is authorized to accept the software for the Government. The CO should communicate problems to the vendor for resolution and ensure that all concerns are resolved satisfactorily. The CO must know the terms and conditions of the contract, know when to accept the software, and understand the implications of vendor conditions and the statement of Government

APPENDIX A

GLOSSARY

Acceptance: The act of an authorized representative by which the Government, for itself or as an agent of another, assumes ownership of existing identified supplies tendered or approves specific services rendered as partial or complete performance of the contract. Acceptance Testing: Testing to determine whether the FIP resources offered meet the requirements specified in the contract before the Government accepts them. Acquisition: The acquiring by contract with appropriated funds of supplies or services (including construction) by and for the use of the Federal Government through purchase or lease, whether the supplies or services are already in existence or must be created, developed, demonstrated, and evaluated. Acquisition begins at the point when agency needs are established and includes the description of requirements to satisfy agency needs, solicitation and selection of sources, award of contracts, contract administration, and those technical and management functions directly related to the process of fulfilling agency needs by contract. Acquisition Life-Cycle: The period covering all acquisition-related activities. The life cycle begins when agency needs are established and ends with disposal of the FIP resources. Acquisition Strategy: The set of decisions that determines how FIP resources will be acquired, including contracting method, contract duration, contract pricing, and qualities. Agency Procurement Request: A request by an agency for procurement authority above their regulatory and/or specific agency delegation. American National Standards Institute (ANSI): The national clearinghouse and coordination agency for voluntary standards. Analysis of Alternatives: The process of determining how an agency's need for FIP resources will be met. Benchmark: A test of the capabilities of a proposed system using simulated workloads. Best and Final Offer (BAFO): A final opportunity for offerors in the competitive range to revise proposals. Bidder: An entity that responds to a Government request for sealed bids. Commerce Business Daily (CBD): A daily publication that lists the Government's procurement invitations, contract awards, subcontracting leads, sales, surplus property, and foreign business opportunities. Commercial Software: Software that is available through lease or purchase in the commercial market from a concern representing itself to have ownership of marketing rights in the software. Software that is furnished as part of the ADP system but that is separately priced is included. Competitive Range: The group of offerors selected, after technical and cost evaluation, to whom award of a contract is a reasonable possibility. Contract Administration: Management of contract to ensure that the Government receives the products and services specified within established costs and schedules. Contracting Officer (CO): The person with the authority to enter into, administer, and/or terminate contracts and make related determinations and findings for the Government. Contracting Officer's Representative (COR): An individual to whom the CO delegates certain contract administration responsibilities. Contracting Officer's Technical Representative (COTR): An individual to whom the CO delegates certain responsibilities, usually related to technical acceptance issues. Contractor: An organization providing FIP resources to the Government under a contract. Cost Evaluation Panels (CEP): The individuals responsible, during the source selection process, for performing the cost evaluation of proposals submitted in response to a Request for Proposals (RFP). Cost Reimbursement Contract: A contract in which the Government reimburses the contractor for expenses so long as the contractor provides its"best effort" to complete the work called for. Customized Software: Packaged software in which the program code is modified to meet specific agency needs. Delegation of Procurement Authority (DPA): Authority to acquire FIP resources up to a specified limit, issued by GSA in response to an agency procurement request. Discussions: Oral or written communications between the Government and an offeror that involve information essential for determining the acceptability of a proposal or provide an offeror an opportunity to revise or modify its proposal. Environment: The hardware and operating system on which commercial software operates. Established Source of Supply: A method of acquisition by which an agency acquires FIP products and services using contracts that have already been negotiate by GSA or the agency. Federal Acquisition

Regulation (FAR): The regulation that codifies uniform acquisition policies and procedures for Executive agencies Governmentwide. Federal Information Processing Resources (FIPR): Automatic data processing equipment (ADPE) and any equipment or interconnected system of subsystems of equipment that is used in the automatic acquisition, storage,manipulation, management, movement, control, display, switching interchange, transmission, or reception of data information -- (1) by a Federal agency, or (2) under a contract with a Federal agency which -- (a) requires the use of such equipment, or (b) requires the performance of a service or the furnishing of a product which is performed or produced making significant use of such equipment. Such term includes computers; ancillary equipment; software, firmware, and similar procedures;services, including support services; and related resources as defined by regulations issued by the Administrator of General Services. Federal Information Resources Management Regulation (FIRMR): The regulation that sets forth uniform policies and procedures for acquiring FIP resources; used in conjunction with the FAR. Fee: The portion of total remuneration to a contractor over and above allowable costs. Fixed-Price Contract: A contract which provides for a firm price, or in appropriate cases, an adjustable price. Information Resources Management (IRM): This means the planning, budgeting, organizing, directing, training, promoting, controlling, and management activities associated with the burden, collection, creation, use, and dissemination of information by agencies and includes the management of information and related resources such as automatic data processing equipment. Invitation for Bid (IFB): The solicitation document used when contracting by sealed bidding. License: An agreement by a contractor to permit the use of copyrighted software under ceratin terms and conditions. Liquidated Damages: Compensation to the Government for a contractor's failure to perform. Negotiated Procurement: The method of contracting in which offerors submit proposals in response to a Request for Proposals. The proposals evaluated and terms negotiated prior to award. Offeror: An entity that responds to a Government request for proposals. Packaged Software: The uncustomized porion of commercial software. Procurement: All stages of the process of acquiring property or services, beginning with the process for determining a need for the property or services and ending with contract completion and closeout. Program Manager (PM): The key management official who represents the program office in formulating FIP resources requirements and managing presolicitation activities. In some organizations the program manager or another management official is designated as the acquisition manager for a specific acquisition. Proposal: An offeror's response to a Government Request for Proposals (RFP) that presents the offeror's approach to meeting the Government's requirement. Protest: A written objection by an interested party to (1) a solicitation for a proposed contract, (2) a proposed award, or (3) the award of a contract. Release: A new release of commercial software to correct errors, resolve incompatibilities, or improve performance. Request for Comment (RFC): An announcement in the Commerce Business Daily or other publication requesting industry comment on draft specifications for FIP resources. Request for Information (RFI): An announcement in the Commerce Business Daily or other publication requesting information from industry about a planned acquisition and, in some cases, corporate capability information. Request for Proposal (RFP): The solicitation document used in negotiated procurements to communicate Government requirements and to solicit proposals. Requirements Analysis: The process of determining an agency's need for FIP resources. Sealed Bidding: A method of contracting using competitive bids that are opened publically. Shrink-Wrapped Software: Commercial software that can be used "out of the box" without change (i.e., customization). The term derives from the plastic wrapping used to seal microcomputer office software. Small Purchase: A method of contracting for FIP resources in which verbal or written quotations are solicited from offerors. Solicitation: An official Government request for bids/proposals publicized in the Commerce Business Daily in accordance with Federal Regulations. Source Selection Authority (SSA): The Government official in charge of selecting the source for an acquisition. Most often the title is used when the selection process is formal and the official is other than the Contracting Officer. Source Selection Evaluation Board (SSEB): A board composed of technical, contract, IRM, and other Government personnel whose primary function is to evaluate proposal received in response to an RFP. Source Selection Plan (SSP): A document that describes the entire process for awarding a contract -- proposal evaluation criteria, evaluation methodology, evaluators' responsibilities, and final selection procedures. Specification: A written description of the technical requirements for FIP resources stated in an Invitation for Bids (IFB) or Request for Proposals (RFP). Statement of Work (SOW): A technical

description of FIP resources prepared for inclusion in a solicitation document. System Life: The period of time beginning when the FIP resource is installed and ending when the agency's need for it disappears. Technical Evaluation Panel (TEP): The individuals responsible, during the source selection process, for performing the technical evaluation of proposals submitted in a response to a Request for Proposals (RFP). Test Plan: A plan prepared by the Government that details the specific test and procedures to be followed. Time-and-materials Contract: A contract in which the Government reimburses a contractor for total labor charges during (based on time and expended at fixed labor rates) and for materials used to complete the work. Two-step Sealed Bidding: An acquisition process that involves an initial technical evaluation followed by an evaluation of cost proposals for bidders with acceptable technical proposals. Uniform Contract Format (UCF): The format required by the FAR for preparation of a solicitation. Version: A new version of commercial software reflecting major changes made in functions. Workload: A collection of logically distinct, identifiable problems presented to a computer system enabling it to perform certain agency functions (e.g. payroll).

ACRONYMS

Acronym Definition ACO Administrative Contracting Officer ADP Automated Data Processing ADPE Automated Data Processing Equipment API Application Program Interface APR Agency Procurement Request ASCII American National Standard Code for Information Interchange BAFO Best and Final Offer CASE Computer Aided Software Engineering CBD Commerce Business Daily CEP Cost Evaluation Panel CICA Competition in Contracting Act CLIN Contract Line Item Number CO Contracting Officer COBOL Common Business Oriented Language COCA Clearinghouse on Computer Accommodation COR Contracting Officer Representative COTR Contracting Officer Technical Representative CPAF Cost-Plus-Award-Fee CPFF Cost-Plus-Fixed-Fee CPIF Cost-Plus-Incentive-Fee CSP Contract Services Program DBMS Database Management System DCA Document Content Architecture DCAA Defense Contract Audit Agency DDE Dynamic Data Exchange DOC Department of Commerce DOD Department of Defense DPA Delegation of Procurement Authority DSO Designated Senior Official FAR Federal Acquisition Regulation FIP Federal Information Processing FIPS PUB Federal Information Processing Standards Publication FIRMR Federal Information Resources Management Regulation FFP Firm-Fixed-Price FMSS Financial Management Systems Software FPI Fixed-Price-Incentive FPMR Federal Property Management Regulation FPR Federal Procurement Regulation FTS Federal Telephone Service GAO General Accounting Office GSA General Services Administration GSBCA General Services Board of Contract Appeals GUI Graphical User Interface ICCSHE Interagency Committee for Computer Support of Handicapped Employees IFB Invitation for Bids IGCE Independent Government Cost Estimate ITF Information Technology Fund IRM Information Resources Management IRMS Information Resources Management Services, GSA KE Office of Information Resources, Procurement, IRMS, GSA KES Schedules Division, IRMS, GSA KET Telecommunications Procurement Division, IRMS, GSA KM Office of Information Resources Management Policy, IRMS, GSA KMAD Acquisition Evaluation and Analysis Branch, IRMS, GSA KMAS Authorizations Branch, IRMS, GSA KMP Policy and Regulations Division, IRMS, GSA KRS Federal Software Management Center LAN Local Area Network LTD Live Test Demonstration MAS Multiple Award Schedule MOL Maximum Order Limitation NASA National Aeronautics and Space Administration NBS National Bureau of Standards (now NIST) NIST National Institute of Standards and Technology NTIS National Technical Information Service OA Office Automation OCD Operational Capability Demonstration OFPP Office of Federal Procurement Policy OMB Office of Management and Budget OOP Object Oriented Programming OTA Office of Technical Assistance, GSA P∧CV Performance and Capability Validation PC Personal Computer PCO Procuring Contracting Officer P.L. Public Law PM Program Manager POSIX Portable Operating System Interface RAM Random Access Memory RFC Request for Comment RFI Request for Information RFP Request for Proposals SBA Small Business Administration SF 33 Standard Form 33 SIG Special Interest Group SQL Structured Query Language SSA Source Selection Authority SSB Source Selection Board SSEB Source Selection Evaluation Board SST Source Selection Team TEP Technical Evaluation Panel TEPL Technical Evaluation Panel Leader TSP Teleprocessing Service Program TSR Terminate-and-Stay-Resident Program UCF

APPENDIX B: GSA ASSISTANCE PROGRAMS

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APPENDIX B - GSA ASSISTANCE PROGRAMS

GSA has in place a number of programs to provide assistance to Federal agencies planning to acquire, update, expand, or replace Federal Information Processing (FIP) resources systems or components. These programs are administered by the Office of Technical Assistance (OTA) which also develops and publishes numerous handbooks addressing various management, technical, and Federal acquisition aspects of FIP resources. OTA offers publications, techniques, and experienced staff to assist Government agencies in many areas of IRM planning, management, and operations.

B.1 FEDERAL SOFTWARE MANAGEMENT SUPPORT CENTER

The Federal Software Management Support Center (KRSS) provides technical, managerial, and procurement services to solve software management problems. The center offers a complete line of software management support services including: o Software conversion studies o Software conversion o Software improvement o Software engineering o Software tools o Training o Reference materials o Research programs The center also has a Tools and Technology Program designed to assist Federal activities in the assessment, evaluation, acquisition and implementation of automated software productivity tools.

B.2 FEDERAL IRM PLANNING SUPPORT CENTER

The Federal IRM Planning Support Center (KRSP) provides guidance and advice in all phases of IRM planning. The center provides a framework for coordinating IRM activities as well as developing a system for evaluating performance. The center offers comprehensive IRM planning support including: o Long-range, strategic, tactical, and operational planning o Information requirements and flow analyses o IRM organizational analysis o On-site assistance o Contracting support o Seminars and workshops o Publications o Automated planning tools

B.3 FEDERAL OFFICE SYSTEMS SUPPORT CENTER

The Federal Office Systems Support Center (KRSO) provides a complete line of OA services to help Federal agencies increase office efficiency and reduce labor and equipment costs. These services include: o Assessment of current information handling o Development of standards and controls o Definition of requirements and evaluation of alternative solutions o System design or modification o Training for new users The center's OA solutions may include the use of any of the following: o Local Area Networks (LANs) o Applications software packages o Micrographics o Copiers o Optical mass storage systems o Optical character recognition systems o Bar code identification systems

B.4 FEDERAL SYSTEMS ACQUISITION SUPPORT CENTER

The Federal Systems Acquisition Support Center (KRCE) provides support for all phases of computer, communications, and information systems acquisitions. The center prepares or analyzes the following acquisition documents: o Presolicitation studies and analyses o Acquisition plans o Solicitation-related documentation including Requests for Proposals (RFPs), test plans, benchmarks, Live Test Demonstrations (LTDs), source selection plans, and evaluation materials The center can also provide

technical support for source selection panels, benchmarks, LTDs, and operational capability demonstrations (OCDs).

B.5 FEDERAL INFORMATION TECHNOLOGY FACILITIES SUPPORT CENTER

The Federal Information Technology Facilities Support Center (KRCA) determines problem areas in IRM management and operations and provides sound, workable solutions. Specific center services include: o Establishing capacity management programs o Implementing charging systems for FIP resources o Evaluating and establishing security programs o Performing risk assessments

B.6 FEDERAL SYSTEMS INTEGRATION AND MANAGEMENT CENTER

The Federal Systems Integration and Management Center (KRCD) provides total systems integration support services for major Federal information systems and programs, including early planning, design, and implementation of specialized hardware, software and communications interfaces; rapid prototyping; feasibility and proof-of-concept studies; and post-implementation support services including test, evaluation, and program management support. The center also provides data communications services ranging from wide area networks (WANs) to large scale, nonstandard data communications systems; develops systems concepts and plans; conducts feasibility studies; and supports a wide range of design activities.

B.7 FEDERAL INFORMATION SYSTEMS SUPPORT PROGRAM

OTA provides technical assistance for acquiring and managing FIP resources via commercial contracts managed and administered by OTA personnel with both FIP resource and acquisition experience and expertise. Contracts are in place for every Information Resources Management Service (IRMS) zone. Federal agencies can use these contracts through GSA, and do not require further contracting by the client agency. Services on these contracts typically include: o Requirements analysis o Systems design and analysis o Software development, maintenance, or conversion o Facilities operations o Automated information security For more information, contact the GSA IRMS office in the appropriate zone. A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE A GUIDE FOR ACQUIRING COMMERCIAL SOFTWARE--APPENDIX C

APPENDIX C: GSA SOURCES OF ASSISTANCE

SYMBOL OFFICE FTS COMMERCIAL GA Administrative and 241-0116 (202) 501-0116 Technical Services Division (GSBCA Protest Results) KB Assistant Commissioner 241-5308 (202) 501-5308 for Telecommunications Services KE Office of Information 241-1072 (202) 501-1072 Resources Procurement KECP ADP Systems 241-0851 (202) 501-0851 Procurement Branch KELN Network Procurement 393-7480 (703) 760-7480 Division KES Schedules Division (GSA 241-1840 (202) 501-1840 Nonmandatory ADP and Telecommunications Schedule Contracts) KET Telecommunications 241-1076 (202) 501-1076 Procurement Division KGDO Clearinghouse on 241-4906 (202) 501-4906 Computer Accommodations (COCA) KMA Authorization and 241-1126 (202) 501-1126 Management Reviews Division KMAD Acquisition Evaluation 241-4305 (202) 501-4305 and Analysis Branch (ADP Protest Reports) KMAS Authorizations Branch 241-1566 (202) 501-1566 (Delegations of Procurement Authority) KAL Agency Liaison Officer 241-0819 (202) 501-0819 Program Division (Trail Boss Program) KMP Policy and Regulations 241-3194 (202) 501-3194 Division KRA Information 756-4111 (703) 756-4111 Technology Facilities Center KRD Federal Systems 756-4169 (703) 756-4169 Integration and Management Support Center KRE Federal Systems 756-4201 (703) 756-4201 Acquisition Support Center KRO Federal Office System 756-6900 (703) 756-6900 Center KRP Federal IRM Planning 756-4000 (703) 756-4000 Center KRS Federal Software 756-4500 (703) 756-4500 Management Center KRT Federal Information 756-4227 (703) 756-4227 Systems Program KVT Technical Contract 241-3881 (202) 501-3881 Management Division KXMA ADP Program Analysis 241-1183 (202) 501-1183 Branch (Information Technology Fund) KZH Automated Information 241-4968 (202) 501-4968 Division OTA Office of Technical 756-4100 (703) 756-4100

APPENDIX D: FIPS PUBS APPLICABLE TO COMMERCIAL SOFTWARE

GENERAL PUBLICATIONS

FIPS PUB 0 GENERAL DESCRIPTION OF THE FEDERAL INFORMATION PROCESS STANDARDS REGISTER, 1968 November 1.

Establishes the Federal Information Processing Standards Register as the official source within the Federal Government for information pertaining to the approval, implementation, and maintenance of FIPS. Defines responsibilities for development and maintenance of Register, and for the content and format of FIPS.

FIPS PUB 29-2 INTERPRETATION PROCEDURES FOR FEDERAL INFORMATION PROCESSING STANDARDS FOR SOFTWARE, 1987 September 14.

Establishes procedures for requesting an interpretation of the technical specifications of the FIPS for software and for providing a solution to the request.

FIPS PUB 34 GUIDE FOR THE USE OF INTERNATIONAL SYSTEM OF UNITS (SI) IN FEDERAL INFORMATION PROCESSING STANDARDS PUBLICATIONS, 1975 January 1.

Establishes requirements for use of International System of Units in all FIPS PUBS. Covers use of dual dimensional notation of measurements, spelling of SI units, symbols for units, and use of separators and decimal points.

SOFTWARE STANDARDS AND GUIDELINES

Computer Network Protocols

FIPS PUB 107 LOCAL AREA NETWORKS: BASEBAND CARRIER SENSE MULTIPLE ACCESS WITH COLLISION DETECTION ACCESS METHOD AND PHYSICAL LAYER SPECIFICATIONS AND LINK LAYER PROTOCOL, 1984 October 31.

Specifies a network access technique used in office automation applications. Provides the mechanical, electrical, functional, and procedural specifications and link protocol required to establish physical connections, to transmit bits, and to send data link frames between nodes. Adopts ANSI/IEEE 802.2 Logical Link Control type 1 class 1 service, and all of ANSI/IEEE 802.3.

FIPS PUB 146 GOVERNMENT OPEN SYSTEMS INTERCONNECTION PROFILE (GOSIP), 1988 August 24.

Specifies Version 1 of GOSIP for the acquisition of networks and services. Defines a common set of data communications protocols which enable systems developed by different vendors to interoperate and enable the users of different applications on these systems to exchange information. This standard is being revised.

Database

FIPS PUB 126 DATABASE LANGUAGE NDL, 1987 March 10.

Specifies three languages that make up a network model database management system. NDL is suitable for highly structured applications requiring rapid access along predefined paths through the database. Adopts ANSI X3.133-1986.

FIPS PUB 127 DATABASE LANGUAGE SQL, 1987 March 10.

Specifies two languages that make up a relational model database management system. SQL is suitable for database applications that require flexibility in data structures and access paths to the database. Adopts ANSI X3.135-1986. Two proposed extensions being considered are Draft Addendum ISO 9075/DAD 1 and X3H2-87-262.

Data Management Applications

FIPS PUB 76 GUIDELINE FOR PLANNING AND USING A DATA DICTIONARY SYSTEM, 1980 August 20.

Describes the capabilities of a data dictionary system (DDS), discusses selection considerations, and provides guidance for planning, implementation, and operational use of a DDS.

FIPS PUB 77 GUIDELINE FOR PLANNING AND MANAGEMENT OF DATABASE APPLICATIONS, 1980 September 1.

Summarizes a recommended discipline of application management for database systems and provides specific advice on applications planning and management, and on software selection.

FIPS PUB 88 GUIDELINE ON INTEGRITY ASSURANCE AND CONTROL IN DATABASE ADMINISTRATION, 1981 August 14.

Provides explicit advice on achieving database integrity and security control, and documents a step-by-step procedure for examining and verifying the accuracy and completeness of a database.

FIPS PUB 110 GUIDELINE FOR CHOOSING A DATA MANAGEMENT APPROACH, 1984 December 11.

Provides a framework for comparing and selecting alternative data management approaches. The emphasis is on pragmatic guidance that captures the principal, relevant decision factors.

FIPS PUB 124 GUIDELINE ON FUNCTIONAL SPECIFICATIONS FOR DATABASE MANAGEMENT SYSTEMS, 1986 September 30.

Provides a framework for gathering and incorporating an appropriate set of data management functions into a request for proposals document. The emphasis is on the logical separation of the database management functional specifications, the relationship among the logical categories, and the recommended set of sources.

FIPS PUB 156 INFORMATION RESOURCE DICTIONARY SYSTEM (IRDS), 1989 April 5.

Specifies a computer software system that provides facilities for recording, storing, and processing descriptions of an organization's significant data and data processing resources. The IRDS includes the functions performed by data dictionary systems or information repositories. The standard specifics two user interfaces: the full-syntax and semantics of a Command Language, and the semantics of a menu-driven Panel Interface. Adopts ANSI X3.138-1988.

Documentation

FIPS PUB 11-2 GUIDELINE: AMERICAN NATIONAL DICTIONARY FOR INFORMATION PROCESSING SYSTEMS, 1983 May 9.

Provides a common reference within the Government for terms and definitions used in such information processing activities as the representation, communication, interpretation, and processing of data by human or automatic means. The Dictionary consists of a single alphabetic listing of over 4000 terms and their definitions. Adopts X3/TR-1-82.

FIPS PUB 30 SOFTWARE SUMMARY FOR DESCRIBING COMPUTER PROGRAMS AND AUTOMATED DATA SYSTEMS, 1974 June 30.

Establishes a standard form to be used by Federal agencies in documenting summaries or abstracts of programs and automated data systems. This standard is being considered for revision or withdrawal.

FIPS PUB 38 GUIDELINES FOR DOCUMENTATION OF COMPUTER PROGRAMS AND AUTOMATED DATA SYSTEMS, 1976 February 15.

Provides basic guidance for the preparation of ten document types that are used in the development of computer software. Can be used as a checklist for the planning and evaluation of software documentation practices.

FIPS PUB 53 TRANSMITTAL FORM FOR DESCRIBING COMPUTER MAGNETIC TAPE FILE PROPERTIES, 1978 April 1.

Provides a standard form for Federal agencies to use in documenting the physical properties and characteristics of a recorded magnetic tape file.

FIPS PUB 64 GUIDELINES FOR DOCUMENTATION OF COMPUTER PROGRAMS AND AUTOMATED DATA SYSTEMS FOR THE INITIATION PHASE, 1979 August 1.

Provides guidance in determining the content and extent of documentation needed for initiation phase of the software life cycle. Covers preparation of project requests, feasibility studies, and benefit/cost analysis documents.

FIPS PUB 105 GUIDELINE FOR SOFTWARE DOCUMENTATION MANAGEMENT, 1984 June 6.

Provides explicit advice on managing the planning, development, and production of computer software documentation. Includes several checklists, references to relevant standards and guidelines, and a glossary of terms.

Electronic Document Interchange

FIPS PUB 152 STANDARD GENERALIZED MARKUP LANGUAGE (SGML), 1988 September 26.

Specifies a language for describing documents to be used in office document processing, interchange between authors and between authors and publishers, and publishing. The language provides a coherent and unambiguous syntax for describing the elements within a document. Adopts ISO 8879-1986.

Graphics

FIPS PUB 120 GRAPHICAL KERNEL SYSTEM (GKS), 1986 April 18.

Specifies a library (or toolbox package) of subroutines for an application programmer to incorporate within a program in order to produce and manipulate two-dimensional pictures. Promotes portability of graphics application programs between different computers, and to aid programmers in understanding and using graphics methods. Adopts ANSI X3.124-1985. GKS is also an international standard (ISO 7942).

FIPS PUB 128 COMPUTER GRAPHICS METAFILE (CGM), 1987 March 16.

Specifics a file format suitable for the description, storage, and communication of graphical (pictorial) information in a device independent manner. Adopts ANSI X3.122-1986.

FIPS PUB 153 PROGRAMMER'S HIERARCHICAL INTERACTIVE, GRAPHICS SYSTEM (PHIGS), 1988 October 14.

Specifics the control and data interchange between an application program and its graphic support system. Provides a set of functions and programming language bindings (or toolbox packages) for the definition, display, and modification of two-dimensional (2D) or three-dimensional (3D) graphical data. In addition, this standard supports highly interactive processing and geometric articulation, multi-level or hierarchical graphics data, and rapid modification of both the graphics data and the relationships between the graphical data. Adopts ANSI X3.144-1988 and X3.144.1-1988.

Information Interchange

FIPS PUB 123 SPECIFICATION FOR DATA DESCRIPTIVE FILE FOR INFORMATION INTERCHANGE (DDF), 1986 September 19.

Specifies media-independent and system-independent file and record formats for the interchange of information between computer systems. Provides a mechanism to allow data structures to be easily transported from one computer system to another computer system, independent of make, with the capability of restructuring the data without loss of content or meaning. Adopts ANSI/ISO 8211-1985.

FIPS PUB 1-2 CODE FOR INFORMATION INTERCHANGE, ITS REPRESENTATIONS, SUBSETS, AND EXTENSIONS, 1984 November 14.

Provides a standard coded character set and a recommended collating sequence, subsets, extensions, and certain graphic representations for the set, all for use in Federal information processing systems, communications systems, and related equipment. This revised standard withdraws FIPS 7, 15, 35, and 36. Adopts ANSI X3.4- 1977, X3.32-1973, and X3.41-1974.

FIPS PUB 121 VIDEOTEX/TELETEXT PRESENTATION LEVEL PROTOCOL SYNTAX (NORTH AMERICAN PLPS), 1986 May 6.

Describes the formats, rules, and procedures for encoding of alphanumeric text and pictorial information for videotex and teletext applications. Adopts joint American National Standard X3.110-1983/Canadian Standard CSA T500-1983.

Labeling and File Structures

FIPS PUB 79 MAGNETIC TAPE LABELS AND FILE STRUCTURES FOR INFORMATION INTERCHANGE, 1980 October 17.

Specifies four levels of labeling, label formats, blocking structures, and tape-mark relationships on magnetically recorded tapes used for information interchange. Adopts ANSI X3.27-1978 with qualifications for Federal applicability. This standard is being revised.

FIPS PUB 118 FLEXIBLE DISK CARTRIDGE LABELING AND FILE STRUCTURE FOR INFORMATION INTERCHANGE, 1985 September 30.

Prescribes a set of logical track format specifications for flexible disk cartridges described in the following physical track format standards: FIPS 114, 115, 116, and 117. Specifications enable users to interchange information using commercially available disk technology and to purchase off-the-shelf equipment. Adopts ISO 7665. This standard is being withdrawn.

Operating Systems

FIPS PUB 151 POSIX: PORTABLE OPERATING SYSTEM INTERFACE FOR COMPUTER ENVIRONMENTS, 1988 September 12.

POSIX is for use by computing professionals involved in system and application software development and implementation. This standard is the first component of a series of specifications needed for application portability. Appendix discusses the elements needed in an Applications Portability Profile and provides a schedule for the additional specifications. Adopts on an interim basis IEEE 1003.1/Draft 12 which defines a C language source interface to an operating system environment. This standard is being revised.

Programming Languages

FIPS PUB 21-2 COBOL, 1986 March 18.

Establishes the form for and the interpretation of programs expressed in FIPS COBOL. Adopts ANSI X3.23-1985.

FIPS PUB 29-2 INTERPRETATION PROCEDURES FOR FEDERAL INFORMATION PROCESSING STANDARDS FOR SOFTWARE, 1987 September 14.

Establishes procedures for requesting a technical interpretation of any of the FIPS for software and for providing a solution to the request.

FIPS PUB 68-2 BASIC, 1987 August 28.

Specifies the form and establishes the interpretation of programs expressed in the BASIC programming language. This revision reflects major changes, improvements, and additions to the BASIC specifications. Adopts ANSI X3.113-1987.

FIPS PUB 69-1 FORTRAN, 1985 December 21.

Specifies the form and establishes the interpretation of programs expressed in the FORTRAN programming language. The standard consists of a full language, FORTRAN, and a subset language, Subset FORTRAN. Adopts ANSI X3.9-1978.

FIPS PUB 109 PASCAL, 1985 January 16.

Specifies the form and establishes the interpretation of programs expressed in the PASCAL programming language. Promotes portability of PASCAL programs for use on a variety of data processing systems. Adopts ANSI/IEEE770X3.97-1983.

FIPS PUB 119 ADA, 1985 November 8.

Specifies the form and establishes the interpretation of programs expressed in the ADA programming language. Promotes portability of ADA programs for use on a variety of data processing systems. Adopts ANSI/MIL-STD-1815A-1983.

FIPS PUB 125 MUMPS, 1986 November 4.

Specifies the form and meaning of programs units written in MUMPS. Adopts ANSI/MDC X11.1-1984.

Software Engineering

FIPS PUB 99 GUIDELINE: A FRAMEWORK FOR THE EVALUATION AND COMPARISON OF SOFTWARE DEVELOPMENT TOOLS, 1983 March 31.

Presents a framework for the evaluation and comparison of software development tools. The framework is a hierarchical structure of tool features that provides the level of detail necessary to classify the capabilities of tools. Through a careful analysis of tool features, users can obtain a better understanding of the characteristics of a tool and can compare these characteristics with those of other tools.

Software Maintenance

FIPS PUB 106 GUIDELINE ON SOFTWARE MAINTENANCE, 1984 June 15.

Presents information on techniques, procedures, and methodologies to employ throughout the life-cycle of a software system to improve the maintainability of that system. Included is a glossary of technical terms. Appendices provide information on software maintenance process; how to decide whether or not to continue maintaining a system; and software maintenance tools.

Validation, Verification, and Testing

FIPS PUB 101 GUIDELINE FOR LIFE-CYCLE VALIDATION, VERIFICATION AND TESTING OF COMPUTER SOFTWARE, 1983 June 6

Presents an integrated approach to validation, verification, and testing (VV∧T) that should be used throughout the software life-cycle. Also included is a glossary of technical terms and a list of supporting NBS publications. An appendix provides an outline for formulating a VV∧T plan.

FIPS PUB 132 GUIDELINE FOR SOFTWARE VERIFICATION AND VALIDATION PLANS, 1987 November 19.

Provides uniform and minimum requirements for the format and content of software verification and validation plans. Defines minimum tasks,inputs, and outputs for critical software and optional tasks. Adopts ANSI/IEEE Standard 1012-1986.