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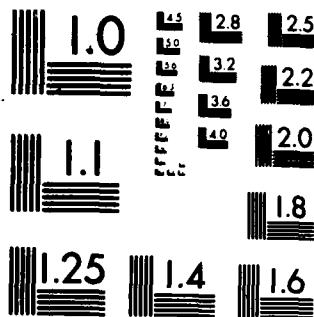
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STARS PMP - (8/06/86)

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**SOFTWARE TECHNOLOGY
FOR
ADAPTABLE, RELIABLE SYSTEMS (STARS)
PROGRAM MANAGEMENT PLAN**

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19. ABSTRACT (Continue on reverse if necessary and identify by block number) Software Technology for Adaptable, Reliable Systems, or STARS, is the Defense Department's program to achieve dramatic improvements in software quality and to mitigate runaway software costs. This management plan provides guidance for organization, responsibilities, and STARS Joint Program Office staffing. The management strategy includes an increased role for Service research laboratories in the fundamental technology efforts and establishes a strong industry leadership role in STARS technology development.			
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STARS PMP - (8/06/86)

EXECUTIVE SUMMARY

Software Technology for Adaptable, Reliable Systems, or STARS, is the Defense Department's program to achieve dramatic improvements in software quality and to mitigate runaway software costs. The Under Secretary of Defense for Research and Engineering (USDRE) directed the STARS Program Director to expeditiously develop and annually update technical and management plans for approval by STARS Executive Committee. This management plan responds to the USDRE direction.

The STARS Charter [1] signed by the USDRE on 1 November 1984, the Deputy Secretary of Defense program clarification memorandum [2], signed on 12 August 1985, and the requirements document prepared by the Services [3] provide the approved [4] statements of STARS program requirements, objectives and approach. In brief summary, these documents provide the following management guidance:

- ORGANIZATION

- The STARS organization shall consist of:
 - OSD Program Office
 - Headed by an OSD Director
 - With Army, Navy and Air Force Deputy Directors
 - Army, Navy and Air Force Program Managers
 - Defense Agency Focal Points

- RESPONSIBILITIES

- STARS Program Director shall:
 - Provide direction and overall management
 - Develop and maintain the Program Management Plan
 - Consistent with the Charter
 - With support from the Service STARS Deputy Directors
 - In coordination with the Service Program Managers and Agency Focal Points
 - Have financial, planning, and management authority
 - Develop and annually revise the implementation plan
 - Specify and detail (technical) activities

STARS PMP - (8/06/86)

- Services shall:
 - Appoint Service Program Managers
 - Appoint Deputy Directors to the STARS Joint Program Office (SJPO)
 - Set up appropriate organizational and managerial processes for:
 - Full participation
 - Program definition
 - Overall planning assistance
 - Solution design
 - Program execution management
 - Transition to implementation
- Defense Agencies shall:
 - Appoint agency focal points
 - Set up appropriate organizational and managerial processes for:
 - Full participation
 - Program definition
 - Solution Design
 - Transition to implementation
- Service Deputies shall:
 - Be appointed to the SJPO
 - Support the STARS Director
 - Participate in program direction and execution
 - Support joint activities
- Agency Focal Points shall:
 - Coordinate agency STARS activities
 - Develop and annually revise implementation plans
 - Specify and detail (technical) activities
- JOINT PROGRAM OFFICE STAFFING
 - One OSD director billet
 - Three Service STARS Deputy Directors
 - Support from Defense Logistics Agency

The management strategy for STARS recognizes that the U.S. national expertise in software resides with a very large and competitive industry. STARS assumes that industry, therefore, must exercise strong research leadership for STARS to succeed. To provide industry the necessary leadership opportunity, while retaining government control, responsibility, and accountability, a new contracting concept, called competing-primers, has been developed using multiple lead STARS

STARS PMP - (8/06/86)


contractors. Under the competing-primes strategy, a major part of the STARS program will be contracted with industry through a single government contracting office under the technical direction of the DoD STARS Joint Program Office.

The STARS program will foster the needed software technology by funding research and developments, integrating the contributions of many organizations and making those contributions conveniently available to the U.S. software industry and the Services. The STARS technology approach and acquisition approach are both designed to stimulate a new business opportunity for industry through the unification of commercial software standards. The approach should leverage a much larger benefit to the department through these commercial endeavors than could be otherwise expected from the government activities alone. A research and development effort is required because the necessary software processes and products do not yet exist. Although significant near-term results are expected from the STARS effort, the program must continue in a focused and centrally managed way over several years.


The management strategy includes an increased role for Service research laboratories in the fundamental technology efforts. Participating System Program Offices within the Service product divisions will have key roles in demonstration projects that will provide a pragmatic assessment of the STARS program progress. The STARS Service Program Managers will have key roles in the development, transition and evaluation of the STARS program products by management of the Service activities.

The STARS Executive Committee has approved this management plan for execution of the FY 1986 program. Written line-in, line-out comments with rationale should be forwarded to the STARS Director, The Pentagon Room 3D139 (Fern C107), Washington, D.C. 20301 by 15 August 1986 for consideration in preparing the FY 1987 annual update.

Submitted:


Joseph S. Greene, Jr.
Colonel, USAF
Director, STARS

Approved:


Ronald L. Kerber
Chairman, STARS
Executive Committee



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STARS PMP - (8/06/86)

TABLE OF CONTENTS

<u>SECTION</u>	<u>Page</u>
1. BACKGROUND	1
1.1 Program Goals	1
1.2 Products and Milestones	1
1.2.1 MCCR Applications	
1.2.2 Environment Products	
1.2.3 Technology Development	
1.2.4 Fundamental Research	
1.3 Purpose of the Program Management Plan	4
1.4 Program Apportionment	4
2. OBJECTIVES	6
2.1 The Task	6
2.2 Contract Capabilities Needed	6
2.3 Dangers to be Avoided	7
3. MANAGEMENT STRATEGY	9
3.1 Industry Execution	9
3.1.1 Competing-Prime Concept	
3.1.2 Competing-Prime Structure	
3.1.3 Competing-Prime Award Process	
3.2 Service Execution	12
3.2.1 Service Research Laboratories	
3.2.2 Service Product Divisions	
4. MANAGEMENT STRUCTURE	13
4.1 Participating Organizations	13
4.2 Organizational Relationships	15
5. AUTHORITIES AND RESPONSIBILITIES	18
5.1 STARS Executive Committee	18
5.1.1 Senior Advisors	

STARS PMP - (8/06/86)

<u>SECTION</u>	<u>Page</u>
5.2 DoD STARS Program Director	19
5.2.1 STARS Joint Program Office	
5.2.2 STARS Deputy Program Directors	
5.2.3 Defense Logistics Agency	
5.2.4 Defense Supply Services Washington	
5.2.5 Office of Naval Research	
5.2.6 Competing-Prime Lead Contractors	
5.2.7 Competing-Prime Subcontractors	
5.2.8 Competing-Prime Technical Oversight Group	
5.2.9 Technical Peer Reviewers	
5.3 Service Management	26
5.3.1 Service STARS Program Managers	
5.3.2 Service STARS Program Offices	
5.3.3 STARS Steering Committee	
5.3.4 Personnel Resources	
6. OPERATING PRINCIPLES	30
6.1 General Management Guidance	30
6.2 General Methods of Operation	32
6.3 Management Instruments	32
6.3.1 Plans	
6.3.2 Reviews	
6.3.3 DD Form 1498's	
6.3.4 Work Package Directives	
6.4 Calendar of Recurring Events	36
6.5 Security Classifications	38
6.6 Contract Priorities	38
7. PROGRAM TRANSITION	39
REFERENCES	40

STARS PMP - (8/06/86)

SECTION 1 - BACKGROUND

The initial requirements and goals for STARS were established after a series of joint OSD, Army, Navy, Air Force, and Defense Agency task force efforts which resulted in the DoD Software Initiative [5]. In June 1983, the Joint Logistics Commanders (JLC) endorsed this initiative to offset the growing manpower shortfall and to improve the capability to support software development and maintenance [6]. In November 1984, the Under Secretary of Defense for Research and Engineering (USDRE) summarized the requirements and goals in the STARS Program Charter [1]. The operational requirements for STARS are stated in reference 3.

1.1 PROGRAM GOALS

STARS will develop and manage programs to improve the process of software engineering, to increase the adaptability and reliability of mission critical software, and to achieve dramatic improvement in the DoD ability to provide software meeting defense mission requirements. The STARS goals are to:

- (1) Improve productivity
- (2) Improve quality and reliability
- (3) Promote development and application of reusable software
- (4) Reduce the time and cost to develop and support defense software

1.2 PRODUCTS AND MILESTONES

STARS research and development activities fall into four major areas: MCCR applications, environment products, technology development and fundamental research. The specific technical details are described in greater detail in the STARS Technical Plan [7]. A brief summary of these areas and products is provided here as the basis for discussing the incentives and controls that are key to the STARS management strategy.

1.2.1 MCCR APPLICATIONS

STARS will sponsor applications called Shadow Projects to develop and deliver operational MCCR capabilities. Shadow demonstrations will duplicate, using the discipline and processes developed by STARS, operational weapons, command-control, or intelligence systems to provide representative demonstrations for each Service. Shadows will start after system Critical Design Review (CDR) at a time when the requirements are fully defined and, in parallel with the System Program Office software development, will develop the same capability in STARS technology on a noninterference basis. Shadow projects will measure STARS program progress, provide realistic and useful feedback to the technology developers, and

STARS PMP - (8/06/86)

contribute to the process of technology transfer. The "should-cost" goals for shadow developments will be set by the STARS Program Director and will be reduced in successive projects over the next five years to achieve the productivity improvement STARS seeks. At least twelve shadow demonstrations are planned at a rate of three per year beginning in FY 1987.

1.2.2 ENVIRONMENT PRODUCTS

STARS will develop several prototype and fully operational software engineering environments for specific problem domains. The environments will provide the framework, controls, tools, techniques, methods and documentation to:

- (1) Deal with the complexities inherent in the creation and maintenance of software to:
 - (a) Improve the design, development and support process.
 - (b) Facilitate incorporation of changes in requirements and/or technology,
 - (c) Reduce the life-cycle cost,
 - (d) Predict, track, and manage the cost, schedule, performance, and quality of software throughout the evolutionary support processes.
- (2) Improve software quality, including reliability, adaptability, and performance.
- (3) Improve the management and control of the complex and varied activities required to develop, field, and support MCCR software.

STARS will deliver several fully operational, adaptable software engineering environments. These systems will be built using common, reusable Ada® software unified by a consistent set of commercial functional interface standards to provide an adaptable framework for interfacing tools and processes. An automated configuration control discipline will include appropriate bimodal documentation and specification approaches supported by computer aided processes. The word "bimodal" is used to convey the idea that a reusable technology should be able to start with existing code, include mixing, matching and adapting, and recover specifications, requirements and documentation from the code. A significant and growing set of tools for reliability and adaptability processes will be defined and developed to support the evolutionary software-first systems technology. These environments will be developed using the new

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STARS PMP - (8/06/86)

software engineering principles and processes STARS seeks to develop and support. Prototype versions will be available for peer review and evaluation during FY 1988 and be fully operational by FY 1991.

1.2.3 TECHNOLOGY DEVELOPMENT

STARS will develop the tools and processes to demonstrate and support a software-first approach to systems engineering. This approach requires a machine independence that mandates a stable and carefully controlled language standard. The Defense Department's common high-order language called Ada, defined by the Ada Reference Manual [8], and monitored through the Defense Department's Ada Joint Program Office compiler validation facilities, provides the degree of machine independence needed to support a software-first approach.

To establish a software-first systems technology, STARS will develop the technical foundations for software reusability. The approach will include the development of a significant quantity of functional foundation software capabilities in and for Ada such as command languages, text processors, database system components, operating system capabilities, graphics support, communications protocols, and numerous applications components that comply with well defined commercial functional interface standards. STARS will seek to unify a useful set of functional interface standards through Ada implementations and bindings to provide the technical basis for a reusable software technology that does not exist today. To make this reusable software widely available, STARS will maintain a high quality on-line, trusted, mandatory-access-controlled software repository with continuously improving human interface capabilities. (Initially the Ada repository on the MILNET host called SIMTEL20 will be used.)

1.2.4 FUNDAMENTAL RESEARCH

STARS will pioneer a new approach to resolving high-risk MCCR acquisition issues. Experience in shadow applications, environment products, and technology developments will provide the basis for several briefings to industry annually at which fundamental research issues will be described for creative proposals. Pre-prototype projects will provide a new role model for dealing with unsolved MCCR technology problems. The approach will depart radically from the traditional documentation intensive acquisition approach that has historically focused on elaborate specifications before the fundamental problems are identified and understood.

STARS PMP - (8/06/86)

1.3 PURPOSE OF THE PROGRAM MANAGEMENT PLAN (PMP)

This PMP establishes the management strategy, structure and responsibilities for planning and execution of the STARS program, and identifies decision mechanisms, documentation, and resources required for STARS program management. Upon approval by the STARS Executive Committee [4], this PMP will be forwarded through each Service Secretariat and form the basis for the development of management directives within each Service.

This plan also describes the competing-primes lead contractor acquisition concept and underlying rationale, identifies the relationship and responsibilities of government organizations to the lead contractors, explains the controls and incentives through which the government will seek to stimulate creative, affordable software solutions.

1.4 PROGRAM APPORTIONMENT

The STARS Program apportionment for FY 1986 through FY 1992, provided in Figure 1.1 is discussed in detail in the STARS Technical Program Plan [7] and is included here for easy reference. The program resources are apportioned with approximately 70 percent to industry execution, 20 percent to Services execution, 7 percent to Joint Program Office management and 3 percent to the repository.

The STARS competing-prime industry effort is programmed at a base level averaging about 200 manyears annually over the first five years. Initially this level of effort will be allocated with 17 percent for MCCR Shadow project applications (like DoD 6.3 appropriation), 46 percent for products and advanced technology developments (like DoD 6.3A and 6.2 appropriation), 17 percent for fundamental research (like DoD 6.2 appropriation).

The apportionment of effort between the Service and Industry activities, and between the categories of Industry effort will be reviewed annually by the STARS Director and adjusted with developing experience.

STARS PMP - (8/06/86)

Purpose	<u>FY86</u>	<u>FY87</u>	<u>FY88</u>	<u>FY89</u>	<u>FY90</u>
<u>Gramm-Rudman</u>	2.0	-	-	-	-
<u>FY85 Continuations</u>	8.1	-	-	-	-
<u>R&D by the Services</u>					
Management	1.5	1.5	1.5	1.5	1.5
R&D	6.0	6.0	6.0	6.0	6.
<u>R&D by Industry</u>					
Shadows	3.0	3.0	6.0	6.0	6.0
Foundations	10.0	3.0	-	-	-
Development	5.4	13.1	12.4	14.2	15.8
Risk Reduction	3.0	3.0	6.0	6.0	6.0
<u>Repository</u>	-	3.0	1.0	1.0	1.0
<u>STARS JPO</u>	<u>2.5</u>	<u>2.6</u>	<u>2.6</u>	<u>2.6</u>	<u>2.6</u>
Total	41.5	35.2	35.5	37.5	38.9

Figure 1-1 Current STARS Program Allocation (\$s in Millions)

STARS PMP - (8/06/86)

SECTION 2 - OBJECTIVES

The objective of the STARS Program is to achieve a dramatic improvement in our ability to provide and support software meeting mission critical defense requirements. This improvement will be reflected in the cost, schedule performance, and quality of MCCR software. The program will seek major improvements by the early 1990's.

2.1 THE TASK

MCCR software sources encompass a very large and competitive U.S. industry. The intent of STARS in solving a very specific set of technical problems is to produce a significant change in the processes and products of that very large U.S. industry.

2.2 CONTRACT CAPABILITIES NEEDED

In order to achieve the objectives of the STARS program, the acquisition process itself will provide a management tool to create an effective partnership with industry tailored to the unique needs of software technology. In formulating the new approach several points are fundamental. The contracting approach must:

- Intimately involve, from the beginning, the industry that will ultimately use the STARS technology to facilitate technology transfer.
- Provide long term leadership continuity and involve a broad industry base to accommodate the facts that no one company has a sufficient technology base and no one customer has a sufficient market to drive such a long-term, fundamental change.
- Stimulate a new business opportunity for industry, thereby incentivizing investment of private sector dollars in commercial implementations once the technology base is established.
- Stimulate creativity by having the flexibility and responsiveness needed to develop and rapidly assimilate breakthroughs.
- Provide incentives for high quality performance and cost control, and provide practical recourse to replace participating organizations whose performance or costs are not competitive.
- Maintain government control without incurring the burden and delays characteristic of government reviews that the current documentation-driven approach requires.

STARS PMP - (8/06/86)

- Be able to expeditiously accommodate applications of new STARS technology to specific DoD operational mission critical systems using "industrially-funded" dollars from DoD Components and Agencies like the Strategic Defense Initiative.

2.3 DANGERS TO BE AVOIDED

The competing prime acquisition concept with multiple lead contractors will seek to avoid certain problems not infrequently experienced in government contracting. Some problems to be avoided are most severe in acquisition or product development activities. The contracting approach will seek to redress the following issues:

- The selection of a prime contractor is often an extensive process, involving great costs in time and money for government and industry. The penalties for starting over are often so high that the option is rarely chosen even when performance and cost growth become unacceptable.

- The documentation-driven process with the requirement for numerous government reviews, conducted by well-meaning, but too often inadequately qualified, personnel can place extraordinary burdens on industry, have a significant cost and frequently cause delays and discontinuities in funding and work force management that degrade quality and increase costs. While the approach may be appropriate for low-risk developments, it has been uniformly a road to disaster for high-risk developments. STARS will identify high-risk areas and, in these areas, explicitly forbid detailed specifications as the primary outcome of the systems engineering process, and instead, require the more cost-effective approach of risk identification and resolution through pre-prototype and prototype activities before developing elaborate specifications.

For fundamental research activities, a different set of problems often cause cost increase and schedule loss without commensurate performance improvement. The competing-prime contracting approach will include explicit provisions to redress the following issues:

- The common focus on specifications in today's contracting process (often over-specification before the problems are understood) and the rigid evaluation of compliance to specifications often disqualify the bidder with a radically different solution and represent a major impediment to creativity.

- The exceedingly long delay between the time a need is recognized and the work is performed is a serious impediment to progress, particularly in an industry that experiences fundamental change about every two years.

STARS PMP - (8/06/86)

- The abilities to change direction mid-stream to take advantage of breakthroughs in technology are overly constrained by the classical software engineering process of the early 1970's now embedded in many acquisition contract requirements.

The management strategy presented in Section 3 is developed with the magnitude and complexity of STARS in mind, the contracting criteria needed for success and a favorable approach to risk reduction.

SECTION 3 - MANAGEMENT STRATEGY

The STARS management strategy has been streamlined to reduce overhead activities. The STARS Executive Committee with Service Secretariat membership has JRMB-like overview and program execution approval authority. The STARS Joint Program Director, supported by the Joint Program Office, will establish program direction through technical and management plans, provide technical and management guidance, establish performance and reporting expectation and criteria, measure performance through scheduled reviews and planned reporting processes, and chair reapportionment reviews to best accomplish the STARS mission. The STARS Joint Program Director will also be responsible for planning and managing the industry program executed through the STARS lead contractors. Service STARS Program Managers will have full responsibility for planning and executing Service STARS activities within allocated resources. The management strategy seeks to provide industry and Service executing organizations a great deal of authority to exercise both technical and management leadership over resources allocated, while retaining centralized planning control, responsibility and accountability with the STARS Program Director.

The new strategy consolidates the government's primary STARS interface with industry through a single contracting office and employs a new concept using a few lead contractors. Service laboratories will have an increased role in STARS funded research and technology development. Participating Service System Program Offices will have an important role in STARS-funded MCCR applications.

3.1 INDUSTRY EXECUTION

To achieve the contracting objectives outlined in paragraph 2.2 and avoid the pitfalls outlined in paragraph 2.3 above, a new acquisition concept has been formulated. The concept, called competing-prime lead contractors, is discussed in this section.

3.1.1 COMPETING-PRIME CONCEPT

Because the source of mission-critical software encompasses a very large and competitive industry, that industry itself needs to provide the technology solutions. The competing-prime concept will produce a focused management approach to apply industry research capabilities through the leadership of a few STARS lead contractors. Key to the concept is a mechanism to preserve competition throughout the life of the STARS program. Multiple, five year, annually renewable basic contract awards are planned. All future STARS work tasks and work units awarded to these contractors will be competed between all lead contractors. In some cases, multiple awards will be made for the same task. The tasks, progress reports, and products of all

STARS PMP - (8/06/86)

awards will be shared with all the lead contractors and their subcontractors as rapidly as possible. To involve a broad industry base, criteria will be established requiring that some percentage (say 60 percent by dollar value) of the technical work be subcontracted by the primes.

3.1.2 COMPETING-PRIME STRUCTURE

Figure 3-1, illustrates the partitioning of STARS work units into three major categories: These are application demonstrations, product and technology development, and fundamental research. In addition to the fact that the level of STARS effort devoted to each area will be set by the STARS Program Director, the management controls will be different for each area.

For example, the application demonstrations will be "designed to cost". As the STARS software engineering process matures, larger and more difficult applications will be attempted within a constant level of effort. In the fundamental research area, each prime contractor will sponsor a briefing to industry annually describing fundamental problems and issues. Solution proposals will be invited from industry. The primes will solicit, evaluate, select and fund subcontracts, within the level of effort set aside, for creative solutions to fundamental problems. The prime contractors will be evaluated on the technical content and presentation quality of their briefing to industry, their judgement in selecting work to be funded, and on their timeliness and efficiency in executing subcontracts.

In the technology development area, a cyclical process will be initiated in which all primes propose tasks to be accomplished and the government evaluates and prioritizes the tasks. All primes will compete for the tasks selected. Additionally, each prime will be tasked to develop and productize a development environment tailored to a particular application domain.

3.1.3 COMPETING PRIME AWARD PROCESS

Sources for STARS lead contractors will be sought through a Commerce Business Daily announcement scheduled to appear about the third week in May 1986, through which potential sources will be invited to submit their qualifications. Companies will be selected as STARS lead contractors through a two-step process. Based on responses to a sources sought announcement in the Commerce Business Daily, a number of companies will each be awarded a contract to work together with the government in developing the detailed competing-prime management concept for the STARS acquisition. These successful offerors will be also invited to respond to a subsequent RFP against which a smaller number of multiple, five-year, annually-renewable awards are planned.

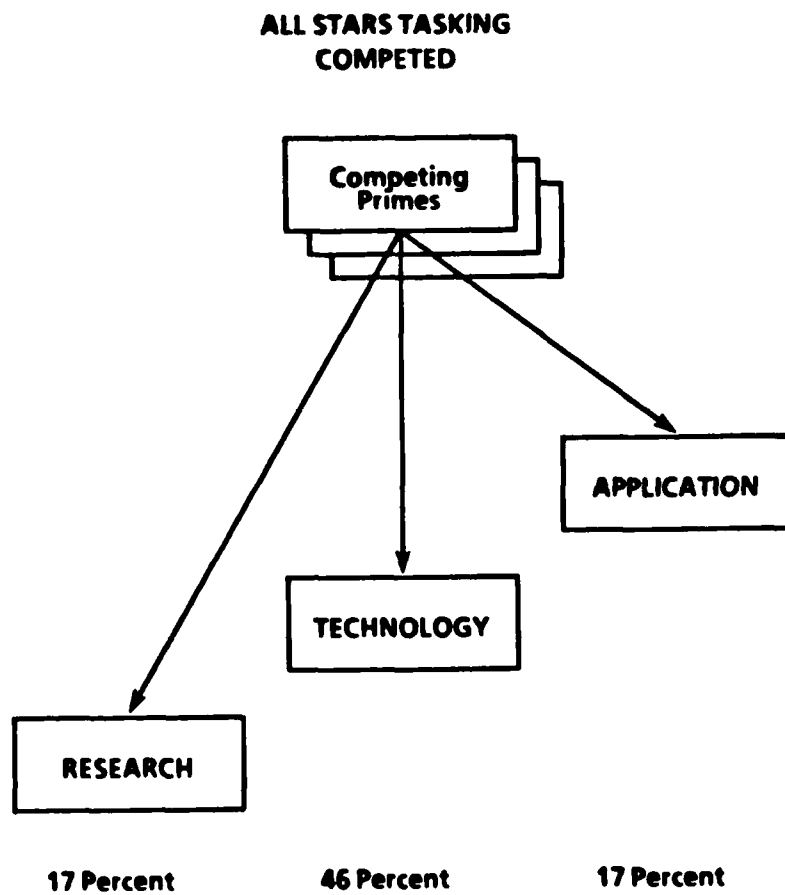


Figure 3.1 PARTITIONING OF WORK UNITS

STARS PMP - (8/06/86)

3.2 SERVICE EXECUTION

The STARS Technical Program Plan (TPP) [5] allocates part of the STARS program to the Services. The Services shall have full and immediate access to all the STARS work performed by industry and they need the resources and freedom to contribute to and apply the industry progress to their specific needs. For this reason, the Service STARS Program Managers will be given a great deal of freedom in the specific uses of the moneys allocated so long as the expenditures are consistent with the goals, constraints and criteria of the STARS program. STARS Program Office oversight will be generally limited to apportionment, quarterly and semi-annual management reviews as well as discretionary participation in scheduled technical reviews. The Service efforts will be expected to contribute working, executable Ada code products to the repository that will be available for use by the entire STARS community (consistent with applicable export or security classification restrictions).

3.2.1 SERVICE RESEARCH LABORATORIES

Funding has been allocated to each Service to fund STARS efforts and participation by Service laboratories. The goal is to develop centers of Ada software engineering expertise within each Service that can be used by the Services to further the DoD's Ada insertion effort and to help achieve the cost and quality benefits sought through STARS in Service programs.

3.2.2 SERVICE PRODUCT DIVISION

The "Shadow" application projects described in the TPP [5] will directly involve participating Service system development organizations. The Service Program Manager will serve a key role in coordinating and developing the agreements that establish Shadow application projects. In FY 1986, the Software Engineering Institute will provide the infrastructure to deal with the selected systems offices. When the STARS competing-primes are awarded the procedures will be revised to include them in the technology insertion activities.

STARS PMP - (8/06/86)

SECTION 4 - MANAGEMENT STRUCTURE

This section will list the organization expected to participate in STARS and describe the organization relationships.

4.1 PARTICIPATING ORGANIZATIONS

The principal organizations participation in the STARS program activities will be the:

- STARS Executive Committee
DUSD(R&AT)
The Pentagon, Rm 3E114
Washington, D.C. 20301
Telephone (202) 695-5036
- Office of Secretary of Defense
OUSDRE (R&AT/CSS)
STARS Joint Program Office
The Pentagon, Room 3D139/Fern
Washington, D.C. 20301-3081
Telephone (202) 694-0211
- Defense Logistics Agency (DTAO)
1211 S. Fern St. (Rm A131)
Arlington, VA 22202
Telephone (202) 694-6996
- Institute for Defense Analyses (CSED)
1801 N. Beauregard Street
Alexandria, VA 22311
Telephone (703) 824-5522
- Washington Headquarters Services
The Pentagon, Rm 3B289
Washington, D.C. 20301-1155
Telephone (202) 695-6342
- US Army Material Command
ATTN: AMCDE-SB
5001 Eisenhower Avenue
Alexandria, VA 22333-0001
Telephone (703) 274-9310
- Defense Supply Services Washington
Chief, Research and Studies
The Pentagon, Rm 1C234
Washington, D.C. 20310-5200
Telephone (202) 695-5029

STARS PMP - (8/06/86)

- Multiple Competing-Prime lead contractors (to be determined)
- Subcontractors of the Competing-Prime lead contractors (to be determined)
- Office of Naval Research (OCNR-12)
800 N. Quincy and Wilson Blvd.
Arlington, VA
Telephone (202) 696-4224
- Service Secretariats:
 - ASA (RD&A), Pentagon, Rm 2E673,
Telephone (202) 697-2653
 - ASN (RE&S), Pentagon, Rm 4D745,
Telephone (202) 695-0023
 - ASAF (RD&L), Pentagon, Rm 4D977,
Telephone (202) 697-8331
- Service Components (offices to be determined)
- Service STARS Program Managers (to be determined)
- Participating Service Laboratories (to be determined)
- Participating Service System Program Offices (to be determined)

Several additional organizations will participate in ways to be specified in memorandum of agreement or contract documents. Some are identified here:

- Office of Secretary of Defense
OUSDRE (R&AT/CSS)
Ada Joint Program Office
The Pentagon, Room 3D139/Fern
Washington, D.C. 20301-3081
Telephone (202) 694-0211
- Software Engineering Institute
Carnegie-Mellon University
Pittsburgh, PA 15213
Telephone (412) 578-7700
- Defense Advanced Research Projects Agency
Information Processing Techniques Office
1400 Wilson Blvd.
Arlington, VA
Telephone (703) 694-5922

STARS PMP - (8/06/86)

- National Security Agency
Attn: S3
9800 Savage Road
Fort George G. Meade, MD 20755-6000
Telephone (301) 688-6581
- Industry Associations and Professional Societies
 - Aerospace Industries Association
 - Electronics Industries Association
 - American Institute of Aeronautics and Astronautics
 - National Security Industrial Association
 - The Association for Computing Machinery
 - The Institute of Electrical and Electronics Engineers
 - Others to be determined

4.2 ORGANIZATIONAL RELATIONSHIPS

Figure 4.2 shows the direction and authority relationship from OSD to the Services for the STARS program, and the management execution relationships that can be authorized. The Technical Program Plan and the Program Management Plan will be the basis for formalizing the direction and authority relationships within each Service.

Figure 4.3 identifies the relationship between other organization and groups. Formal authority will be established by appropriate directive or contracts. The informal relationship may be established by Memoranda of Agreement.

STARS PMP - (8/06/86)

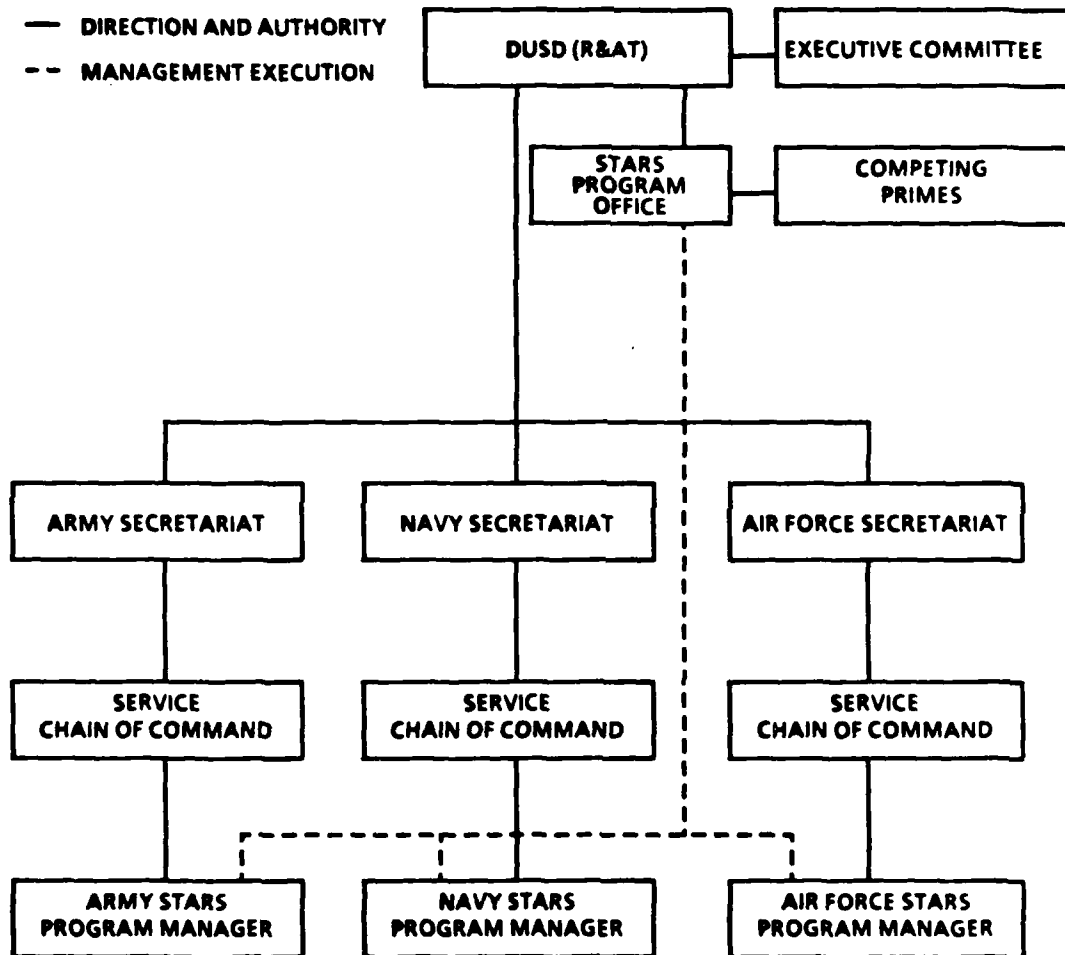


Figure 4.2 STARS MANAGEMENT ORGANIZATION CHART

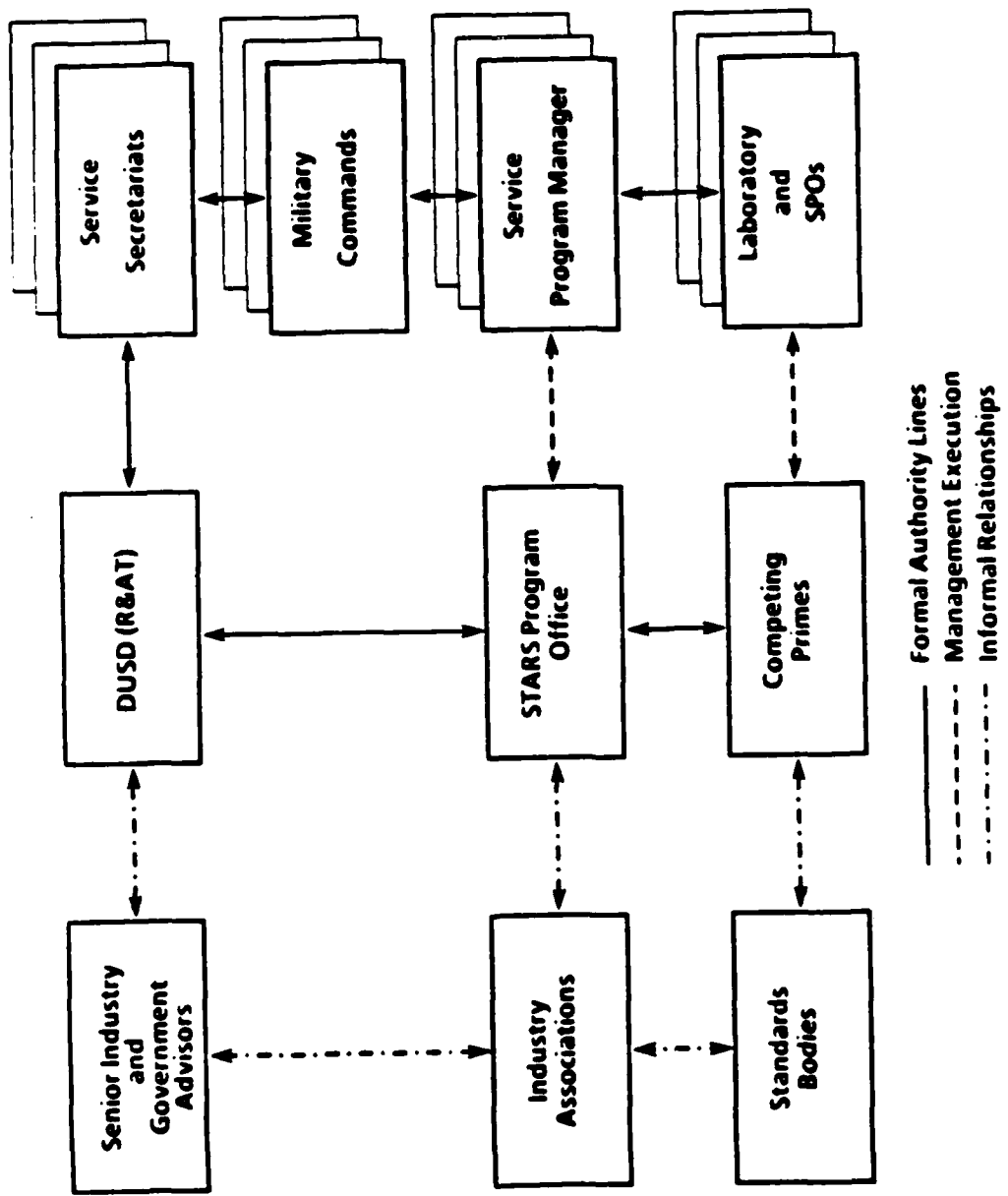


Figure 4.3 RELATIONSHIPS

STARS PMP - (8/06/86)

SECTION 5 - AUTHORITIES AND RESPONSIBILITIES

5.1 STARS EXECUTIVE COMMITTEE

Each Service will have research, acquisition, and logistics representatives on the STARS Executive Committee, chaired by the Deputy Under Secretary of Defense (Research and Advanced Technology).

a. DUSD (Research and Advanced Technology): The DUSD (R&AT) chairs the STARS Executive Committee and provides high level guidance to the STARS Director and Service Program Managers. The Service STARS Program Managers will establish and maintain close liaison with the STARS Program Director for all matters pertaining to the management of the program.

b. STARS Executive Committee: Each Service will appoint a representative to the STARS Executive Committee, chaired by DUSD (R&AT). The Executive Committee will use the STARS Technical and Management Plans to establish the baseline for the program and review the program progress at least annually for compliance. The Executive Committee approves both the STARS Technical and Management Plans [6]. Any significant changes to either the STARS technical or management plans must be approved by the Executive Committee. The Executive Committee is responsible for overall guidance and coordination of the STARS program. The DoD STARS Program Director and Service Program Managers then responsible to execute the program within the constraints of these approved documents.

c. Service Secretariat Coordinators: The Service Secretariat Coordinators will represent their Service on the STARS Executive Committee. In their Service role, they will act as the Service agent in providing guidance and direction to the Service STARS Program Managers. The Service STARS Program Managers will establish and maintain close liaison with the Service Secretariat Coordinator for all matters pertaining to the management of the program.

d. Other Service Components: The program will be supported in a Service Systems Command under its assigned material support responsibilities. Details of support arrangements will be documented in agreements between the Service STARS Program Managers and the respective organizations. Initial contacts with field activities of other Commands and agreements for support will be cleared with the parent Command. All support agreements will be incorporated in program planning documents.

STARS PMP - (8/06/86)

5.1.1 SENIOR ADVISORS

The Under Secretary of Defense for Research and Engineering may task the Defense Science Board Task Force on Software to review and make recommendations on the STARS program.

5.2 STARS PROGRAM DIRECTOR

The STARS Program Director reports to the DUSD (R&AT) and is directly responsible to him for planning, organizing, executing, and directing the STARS Program efforts against established objectives. The STARS Program Director has direct responsibility for financial distribution, control, and accountability. The STARS Program Director will provide program direction and funding to the Service STARS Program Managers to accomplish the approved Service goals of the program. To carry out his responsibilities the STARS Program Director shall:

- a. Define, prioritize, organize, negotiate, and assign the work to participating organizations.
- b. Use the large cohesive areas defined in the STARS Technical Plan for work assignment to the Services.
- c. Develop and advocate the STARS budget.
- d. Fully fund approved Service Implementation Plans via a single funding vehicle.
- e. Redirect assigned work as necessary to meet the established baseline in coordination with the Service Program Managers.
- f. Take specific action to ensure that relevant Government, industrial and academic software technology programs are fully examined.
- g. Convene an annual technical review of the STARS program to increase public awareness and availability of the technology and products developed through the program.
- h. Insure direct interaction with the Ada Joint Program Office, the DoD Software Engineering Institute (SEI) and the Strategic Computing Program.
- i. Chair a monthly management review on the third Thursday of every month with presentations by the STARS Technical Manager and STARS Business Manager.
- j. Conduct, annually, a zero-base program review in August prior to distribution of new fiscal year dollars in October. This review will serve as a final step to the annual update of the technical and management plans prior to Executive Committee approval.

STARS PMP- (8/06/86)

k. Conduct a mid-year program reapportionment review of commitment and obligation progress in March of each year and reallocate dollars that will not meet planned objectives by fiscal year end. The reallocation plan will be approved by the Executive Committee before execution.

1. With the STARS Steering Committee (para 5.3.3 below), resolve any disagreements on program management and execution.

5.2.1 STARS JOINT PROGRAM OFFICE

The Joint Program Office, in support of the Director, shall:

a. Formulate and prepare all contractual documentation in coordination with and in support of the financial officers (i.e., Army Material Command in FY 1986, Washington Headquarters Services after FY 1986) and the contracting officers (Defense Supply Services Washington and Office of Naval Research) to facilitate the STARS Competing-Prime and foundations contracts execution, administration and technical oversight according to applicable Department of Defense directives.

b. Support and use a Senior Technical Oversight Group of foremost national Ada software experts to evaluate, at least annually and in accordance with contract provisions, the competing-prime lead contractors' technical progress and to prepare written recommendations to the STARS Director for follow-on program guidance and direction. The members of the Senior Technical Oversight Group shall be selected by the STARS Director and shall be sufficiently qualified to examine program activities at all levels of technical detail and to recommend corrective technical concepts and measures.

c. Perform appropriate business manager functions supported by Defense Logistics Agency personnel to administer all aspects of total program execution from a resource and data accountability viewpoint.

d. Perform appropriate technical analysis functions supported by Institute for Defense Analysis and Defense Logistics Agency technical personnel.

e. Establish through the competing-primes contract statements of work, mechanisms for industry peer review to minimize critical dependence of government in house technical expertise.

f. Establish through the competing-primes contract statements of work, mechanisms for industry to identify, evaluate, prioritize and recommend technical tasks consistent with the goals and objective of the STARS program.

STARS PMP- (8/06/86)

g. Use these industry inputs together with appropriate government review and analysis to formulate STARS programmatic recommendations and documentation in support of the Defense Department Program planning process.

h. Defend all program plans, proposals and actions before program, budget, and execution review groups as appropriate.

i. Be the principal focal point for all Defense Components and Agencies participating in the STARS program, and using the STARS competing-primes contracts, through the STARS Program Office, to accomplish "industrially funded" software development tasks with STARS technology in support of operational MCCR missions.

j. Identify the need for special government expertise in relationships to specific task formulation, technical or cost proposal evaluations, and formal technical reviews. Therefore the STARS program shall foster and maintain open and cooperative relationships with participating Services and Defense Agencies to obtain and fund requisite expertise for specific actions and to provide early benefits from STARS activities.

k. Prepare and periodically update program plans, technical and management guidelines and criteria, and resource allocation levels based on recommendations from the STARS Executive Committee, the Senior Technical Oversight Group, the peer review process, and the maturing nature of STARS technology development and application activities.

5.2.2 STARS DEPUTY PROGRAM DIRECTORS

The Services will appoint Service STARS Deputy Program Directors to serve in the STARS Joint Program Office and to support the development and execution of the STARS program. The Service STARS Deputy Program Directors shall:

a. Participate in the formulation of the STARS program and shall support the OSD STARS Program Director in the execution of all STARS Director responsibilities. In the absence of the OSD STARS Director, a Service STARS Deputy Director shall be designated to act in behalf of the Director.

b. Be the principal facilitators between the STARS Program Director and the Service STARS Program Manager in Service issues.

c. Participate in the management of the STARS competing-prime contractors' efforts and facilitate effective interface with Service laboratory and product division efforts.

d. Be fully conversant with the STARS products and technology objectives and management strategy.

STARS PMP- (8/06/86)

e. Have a technical background in software engineering and the Ada computer language, if possible. At the minimum, they must have a strong personal commitment to the goals, objectives and approach of the STARS Program.

f. Be qualified to brief the STARS program at all Service command levels for the STARS Program Director and Service STARS Program Managers.

5.2.3 DEFENSE LOGISTICS AGENCY (DLA)

DLA agreed with DUSD (R&AT) to provide technical and management support to the STARS Joint Program Office [7]. DLA/DTAO has been designated the supporting activity.

a. DTAO will provide a STARS Technical Manager, and provide that person with appropriate technical and clerical support staff.

b. The STARS Technical Manager will normally be the Technical Representative of the Contracting Officer for the STARS Competing-Primes lead contracts to provide long-term management continuity.

c. The STARS Technical Manager will have the benefit of on going and quick reaction technical analysis support from the Institute for Defense Analysis.

d. The STARS Technical Manager will schedule and support technical reviews at all levels as appropriate.

e. DTAO will provide one of the persons referenced in a. above as the STARS Business Manager and provide that person with appropriate financial, analytical and clerical support.

f. The STARS Business Manager will be responsible for preparing all budget support, program execution, financial management and deliverable data auditing in accordance with documented accounting procedures and practices.

g. The STARS Technical and Business Managers, as senior members of the staff supporting STARS, shall ensure, in cooperation with the STARS Director, that civilian work objectives are developed in accordance with appropriate DLA instructions for SES and other members, the Performance Management and Recognition System, and the Basic Appraisal System.

h. The STARS Business Manager shall develop, in coordination with the STARS Director, Data Item Descriptions (DID's) and contract preparation guidance to exploit commercial and government data communications network capabilities for monthly reporting of all financial management data and for

STARS PMP-(8/06/86)

delivery of all executable and document contract products. These shall be used on all STARS funded contracts.

i. The STARS Business Manager shall designate a person responsible as the STARS Equipment Custodian who shall establish procedures and maintain an accountability inventory of all computer equipment and electronic equipment purchased with STARS funding. Accountability shall be maintained from purchase to final authorized disposition. Data Item Description (DID)s and contract preparation guidance shall be developed to maintain the inventory using network accessible capabilities.

j. The STARS Director shall interview and approve all DTAO personnel hired to provide support to the STARS program.

5.2.4 DEFENSE SUPPLY SERVICES WASHINGTON

Defense Supply Washington (DSS-W) will be the government contracting office responsible for the STARS Competing-Primes contracts.

5.2.5 OFFICE OF NAVAL RESEARCH

Pending completion and approval of appropriate support agreement, the Office of Naval Research will be the government organization and contracting office responsible for contracting the development of Ada foundation capabilities described in the Technical Program Plan [5].

5.2.6 COMPETING-PRIME LEAD CONTRACTORS

The lead contractors shall perform, in accordance with the terms of the negotiated contract and Statement of Work, work that will include the following kinds of activities. These will be further definitized during the concept development contract phase.

a. Conduct research and development in support of STARS program objectives to increase the quality and reduce the costs of MCCR software.

b. Provide materials, tools, supplies, facilities, and services of skilled technical and professional personnel for the performance of research and development tasks.

c. Provide technical management and integration of the work performed by themselves and their subcontractors.

d. Structure their technical program so that 40 percent of the technical level of effort is performed by the lead contractor and 60 percent of the technical level of effort is performed by subcontractors.

STARS PMP- (8/06/86)

e. Shall have associate contractor relationships with the other lead contractors to facilitate the exchange of technical progress information and conduct of peer technical review at scheduled milestone points.

f. Shall provide a rapid distribution mechanism for sharing results of the STARS program with STARS participants. The government may at some point select a single distribution system. The selected distribution system shall provide rapid distribution of all results. All primes and their subcontractors will be required to provide data to the repository and distribution system in the required electronic form. Products will be in the form of computer processible code, accessible demonstration systems, prototype systems, and documentation. Each lead contractor will be responsible to provide configuration control for all products developed under that company's purview.

g. Will propose the order of execution priority and required resources for the future tasks including draft statements suitable for inclusion in Statements of Work and including supporting documentation and rationale. The Government will select, as funding is available, and activate approved tasks for proposal, source selection and execution.

h. Need not propose for every task, and the government may select one or more offerors for any task. At least annually, each prime will review and update the proposed task statement for future work.

i. Shall sponsor annually a briefing to industry on fundamental unsolved technology problems.

j. Shall solicit, evaluate, select and fund within resources designated for this purpose, the most creative and promising responses to address the problems identified. The prime shall be evaluated by the Technical Oversight Group on the quality of the briefings to industry, the prime's judgement in selecting leading-edge, creative responses to unsolved problems and the manner in which accepted responses are executed.

k. Awards in response to proposals from the Industry Briefing shall be made within 100 days of the briefing to industry and announced before the briefing to industry by the next prime.

l. The STARS Program manager shall conduct an annual briefing of STARS issues with CEO's of the competing prime companies.

STARS PMP- (8/06/86)

5.2.7 COMPETING-PRIME SUBCONTRACTORS

a. Shall be selected by the primes based on a "most technically qualified" basis within affordability constraints to best achieve the overall goals of a given task.

b. Shall be used to provide the benefits of many sources and to assure broad industry sharing (within security classifications and export control constraints) of the experience, technologies and technology base developed by STARS.

5.2.8 TECHNICAL OVERSIGHT GROUP (TOG)

An independent Senior Technical Oversight Group shall be established to provide periodic review of the STARS competing-prime contractors' work. The group may include industry members, except employees of the primes and their subcontractors. The best technically-qualified persons from industry or government will be sought. The STARS Director shall designate the group chairman who will nominate additional members for selection by the STARS Director and confirmation by the STARS Executive Committee. The STARS Director and/or a Service STARS Deputy Director shall attend all review group meetings and reviews.

The TOG will meet at least annually with each prime for a formal review of technical progress. The review will cover milestones and schedule progress, but focus primarily on technical problems and proposed solutions. Prime contractors shall be formally tasked in their statement of work to host the TOG review and provide such information and reports as requested by the TOG. The assumption is that most information will be available through the repository. The TOG may also be convened by contractor or the STARS Program Director when required to assist in addressing special technical issues.

5.2.9 TECHNICAL PEER REVIEWS

Most STARS tasks will result in the delivery of executable Ada code and systems. As a minimum, design reviews will be scheduled upon completion and delivery of the Ada package specifications for a code or system, and software walk throughs will be scheduled upon the delivery of a code or system.

Contributors to the current Ada repository on SYMTEL20 are candidates for consideration as early reviewers. STARS contractors and participants contributing future code to the SIMTEL20 or the future STARS repository will also be candidates to conduct peer technical reviews at scheduled review points. A serious effort will be made to identify and fund persons qualified by virtue of their previous technical contributions to serve as reviewers.

The review process will contribute to the software sharing, transition and reuse objectives of STARS.

STARS PMP-(8/06/86)

5.3 SERVICE MANAGEMENT

Each Service may establish a STARS Program Office and appoint a Service STARS Program Manager as its principal representative for Service interests, and to direct the Service STARS Program Office in executing the assigned elements of the program. The Services will set up the appropriate managerial processes for full participation in the STARS program and assure that the joint nature of the STARS Program is reflected in each Service's execution.

The Service STARS Program Manager's parent command will provide technical assistance, contractual and administrative support to the Service STARS Program Office. The responsibility stated in the appropriate Service Headquarters Organizational manual will apply. Organizational relationships with reviewing authorities and support organizations are depicted in Figure 4.2.

a. Service Headquarters Command. Headquarters Engineering Directorates will provide in-house support to the Service STARS Program Managers.

b. Service Field Activities. Contacts by Service STARS Program Managers with Service field activities for support to the program will be initiated via the cognizant Commander or appropriate management office.

c. An R&D Activity (Service Laboratory) may be designated Lead Laboratory to support the Service STARS Program Manager. The specific responsibilities assigned to the Service Laboratory shall be negotiated between the Service STARS Program Manager and the Commander of the Laboratory. Terms of the agreement will be incorporated into future program planning documents.

d. Programmatic decisions made by responsible officials senior to the Service STARS Program Managers shall be documented by the Senior Official with copies sent to the Service STARS Program Managers as official program direction. Senior Officials shall be held responsible to DUSD(R&AT) through Service Secretariats for decisions which they make regarding STARS activities.

5.3.1 SERVICE STARS PROGRAM MANAGERS

The Service STARS Program Managers will be responsible for planning, organizing, directing, and measuring the STARS efforts assigned by the STARS technical and management plans to his Service and will report progress and program implementation activities to the STARS Program Director.

a. Service STARS Program Managers will provide implementation plans covering assigned areas for approval and funding by the STARS Director.

STARS PMP- (8/06/86)

b. Each Service Program Manager is responsible for reporting, at quarterly intervals, technical, schedule, and financial status to the STARS Program Director.

c. The Service STARS Program Manager is assigned responsibility for and authority to conduct the Service's STARS program within the performance, funding, schedule and supportability constraints and thresholds established in the approved STARS Technical Program Plan.

d. The Service STARS Program Manager will be responsible for planning, organizing, executing, and measuring the STARS efforts in his Service and will present at least semi-annual program reviews to his Service and the STARS Executive Committee. He will direct all program support efforts performed under his auspices.

e. All operating relationships described in the plan shall be considered complementary to the fundamental concepts established in Service and DoD Directives. When the exercise of this authority may adversely impact another system or program, the Service STARS Program Manager will be expected to negotiate the matter with the cognizant manager.

f. The Service STARS Program Manager shall prepare and sign military and civilian fitness or performance reports for all personnel assigned full time to the Service STARS Program Office. He shall ensure that civilian work objectives are developed in accordance with the appropriate Service instructions for SES members, the Performance Management and Recognition System, and the Basic Performance Appraisal System. With regard to civilian or military employees (such as STARS Service Deputy Directors) working for him in matrix management, the Service STARS Program Manager will make certain that suitable objectives are developed and evaluated in cooperation with the STARS Director or other day-to-day supervisor.

g. In relationship to Chartering Authority, the Service STARS Program Manager is responsible to his Service and the STARS Director for successful management of the program and will report to both organizationally. However, recognizing the uniqueness of Service STARS Program Manager relationships, the Service will sign the Service STARS Program Managers' SES/PMRS objectives and his annual performance evaluation (if civilian) or his fitness report or evaluation (if military). The STARS Director or DUSD (R&AT) may negotiate certain suitable objectives and their subsequent evaluation (in cooperation with the line supervisor).

STARS PMP- (8/06/86)

h. Special Operating Relationships. The Service STARS Program Manager will insure that all internal and external interfaces are recognized; and he will establish support agreements with participating managers and functional organizations. Once an agreement has been concluded no participating manager may take unilateral action which will alter the basic concepts or specific provisions covered by the agreement.

STARS PMP-(8/06/86)

5.3.3 STARS STEERING COMMITTEE

The STARS Steering Committee will consist of the STARS Program Director (Chairman), and the STARS Service Program Managers.

a. The STARS Steering Committee will review and integrate the Services' implementation plans.

b. The STARS Steering Committee may be convened by the STARS Director or any Service STARS Program Manager.

c. The STARS Director shall use the STARS Steering Committee to obtain Service review and comment on technical and management plans prior to submission to the STARS Executive Committee.

d. In the event of unresolved differences the STARS Director shall forward documents in question, along with appropriate consideration of nonconcurrences, to the STARS Executive Committee for resolution. The decision of the Executive Committee shall be final.

5.3.4 STAFFING RESOURCES

In the FY 1984 budget process, the Services were allocated ten personnel positions at the GM 14/15 level to support management planning functions and service coordination. Three of these positions were allocated to the Navy, three to the Air Force, and four to the Army. In the FY 1987 budget process the fourth Army position was reallocated to Washington Headquarters Services for budget allocation and financial control for the STARS program element.

The STARS Program Director will be assisted by a small resident DLA/DTAO staff and three Service STARS Deputy Directors. This staff will perform technical and business management functions assigned to the STARS Program Director. The Service STARS Program Managers will provide line support to the STARS Program Director for their Service's assigned areas of responsibility.

The Service STARS Program Managers shall identify the manpower resources required in order to effectively carry out the assigned mission. Staffing and Program Office organization are shown in Appendix (TBD). Per established Service procedures, the Service STARS Program Manager periodically prepares and submits revised staffing requirements for the expected life of the program. Allocation of additional staffing will be determined by established Service procedures, given ceiling limitations and other Service priorities.

SECTION 6 - OPERATING PRINCIPLES

6.1 GENERAL MANAGEMENT GUIDANCE

- A financial management mechanism will be established to maintain full and continuous accountability of STARS funding.
- Full and continuous competition shall be used. Sole source procurement is discouraged. Such procurements shall be identified, justified, and approved by the STARS Director prior to funds commitment.
- STARS funding will not be used to sponsor research in next generation software technologies like artificial intelligence, knowledge based systems, very high level languages, fourth and fifth generation languages, etc., unless all code is in the Ada language and for the Ada software engineering technology.
- All meetings involving more than five people and funded or sponsored with STARS funding will be scheduled far enough in advance to take advantage of low-cost air fares and accommodations. A responsible chairperson will be identified. Chairpersons shall be responsible to assure that the purpose, agenda, expected contribution of each participant and action materials are distributed in advance of the meetings. A meeting summary shall be provided electronically to the STARS Business Manager within 10 days after the meeting, including estimated total cost and benefit.
- STARS projects will emphasize adaptive concepts. To this end all specifications, designs, code and documentation shall be delivered incrementally over the network to the STARS repository every thirty days for progress review and monitoring by assigned technical reviewers.
- A central inventory of all equipment purchased with STARS funds will be maintained at the STARS repository. The purchasing organization shall be accountable for maintaining the status, location, and responsible person entries up to date from date of purchase to time of final disposition.
- Any peer reviewers funded with STARS funding to attend scheduled reviews will submit their findings electronically to the project file within 10 days of the review.
- MILNET access will be addressed in support contracts on a case-by-case basis.
- New fiscal year dollars allocated to any executing agency may be decremented by the amount of preceding year dollars that remain unobligated in that agency at the years end.

STARS PMP - (8/06/86)

- STARS funding shall not be used to perpetuate non-generic Service programs that the Services terminate or cease to fund in POM review.

- STARS funding will not be executed through existing contracts or mixed with other program element moneys in any way that denies the STARS Director full management oversight and review at any time.

- Communications networks will be used to minimize travel associated with reviews and monitoring.

- To the maximum extent possible, all management and technical products will be monitored during development, and delivered and maintained electronically in the STARS network accessible repository.

- All technical principal investigators shall be funded to present at least one project review per year at the STARS program office in Washington, D.C.

- DoD, national and international commercial standards are a powerful mechanism to leverage technology transfer. Individuals qualified by excellence in technical areas of interest to STARS and sponsored by their companies to standards organizations shall receive extra points in source selections and shall be funded to represent STARS interests in meetings of commercial standards bodies.

- The STARS program will seek to leverage available resources establishing a mechanism to remain cognizant of and to endorse to appropriate government reviewing authorities IR&D work that contributes to the goals and objectives of STARS. Mechanisms shall be sought to give companies so identified extra points in the source selection process for STARS funded work to which such IR&D work has direct application.

- The STARS program office shall establish a mechanism to identify people who have developed over 10,000 lines of Ada code. These people shall be candidates to participate in STARS funded reviewer training seminars and may be funded to conduct peer reviews of software delivered to the STARS repository.

- The STARS program office shall establish a mechanism to identify people who have developed systems exceeding one million lines of Ada code. These persons shall be candidates as senior technical reviewers who may be invited by the STARS Director to serve on the competing-primes Technical Oversight Group.

- Principal investigators and project managers responsible for the delivery of significant Ada software engineering processes and products to the STARS repository, and who chair or sponsor panels and initiatives at professional societies, user groups and trade associations that further the STARS program

STARS PMP - (8/06/86)

objectives shall receive extra points in source selection processes and may be funded to represent STARS initiatives to such bodies.

- The STARS repository shall be maintained in a way that provides B3 level or better mandatory access control protection as defined in the DoD Trusted Computer System Evaluation Criteria.

- All software developed with STARS funding shall be placed in the public domain consistent with security classification and export control constraints.

6.2 GENERAL METHODS OF OPERATIONS

a. The DoD STARS Program Director shall prepare and annually update the STARS Technical Program Plan and Management Plan in July and submit them to the Executive Committee for approval.

b. Upon approval of these plans by the STARS Executive Committee, the Service STARS Program Managers will develop detailed implementation plans for the resources allocated to his Service to carry out the objectives of the STARS Program in a way that is responsive to the needs of his Service and in accordance with the specific regulations and instructions of his Service.

c. The Service STARS Implementation Plans will be sent by the Service Program Manager to the STARS Director for approval.

d. After review and approval, the STARS Director will issue direction to provide funding for the Service STARS Program for that year as soon as funds are available for disbursement.

e. Upon receipt of the approved and funded Service STARS Implementation Plan, the Service STARS Program Manager will initiate appropriate tasking, procurement and contracting actions to execute his program.

f. The Service STARS Program Manager will continually review the program and make necessary adjustment. Execution and expenditure of funds will be reported monthly to the STARS Joint Program Office Business Manager. Management and technical status and results will be briefed semi-annually, in January and July, to the STARS Director and the STARS Executive Committee.

g. The Service STARS Program Managers will update the Service STARS Program Implementation Plans annually in August and submit them to the STARS Director for approval and funding.

h. The STARS Joint Program Office Technical Manager and Business Managers will brief technical and management status and results semi-annually, in January and July to the STARS

STARS PMP - (8/06/86)

Director and the STARS Executive Committee. These briefings will focus on the Competing-Prime Contractor efforts and issues program-wide not covered by the Service Program Managers' briefings.

i. The STARS Joint Program Office Technical Manager will update the task execution documents for the Competing-Primes contracts at least annually in August and submit them to the STARS Director for approval.

j. Any change to either the STARS Technical Program Plan or STARS Program Management Plans will be coordinated through the STARS Steering Committee for review, prior to formal submission to the STARS Executive Committee. Implementation of the change will be subject to the approval of the STARS Executive Committee.

k. Approved changes in the STARS Technical Program Plan and/or changes in available funds will require changes in Service Implementation Plans and the competing-primes implementation plans.

6.3 MANAGEMENT INSTRUMENTS

A number of mechanisms will be used as management controls for the STARS Program.

6.3.1 PLANS

a. The STARS Program Director shall annually update the STARS Technical Program Plan and Program Management Plan and present them to the STARS Executive Committee for approval annually in July.

b. Based on the STARS Technical and Management Plans, the Service STARS Program Managers will annually prepare detailed Implementation Plans for submission in September to the STARS Director for approval and funding.

c. Competing-Prime Contractors will be tasked in the contract SOW to submit candidate future task and work unit statements with supporting rationale for the following and out-year program continuation. The Service Program Managers will provide similar inputs from the Service efforts. These will be due to the STARS Joint Program Office annually in March, and will be reviewed and prioritized by a technical review team and be available as a basis for the annual STARS POM development and submission in April of each year.

d. Service STARS Program Managers will promptly support requests from the STARS Program Director for STARS program status and planning information in support of the DoD POM issue cycle in August and September, and the Program Budget Decision

STARS PMP - (8/06/86)

cycle in December of each year, and in support of OSD(C), OMB and Congressional questions as required.

6.3.2 REVIEWS

a. There will be semi-annual technical and program reviews for the STARS Executive Committee scheduled in January and July.

b. There will be quarterly technical and program reviews for the STARS Director scheduled in December, March, June, and September.

c. There will be monthly management reviews by the STARS Joint Program Office Technical and Business Managers for the STARS Director scheduled for the third Thursday of every month.

d. The Technical Oversight Group will conduct semi-annual reviews of the Competing-Prime Contractors in November and May and make recommendations to the STARS Director.

e. The STARS Business Manager together with the Competing-Primes will develop a network-communication-based monthly technical and management reporting procedure that will provide accurate accounting and status of resources current as of the tenth day of each month. This will provide the basis for the monthly management reviews.

f. The STARS Program Director will schedule a reapportionment review to be lead by the STARS Joint Program Office Business Manager in March of each year. Moneys not committed to a contract effort that will be awarded before the fiscal year end will be vulnerable to reallocation action upon approval by the STARS Executive Committee.

g. Technical design reviews and software walk-throughs will be scheduled for each software development project or contract and qualified technical reviewers designated in the project documents to attend or conduct the review based on electronic transmission of the design, code and reports or site visits.

6.3.3 DD Form 1498s

DD Form 1498, Work Unit Summary, will be used as a management tool for all STARS funded work units. The Competing-Prime TRCO and the Service STARS Program Managers are responsible to insure the DD Form 1498s are prepared and kept current for all work units under their purview.

Service STARS Program Managers will be provided FY 1986 funds, part of which will be used to support a complete audit and accounting of FY 1984 and FY 1985 monies allocated to their Services. The DD Form 1498s will be the instrument to provide this accounting to the STARS Business Manager for each identifiable work unit.

STARS PMP - (8/06/86)

In view of the late start of FY 1986 execution, a set of properly completed DD Form 1498's for each work unit proposed by the Service for FY 1986 funding with a cover letter explaining where to send these moneys, will be accepted as an adequate specification justifying direction to release the funds. Service Work Package Directives will provide the standard detailed Service implementation planning mechanism.

DD Form 1498s will be prepared, submitted and maintained current within 30 days by the Executing agency. Status will be monitored and discrepancies reported at the STARS Director's monthly management review.

The initial DD Form 1498 submission will include in the description section statements on:

- Expected lines of code to be developed
- Planned cost per line of developed and documented code
- Applicable standards will be identified
- Amount of planned software reuse from SYMTEL 20
- Compiler manufacturer
- Development and target hardware and code generators

The final DD Form 1498 will report:

- Amount of code reused
- Amount of code developed
- Total project cost

The following project major milestones will be planned and maintained current in a network accessible file for the projects in the repository.

- Planned and actual date:
 - Funds committed
 - Funds obligated
 - Award
 - Work start
 - Work completed
 - Contract closed
- Planned and actual date and place of:
 - Specification review (if required)
 - Design review
 - Implementation review
 - Acceptance testing (if required)

Other items on the DD Form 1498s will be completed in accordance with applicable DoD Directive.

STARS PMP - (8/06/86)

6.3.4 WORK PACKAGE DIRECTIVES

Standard Service Work Package Directive will provide the mechanism for defining, approving and monitoring Service sponsored work. Details will be worked between the STARS Business Manager and the Service STARS Program Managers.

6.4 CALENDAR OF RECURRING EVENTS

Table 6.1 provides the STARS calendar of recurring events. Executive Committee members, STARS Directors, Service Program Managers have standing invitations to attend all scheduled recurring reviews.

STARS PMP - (8/06/86)

TABLE 6.1 Schedule of Recurring Events

<u>MONTH</u>	<u>ACTIVITY</u>
OCTOBER	<ul style="list-style-type: none">• STARS CRA suballocation to Services
NOVEMBER	<ul style="list-style-type: none">• Technical Oversight Group review of Primes
DECEMBER	<ul style="list-style-type: none">• POM PBD Cycle• STARS Director's Service Quarterly Review
JANUARY	<ul style="list-style-type: none">• Final STAR Suballocation to Services• STARS Executive Committee semi-annual Program review and POM guidance approval
FEBRUARY	<ul style="list-style-type: none">• STARS draft POM submission to Service Program Managers
MARCH	<ul style="list-style-type: none">• Competing-Prime and Service work proposals• Reapportionment review• Steering Group POM review• STARS Director's Service Quarterly Review
APRIL	<ul style="list-style-type: none">• STARS POM submission to OSD(C)
MAY	<ul style="list-style-type: none">• Technical Oversight Group review of primes• POM issue identification
JUNE	<ul style="list-style-type: none">• STARS Director's Service Quarterly Review• First Draft Congressional Descriptive Sheets and Budget Estimates• First draft Congressional Descriptive Sheets and Budget Estimates
JULY	<ul style="list-style-type: none">• Approve Annual Technical and Management Plans• STARS Executive Committee semiannually review
AUGUST	<ul style="list-style-type: none">• POM issue defense (if any)• Service Detailed Technical Plans (WPDs) submitted
SEPTEMBER	<ul style="list-style-type: none">• Service Detailed Technical Plans (WPDs) Approved• Final POM Budget Estimate• STARS Director's Service Quarterly Review

6.5 SECURITY CLASSIFICATION

The majority of the technical work shall be unclassified with the expectation that resulting reports, specifications, designs, and software whenever possible will be cleared for public release and unlimited distribution to facilitate widest possible use by industry and the Services.

Provision must exist for the lead contractors to handle some fraction of the estimated 17 percent MCCR shadow projects at the classification level appropriate to the requirement of the military system being shadowed. Because MCCR projects focus on weapons, command control and intelligence systems that are generally classified, often involve national security export control or technology transfer issues, special instructions will be provided to satisfy these requirements in the covering contracts and statements of work. As a general principle all classified contracts will be issued through the responsible System Program Office and all deliveries will be made to that office for distribution control and release determinations. The STARS Joint Program Office and the Defense Supply Service Washington will not handle classified materials, although the Competing Primes must be capable of accepted classified work from participating System Program Offices under separate contract.

The Director, National Security Agency will provide, through the Deputy Director for Information Security, advice and guidance to the STARS Program Director on communications and computer security issues related to the MCCR Shadow projects. Some aspects of the STARS program that relate directly to sensitive or classified technology may be executed by the National Security Agency for STARS.

6.6 PRIORITY

Cite any special industrial or Service priority (this is where the contractual priority is established).

STARS PMP - (8/06/86)

SECTION 7 - PROGRAM TRANSITION OR DISESTABLISHMENT

This program shall be reviewed periodically by the STARS Executive Committee to determine if the objectives have been accomplished. If the review indicates that the objectives are substantially completed, a transition plan shall be prepared to insure the disposition of remaining resources and responsibilities into the Services' functional organization. The specific tasks and products to be pursued after STARS formally ends will be defined in the STARS Phase-Out Plans to be part of Service POM 88 plans.

General Schedule and Affordability Limits. The STARS program has a life span of nine years, from FY 1984 until FY 1992.

Appropriation	\$ in Millions									
	Fiscal Year									
	86	87	88	89	90	91	92	93	94	95
RDT&E (STARS)	42.0	35.6	37.2	39.2	41.8					
RDT&E () *										
O&M () **										
OP () **										
MCON										

* The Services need to establish RDT&E funding to transition this program into respective Service programs.

** The Services need to initiate request for POM-89 funds to maintain and support the products of this program.

STARS PMP - (8/06/86)

REFERENCES

1. STARS Charter, 1 November 1984, signed by the USDRE.
2. DEPSECDEF Letter, "Staffing and Management of DoD Software Programs," 12 August 1985.
3. "Requirements for Software and Software Systems," JLC-JPCG-CRM STARS Working Group, February 1986.
4. USDRE letter to Commander, US Army Material Command, 18 April 1986.
5. "STARS Program Strategy," DUSD (R&AT)/Dir CSS, March 1983.
6. JLC letter, "STARS Program Implementation," 28 June 1983.
7. STARS Technical Program Plan, STARS Joint Program Office, 20 May 1986.
8. "Reference Manual for the Ada Language," ANSI/MIL-STD-1815A, United States Department of Defense, February 17, 1983.

END

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