U. S. Department of Energy (DOE)

CUSTOMER INFORMATION TECHNOLOGY (IT) SUPPORT SYSTEM (CITSS)

Project Plan

December 1997

U. S. DEPARTMENT OF ENERGY
Office of the Chief Information Officer
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THIS IS A WORKING DOCUMENT THAT WILL BE UPDATED AS THE PROJECT PROGRESSES. COMMENTS RECEIVED FROM THE CITSS PROJECT TEAM, CUSTOMERS, AND STAKEHOLDERS SHOULD ONLY BE CIRCULATED AFTER COORDINATION WITH THE PROJECT MANAGER.

U.S. DEPARTMENT OF ENERGY
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Headquarters Collaboration Group

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Preface

Preface

Document Version Control: Questions regarding updates and currency of the subject document should be directed to the owner of this document, or the project manager.

This plan was generated by the CITSS Project Team. CITSS will be implemented and deployed for the Office of the Chief Information Officer (CIO) and offices participating in the Headquarters Collaboration Group, U.S. Department of Energy (DOE).

Project Stage: CITSS will be based on the commercial-off-the-shelf application titled Applix Enterprise. The project is currently in the *System Integration* stage of the life cycle.

Approval: A completed stage exit will constitute approval of this plan.

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Privacy Information

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1. Introduction

Foreword

This document provides an orientation on how the Customer IT Support System (CITSS) project will be managed. It also defines the deliverables, schedules, risks, dependencies, assumptions, estimates, Pilot Project Team and change management philosophy. This plan will:

- Provide a general product description.
- Identify schedules and activities to be performed.
- Identify required resources.
- Establish a common information source.
- Establish schedule baselines.
- Provide a basis for management tracking and control.

This plan is an active document and may be formally revised at the end of each of the following stages of implementation:

- Research and Testing
- Planning
- System Integration
- Pilot Installation and Testing
- Pilot Deployment and Acceptance
- Pilot Post-Implementation Assessment
- Headquarters-wide Implementation

All changes will be recorded in the Preface section of this document.

1.1 Current Environment

Computer Data Systems, Inc. (CDSI) and other service providers support the desktops and networks at the Headquarters, U.S. Department of Energy in the Washington, DC metro area. This support involves PC adds, upgrades, and moves, LAN administration support, hardware trouble shooting and repair, and help desk services for all desktop, software, and network services for approximately 6,000 DOE employees. CDSI has approximately 200 support personnel in these areas. The technical environment at DOE is varied, but for the purpose of this Project Plan, Novell 3.12/4.1X remains the predominant network operating system, and Windows 3.1 the desktop operating system. Windows 95 and Windows NT are also being implemented in most organizations at the Headquarters.

The DynCorp/CDSI contract is structured to allow each DOE organization to generate a task assignment to provide desktop and LAN administration support services. Most of the support personnel are located in the Forrestal Building in Washington, DC or the DOE Germantown facility. In support of these task assignments, most of our support teams use some form of call tracking software either developed in-house or, less frequently, purchased through a software vendor. The systems are disjointed, lack standard processing procedures, and lack many of the capabilities that are available in today's IT support systems. Of critical importance is the lack of ability to share existing problem resolution data to prevent the solving of the same problem multiple times.

The Hotline services function is located in Germantown. This service supports all users for IT infrastructure and corporate software. It also provides hardware support to those organizations subscribing to that service through the Working Capital Fund. An in-house developed call tracking data base is available to the Hotline operators. It is a Clipper application and runs on a Novell 3.12 file server. The Hotline data base is used to log all incoming calls, route calls to hardware or software personnel in either DOE location, and provide required reports to DOE management officials. Across all support activities, only a limited number of support personnel, exterior to the Hotline operators, can access the system. Therefore, it is difficult to effectively track calls which are referred by a Hotline operator. The system also has no capability to manage workload, resources, escalations, automated notifications, problem resolutions, and customer inquiry, logging, and feedback.

GTE is responsible for network management. They maintain the Network Management Information Center (NMIC). The NMIC is designed to provide centralized network management support for the metropolitan area network. The HP Open View network management software system actively monitors the network. The NMIC is co-located with the CDSI Hotline staff. However, information on network outages, or potential outages are not shared between the support teams. In addition, because the technicians cannot effectively enter the information on a problem directly into the existing support system, there is a number of failed hand-offs, duplicate trouble shooting, and lost time leading to dissatisfied and uninformed customers. Because of these problems, IT information and knowledge are not effectively shared. The result is deficient service to our customers.

1.2 Previous Activities

CDSI formed an action team to determine process changes and tools that would enable their staff to reach the next level of customer satisfaction. The most significant return for the investment was an up-to-date customer support system that could be used by all staff in the service delivery process. At the beginning of the project, the system was only to support those organizations participating in the Working Capital Fund. CDSI developed a Help Desk Requirements document, conducted help desk software market research, and evaluated candidate help desk products through demonstrations, vendor presentations, and vendor responses to the requirements document. A rating plan and selection criteria were prepared and used throughout the process. Applix Enterprise (Applix) was selected as the software of choice (both technically and economically). After a presentation at the Headquarters Collaboration Group (HCG), which

was given after the selection of the software, other organizations besides HR-4 joined to collaboratively participate in the project. This effort slightly expanded the scope of the initial project, but to the benefit of IT customers. A Project Team was formed to plan and coordinate the requirements, acquisition and implementation. The CITSS Project Plan is a product of the Project Team.

1.3 Pilot Project Objectives

The office of the Chief Information Officer (CIO) and members of the HCG need a reliable, up-to-date, automated IT support system that will resolve previously stated discrepancies with the current help desk system. CITSS will be the hub in the CDSI support service cycle, and can be used and accessed by other IT service providers.
The major functional objectives of CITSS are:

- Enable Customer-focused services
- Facilitate single Customer point-of-entry
- Support service-provider ownership of requests
- Integrate IT support functions with other business processes
- Empower seamless service delivery
- Reduce service response and resolution times
- Reduce support costs through reduced time spent on each call
- Increase customer satisfaction.... resulting in delighted Customers!

1.4 Applix Product Overview

Applix is a real-time support application designed to improve all aspects of most support processes. This commercial product will be the foundation of CITSS. It provides tools to increase accuracy, efficiency, and effectiveness of most technical support functions. While it was modeled first to support the IT process and specifically the help desk function, it will support most all processes that deal with services requests, assets, and service workforce management. It contains a series of integrated applications that provide an enterprise-wide solution for architecture, data capture, incident management and tracking, diagnostic tools, resolution technology, and trend analysis. Applix also supports DDE, OLE, SQL and E-mail.

Applix provides a complete help desk architecture through a suite of applications designed to deliver a total quality management solution for all IT customer and technical support staff needs. It has extensive call tracking capabilities with good problem resolution tools. It has the capability to perform warranty tracking, manage assets, support commercially available or locally generated knowledge bases, notify customers/staff and escalate problems using business rules, and can be configured based on specific operational needs without manipulation of source code. The system is also web browser accessible and a Java version is currently in beta testing.

Applix contains a reporting capability which also includes a charts module designed to support performance overview, trend analysis and other planning and workload tasks. Other features that are part of the system include training scheduling and registration, parts inventory support, and a

whiteboard communication capability for broadcasting any type status, messages, or support information to our customers and support staffs across the metro area. The system supports a fail-safe capability enabled by a process that replicates critical data to a smaller backup system to provide for continuous operation.

1.5 Project Scope

CITSS will be implemented (as requested) for the benefit and use of all IT related service providers throughout the DOE Headquarters. As our IT architecture becomes more and more integrated, the root cause of our problems become more difficult to determine. Often, we must peel off layers of possibilities to get at the root of the problem. These layers of possibilities very frequently cross organizational and technical support boundaries. Without a common IT support system for most service providers, the initial definition of the problem and subsequent audit trails of tests and analyses are not available and must be continually rediscovered. The process, without a common repository for the collected information, results in inefficiency and poor customer service. To that end, the more IT service providers that use CITSS, the broader the scope for improving our efficiency and customer satisfaction.

CITSS will be configured based on the best practices derived from a review of the support processes in use by all organizations today as well as those we can identify from sources such as the Gartner Group. A number of these practices and supporting processes are pre-loaded in the Applix application. Tied to the processes and the successful installation of CITSS will be the determination of the business rules that control staff, user, and manager notification; escalation rules that will most likely be tied to service level agreements; interfacing systems design and business process re-engineering to support the CallUp and PAMS integration; and the integrated support processes for actions such as new IT installs, moves, retirements, and customer-related actions such as adding or removing customers from LAN's.

The project team and representatives of the piloting organizations will develop a core set of functions and implement those functions in a pilot test. Upon the successful completion of the pilot organizations' evaluation period, the agreed upon functionality will be deployed Headquarters-wide. The pilot organizations will then initiate future projects as recommended to and approved by the CIO and the Headquarters Collaboration Group.

1.6 Major Milestones

The following are the major CITSS project milestones and their estimated completion dates.
The activities detail will be provided in the CITSS project work breakdown structure (WBS). Further schedule and deliverables information is provided in Section 3.7, Master Schedule/Project Deliverables.

Milestone	**Target Date**
Exit the Planning Stage	10/15/97

Exit the System Integration Stage	01/09/98
Exit the Pilot Installation and Testing Stage	02/02/98
Exit the Pilot Deployment and Acceptance Stage	03/09/98
Exit the Pilot Post-Implementation Assessment	04/10/98
Exit the Headquarters-wide Implementation Stage	06/30/98

2. Project Organization

2.1 Implementation Model

The implementation of CITSS will follow the DOE Software Engineering Methodology (SEM). The SEM is the life cycle methodology for all DOE software projects - developed in-house or purchased off-the-shelf. Tailoring of the life cycle for this project includes modifications to and skipping of stages in addition to the range and types of documents. Listed below are the deviations from the SEM medium model for this project.

Planned Deviations - Stages

Since the foundation for CITSS is a COTS system (Applix), the Functional Design and System Design stages will be combined into the System Integration Stage. This approach will require one less stage exit and its associated activities, and does not introduce any undue risk to the project.

Planned Deviations - Deliverables

- A Feasibility Statement is not planned for this project as the base COTS package is in production at a number of locations.

- The Functional and System Design documents will be combined into a single CITSS System Integration document. Multiple system interface specifics may also be included in this document. To reduce the risk associated with combining the two documents, design copies of the various screens and reports will be reviewed by the Project Team and pilot organization representatives to assure user satisfaction with the user interface.

- The Implementation Plan will be produced in the Planning stage.

- The Configuration Management and Quality Assurance Plans will be produced in the Planning stage.

- The Pilot Installation Plan will be produced in the Planning stage.

- The Deployment Plan will be produced in the Pilot Installation stage.

2.2 Pilot Project Team

The following chart defines the Project Team for the CITSS project. The CITSS project will involve all of the listed functional areas of expertise at various times throughout the project.

CITSS Pilot Project Team		
Project Manager/Planner	Independent Tester	User Point of Contact
Configuration Manager	Documentation Specialist	System Owner
Senior Analyst	Trainer	CITSS Functional Manager
Senior Programmer 1	Network Engineer	Quality Assurance
Senior Programmer 2	Security Specialist	Pilot Group Member (s)
Programmer	Acceptance Tester	Independent Consultant
System Administrator	Database Administrator	UNIX System Administrator

2.3 Roles and Responsibilities

The following chart defines the roles and responsibilities of the members of the project team and their function at stage exit. For the purpose of this draft, names are hypothetical. Matrix management will be used and experts will be brought into the project at appropriate times by the Project Manager.

Note: Due to staffing fluctuations, if a particular person is unable to fulfill his/her responsibilities, it will be the responsibility of the manager overseeing that area to ensure a replacement, with appropriate skills and experience, on a timely basis.

Role	**Name**	**Org.**	**Project Development Responsibility**	**Stage Exit Function**
System Owner	Bill Sylvester Patrick Hargett	HR-44	Verifies Project Teams understanding of the CITSS goals and purpose. Has overall responsibility and accountability for system and data. Helps resolve conflict.	Approve

Pilot Group POCs	Patrick Hargett Penny Gardner Richard Yockman Ted Kurkowski	HR-4/ ER/NN EE	Acts as single point of contact for approving project changes and deliverables. Represents HQ's interests and ensures that organizational needs are met. Resolves conflicts.	Approve
Pilot Group Member(s)	Kim Murray Sam Slough Kim Wandersee Tom Lombardo	HR-4/ ER/NN/ EE	Reviews project deliverables.	Support
Quality Assurance Contact	Andy Bicocchi	Quality Assur.	Provides guidance and assistance in quality assurance and continuity of operations processes.	Approve
Project Manager	Brian Field	AOSS Sys. Engr. Services	Plans and directs the project. Identifies the Project Team. Coordinates resolution of issues. Manages and coordinates technical effort. Performs adequate and timely staffing. Provides regular and timely communications.	Conduct\ Approve
CITSS Functional Manager	John Sewell	Cont. Manage -ment	Provides support and guidance to the Project Manager. Resolves conflict across organizations. Facilitates communications.	Approve
Senior Analyst	Kim Wandersee David Ensign Tom Lombardo	AOSS Sys. Engr. Svcs.	Reviews Applix relative to implementing, configuring and integrating . Assists in deployment strategy and training. Serves as team member for Pilot Group planning. Acts as primary author of CITSS documents.	Support

Senior Programmer 1	Trish Fuchs Zoya Fuller (Applix Cons.)	AOSS Sys. Engr. Svcs.	Designs and configures user interfaces and features, and facilitates integration of software for Headquarters environment.	Support
Programmers	Wendy Moriarty	AOSS Sys. Engr. Svcs.	Assists the Senior Programmers in writing programs.	Support
Configuration Manager	Brian Field	AOSS Sys. Engr. Svcs.	Prepares the Configuration Management Plan. Handles configuration management activities.	Support
Independent Tester	Zoya Fuller (Applix Cons.) Kim Wandersee	Supt. Svcs.	Conducts testing of CITSS at all stages of implementation and deployment.	Support
Independent Consultant	Zoya Fuller (Applix Cons.)	Applix	Provides consultation for final implementation plan, testing plan, installation, deployment and training plan and training.	Support
Acceptance Testers	TBD	Supt. Svcs.	Evaluates CITSS for organization environment compatibility, operability and ease of user interface for each organizational deployment.	Support
Documenta-tion Specialist	Leslie O'Gwin-Rivers	Admin. Svcs.	Assists in writing user and programmer manuals, as required.	Support
Trainer	Trish Fuchs Wendy Moriarity	AOSS Sys. Engr. Svcs.	Assists in the development of the Training Plan and in-house training (if selected option).	Support
Network Administrator	Trish Fuchs	AOSS Sys. Engr. Svcs.	Provides internal consulting, testing, and support.	Support
Oracle DBA	Jeff Budge	AOSS Sys. Engr. Svcs.	Provides installation, customization, setup, configuration, and maintenance support.	Support

Unix Administrator	Eric Hendrickson	AOSS Sys. Engr. Svcs.	Provides installation, customization, setup, configuration, and maintenance support.	Support
Security	Mark Jeness	Over-sight	Provides guidance in the development of the Security Plan.	Support

2.4 Problem Escalation

Problem situations are to be resolved in an orderly and timely manner. The severity of the problem will dictate the persons responsible for resolving the problem, and the time period allowed for resolution. If no decision is made about the conflict in the amount of time stated, the project manager will proceed forward at risk. All problems should be resolved at the lowest level possible prior to advancing to the Project Manager. A period of 3 business days should elapse while trying to resolve the issue before it is escalated. Problem escalation on this list should proceed from the top down, beginning with the Project Manager.

Project Manager	Resolves conflicts within the Project Team that revolve around the functional aspects of the application (3 business days).
CITSS Functional Manger	Resolves conflicts within teams concerning project direction, new policies and procedures, and changes and implementation strategy. Consults with CIO/HCG/system owner to resolve policy issues and difficult problems (3 business days)
CITSS System Owner	Resolves conflict among the Project Team, user POC, and Project Manager in situations where differences about project scope or deployment schedule occur or where funding issues arise (7 business days)
HCG	Assists the system owner in resolving conflicts with their organization's primary users or to resolve funding, resources, or scheduling issues (7 business days).

3. Management Approach

3.1 Management Priorities

The CITSS project will provide a critical component for improving the delivery of IT services to DOE Headquarters customers. The highest priority is to partner with Program Offices in piloting the configuration and installation of CITSS to ensure that agreed upon initial functionality meets organizational requirements, and so support staff and users can quickly benefit from the integrated help desk features.

The sections below address the project management activities that will help meet these priorities and the project's objectives. This includes how project progress will be tracked and reported, how problems will be addressed and resolved, and certain assumptions and dependencies that are key to the project's success.

3.2 Project Tracking and Control

The project schedule will be laid out in detail in a monthly status report. This is where actual completions are tracked against what was planned. The Project Manager will put all line items (activities, tasks, and sub-tasks) of the development life cycle stages on the report with a deliverable date for each, as the work begins for a given line item.

If problems are encountered in the development of the project, they will be tracked in a problem/issue log. This log will consist of a problem description, date the problem was reported, person who reported the problem, person who owns the problem, the resolution, and date the problem was resolved. This log will be maintained by the project planner and used for project status discussions.

3.2.1 Status Reporting

As required

Since the CITSS project is highly visible and offers many potential benefits to customers and service providers, the CITSS Project Team will meet at least weekly throughout the project to review current and future work assignments, and discuss strategies, problems, and issues.

Weekly

The project manager will update the status report on a weekly basis to provide the approvers information about recent completions, accomplishments, and effort expended. The project manager will discuss the progress of the CITSS project periodically at either a TeleVideo conference or in-person meeting between the Project Team, system owner, and Pilot Group POCs.

In addition to these weekly means of reporting project status, the project manager will be available to answer questions about the progress of CITSS at any point in the project life cycle.

Monthly

All of the above information will be summarized in the Technical Status Report (TSR). The TSR is the official reporting mechanism for the system owner and Pilot Group POCs. It is prepared monthly, and is distributed according to the standard CITSS distribution list.

The Project Manager will give a 10-15 minute status update at each monthly HCG meeting until project completion or deferred by the HCG.

3.2.2 Stage Exits (Project Checkpoints)

Each stage of the CITSS project will conclude with a formal checkpoint called a stage exit. When a stage has been successfully "exited", it indicates that all deliverables due to date have been completed, all outstanding issues have an acceptable action plan, and there is a sound plan for the remainder of the project (detailed for the next stage). The project's designated approvers (sign-off authorities) must provide a written position of concur/non-concur at stage exit. All affected functional areas involved in the project also participate in and provide input to the stage exit.

3.3 Assumptions, Constraints, and Dependencies

Assumption: System Administrator Access

It is assumed that Windows 95 or Windows NT will be procured and installed on each IT support staff member's PC, and that organizational system administrators and users will be trained in CITSS prior to use.

Dependency: Availability of Project Staff

The success of CITSS depends on the active participation and involvement of staff from many different support areas. Staff must be made available to assist as required throughout the project's life cycle. Every attempt will be made to notify management with as much advance notice as possible when expertise is required from specific staff members.

Dependency: Availability of Adequate Hardware and Software

Adequate hardware and software must be acquired or made available throughout the project's life cycle. System implementation will be severely impacted or the system will not perform at acceptable speed or availability levels. In either case, the success of the system from the user's perspective will be minimized.

Dependency: Funding

Appropriate funding must be provided for this project, in terms of hardware, software, and implementation team support. Funding for Applix maintenance releases, upgraded hardware and software components, and for routine CITSS maintenance support must be provided during the entire life of the system. Inadequate funding will increase the likelihood that the system will fail. To date, two organizations, GC and NN, will not provide funding for the project as anticipated.

Dependency: ACPPM Approval

Since CITSS will eventually be deployed Headquarters-wide, a Computer Security and Privacy Plan (CSPP) should be developed before CITSS is installed. This plan will be written by the CITSS Project Team and submitted to the Headquarters Computer Protection Program Manger (CPPM), John Staley. An Assistant CPPM should also be identified for the CITSS system, who would be responsible for planning annual security reviews and security refresher training.

Dependency: Definitions Verification

The project team will need HR-4 and Pilot Group POC assistance in ensuring that the proper definitions have been assigned to callers; assets; incident data; locations; groups; representatives; forms; queries; integration; and for identifying notification and escalation requirements.

Dependency: Testing and Evaluation

The system owner, user point of contact and Pilot Group POCs should be involved in the testing of early versions of screens, reports and process flow to ensure that initial functionality meets the organization's requirements and expectations. The pilot testing will be structured to take a minimal amount of time that will not compromise the integrity of the testing objectives. A consensus of agreement will be sought from the participants as to their acceptance of preliminary screens and reports.

Dependency: Document Review

The project team is dependent on the availability of the system owner and Pilot Group members to review the deliverable documents within ten (10) business days. These deliverables will be announced in advance.

3.4 Risk Management

Risk Category: Schedule

The CITSS Project Team has developed a project schedule that covers the anticipated span of the pilot project. This schedule is based on estimates for requirements identified to date. Additional requirements may be identified as the project progresses through the Pilot Installation and Pilot

Deployment stages. This may result in modifications to the agreed upon functionality and changes to the current project schedule.

Resolution of risk: If additional requirements are identified and deemed necessary for the initial deployment of CITSS, the project manager will prepare an impact assessment and all approvers will have to sign off on the impact to schedule and budget before they will be implemented.

Risk Category: Changing Requirements

There is a possibility that requests for changes to the requirements may arise during the Pilot Deployment stage. Typical reasons for these change requests include adding functionality, and new organization requirements for configuration of CITSS screens, reports and queries.

Resolution of risk: The project team will apply appropriate software engineering principles during the configuration of CITSS functionality. As requirements evolve over the life cycle, we will apply the change management procedures outlined in the Change Control Process and Configuration Management Plan to determine which changes to make, and their impact on operating environments, schedule and budget.

3.5 Project Estimates

3.5.1 Size Estimates

Estimates for the CITSS installation and deployment were determined by analyzing the project requirements that are known to date. This includes the current project objectives and information gathered during interviews conducted with future users of CITSS.

For the pilot project core installation, the extent of system integration and the number of initial deployments were considered. All are valid and accepted methods of estimating size of effort for implementing COTS software projects.

An analysis of project objectives and requirements led to the identification of several major CITSS functions required. Each of these functions were sized independently by three (3) systems analysts, based on guidance from Applix Consultants for installations analogous with Headquarters. The 3 estimates were then averaged to produce the following:

Function	Estimated Time
Procure hardware and software	Complete
Install hardware/software on a testbed, and test and evaluate Applix	Complete

Conduct Project Team and support training	Complete
Define Headquarters Attributes	90 Days
Load the knowledge base with off-the-shelf knowledge paks	15 Days
Configure reports, screens, forms, and queries	60 Days
Establish CITSS interfaces	60 Days
Conduct Pilot Group user training	5 Days
Deploy CITSS at Headquarters	45 Days

The above estimates will be revisited at the end of each stage, or when new requirements are identified.

3.5.2 Time Estimates

The size estimates were used to project time required for this project, based on skill/experience levels as defined in the Staffing Plan section. They were also provided to other participating functional areas, along with the known requirements, to support them in estimating their activities for the project. This includes documentation, testing, and training.

The estimates received from the functional areas, when added to the base project estimates produce a total project expenditure of 6,412 person hours required to test and evaluate; plan; configure screen, query and report features; and install and deploy CITSS.

The resulting resource allocation chart represents a best effort to achieve a combination of optimum resource utilization and timely CITSS deployment. At the completion of each stage of the project, the estimate of total person hours will be updated and the target completion date will be validated.

3.6 Staffing Plan

The CITSS Project Team will be comprised of personnel from the broad area of AOSS, with the mix of skills required to complete the CITSS project. The staff for this project will need to possess the following skill sets: project management, project planning, systems design, systems analysis, programming, testing, acceptance testing, documentation, network administration, configuration management, and training. Below are descriptions of the positions that need to be filled.

3.6.1 Required Skills

The **Project Manager** must have demonstrated the ability to plan development tasks, coordinate activities among various groups, coordinate the flow of work, conduct project meetings, and ensure issue resolution. The **Project Manager** must also be capable of developing a project plan using a bottoms-up approach and coordinating the activities of several persons who will provide the WBS detail, project estimates, and dependencies. This person must be able to work closely with the system owner on resolving issues and concerns across organizations and within the Pilot Group.

The **Senior Analyst** must be capable of interviewing end-users, capturing user wants and needs and translating them into requirements. This person must also be able to perform an analysis of the requirements so CITSS configuration needs can be identified. This person must be able to work closely with the project manager on resolving issues and concerns across organizations.

The **Senior Programmer** must be able to produce the System Integration document and make the necessary program modifications, based on System Integration Requirements Specification document developed by the Project Team. This position needs very little supervision. The Senior Programmer is responsible for delegating program assignments to the Programmer.

The **Programmer** must be able to program and unit test specific modules of Applix software using the System Integration document. This position needs to take direction from the Senior Programmer.

The **Independent Tester** must be able to review the Applix system documentation and the System Integration document to determine testability of functions described therein. The Tester must be able to design and execute a System Integration plan and a System Test Plan based on these documents. This position will work independently from the project team to ensure an objective review of CITSS functionality in the Headquarters environment.

The **Network Administrator** must be able to document requirements for the system to be installed in the Headquarters local area network (LAN) environment, install the application on the LAN, and write and execute a test plan which will determine adherence to LAN response time standards for the CITSS system.

The **Independent Consultant** must be able to provide expert Applix support for developing an installation, deployment, testing and training plans and providing training to the Project Team, Pilot Group POCs and the hotline technical support team.

The **Documentation Specialist**, if required, must be able to write the CITSS User Manual or Quick Reference Guide of helpful hints, in a Windows-based word processing package. This person must have functional knowledge of CITSS in order to capture screens for placement into the manual. The Documentation Specialist must be able to create the user guidance with little supervision from the Project Manager.

The **Trainer** must be able, based on knowledge gained in the training presented by Applix and the CITSS user guidance, to prepare and execute a Training Plan for Headquarters-wide CITSS users. In addition to the Applix training, the Trainer must have a working knowledge of CITSS features and functionality. The Trainer will be assisted by the Project Team as needed.

The **Configuration Manager** must be able to write a Configuration Management Plan (CMP) which identifies the project items that will be placed under formal change management and the method by which change against these items will be managed. This person must also be able to execute the CMP, managing all changes through the System Integration, Installation and Deployment stages.

The **Acceptance Tester** must have the ability to test CITSS separately from, and act as an advisor to, the Project Team. This person must utilize the CITSS system documentation and user guidance to determine if *all the processes* in the application are functioning correctly according to these documents and principles of user friendliness, such as ease of use and response times. This person will perform his or her duties with very little assistance from the development team in order to maintain objectivity.

The **Database Administrator (DBA)** shall be responsible for the design, implementation, operation, and maintenance of the CITSS database management system (DBMS) software. Oracle will be the DBMS used with CITSS. The DBA shall assist with all administrative tasks related to the database such as access control, maintenance procedures, database design and configuration, and disaster recovery.

The **System Administrator** shall provide overall analytical and strategic support for all CITSS components. The System Administrator is responsible for the successful operation of the system and it’s underlying architecture.

The **UNIX System Administrator** will configure the Oracle database server for optimum performance, establish operational procedures, and establish and test database backup, recovery, and fault-tolerance.

3.6.2 Resource Loading Chart

The following chart shows the estimated hours required by month for each person on the project.

Resource	FY 1997	FY 1998									
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Tot
Project Manager	80	160	160	160	160	160	160	160	160	160	1520
Functional Manager	5	10	10	10	10	10	10	10	10	10	95
Sr. Analyst (2)	20	160	80	80	80	80	40	40	40	40	660
Sr. Programmer	80	160	160	160	160	160	160	160	80	80	1360
Programmer (2)	40	80	100	80	60	40	40				440
Independent Tester				40	40	40	40				160
Independent Consultant		120	120	120	120	120	40	40	40		720
Quality Assurance		10	10	10	10	5	5	5	5	5	65
Security Specialist				40							40
Documentation Specialist				60	60						120
Trainer					40						40
Acceptance Tester					20	20	10				50
Configuration Manager		40	20	10	10	10	10	10	10	10	130
Network Administrator		80	10	10	80	10	10	10	10	10	230
System Administrator		80	80	20	20	20	20	20	20	20	300
Database Administrator	24	40	40	80	50	10	10	10	10	10	284
UNIX System Administrator	8	100	40	20	10	10	10				198
Total Person Hrs	257	1040	830	900	930	685	565	465	385	345	6412

As the above resource loading chart shows, project resources will be focused on the early stages of the project (planning, system integration, and installation) and lessen as the project moves toward the testing, deployment, and acceptance activities.

3.7 Master Schedule/Project Deliverables

Following is the master schedule and deliverables planned for each stage of the CITSS project implementation life cycle, and their respective planned completion dates.

Stage of Implementa-tion	**Stage Completion Date**	**Deliverable**	**Deliverable Completion Date**
Research and Testing	Completed 05/30/97	Requirements Specifications Market Research Product Evaluation Site Installation and Test	N/A
Planning	12/16/97	Acquisition Plan Project Plan Staffing Plan Configuration Management Plan Quality Assurance Plan Preliminary Training Plan Implementation Plan Stage Exit	09/26/97 09/26/97 09/26/97 09/26/97 09/26/97 09/26/97 09/26/97 12/16/97
System Integration	01/09/98	Customization/Integration Requirements (Part 1) Service Level Agreements (Types) Customization/Integration Requirements (Part 2) Data Migration Plan Pilot Installation Plan Continuity of Operations Plan Marketing Strategy Stage Exit	11/14/97 11/14/97 11/21/97 11/28/97 12/09/97 12/09/97 12/05/97 01/09/98

Pilot Installation and Testing	02/02/98	Computer Security and Privacy Plan Knowledge Base Population Strategy Integration Test Plan Pilot System Test Plan Pilot Acceptance Test Plan (draft) Final Training Plan In-Stage Assessment User Guide, Manual or Quick Reference Guide (draft) Helpdesk Procedures (draft) Deployment Plan (draft) Deployment Schedule (draft) Deployment Procedures (draft) HW/SW Tools Checklist (draft) Acceptance Test Plan CITSS Operational System Stage Exit	12/23/97 12/23/97 12/26/97 12/31/97 12/31/97 12/24/97 01/15/98 01/13/98 01/30/98 01/06/98 01/02/98 01/16/98 01/16/98 01/16/98 01/23/98 02/02/98
Pilot Deployment	03/09/98	User Guide, Manual or Quick Reference Guide Helpdesk Procedures Deployment Plan Deployment Schedule Deployment Procedures Hardware, Software and Tools Checklist Deployment Kit Test Reports Stage Exit	02/20/98 02/16/98 02/13/98 02/13/98 02/16/98 02/16/98 02/23/98 01/27/98 03/09/98
Pilot Post-Implementation Assessment	04/10/98	Deployment Impact Analysis Post-Deployment Assessment Report Customer Feedback Assessment Customer Feedback Report Post-Deployment Software Reqts. Ongoing Assessments Headquarters-wide Project Plan	03/16/98 03/23/98 03/23/98 03/30/98 04/10/98 03/13/98 03/27/98
Headquarters-Wide Implementation	06/30/98	Deliverables TBD	TBD

4. Technical Approach

4.1 System Architecture

Applix is a client/server-based product. There are several components, both hardware and software, that are required to implement all of the features and functionality available through Applix. We plan to implement a three-tiered architecture at DOE

The first tier is the client workstation. Applix must be installed and configured on each workstation in order to establish connectivity to the main Applix file server and the data base server. The second tier is comprised of the file servers which run the Applix software and store the Applix data bases. The main file server will be used to control access to the system and provide access to the main Applix files. We have selected Oracle as our data base engine and it will reside on the main data base server. The third tier is comprised of the equipment which will run Applix's virtual incident processes (VIPs). The VIPs handle the E-Mail, Notification, Key Word Indexing, and Escalation processes as identified in the chart. Ideally, each of these processes should run on it's own machine. This will increase system speed and reduce the impact on the system should one of the machines become unavailable.

We will also implement Applix's WebLink product. WebLink provides the capability to publish the Applix data base to the World Wide Web. Ultimately, our support staff and our customers will be able to access the Applix data base to check on incident status, search the knowledge base, and get information on items affecting Headquarters-wide information processing using their Web Browsers. All known Web Browsers, which include Mosaic, Netscape, and Internet Explorer can be used. WebLink has built in security features so that access can be controlled. WebLink can be run on a Pentium class workstation running the Windows NT operating system.

We plan to implement Applix in identical production and test bed environments. All Applix development and enhancements will be completed in the test bed environment, impacts on the overall system will be identified, and complete testing will be completed on the test bed prior to release into the production environment. It is critical that all potential variables are removed from these environments so that unexpected problems do not arise due to incompatible and inconsistent equipment or software. Another advantage to this approach is in the event of a hardware failure. The equipment from the test bed can be placed in the production environment, reducing the amount of system downtime.

The minimum specifications for the client workstations, file servers, and VIP equipment are detailed below.

Client: Windows 95 or Windows NT Workstation
586, 90 MHz machine (or higher)
16Mb RAM
VGA or better display resolution
hard disk drive with 10 MB (or more) of free disk space

network interface card and a mouse or other pointing device

Applix Server:	Novell 3.1X Pentium, 133Mhz ~100Mb RAM 1Gig Hard Disk
Data Base: Server	UNIX 4.0a DEC AlphaServer 4100 648Mb RAM 4 8Gig Hard Disks
VIP Process:	Windows NT Server Pentium, 133 MHZ 32Mb RAM 1Gig Hard Disk

Applix and all of it's shared hardware and software components, including system administration, configuration management, will be centrally managed. A comprehensive configuration management plan will be developed during the project's life cycle.

Applix provides the flexibility to grant specific access, or limit data access, to certain groups or people. For example, we intend to configure the system using a work group structure. Under this approach, support calls or incidents for a specific organization will not be accessible by other work groups. Exceptions to this policy include common knowledge bases, incidents with impacts on multiple work groups, and incidents which are transferred between work groups.

In addition to the routine backup, recovery, and disaster recovery mechanisms, we plan to implement Applix's LifeLine product. LifeLine provides us with the capability to ensure continuous operation of CITSS in scenarios such as communication service disruptions or server outages. We will construct the LifeLine architecture so that data will be replicated periodically to strategic workstations or servers at all supported sites. Should a disruption in service occur, LifeLine will automatically transfer the data services to the appropriate backup location. When normal service is restored, data captured during the disruption will be replicated to the production equipment.

4.2 COTS Software Components

Applix is a COTS package and does not require coding to modify the base application. Modifications can be made to the base system through the interfaces built into the product. Expertise will be required to support the underlying data base from a data base administration point of view. We will be using Oracle for Applix data base management. SQL expertise will also be required to implement many of the VIP rules and as we examine potential interfaces with other DOE corporate systems like CallUp and PAMS.

Other COTS software, such as Crystal Reports, WinBeep, and cc:Mail must be integrated with Applix. Expertise will be required in each of these areas. We anticipate that we will use in-house experts to assist with the integration. We will also train CITSS implementation team staff on each of the products as necessary.

4.3 Security

Security is a very important issue with CITSS, since it will be implemented Headquarters-wide. A Security Plan will be written and it will address CITSS access, disaster recovery, system backup, rules writing, data and database management, and measures to protect the integrity of the CITSS architecture.

4.4 Configuration Management

Configuration Management (CM) activities will begin in the Planning stage and continue through Post-Implementation and system maintenance. CM activities will commence with the approval of the Final System Integration Requirements document. A Configuration Management Plan (CMP), in line with the Software Configuration Management Guide (SCMG), will be developed and delivered concurrently with the Final System Integration Requirements document.

The CMP will address the following CM elements/activities:

- Identification (software configuration items)
- Control (change control of the software configuration items; see following section for details of the CITSS change control process)
- Auditing (functional and physical reviews of the system)
- Status Accounting (detail and summary reports of the status of software configuration items)

4.5 Change Control Process

The requirements will be baselined on research conducted for the System Integration requirement. Any requirements added after the end of the System Integration stage will require mutual agreement on the part of all Approvers, and that modifications be made to remaining scheduled deliverable dates, if appropriate.

Change initiation, logging, evaluation, and approval procedures will be detailed in the CMP, and will reflect current CITSS procedures found in the CITSS Project Team Procedures Handbook. The following identifies those persons that will be involved in managing changes on the CITSS project, and their respective roles.

Pilot Group POC(s)	The person authorized to request modifications/additions to the CITSS baselined requirements.
Project Manager	Receives modification requests and coordinates a project-wide impact assessment, to include scope of effort and time required to implement.
System Owner	Authorized to review modification requests, their impact assessment, and approve or disapprove of their implementation.

If there are disagreements about the necessity or cost of the requested modifications, the above people will meet, review, assess, and facilitate a resolution.

All approved changes and their impact on the project schedule and budget (if any) will be reviewed at each stage exit. This will give all of the approvers and functional area representatives an opportunity to assess and plan for impact on their respective organization's schedules and budgets.

4.6 Testing Strategy

Several levels of testing of the CITSS system will be conducted as follows:

Initial Test and Evaluate - Project team
Integration testing - Project team
Final System testing - Independent tester
Deployment and Acceptance testing - Acceptance tester

The System Test Plan and the Acceptance Test Plan will be produced in the System Integration stage. A detailed Integration Test plan will be produced in the Installation stage.

System testing will include testing for completeness of the mutually agreed upon functionality and the operation of the system in the test environment.

The person performing system testing will report organizationally to a person other than the project team manager. This person will develop and execute the System Test plan, which will include the execution of features, mapping to requirements, and tracking and reporting of weaknesses and incompatibilities.

Deployment and acceptance testing will include testing system interfaces, functionality and ease of use. Acceptance testing determines if the deployed system is ready to be accepted by the client organization.

During system testing, the tester will receive the initial, mutually agreed upon version of CITSS to test. For deployment and acceptance testing, the tester will have the operational version to test in the organization-specific environment.

4.7 Quality Assurance

Quality Assurance for this project will include an In-Stage Assessment (ISA) conducted near the end of each stage of implementation. An ISA is the DOE standard to assure that the established system development and project management processes and procedures are being followed effectively, and exposures and risks to the current plan are identified and addressed.

The Quality Assurance consultant will be considered part of the project team and will provide project management, development process, and quality assurance support throughout the duration of the project, and will provide a position at stage exit based on his or her ongoing involvement in the project.

4.8 Defect Prevention

For the purpose of the deployment of CITSS, defects will apply to incompatibilities identified between CITSS and the organization-specific LAN and computer environment, and in user guidelines and other system documentation. During the various levels of testing, several steps will be taken to prevent defects from being introduced. These steps will include:

- Document deliverables: All documents (e.g. requirements, manuals) will be subjected to peer reviews and Structured Walkthroughs to help ensure both completeness and accuracy of technical content. In addition, document drafts will be provided for review and comment as soon as practical, to allow for early feedback.

- Project plans: All project plans will undergo peer reviews and/or Structured Walkthroughs to help ensure all project activities have been accounted for, and to promote early alignment with other persons or organizations upon whom this project has a dependency.

- Test cases: All test cases will be inspected to help ensure they are measurable, complete, and appropriate for the function or system scenario to be tested.

4.9 Training

There are two groups which require training on CITSS. They are the technical personnel charged with the system's configuration and implementation and the end users of the system. End users are defined to include management staff. The technical personnel will be trained by Applix, Inc. staff. We plan to develop a "train the trainer" program to train the remainder of the end users. Applix, Inc. staff may be used during the initial end user training sessions. Computer-based training may eventually be added to the curriculum at a later date.

4.10 Documentation

The traditional system documentation as prescribed by the SEM is planned to be produced for this project. The planned documents include:

- User's Guide
- System Administration Guide
- Help Desk Operations Procedures

The User's Guide is planned to be a Quick Reference Guide with a visual, graphical orientation, to help the reader more quickly grasp the subject matter.

Appendix A, Planning Questionnaire

Project Managers should fill out this questionnaire after receiving a task assignment and distribute the completed questionnaire to support areas (e.g., operations, training, microtechnology research, and LAN operations and planning). The questionnaire gives the support areas early notification that a new project may involve their area. Information gained from this questionnaire aids in planning estimates and identifying risks at the task and project levels. Provide as many answers as are possible at this early stage. The questionnaire is not designed to capture detailed requirements.
If the project is not started immediately after the questionnaire is distributed, revisit the use of the questionnaire at project startup to provide current information to the support areas. All support areas must be notified of the project prior to scheduling the Planning Stage Exit.

Consider using this questionnaire as a basis for a project startup meeting. Notice of the meeting can be included when the questionnaire is distributed. Early dialogue benefits support areas and developers in planning and supporting project needs.

Electronic copies of the Planning Questionnaire, Support Area Contact List, and Support Area Descriptions are available on the AOSS-01 LAN, and through the MASL coordinator. Use the contact list as a distribution list for the completed questionnaire.

Project Profile

Application Name: Customer IT Support System

Acronym: CITSS

Contract Number: DE-AC01-95AD34277 Task Assignment #: 4012

Is the task number specific to this application? Yes ___X_____ No _____

Contractor Project Manager: Brian Field Phone: (301) 903-0652

cc:Mail address: Brian Field at CDSI-01 Internet address: brian.field@hq.doe.gov

DOE User Organization: HR-44 Organization POC: Patrick Hargett

What size development (as defined by Software Engineering Methodology (SEM)) do you anticipate this application will be?

Large _____ Medium _____X_____ Small

Appendix A, Planning Questionnaire

Briefly describe what your application is supposed to do.
CITSS will provide an integrated IT support system with extensive call tracking capabilities and problem resolution tools. It has the capability to manage assets; resolve, notify and escalate problems; and is customizable without manipulation of source code. CITSS supports many software platforms and will interface with other help desk software. The system contains an executive reporting capability which includes a charts module that can be used to present a management perspective of performance, trend analysis and planning issues.

Check all appropriate choices and supply specific information where requested.

1. Application processing platforms. *(Check all that apply.)*

   Mainframe _____

   Minicomputer X

   Microcomputer X : IBM-compatible X Macintosh _____

   LAN X : Server Name (e.g., ER-01, MA-01) : MULTIPLE

2. The application needs to run in the following operating environment(s). (Check all that apply.)

DOS	_____	VM	_____	Novell	X
Windows	X	MVS	_____	Unix	X
OS/2	_____	CICS	_____	Sun	_____
Windows NT	X	HP MPE	_____	Other (specify)	Win NT/WS
Macintosh	_____	HP UX	_____		_____

3. The application requires the following printer support. *(Check all that apply.)*

   Workstation printer X

Appendix A, Planning Questionnaire

LAN-shared X

Mainframe/Minicomputer Addressable _____

4. List the programming languages, data base management systems, and/or file systems you will be using or are considering using (e.g., S2K, Oracle, C++, Clipper, dBASE).

Programming Languages No languages required.

Data Base Management Systems SQL Compliant./ORACLE
File Systems _____

5. List existing applications or data sources with which the application will interface (sharing data, receiving data from, or sending data to).

Applications	Data Sources
DPIN	Phone book database
cc:Mail	Electronic list of contractor personnel
PAMS	Other help desk systems

6. What communication mechanisms are planned to provide these interfaces (e.g., Modem, Internet, SNA, TCP/IP, LAN)?

(specify) Local Area Network/TCP/IP

7. Where are users located? (Check all that apply.)

HQ X

Field site _____

Other (specify) _____

8. What is the sensitivity of the application's data?

Classified

Appendix A, Planning Questionnaire

Unclassified sensitive

Unclassified nonsensitive X

9. Is the application's operation so essential that data must be immediately available at all times or recoverable within a short time frame?

   Yes X No

10. What training support services do you think you will need to complete your project? (Note: Consultation indicates consulting with the training area; for example, you might ask the training group to help design some training that your support group will give to users.)

    Consultation X Computer Based ____ Classroom X Workbook

11. What documentation support services do you think you will need to complete your project? (Note: Consultation indicates consulting with the documentation experts.)
    Consultation _____

    Production: User Documentation X Programmer Documentation X
    Other (e.g., quick reference card, administrator manual) (specify)

    Quick Reference Card - Hotline Operator Guide

12. What level of Verification & Validation (V&V) Testing support services do you think you will need to complete your project? *(Note: Consultation indicates consulting with project analysts and programmers for requirements review and/or overall project testing analysis.)*

    Requirements Consultation X Test Consultation X

    V&V Systems Testing X Acceptance Testing X

Please use this space for additional comments.