Management

Version 1.0

CS410 Red Team
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Program Identification
This Program Management Plan (PMP) is for the Restaurant Efficiency Decision Artificial Intelligence (RED AI). The program will deliver the RED AI hardware, software, and documentation for the RED AI. The RED AI Project Team (RPT) is responsible for the integration, acceptance testing, and training of the Total Computing Environment.

Program Management Overview
Execution of the Program will be performed in accordance with the procedures defined by the set of planning documents. These documents include Program Management Plan*, Development Plan, Evaluation Plan, Marketing Plan, Staffing Plan, Financial Plan, Resource Plan, and Risk Management Plan (RMP) (see Figure 1). The responsibilities of the Program Team, the capabilities of the system, and the Program deliverables are detailed under the contractual provisions, as well as RPT's technical, management, and cost proposals.

* This Program Management Plan shall be deemed to meet the contractual requirement of a Project Management Plan.

Figure 1. Program Management

This Program Management Plan describes the management philosophy, program organization, schedule, and major milestones that serve as the guide for execution of the Program. The PMP also provides the customer and the quality team with the information they need to monitor and evaluate the progress of the effort. This plan provides the following pertinent information:

- Corporate Organization
- Program Team Organization With Areas of Responsibility
- Work Breakdown Structure
- Program Planning
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- Progress Reporting and Team Management
- Detailed Program Schedule and Milestones
- Program Reviews

The Program Management Plan provides guidance for the content and execution of the following plans:

- Risk Management
- Financial
- Evaluation
- Development

Corporate Structure

The entirety of Computer Productivity Initiative supports the RED AI Program. In 1995, Old Dominion University started the Computer Productivity Initiative from a grant by the National Science Foundation to give Computer Science students the opportunity to develop solutions to real world problems. The RED AI Project Team formed in the fall semester of 2007. The team will either be directly involved in the development process of the RED AI service or outsource responsibilities on a contract basis. The following is RED AI's organizational structure:

- **Consultant** – Janet Brunelle, Old Dominion University
- **Project Manager** – Alexander Caulkins
- **RED AI Program Office** – The RED AI Program Office will execute the program and provide day-to-day senior management supervision, management, engineering, and administrative resources necessary to manage and administer the RED AI service.

Management Approach

RED AI's management goal is to work closely with the customer to fully understand the system requirements and field a system that meets those requirements. The management approach to executing contracts at RED AI is based on the philosophy that successful Programs are delivered by goal-oriented teams. A Program Manager (PM) will lead the RED AI project team. The PM is responsible for all planning, programmatic, technical, and financial aspects of the Program. The PM is the primary Point of Contact (POC) for the customer. The primary duties include supervision of all planning, scheduling, financial, and technical activities, and customer liaison. The PM is responsible for all Program-related decisions and commitments with approval, as required, from the Corporate Management Team.

A key element of RED AI's program management approach is customer involvement. RED AI desires the customer to retain an active role in monitoring the progress of all aspects of the
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Program. The customer is encouraged to discuss technical details directly with members of the Program team, provide planning and schedule recommendations, and assist in resolution of technical and programmatic issues. In order to facilitate customer involvement, RED AI will provide access to program information including, but not limited to:

- Program Plans and Schedules
- Program Status
- Formal Review Material
- Action Items
- System Drawings and Documentation

Program Team

The RED AI team is committed to provide the best value by delivering COTS, open architecture, and low-risk systems at the lowest cost. This commitment is attainable because it is based on the re-use of existing technology that is field-proven. Through strategic teaming and an extensive system selection process, Computer Productivity Initiative has assembled a cohesive Program Team that is experienced with the implementation of each component that will comprise the RED AI service.

Program Manager. Overall management responsibility for RED AI is assigned to a Program Manager who is responsible for planning and coordination of the day-to-day technical, contractual, and financial aspects of the program. He is responsible for the generation and management of all program schedules, for the coordination of program staff assignments and for coordinating all program activities. His principal assistants are:

- **Documentation Specialist.** The DS provides overall documentation direction for the Program Team. The DS will ensure that everyone on the team has met the required documentation specifications, and that each person is aware of the tasks he/she has been assigned. The DS will also provide documentation of each meeting in which an overview of tasks assigned is given.
- **Financial Director.** The FD works in coordination with the rest of the team to devise a specific and schedule based budget plan, that will be reviewed by each of the team members and approved by both the PM and the customer. The FD will also determine the best agency to pursue to get funding for the project.
- **Hardware Manager.** The HM is responsible for system-level activities to ensure system hardware meets the specification requirements. The HM is also responsible for the development of system specifications, system design documents, interface documents, test plans, and procedures.
- **Marketing Director.** The MD is responsible for developing a marketing plan that includes the specification of an initial target market. The MS is responsible for the development of an in-depth plan on how to advertise and sell RED AI to the specified
target market. The MD must also determine the various risks involved and the best way to mitigate them.

- **Software Manager.** The SM is responsible for the development of system software functions as defined in the system specifications. The SM is also responsible for integration of all system components to meet the performance requirements of the system.

**Program Duration**

The RED AI program is a 3-year project that will culminate in the rollout of an Expert System for the restaurant industry that will increase efficiency, thus increasing profit. The planned on-shelf date is by Christmas 2009.

**Work Breakdown Structure**

The program Work Breakdown Structure (WBS) reflects the budgeted cost versus resources required to complete each task. The WBS phase numbers are integrated as part of the master program schedule. Assuming SBIR funding, the budget will be carefully planned out against the set deadlines set by SBIR guidelines. The budget will be carefully planned out against the set deadlines set by SBIR guidelines. The budgets are created by the Financial Manager, reviewed by the RED AI program, and set by the Program Manager. The WBS will be used to mark the different milestones throughout the phases and to make sure that the team is on time and on budget. The WBS management tool that RED AI will use is Microsoft Project 2003.

**Program planning**

The RED AI Program Team office will maintain the program master schedule. The master schedule contains a line item for each WBS element and will be used to track the progress of each element. All deviations from the master schedule must be coordinated with the program office. It is the responsibility of each team member to call attention to possible schedule deviations at the earliest opportunity. The program office will coordinate the program schedule with Computer Productivity Initiative. The program will be developed in phases; within each phase, formal reviews will play an integral part in monitoring program progress. All formal reviews will be announced four weeks in advance of the starting date.

RED AI will take a “top down approach” to the Program Schedule, meaning that we will pace our workload to fit the overall Program requirements. Particular attention will be given to timely milestone completions. It is recognized that the schedule is particularly tight, containing critical program milestones during the first year, and adequate personnel will be available in order to keep the program moving forward.
Progress Performance Assessment

All RED AI team members will participate in progress reporting and team management. RED AI will track technical and financial progress of the program. Reviews will be held monthly or as mutually agreeable between Computer Productivity Initiative and RED AI.

- Report on progress to date
- Present work to be performed during the next month
- Present status of all deliverables and review planned delivery dates
- Plan and coordinate activities, including the new review date.
- Discuss technical or programmatic issues as necessary.

In preparation for the meetings, the RED AI Program Manager will collect the status data on relevant on-going activities, progress against schedule and budget, and planned activity for the next reporting period. Quality reviews of all program documentation and procedures will be held periodically. In particular, the quality program will be involved with program deliveries and milestones and will work off the master program schedule to plan program audits. Technical, financial, and quality progress and status reporting will be conducted according to the following general guidelines.

Technical Progress and Reporting

The schedule for the program is established during the planning phase and monitored throughout the performance period. The schedule contains an entry for each WBS element. The percentage of completion for each WBS element is determined as necessary to manage program progress and is reviewed at least quarterly during the General Manager’s review.

Financial Management and Reporting

The financial profile for the Program is established during the planning phase and monitored throughout the performance period. This profile is generated by assigning accounting phase numbers to every Program activity that has been identified as a scheduled event. A budget representing labor costs, materials purchase, and other expenditures (such as travel expenses) is then prepared for every phase. The schedule and budgets are then integrated to provide a spending profile for the phase. The Program spending profile represents a summary of phase spending profiles.

The PM is provided an information package that identifies the phase numbers assigned to each activity, the corresponding budgets and schedules, the overall spending profile for the program, and a synopsis of all major deliverables and milestones specified in the contract. The PM uses this information, combined with an on-line financial summary of the Program to track its financial status on a weekly basis. An updated spending profile is provided automatically by the Contracts
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Administrator on a monthly basis, or upon request from the PM. The PM uses the financial summary in conjunction with his assessments of technical progress to track the overall status of the efforts (please see the Financial Plan for more information).

**Earned Value**

Earned Value Ratios will be reported as required. At a minimum, RED AI will determine earned value quarterly at the overall Program level and will report at the second level of WBS indenture in order to provide additional information. RED AI will use Microsoft Project Program Manager Software in order to calculate the ratios. Please refer to the Financial Appendix for more information.

**Quality Process and Reporting**

Quality management on the program will be a team effort. The Project Manager will coordinate conduct, quality reviews, and audits. The PM is ultimately responsible for the development and implementation of the System Quality Program Plan. The SQPP is an umbrella plan that incorporates the quality programs of the program team members. The SQPP describes a team quality concept, including Process Coordination and Quality Evaluators. Team members are responsible for performing the processes required to complete Program tasks. Quality Evaluators are responsible for verifying that the development, production, and handling of all documentation, software, and hardware are performed in accordance with the SQPP and its component processes. The team is also responsible for conducting periodic reviews and evaluations of work in process attending in house test events and supporting in house Program reviews. All planned quality program activities and quality evaluations (internal audits) are submitted to the PM for review. See the Evaluation Plan for more details.

**Monthly Progress Report**

RED AI will submit monthly progress reports. The report shall cover, at a minimum, the following:

- Progress Summary;
- The variance statement;
- Critical Path Analysis;
- Milestone Deliverables, planned actual and forecast;
- Earned Value Schedule and Cost Performance Indices;
- Dependencies: a ‘critical items list’ of all items, whether or not the Contractor’s direct responsibility, which could jeopardize timely completion of the work or any significant parts of the program;
- Risk Status: update of risk register;
• Look Ahead (Future action and Forecast);
• Resource Profile;
• Work Package/Activities planned, actual & forecast status;
• Milestone/Deliverables planned, actual & forecast status;
• Configuration Change Control issues;

Reviews
Reviews will play an integral part in the management and monitoring of all phases of the RED AI Program. Informal reviews with the Program team members will be held at all levels on a weekly basis to ensure that the program stays on track. Formal technical reviews will be held to ensure that the program is proceeding as planned. The types of reviews, their purpose, and presented information are addressed in the following paragraphs.

Program Management Reviews
Program Management Reviews (PMRs) will be conducted with RED AI and subcontract representatives. The first PMR will be conducted in May 2007; thereafter PMRs will be conducted approximately twice weekly. The PMRs are scheduled to discuss programmatic issues related to the development and implementation of the project. The reviews will provide the opportunity to review the progress of the effort; as well as to conduct milestone reviews of deliverables, and identifies and resolves any issues that may arise during the execution of the tasking.

The PM will ensure that all program related information required to meet the objectives of the review are prepared and delivered no later than the night prior to the scheduled review date. The PM will also be responsible for identifying the RED AI Program Team personnel who will attend the review. The PM will attend all Program Management Reviews. The following information will be prepared in support of each PMR. Recorded during the review and delivered before the completion of the review.

Technical Reviews
Formal technical reviews will be conducted on the dates specified in the master schedule. The reviews will be held jointly with RED AI, Program Team members and sub-suppliers as necessary. An agenda and review material will be submitted to RED AI two weeks prior to the scheduled meeting. Review meeting minutes will be delivered before the completion of the review. The objectives for each review are outlined below (please see the Technical Plan for more information).
Reviews will be held to validate the direction taken for the design, development, and test of the system. The System Requirements Review (SRR), Preliminary Design Review (PDR), and Critical Design Review (CDR) will be formal reviews held at RED Al’s facility. The Test Readiness Reviews (TRR) will be formal reviews completed before completion of each phase.

**System Requirements Review** is conducted to ensure that the Program team fully understands the system performance requirements specified in the System/Segment Specification. A detailed review of requirements for the system and each subsystem will be reviewed. The System/Segment Specification (Technical Specification) will be used in the review.

**System Design Review** is conducted to present and review the system design. System requirement allocation to each system component will be discussed. The general approach to be taken for the integration of each system component will be presented. The documents listed below will be used in the review. This will be an informal review. The data will be included in the PDR.

- System/Segment Design Document
- System Interface Design Document

**Software Requirements Review** is conducted to review the software specification and interface requirement specifications. This review will be conducted as part of the PDR.

**Preliminary Design Review** is conducted to present the preliminary design of the Program System. The functional requirements of each subsystem will be discussed in detail. The following documents will be used in the review:

**Critical Design Review** is conducted to review system integration issues. In particular, the review will focus on system interfaces in preparation for Subsystem FAT.

**Test Readiness Reviews** are held to determine if the system is ready to proceed to the next level of test. Test configurations and results from the previous test efforts will be presented. The test report from the previous test will be used in the review.

**Quality Reviews**

The PM supported by the Project Manager (PM) will establish the time and identify attendees for all formal reviews. He will also coordinate with the appropriate managers to conduct quality reviews at key program milestones, and in preparation for formal reviews with the customer. Informal peer review and engineering planning meetings will also be held at the discretion of each subsystem manager to discuss technical issues, conduct internal comment reviews, and provide technical guidance to members of the Program team (please see the Evaluation Plan for
more information). As part of the quality activities for the program, the quality team will conduct informal reviews to:

- Evaluate the processes used by the Program team members to perform program tasks;
- Evaluate deliverable products for compliance with contract requirements;
- Evaluate work-in-process during engineering reviews;
- Document results of each evaluation; and

Recommend corrective and preventive actions if necessary.