Polytechnic University of Puerto Rico

Hato Rey, Puerto Rico

Department of Electrical & Computer Engineering

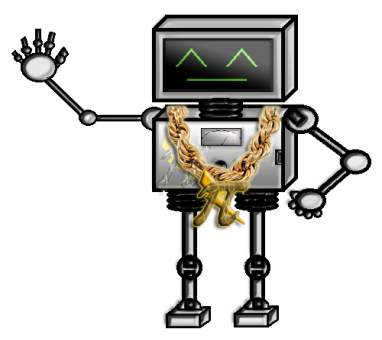
And Computer Sciences

**Software Project Management Plans**

Astra Enroller

Made by: AstraPi Technologies

Version 1.0



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Updates History:

This document was written simultaneously from each assigned member, in this case Gabriel, Francisco and Luis. For the 1st version of this document there will be no history of updates sense this would not apply because the document has yet to finalize. When the document is already finalized from 1st version the when updates are applied, the editor of this document should add detailed information of the updates done, this include time, data and a description explaining why the update was done.

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1. **Introduction**
   1. **Project Overview**

Our company, AstraPi Technologies proposed the development of a software called Astra – Enroller. The main purposed of Astra – Enroller is to enhance the current system of enrollment of the Polytechnic University of Puerto Rico. This software was designed exclusively for the Polytechnic University of Puerto Rico, but there’s no doubt that in the future it will be implemented in other universities.

The purpose of this document named Software Project Management Plan is to establish in a clear form, the details and specifications of how Astra – Enroller would be administrated. This document is going to facilitate the organization of the project, and it would guarantee that all the requirements are being fulfilled for the completion of the product. This documents discus the following topics:

Evolution of the SPMP

Project Organization

Managerial Process

Technical Process

Work Packages, Schedule, and Budget

The SPMP is directed to:

1. Clients- any person with an interest in the software.
2. Users- a student from the PUPR, who will use this software.
3. Developers- people responsible in created, designing maintenance and making updates to the system.
   1. **Project Deliverables**

* IEEE 830 Software Requirements Specification

Due Date: April 19, 2011

Quantity: 1

Localization: P-306

* SRS Presentation

Due Date: April 19, 2011

Quantity: 1

Localization: P-306

* IEEE 1058 Software Project Management Plan

Due Date: May 26, 2011

Quantity: 1

Localization: P-306

* IEEE 829 Software Test Document

Due Date: May 26, 2011

Quantity: 1

Localization: P-306

* IEEE 1016 Software Design Description

Due Date: May 26, 2011

Quantity: 1

Localization: P-306

* Final Presentation

Due Date: May 26, 2011

Quantity: 1

Localization: P-306

* 1. **Evolution of the SPMP**

If any member of the group understands that the SPMP document needs to be updated for any reason, the member would have all the right to present a motion to express his point of view. If the point of view is valid and is seconded from two other members, the document would be updated.

* 1. **Reference Material**

Documents:

IEEE Std 1058.1-1987  Software Project Management Plan

Author: The Software Engineering Technical Committee of the Computer Society of the IEEE

Date: Approved December 10, 1987

PDF: ISBN 0-7381-0409-4, SS12138

IEEE Std 829-1998  Software Test Documentation

Author: The Software Engineering Technical Committee of the Computer Society of the IEEE

Date: Approved 16 September 1998

PDF:ISBN 0-7381-1444-8 SS94687

IEEE Std 830-1998 Software Requirement Specification

Author: The Software Engineering Technical Committee of the Computer Society of the IEEE

Date: Approved 25 June 1998

PDF: ISBN 0-7381-0332-2

IEEE Std 1016-1998 Software Design Description

Author: The Software Engineering Technical Committee of the Computer Society of the IEEE

Date: Approved 23 September 1998

PDF: ISBN 0-7381-1456-1 SS94688

Web-Page:

[www.Amazon.com](http://www.Amazon.com)

Description: It was used to obtain software prices.

* 1. **Definitions and Acronyms**

*1.5.1 Definitions*

|  |  |
| --- | --- |
| Term | Definition |
| AstraPi | Greek for the combination of lightning and pi |
| Astra | Lightning in Greek. |
| pi | Represent the Greek letter |
| Astra-Enroller | The name of the software to be developed. |
| Web-Page | A document on the World Wide Web or simply put on the Internet. |
| Our | This will be directed to Astrapi Technology team working on the Astra-Enroller Software. |
| We | This will be directed to Astrapi Technology team working on the Astra-Enroller Software. |
| Group | This will be directed to Astrapi Technology team working on the Astra-Enroller Software. |

## *1.5.2 Acronyms*

|  |  |
| --- | --- |
| Term | Acronym |
| Polytechnic University of Puerto Rico. | PUPR |
| Software Requirements Specification. | SRS |
| Software Project Management Plan | SPMP |
| Software Test Document | STD |
| Software Design Description | SDD |
| Astra-Enroller. | AE |

**2. Project Organization**

**2.1 Process Model**

The organization for the development of our software's documents (SRS, STD,SDD and SPMP) will be paralleled and cascade. Paralleled because each member will have the same amount of time to finish there working and will be working on different document or on deferent sections of a document to help improve time. Cascade simply because there are document which could not be worked on because they depend on another document. Using this combination will help save time and increase the chances of delivering each document on time.

**2.2 Organizational Structure**

Our structure will consist of four documents of which some could depend on others. Do to this problem we would need to organize all the work that needs to be done within 3 months. The Figure 1 is a block diagram of the documents that need to be done in the order they will be worked on. What you the reader, may notice is several documents will be worked in the same time line, this is because we found they don't depend much on each other and could be divided to be worked on in parallel.



Figure 1

As shown in Figure 1 the SRS document is independent from the other document but the SDD, STD and SPMP are dependent to it. This is because we needed to finish our SRS in order to continue with the rest of the documents, this may not apply in other projects but it does in our case. Once the SRS document is complied we could continue working on any of the other documents, having a clear idea of what needs to be done.

**2.3 Organizational Boundaries and Interfaces:**

The Astra-Enroller software will be developed by Astrapi Technologies in order to improve the current online enrolling system for the Polytechnic University of Puerto Rico. In this section all boundaries and interfaces will be shown as bullet below. In order for the software to be fully functional we need the following:

* Interface our system with the current database. This means that a strong communication with the database's administrator is required in order to have a successful, fully operational system interface.
* Each member working on this project will be responsible for their work, it will be revised by the project manager(s) assuming that there work is sent on time. This is why each member should ensure their work is at best quality and update the project manager for changes to avoid having to go back and fix the document.
* When a document is finished a member working on that document , preferably the manager of that document, will be assigned to check the documents format and apply the necessary esthetics to ensure the document's quality and readability.
* Anything related to graphical designing will be directed to a graphics designer from Astrapi Technologies.

**2.4 Project Responsibilities**

It is important to note that there will be at least one manager per document. The manager(s) of the document will be listed with the documents type also indicating the other member(s) that were assigned to work under that document. This list will be directed in Tables 1-4 to help understand each member document responsibilities.

In addition it is important to understand that there are more responsibilities unrelated to the documents that need to be done. These responsibilities are more related the project status of which each member should have often known as job titles. In our case a member working on this project could have more than one title and these titles imply their responsibilities within the current project.

|  |  |  |
| --- | --- | --- |
| Document Type | Project Manager (s) | Assigned Member(s) |
| SRS | Gabriel and Emanuel | Gabriel, Emanuel, Joaquín, Francisco and Luis |
| SDD | Joaquin | Joaquin |
| STD | Emanuel | Emanuel |
| SPMP | Francisco and Gabriel | Francisco, Gabriel and Luis |

Table 1

|  | SRS | |
| --- | --- | --- |
| Title | Section | Works on |
| Purpose | 1.1 | Luis |
| Scope | 1.2 | Francisco and Gabriel |
| Definitions, Acronyms and Abbreviations | 1.3 | All |
| References | 1.4 | All |
| Overview | 1.5 | Joaquin and Emanuel |
| Product Perspective | 2.1 | Luis |
| Product Functions | 2.2 | Joaquin and Gabriel |
| User Classes Characteristics | 2.3 | Emanuel |
| Constraints | 2.4 | Emanuel |
| Assumptions and dependencies | 2.5 | Francisco |
| External interface | 3.1 | Luis |
| Product Functions | 3.2 | Joaquin and Gabriel |
| Performance Requirements | 3.3 | Emanuel |
| Logic Requirements of Database | 3.4 | Emanuel |
| Design restrictions | 3.5 | Emanuel |
| Software System Requirements | 3.6 | Francisco |

Table 2

|  | SDD | |
| --- | --- | --- |
| Title | Section | Works on |
| Introduction | 1 | Emanuel |
| Everything else | 2-6 | Joaquin |

Table 3

|  | STD | |
| --- | --- | --- |
| Title | Section | Works on |
| ALL | ALL | Emanuel |

Table 4

|  | SPMP | |
| --- | --- | --- |
| Title | Section | Works on |
| Introduction | 1 | Luis |
| Project Organization | 2 | Gabriel |
| Managerial Process | 3 | Francisco |
| Technical Process | 4 |  |
| Methods, Tools, and Techniques | 4.1 | Gabriel |
| Software Documentation | 4.2 | Luis |
| Project Support Functions | 4.3 | Francisco |
| Work Packages, Schedule, and Budget | 5 |  |
| Work Packages | 5.1 | Gabriel |
| Dependencies | 5.2 | Flagged |
| Resource Requirements | 5.3 | Francisco |
| Budget and Resource Allocation | 5.4 | Luis |
| Schedule | 5.5 | Gabriel |

Table 5

| Member Full Name | Title(s) |
| --- | --- |
| Gabriel E. Nieves Rodríguez | Head Computer Engineer, Project Manager, Graphics Designer |
| Francisco O. Ramos Bravo | Computer Engineer, Project Manager, Editor & Chief and Translator |
| Joaquín Pockels Balaguer | Computer Engineer, Project Manager and Function Specialist |
| Emanuel Rivera Castro | Computer Engineer, Project Manager, Editor and Translator |
| Luis Ayala Silva | Computer Engineer |

Table 6

**3.0** **Managerial Processes**

Throughout this section of the SPMP, the topics to be discussed upon are the following:

* Management objectives and priorities (3.1)
* Project assumptions, dependencies and constraints (3.2)
* Risk management techniques (3.3)
* Monitoring and controlling mechanisms to be used (3.4)
* Staffing Plan (3.5)

**3.1** **Management objectives and priorities**

This section contains first, the philosophy, goals and priorities on management activities for the project. Also it will specify the format used for reporting and the expected frequency of reports during the project, priorities among requirements on the project and the project’s schedule and budget. Also information how statements in order to adquire, modify or use existing software for project completion will be given, will be found on this section

**3.1.1** **Philosophy, goals and priorities for management activities on the project**

**3.1.1.1 Philosophy**

The philosophy adopted for management activities is that of divide and conquer. The group will usually meet either physically or via other means of communication such as Internet conference calls using Skype or phone calls with speaker phone on. After wards the activity is discussed by the members and decomposed into essential parts or tasks required for the activity completion which are then assigned to a corresponding project member in order for a swift completion of the activity. Also project managers for each activity will be assigned.

**3.1.1.2 Goals**

The goals are simply to be able to complete the activity as fast as possible and in a worst case scenario on the due date in order to proceed to the next activity, the swifter the completion of an activity the more time the project team will have to review and audit the activity with the purpose of obtaining desired quality control on an activity.

**3.1.1.3 Priorities**

The priorities on an activity may vary on the difficulty of completion of said activity, also priorities can be viewed as the time and project resources allocated on the completion of an activity, the greater time and project resources allocated to an activity, the higher the priority of the activity.

The order established for the main activity priorities are the following:

1. SPMP
2. SDD
3. STD
4. SRS

**3.1.2 Report Format and Report frequency**

**3.1.2.1 Report Format**

There is no required structured format for a report regarding this project. However most if not all the reports are verbal and their content address for the most part the completion of an assigned task on a project member and pending tasks of said project member regarding the completion of an activity. Most of the reports are given by each member when project meetings occur. Also these reports are not to be extensive just essential details are required such as completed tasks and tasks being worked on for example. Also reports are compulsory when most of the project staff requires it so.

**3.1.2.2** **Report frequency**

The frequencies that verbal reports will be given are directly proportional to the frequency that meetings are withheld. This is due to the fact that reports are given verbally by project members at the meetings. Since meetings are held once or twice a week depending on availability of the project staff, on average a verbal report per member may be given per week of the project’s time duration.

**3.1.3 Priorities on requirements, project schedule and budget**

**3.1.3.1 Requirement priorities:**

Priority on project requirements was given to the development of the project documentation. For the most part SPMP document and SRS had the higher priority since they were required in order to proceed on the development of the remaining documents.

**3.1.3.2 Project Schedule priority:**

Priority on the project’s schedule was given in the following order:

* + - SRS document development
    - SPMP document development
    - SDD document development
    - STD document development
    - Software implementation.

**3.1.3.3 Project budget priorities**

The priority on the project budget allocation was the following:

* + - Computers for the project staff
    - Required hardware and software for the project’s completion
    - Project logbook
    - Miscellaneous materials

**3.1.4 Risk management procedures**

In the event that a risk or problematic situation occurs during the development of the project, an emergency staff meeting will take place in order to address the problem or situation. On these meeting it’s imperative to hear each of the staff member’s opinion and possible solutions on the matter. Afterwards the project staff will proceed to make a democratic vote election to determinate the course of action to be taken based on the proposed or accepted solutions to the given risk or problem.

**3.1.5 Software acquisition statement management:**

The proper format to deliver a statement which states the intention of acquiring, modifying or using existing software should follow the following procedure:

* + - Mention the Software in question during a staff meeting
    - State the reasons why the existing software is needed
    - Mention and justify the amount of software licenses needed
    - Afterwards the staff in democratic vote will decide to acquire the software or not.

**3.2 Assumptions, Dependencies and Constraints**

This section will contain information regarding the necessary assumptions on which the project is based, external events the project is dependent upon in order to complete itself and constraints on which the project will be conducted.

**3.2.1 Assumptions:**

Assumptions the project is based upon are the following:

* + - All of the project staff members don’t have previous experience on the development of software documentation.
    - Project staff members will require minimum assistance in the completion of their respectively assigned tasks.
    - Project can be completed on the time lapse of three months
    - Project staff members can follow closely to the established IEEE documentation standards
    - Unlimited Budget

**3.2.2 Dependencies:**

Most of the dependencies of external events the project will be dependent upon will be due the completion of the project documentations. For example SDD and STD documents will be dependent on the completion of the SRS and SPMP documentations in order for their completion to be successful. Other dependencies would be extracurricular activities and other responsibilities of each of the project staff members which may delay the document’s completion and thus delaying the project’s completion itself.

**3.2.3 Constraints**

The following where the constraints given to the project:

* + - A deadline for completion of three months
    - Project documents must comply with IEEE software documentation format
    - Software developed must support commonly used operating systems(Linux based, Windows based, Mac OS) and support commonly used web browsers ( Mozilla FireFox, Internet Explorer, Google Chrome)
    - Software developed must be compatible and be able to interact with PUPR database

**3.3 Risk Management**

Regarding this section for all risk situations, for the contingency plan to be followed please refer to section 3.1.4 . On this section several possible risk situations will be mentioned.

* + - **Risk’s regarding contract :**

Examples would be not complying with the established deadline by the costumer. Another example would be violations of the contract terms from either end of the contract. These are the most common situations that may occur during project development.

* + - **Risk’s regarding technology related on the project:**

An example would be damage received to project data resulting in it’s loss. Other situations that could occur are damage or theft of computer equipment or other materials. Also problems with server and internet availability may occur which could hinder the project’s completion.

* + - **Risk’s regarding size and complexity of the product:**

An example of these risks would be that requirements and constraints of the project may require strong attention to detail and extensive documentation that may require more time that the established deadline. Another example could be disagreement on the design approach to solve a particular problem regarding the project’s development which may result on delaying progress on the project’s development.

* + - **Risks regarding personnel acquisition and retention:**

Examples of these risks would be that a member may not have the required skill and expertise in order to perform assigned tasks which would hinder greatly the project’s development. Another example would be that a project staff member doesn’t complete the assigned task or that the completed task does not meet the expected standards. Another possible example would be the inconsistency of a project member to show up on meetings or having lack of communication with other project staff members resulting in a hindrance to the project’s development for not being in par with the progress of the project’s development.

* + - **Risks regarding consumer acceptance of the product**

Examples would be the customer may not express the desired resulting product correctly and mid development forces the staff member to redo most of the currently developed product on the project. Another example would be additional requests from the customer that may require drastic changes on the currently developed product. Finally a risk example would be that the final product doesn’t comply with the requirements and constraints given by the client resulting in customer’s insatisfaction, termination of the contract, revenue loss, loss of the company’s reputation, company bankruptcy and other undesired situations.

**3.4 Monitoring and Controlling Mechanisms**

Regarding this section of the SPMP for report formats please refer to section 3.1.2 of the document. This section would briefly contain information about flow of information and controlling and auditing mechanisms as well as tools used in order to aid this task. These all apply to all the work packages regarding this project.

* + - **Flow of information:**

Most of the information regarding the project is being kept digitally in documents stored as data on computers. Also information may flow via personal means or telecommunication tools such as cell phones, text messages, Skype conference calls , drop box internet storage and real time synchronization of data on all the linked computers to the service.

* + - **Review and audit mechanisms:**

The editor in chief would often open and review the work done on all the documentation either by opening the document locally using drop box or simultaneous document development and auditing live using Google docs feature. If changes are necessary to a current work done in order to comply with the requirements, constraints and IEEE standards, the editor in chief would notify the staff member responsible of the work in question the necessary changes via document comments on Google docs ( or using the Google docs live chat if both editor in chief and the staff member are online) . If necessary and the editor in chief has the required skill and preparation, he may do the corresponding modifications to the work under review and audit.

* + - **Tools used for monitoring and controlling mechanisms:**

The tools used for Monitoring and controlling mechanisms are the following:

1. Google Docs
2. Skype
3. Drop Box

**3.5 Staffing Plan**

This section contains information of the number and types of personnel required to complete the project and several expected requirements on the personnel in order to work on the project. These are the following.

* + - **Number of personnel required :**

Five members are required for the project’s completion.

* + - **Expected start time:**

Immediate to the project’s approval

**3.5.1. Expected requirements**

These requirements are the following:

* + - **Bachelor degree on computer science and or Computer Engineering**
    - **Willing to work on flexible schedules**
    - **No previous field experience is required**
    - **Capable of following instructions**
    - **Be able to work with other team members**
    - **Basic knowledge of IEEE standard software documentation.**

1. **Technical Process**
   1. **Methods, Tools, and Techniques**

* Photo Shop CS3
* Smart Draw 2011
* Microsoft Office Projects 2010
* Microsoft Office Word 2007
* HP Pavilion dv6-2066dx Entertainment Notebook
* HP Pavilion dv7-2173cl Entertainment Notebook
* Acer Aspire 5334-2153
* Toshiba Satellite L555
* Pencils
* Printing paper
* Logbook
* Pens
* Skype
* Dropbox
* Google Documents
* Google Search Engine
* PHP
* MySQL
* Opera/Chrome/Firefox web browsers
  1. **Software Documentation**

The Process of documentation is based on the standard documents of The Institute of Electrical and Electronics Engineers (IEEE). Here is a description of the documents that we use on this project.

* + 1. **Software Project Management Plan**

The software project management plan is the controlling document for managing a software project; it defines the technical and managerial processes necessary to satisfy the project requirements.

* + 1. **Software Requirements Specification**

The software requirements specification is an important part of the requirements process of the software life cycle and is used in design, implementation, project monitoring, verification and validation. It gives a complete description of the behavior of the system to be developed.

* + 1. **Software Test Document**

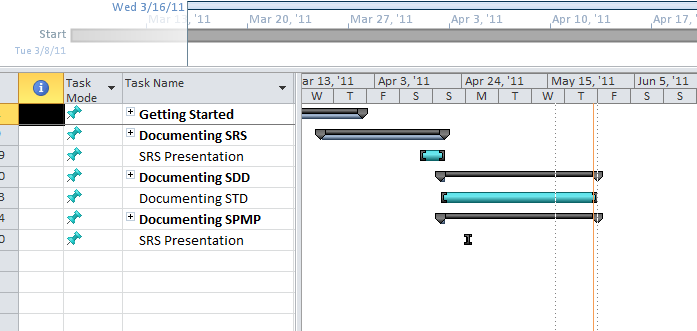
The standardized test document can facilitate communication by providing a common frame of reference. It specifies the form of a set of documents for use in eight defined stages of software testing, each stage potentially producing its own separate type of document.

* + 1. **Software Design Description**

The software design description is a representation of a software system that is used as a medium for communicating software design information. A representation of a software system is created to facilitate analysis, planning, implementation, and decision making.

1. **Work Packages, Schedule, and Budget**
   1. **Work Packages**

Our work packages are focused on the SRS, STD, SDD, SPMP and several other unrelated to the previously mentioned documents. The following is a time line of our work packages:



* 1. **Dependencies**

Use section 2 as reference.

* 1. **Resource Requirements**

Each member working under this document needs to have the following in order to work under this document:

* Microsoft Office 2007 with Word and Projects
* SmartDraw 2010
* Internet connection
* Google account in order to use Google Documents
* Dropbox account
  1. **Budget and Resource Allocation**

|  |  |  |  |
| --- | --- | --- | --- |
| Items | Quantity | Amount | Total |
| Pens Package | 2 | $4.99 | $9.98 |
| Record Note Book | 1 | $19.99 | $19.99 |
| Laptops | 5 | $900.00 | $4,500.00 |
| Gasoline | 5 | $500.00 | $2,500.00 |
| Paper Block | 2 | $23.95 | $47.90 |
| Adobe Photoshop CS5 | 1 | $679.99 | $679.99 |
| Office 2010 Professional | 1 | $408.99 | $408.99 |
| Microsoft Project 2010 | 1 | $499.80 | $499.80 |
| Smart Draw 2010 | 1 | $208.04 | $208.04 |
|  |  |  |  |
| TOTAL |  |  | **$8,874.69** |

Table 7

|  |  |  |  |
| --- | --- | --- | --- |
| Personal | Months | Amount(Per Month) | Total |
| Gabriel Nieves | 3 | $2,400.00 | $7,200.00 |
| Francisco Ramos | 3 | $1,920.00 | $5,760.00 |
| Emanuel Rivera | 3 | $1,920.00 | $5,760.00 |
| Joaquin Pockels | 3 | $1,920.00 | $5,760.00 |
| Luis Ayala | 3 | $1,920.00 | $5,760.00 |
|  |  |  |  |
| Total |  |  | **$30,240.00** |

Table 8

|  |  |
| --- | --- |
| Personal | Total |
| Materials | $8,874.69 |
| Human Labor | $30,240.00 |
| Total | **$39,114.69** |

Table 9

* 1. **Schedule**

**FALTA**