



— CSUSB —
LIBRARY STUDY SPACE

CSUSB LIBRARY STUDY SPACE
MOBILE APPLICATION

SOFTWARE PROJECT MANAGEMENT PLAN

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Prepared by:

MICHAEL GARAYSI (*Project Manager*)
MARK MARTINEZ (*Assistant Manager*)

Advisor:

Dr. ARTURO I. CONCEPCION

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1 Introduction

1.1 Project Summary

1.1.2 Purpose

This Software Project Management Plan outlines the management of the CSUB Library Study Space mobile application development for the first iteration of the project. It contains requirements, development cycle plans, a timeline of progress, testing protocols, and maintenance details for the application. Its intended audience is Dr. Concepcion.

1.1.2 Scope of the Project

The scope of this plan encompasses the completion of development for the CSUSB Library Study Space application during the first iteration of the application's development. It outlines methods that will be implemented in this iteration. Anything not directly related to application development as specified in the current SRS is to be considered outside of project scope. These include:

- Application Development
- Quality Assurance
- Documentation

1.1.3 Assumptions and Constraints

We make the following assumptions:

- The programmers are following the most recently approved SRS
- The client will be a key part of the design process and provide timely responses to inquiries.
- Team members will attend lab meetings.
- Team members will dedicate time outside of class towards the development of the project.
- A development server will be provided with the necessary technologies available.

We make the following constraints:

- The application must be designed to work fast and efficiently on mobile devices.
- Short time frame for development.
- Prior knowledge of development technologies.
- The ability to test on Android devices.

1.1.4 Project Deliverables

For this iteration the following will be delivered:

- 1) Documentation: SRS, SPMP, SQAP, Software Architecture, Detailed Design, Documented Source Code, and Maintenance Manual.
- 2) The CSUSB Library Study Space mobile application
 - a) Information from pages currently available on the CSUSB Library Website
 - b) Android capability
 - c) PDF map of library
 - d) Room reservation
 - e) Calendar view and date select

1.1.5 Schedule and Budget Summary

Prototype 1 will be delivered on February 27, 2015 and Prototype 2 will be delivered on March 25, 2015. No budget is given for the project, however the following resources will be made available for development:

- Computers suitable for development
- A server to keep a database and server-side code (if needed)

1.2 Evolution of the Plan

The project was started when the Client was interviewed for a mobile application idea. The Client was Samuel Sudhakar and Laurie Smith. After the interview, an SRS was written and presented to the Client and Dr. Concepcion for review and feedback. Afterwards, we started planning the project and managing the team.

The preliminary drafts of the SPMP will be submitted to Dr. Concepcion for approval and will be improved upon and modified depending on progress with development.

2 References

Software Project Management Plan IEEE 1058-1998, Student Advising Software Project, Management Plan CSE 455, Inc v1.0 (Winter 2014),
CSUSB Library Study Space SRS v1.1 (Winter 2015)

3 Definitions, Acronyms, and Abbreviations

API Application Programming Interface

This is a particular set of previously written rules and specifications that a software program can follow to access and make use of the services and resources provided by another software program that implements that API. It serves as an interface between different software programs and facilitates their interaction.

Client

CSUSB Library.

CSS Cascading Style Sheet

A language designed for creating the graphical style of a web page.

DB Database

Implies MySQL as the database engine and language.

HTML Hyper Text Markup Language

The dominant description language for the frontend display of web pages.

JavaScript

A programming language that allows execution of application logic by the web browser.

PHP PHP: Hypertext Preprocessor

A programming language purposed for developing application logic for websites.

QA Quality Assurance

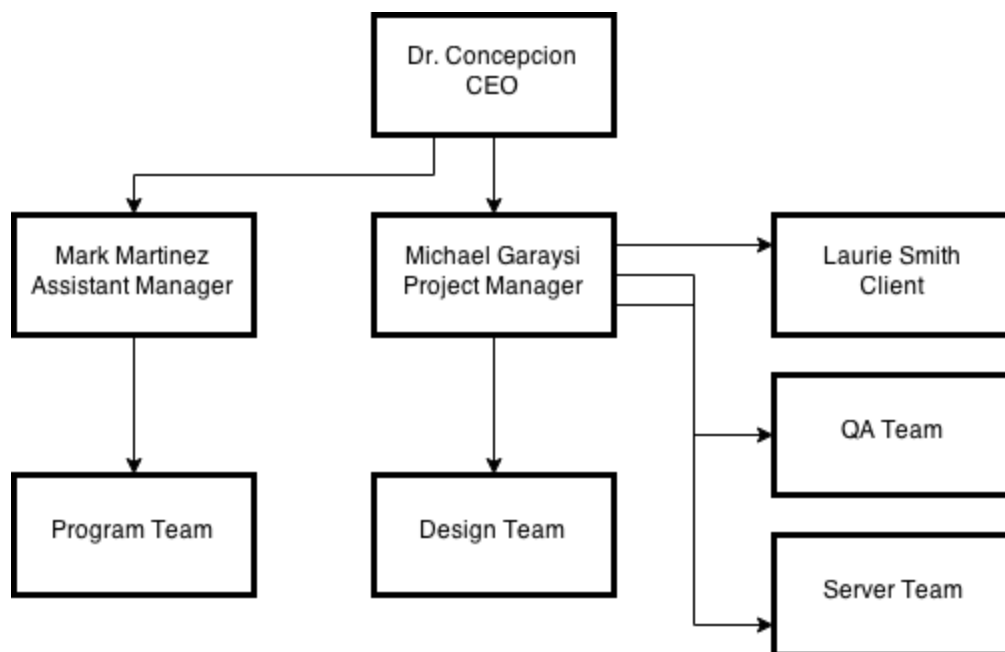
The team responsible for verifying that the application produced by the software team meets its requirements.

SDK Software Development Kit

An environment designed for the purpose of developing a specific type of application, containing tools and code libraries that facilitate development.

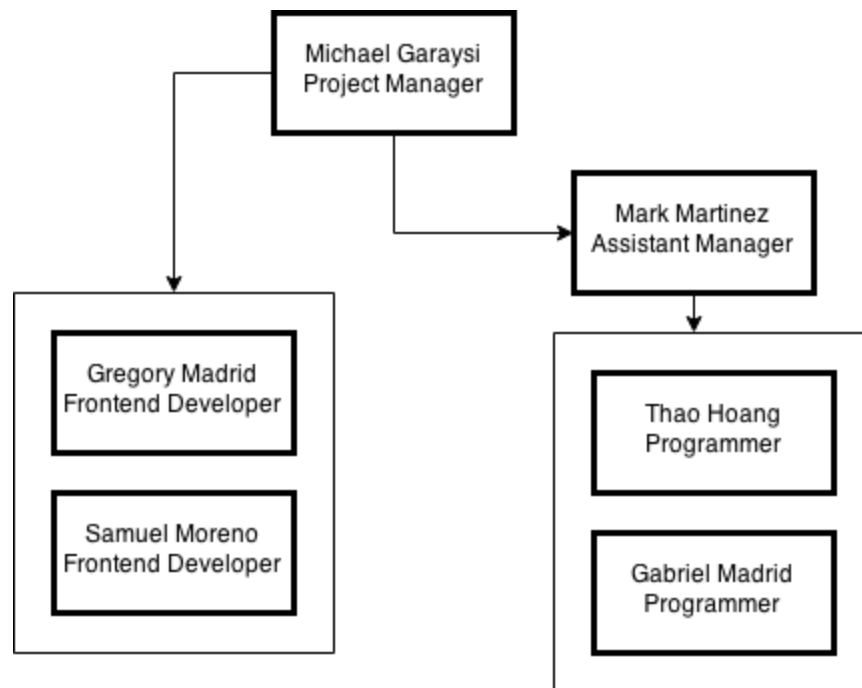
4 Project Organization

4.1 External Interfaces



Dr. Concepcion (CEO) will contact Michael Garaysi (Project Manager) and Mark Martinez (Assistant Project Manager) by email or during meetings for updates and any required documentation on the development of the mobile application. Mark Martinez will relay relevant information pertaining to the Program Team by email and during lab sessions. Michael Garaysi will relay relevant information pertaining to the Design Team by email and during lab sessions. Michael Garaysi will contact Laurie Smith (Client) for updates and feedback on the application and application deliverables by email or by phone. Michael Garaysi will contact the QA Team by email to arrange testing dates and get testing feedback. Michael Garaysi will contact the Server Team by email to arrange server-related deliveries and deployment.

4.2 Internal Interfaces



4.3 Roles and Responsibilities

Name	Role	Responsibility
Michael Garaysi	Project Manager	Conducts meetings Communicates with client Oversees design team Verifies application accessibility Reviews design and all other aspects of project
Mark Martinez	Assistant Project Manager	Maintains timeline Oversees program team Assists project manager Verifies program security Audits code
Thao Hoang Gabriel Madrid	Programmer	Develops in Java Implements features of the SRS Adheres to security standards
Gregory Madrid Samuel Moreno	Frontend Developer	Develops in XML Implements design elements of the application Adheres to accessibility standards
Deanna Sulli	UI Design	Creates user interface designs and layouts

5 Managerial Process Plans

5.1 Start-up Plan

Our start up plan will consist of using a multi-branch process, all of which will be carried out simultaneously.

- Client specification
- Technology research

- Environment set up
- Resource acquisition
- Design overview

5.1.1 Staffing Plan

The team was formed when a survey was given to the CSE 455 class to assess our individual skills. From the survey, our team was formed according to our complementary skillsets. The team was then further categorized into management and two main teams: the Program Team and the Design Team. Management was formed by voluntary means and willingness to take up the roles of managers. The Program and Design Teams were formed based on the remaining team members' individual skills and talents.

5.1.2 Resource Acquisition Plan

Resources will need to be obtained from an artist, Server Team, CSUSB Pfau Library, along with access to the CSUSB library reservation database. Resource requests will be written by Michael Garaysi, Mark Martinez, or Samuel Moreno. All requests will be sent out in a timely manner to assure quick turnaround. We as a team each have our own workstations/laptops and smartphones to develop and deploy to. A server will be needed, which will be acquired from the Server Team. Several mobile devices may be requested for testing purposes, which will be acquired from Dr. Concepcion.

5.1.3 Project Staff Training Plan

All staff are required and expected to learn the technologies independently. The staff is expected to program in Java and OkHttp at a sufficient level of competency such that they can contribute meaningfully to the development of the mobile application.

A workshop will be given on how to use OkHttp if it becomes clear that there is a lack of understanding the familiarity of this API. Training will also be given on a person-by-person basis if necessary.

A tutorial on OkHttp was given one week prior to development during a lab session, where we went over making a simple GET and POST requests. Future tutorials may be needed when we

begin developing the backend, during which case we will consult our intern and/or the Server Team for assistance.

5.2 Work Plan

5.2.1 Work Activities

UI Design: Layout, XML, and styles

Frontend Programming: Source code for offline features (methods and classes for proper display and interactivity on the client application)

Backend Programming: Source code for online features (fetching/retrieving data from the server)

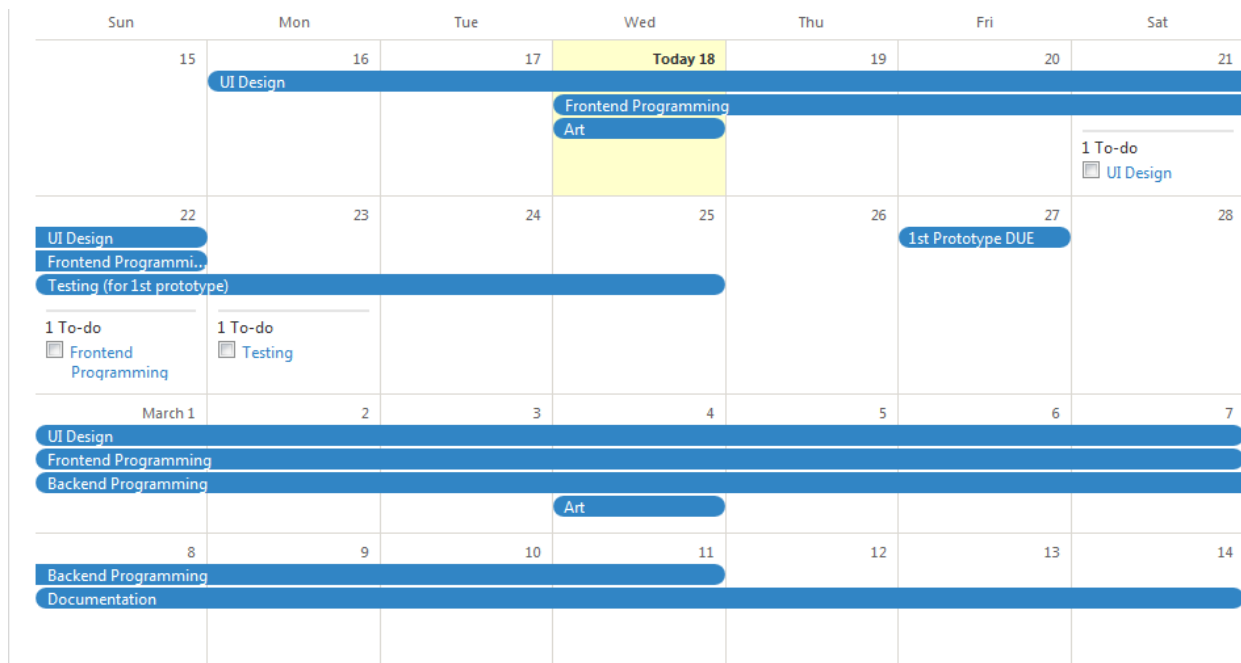
Art: Graphics for buttons, special screens, icons, and various items

Testing: Test for consistency on multiple devices, test for compatibility with the CSUSB Library Website, test for logic errors

Documentation: Document source code for future use and maintenance

5.2.2 Schedule Allocation

Development will launch on Monday, February 9th, 2015. The following is our Basecamp schedule:



5.3 Control Plan

5.3.1 Requirements

Meetings will be conducted with the development team during every lab of every week (Mondays and Wednesdays). Urgent meetings may be conducted depending on the stage of development. Team members will be responsible for receiving and giving input during said meetings.

The client will be notified about any significant updates as they occur.

Should any changes need to be made (a change of requirements), we will contact the team members via email and schedule an urgent meeting to discuss a plan of action. The Client and/or Dr. Concepcion will also be notified via email of any changes and may be asked to give input.

5.3.2 Schedule

Dr. Concepcion will conduct bi-weekly meetings with Michael Garaysi and Mark Martinez. Progress will be continuously evaluated.

In the event of a change of schedule where Dr. Concepcion and the project managers need to meet outside of the normal meetings, the project managers will contact Dr. Concepcion either during class lecture times, during lab meetings, during office hours, or by email.

5.3.3 Quality

Mark Martinez will continuously evaluate the quality of the codebase of the application, where quality is measured by the number of faults per 1,000 lines of code. Michael Garaysi will evaluate the quality of the graphical design elements of the application as well as other revisions made to the application. Major iterations will be reviewed by the client and Dr. Concepcion.

5.3.4 Reporting

Dr. Concepcion will hold bi-weekly meetings where the status of the project is reported in detail. Team members will contact management by Basecamp, email, or phone. Team members are expected to provide regular updates on the tasks they are assigned.

5.3.5 Metrics Collection

The following metrics have been collected:

- Number of lines of code per week: 200~
- Number of man-hours per week: 20
- Current progress percentage: 100%
- Lines of code per man-hour: 10

5.4 Risk Management Plan

Several procedures will be used to manage risks.

Human resource loss:

- Project management will pick up slack
- Members from other projects may be utilized/consulted

Equipment Loss

- Students are held individually liable for equipment loss, as per normal CSUSB policy.

5.5 Closeout Plan

1. Presentation of app to Client
2. Store all deliverables to repository
3. Submit maintenance manual

6 Technical Process Plans

6.1 Process Model

A hybrid of the general principles of the Agile and SCRUM software development models will be utilized for the development of this application. Development will take place in multiple weekly sprints throughout the duration of the quarter. Each sprint will be started with a planning meeting, during which a sprint backlog of tasks for the sprint are identified and an estimated commitment for the sprint goal is made. During each sprint, team members work on tasks that are assigned to their respective teams/roles. Each sprint is ended by a sprint review meeting, where the progress of development is reviewed, and a sprint retrospective meeting, where the team focuses on improving their individual and team processes. Once stability testing has passed, an iteration will be pushed to the main development branch in the repository. Only the semi-major iteration and final iteration will be released to Dr. Concepcion and the Client, during which time a demonstration will take place.

The Agile: Scrum Framework at a glance

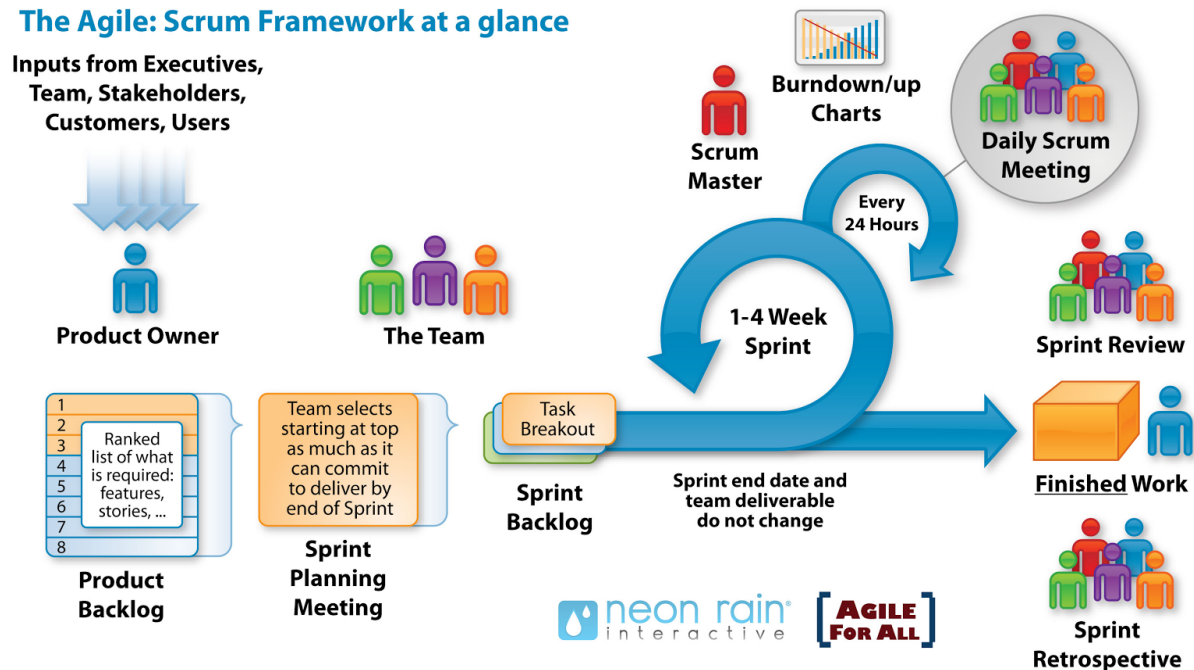


Figure 1: An overview of the SCRUM process

6.2 Methods, Tools, and Techniques

Methods:

- Agile Software Development
- SCRUM

Tools:

- Android SDK
- OkHttp
- Trello
- Dia
- Basecamp

Techniques:

- PSR-2 Coding standard for HTTP
- Black Box and White Box testing

6.3 Infrastructure Plan

Continued maintenance and development of the application will be carried out by the CSUSB Mobile student interns. Further development plans for the application will be assessed at the end of the source. Devices necessary for development will be provided by Dr. Concepcion.

The Server Team will support us by assisting us in setting up and maintaining a server and database for our application with any necessary technologies and features. The project managers will consult with the Server Team when information, services, or collaboration with them is required for the continued development and maintenance of the application. Server-side code will be designed and implemented with the collaboration of the Server Team so that the best practices for interacting with server-side technologies may be adhered to.

6.4 Product Acceptance Plan

Dr. Concepcion and the Client will test the final product for acceptance. The following major issues will be assessed:

- Security Vulnerabilities
- Compatibility with CSUSB Library Website/Database
- Memory Leaks
- Functionality Completeness
- Accessibility
- Response Time

7 Supporting Process Plans

7.1 Configuration Management

All of the project deliverables will be considered as configuration items. They will be named after the document (SRS, SPMP, SQAP) followed by a version number. Each code revision will be submitted to GitHub and then reviewed and tested by Michael Garaysi and Mark Martinez before being put into production.

The Server Team will be able to view the repository and suggest any changes regarding network features and server access code, during which case they will contact the project managers by email or during lab sessions. Because the project is on GitHub, the Server Team does not need to host the repository on an SSH server in the near future, although that possibility is open.

7.2 Documentation

The SRS was written in conjunction with the entire team, with approval by Michael Garaysi. It may be updated in the future, during which case management will update it.

The SPMP will be written by Michael Garaysi and Mark Martinez.

The SQAP will be written by the QA Team.

Software Architecture will be done by Mark Martinez.

Detailed Design will be done by Michael Garaysi.

The Maintenance Manual will be written by Michael Garaysi and Mark Martinez.

7.3 Quality Assurance

The team will continuously test their contributions to the project on emulators and actual devices, carefully documenting and fixing any bugs or errors. This will improve the quality of the code and reduce the number of faults in the final build of the application. Before submitting anything to the QA Team, the team will do a final check to catch any glaring errors or bugs.

The QA Team will do intensive testing and provide a thorough assessment of the application. The development team will fix any bugs the QA Team discovered and resubmit the application for evaluation as fixes are implemented.

7.4 Reviews and Audits

Mark Martinez will review and audit all code submitted to the repository before being put into production. In addition, Mark Martinez will also do design and code reviews.

7.5 Problem Resolution

Problems will be resolved within the development team. If a problem can not be resolved internally, Dr. Concepcion will be consulted.

7.6 Process Improvement

Documentation and coding standards, as well as performance metrics will be defined by the QA team. On each iteration the software team will attempt to meet such benchmarks.

Our SCRUM process will be improved weekly during our retrospective meetings. We will identify and fix any shortcomings in failing to adhere to the SCRUM process. Additionally, we will continuously read about the SCRUM process so that we may better understand and use it.