Life Cycle Plan (LCP)

GOTRLA

Team 15

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Version History

Date	Author	Version	Changes made	Rationale
09/25/14	PP	1.0	Original Template for use with LeanMBASE 1.0	This document is for submitting Valuation Commitment Package.
10/12/14	SV, NB	1.1	-Updated sections 1 and 2 -Updated section 3.2, the Roles and Responsibilities for Valuation Phase. -Updated section 2.2.2, deliverables for valuation phase. -Updated sections 4 and 5	This document is for draft Foundations Commitment Package.
10/19/14	SV, NB	2.0	-Updated section 5 -Added section 6.1	This document is for Foundation Commitment Package.
11/05/14	SV	2.1	-Updated section 2 and section	
11/26/14	SV	3.0	Added section 6.2 and completed the remaining section	Final Draft of the LCP to be included in the TRR Package
12/07/14	SV	3.1	Updated section 2.1	Final LCP to be included in the TRR Package

Table of Contents

Table of Tables

Table of Figures

1. Introduction

1.1 Purpose of the LCP

Life Cycle Planning is an important part of Project Development. It is used to plan the entire process of software development. Early planning calculates the availability of all the resources and fits them into a framework so as to optimize their usability. This helps to organize resources (human and non human) and manage them so that we can obtain benefits from them. Also, by establishing a timeline of the project, we can monitor the progress of the project from time to time and maintain a constant watch on the progress with respect to stakeholder objectives.

1.2 Status of the LCP

- This is version 3.0 of the Life Cycle Planning Documentation.
- Various skills of the team are updated according to their progress in the project.
- The Iteration section of the document is been added to provide a high-level overview of the content of the given iteration

1.3 Assumptions

- **Duration:** The duration of the project is 12 weeks for fall 2014 (Calculated from the day we had a first meeting with the client-August 26th to December 8th 2014)
- **Personnel Resources:** We are a team of 8 members including Project Manager, Feasibility Analyst, Operational Concept Engineer, Life cycle planner, Requirement Engineer, System/Software Architect and Prototyper. We assume that the members will be able to invest the time required to complete the project and no one will leave the project in between.

2. Milestones and Products

2.1 Overall Strategy

The GOTRLA (Girls on the run of LA County) project is an attendance monitoring system designed to improve the quality of service that GOTRLA provides. The ICSM process we are utilizing to develop this system is Architected Agile since we are going to develop the system from scratch.

Exploration phase

Duration: 09/12/14- 9/29/14

Concept: This phase involved identification of how the current system works and the various requirements and expectations of the client. This information was obtained through various meeting and win-win negotiations with the client. Also, the operational concept, system and software requirement, system and software architecture, and life-cycle plan was formulated. This phase helped in prioritizing the capabilities. We also recognized the various current and required skills of the team mates.

Deliverables: Valuation Commitment Package

Milestone: Valuation Commitment Review

Strategy: One Incremental Commitment Cycle

Valuation Phase

Duration: 9/30/14-10/20/14

Concept: The Valuation Phase dealt with analyzing alternative solutions and developing prototypes so as to ensure that at least one of the alternatives is feasible. Prototyping mockups helped to explore the functionality. We architected and designed the project, performed all UML diagramming. This was important to do before moving towards foundation phase.

Deliverables: Foundation Commitment Package

Milestone: Foundation Commitment Review

Strategy: One Incremental Commitment Cycle

Foundation Phase

Duration: 10/21/14-11/7/14

Concept: Continue risk assessment process, regular stakeholder meetings are to be taken every week, regular progress reports and effort reports to be submitted every Monday and every other Monday respectively, project plans are to be prepared and released on project web-page, risk resolution, assessing project status, sharing implementation jobs. Start work on linking tool and start making test plans and schedules.

Deliverables: Development Commitment Package, Initial Prototype, Project Reports and Plans, Weekly Effort Report

Milestone: Draft DCR

Strategy: Architecture Agile

Development Phase - Construction

Duration: 11/8/14-11/17/14

Concept: Work on synchronization of all documents. Prepare for the core capability drivethrough by starting work on all the modules required to deliver the core capabilities of the system. Continue risk assessment process; regular stakeholder meetings are to be taken every week, regular progress reports and effort reports to be submitted every Monday and every other Monday respectively; project plans are to be prepared and released on project web-page, risk resolution, assessing project status, sharing implementation jobs. Continue work on linking tool and start the testing process.
Deliverables: Enhanced Prototype of the system consisting of all core capabilities.
Milestone: Core Capability Drive through

Development Phase - Transition

Duration: 11/17/14-12/15/14
Concept: Finishing the proposed system is the main focus of this phase. Finishing work on the linking tool also takes top priority. Testing must be performed by the development team as soon as a capability is delivered. Preparing a transition plan and training the users of the system to use the interface is also done in this phase. Continue risk assessment process; regular stakeholder meetings are to be taken every week, regular progress reports and effort reports to be submitted every Monday and every other Monday respectively; project plans are to be prepared and released
Deliverables: Final Product, All planning, Testing, Quality and Transition Documents
Milestone: Transition Readiness Review

2.2 Project Deliverables

2.2.1 Exploration Phase

Table 1: Artifacts Deliverables in Exploration Phase

Artifact	Due date	Format	Medium
Client Interaction Report	09/19/2014	.doc, .pdf	Soft copy
Team Website	09/19/2014	Website	Webpage
Program Model & Business Process Model	09/21/2014	.doc	Soft Copy
Valuation Commitment Package • Operational Concept Description (OCD) Early Section • Life Cycle Plan (LCP) Early Section • Feasibility Evidence Description (FED) Early Section	09/29/2014	.doc, .pdf	Soft copy
Project Plan	Every alternate	.mpp, .pdf	Soft copy

	Wednesday		
Progress Report	Every alternate Wednesday	.xls	Soft copy
Bugzilla	Every Monday	Website	Bugzilla

2.2.2 Valuation Phase

Table 2: Artifact deliverable in Valuation Phase

Artifact	Due date	Format	Medium
Team Prototype Presentation	10/03/2014	.pptx	Team presentation and Soft copy
Project Plan Updated	10/01/2014	.mpp .pdf	Soft Copy
Progress Report Updated	10/01/2014	.xls	Soft Copy
Draft Foundation Commitment Package • Operational Concept Description: All sections of OCD completed • Feasibility Evidence Description: Sections 1 to 5 completed. • Life cycle Plan: Section 1 to 5 must be completed. • PRO: Screenshots of prototype and description. • SSAD: Section 1 and 2 completed	10/13/2014	.doc ,.pdf	Soft Copy
FCR ARB	10/14/14	.pptx	Team presentation, soft copy and hard copy

Foundation Commitment Package	10/20/14	.doc,.pdf	Soft copy
Project Plan	Every alternate Wednesday	.mpp, .pdf	Soft copy
Progress Report	Every alternate Wednesday	.xls	Soft copy
Bugzilla	Every Monday	Website	Bugzilla

2.2.3 Foundations Phase

Table 3: Artifact deliverable in Foundations Phase

Artifact	Due date	Format	Medium
Draft DC Package	12/01/14	.doc, .pdf	Soft Copy
Project Plan	Every alternate Wednesday	.mpp, .pdf	Soft copy
Progress Report	Every other Monday	.xls	Soft copy

2.2.4 Development Phase-Construction

Table 4: Artifact deliverable in Development Phase

Artifact	Due date	Format	Medium
Enhanced Prototype	11/20/14	.html	Soft Copy, Demo
Project Plan	Every alternate Wednesday	.mpp, .pdf	Soft copy
Progress Report	Every alternate Wednesday	.xls	Soft copy

2.2.5 Development Phase-Transition

Table 4: Artifact deliverable in Development Phase

Artifact	Due date	Format	Medium
Final Product	12/01/14	.html	Soft Copy, Demo
TRR Package: ● Operational Concept Description (OCD) ● Life Cycle Plan (LCP) ● Feasibility Evidence Description (FED) ● TCP and TC ● Support Plan ● Training Materials	12/01/13	.doc, .pdf	Soft copy
Bugzilla report	Every Monday	Text	Bugzilla Website
Project Plan	Every alternate Wednesday	.mpp	Soft copy
Progress Report	Every alternate Wednesday	.xls	Soft copy

3. Responsibilities

3.1 Project-specific stakeholder's responsibilities

The client of the project is Molly Snow, Executive director, GOTRLA (Girls on the run of Los Angeles County). The users of the system are program staff and volunteer coaches of GOTRLA. The developer of this project is Team 15 of course CS577a.

3.2 Responsibilities by Phase

Table 5: Stakeholder's Responsibilities in each phase

	Exploration	**Valuation**	**Foundations/ Development-** Construction Iteration	**Development-** Transition Iteration
Name: Molly Snow Client	**Primary Responsibility** -Analyze Current System and Workflow -Document current System	**Primary Responsibility** -Asses the prototypes and provide feedback for every iteration. -Start to develop the support plan.	**Primary Responsibility:** - Assist the developers with all the technical details and provide the Level of service for the system. - Provide feedback based on the current system. - Provide changed Requirements.	**Primary Responsibility:** Perform the core capability drive through and give feedback. -Transition planning.
Name: Deepak Earayil Project Manager, Prototyper & Tester	**Primary Responsibility** -Create Task Plan for the team -Manage the project activities and schedules	**Primary Responsibility** -Detail the project plan. -Record the bugs in Bugzilla. -Assess the progress of the project.	**Primary Responsibility:** - Assess risks - Distribute work, give specific task to each team member - Update bugzilla. - Interact with the Client	**Primary Responsibility** -Assess Metrics -Co-ordinate Meetings **Secondary Responsibility** Update Bugzilla
Name: Suhani Vyas Life Cycle Planner and Requirements	**Primary Responsibility** -Capture and define system/software	**Primary Responsibility** -Manage the activities on Winbook.	**Primary responsibility**: -Manage the quality of the project	**Primary Responsibility** Plan Test Cases Perform Testing **Secondary**

Engineer	requirements -Capture progress of win-win negotiations	-To reiterate through the requirements with the client and make updates/notify the team, if there is any change in the requirements.	- Develop templates for the remaining clients requirements.	**Responsibility** Manage Quality
Name: Presha Thakkar Prototyper ,Developer and Operational Concept Engineer	**Primary Responsibility** -Identify roles and responsibilities of the project team -Update the current life cycle status	**Primary Responsibility** -Assess the project plan and allocate tasks and resources. -Work on development of prototypes.	**Primary Responsibility** - Detail Project Plan - Record Project Progress -System Development	**Primary Responsibility** Develop Architecture **Secondary Responsibility** Develop User Manual
Name: Anushila Dey Developer and Software/System Architect	**Primary Responsibility** -Analyze Proposed system at technical level of detail	**Primary Responsibility** -Develop the business flow of proposed system. -UML Modeling is to be done. -Access system architecture.	**Primary responsibility:** - Develop the system architecture -Assess Project Status - System Development	**Primary Responsibility** Finalize the product Develop the linking tool **Secondary Responsibility** Interact with the client
Name: Ankith Nagarle Prototyper & Developer	**Primary Responsibility** -Analyze and prioritize capabilities to prototype -Identify objectives, constraints and risk critical items	**Primary Responsibility** -Develop prototypes for the high risk items. - Develop prototypes to depict the functionality and key features.	**Primary responsibility:** - Analyze and prioritize capabilities to prototype - Develop Prototype - Access prototype and components - System Development	**Primary Responsibility** Perform activities required for transition **Secondary Responsibility** Interact with the client
Name: Aayush Jain	**Primary Responsibility**	**Primary Responsibility**	**Primary Responsibility**	**Primary Responsibility**

Feasibility Analyst& Tester	-Assess Business case -Acquire the framework and technology to be used.	-Perform the feasibility analysis of the project. -Manage the project activities	- Verify and Validate Work Products Using Issue Tracking System - Explore Alternatives	Perform activities required for training **Secondary Responsibility** Update website
Name: Nidhi Baheti Operational Concept Engineer& Tester	**Primary Responsibility**: -Analyze Current System and Workflow -Access Operational Concept	**Primary Responsibility** -Develop the new Business workflow of the proposed system. -Develop the new operational concept of the proposed system and analyze it.	**Primary Responsibility** -Development Environment Construction -System development -Edit operational concept.	**Primary Responsibility** Perform activities required for transition **Secondary Responsibility** Interact with the Client
Name: Elaine Lo Quality Analyst , Shaper and Tester	**Primary Responsibility** -Assess Quality Management Strategy	**Primary Responsibility** -Develop the prototype. -Work on winbook. -Monitor the activities and prioritize the requirements.	**Primary Responsibility** -Identify Quality Management Strategy - Review the project artifacts	**Primary Responsibility** -Identify Quality Management Strategy - Review the project artifacts

3.3 Skills

Table 6: Team Member's Role and Skills

Team members	Role	Skills
Deepak Earayil	Project Manager, Prototyper & Tester	Current skills: Good communication skills ,interpersonal skills Required skills: Effective time management, organizational skills, Symfony, PhoneGap

Aayush Jain	Feasibility Analyst& Tester	Current skills :Good analytical skills, Java ,C++, SQL Required skills: PhoneGap, Web technologies
Ankith Nagarle	Prototyper & Developer	Current skills: Core Java, HTML, MySQL, Apache, Symfony, PHP,CSS Required skills:PhoneGap
Presha Thakkar	Prototyper , Developer and Operational Concept Engineer	Current skills: Java, PHP, Advanced JAVA,Symfony Required skills :PhoneGap, Life cycle planning skill
Suhani Vyas	Life Cycle Planner and Requirements Engineer	Current skills: C,C++, Python, MySQL, WinBook operation Required skills:, PhoneGap, PHP
Nidhi Baheti	Operational Concept Engineer& Tester	Current skills: C/C++,SQL, good analysis skills. Required skills: Web development, PhoneGap, Symfony
Anushila Dey	Developer and Software/System Architect	Current skills: C, C++, Microsoft Visio, PhoneGap Required skills: Analyse system, Symfony
Elaine Lo	Quality Analyst, shaper and Tester	Current skills: Java, SQL problem-solving, PhoneGap Required skills: HTML, quality management, communication

4. Approach

4.1 Monitoring and Control

We are currently updating our Project Plan and Progress Report bi-weekly to monitor and control the progress of our project.

4.1.1 Closed Loop Feedback Control

We have created Google group for our Team where after completing the documents and other deliverables, we update them on the group to get feedback from other team members.

While preparing the deliverables, documents and carrying out the developmental activities, we refer to the Win Book to get the summary of our win-win session.

4.1.2 Reviews

We are using the Progress Reports and the documentations to review our project. We update the documents according to the deadlines scheduled for CS577a projects and use the various commitment packages as important deliverables to recognize risks and accordingly design the risk mitigation plans.
Our team uses Google Doc and Google group to share all the documents completed by different team members. The other team members review those documents and share their point of view by highlighting specific section of the documents. This way we come with better documents and are able to share our views.

4.2 Methods, Tools and Facilities

Tools	Usage	Provider
Balsamiq	It was used to develop application and web-interface prototypes.	Balsamiq Studios, LLC
Project 2013	I was used to design the project plan.	Microsoft
Microsoft Excel	It is being used to record the progress of the Project	Microsoft
WinBook	It is being used to record the win-win sessions with the client.	USC License

Bugzilla	Assigning tasks and activities to the team members	USC License

5. Resources

Table 2: COCOMOII Scale Driver for the project

Scale Driver	Value	Rationale
PREC	NOM	The project is largely unprecedented as none of the team members have experience in developing similar kind of software.
FLEX	NOM	The flexibility is nominal because being a one semester project we have a time constraint and we have constraints such as easily maintainable and easy to use application.
RESL	NOM	The risk resolution doesn't completely identify the risk critical items. Many items are identified but not all. Also, when we calculated the amount of time in developing the architecture, it turned out to be about 17 percent.
TEAM	HIGH	The team cohesion is low as none of us have the experience in working together as a team and we have different schedule of classes so it is a bit difficult to coordinate with everyone.
PMAT	NOM	We are following the ICSM EPG guidelines and according to it, our PMAT is in level 2.

Table 3: COCOMOII Cost Driver Class Module-Class Management

Cost Driver	Value	Rationale
RELY	NOM	The losses are not life threatening, but can't be completely ignored. If the system is down for more than 5 hours per month and during the program timings, it will cause inconvenience to the client's organization
DATA	LO	The test database is low as compared to the amount of lines of code being written.
CPLX	NOM	Simple functions and calculations are used. No complex numerical analysis is needed.
RUSE	LOW	The reuse is low as it will not be reused in any other module across the project.
DOCU	NOM	Documentation is significantly sufficient as we are following the ICSM EPG
TIME	NOM	The time devoted to perform the functions specific to this module is nominal

STOR	HIGH	Not much storage is required for this module.
PVOL	LOW	As the system we are developing includes a website and a hybrid mobile application, platform volatility is expected to be low.
ACAP	NOM	By far, the analysis team is doing good work. There is not much of a communication problem as people have made groups and are working in pairs to do analysis.
PCAP	NOM	Out of 8, about 3 to 4 team members are engaged in programming and they are doing a good job.
PCON	VLO	Since none of the team members plan to takes csci577b PCON is very low.
APEX	NOM	One person in the team has application experience of 2 years. Almost all the others have application experience of 2 to 6 months. So when the average is taken, it comes out to be nominal.
LTEX	NOM	Team has good knowledge of language and tools and everybody has worked with different types of software tools thereby creating diversity. But LTEX has been rated NOM because not everybody is proficient in web development and the frameworks which we are using are new to everyone.
PLEX	NOM	Team has a equal mix of people who have 1-2 years of experience and 6 months of experience.
TOOL	NOM	We are using the tools specified by the ICSM EPG for carrying out the life cycle activities. These are the basic life cycle tools such as project planning and cost estimation.
SITE	VHI	7 out of 8 team members are at the same place. One of them is a remote student.
SCED	NOM	The shrinking of sced might lead to increased effort by huge factor and the team is already having problem to collaborate and work together due to different schedules of classes

Table 9: COCOMOII Cost Driver Class Module-Girls Management

Cost Driver	Value	Rationale
RELY	NOM	The losses are not life threatening, but can't be completely ignored. If the system is down for more than 5 hours per month and during the program timings, it will cause inconvenience to the client's organization
DATA	LO	The test database is low as compared to the amount of lines of code being written.
CPLX	NOM	Simple functions and calculations are used. No complex numerical analysis is needed.

RUSE	LOW	The reuse is low as it will not be reused in any other module across the project.
DOCU	NOM	Documentation is significantly sufficient as we are following the ICSM EPG
TIME	NOM	The time devoted to perform the functions specific to this module is nominal
STOR	HIGH	The number of girls will be large so more space required.
PVOL	LO	As the system we are developing includes a website and a hybrid mobile application, platform volatility is expected to be low.
ACAP	NOM	By far, the analysis team is doing good work. There is not much of a communication problem as people have made groups and are working in pairs to do analysis.
PCAP	NOM	Out of 8, about 3 to 4 team members are engaged in programming and they are doing a good job.
PCON	VLO	Since none of the team members plan to takes csci577b PCON is very low.
APEX	NOM	One person in the team has application experience of 2 years. Almost all the others have application experience of 2 to 6 months. So when the average is taken, it comes out to be nominal.
LTEX	NOM	Team has good knowledge of language and tools and everybody has worked with different types of software tools thereby creating diversity. But LTEX has been rated NOM because not everybody is proficient in web development and the frameworks which we are using are new to everyone.
PLEX	NOM	Team has a equal mix of people who have 1-2 years of experience and 6 months of experience.
TOOL	NOM	We are using the tools specified by the ICSM EPG for carrying out the life cycle activities. These are the basic life cycle tools such as project planning and cost estimation.
SITE	VHI	7 out of 8 team members are at the same place. One of them is a remote student.
SCED	NOM	The shrinking of SCED might lead to increased effort by huge factor and the team is already having problem to collaborate and work together due to different schedules of classes

Table 10: COCOMOII Cost Driver Attendance Module-Girls attendance Management

Cost Driver	Value	Rationale

RELY	NOM	The losses are not life threatening, but can't be completely ignored. If the system is down for more than 5 hours per month and during the program timings, it will cause inconvenience to the client's organization
DATA	LO	The test database is low as compared to the amount of lines of code being written.
CPLX	NOM	Simple functions and calculations are used. No complex numerical analysis is needed.
RUSE	LOW	The reuse is low as it will not be reused in any other module across the project.
DOCU	NOM	Documentation is significantly sufficient as we are following the ICSM EPG
TIME	NOM	The time devoted to perform the functions specific to this module is nominal
STOR	HIGH	Requires storage space for storing attendance data of girls.
PVOL	LO	As the system we are developing includes a website and a hybrid mobile application, platform volatility is expected to be low.
ACAP	NOM	By far, the analysis team is doing good work. There is not much of a communication problem as people have made groups and are working in pairs to do analysis.
PCAP	NOM	Out of 8, about 3 to 4 team members are engaged in programming and they are doing a good job.
PCON	VLO	Since none of the team members plan to takes csci577b PCON is very low.
APEX	NOM	One person in the team has application experience of 2 years. Almost all the others have application experience of 2 to 6 months. So when the average is taken, it comes out to be nominal.
LTEX	NOM	Team has good knowledge of language and tools and everybody has worked with different types of software tools thereby creating diversity. But LTEX has been rated NOM because not everybody is proficient in web development and the frameworks which we are using are new to everyone.
PLEX	NOM	Team has a equal mix of people who have 1-2 years of experience and 6 months of experience.
TOOL	NOM	We are using the tools specified by the ICSM EPG for carrying out the life cycle activities. These are the basic life cycle tools such as project planning and cost estimation.
SITE	VHI	7 out of 8 team members are at the same place. One of them is a remote student.
SCED	NOM	The shrinking of SCED might lead to increased effort by huge factor and the team is already having problem to

		collaborate and work together due to different schedules of classes

Table 11: COCOMOII Cost Driver Attendance Module-Volunteer attendance Management

Cost Driver	Value	Rationale
RELY	NOM	The losses are not life threatening, but can't be completely ignored. If the system is down for more than 5 hours per month and during the program timings, it will cause inconvenience to the client's organization
DATA	LO	The test database is low as compared to the amount of lines of code being written.
CPLX	NOM	Simple functions and calculations are used. No complex numerical analysis is needed.
RUSE	LOW	The reuse is low as it will not be reused in any other module across the project.
DOCU	NOM	Documentation is significantly sufficient as we are following the ICSM EPG
TIME	NOM	The time devoted to perform the functions specific to this module is nominal
STOR	HIGH	Attendance storage of volunteers. More storage is required.
PVOL	LO	As the system we are developing includes a website and a hybrid mobile application, platform volatility is expected to be low.
ACAP	NOM	By far, the analysis team is doing good work. There is not much of a communication problem as people have made groups and are working in pairs to do analysis.
PCAP	NOM	Out of 8, about 3 to 4 team members are engaged in programming and they are doing a good job.
PCON	VLO	Since none of the team members plan to takes csci577b PCON is very low.
APEX	NOM	One person in the team has application experience of 2 years. Almost all the others have application experience of 2 to 6 months. So when the average is taken, it comes out to be nominal.
LTEX	NOM	Team has good knowledge of language and tools and everybody has worked with different types of software tools thereby creating diversity. But LTEX has been rated NOM because not everybody is proficient in web development and the frameworks which we are using are new to everyone.
PLEX	NOM	Team has a equal mix of people who have 1-2 years of experience and 6 months of experience.

TOOL	NOM	We are using the tools specified by the ICSM EPG for carrying out the life cycle activities. These are the basic life cycle tools such as project planning and cost estimation.
SITE	VHI	7 out of 8 team members are at the same place. One of them is a remote student.
SCED	NOM	The shrinking of SCED might lead to increased effort by huge factor and the team is already having problem to collaborate and work together due to different schedules of classes

Table 12: COCOMOII Cost Driver Volunteer Module-Volunteer Management

Cost Driver	Value	Rationale
RELY	NOM	The losses are not life threatening, but can't be completely ignored. If the system is down for more than 5 hours per month and during the program timings, it will cause inconvenience to the client's organization
DATA	LO	The test database is low as compared to the amount of lines of code being written.
CPLX	NOM	Simple functions and calculations are used. No complex numerical analysis is needed.
RUSE	LO	The reuse is low as it will not be reused in any other module across the project.
DOCU	NOM	Documentation is significantly sufficient as we are following the ICSM EPG
TIME	NOM	The time devoted to perform the functions specific to this module is nominal
STOR	NOM	Not much storage is required for this module.
PVOL	LO	As the system we are developing includes a website and a hybrid mobile application, platform volatility is expected to be low.
ACAP	NOM	By far, the analysis team is doing good work. There is not much of a communication problem as people have made groups and are working in pairs to do analysis.
PCAP	NOM	Out of 8, about 3 to 4 team members are engaged in programming and they are doing a good job.
PCON	VLO	Since none of the team members plan to takes csci577b PCON is very low.
APEX	NOM	One person in the team has application experience of 2 years. Almost all the others have application experience of 2 to 6 months. So when the average is taken, it comes out to be nominal.
LTEX	NOM	Team has good knowledge of language and tools and everybody has worked with different types of software tools thereby creating diversity. But LTEX has been

		rated NOM because not everybody is proficient in web development and the frameworks which we are using are new to everyone.
PLEX	NOM	Team has a equal mix of people who have 1-2 years of experience and 6 months of experience.
TOOL	NOM	We are using the tools specified by the ICSM EPG for carrying out the life cycle activities. These are the basic life cycle tools such as project planning and cost estimation.
SITE	VHI	7 out of 8 team members are at the same place. One of them is a remote student.
SCED	NOM	The shrinking of SCED might lead to increased effort by huge factor and the team is already having problem to collaborate and work together due to different schedules of classes

Table 13: COCOMOII Cost Driver User Module-Change Password

Cost Driver	Value	Rationale
RELY	NOM	The losses are not life threatening, but can't be completely ignored. If the system is down for more than 5 hours per month and during the program timings, it will cause inconvenience to the client's organization
DATA	LO	The test database is low as compared to the amount of lines of code being written.
CPLX	HIGH	This module implements the function of authentication and role authorization which requires the use of complex analysis.
RUSE	LOW	The reuse is low as it will not be reused in any other module across the project.
DOCU	NOM	Documentation is significantly sufficient as we are following the ICSM EPG
TIME	NOM	The time devoted to perform the functions specific to this module is nominal
STOR	NOM	Not much storage is required for this module.
PVOL	LO	As the system we are developing includes a website and a hybrid mobile application, platform volatility is expected to be low.
ACAP	NOM	By far, the analysis team is doing good work. There is not much of a communication problem as people have made groups and are working in pairs to do analysis.
PCAP	NOM	Out of 8, about 3 to 4 team members are engaged in programming and they are doing a good job.
PCON	VLO	Since none of the team members plan to takes csci577b PCON is very low.
APEX	NOM	One person in the team has application experience of 2

		years. Almost all the others have application experience of 2 to 6 months. So when the average is taken, it comes out to be nominal.
LTEX	NOM	Team has good knowledge of language and tools and everybody has worked with different types of software tools thereby creating diversity. But LTEX has been rated NOM because not everybody is proficient in web development and the frameworks which we are using are new to everyone.
PLEX	NOM	Team has a equal mix of people who have 1-2 years of experience and 6 months of experience.
TOOL	NOM	We are using the tools specified by the ICSM EPG for carrying out the life cycle activities. These are the basic life cycle tools such as project planning and cost estimation.
SITE	VHI	7 out of 8 team members are at the same place. One of them is a remote student.
SCED	NOM	The shrinking of SCED might lead to increased effort by huge factor and the team is already having problem to collaborate and work together due to different schedules of classes

Table 14: COCOMOII Cost Driver User Module-User Management

Cost Driver	Value	Rationale
RELY	NOM	The losses are not life threatening, but can't be completely ignored. If the system is down for more than 5 hours per month and during the program timings, it will cause inconvenience to the client's organization
DATA	LO	The test database is low as compared to the amount of lines of code being written.
CPLX	NOM	Simple functions and calculations are used. No complex numerical analysis is needed.
RUSE	LOW	The reuse is low as it will not be reused in any other module across the project.
DOCU	NOM	Documentation is significantly sufficient as we are following the ICSM EPG
TIME	NOM	The time devoted to perform the functions specific to this module is nominal
STOR	NOM	Not much storage is required for this module.
PVOL	LO	As the system we are developing includes a website and a hybrid mobile application, platform volatility is expected to be low.
ACAP	NOM	By far, the analysis team is doing good work. There is not much of a communication problem as people have

		made groups and are working in pairs to do analysis.
PCAP	NOM	Out of 8, about 3 to 4 team members are engaged in programming and they are doing a good job.
PCON	VLO	Since none of the team members plan to takes csci577b PCON is very low.
APEX	NOM	One person in the team has application experience of 2 years. Almost all the others have application experience of 2 to 6 months. So when the average is taken, it comes out to be nominal.
LTEX	NOM	Team has good knowledge of language and tools and everybody has worked with different types of software tools thereby creating diversity. But LTEX has been rated NOM because not everybody is proficient in web development and the frameworks which we are using are new to everyone.
PLEX	NOM	Team has a equal mix of people who have 1-2 years of experience and 6 months of experience.
TOOL	NOM	We are using the tools specified by the ICSM EPG for carrying out the life cycle activities. These are the basic life cycle tools such as project planning and cost estimation.
SITE	VHI	7 out of 8 team members are at the same place. One of them is a remote student.
SCED	NOM	The shrinking of SCED might lead to increased effort by huge factor and the team is already having problem to collaborate and work together due to different schedules of classes

Table 15: COCOMOII Cost Driver Mobile Module Attendance Check-in

Cost Driver	Value	Rationale
RELY	NOM	The losses are not life threatening, but can't be completely ignored. If the system is down for more than 5 hours per month and during the program timings, it will cause inconvenience to the client's organization
DATA	LO	The test database is low as compared to the amount of lines of code being written.
CPLX	NOM	Simple functions and calculations are used. No complex numerical analysis is needed.
RUSE	LOW	The reuse is low as it will not be reused in any other module across the project.
DOCU	NOM	Documentation is significantly sufficient as we are following the ICSM EPG
TIME	NOM	The time devoted to perform the functions specific to this module is nominal
STOR	NOM	Not much storage is required for this module.

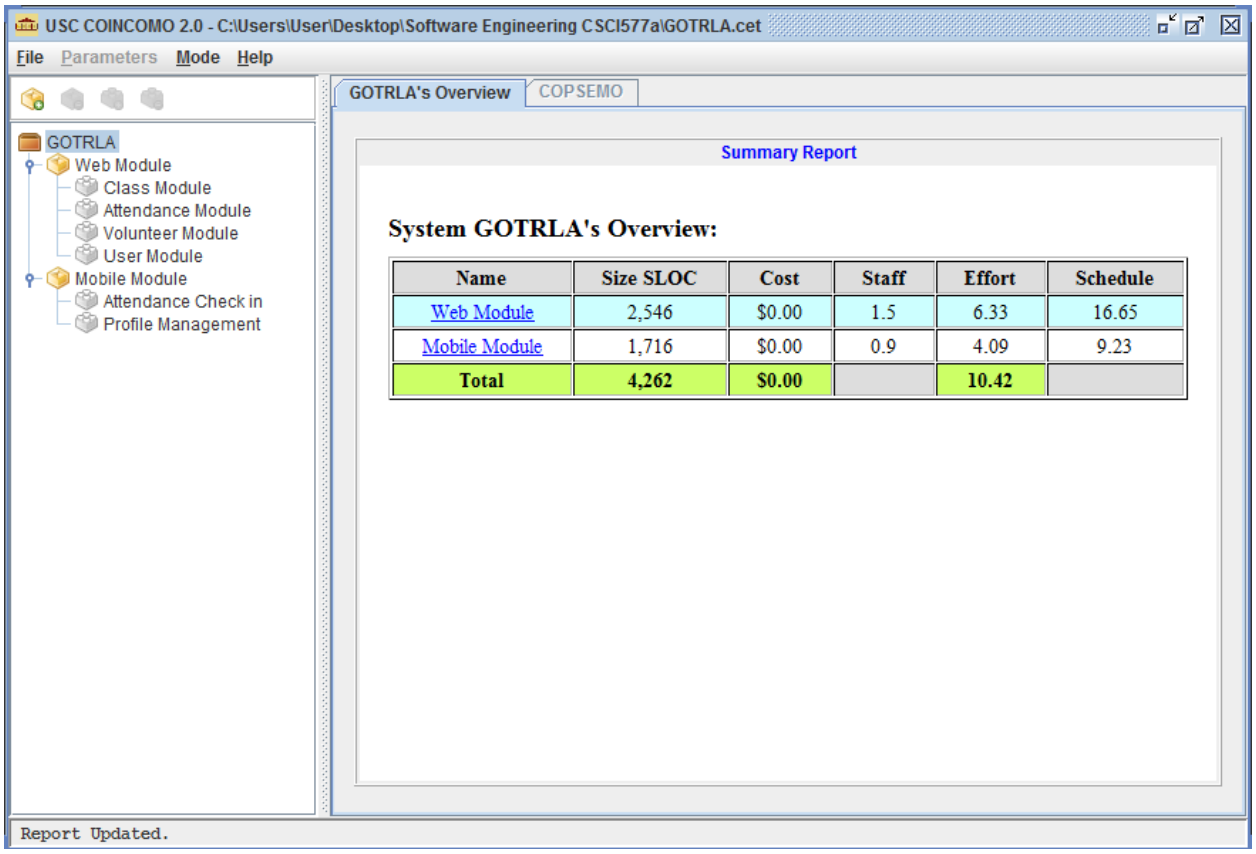
PVOL	LO	As the system we are developing includes a website and a hybrid mobile application, platform volatility is expected to be low.
ACAP	NOM	By far, the analysis team is doing good work. There is not much of a communication problem as people have made groups and are working in pairs to do analysis.
PCAP	NOM	Out of 8, about 3 to 4 team members are engaged in programming and they are doing a good job.
PCON	VLO	Since none of the team members plan to takes csci577b PCON is very low.
APEX	NOM	One person in the team has application experience of 2 years. Almost all the others have application experience of 2 to 6 months. So when the average is taken, it comes out to be nominal.
LTEX	NOM	Team has good knowledge of language and tools and everybody has worked with different types of software tools thereby creating diversity. But LTEX has been rated NOM because not everybody is proficient in web development and the frameworks which we are using are new to everyone.
PLEX	NOM	Team has a equal mix of people who have 1-2 years of experience and 6 months of experience.
TOOL	NOM	We are using the tools specified by the ICSM EPG for carrying out the life cycle activities. These are the basic life cycle tools such as project planning and cost estimation.
SITE	VHI	7 out of 8 team members are at the same place. One of them is a remote student.
SCED	NOM	The shrinking of SCED might lead to increased effort by huge factor and the team is already having problem to collaborate and work together due to different schedules of classes

Table 16: COCOMOII Cost Driver Mobile Module -Profile Management

Cost Driver	Value	Rationale
RELY	NOM	The losses are not life threatening, but can't be completely ignored. If the system is down for more than 5 hours per month and during the program timings, it will cause inconvenience to the client's organization
DATA	LO	The test database is low as compared to the amount of lines of code being written.
CPLX	NOM	Simple functions and calculations are used. No complex numerical analysis is needed.
RUSE	LOW	The reuse is low as it will not be reused in any other module across the project.

DOCU	NOM	Documentation is significantly sufficient as we are following the ICSM EPG
TIME	NOM	The time devoted to perform the functions specific to this module is nominal
STOR	NOM	Not much storage is required for this module.
PVOL	LO	As the system we are developing includes a website and a hybrid mobile application, platform volatility is expected to be low.
ACAP	NOM	By far, the analysis team is doing good work. There is not much of a communication problem as people have made groups and are working in pairs to do analysis.
PCAP	NOM	Out of 8, about 3 to 4 team members are engaged in programming and they are doing a good job.
PCON	VLO	Since none of the team members plan to takes csci577b PCON is very low.
APEX	NOM	One person in the team has application experience of 2 years. Almost all the others have application experience of 2 to 6 months. So when the average is taken, it comes out to be nominal.
LTEX	NOM	Team has good knowledge of language and tools and everybody has worked with different types of software tools thereby creating diversity. But LTEX has been rated NOM because not everybody is proficient in web development and the frameworks which we are using are new to everyone.
PLEX	NOM	Team has a equal mix of people who have 1-2 years of experience and 6 months of experience.
TOOL	NOM	We are using the tools specified by the ICSM EPG for carrying out the life cycle activities. These are the basic life cycle tools such as project planning and cost estimation.
SITE	VHI	7 out of 8 team members are at the same place. One of them is a remote student.
SCED	NOM	The shrinking of sced might lead to increased effort by huge factor and the team is already having problem to collaborate and work together due to different schedules of classes

Figure 1: COCOMOII Final Estimation



ANALYSIS OF COCOMO RESULTS

Assuming that every person in the 8 member team can work for 17 hour per week, the project is scheduled to be completed in one semester hence we have 12 weeks time frame.
Total time spent by one person would be 12×17=204 work hours
Total person month effort calculated from COCOMOII is 10.42.
Therefore according to COCOMOII, the project will be completed in 152 hrs/person month ×10.42 person months = 1583.84 hours.

When we divide the total time that the project will take to finish by the time which one person can work, which is, 1583.84/204 =7.76 persons

Therefore, with a team of 8 members and taking the most likely estimates, we will be able to complete the project on time.

6. Iteration Plan

6.1 Plan

During the development phase, the development team started off with the website development and relatively started off with the mobile application development.
The website included functionality modules like User module, Girls Module, Attendance Module, Login Module, Class Module and Volunteer Module. All these modules relatively included all high priority features like data monitoring, Add-Edit-Delete of class, girl, volunteers and user data, access control for various users.
The developers took up the work in the order of the priority mentioned by the client. The web server was developed using Symfony framework. The role authorizations and authentications being critical to the system were done first. We also used doctrine framework, which is a part of symphony to make connections to the database.

At the same time, various forms for mobile application were be built using PhoneGap tool and connected to the database. The features like logging in and checking in the girls attendance were added to the mobile application.
We simultaneously tested the features as they were developed. The various test cases were according to the TPC document.

6.1.1 Capabilities to be implemented

Table 17: Construction iteration capabilities to be implemented

ID	Capability	Description	Priority	Iteration
OC 1	Modifying girl's data	Add/edit and delete girl's data from the database	Must Have	1
OC-2	Modifying volunteer coach's data	Add/edit and delete data of volunteer coaches from the database	Must Have	1
OC-3	Modifying Program staff's data	Add/edit and delete program staff data from the database.	Must Have	1
OC-4	Class Management	Add/Edit and Delete classes from the database.	Must Have	1
OC-5	Attendance Tracking	Check-in the girls and store the attendance data.	Must Have	2

6.1.2 Capabilities to be tested

Table 18: Construction iteration capabilities to be tested

ID	Capability	Description	Priority	Iteration

OC 1	Modifying girl's data	Add/edit and delete girl's data from the database	Must Have	1
OC-2	Modifying volunteer coach's data	Add/edit and delete data of volunteer coaches from the database	Must Have	1
OC-3	Modifying Program staff's data	Add/edit and delete program staff data from the database.	Must Have	1
OC-4	Class Management	Add/Edit and Delete classes from the database.	Must Have	1
OC-5	Attendance Tracking	Check-in the girls and store the attendance data.	Must Have	2

6.1.3 CCD Preparation Plans

For the Core Capability Drive-through, the following stakeholders will be involved:

- Client: Molly Snow
- Development Team Members (Team 15)

CCD Preparation Plan:

- The client will be informed of the latest features added to the system and why they were added in the order they were. This will establish the focus on the most important aspects of the system.
- The client would have to try to use the system developed till now. She will try using the Web site created for the project. She would test the features like login/password, adding /deleting/updating girls data, Volunteer data, adding /deleting the users of the system.
- The testing team will have test cases ready for the client to run and will carefully document the results of each case.
- The client will be asked to run each test case and provide feedback on the usability and user interface.
- The client will be asked his opinion on changes to be made to the system and the development team will negotiate on these changes and identify feasibility during the session itself.
- The risks and test cases will be revised by the development team after revising the client feedback.

6.2 Iteration Assessment

6.2.1 Capabilities Implemented, Tested, and Results

Table 19: Capabilities implemented, tested, and results

ID	Capability	Test Case	Test Results	If fail, why?
OC 1	Modifying girl's data	Add/edit and delete girl's data from the database	Pass	
OC-2	Modifying volunteer coach's data	Add/edit and delete data of volunteer coaches from the database	Pass	1
OC-3	Modifying Program staff's data	Add/edit and delete program staff data from the database.	Pass	1
OC-4	Class Management	Add/Edit and Delete classes from the database.	Pass	1
OC-5	Attendance Tracking	Check-in the girls and store the attendance data.	Fail	The mobile application was not developed completely.
OC-6	Export Attendance data	Export the attendance data	Pass	2

6.2.2 Core Capabilities Drive-Through Results

Improvements needed in Web Site:

- Need of a pop up window to show which girls are present in which team.
- Export data feature needed (in CSV format).
- Check on what needs to be imported to the database (girls data and volunteer data).
- On attendance page, 'Get attendance' need to show no. of absent girls plus no. of present girls on the page.

- ‘Select Volunteer’ has a bug
- Program staff should get a different view of the web site than what Admin sees.

Improvements Needed in Mobile Application:

- Mobile application needs to communicate with the web app
- ‘Save’ button needed in the mobile application to save the attendance.
- ‘Submit’ button needed in the mobile application.
- Time stamp feature needs to be implemented in while submitting the attendance in case of multiple over write of the attendance data.
- ‘Reset Password’ functionality for both web site and the mobile application needed.
- A feature to know that the volunteer has already marked attendance so that he doesn’t mark attendance again by mistake

6.3 Adherence to Plan

The iterations are going according to plan.

- The capabilities with the highest magnitude and probabilities of risk were implemented in the Prototype Review and CCD but some unexpected bugs appeared during the CCD.
- The bugs gave us an opportunity to improve the existing features. Also the client gave the feedback about the features we need to improve on.
- All the team members are performing their duties efficiently without delay.
- The client and the development team are working together to get the linking done before the system has to be delivered.
- The test cases for all capabilities are documented and run as soon as a new capability is delivered.