Life Cycle Plan (LCP)

ThrdPlace Social Networking

Team #7

Team members	Role
Gaurav Doon	Project Manager
Yixiang Liu	Developer
Tu Duong	IV&V
Ronghui Zhang	Tester
Kan Qi	Developer

04/28/2014

Version History

Date	Author	Version	Changes made	Rationale
09/25/13	Kan Qi	1.0	Original for CSCI577a; Tailored from ICSM OCD Template	To fit CSSI577a course content
09/26/13	Kan Qi	1.1	Add section 3.3	To identify team members' skills and specify their role in this project
10/10/13	Kan Qi	2.0	Update section 3.3, and add section 1,2,3.1	To make an introduction to life cycle planning, define the milestones and products deliverable in the whole project, specify team members ' responsibilities by phase, as well as correct some errors in section 3.3
10/12/13	Kan Qi	3.0	Update section 1,2,3, and add section 4,5	To specify the approach this project would be implemented with and its required resources
10/16/13	Kan Qi	3.1	Make some adjustment of the document format and some content modification	To correct some errors in milestones and projects section
10/17/13	Kan Qi	3.2	Correct some errors	To correct some errors found out in peer reviews
10/21/13	Kan Qi	3.3	Make some modifications according to the changed requirements.	Adjust some parts of this document to keep consistency with other documentations
11/29/13	Kan Qi	4.0	Add section 6.1	To make CCD preparation plans and iteration assessment.
02/08/14	Kan Qi	5.0	Make some modifications According to the changed personnel and status of the project	To make this document consistent with real situations.
02/17/14	Kan Qi	5.1	To improve consistency with other documents	To make this package more consistent

Date	Author	Version	Changes made	Rationale
03/30/14	Kan Qi	5.2	Add section 6.2	To record the results of CCD into this documents, as well as some comments
04/04/14	Kan Qi	5.3	Add section 6.3	To record adherence between practice and plan. Close out the report.
04/28/14	Kan Qi	5.4	To improve consistency with other documents	To make sure the consistency between documents in Asbuilt Package

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1. Introduction

1.1 Purpose of the LCP

This Life Cycle Plan aims to describing the overall strategies under which this project will be implemented, artifacts and milestones it will yield during the process and the responsibilities for each stakeholder at different stages. This document also gives an initial estimation of the effort and schedule that will be put on this project to help all the stakeholders understand the project scale.

1.2 Status of the LCP

The current version of LCP is 4.0. Capabilities implemented, tested, and not tested will be determined in this version. Besides iteration assessment will also be planned in terms of showing the results of capability testing and drive-through. Further, an assessment of adherence to plan will also be implemented in Chapter 6.3. This document will be a part of Development Commitment Package.

1.3 Assumptions

(1) The duration of the project is 24 weeks from Fall 2013 to Spring 2014.

(2) Our team has 7 on-campus students working on the project in this semester.

(3) All the project stakeholders fully understand their responsibilities and will be committed to fulfilling their duties until the end of this project.

(4) Development team members and clients are able to recognize win-win conditions and thus have a shared vision of the final product and work concordantly to achieve the goals.

(5) Every team member and the client will have a regular meeting once a week to share their weekly progress, issues, and concerns.

(6) Thrdplace Social Networking would provide the development team with an access to its database and detailed documentation of it.

(7) Thrdplace Social Networking would pay for the costs of some COTS/NDI/NCS which might be needed in the project.

2. Milestones and Products

2.1 Overall Strategy

Figure1: Architected Agile Process Pattern

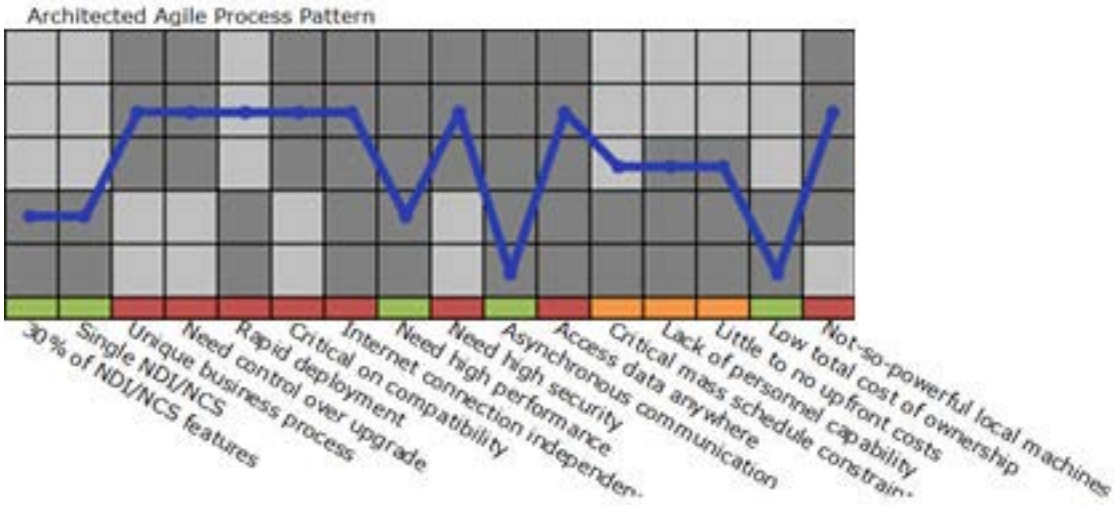


Figure 2: Use Single NDI Process Pattern

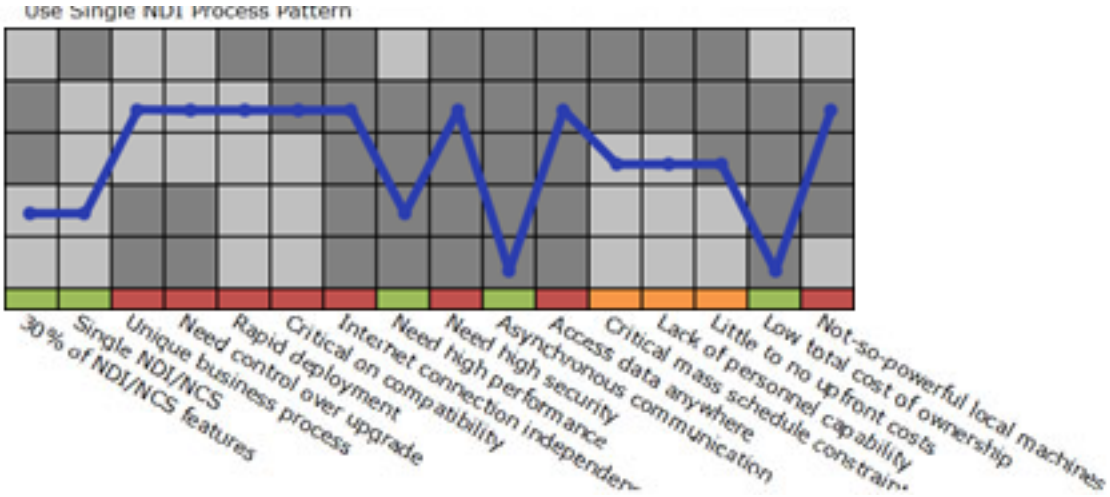


Figure 3: NDI-Intensive Process Pattern

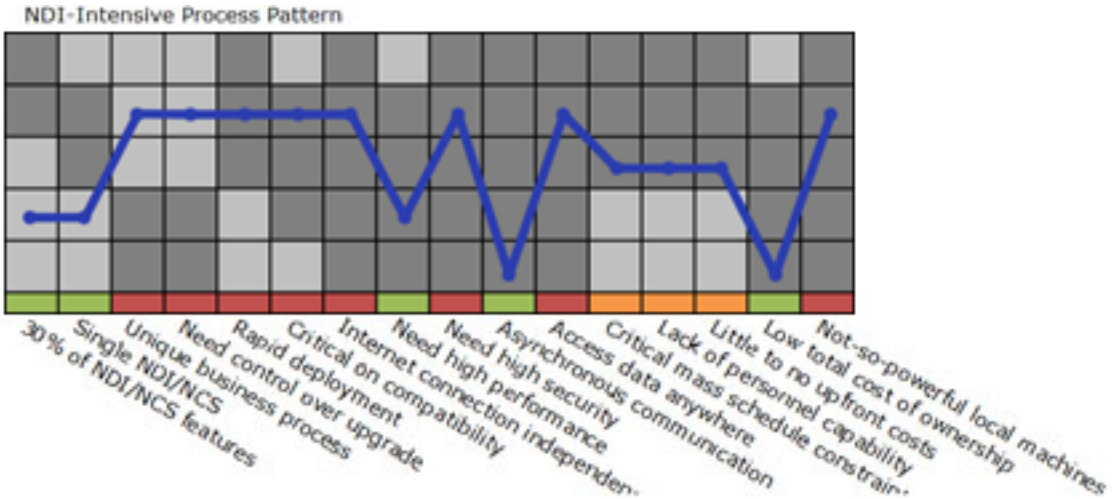
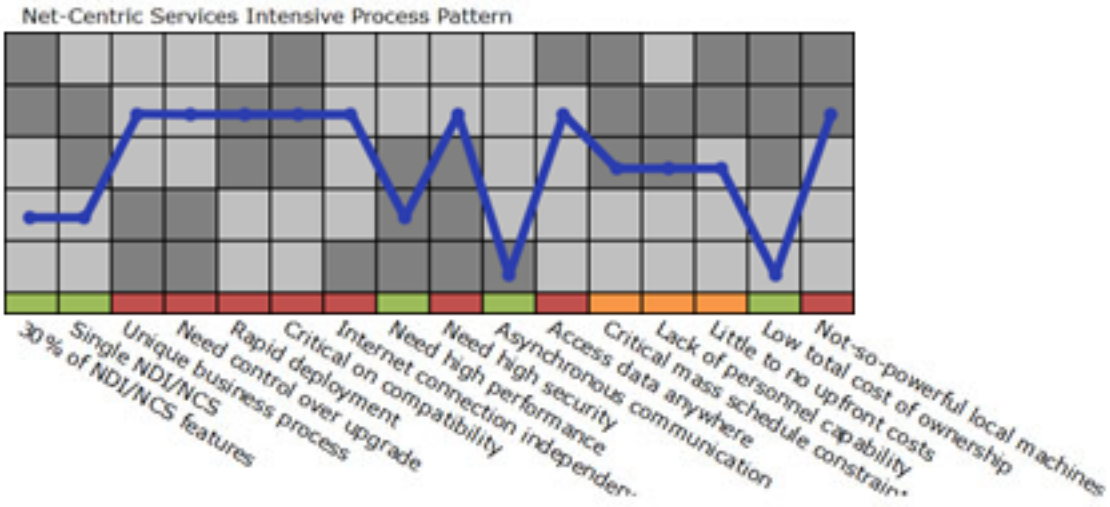


Figure 4: Net-Centric Service Process Pattern



By counting and comparing disqualified items in each process pattern, Architected agile has been proven the most suitable process pattern for Thrdplace social networking. Since most of our development is independent rather than highly dependent on NDIs, it is not much possible that the resultant system would include more than 30% of NDI/NCS features. However, because the clients also require much customization on those NDI/NCS and many features which require coding, it's not much possible that single NDI/NCS would satisfy the requirements for its functionalities. As for the business process of this system, it's unique in some degree, because the system should make recommendations based on information from user and project profiles. Thus, the rating of unique business process should be high. For the reason that the final system would run as a website on Thrdplace's web server, it's obvious that the system need control over upgrade, so the rating for this item would be very high. This system would be a subsystem of the

original Thrdplace website to enhance its social networking capabilities, so deployment of this system should not influence proper functioning of the original Thrdplace website and a fast deployment of the system would be highly needed. As what have been mentioned before, the expected system should be a part of the existent Thrdplace website and run on its database, so system compatibility is pretty critical. The system should be an internet-connection-dependent system, because it only provides users an access to its functionalities through web browsers. High performance should be ensured in this system, because there is high possibility that a large quantity of users access the system via web browsers concurrently. Also, the requirement for high security will be restrict, because the system would directly access Thrdplace's database and information of users and clients in it. According to the agreed requirements so far, the system would not concern asynchronous communication, so the rating for this part should be very low. As for the part of critical mass schedule constraint, because the development team members are all on-campus students and taking several other courses at the same time of commitment to the project, so, by estimating amount of time in which developers can get together and work on the project, the schedule constraint is estimated nominal. It is moderately possible that the situation of lacking personnel capability would happen in the development process, because we have to understand the existent Thrdplace database and development a profile and a recommendation system on it, if the volume of data or the scale of the database is far beyond our expectation, shortage in personnel capability is possible. There are no many fees for the NDIs and maintenance of the system, so the rating for low total cost of ownership is low. Because this system is actually a website whose functioning largely depends on capability of the server, powerful local machines are not required. By inputting those ratings mentioned above into Process Decision Driver Diagram and calculating the disqualified items in each process pattern, we find that the architected agile process pattern would be most suitable for us to implement the expected system.

Exploration Phase

Duration: 09/11/13 – 09/27/13

Concept:

In this phase, our team focuses on analyzing the current Thrdplace website, for example, by analyzing its operation workflow, software-hardware environment, as well as its business workflow. Several methods helps us to better implement the aforesaid analyses, including holding client interaction session, reading documents provided by Thrdplace, browsing and using Thrdplace website as practical researches, and emailing our questions regarding the system's specs and workflow to Dekoven. As a result of system understanding, an initial prototype will be implemented and validated by our client. Based on his feedbacks, we would have a clearer understanding of the domain and requirements of the system. Besides, we also perform an initial check for NDI/NCS list by setting up a list of alternatives, and exploring the possibilities to integrate them into our project and use them to provide the required functionalities. The final decision of which NDI/NCS should be used in our system is based

on the project objectives, win conditions, and the established operational concepts. Assessment and plans of mitigating risks is also implemented in this phase by analyzing and prioritizing currently found risks of the project and providing their mitigation plans. Some activities concerning managing and planning the project is also started, including identifying team members' skills, recording project individual effort and project progress, and detailing project plan. The milestone of this phase is valuation commitment review where valuation commitment package is delivered as the artifact of this phase.

Deliverables: Valuation Commitment Package

Milestone: Valuation Commitment Review

Strategy: One Incremental Commitment Cycle

Valuation Phase

Duration: 09/28/13– 10/21/13

Concept:

In this phase, our clients and all the team members hold three Win-Win negotiation sessions in total, in which MMF and win conditions are captured and scored, and objectives, constraints and priorities of the project are identified. Based on information from win-win sessions, operational concept engineer starts to develop operational concept by analyzing the operational pattern and environment of Thrdplace's current website and its business workflow, so as to identify system boundary and establish the new operational concept. Feasibility analyst analyzes and evaluates NDI/NCS component candidates further based on constraints, objectives, priorities described in operational concept description, and prototyper implements an initial prototype as trial run to verify their feasibilities. We also define quality and configuration policy, including building up a team-shared dropbox folder for project artifacts library and version control policy for finished artifacts. Quality management strategy is also decided, which is, after completion of an artifact, it will go through three types of reviews including peer review, IIV&V, and teaching staff and feedbacks will be sent to every responsible parts in forms of Bugzilla tickets. This phase' milestone is foundations commitment review and foundations commitment package and improved prototype is submitted as artifacts to our team page.

Deliverables: Foundations Commitment Package, improved prototype

Milestone: Foundations Commitment Review

Strategy: Win-Win negotiation, prototype improvement

Foundations Phase

Duration: 10/22/13 – 12/09/13

Concept:

In this phase, the project status is assessed, which includes assessment on feasibility evidence, life cycle content, operational concept, prototypes, and system architecture. Those are the artifacts that have been accomplished so far. The prototype is continuously improved by removing defects and adaptation according to Thrdplace's feedbacks. Architect keeps elaborating on the architecture design by defining the system structure, developing the process realization model and design classes, and specifying architecture styles, patterns and frameworks. Besides, by identifying recent activities, the project plan keeps being detailed in this phase. The milestone of this phase is Development Commitment Review and development commitment package is delivered as the artifact.

Deliverable: Development Commitment Package

Milestone: Development Commitment Review

Strategy: Prototype Improvement, Architecture Elaboration

Development phase - Construction Iteration

Duration: 2/12/14 – 4/16/14

Concept:

In this phase, the development team should keeps detailing project plan and recording project progress and emphasize on implementing the system and performing testes. Such a construction process should be iterated several times in this period of time. Besides, several milestones will be walked through in this phase, which includes core capability drivethrough and transition readiness review.

Deliverable: Transition Readiness Review Package, Draft Transition Readiness Review Package

Milestone: Transition Readiness Review, Core Capability Drivethrough

Strategy: Development and testing

Development phase - Transition Iteration

Duration: 4/17/14 – 4/30/14

Concept:

In this stage, the development team should perform system transition by providing maintenance information, tutorial session, technical support, as well as user menu which covers different user roles. The milestone of this phase is operational commitment review, which would directly lead to the final product release.

Deliverable: Operational Commitment Review Package, Transition manual, Source code

Milestone: Operation Commitment Review

Strategy: Deployment, Training, and Transition

2.2 Project Deliverables

2.2.1 Exploration Phase

Table 1: Artifact deliverable in Exploration Phase

Artifact	Due date	Format	Medium
Client Interaction Report	09/20/2013	.doc, .pdf	Soft copy
Valuation Commitment Package • Operational Concept Description (OCD) Early Section • Life Cycle Plan (LCP) • Feasibility Evidence Description (FED) Early Section	09/27/2013	.doc, .pdf	Soft copy
Effort Report	Every Monday	Text	ER system
Project Plan	Bi-Weekly	.mpp	Soft copy

Progress Report	Bi-Weekly	.xls	Soft copy
Bug and Issue Report	Every Wednesday	Text	Bugzilla

2.2.2 Valuation Phase

Table 2: Artifact deliverable in Valuation Phase

Artifact	Due date	Format	Medium
Initial Prototype	10/04/2013	.ppt	Soft copy
Draft Foundation Commitment Package • Operational Concept Description (OCD) • Life Cycle Plan (LCP) • Feasibility Evidence Description (FED) • System and Software Architecture Description Template for NDI NCS Team (SSAD)	10/16/2013	.doc, .pdf	Soft copy
Foundation Commitment Package • Operational Concept Description (OCD) • Life Cycle Plan (LCP) • Feasibility Evidence Description (FED) • System and Software Architecture Description Template for NDI NCS Team (SSAD)	10/21/2013	.doc, .pdf	Soft copy
Project Plan	Bi-Weekly	.mpp	Soft copy
Progress Report	Bi-Weekly	.xls	Soft copy
Effort Report	Every Monday	Text	ER system

Bug and Issue Report	Every Wednesday	Text	Bugzilla

2.2.3 Foundations Phase

Table 3: Artifact deliverable in Foundations Phase

Artifact	Due date	Format	Medium
Draft Development Commitment Package • Operational Concept Description (OCD) • Life Cycle Plan (LCP) • Feasibility Evidence Description (FED) • System and Software Architecture Description Template for NDI NCS Team (SSAD) • Test Plan and Cases (TPC)	12/02/2013	.doc, .pdf	Soft copy
Development Commitment Package • Operational Concept Description (OCD) • Life Cycle Plan (LCP) • Feasibility Evidence Description (FED) • System and Software Architecture Description Template for NDI NCS Team (SSAD) • Test Plan and Cases (TPC)	12/09/2013	.doc, .pdf	Soft copy
Project Plan	Bi-Weekly	.mpp	Soft copy
Progress Report	Bi-Weekly	.xls	Soft copy
Effort Report	Every Monday	Text	ER system

Bug and Issue Report	Every Wednesday	Text	Bugzilla

2.2.4 Development Phase

Table 4: Artifact deliverable in Development Phase

Artifact	Due date	Format	Medium
Draft Rebaselined Development Commitment Package • Operational Concept Description (OCD) • Life Cycle Plan (LCP) • Feasibility Evidence Description (FED) • System and Software Architecture Description Template for NDI NCS Team (SSAD) • Test Plan and Cases (TPC)	02/04/2014	.doc, .pdf	Soft copy
Draft Rebaselined Development Commitment Package Evaluation • Operational Concept Description (OCD) • Life Cycle Plan (LCP) • Feasibility Evidence Description (FED) • System and Software Architecture Description Template for NDI NCS Team (SSAD) • Test Plan and Cases (TPC)	02/08/2014	.doc, .pdf	Soft copy
Rebaselined Development Commitment Package	02/19/2014	.doc, .pdf	Soft copy

Core Capabilities Drivethrough Report	03/26/2014	.doc, .pdf	Soft copy
Transition Readiness Review Package • Feasibility Evidence Description (FED) • Life Cycle Plan (LCP) • Operational Concept Description (OCD) • System and Software Architecture Description (SSAD) • Test Plan and Cases (TPC) •Transition Plan(TP) • User Manual (UM) • Training Material(TM)	04/14/2014	.doc, .pdf	Soft copy
Product and System Manual Delivery	04/30/2014	.doc, .pdf	Soft copy
Project Plan	Bi-Weekly	.mpp	Soft copy
Progress Report	Bi-Weekly	.xls	Soft copy
Effort Report	Every Monday	Text	ER system
Bug and Issue Report	Every Wednesday	Text	Bugzilla

3. Responsibilities

3.1 Project-specific stakeholders' Responsibilities

The stakeholders involved in this project should be categorized into four types, which is, clients including Dekoven and Mike (co-founders of Thrdplace, also take the responsibility of maintaining the system), users, maintainers, and the development team which consists of project manager, operational concept engineer, requirements engineer, prototyper, software architect, life cycle planner, and IIV&V, testers, implementers, trainers.

3.2 Responsibilities by Phase

Table 5: Dekoven's responsibilities

Name: Dekoven	
Role: Client and Maintainer	
Exploration	**Client:** - Provide domain information - Define current system shortfalls - Define desired system and the requirements to achieve it
Valuation	**Client:** - Provide domain information - Define current system shortfalls - Define desired system and the requirements to achieve it
Foundations	**Client:** - Provide feedbacks based on prototype - Define prototype shortfalls - Define desired system and the requirements to achieve it - Provide changed requirements
Development-	**Client:**

Construction Iteration	- Provide feedbacks based on current system - Provide changed requirements
Development- Transition Iteration	**Client:** - Provide feedbacks based on current system - Provide changed requirements **Maintainer:** - Receive training for the new system - Maintain the system

Table 6: Gaurav Doon's responsibilities

Name: Gaurav Doon	
Role: Project Manager (PM) &Trainer &Tester	
Exploration	**PM:** - Creating the Project Plan - Distribute workload, give specific task to each team member
Valuation	**PM:** - Creating the Project Plan - Distribute workload, give specific task to each team member
Foundations	**PM:** - Creating the Project Plan - Distribute workload, give specific task to each team member
Development- Construction Iteration	**PM:** - Creating the Project Plan - Distribute workload, give specific task to each team member **Tester:** -Develop and implement test cases

Development- Transition Iteration	**PM:** - Creating the Project Plan - Distribute workload, give specific task to each team member **Trainer:** -Give clients training sessions and answer their questions on support materials

Table 7: Yixiang Liu's responsibilities

Name: Yixiang Liu	
Role: Operational Concept Engineer (OCE) & Builder	
Exploration	**OCE:** - Analyze the current system - Set specific goals, visions, and user scenarios
Valuation	**OCE:** - Define operational goals - Define Operational Concept - Define Organizational and Operational Implications
Foundations	**OCE:** - Refine Operational Concept - Refine Organizational and Operational Implications
Development-Construction Iteration	**Builder:** - Implement the main functions of system.
Development-Transition Iteration	**Builder:** - Implement the main functions of system. - Deploy the system onto server.

Table 8: Ronghui Zhang's Responsibilities

Name: Ronghui Zhang	
Role: Software Architect &Tester	
Exploration	**SA:** - Analyze and develop current system with the technologies - Work with Prototyper to design, and model the new system
Valuation	**SA:** - Set up basic infrastructure - Define Architecture
Foundations	**SA:** - Elaborate the system architecture
Development-Construction Iteration	**Tester:** -Develop and implement test cases
Development-Transition Iteration	**Tester:** -Develop and implement test cases

Table 9: Tu Duong's Responsibilities

Name: Tu Duong	
Role: IIV&V & Quality Focal Point	
Development-Construction Iteration	**VV:** - Review the project artifacts - Manage Project Quality **QFP:** -Assess quality management and strategy

	-Definition of done -Identify traceability matrix
Development- Transition Iteration	**VV:** - Review the project artifacts - Manage Project Quality **QFP:** -Assess quality management and strategy -Definition of done -Identify traceability matrix

Table 12 Kan Qi's Responsibilities

Name: Kan Qi	
Role: Life Cycle Planner (LCP), &Builder	
Exploration	**LCP:** - Plan Project Plan - Identify team members' responsibilities
Valuation	**LCP:** - Plan detailed Project Life Cycle - Provide Project Feasibility Evidence
Foundations	**LCP:** - Manage Project Life Cycle - Provide Project Feasibility
Development-Construction Iteration	**Builder:** - Implement the main functions of system.
Development-	**Builder:**

Transition Iteration	- Implement the main functions of system. - Deploy the system onto server.

3.3 Skills and Responsibilities of Current Team Members

Table 13: Development Team Members' Skills

Team members	Role	Skills
Gaurav Doon	Project Manager & Tester	Current skills: C/C++, Java, HTML, JavaScript, Mysql Required skills: PHP, Apache
Tu Duong	IIV&V & Quality Focal Point	Current skills: PHP, C++, Java, Software Engineering
Kan Qi	Builder	Current skills: Java, C/C++, PHP, JavaScript, Mysql, JSP, Android, HTML/CSS, SVN Required skills: Apache
Yixiang Liu	Builder	Current skills: Java, C/C++, PHP, HTML/CSS Required skills: Apache, Mysql
Ronghui Zhang	Tester & Developer	Current skills: C/C++, C#, Java, Python, assembly language, Verilog HDL, VHDL, yacc, lex, J2EE, HTML/CSS, Microsoft SQL Server Required skills: PHP, Apache, Mysql

4. Approach

4.1 Monitoring and Control

The bi-weekly project plan will provide a guideline for team members to execute their duties specified in the life cycle plan. Besides, bi-weekly progress report and monthly effort report as well as weekly team meetings would valuable statistics for understanding the current project status and adjust it to better fit the decided project plan. Also, if there are some bugs found in past works or issues pending shortly, then project manager and IIV&V can issue a ticket through Bugzilla to notify the issue or bugs related team members and specify their duties in fixing them.

4.1.1 Closed Loop Feedback Control

Two effective communication tools have been adopted in our team to realize feedback control, which are Wechat and Bugzilla. Wechat is a real-time chatting system, which helps us to manage project-related logistics, such as settling team meeting schedule, booking group discussing room, and so on. As for Bugzilla, it's a bug tracking system, which helps team members to keep informed with their duties in fixing bugs and shortly coming events.

4.1.2 Reviews

Usually reviews for project artifacts would go through three steps, which respectively are peer reviews after an artifact is finished, then IIV&V reviews for its correctness and validity (if there are some defects or errors existing in the artifact, IIV&V would issue a ticket in Bugzilla to notify the responsible parts for correction of the bugs), and finally reviews by teaching staff members.

4.2 Methods, Tools and Facilities

Table 15: Tools to be used in the project

Tools	Usage	Provider
WinBook	Identifying Win-Win Conditions and negotiating agreements	USC
Bugzilla	Report defect/errors/bugs etc	USC

Dropbox	Collaborate on the latest document version and share resources	Dropbox
WeChat	A real-time communication tool	Tecent
CSE Effort Reporting System	Individual effort records	USC
Email	One of the main tools of communication	USC/Google
Project Website	Documentation, Client Meeting Notes Record	USC
Microsoft Project	Project managing and planning	Microsoft
Rational Software Modeler	UML modeling	IBM
Eclipse	Integration development environment for PHP and HTML development	IBM
Apache	Web server for PHP application	Apache Software Foundation

5. Resources

In this section, we present the project effort and schedule estimation of the project using COCOMO II.

- Estimated CSCI577a Effort: There are 7 team members. Each of them spends 10 hrs per week for 12 weeks.
- Estimated CSCI577b Effort: There are 5 team members. Each of them spends 10 hrs per week for 12 weeks.
- Total estimated effort: 8.6PM
- Project duration: 24 weeks
- Component modules in your development project: ranking system, search engine, and recommendation system
- Programming language used: PHP
- The following is module listed in the system and its estimated size with Source Lines of Code (SLOC)

Table 16: Module lists and SLOC of each module

No.	Module Name	Brief Description	SLOC	REVL
1	Ranking System	Ranking the results derived from search engine by certain criterion.	200	5%
2	Search Engine	Allow creators and contributors to search keywords and get the related information from Thrdplace's database. Allow advanced searching by different dimensions and categories.	2500	10%
3	Recommendation System	The system would automatically provide an contributor or an creator with information about creators, contributors or projects which he/she might be interested in	750	10%

The following is COCOMOII Scale Drivers and rationales of choosing the values.

Table 17: COCOMOII Scale Drivers

Scale Driver	Value	Rationale
PREC	NOMINAL	Although team members are all familiar with this type of online applications, they don't know well about PHP programming and there would be an effort on understanding Thrdplace's database and server, as well as business work flow of it.
FLEX	HIGH	Except for the three major features required by Thrdplace, our project team has high flexibility in negotiating changes and modifications of other modules and settling down development schedules and so on so forth.
RESL	NOMINAL	For now, we know clearly where the critical risk items are, and the constraints on budget and schedule. However, there are still some uncertainties about Thrdplace's original platform including its database and web server specs, which increase the risk of integration failure.
TEAM	HIGH	Each stakeholder has considerable consistency of objectives and cultures, and considerable ability and willingness to accommodate others' objectives. In addition, the stakeholders have moderate experience in operating as a team.
PMAT	NOMINAL	The development team follows ICSM guidelines, which is a well-defined and managed process. However, due to the lack of thorough understanding of the process, some consistent results might occur. So the process is repeatable and at CMM Level 2.

The following is COCOMOII Cost Drivers of each module and rationales of choosing the values.

Table 18: COCOMOII Cost Drivers of Module 1 – Ranking System

Cost Driver	Value	Rationale
RELY	NOMINAL	Other modules in this project is independent on this module, so it's failure can hardly affect other modules' proper functioning

		and losses can be easily recovered.
DATA	LOW	This module doesn't access the data in Thrdplace's database directly. It aims to ranking search results by certain criteria, so the data storage is low.
DOCU	NOMINAL	Since our project follows agile development pattern and all the documents which can support further maintenance are enough, there are no stringent requirements for micro-level.
CPLX	NOMINAL	Although this module doesn't concern complex control, device dependent operations, it has moderate amount of computation-intensive tasks. So complexity of this module should be ranked nominal.
RUSE	LOW	It is not intended to be reused for the future project.
TIME	HIGH	The percentage of available execution time expected to be used by the system and subsystem consuming the execution time resource is less than 70% because this functionality is associated with search engine and search engine would be the most commonly used module.
STOR	NOMINAL	The percentage of available storage expected to be used by the system and subsystem is less than 50% because this module doesn't generate data or retrieve data from memory (it is just used to process data provided by search engine).
PVOL	LOW	Major changes of the platform, i.e. Apache, PHP, MySQL, and web browsers, are approximately every year.
ACAP	HIGH	The analysts have the ability to analyze, design, communicate, and cooperate well.
PCAP	HIGH	Programmers are capable, efficient and thorough. They are able to communicate and cooperate well.
PCON	NOMINAL	There will be 2 team members deduction in the spring 2014 semester.
APEX	NOMINAL	The average experience of the team members for this online web-based application is about one year.
LTEX	NOMINAL	The development team plans to develop this web-based application with PHP, HTML/CSS, and use SQL language to query information from the database. Eclipse will be used as

		integrated development environment to facilitate its development. Even though all team members have at least one year of web development, most of us are not very familiar with PHP, so LTEX should be nominal.
PLEX	LOW	As what mentioned above, most team members are not familiar with PHP and we still don't have access to or documentation explanations about Thrdplace's database until now.
TOOL	LOW	The software tools development team plan to use is just simple, frontend, backend CASE, and supporting little integration. There is no support for life-cycle.
SITE	VERY HIGH	All the team members are all on-campus students and can arrange meetings easily. Additionally, we use wideband electronic communication and occasional video conference.
SCED	NOMINAL	The schedule is fixed for 12 weeks in Fall semester and 12 weeks in Spring semester.

Table 19: COCOMOII Cost Drivers of Module 2- Search Engine

Cost Driver	Value	Rationale
RELY	NOMINAL	Other modules in this project is independent on this module, so it's failure can hardly affect other modules' proper functioning and losses can be easily recovered.
DATA	HIGH	Since search engine would search across all the fields of project profile table, user profile table and some other tables describing relations between them in Thrdplace database. The space used to store the data would be high.
DOCU	NOMINAL	Since our project follows agile development pattern and all the documents which can support further maintenance are enough, there are no stringent requirements for micro-level.
CPLX	LOW	For the reason that this module will not concern complex control, computational, and device dependent operations, and just moderately complex SQL queries and graphic interface

		management are required, complexity of this module should be low.
RUSE	LOW	It is not intended to be reused for the future project.
TIME	NOMINAL	The percentage of available execution time expected to be used by the system and subsystem consuming the execution time resource is less than 50% because searching would be one of the most frequently used functionalities this system provide.
STOR	NOMINAL	The percentage of available storage expected to be used by the system and subsystem is less than 50% because most data is stored as textual records, and some of them might include some low-definition image as users' profile pictures.
PVOL	LOW	Major changes of the platform, i.e. Apache, PHP, MySQL, and web browsers, are approximately every year.
ACAP	HIGH	The analysts have the ability to analyze, design, communicate, and cooperate very well.
PCAP	HIGH	Programmers are capable, efficient and thorough. They are able to communicate and cooperate very well.
PCON	NOMINAL	There will be personnel deduction which is about two in the spring 2014 semester.
APEX	NOMINAL	The average experience of the team members for this online web-based application is about one year.
LTEX	NOMINAL	The development team plans to develop this web-based application with PHP, HTML/CSS, and use SQL language to query information from the database. Eclipse will be used as integrated development environment to facilitate its development. Even though all team members have at least one year of web development, most of us are not very familiar with PHP, so LTEX should be nominal.
PLEX	LOW	As what mentioned above, most team members are not familiar with PHP and we still don't have access to or documentation explanations about Thrdplace's database until now.
TOOL	LOW	The software tools development team plan to use are just simple coding facilitating platforms, and supporting little integration. There is no support for life-cycle.

SITE	VERY HIGH	All the team members are all on-campus students and can arrange meetings easily. Additionally, we use wideband electronic communication and occasional video conference.
SCED	NOMINAL	The schedule is fixed for 12 weeks in Fall semester and 12 weeks in Spring semester.

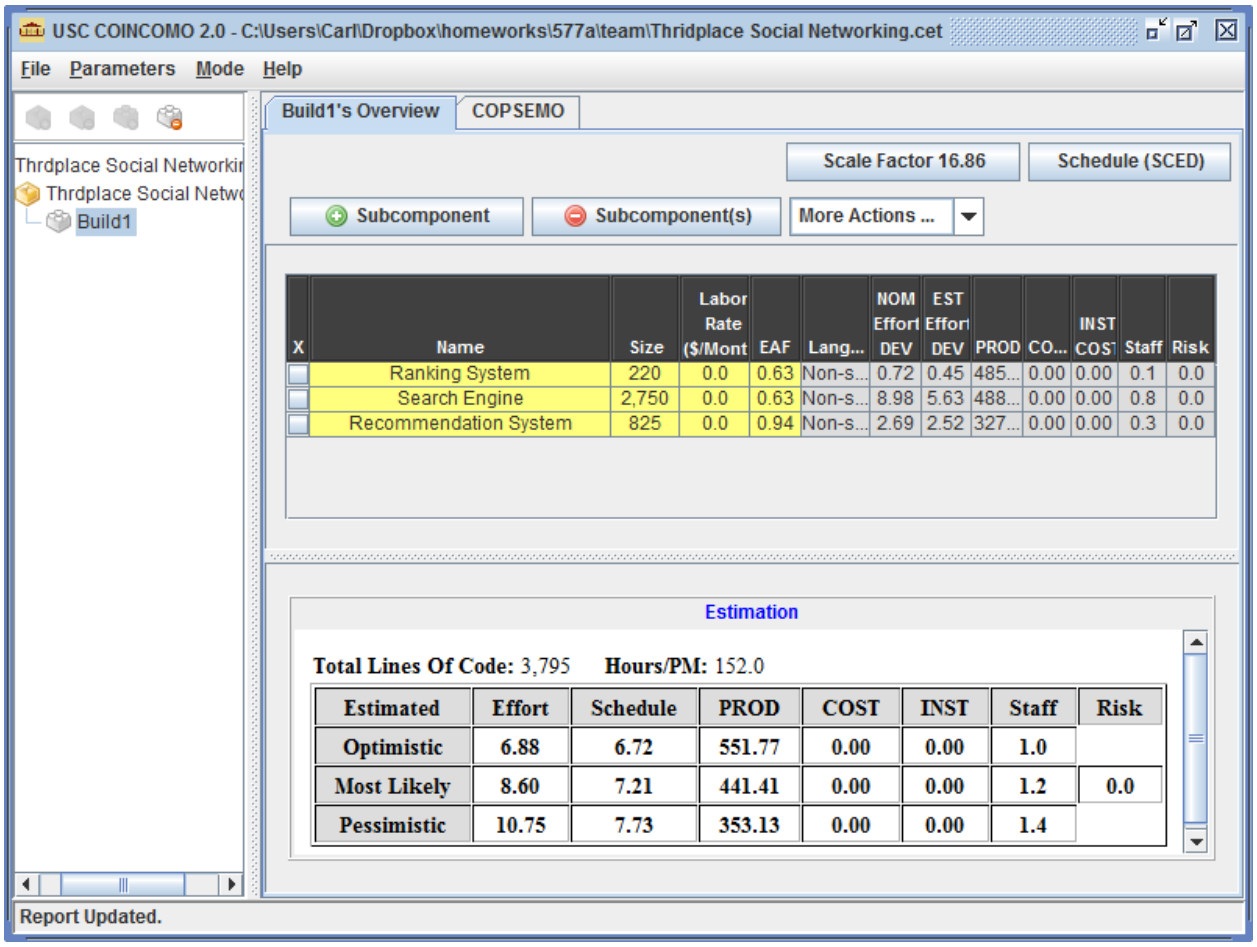
Table 20: COCOMOII Cost Drivers of Module 3 –Recommendation System

Cost Driver	Value	Rationale
RELY	NOMINAL	Other modules in this project is independent on this module, so it's failure can hardly affect other modules' proper functioning and losses can be easily recovered.
DATA	HIGH	Since the recommendation results based on all the fields of project profile table ,user profile table and some other tables describing relations between them in Thrdplace's database. The space used to store the data would be high.
DOCU	NOMINAL	Since our project follows agile development pattern and all the documents which can support further maintenance are enough, there are no stringent requirements for micro-level.
CPLX	HIGH	Although this module will not involve complex control, computational, device dependent operations, complicated SQL queries are required to carry out information related to currently logged-in user, so complexity of this module should be nominal.
RUSE	LOW	It is not intended to be reused for the future project.
TIME	HIGH	The percentage of available execution time expected to be used by the system and subsystem consuming the execution time resource is less than 50% because viewing project and user profile pages would be the functionalities users most often use and on which they stay for the longest time compared with other functionalities this system provides.
STOR	NOMINAL	The percentage of available storage expected to be used by the system and subsystem is less than 50% because most data is

		stored as textual records, and some of them might include some low-definition image as users' profile pictures.
PVOL	LOW	Major changes of the platform, i.e. Apache, PHP, MySQL, and web browsers, are approximately every year.
ACAP	HIGH	The analysts have the ability to analyze, design, communicate, and cooperate very well.
PCAP	HIGH	Programmers are capable, efficient and thorough. They are able to communicate and cooperate very well.
PCON	NOMINAL	There will be personnel deduction which is about two in the spring 2014 semester.
APEX	NOMINAL	The average experience of the team members for this online web-based application is about one year.
LTEX	NOMINAL	The development team plans to develop this web-based application with PHP, HTML/CSS, and use SQL language to query information from the database. Eclipse will be used as integrated development environment to facilitate its development. Even though all team members have at least one year of web development, most of us are not very familiar with PHP, so LTEX should be nominal.
PLEX	LOW	As what mentioned above, most team members are not familiar with PHP and we still don't have access to or documentation explanations about Thrdplace's database until now.
TOOL	LOW	The software tools development team plan to use is just simple, frontend, backend CASE, and supporting little integration. There is no support for life-cycle.
SITE	VERY HIGH	All the team members are all on-campus students and can arrange meetings easily. Additionally, we use wideband electronic communication and occasional video conference.
SCED	NOMINAL	The schedule is fixed for 12 weeks in Fall semester and 12 weeks in Spring semester.

The following is the estimation result of effort and schedule from COINCOMOII based on Scale Drivers and Cost Drivers discussed above.

Figure 5: COCOMO Estimation Result



The following conditions were used to estimate the cost of our system, the Thrdplace social networking

The form of schedule our project uses is the Independent Variable (SAIV) strategy. 24–week schedule drives development of a set of top priority core capabilities. Therefore, the estimates show the effort required for the project.

According to COINCOMO II, one team member effort = 10*24/152/1.0=1.58 COINCOMO II person months. The most likely effort from the COCOMO estimation above is 8.93, so the total team members need for this project = 8.93/1.58 = 5.65

Since we have 7 developers in total on our team, the estimated staff number is below the actual number of our team members (5.65<7). So we would complete our project in time.

6. Iteration Plan

6.1 Iteration Plan

This project will have two iterations. In the first iteration, we will mainly focus on the highest priority capabilities, which are . In the second iteration, we will implement and test recommending projects and contributors. Test cases designed for each capability will also be implemented in these two iterations and each capability will be tested at least one time.

6.1.1 Capabilities to be implemented

Table 5: Construction iteration capabilities to be implemented

ID	Capability	Description	Priority	Iteration
CR-1	Display recommendation section on each page.	The system is capable of providing useful suggestions about projects and contributors. For the project creators, it'll recommend contributors interested in the project; for the contributors, it'll recommend influential projects.	2	2
CR-2	Projects and project contributors can be searched by project contributors/creators using filters (geography, etc.)	The system is capable of enabling project contributors to search projects and project creators to search contributors with filter.	1	1
CR-3	Search for the most influential projects and creators.	The system is capable of providing a ranking system to rank the search results by influence. The criterion of the influence includes promotion, the completion percentage of the project and the contribution of contributors.	1	1
CR-4	Search results can be seen in a list view.	The system is capable of displaying search results in a list view.	2	2

6.1.2 Capabilities to be tested

Table 6: Construction iteration capabilities to be tested

ID	Capability	Description	Priority	Iteration
CR-1	Display recommendation section on each page.	The system is capable of providing useful suggestions about projects and contributors. For the project creators, it'll recommend contributors interested in the project; for the contributors, it'll recommend influential projects.	2	2
CR-2	Projects and project contributors can be searched by project contributors/creators using filters (geography, etc.)	The system is capable of enabling project contributors to search projects and project creators to search contributors with filter.	1	1
CR-3	Search for the most influential projects and creators.	The system is capable of providing a ranking system to rank the search results by influence. The criterion of the influence includes promotion, the completion percentage of the project and the contribution of contributors.	1	1
CR-4	Search results can be seen in a list view.	The system is capable of displaying search results in a list view.	2	2

6.1.3 Capabilities not to be tested

In the first and second iteration, all the core capabilities will be tested at least one time and the order of testing on each capability will depend on their priority. However, some non-functional capabilities will not be tested in these two iterations. The requirement for max down time will not be tested, because we don't have enough time to collect the testing result and testing for this requirement should precede deployment of the system. Also, the requirement for deployment of the system mentioned in Winbook would not be tested, since we will demonstrate the deployment of the system onto Thrdplace's server at the end of this semester.

6.1.4 CCD Preparation Plans

- **Who will be involved in the CCD:** clients and Team 07.

- **Where will the CCD happen:** Leavy library of USC

- What will be provided in the CCD: team members and clients will have a chance to use website and check whether they can utilize the website as required. After checking website, a survey for feedbacks will be released, and clients and team members will be asked to fill out the form as follows:

Table 7: Feedback form

ID	Iteration	Capability	Description	Comments	Score (1-10)		
					Performance	Usability	Satisfaction

- Risk management Plan: For capabilities which received lower score, the features that are related to the capabilities need to be handled as high-level risks in the next iteration.

Table 8: Risk management Plan for CCD

<Priority: 1: High, 2: Medium, 3: Low>

ID	Risk	Mitigation Plan	Priority
1	Disabled function of NDIs, for example, Solr.	Prepare for local access to the web site Prepare for a recorded showing required functionalities Exam all functions before CCD	1
2	Clients and team members cannot attend CCD	Confirm attendance before CCD Reschedule the date of CCD	2
3	Clients do not make enough preparation, for example,	Send email or make phone call before CCD.	3

	forgetting to bring user test scenarios.	Reschedule the date of CCD	
4	Technical staff does not make enough preparation, for example, lacking user manuals.	Ask more than one team members to bring user manuals.	3
5	Disabled laptop during CCD	Prepare for sub-laptops for CCD.	4

6.2 Iteration Assessment

6.2.1 Capabilities Implemented, Tested, and Results

Table 9: Capabilities implemented, tested, and results

ID	Capability	Test Case	Test Results	If fail, why?
CR-1	Display recommendation section on each page.	TC-04-01 TC-04-02 TC-04-03	Pass	-
CR-2	Projects and project contributors can be searched by project contributors/creators using filters (geography, etc.)	TC-02-01 TC-02-02	Pass	-
CR-3	Search for the most influential projects and creators.	TC-03	Pass	-
CR-4	Search results can be seen in a list view.	TC-01-01 TC-01-02 TC-01-03 TC-01-04	Pass	-

6.2.2 Core Capabilities Drive-Through Results

Table 10: Core capabilities drive-through results

ID	Capability	Method
CR-1	Display recommendation section on each page.	Drive-through
CR-2	Projects and project contributors can be searched by project contributors/creators using filters (geography, etc.)	Drive-through
CR-3	Search for the most influential projects and creators.	Drive -through
CR-4	Search results can be seen in a list view.	Drive-through

Table 11: Core capabilities drive-through results

Positive feedbacks	- Core capabilities required of the system work very well.
Improvements needed/suggested	- Take into consideration adaption of webpages to frequently-seen scree resolution; -Remove some dead links on search page and some trivial words; - Make search results look more organized; - Make the photo of projects as link to a project page.
Changes to-be considered (Reprioritized capabilities, requirements, GUI, etc.)	-Recommendation should respond to the input keywords; -Integrate recommendation section into search result list and find a way to distinguish it from search results; - Add a function of keyboard navigation;
Risks (Possible risks, New risks introduced, risks mitigated, etc.)	- The database we developed our system on is slightly different from what the database Thirdplace is using, since our clients are making progress on their database. - Solr that we are using in our system doesn't support "Count" function usually used in SQL, which requires some modifications to the original database.

6.3 Adherence to Plan

Table 12: Adherence to plan

Issues	Results	Adherence to Plan <1:Good, 2:Nominal, 3:Bad>
Was it on budget?	We reuse all the resources we already had to build the system without any funding. So it is clear that we don't exceed budget	1
Was in on time?	The due date of Project Archive is on 05/07, we have finished almost all the required features and documents at this point. We need more time to examine and improve the artifacts.	1
Is there any uncertainty in the software development status?	We have implemented all the core capabilities specified in win conditions. However, as we know, Thrdplace itself is also developing on their original system, the major risk left is at the phase of transition	2

***Provide some insight to avoid mistakes for future iterations:**

To avoid the mistakes, defects revealed in tests should be reported to clients in form of surveys, emails, or face-to-face meetings and then modifications would be implemented based on client's feedbacks. If we rely on some infrastructure which we can also don't have much authority to control, for example, the current database and servers. We have to take into consideration the changeability of them, and this should be part of risk analysis.