Life Cycle Plan (LCP)

Surgery Assist

Team 11

Name	Primary Role	Secondary Role
Yu Fang	Project Manager	Life Cycle Planner
Yu Zhang	Software Architect	Prototyper
Heguang Liu	Operational Concept Engineer	Software Architecture
WanghaiGu	Life Cycle Planner	Operational Concept Engineer
Zhen Li	Feasibility Analyst	Requirement Engineer
LongfengJia	Prototyper	Feasibility Analyst
XihengYue	IIV&V	QFP

2013/9/25

Version History

Date	Author	Version	Changes made	Rationale
09/24/13	W.G.	1.0	• All details known as of 09/24/13	• Initial Draft
09/27/13	W.G.	1.1	• Update skills	• Update Ch3 skills
09/27/13	Y.F.	1.2	• Final check and make minor changes	• Update Ch3 skills
10/02/13	W.G	2.0	• Finish part of Section1-4	• Initial Draft
10/14/13	W.G	2.1	• Finish section 5	• Use Cocomo to estimate
10/15/13	W.G	2.2	• Complete section 1-4	• Add future phase plan
11/10/2013	W.G	2.3	• Update section 1-5	• Change some typos
11/19/2013	W.G	2.4	• Finish 6-6.1.3	• Initial iteration plan
11/30/2013	W.G	2.5	• Finish 6-6.1.3	• Update development plan
12/01/2013	W.G	2.6	• Update 6	• Consistent with other files
12/01/2013	W.G	2.7	• Update 3	• Consistent with other files
12/01/2013	W.G	2.8	• Update 3	• Change some documentation
12/01/2013	W.G	2.9	• Update all	• Change some typos
12/08/2013	W.G	3.0	• Update 3	• Change some areas after ARB

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1. Introduction

1.1 Purpose of the LCP

As Roger Sherman said that "The goal is often not to achieve what you said you would do at the beginning of the project, but to achieve the maximum possible within the time and resources available." LCP is able to answer the following questions: Why? What? When? Who? Where? How? How much? Whereas?:

- Objective to be achieved.
- Milestones (dates) & products (to be delivered).
- Responsibilities (individual and location/organization).
- Approach to be used in the project.
- Resources to be allocated.
- Assumptions need to be made.

1.2 Status of the LCP

The status of the LCP is currently at the Draft FC Package version number 2.2. This is the version that is revised to produce the final FC package. The major changes from the previous version 1 are adding section 1-5 in this document.

1.3 Assumptions

- The duration of the project is 2 semesters, which are 12 weeks in Fall 2013 semester and 12 weeks in Spring 2014 semester.
- Requirements are stable and require minor changes.
- Clients will buy some services needed to support the system.
- The team has 7 members.

2.Milestones and Products

2.1 Overall Strategy

The Surgery Assist is following Net-Centric Service Intensive process. We need to use a lot of services. For instance, Google maps, Paypal and Amazon etc. Data stored on service host's servers. Patching on service provider's side; mostly does not require installation on client side. Change on the server side can result in the client side. The integration could be done merely in code, without additional installation of external components.

Exploration phase
    Duration: 09/12/13- 9/27/13
    Concept: They identify project operational concept, system and software requirement, system and software architecture, and life-cycle plan, have Win-Win negotiation, explore client's needs and analyze current system environment, study possible technologies, develop VC package, which includes improving project website, identifying success-critical stakeholders, conducting benefit chain analysis, identifying team member skills, determining risk exposure and mitigation.
    Deliverables: Valuation Commitment Package, Client Interaction Report, Progress Report, Effort Report and Project Plan
    Milestone: Valuation Commitment Review
    Strategy: One Incremental Commitment Cycle

Valuation phase
    Duration: 09/28/13- 10/21/13
    Concept: They evaluate VC package, research other possible COTS packages, develop operational concept, provide project feasibility evidence, analyze and prioritize capabilities to prototype, plan and manage project, perform Win-Win negotiation, define quality and configuration policy.
    Deliverables: Foundation Commitment Package, Draft Foundations Commitment Package, Progress Report, Project Plan and Project Effort Reports, System and Software Architecture Description, Traceability Matrix, UML, User Interface Prototype Mockups
    Milestone: Foundation Commitment Review, Architecture Review Board
    Strategy: One Incremental Commitment Cycle

Foundations phase
    Duration: 10/21/13- 12/02/13
    Concept: They assess project status, feasibility evidence, life cycle content, operational concept, prototype and components, system architecture. Also, they plan and manage detail project plan, record project progress, manage project quality by verifying and validate work products using Defect Tracking System, fix defects, develop prototype, develop software architecture.

Deliverables: Development Commitment Package, Draft Development Commitment Package, Progress Report, Project Plan and Project Effort Reports, Release Description, System and Software Architecture Description, System and Software Requirements Definition, Software Components, UML Model
Milestone: Development Commitment Review, Architecture Review Board
Strategy: One Incremental Commitment Cycle

Re-baselined Foundations phase
Duration: 1/13/13- 02/14/14
Concept: They prioritize requirements, review and modify modeling, architecture and prototype, manage related high risk and transition strategy before going to the next phase.
Deliverables: Progress Report, Project Plan, Effort Report, User Interface, main module functions, Draft RDC Package which includes (OCD, LCP, SSAD+UML, FED, SID, QMP, TPC, TP), RDC Package,
Milestone: RDCR-ARB
Strategy: One Incremental Commitment Cycle

Development phase
Duration: 02/14/14- 04/28/14
Concept: They assess risks, assess development iteration, implement the system, perform testing and perform core capabilities drive-through, integrate components, develop the components, develop glue code, tailor components. And they perform site installation and activation
Deliverables: Draft TRR Package, TS set, Project Deliverable, Training Plan, User Manual
Milestone: Core Capability Drive-through, TRR Review, and Operation Commitment Review
Strategy: Three Incremental Commitment Cycles

Operational phase
Duration: 04/29/14- 05/05/14
Concept: They operate systems, and train sales team to use this system.
Deliverables: final system product，close out report
Milestone: Close out report
Strategy: One Incremental Commitment Cycle

2.2 Project Deliverables

2.2.1   Exploration Phase

Table 1: Artifacts Deliverables in Exploration Phase

Artifact	Due date	Format	Medium
Client Interaction Report	09/20/2013	.doc, .pdf	Soft copy
Project Website	09/20/2013	Web-based	
Valuation Commitment Package • Operational Concept Description (OCD) Section 1, Section 2, Section 3.1 • Life Cycle Plan (LCP) Section 3.3 • Feasibility Evidence Description (FED) Section 3	09/27/2013	.doc, .pdf	Soft copy
Effort Report	Every Monday	E-form	ER system
Project Plan	Every two weeks on Monday	.mpp	Soft copy
Progress Report	Every two weeks on Monday	.xls	Soft copy
Triggering Ticket History	Every Wednesday	text	Bugzilla

2.2.2   Valuation Phase

Table 2: Artifacts Deliverables in Valuation Phase

Artifact	Due date	Format	Medium
Draft Foundation Commitment Package • Operational Concept Description (OCD) All section • Prototype Report (PRO) All section • System and Software Architecture Description (SSAD) System Context Diagram • Life Cycle Plan (LCP) Section 1 -5 • Feasibility Evidence Description (FED) Section 1-5	10/16/2013	.doc, .pdf	Soft copy
Foundation Commitment Package • Operational Concept Description (OCD) All section	10/21/2013	.doc, .pdf	Soft copy

• Prototype Report (PRO) All section • System and Software Architecture Description (SSAD) System Context Diagram • Life Cycle Plan (LCP) Section 1 -5 • Feasibility Evidence Description (FED) Section 1-4 • Supporting Information Document(SID)			
Effort Report	Every Monday	E-form	ER System
Progress Report	Every two weeks on Monday	.xls	Soft Copy
Project Plan	Every two weeks on Monday	.mpp	Soft copy
Triggering Ticket History	Every Wednesday	text	Bugzilla
User Interface Prototype Mockups	10/16/2013	jpg	Balsamiq Mockups

2.2.3 Foundations Phase

Table 3: Artifacts Deliverables in Foundations Phase

Artifact	Due date	Format	Medium
Draft Development Commitment Package • Operational Concept Description (OCD) • Prototype Report (PRO) • System and Software Architecture Description (SSAD) • Life Cycle Plan (LCP) • Feasibility Evidence Description (FED) • Supporting Information Document (SID) • Quality Management Plan (QMP) • Test Plan (TP)	12/02/2013	.doc, .pdf	Soft copy

• Test Plan and Cases (TPC)			
Development Commitment Package • Operational Concept Description (OCD) • Prototype Report (PRO) • System and Software Architecture Description (SSAD) • Life Cycle Plan (LCP) Section 1 -5 • Feasibility Evidence Description (FED) • Supporting Information Document (SID) • Quality Management Plan (QMP) • Test Plan (TP) • Test Plan and Cases (TPC)	12/09/2013	.doc, .pdf	Soft copy
Effort Report	Every Monday	E-form	ER System
Progress Report	Every two weeks on Monday	.xls	Soft Copy
Project Plan	Every two weeks on Monday	.mpp	Soft copy
Triggering Ticket History	Every Wednesday	text	Bugzilla

2.2.4   Rebaselined Development Phase

Table 4: Artifacts Deliverables in Rebaselined Development Phase

Artifact	Due date	Format	Medium
Draft RDC Package	02/10/2014	.doc, .pdf	Soft copy
Effort Report	Every Monday	E-form	ER System
Progress Report	Every two weeks on Monday	.xls	Soft Copy
Project Plan	Every two weeks on Monday	.mpp	Soft copy
Triggering Ticket History	Every Wednesday	text	Bugzilla

2.2.5 Devevelopment Phase

Table 5: Artifacts Deliverables in Development Phase

Artifact	Due date	Format	Medium
Draft TTR Package	04/15/2014	.doc, .pdf	Soft copy
Effort Report	Every Monday	E-form	ER System
Progress Report	Every two weeks on Monday	.xls	Soft Copy
Project Plan	Every two weeks on Monday	.mpp	Soft copy
Triggering Ticket History	Every Wednesday	text	Bugzilla
Core Capability Drive Through	03/26/2014	system	Real system
Project Transition Readiness ARB Package	04/04/2014	.doc, .pdf, System	Soft copy, Real system
Operations Commitment Package	05/02/2014	.doc, .pdf, system	Soft copy, Real system

2.2.6 Operational Phase

Table 6: Artifacts Deliverables in Operational Phase

Artifact	Due date	Format	Medium
Close-out Report	05/05/2014	doc. pdf	Soft copy

3. Responsibilities

3.1 Responsibilities by Phase

Table 4: Stakeholder's responsibilities

Name:	David Vosicher
Role:	Client, maintainer, user
Exploration	Analyze current system,
Valuation	Analyze current system, Establish new operational concept, Identify objectives, constraints and Priorities, Identify organizational and operational transformation, Identify shared vision
Foundations	Make client feedback form, Make release description, Assess prototype and components
Development- Construction Iteration	Develop transition plan, Assess prototype and components, Make client feedback form, Assess development iteration
Development- Transition Iteration	Provide training, Assess the development Develop Support Plan

Table 5: Stakeholder's responsibilities

Name:	Yu Fang
Role:	Project Manager/Life Cycle Planner
Exploration	Record Project Progress, Make project plan
Valuation	Record on Bugzilla repository, Record progress report, Make project plan, Create and follow up action items, Make detailed project plan on next phase
Foundations	Record progress report, Make project plan, Make detailed project plan
Development- Construction Iteration	None

Development-Transition Iteration	None

Table 6: Stakeholder's responsibilities

Name: Yu Zhang	
Role: Software Architect/Prototyper	
Exploration	Construct team web page, Analyze current system
Valuation	Assess and evaluate NDI and NCS components candidates
Foundations	Make UML model, Assess system architecture, Define technology-independent architecture, Define technology-dependent architecture, Make system and software architecture description
Development-Construction Iteration	None
Development-Transition Iteration	None

Table 7: Stakeholder's responsibilities

Name: Heguang Liu	
Role: Operational Concept Engineer/Software Architect	
Exploration	Analyze current system, Explore alternatives
Valuation	Make interaction report, Analyze current system, Establish new operational concept, Explore alternatives, Identify objectives, constraints and priorities, Identify organizational and operational transformation, Identify shared vision
Foundations	Assess operational concept, Make operational concept description Complete system transformation strategies as coordinated with operational stakeholders, Complete operational and organizational transformations, Make additional prototypes and further elaboration of the existing prototypes
Development-Construction	None

Iteration	
Development- Transition Iteration	None

Table 8: Stakeholder's responsibilities

Name: Wanghai Gu	
Role: Life Cycle Planner/Operational Concept Engineer/Life Cycle Planner	
Exploration	Identify responsibilities and skills, Make project plan, Analyze current system
Valuation	Make life cycle plan, Identify responsibilities and skills, Make detail project plan
Foundations	Make life cycle plan, Make detailed project plan, Assess life cycle content，Plan achievable budgets and schedules with respect to the architecture in the SSAD and detailed development plans for the Development phase. Identify detailed plan for 1st…N iterations in Section 6.1 Prepare for Development Commitment Review and Rebaselined Development
Development- Construction Iteration	Assess development iteration, Record project progress, Develop and integrate components
Development- Transition Iteration	Record project progress Transition the system

Table 9: Stakeholder's responsibilities

Name: Zhen Li	
Role: Feasibility Analyst/Requirement Engineer	
Exploration	Assess and plan to mitigate risks, Explore alternatives
Valuation	Analyze business case, Assess and evaluate NDI and NCS components candidates, Assess and plan to mitigate risks, Explore alternatives
Foundations	Describe feasibility evidence, Assess feasibility evidence, Define System and Software requirements
Development-	None

Construction Iteration	
Development- Transition Iteration	None

Table 10: Stakeholder's responsibilities

Name: Longfeng Jia	
Role: Prototyper/Feasibility Analyst/Trainer/Operational Concept Engineer	
Exploration	Design Prototype
Valuation	Make Interaction report, Analyze and prioritize capabilities to prototype Develop prototype, Establish new operational concept, Identify objectives, constraints and priorities
Foundations	Make client feedback form, Make project deliverable, Develop prototype, Assess prototype and components, Analyze and prioritize capabilities to prototype
Development- Construction Iteration	Tailor components, Make training plan
Development- Transition Iteration	Provide training, Tailor components

Table 11: Stakeholder's responsibilities

Name: Xiheng Yue	
Role: IIV&V/Quality Focal Point/Tester/System Architect	
Exploration	Verify and validate work, Track defects, Record on Bugzilla repository
Valuation	Construct traceability matrix, Identify configuration management strategy, Identify quality management strategy， Track defects, Verify and validate work projects， Record on Bugzilla repository
Foundations	Construct traceability matrix, Record on Bugzilla repository, Verify and validate work projects,

	Track defects
Development- Construction Iteration	Perform testing, Perform testing of the modules
Development- Transition Iteration	Perform testing of the system, Perform testing of the module

Table 12: Stakeholder's responsibilities

Name: Sales team	
Role: Sales	
Exploration	None
Valuation	None
Foundations	None
Development- Construction Iteration	None
Development- Transition Iteration	Advertise and train customers, Provide training

Table 13: Stakeholder's responsibilities

Name: New Member1&2	
Role: Implementation team	
Exploration	None
Valuation	None
Foundations	None
Development- Construction Iteration	Implement some of the modules of the development.
Development- Transition Iteration	Prepare the transition.

3.2 Skills

Team members	Role	Skills
Yu Fang	Project Manager, Life Cycle Planner	Jsf, COCOMO, SQL, PHP, Java, HTML, C++, Objective- C, UML, Project

		Management
Yu Zhang	Software Architect, Prototyper	Jsf, COCOMO, SQL, PHP, Java, HTML, jQuery, C++, Objective-C, C, Winbook
Heguang Liu	Operational Concept Engineer, Software Architect	Jsf, COCOMO, SQL, PHP, Java, HTML, jQuery ,C++, Objective-C
Wanghai Gu	Life Cycle Planner, Operational Concept Engineer	COCOMO, SQL, PHP, Java, HTML, jQuery, C++, C，Bugzilla
Zhen Li	Feasibility Analyst	COCOMO, SQL, PHP, Java, HTML, jQuery, C++
Longfeng Jia	Prototyper, Feasibility Analyst	COCOMO, SQL, PHP, Java, HTML, C++, C
Xiheng Yue	IIV&V, QFP	COCOMO, SQL, PHP, Java, HTML, jQuery, C++, Bugzilla

Requirement for CS577b:

Role	Skills
Builder	JSF, AWS, PrimeFaces, Spring
Builder	JSF, AWS, PrimeFaces, Spring

4. Approach

4.1 Monitoring and Control

Teams 11 is using various documentation to monitor and control our project.
- Project plan: Future events and work control.
- Progress Reports: Risks monitoring, activities tracking for next week.
- Effort Report: Weekly submission to record each team member's effort on the specific work.
- Meetings: weekly meetings to discuss the current progress and future plans.

4.1.1 Closed Loop Feedback Control

Team 11 is using various methods to function as closed loop feedback control.
- Bugzilla repository: Defects tracking, notification and feedback of the responsible member.
- Meetings: weekly meetings to review and give feedbacks to each member.
- SVN: shared documents to view other member's documentation and make modifications.
- QQ: Instant chatting with team mates to give feedbacks and discuss internal issues.

4.1.2 Reviews

Team 11 is using various methods to review our project.
- Bugzilla by IIV&V.
- Weekly stakeholder meetings review
- Commitment Package review
- Win-Win negotiations

4.2 Methods, Tools and Facilities

Tools	Usage	Provider
Balsamiq mockups	Provides examples for user interface and system functionality, is helpful in the development of prototype	Balsamiq.com
Winbook	Help to set up win win condition with stakeholders, prioritize and estimate requirements	USC
Visual Pardigm	Create UML model	USC
MS Project	Make project plans	Microsoft
MS office	Document LCP, FED, OCD and other documents	Microsoft

Bugzilla	Track, fix, file bugs/defects	USC
SVN	Share and view and modify team documentation internally	SVN
QQ	Discuss urgent matters online	Tecent
COINCOMO	Estimate resources	USC

5. **Resources**

The following conditions were used to estimate the cost of our system, the Surgery Assist System.
1. This project has no budget for our development efforts. However, the client must provide some necessary equipment for development and testing, e.g. server rental.
2. The duration of the project is 24 weeks, which are 12 weeks in CSCI577a and 12 weeks in CSCI577b.
3. There are seven developers.
4. There are five modules in this system.
    a. Post Surgical Slot module
    b. Email alert module
    c. Profile module
    d. Reservation module
    e. Payment module
    f. Monitor module
    g. Search module
5. All modules are developed with Java technology and application server technology, i.e. JSF, JavaScript, HTML.
6. Web Service for Payment module is calculated effort because we never use it and need effort to research and test. But it should be easy. Web Service for search module is Google maps, we need to know the API.

The following is module listed in the system and its estimated size with Source Lines of Code (SLOC)

Table 7: Module lists and SLOC of each module

No.	Module Name	Brief Description	SLOC	REVL
1	Post surgical module	User authentication and Post Surgical Slot mechanism	100	10%
2	Email alert module	Reminder of surgeons and surgery centers, and maintainers	500	10%
3	Profile module	Profile view, creation, edition and deletion of both sides	400	5%
4	Reservation module	Reservation and cancellation of the room	800	5%
5	Payment module	Payment the reservation fee online	300	10%
6	Monitor module	System log monitoring	500	10%
7	Search module	Search by map or text	800	10%

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

Table 8: COCOMOII Scale Drivers

Scale Driver	Value	Rationale
PREC	NOMINAL	The development team is familiar with some of the modules in this application.
FLEX	NOMINAL	The system needs to considerably conform to pre-established requirement from the client and external interface specifications. However, he's willing to change some of the less important but uneasy requirements.
RESL	HIGH	All critical risk items, schedule, budget and internal milestones are identified. However, there is some uncertainty in hardware.
TEAM	HIGH	Each stakeholder has considerable consistency of objectives, and considerable ability and willingness to accommodate others' objectives.
PMAT	NOMINAL	The development team follows ICSM guidelines but the result may not be consistent, CMM Level 2.

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

Table 9: COCOMOII Cost Drivers of Module 1 – Post Surgical Module

Cost Driver	Value	Rationale
RELY	HIGH	If the post surgical module fails, surgical website will not have with the usual reservation procedure.
DATA	LOW	The ratio of bytes in the testing database to SLOC in the program is approximately less than 10 because the database will store only information of the surgeon and surgery center profile and available slots information.
DOCU	NOMINAL	Because the development process follows ICSM, the document for life-cycle needs is normal.
CPLX	LOW	It contains simple message information passing, simple arrays in main memory, DB queries, simple graphic user interface.
RUSE	LOW	No intention to be reused for the future project.
TIME	NOMINAL	It involves not too much time and computation, which is less than 50%.
STOR	NOMINAL	The percentage of available storage expected to be used by the system and subsystem is less than 50% because the most data is general text and the profile information of the surgeon, surgery center, slots information.
PVOL	LOW	Major changes of the platform 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.
PCON	VERY LOW	We have 7 team members in CSCI577a and 3 team members in CSCI577b.
APEX	NOMINAL	The average experience of the team members for this online web-

Cost Driver	Value	Rationale
		based application is about one year.
LTEX	NOMINAL	The development team plans to develop this web-based application with JSF, HTML, and Java script, and uses SQL language to query information from the database. The tools for programming are Dreamweaver and Eclipse. Therefore, the language and tool experience is nominal because team members have at least one year experience with these languages and tools.
PLEX	LOW	The server Amazon platform and jsf tools. Although, all developers have java experience. Not all developers are familiar with Jsf tools and jsf.
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	We don't have off-campus students. We all do our work in the library.
SCED	NOMINAL	The schedule is fixed for 12 weeks in Fall semester and 12 weeks in Spring semester.

Table 10: COCOMOII Cost Drivers of Module 2 – Email Alert module

Cost Driver	Value	Rationale
RELY	NOMINAL	If the email fails, it would cause recoverable losses.
DATA	LOW	The ratio of bytes in the testing database to SLOC in the program is approximately less than 10 because the database will store only information of the surgeon and surgery center profile and available slots information.
DOCU	NOMINAL	Because the development process follows ICSM, the document for life-cycle needs is normal.
CPLX	LOW	It contains simple message information passing, simple arrays in main memory, DB queries, simple graphic user interface.
RUSE	LOW	No intention to be reused for the future project.
TIME	NOMINAL	It involves not too much time and computation, which is less than 50%.
STOR	NOMINAL	The percentage of available storage expected to be used by the system and subsystem is less than 50% because the most data is general text and the profile information of the surgeon, surgery center, slots information.
PVOL	LOW	Major changes of the platform 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.
PCON	VERY LOW	We have 7 team members in CSCI577a and 3 team members in CSCI577b.
APEX	NOMINAL	The average experience of the team members for this online web-based application is about one year.

Cost Driver	Value	Rationale
LTEX	NOMINAL	The development team plans to develop this web-based application with JSF, HTML, and Java script, and uses SQL language to query information from the database. The tools for programming are Dreamweaver and Eclipse. Therefore, the language and tool experience is nominal because team members have at least one year experience with these languages and tools.
PLEX	LOW	The server Amazon platform and jsf tools. Although, all developers have java experience. Not all developers are familiar with Jsf tools and jsf.
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	We don't have off-campus students. We are do our work in the library.
SCED	NOMINAL	The schedule is fixed for 12 weeks in Fall semester and 12 weeks in Spring semester.

Table 11: COCOMOII Cost Drivers of Module 3 – Profile module

Cost Driver	Value	Rationale
RELY	HIGH	If the profile fails, it would cause financial loss.
DATA	LOW	The ratio of bytes in the testing database to SLOC in the program is approximately less than 10 because the database will store only information of the surgeon and surgery center profile and available slots information.
DOCU	NOMINAL	Because the development process follows ICSM, the document for life-cycle needs is normal.
CPLX	LOW	It contains simple message information passing, simple arrays in main memory, DB queries,, simple graphic user interface.
RUSE	LOW	No intention to be reused for the future project.
TIME	NOMINAL	It involves not too much time and computation, which is less than 50%.
STOR	NOMINAL	The percentage of available storage expected to be used by the system and subsystem is less than 50% because the most data is general text and the profile information of the surgeon, surgery center.
PVOL	LOW	Major changes of the platform 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.
PCON	VERY LOW	We have 7 team members in CSCI577a and 3 team members in CSCI577b.
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

Cost Driver	Value	Rationale
		application with JSF, HTML, and Java script, and uses SQL language to query information from the database. The tools for programming are Dreamweaver and Eclipse. Therefore, the language and tool experience is nominal because team members have at least one year experience with these languages and tools.
PLEX	LOW	The server Amazon platform and jsf tools. Although, all developers have java experience. Not all developers are familiar with Jsf tools and jsf.
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	We don't have off-campus students. We are do our work in the library.
SCED	NOMINAL	The schedule is fixed for 12 weeks in Fall semester and 12 weeks in Spring semester.

Table 12: COCOMOII Cost Drivers of Module 4 – Reservation module

Cost Driver	Value	Rationale
RELY	HIGH	If the reservation fails, fake surgeons can interfere with the usual reservation procedure.
DATA	LOW	The ratio of bytes in the testing database to SLOC in the program is approximately less than 10 because the database will store only information of the surgeon and surgery center profile and available slots information.
DOCU	NOMINAL	Because the development process follows ICSM, the document for life-cycle needs is normal.
CPLX	LOW	It contains simple message information passing, simple arrays in main memory, DB queries, simple graphic user interface.
RUSE	LOW	No intention to be reused for the future project.
TIME	NOMINAL	It involves not too much time and computation, which is less than 50%.
STOR	NOMINAL	The percentage of available storage expected to be used by the system and subsystem is less than 50% because the most data is general text and the profile information of the surgeon, surgery center, slots information.
PVOL	LOW	Major changes of the platform 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.
PCON	VERY LOW	We have 7 team members in CSCI577a and 3 team members in CSCI577b.
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 JSF, HTML, and Java script, and uses SQL language to query information from the database. The tools for programming are Dreamweaver and Eclipse. Therefore, the language and tool experience is nominal because team members have at least one year experience with these languages and tools.
PLEX	LOW	The server Amazon platform and jsf tools. Although, all developers have java experience. Not all developers are familiar with Jsf tools and jsf.
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	We don't have off-campus students. We are do our work in the library.
SCED	NOMINAL	The schedule is fixed for 12 weeks in Fall semester and 12 weeks in Spring semester.

Table 13: COCOMOII Cost Drivers of Module 5 – payment module

Cost Driver	Value	Rationale
RELY	NOMINAL	If the payment fails, it would cause recoverable losses.
DATA	LOW	The ratio of bytes in the testing database to SLOC in the program is approximately less than 10 because the database of payment module is only for storage of the account number and payment history.
DOCU	NOMINAL	Because the development process follows ICSM, the document for life-cycle needs is normal.
CPLX	LOW	It contains simple message information passing, simple arrays in main memory, DB queries, simple graphic user interface.
RUSE	LOW	No intention to be reused for the future project.
TIME	NOMINAL	It involves not too much time and computation, which is less than 50%.
STOR	NOMINAL	The percentage of available storage expected to be used by the system and subsystem is less than 50% because the most data is general account information and history.
PVOL	LOW	Major changes of the platform 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.
PCON	VERY LOW	We have 7 team members in CSCI577a and 3 team members in CSCI577b.
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 JSF, HTML, and Java script, and uses SQL language to query information from the database. The tools for

Cost Driver	Value	Rationale
		programming are Dreamweaver and Eclipse. Therefore, the language and tool experience is nominal because team members have at least one year experience with these languages and tools.
PLEX	LOW	The server Amazon platform and jsf tools. Although, all developers have java experience. Not all developers are familiar with Jsf tools and jsf.
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	We don't have off-campus students. We are do our work in the library.
SCED	NOMINAL	The schedule is fixed for 12 weeks in Fall semester and 12 weeks in Spring semester.

Table 14: COCOMOII Cost Drivers of Module 5 – monitor module

Cost Driver	Value	Rationale
RELY	LOW	If the monitor fails, fake surgeons can cause easily recoverable losses.
DATA	LOW	The ratio of bytes in the testing database to SLOC in the program is approximately less than 10 because the database will store only information of the surgeon and surgery center profile and available slots information.
DOCU	NOMINAL	Because the development process follows ICSM, the document for life-cycle needs is normal.
CPLX	LOW	It contains simple message information passing, simple arrays in main memory, DB queries, simple graphic user interface.
RUSE	LOW	No intention to be reused for the future project.
TIME	NOMINAL	It involves not too much time and computation, which is less than 50%.
STOR	NOMINAL	The percentage of available storage expected to be used by the system and subsystem is less than 50% because the most data is general text and the profile information of the surgeon, surgery center, slots information.
PVOL	LOW	Major changes of the platform 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.
PCON	VERY LOW	We have 7 team members in CSCI577a and 3 team members in CSCI577b.
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 JSF, HTML, and Java script, and uses SQL language to query information from the database. The tools for

| Cost Driver	Value	Rationale
		programming are Dreamweaver and Eclipse. Therefore, the language and tool experience is nominal because team members have at least one year experience with these languages and tools.
PLEX	LOW	The server Amazon platform and jsf tools. Although, all developers have java experience. Not all developers are familiar with Jsf tools and jsf.
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	We don't have off-campus students. We are do our work in the library.
SCED	NOMINAL	The schedule is fixed for 12 weeks in Fall semester and 12 weeks in Spring semester.

Table 15: COCOMOII Cost Drivers of Module 6 – Search module

Cost Driver	Value	Rationale
RELY	LOW	If the search fails, it can cause easily recoverable losses.
DATA	LOW	The ratio of bytes in the testing database to SLOC in the program is approximately less than 10 because the database will store only information of the surgeon and surgery center profile and available slots information.
DOCU	NOMINAL	Because the development process follows ICSM, the document for life-cycle needs is normal.
CPLX	NOMINAL	It contains simple message information passing, simple arrays in main memory, complex DB queries, simple graphic user interface.
RUSE	LOW	No intention to be reused for the future project.
TIME	NOMINAL	It involves not too much time and computation, which is less than 50%.
STOR	NOMINAL	The percentage of available storage expected to be used by the system and subsystem is less than 50% because the most data is general text and the profile information of the surgeon, surgery center, slots information.
PVOL	LOW	Major changes of the platform 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.
PCON	VERY LOW	We have 7 team members in CSCI577a and 3 team members in CSCI577b.
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 JSF, HTML, and Java script, and uses SQL language to query information from the database. The tools for

		programming are Dreamweaver and Eclipse. Therefore, the language and tool experience is nominal because team members have at least one year experience with these languages and tools.
PLEX	LOW	The server Amazon platform and jsf tools. Although, all developers have java experience. Not all developers are familiar with Jsf tools and jsf.
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	We don't have off-campus students. We are do our work in the library.
SCED	NOMINAL	The schedule is fixed for 12 weeks in Fall semester and 12 weeks in Spring semester.

The following is the result from COCOMOII estimation based on Scale Drivers and Cost Drivers discussed above.

Figure 1: COCOMO Estimation Result
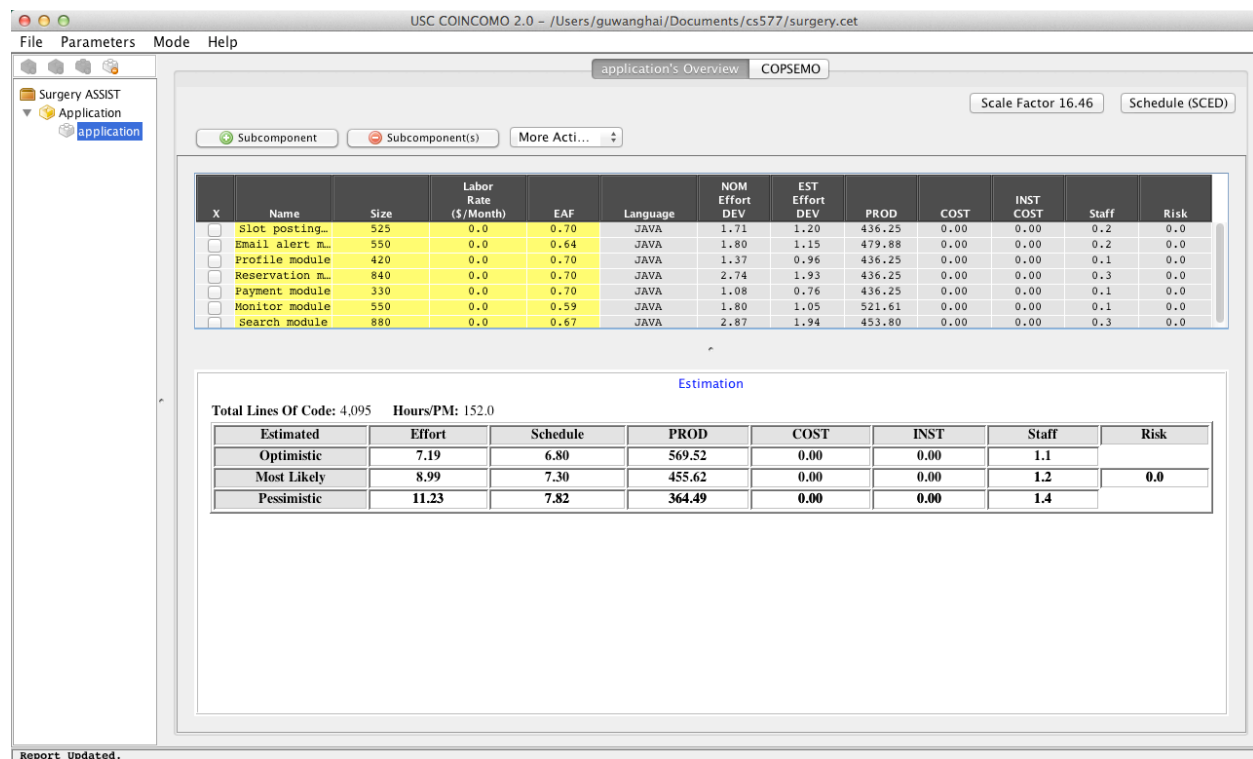
The form of schedule our project uses is the Independent Variable (SAIV) strategy, 24–week schedule drives development of a set of top priority core capabilities. Therefore, the estimates show the effort required for the project.

- Assume 15 hours/week of dedicated effort per person

- Assume 10 of the 12 weeks fill the development phase (72% of the total effort estimates); the final two weeks are for product transition into operations.
- Assume 100/hours/person-month for COCOMO estimates

According to COCOMO II Estimates for CSCI577 and above assumptions, one team member effort = 15*10/100/0.72=2.08 COCOMO II person months. The most likely effort from the COCOMO estimation above is 8.99, so the total team members need for this project = 8.99/1.80= 4.32

Since, we have 7 people, and 3 people will enter the 577b, we need two more people for the next semester to complete the project in time.

6. Iteration Plan

6.1 Plan

3 iterations are planned in the Development phase. They are construction iteration 1, construction iteration 2 and transition iteration.

During the first increment of construction iteration the most important features will be developed, which are "must have" requirements. Testers need to test the main features. Development iteration needs to be assessed before the team moves on to next iteration. At the end of this iteration, milestone of Core Capability Drive-through will be ready. And we can take feedback from the clients.

The second increment of the construction iteration will be developing the remaining low priority capabilities, testing and debugging functionalities, develop User Manual and Support Plan, etc. At the end of this iteration, the milestone of Transition Readiness Review will be ready.

The transition iteration is accountable for the transition of the system to the client and training of the users, client and maintainers.

    construction iteration 1: 02/14/14-04/16/14

    construction iteration 2: 03/31/14- 4/30/14

    transition iteration: 4/18/14- 4/28/14

6.1.1 Capabilities to be implemented

Table 16: Construction iteration capabilities to be implemented

ID	Capability	Description	Priority	Iteration
OC-1	Email Alert	Reminder of surgeons and surgery centers, and maintainers	7	1
OC-2	Reservation	Reservation and cancellation of the room	10	1
OC-3	Profile	Profile view, creation, edition and deletion of both sides, uploading images.	10	1
OC-4	Search	Search by map or text	9	1
OC-5	Post surgical slot	The system will enable SC post their available surgical slot, and upload attachments	8	1
OC-6	Payment	Payment the reservation fee online	3	2
OC-7	Monitor	System log monitoring	5	2

6.1.2 Capabilities to be tested

Table 17: Construction iteration capabilities to be tested

ID	Capability	Description	Priority	Iteration

OC-1	Email Alert	Reminder of surgeons and surgery centers, and maintainers	7	1
OC-2	Reservation	Reservation and cancellation of the room	10	1
OC-3	Profile	Profile view, creation, edition and deletion of both sides, uploading images.	10	1
OC-4	Search	Search by map or text	9	1
OC-5	Post surgical slot	The system will enable SC post their available surgical slot, and upload attachments	8	1
OC-6	Payment	Payment the reservation fee online	3	2
OC-7	Monitor	System log monitoring	5	2

6.1.3 Capabilities not to be tested

All Capabilities will be tested.

6.1.4 CCD Preparation Plans

<< Identify the clients and other users who will be involved in the Core Capability Drive-through, the usage scenarios that it will support, and the specific CCD preparation plans and milestones. These may include

- user context-setting
- site preparation dry runs,
- feedback forms, and
- CCD risk management plans. >>

6.2 Iteration Assessment

6.2.1 Capabilities Implemented, Tested, and Results

<< Describes, in brief, the capabilities that were implemented and the test results. The capabilities implemented and tested do not necessarily need to match the ones listed in section 6.1 because some capabilities may have been pushed to the next iteration. >>

Table 18: Capabilities implemented, tested, and results

ID	Capability	Test Case	Test Results	If fail, why?
< ID >	< Capability >	< TC-XX >	Pass/Fail	< comments >
…				

6.2.2 Core Capabilities Drive-Through Results

<< Briefly summarize the feedback you received from your client(s). You need to be specific enough to cover the critical capabilities or scenarios that were discussed, demoed, or shown. Your descriptions MUST, but not limited to, cover the following areas:
- Positive feedbacks
- Improvements needed/suggested
- Changes to-be considered (Reprioritized capabilities, requirements, GUI, etc.)
- Risks (New risks introduced, risks mitigated, etc.)

Note: Make sure to be specific to the capabilities shown/demonstrated/driven-through. Simply stating that the clients liked the capabilities is not sufficient. >>

6.3 Adherence to Plan

<< Describe how well the iteration ran according to plan. Was it on budget and on time? Is there any uncertainty in the Software Development Status? Provide some insight to avoid mistakes for future iterations. >>