Life Cycle Plan (LCP)

Pediatric Trauma Society Research Investigator Databank (PTS-RID)

Team 01

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Version History

Date	Author	Version	Changes made	Rationale
10/10/12	Georges H.	1.0	Section 3.3	For VC Package
14/10/12	Georges H.	1.1	Sections 1 and 3	Core FC Package
22/10/12	Georges H.	1.2	Sections 1 and 5	Draft FC Package
27/10/12	Georges H.	1.3	Sections 2 and 4	Draft FC Package
04/11/12	Georges H.	1.4	Fix sections	FC Package
26/11/12	Georges H.	2.0	Fix mistakes from previous submission	Draft DC Package
04/12/12	Georges H.	2.1	Minor bug fixing	Draft DC Package
09/12/12	Georges H.	2.2	Section 6 up to 6.1.3 Fix bugs from ARB review	DC Package
02/09/13	Georges H.	3.0	COCOMO estimates and rebaseline for CS 577b	Draft RDC Package
02/20/13	Georges H.	3.1	Minor bugs	RDC Package
04/01/13	Georges H.	4.0	Bugzilla bugs, update estimations	IOC #1
04/05/13	Georges H.	4.1	Updated section 6	Evaluation of IOC #1
04/07/13	Georges H.	4.2	Updated capabilities table	Evaluation of IOC #1
04/10/13	Georges H.	4.3	CCD results	CCD Report
05/03/13	Georges H.	4.4	Capabilities implemented and tested	IOC #3

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1 Introduction

1.1 Purpose of the LCP

The purpose of the LCP is to plan the development of the project. The reason behind that is the high rate of project failures due to poor planning. The LCP is an attempt at reducing this rate, and increasing the chances of project success.

1.2 Status of the LCP

Fixed minor bugs, updated the estimations of the project.

1.3 Assumptions

- The schedule will not be shortened: a total of 24 weeks, over two semesters
- Available hardware / infrastructure: if not, available funding for local hardware, or alternatively online storage.
- Discussion board COTS availability that satisfies client needs. Free otherwise must set a budget
- Pubmed has an API for ease of interaction. If not, might need to renegotiate scope of project.
- The SC Stakeholders are committed throughout the project, and will remain on the team until the end of spring semester: all students are staying for CS 577B and so is the client and webmaster.

2 Milestones and Products

2.1 Overall Strategy

PTS-RID is following the Architected Agile process because, although we are using an NDI, it only fulfills about 30% of our core capabilities and so, we still have to do the major development part ourselves.

Life Cycle phases:

Exploration phase:
Duration: 09/12/2012 – 10/03/2012
Concept: Identify the current and desired system's capabilities, the project operational concept, and define project plan. Conduct feasibility analysis
Deliverables: Valuation Commitment Package
Milestone: Valuation Commitment Review
Strategy: One Incremental Commitment Cycle

Valuation phase:
Duration: 10/03/2012 – 11/05/2012
Concept: Identify Objectives, Constraints and Priorities, define operational concept, requirements, software and system architecture, and life cycle plan. Provide feasibility evidence and negotiate win conditions.
Deliverables: Core FC Package, Draft FC Package, FC Package
Milestone: Foundations Commitment Review
Strategy: One Incremental Commitment Cycle

Foundations phase:
Duration: 11/05/2012 – 12/14/2012
Concept: Assess project status, develop system architecture, manage project quality, prototyping
Deliverables: Draft DC Package, DC Package, Prototype of most important risks (more details in next section)
Milestone: Development Commitment Review
Strategy: One Incremental Commitment Cycle

Rebaselined Foundations phase:
Duration: Two weeks in the Spring semester
Concept: Rebaseline project status and prepare for development phase, plan for testing
Deliverables: DC Package, Prototype of GUI
Milestone: Rebaselined Development Commitment Review
Strategy: One Incremental Commitment Cycle

Development phase:

Duration: Rest of the Spring semester minus two weeks
Concept: Construction and Transition iterations, Core capabilities
Deliverables: Core capabilities, Draft TRR Review, TRR Review, Profile page, basic search, other members' profiles. Using temporary data.
Milestone: Operation Commitment Review
Strategy: Two Incremental Commitment Cycles

2.2 Project Deliverables

2.2.1 Exploration Phase

Table 1: Artifacts Deliverables in Exploration Phase

Artifact	Due date	Format	Medium
Client Interaction Report	9/19/2012	.doc, .pdf	Soft copy
Valuation Commitment Package • Operational Concept Description (OCD) Early Section • Life Cycle Plan (LCP) Early Section • Feasibility Evidence Description (FED) Early Section	10/03/2012	.doc, .pdf	Soft copy
Project Effort	Every Monday	Text	ER system
Project Plan	Every Wednesday	.mpp, .pdf	Soft copy
Progress Report	Every Wednesday	.xls	Soft copy

2.2.2 Valuation Phase

Table 2: Artifacts deliverable in Valuation Phase

Artifact	Due date	Format	Medium
Evaluation of Valuation Commitment Package	10/08/2012	Bugzilla	Online
Response to evaluation of Valuation Commitment Package	10/16/2012	.doc, .pdf	Soft copy
Core FC Package	10/15/2012	.doc, .pdf	Soft copy
Draft FC Package	10/22/2012	.doc, .pdf	Soft copy
Evaluation of Core FC Package	10/22/2012	Bugzilla	Online

Artifact	Due date	Format	Medium
Response to evaluation of Core FC Package	10/24/2012	.doc, .pdf	Soft copy
QMP #1	10/26/2012	.doc, .pdf	Soft copy
Evaluation of Draft FC Package	10/29/2012	Bugzilla	Online
Response to evaluation of Draft FC Package	10/31/2012	.doc, .pdf	Soft copy
FC Package	11/05/2012	.doc, .pdf	Soft copy
Project Effort	Every Monday	Text	ER system
Project Plan	Every Wednesday	.mpp, .pdf	Soft copy
Progress Report	Every Wednesday	.xls	Soft copy
COTIPMO	Every Wednesday	COTIPMO	Online

2.2.3 Foundations Phase

Table 3: Artifact deliverable in Foundations Phase

Artifact	Due date	Format	Medium
Risk mitigation: language used to code the website	11/10/2012	Part of Progress report	Soft copy
Evaluation of FC Package	11/12/2012	Bugzilla	Online
Risk mitigation: COTS to be used for Discussion Board	11/14/2012	Part of Progress report	Soft copy
Risk mitigation: online hosting / storing option	11/14/2012	Part of Progress report	Soft copy
Response to evaluation of FC Package	11/14/2012	.doc, .pdf	Soft copy
Risk mitigation: Prototype of interaction with Pubmed	11/19/2012	.php	Soft copy
QMP #2	11/19/2012	.doc, .pdf	Soft copy
Draft DC Package	11/26/2012	.doc, .pdf	Soft copy
Evaluation of Draft DC Package	12/03/2012	Bugzilla	Online
Response to Evaluation of Draft DC Package	12/10/2012	.doc, .pdf	Soft copy
DC Package	12/10/2012	.doc, .pdf	Soft copy
Project Effort	Every Monday	Text	ER system

Artifact	Due date	Format	Medium
Project Plan	Every Wednesday	.mpp, .pdf	Soft copy
Progress Report	Every Wednesday	.xls	Soft copy
COTIPMO	Every Wednesday	COTIPMO	Online

2.2.4 Rebaselined Foundations Phase

Artifact	Due date	Format	Medium
GUI: try 2	02/06/2013	.pdf	Soft copy
Draft RDC Package	02/11/2013	.doc, .pdf	Soft copy
Module: PubMed pulling (Junjian, Mehrdad)	02/11/2013	.html, .php	Soft copy
Project Effort	Every Monday	Text	ER system
Project Plan	Every Wednesday	.mpp, .pdf	Soft copy
Progress Report	Every Wednesday	.xls	Soft copy
COTIPMO	Every Wednesday	COTIPMO	Online

2.2.5 Development Phase

Table 4: Artifact deliverable in Development Phase

Artifact	Due date	Format	Medium
RDC Package	02/20/2013	.doc, .pdf	Soft copy
IOC #1	04/01/2013	Milestone	Soft copy
Risk mitigation: Graphical User interface	02/18/2013	.html, .jpg	Soft copy
Module: search (Mehrdad, Junjian)	03/01/2013	.html, .php	Soft copy
Module: Basic profile page	03/01/2013	.html, .php	Soft copy
Module: Discussion board integration (Nick)	03/01/2013	.html	Soft copy
Put discussion board on godaddy	03/13/2013	.html	Soft copy
Publication view	03/13/2013	.html	Soft copy
Module: pubmed pulling	03/18/2013	.html	Soft copy
Coding DB schema	03/15/2013	.html	Soft copy
Core Capability drivethru	04/03/2013	.html, .php, .js	Soft copy
Artifact	**Due date**	**Format**	**Medium**

Connect backend and front end	04/10/2013	.html, .php	Soft copy
Risk mitigation: search under 1 minute	04/15/2013	Tests	Soft copy
Draft TRR Package	04/15/2013	.doc, .pdf	Soft copy
Support and Transition set package	04/22/2013	.doc, .pdf	Soft copy
Evaluation of TS set	04/29/2013	Bugzilla	Online
IOC, TS Set Package	05/03/2013	.doc, .pdf	Soft copy
Project Effort	Every Monday	Text	ER system
Project Plan	Every Wednesday	.mpp, .pdf	Soft copy
Progress Report	Every Wednesday	.xls	Soft copy
COTIPMO	Every Wednesday	COTIPMO	Online

3 Responsibilities

3.1 Project-specific stakeholder's responsibilities

There are no specific stakeholders for our project, other than the ones identified in ICSM EPG. I will, however, give some additional details regarding our stakeholders, as requested in the table below.

3.2 Responsibilities by Phase

Table 5: Stakeholder's Responsibilities in each phase

Team Member / Role	Primary / Secondary Responsibility				
	Exploration	**Valuation**	**Foundations**	**Development-** Construction Iteration	**Development-** Transition Iteration
Name: Georges Roles: Project Manager Life Cycle Planner	**Primary Responsibility** - Teamwork Coordination - Ensure that progress is going according to plan **Secondary Responsibility** - Evaluate team strength and weakness - Determine stakeholder responsibilities	**Primary Responsibility** - Weekly define plan for each team member - Ensure that progress is going according to plan - Identify project tasks and assign responsible team members for each task. **Secondary Responsibility** - Estimate project effort and schedule - Identify milestones and products	**Primary Responsibility** - Same as previous phases. **Secondary Responsibility** - Assess life cycle content - Identify Life cycle management approach	**Primary Responsibility** - Same as previous phases. - Define project plan **Secondary Responsibility** - Core capability drive-through - Identify Development Iteration	**Primary Responsibility** - Same as previous phases **Secondary Responsibility** - Develop Transition Plan - Develop support plan (in our case, explaining everything to the maintainer

Team Member / Role	Exploration	Valuation	Foundations	Development- Construction Iteration	Development- Transition Iteration
Name: Sepideh Roles: Prototyper System architect	**Primary Responsibility** - Analyze and prioritize capabilities to prototype **Secondary Responsibility** - Specify architecture styles, patterns and frameworks	**Primary Responsibility** - Analyze and prioritize capabilities to prototype - Establish new operational concept **Secondary Responsibility** - Analyze NDI interoperability - Define technology-(in)dependent architecture	**Primary Responsibility** - Develop prototype - Prepare development / production req. **Secondary Responsibility** - Analyze the proposed system - Provide feasibility evidence - Assess and evaluate NDI candidates		
Name: Junjian Roles: System architect Prototyper	**Primary Responsibility** - Specify architecture styles, patterns and frameworks **Secondary Responsibility** - analyze and prioritize capabilities to prototype	**Primary Responsibility** - Analyze NDI interoperability - Define technology-(in)dependent architecture **Secondary Responsibility** - analyze and prioritize capabilities to prototype - establish new operational concept	**Primary Responsibility** - Analyze the proposed system - provide feasibility evidence - assess and evaluate NDI candidates **Secondary Responsibility** - develop prototype - prepare development / production req.		

Team member / role	Exploration	Valuation	Foundations	Development- Construction Iteration	Development- Transition Iteration
Name: Mehrdad Roles: Project Manager Feasibility Analyst	**Primary Responsibility** - Teamwork Coordination - Ensure that progress is going according to plan **Secondary Responsibility** - Assess and plan to mitigate risks - Identify the most appropriate process	**Primary Responsibility** - weekly define plan for each team member - Ensure that progress is going according to plan **Secondary Responsibility** - Analyze NDI interoperability - Assess feasibility evidence	**Primary Responsibility** - Identify project tasks and assign responsible team members for each task. - Same as previous phases. **Secondary Responsibility** - Assess and evaluate NDI candidates - Analyze Business Case		
Name: Nick Roles: Requirements Engineer Operational Concept Engineer	**Primary Responsibility** - develop requirements definition **Secondary Responsibility** - analyze current system - explore alternatives	**Primary Responsibility** - assess requirements definition **Secondary Responsibility** - identify shared vision - identify organizational and operational transformation - identify objectives, constraints and priorities	**Primary Responsibility** - assess requirements definition **Secondary Responsibility** - establish new operational concept		
Name: Kenda Roles: IIV & V	**Primary Responsibility** - Verify and validate work products	**Primary Responsibility** - Verify and validate work products	**Primary Responsibility** - Verify and validate work products	**Primary Responsibility** - Verify and validate work products	**Primary Responsibility** - Verify and validate work products

Team member / role	Exploration	Valuation	Foundations	Development- Construction Iteration	Development- Transition Iteration
Name: **Rita** Roles: Client	**Primary Responsibility** - Analyze current system	**Primary Responsibility** - Identify objectives, constraints and priorities - Identify shared vision - Identify organizational and operational transformation	**Primary Responsibility** - Establish new operational concept	**Primary Responsibility** - Evaluate prototypes and components - Core capability drive-through	**Primary Responsibility** - Participate in the transition plan - Core capability drive-through
Name: **Max** Roles: Maintainer				- Core capability drive-through	- Develop support plan - Develop transition plan - Core capability drive-through
CS577b role: Developer Name: Kenda, Nick, Georges, Mehrdad, Junjian				- Develop components - Develop glue code - Integrate components - Fix defects - Tailor components	- Fix defects - Transition the system
Future role: Tester Name: Kenda, Nick, Georges, Mehrdad, Junjian				- Determine important test cases - Test builders' products - Report and track issues / bugs	- Same as previous phase

3.3 Skills

Table 6: Members' Skills

Team members	Role	Skills
Georges Hatem	Project Manager Life Cycle Planner	Current skills: - Good planning capabilities - Time management - Risk analysis - Good analysis capabilities - Teamwork and coordination Required skills: - Project and activity planning - Monitoring and controlling execution of project - COTIPMO / MS Project - Good time and people management skills - Good team coordinator - C, C++, Java, MATLAB, Latex, OpenGL, Delphi, SQL, Processing, CUDA
Junjian Wang	System Architect Prototyper	Current skills: - Tools: Eclipse, MATLAB, Weka, GIT, JUnit, Visual Studio, GNU - Languages: C, C++, JAVA, HTML, JavaScript, ActionScript Required skills: - UML Modeling - Visual Paradigm

Team members	Role	Skills
Mehrdad Mahdavi Boroujerdi	Project Manager Feasibility Analyst	Current skills: - Teamwork, Java, PHP, C family, Python, CSS, HTML, Javascript, MySQL Required skills: - Project plan - Teamwork - Risk analysis
Nick McCall	Operational Concept Engineer Requirements Engineer	Current skills: - Languages: C, C++, Java, assembly (HLA), XML, SQL, HTML - Additional: Android, database design, computer security - Clear and concise communication Required skills: - Goal setting and (re) alignment
Kenda Albertson	IIV&V	Current Skills: - Java, Javascript, JDBC, C++, HTML - Good organization and communication Required Skills: - Communication - Attention to Detail

Team members	Role	Skills
Team	Builder	Required Skills: - Good understanding of the requirements - Good programming skills
Team	Tester	Required Skills: - Determine important test cases - Attention to detail

4 Approach

4.1 Monitoring and Control

In order to monitor the progress of our project, we are relying heavily on the project's progress report. The planning is being done via MPP and uploaded to the project website.

4.1.1 Closed Loop Feedback Control

Our team relies heavily on emails to share information with the members. We made two Google groups, one for internal communication between us students, and another one where we have the clients too. This makes communication easy and reliable (we don't forget to add someone to the emails).

Every time someone uploads a document to the website or completes some assigned work, he notifies the team by email. This keeps everyone up-to-date with the recent activities and progress of the individual components of the project.

4.1.2 Reviews

We are using four types of review to control our project:

- IIV & V evaluations
- TA feedback (via FTP)
- Group assessment of difficulties
- ARB

The first two are reviews provided by Kenda (DEN) and the TAs. We provide the third as a team, when someone is having difficulties in doing something. We usually meet once a week, and assess the difficulties encountered by each one of us. We either solve the problem on the spot, or provide group feedback to help fix the problem. Finally, the ARB is an opportunity for us to get review by all of the professors, TAs and client.

4.2 Methods, Tools and Facilities

Table 7: Tools, their usage and providers

Tools	Usage	Provider
Project website	View all the documents completed by the team members, and their versions	USC
Filezilla	FTP access to our project website. Also allows us to view TA feedback	Open source
ICSM EPG	Better understanding of our roles as software engineers; help with documentation and other submissions	CSCI 577
Course lectures	Similar to ICSM EPG	CSCI 577
Effort report	Keep track of members individual effort during a certain week	CSCI 577
COTIPMO	Estimate project costs at current iteration	CSCI 577
Winbook	Keep track of the information resulting from negotiations with client, win conditions and issues raised	CSCI 577
M.S. Project	Project planning	Microsoft
Balsamiq	GUI prototyping	Balsamiq
MS Office	Document editing, sheets, presentations etc…	Microsoft
Bugzilla	Keep track of our current bugs, and insert new ones as they are found.	CSCI 577
Adobe Dreamweaver	Help design the website's UI	USC
WAMP server 2	Simulates a server on our local machine	WAMP
ZendStudio	Enables debugger for SQL queries	Zend

5 Resources

We identify the following information in order to estimate the software cost:

- Estimated CSCI577a Effort: 7.05 * 0.6 = 4.4 team members at 536 / 6 persons / 12 weeks = 7.5 hrs/week for 12 weeks
- Estimated CSCI577b Effort: 7.05 * 0.6 = 4.4 team members at 536 / 5 persons / 12 weeks = 9 hrs/week for 12 weeks
- Total estimated effort: 4.4 PM, 1072 hours with Nominal Schedule.
- Budget information: as this is a non-profit organization, the budget is limited to the online hosting
- Project duration: 24 weeks
- Component modules in your development project:
  - Pubmed pulling module
  - Search module
  - User profile and CV module
  - Discussion board and messaging module
  - Collaboration list module
- Programming language used: HTML, Javascript, MySQL, PHP

After analysis using COTIPMO, we determine that the project is doable: a workload of 9 hours per person per week is feasible. The optimal team size is 4.4 persons, we have 5 people.

Below are the cost drivers for the project, the scale factors for each module, and the rationale that explains how those factors were chosen:

Table 8: COCOMOII Scale Driver

Cost Driver	Value	Rationale
Precedentedness	NOM	We do not have experience with this type of project, but we've been learning quickly
Dev. Flexibility	HI	We have the choice of several languages and discussion board software to use.
Risk Resl.	HI	We tracked various risks that we might encounter, computed RE, prioritized them and started working on resolving them
Team Cohesion	HI	Although sometimes it takes time to agree on something, our team cooperates well.
Proc. Maturity	HI	Since we are following the process of the class, the process is decently mature (lv.3)

Figure 1: initial module size estimation

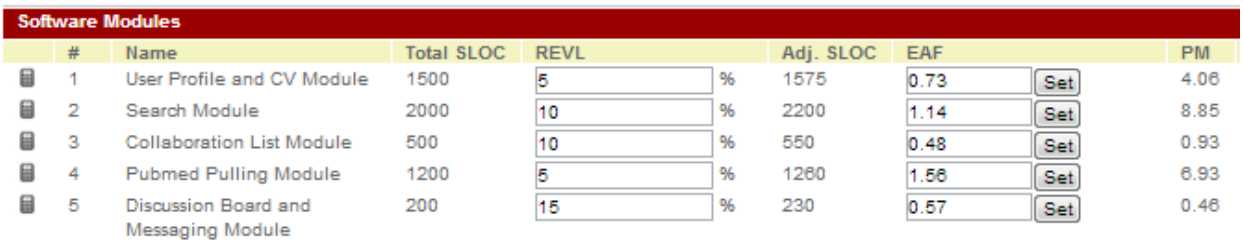
Initial Project Estimates — Edit

Description:	A website that enhances research collaboration between members of PTS, specifically around pediatric research.
SCED:	NOM
Scale Factors:	19.34
Total PM:	7.05
Total Effort:	1072 hours

Modules:

#	Name	Total SLOC	REVL	Adj. SLOC	EAF	PM	Equiv. Effort
1	User Profile and CV Module	600	5	630	0.69	1.38	210 hrs
2	Search Module	400	10	440	1.02	1.43	217 hrs
3	Collaboration List Module	100	10	110	0.48	0.17	26 hrs
4	Pubmed Pulling Module	700	5	735	1.56	3.65	555 hrs
5	Discussion Board and Messaging Module	200	15	230	0.57	0.42	64 hrs

Figure 2: current module size estimation



Software Modules

#	Name	Total SLOC	REVL		Adj. SLOC	EAF		PM
1	User Profile and CV Module	1500	5	%	1575	0.73	Set	4.06
2	Search Module	2000	10	%	2200	1.14	Set	8.85
3	Collaboration List Module	500	10	%	550	0.48	Set	0.93
4	Pubmed Pulling Module	1200	5	%	1260	1.56	Set	6.93
5	Discussion Board and Messaging Module	200	15	%	230	0.57	Set	0.46

Table 9: COCOMOII Cost Driver – pubmed pulling module

Scale Driver	Value	Rationale
Rely	HI	We must pull the correct information, get the user to confirm his publications, and automate the pulling as publications are posted on pubmed. This, as every automated procedure, requires high reliability, as a human will probably not monitor it. Failure would assign publications to the incorrect member, and will require human interference to get fixed.
Data	HI	Will store publication headers, along with the abstract (text paragraph). Estimates show that there will be more than a 10,000 such publications (@ 200 members, 50 pubs. ea.). The publications themselves will not be stored. Will also store CV files, and pictures for profile.
Docu	NOM	There is no need for too much documentation, as this is already covered by the pubmed API. Still, we need to explain what we are doing, and why we are doing it like that.
Cplx	HI	Communication with PubMed to pull information is tricky. Search algorithm should be “fast”
Ruse	LO	Pulling information under this specific format is very unlikely to be used again in PTS.

Scale Driver	Value	Rationale
Time	NOM	Pulling will be done at night, when fewer people are using the system. The time constraint on this operation is thus not constraining
Stor	NOM	Since we are mostly storing text, the storage requirements are not huge. The data can fit very easily on a hard disk, or alternatively, on online storage.
Pvol	NOM	Some clarifications are still needed, and as such we cannot set the req. volatility to low.
Acap	NOM	The team consists of graduate students who have no professional experience for the most part, yet have decent analytical skills
Pcap	LO	Our programming background in web development is not too strong, and in addition, we know nothing of the API provided by pubmed.
Pcon	VHI	Only 1 person left after CS 577a
Apex	NOM	We each have various application experiences that can help us in the development of the project.
Plex	NOM	Again, we all used different platforms and have basic to good knowledge of several ones
Ltex	VLO	Due to our lack of web programming experience and complete unfamiliarity with pubmed API
Tool	NOM	Several tools are provided by USC, and are at our disposition (Dreamweaver...) other tools are free (MySQL). Might need additional tools
Site	NOM	Most students are on campus. Only Kenda (DEN) and client call during meetings.
Sced	NOM	We are limited by the length of the 2 semesters.

Figure 3: pubmed pulling module effort factors

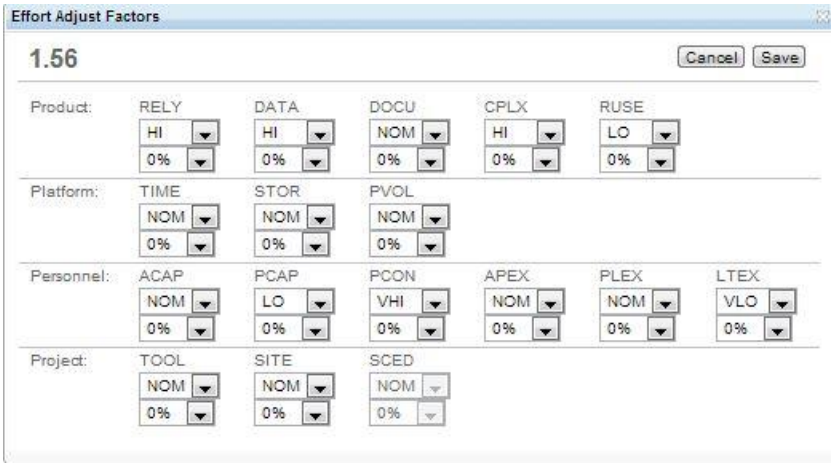


Table 10: COCOMOII Cost Driver – Search Module

Scale Driver	Value	Rationale
Rely	HI	Searching must find accurate results, not too limiting, nor too overwhelming. It is the key in finding proper information.
Data	NOM	Searching could return many articles, but it is all text, so the data transferred is not high.
Docu	NOM	Searching is relatively a simple operation. The only thing that might need additional documentation is Searching a paragraph of text for some sentence
Cplx	HI	The way for paragraph searching is still unknown to us and will require some research in order to provide decent results (performance and search).
Ruse	NOM	Searching is always useful, yet most of the time basic. However, the paragraph search might be reused in another context (maybe CV scanning?)
Time	NOM	Client imposed a "not more than 1 minute" search time. Assuming it takes 10ms to search 1 publication (it should take much less, since the text size is small), we can search for 60,000 pubs in 1 minute, which exceeds the size of the expected database.
Stor	NOM	Searching is only querying the database and does not require storing data (except for underlying DBMS operations, which are virtual and not visible at the user level).
Pvol	NOM	Additional search criteria could be required later on.
Acap	NOM	The team consists of graduate students who have no professional experience for the most part, yet have decent analytical skills
Pcap	NOM	Our programming background in web development is not too strong.
Pcon	VHI	We all plan to enroll in 577B and pursue the project next semester.
Apex	NOM	We each have various application experiences that can help us in the development of the project.
Plex	NOM	Again, we all used different platforms and have basic to good knowledge of several ones
Ltex	LO	Due to our lack of web programming experience and complete unfamiliarity with pubmed API
Tool	HI	Several tools are provided by USC, and are at our disposition (Dreamweaver...) other tools are free (MySQL).
Site	NOM	The client has a single site, and the application is meant to be used online via browsers.
Sced	NOM	We are limited by the length of the 2 semesters.

Figure 4: search module effort factors

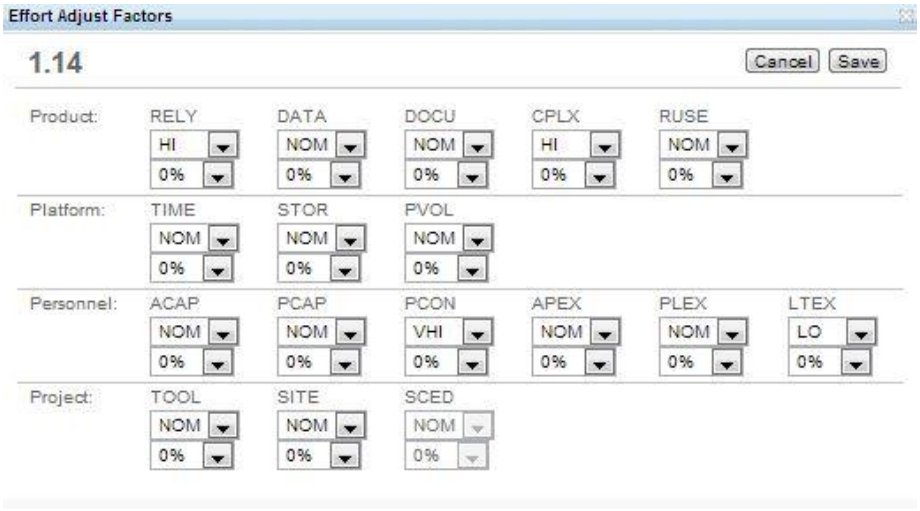


Table 11: COCOMOII Cost Driver – User Profile and CV module

Scale Driver	Value	Rationale
Rely	HI	Displaying incorrect information about a member can be very bad. It is important for the module to be reliable.
Data	NOM	Storing member personal information and CV
Docu	LO	This is a basic relational database and does not require excessive documentation.
Cplx	NOM	Clear user interfacing of information is important here and will surely require some prototyping (IKIWISI)
Ruse	NOM	Such a basic module can easily be implemented from scratch. The GUI is reusable for my profile and other profiles
Time	NOM	Uploading and downloading CVs should be done in a timely manner. However, large files may take more time.
Stor	NOM	Storing personal information, CVs, profile pic (low res).
Pvol	NOM	Personal information reqs. may increase. E.g. phone number
Acap	NOM	The team consists of graduate students who have no professional experience for the most part, yet have decent analytical skills
Pcap	NOM	Our programming background in web development is not too strong.
Pcon	VHI	We all plan to enroll in 577B and pursue the project next semester.
Apex	NOM	We each have various application experiences that can help us in the development of the project.

Scale Driver	Value	Rationale
Plex	NOM	Again, we all used different platforms and have basic to good knowledge of several ones
Ltex	NOM	Due to our lack of web programming experience and complete unfamiliarity with pubmed API. However, the implementation of this module is easy in comparison with the others.
Tool	HI	Several tools are provided by USC, and are at our disposition (Dreamweaver...) other tools are free (MySQL)
Site	NOM	The client has a single site, and the application is meant to be used online via browsers.
Sced	NOM	We are limited by the length of the 2 semesters.

Figure 5: user profile and cv module effort factors

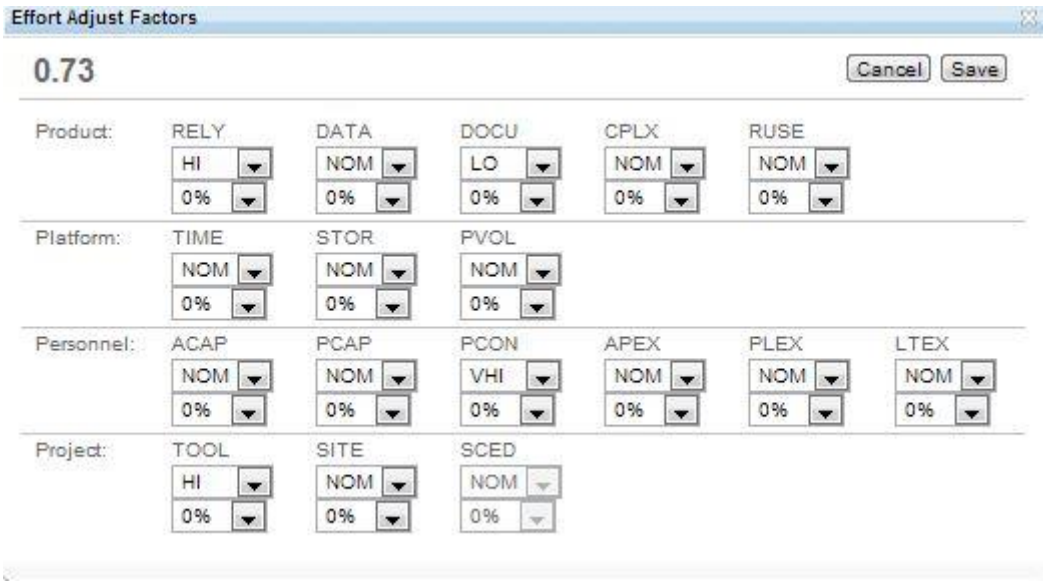


Table 12: COCOMOII Cost Driver – Discussion Board and Messaging Module

Scale Driver	Value	Rationale
Rely	NOM	Since no crucial information needs to be protected, reliability need not be high. However, topic errors should not occur often either.
Data	NOM	Storing messages, board topics.

Scale Driver	Value	Rationale
Docu	LO	We are using a COTS. Documentation needs to explain the COTS' interactions with the system.
Cplx	LO	It should be a matter of integration only.
Ruse	LO	We are already reusing by using a COTS. There is only need for one discussion board.
Time	NOM	No specific time constraints
Stor	NOM	Storing messaging conversations, topics on board.
Pvol	NOM	Have to decide on exact features needed in the COTS
Acap	NOM	The team consists of graduate students who have no professional experience for the most part, yet have decent analytical skills
Pcap	NOM	Our programming background in web development is not too strong.
Pcon	VHI	We all plan to enroll in 577B and pursue the project next semester.
Apex	NOM	We each have various application experiences that can help us in the development of the project.
Plex	NOM	Again, we all used different platforms and have basic to good knowledge of several ones
Ltex	LO	Due to our lack of web programming experience and complete unfamiliarity with pubmed API. Also low experience with COTS integration.
Tool	VHI	Several tools are provided by USC, and are at our disposition (Dreamweaver...) other tools are free (MySQL). And the COTS itself.
Site	NOM	The client has a single site, and the application is meant to be used online via browsers.
Sced	NOM	We are limited by the length of the 2 semesters.

Figure 6: discussion board and messaging module effort factors

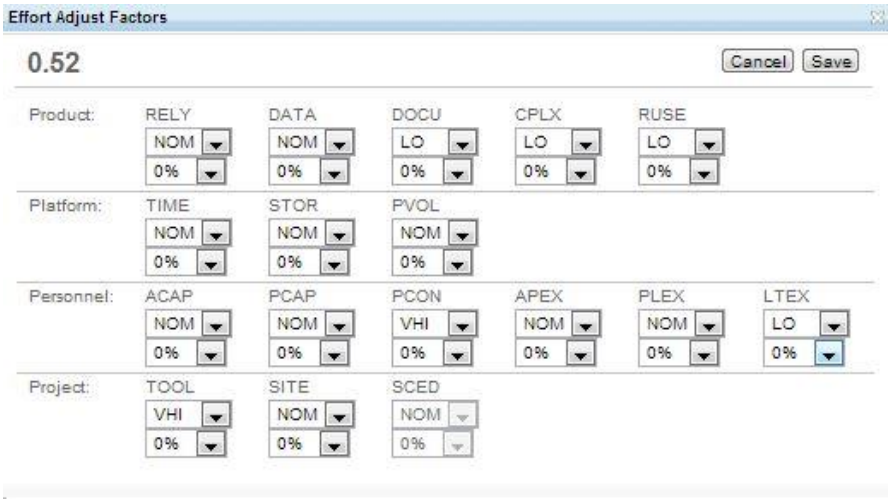
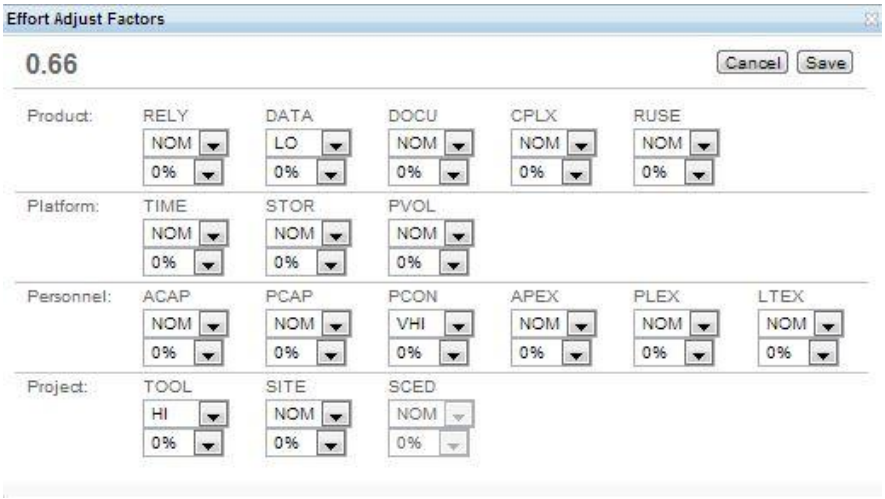


Table 13: COCOMOII Cost Driver – Collaboration List Module

Scale Driver	Value	Rationale
Rely	NOM	Should display the collaborators on a Google maps. Accuracy of locations doesn't need to be exact.
Data	LO	Some counts and a list of names for each member.
Docu	NOM	Have to document the procedure in keeping track of collaborator counters.
Cplx	NOM	Google maps API is unknown to us
Ruse	NOM	This type of statistics can be used in many contexts. However, there is not much room for such reuse in our project.
Time	NOM	Should avoid recomputing every time for faster response.
Stor	NOM	Storing counters for collaborators and displaying the top X.
Pvol	NOM	Might decide to change the number of top collaborators.
Acap	NOM	The team consists of graduate students who have no professional experience for the most part, yet have decent analytical skills
Pcap	NOM	Our programming background in web development is not too strong.
Pcon	VHI	We all plan to enroll in 577B and pursue the project next semester.
Apex	NOM	We each have various application experiences that can help us in the development of the project.
Plex	NOM	Again, we all used different platforms and have basic to good knowledge of several ones

Scale Driver	Value	Rationale
Ltex	NOM	Due to our lack of web programming experience and complete unfamiliarity with pubmed API. However, this is an easy module to develop.
Tool	HI	Several tools are provided by USC, and are at our disposition (Dreamweaver...) other tools are free (MySQL)
Site	NOM	The client has a single site, and the application is meant to be used online via browsers.
Sced	NOM	We are limited by the length of the 2 semesters.

Figure 7: collaboration list module effort factors



6. Iteration Plan

6.1 Plan

The plan will cover the rebaselined foundations and development phases of CSCI 577B. Specifically, it will determine which capabilities will be implemented, which will be tested, and their priorities.

6.1.1 Capabilities to be implemented

Table 14: Construction iteration capabilities to be implemented

ID	Capability	Description	Priority	Iteration
I 1	Obtain XML file from member name	When a new member joins PTS, search PubMed for his/her publications, and obtain the results in XML format	1	First iteration
I 2	Create the database	Create the database's tables according to the architecture's design	1	First iteration
I 3	Import the info from the XML file to the database	Store the results of [I 1] in [I 2]	2 (depends on [I 1] and [I 2])	First Iteration
I 4	Search local database	Search [I 2] for information obtained in [I 3] according to search criteria	2 (depends on [I 2])	First and second iterations
I 5	Basic profile page GUI	Implement the basic profile page according to the prototype's final version Once design is determined, improve the UI in second iteration	1	First iteration
I 6	Basic search page GUI	Implement the basic search page according to prototype's final version Once design is determined, improve the UI in second iteration	2	First and second iterations
I 7	Collaboration map	Geographical map of the members with whom the person co-authored papers.	3	Second iteration

There are a few dependencies, but they are not complex. In fact, they can be implemented based on temporary fake data.

6.1.2 Capabilities to be tested

Table 15: Construction iteration capabilities to be tested

ID	Capability	Description	Priority	Iteration
T 1	Test [I 1]	Test the correctness of the XML obtained in [I 1]	1	First iteration
T 2	Test [I 3]	Data correctly imported from XML to the database	1	First iteration
T 3	Test [I 4] for correctness	Search of our local database returns only results that are relevant	2	First and second iterations
T 4	Test [I 4] for speed	Search of our local database returns results under one minute	2	First and second iterations
T 5	Test [I 5]	Implementation matches the client's expectations and the prototype developed. Features, buttons etc… behave the way they're expected to.	1	First and second iterations
T 6	Test [I 6]	Implementation matches the client's expectations and the prototype developed. Features, buttons etc… behave the way they're expected to.	2	First and second iterations
T 7	Test [I 7]	Collaboration map shows correct output of the co-authors and their geographical location	3	Second iteration
T 8	Limited Accessibility	Only PTS members can view the information in this project	2	First iteration
T 9	System scalability	Test that the system can expand to the required number of users in Winbook	2 (depends on [I 3])	First iteration
T 10	System concurrency	Test that the system can handle 100 concurrent users	2 (depends on [I 3])	First iteration
T 11	System downtime	Test that the system only requires the downtime discussed in Winbook	2	Second iteration

6.1.3 Capabilities not to be tested

The creation of the database needs not be tested explicitly, because during creation, we can get a visual of the tables in our database, and the attributes in those tables.

6.1.4 CCD Preparation Plans

The client that will be using our system during the Core Capability Drive-through is Rita. We are currently running our system on WAMP server's localhost. She will use one of our machines during the CCD. We plan to observe closely the way she directs the mouse pointer while looking for things. This will allow us to understand how or what she expects to find, and where. Based on this feedback, we can discuss in a future meeting our observations, and how they differ from the way we perceived the system. We can then agree on what to modify, and how to modify it. Thanks to our regular meetings and demos to the client, we obtain feedback quite often as to whether she likes the way we implemented the features. This should reduce the risk from the CCD.

6.1 Iteration Assessment

6.2.1 Capabilities Implemented, Tested, and Results

Table 16: Capabilities implemented, tested, and results

ID	Capability	Test Case	Test Results	If fail, why?
TC-01	Create subforum	01-01	Y	
TC-02	Post message on discussion board	02-01	Y	
TC-03	Post comment on discussion board	03-01	Y	
TC-04	Collaboration Map	01, 02, 03	Y	
TC-05	Upload a CV	05-01	Y	
TC-05	View an uploaded CV	05-02	Y	
TC-06	Send a private message	06-01	Y	
TC-07	Receive a private message	07-01	Y	
TC-08	View message history	08-01	Y	
TC-09	View articles	09-01	Y	
TC-09	View article information	09-03	Y	
TC-10	Search by name	10-01	Y	
TC-10	Search by partial name	10-02	Y	
TC-11	Search by keywords	11-01	Y	
TC-12	Advanced Search	12-01	?	
TC-13	Database population	01, 02	?	
TC-17	Profile page	17-01	Y	

6.2.2 Core Capabilities Drive-Through Results

The client's feedback can be split into categories, as follows:

- Positive feedback
  - Basic member search:
    1) Interface was easy to use
    2) Results were relevant

  - Keyword search:
    1) Interface was easy to use
    2) Results were correct
    3) Results were relevant

  - Other member profiles:
    1) Default picture is fine
    2) Layout is fine
    3) Downloaded CVs

  - View my profile
    1) Layout is easy to read
    2) Downloaded CV

  - Edit my profile
    1) Interface was easy to use
    2) Profile kept the changes

  - Advanced search
    1) Interface was easy to use

  - Discussion board
    1) Created a forum successfully
    2) Comfortable using the board in the future
    3) Posting a topic was easy, and done successfully
    4) Successfully sent and received private messages
    5) phpBB is a satisfactory choice

  - Overall
    1) User interface was easy to use
    2) Pages will be useful
    3) My most frequent reaction was "this will be good!"
    4) Great first run

- Improvements needed / suggested
  - Import more articles for testing
  - Advanced search still not working
  - Need to practice more the use of the discussion board

  - Give the user feedback when the query returns no results
  - Rita attempted to log in to the discussion board using her PTS username
  - Discussion board took some time to know how to post
  - Tried to input email address in 'to' field when composing private message
  - Discussion board find a member: search with partial username doesn't work
  - Discussion board: trouble altering permissions
  - Fix view and verify publications label

- Changes to be considered
  - My profile: add checkboxes for funding
  - Add hashtags to skip the header part
  - In member search, have a direct link to the member's publication list

- Risks
  - Pubmed pulling module recently uses Curl (PHP extension). Difficulties installing. Need to ensure it can be installed on server

6.3 Adherence to Plan

Initially the progress was a bit slow due to the learning curve. But once we picked up the languages, things moved pretty fast, and we caught up with schedule. There are some minor uncertainties, for example, which approach to use in order to automate the PubMed pulling module. During this iteration, whenever we are working on a module that involves parts done by two or more persons, we usually tackled the problem together, in the same room. This was done especially during the interaction between front-end and back-end, and transfer of data from Javascript to PHP. This has worked really well so far, and features have been completed the same day they were started. I believe we should keep working like we have, but involve more external testing and code reviews: although we do a lot of regression testing every time we add new capabilities, it is useful to have someone who hasn't coded the task use the system, as (s)he can test things we overlooked.