Life Cycle Plan (LCP)

City of Los Angeles
Public Safety Applicant Resource Center

Team No. 09

Team members and roles:

Vaibhav Mathur	**Project Manager**
Preethi Ramesh	**Feasibility Analyst**
Arijit Dey	**Requirements Engineer**
Shreyas Devraj	**Prototyper**
Gaurav Mathur	**Builder**
Divya Nalam	**OCE**
Rakesh Mathur	**IIV&V**

10/20/2013

Version History

Date	Author	Version	Changes made	Rationale
09/26/13	Vaibhav Mathur, Arijit Dey, Shreyas Devaraj	1.0	• First Draft of the Life Cycle Plan	• To initiate the Life Cycle Planning process and discuss the skills required.
10/12/13	Arijit Dey, Shreyas Devaraj	1.1	• Modification done to Section 2, Section 3.1, 4, 5.	• First Revision before FC Package.
10/20/13	Arijit Dey, Shreyas Devaraj	1.2	• Modification done to Section 3.1, 4, 5.	• First Revision after FC Package which includes the review responses of the stakeholders from ARB session.
10/22/13	Arijit Dey, Shreyas Devaraj	1.3	• Modification done to Section 6.1	• Revision for DC Package.

Table of Contents

Table of Tables

Table of Figures

1. Introduction

1.1 Purpose

The Life Cycle plan helps the stakeholders to get a clear picture of what are the objectives to be achieved, when are the milestones & deadlines and what are the products which needs to be delivered, what are the responsibilities and what should be our approach towards it, what resources we have and what are the assumptions in regard to this project.

1.2 Status

The present status of the project is at the foundation phase. This LCP presently contains our future plans, updated responsibilities, and milestones to be encountered in the various phases. Also, an estimation of the project using COINCOMO is attached to analyze the project's feasibility within 12 weeks.

1.3 Assumptions

- The system will be readily accepted by the City of Los Angeles Staff.
- There needs to be no integration with the current Application System.
- There is no integration with data of current manual applicant investigation process.

2. Milestones and Products

Overall Strategy

The City of Los Angeles Application Resource Center is an online system which built following the architected agile process as we have to develop the project from scratch with minimum COTS involvement.

Exploration phase

Duration: 09/11/13- 09/26/13
Concept: In the Exploration Phase the team was formed and the project was selected. The current system was analyzed. Team held several meetings to discuss on the requirements & initial scope of the project. The team had also held meetings with its stakeholders to clarify their doubts and establish a win-win state. The team also worked on what are the resources, project plan and skills required for the project to be done which are mentioned in the initial artifacts of the VC Package.
Deliverables: Client Interaction Report. Valuation Commitment Package which includes Operational Concept Design, Life Cycle Plan and Feasibility Evidence Description.
Milestone: Valuation Commitment Review
Strategy: One Incremental Commitment Cycle

Valuation phase

Duration: 09/26/13- 10/16/13
Concept: In the Valuation Phase, the team evaluated the win conditions to develop the operational concepts and implemented the prototype to mitigate major risks. The team had developed the initial prototype using the win conditions. The prototype had the following features of generating automated email to the references, and the reference on getting the email had the ability to click on the link, login using his credentials and fill out the background verification questionnaire.
Deliverables: Draft Foundation Commitment Package which includes Operational Concept Design, Life Cycle Plan and Feasibility Evidence Description.
Milestone: Foundation Commitment Review
Strategy: One Incremental Commitment Cycle

Foundation phase

Duration: 10/16/13- 11/12/13
Concept: In the Foundation Phase, the team will lay the foundations of product development. We need to check the interoperability of using NDI component, understand system architecture, design and test cases. Minimal requirement changes needs to be managed and, the highest priority requirements should be developed.
Deliverables: Foundation Commitment Package which includes Operational Concept Design, Life Cycle Plan and Feasibility Evidence Description and Draft Development Commitment Package.
Milestone: Development Commitment Review
Strategy: One Incremental Commitment Cycle

Development phase

Duration: 11/11/13- 12/02/13
Concept: In the Development Phase, the team will develop the system using the architecture and design mentioned in the operational concepts. The system will be integrated using the modules which are thoroughly tested using unit and integration testing. The team also has to prepare for transition plans, test case and train the support staff to maintain the system.
Deliverables: Development Commitment Package which includes Operational Concept Design, Life Cycle Plan and Feasibility Evidence Description.
Milestone: Transition Readiness Review
Strategy: One Incremental Commitment Cycle

3. Responsibilities

3.1 Responsibilities by Phase

Table 1: Stakeholder's responsibilities

Name: Vaibhav Mathur	
Role: Project Manager	
Exploration	Schedule Meetings, Assign Tasks
Valuation	Plan Project Meeting, Manage Client Interaction, record Project Progress
Foundations	Coordinating Meetings with team members and clients.
Development- Construction Iteration	<<responsibilities>>
Development- Transition Iteration	<<responsibilities>>

Name: Arijit Dey	
Role: Requirements Engineer	
Exploration	Understanding Requirements, Life Cycle Planning
Valuation	Update Life Cycle Plan, Indentify Milestones, Indentify the features to be implemented
Foundations	Maintaining the Life Cycle Plan and keeping it updated.
Development- Construction Iteration	<<responsibilities>>
Development- Transition Iteration	<<responsibilities>>

Name: Divya Nalam	
Role: Operational Concept Engineer	
Exploration	Building the Operational Concept Design Report.
Valuation	Establishing New Operational Concept and Identify the alternative.
Foundations	Implement necessary changes to the OCD and Identify the operational concepts to be developed
Development- Construction Iteration	<<responsibilities>>
Development- Transition	<<responsibilities>>

Iteration	

Name: Preeti Ramesh	
Role: Feasibility Analyst	
Exploration	Checking for Feasibility Evidence and COTS
Valuation	Evaluate NDI and interoperability, Mitigation of Risks
Foundations	Implement necessary changed in the FED, update risks and recalculate ROI.
Development- Construction Iteration	<<responsibilities>>
Development- Transition Iteration	<<responsibilities>>

Name: Shreyas Devaraj	
Role: Prototyper	
Exploration	Project Plan and Progress Report Maintaining
Valuation	Develop the prototype based on top priority requirements & risks.
Foundations	Analyze the win conditions to be implemented, Assist in Life Cycle planning
Development- Construction Iteration	<<responsibilities>>
Development- Transition Iteration	<<responsibilities>>

Name: Gaurav Mathur	
Role: Builder	
Exploration	Building and maintaining Project Website
Valuation	Develop the proposed system using the Architecture.
Foundations	Laying the foundation of development and maintaining Project Website
Development- Construction Iteration	<<responsibilities>>
Development- Transition Iteration	<<responsibilities>>

Name: Rakesh Mathur	
Role: IIV & V	
Exploration	Validation and Verification of COTS Interoperability
Valuation	Analyze Business Cases to Validate the work product, Maintain Bugzilla.
Foundations	Assist to maintain FED, Maintain Bugzilla, Evaluating the development.
Development- Construction	<<responsibilities>>

Iteration	
Development- Transition Iteration	<<responsibilities>>

3.2 Skills

Team members	Role	Skills
Vaibhav Mathur	Project Manager Life Cycle Planner	Current- ASP.Net, C#, Javascript
Arijit Dey	Requirements Engineer Prototyper	Current- JAVA, Oracle 10g, Visual Basic, HTML, UML. Required- C#, MySQL
Shreyas Devaraj	Prototyper Project Manager	Current- JAVA, MySQL, JavaScript Required- ASP.Net, C#
Gaurav Mathur	Builder UML designer	Current-JAVA, C++,MySQL Required-C#
Preethi Ramesh	Feasibility Analyst Requirement Engineer	Current-ASP.Net, C#
Divya Nalam	Operational Concept Engineer UML designer	Current-C/C++, Python Required- ASP.Net, C#
Rakesh Mathur	Validation and Verification of COTS Interoperability	Current- ASP.Net, C#, JavaScript

Note:- None of the team members are planning to continue to take up CSCI 577B.

SKILLS REQUIRED FOR TEAM MEMBERS IN CSCI 577B

- C#
- ASP.NET
- MYSQL SERVER 2008
- DB2

4. Approach

4.1 Monitoring and Control

The team members meet up every week and organize meetings to discuss the project development. The development and project progress are recorded in the Progress Report which is submitted on a biweekly basis. The project report includes lines of code developed, issues, concerns, risk and mitigation plans for the coming week, as well the work done in the previous week. We plan the tasks for the future weeks as well. The tasks are issued to all the team members and monitored using Bugzilla.

Microsoft Project is used to monitor the project plan and track the project progress using the schedule. The project plan includes what all activities are complete, what all tasks to be done and about client and team meeting. Initial issues and deviations are communicated through email and verbally. All the team members are individually accountable for their contributions to the Life Cycle Plan.

4.1.1 Closed Loop Feedback Control

The team exchanges feedback using emails and discuss critical issues in the meetings. Bugzilla tickets are also raised to record and track defects and bugs. This allows all the team members to view, track and finally decide on any open issue. Weekly team meetings and after class mini-team sessions is also conducted. Minutes and agendas of the meetings are recorded for being referred to later.

4.1.2 Reviews

Weekly team meetings are organized to discuss and review documents and issues. The author of an artifact or document emails it to the rest of the member for review and updating.

4.2 Methods, Tools and Facilities

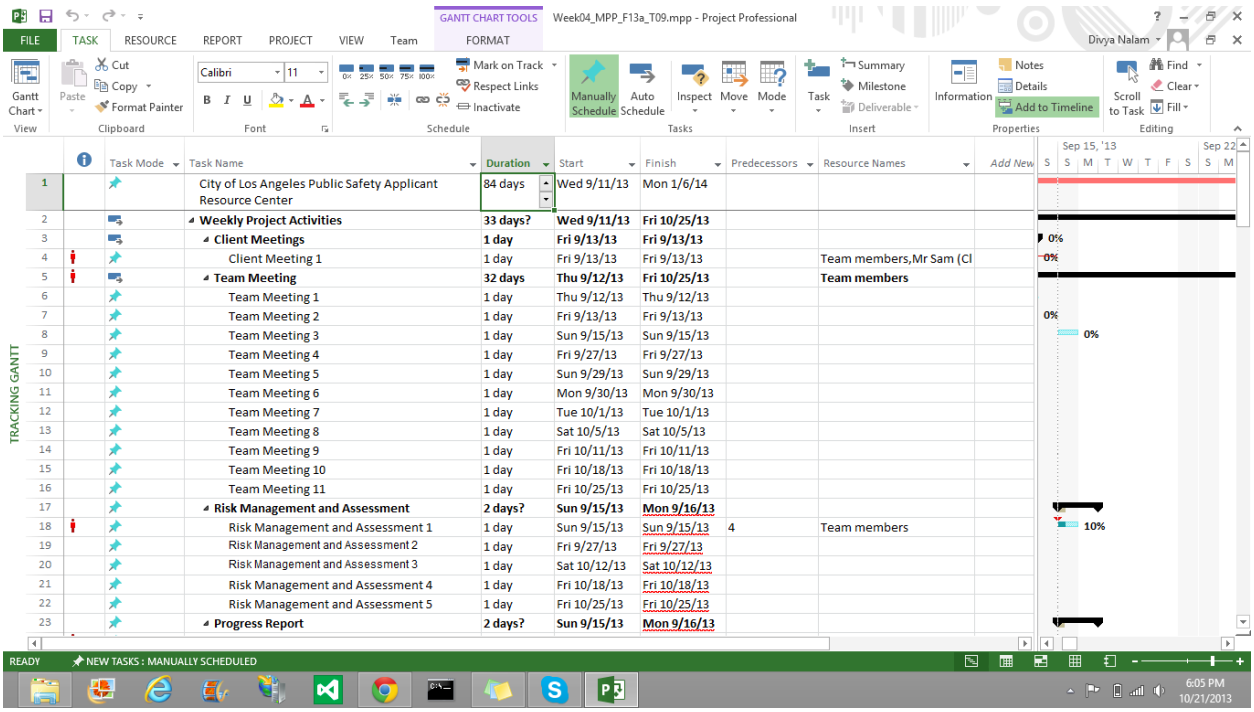
Tools	Usage	Provider
VISUAL STUDIO	Used for development of the project.	MICROSOFT
SQL SERVER 2008	Used as Database for developing Prototype.	MICROSOFT
DB2	Used as Database for developing Project.	IBM

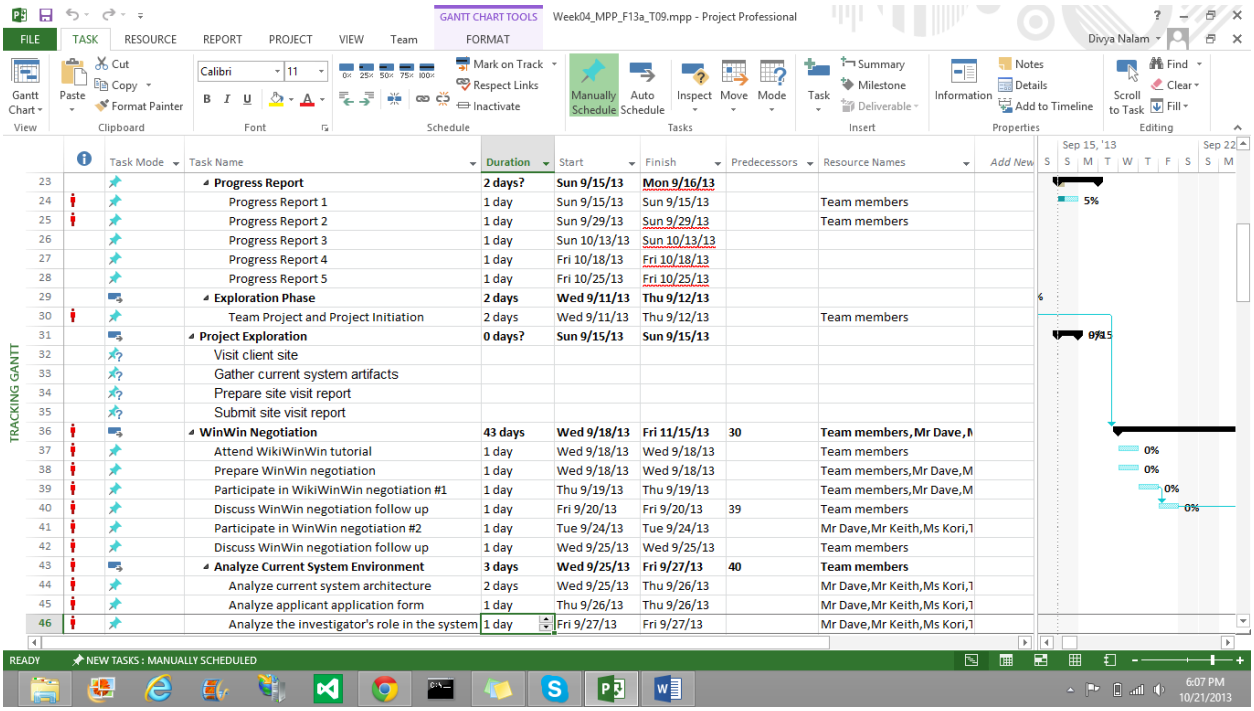
ASP.NET	Framework used to develop the Project.	MICROSOFT
WHATSAPP	Used to communicate minute information between team member.	WHATSAPP

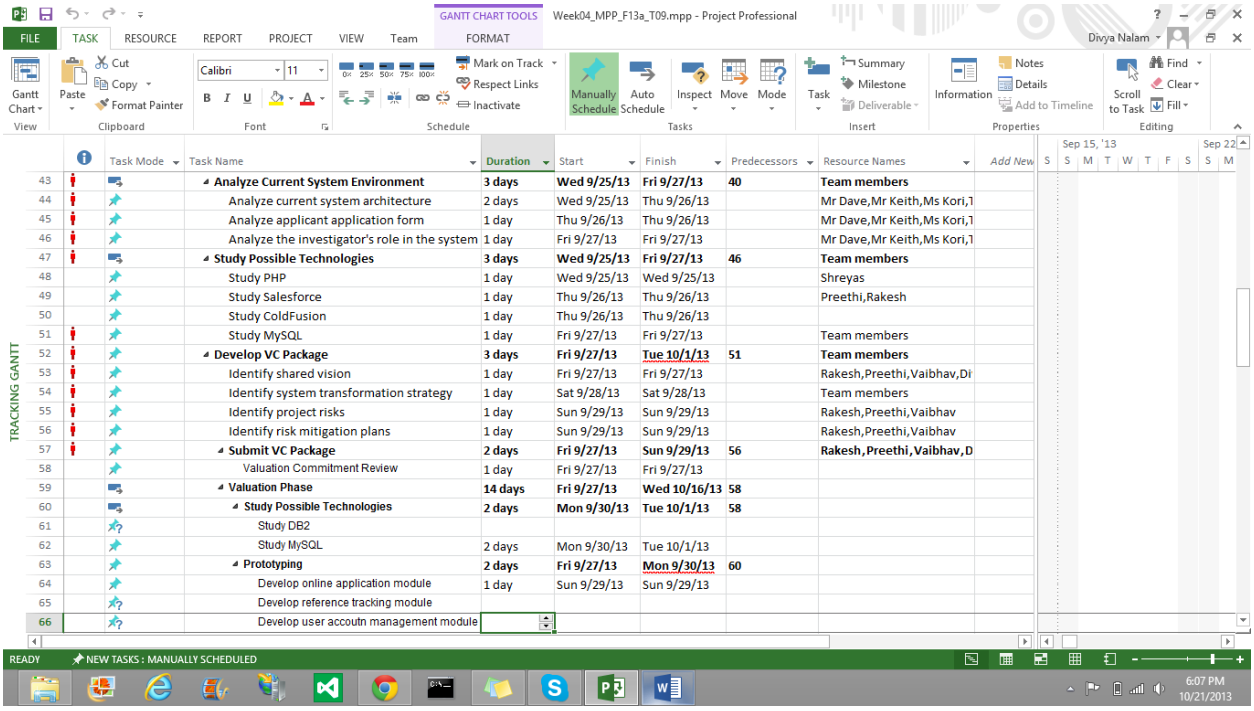
4.3 Project Plan

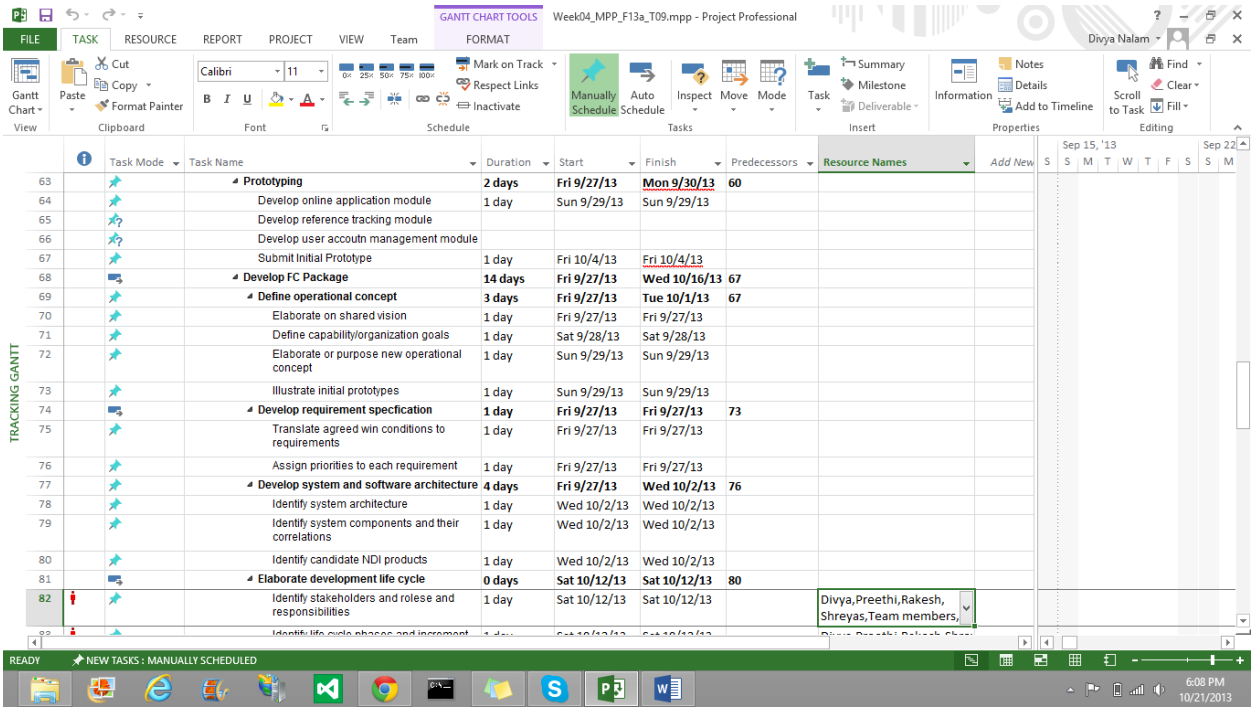
A biweekly project plan is followed to keep track of the project's progress, schedule and future plans.

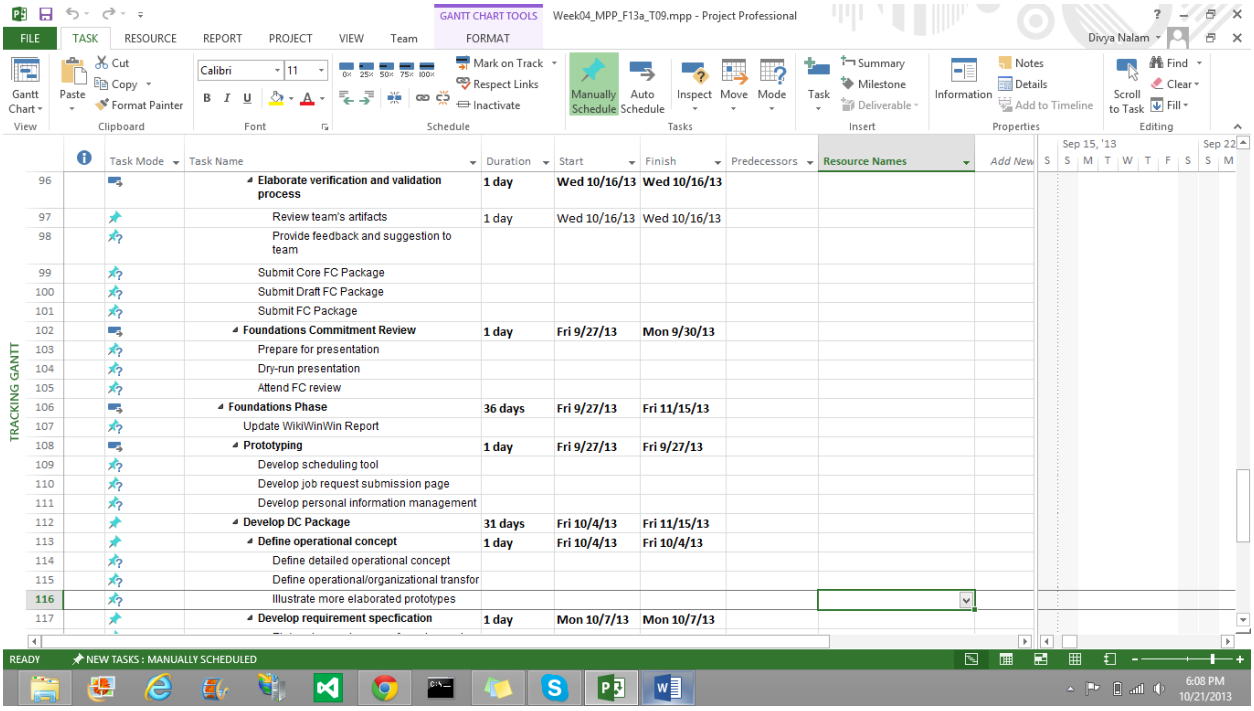
The following is our updated project plan as of now.

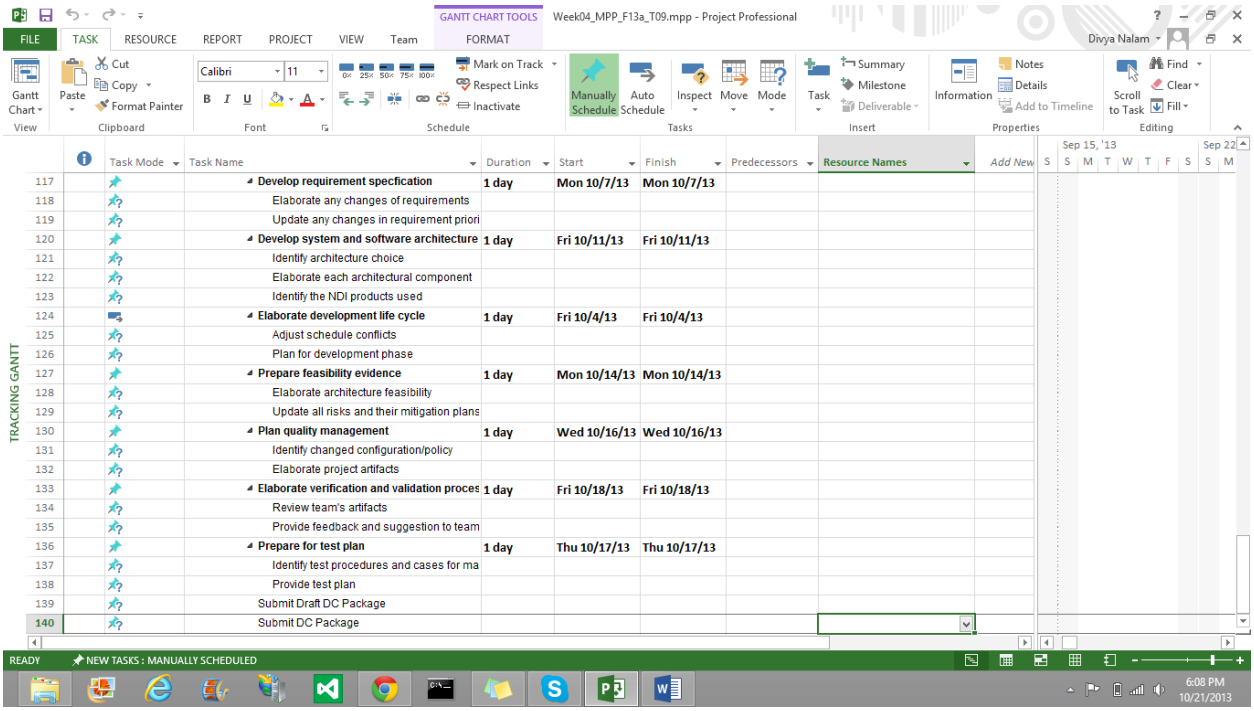



GANTT CHART TOOLS
Week04_MPP_F13a_T09.mpp - Project Professional
FILE
TASK
RESOURCE
REPORT
PROJECT
VIEW
Team
FORMAT
Divya Nalam
Gantt Chart
Paste
Cut
Copy
Format Painter
Calibri
11
Mark on Track
Respect Links
Inactivate
Manually Schedule
Auto Schedule
Inspect
Move
Mode
Task
Summary
Milestone
Deliverable
Information
Notes
Details
Add to Timeline
Scroll to Task
Find
Clear
Fill
View
Clipboard
Font
Schedule
Tasks
Insert
Properties
Editing
TRACKING GANTT
Task Mode
Task Name
Duration
Start
Finish
Predecessors
Resource Names
Add New
Sep 15, '13
Sep 22
23 Progress Report 2 days? Sun 9/15/13 Mon 9/16/13
24 Progress Report 1 1 day Sun 9/15/13 Sun 9/15/13 Team members
25 Progress Report 2 1 day Sun 9/29/13 Sun 9/29/13 Team members
26 Progress Report 3 1 day Sun 10/13/13 Sun 10/13/13
27 Progress Report 4 1 day Fri 10/18/13 Fri 10/18/13
28 Progress Report 5 1 day Fri 10/25/13 Fri 10/25/13
29 Exploration Phase 2 days Wed 9/11/13 Thu 9/12/13
30 Team Project and Project Initiation 2 days Wed 9/11/13 Thu 9/12/13 Team members
31 Project Exploration 0 days? Sun 9/15/13 Sun 9/15/13
32 Visit client site
33 Gather current system artifacts
34 Prepare site visit report
35 Submit site visit report
36 WinWin Negotiation 43 days Wed 9/18/13 Fri 11/15/13 30 Team members,Mr Dave,M
37 Attend WikiWinWin tutorial 1 day Wed 9/18/13 Wed 9/18/13 Team members
38 Prepare WinWin negotiation 1 day Wed 9/18/13 Wed 9/18/13 Team members,Mr Dave,M
39 Participate in WikiWinWin negotiation #1 1 day Thu 9/19/13 Thu 9/19/13 Team members,Mr Dave,M
40 Discuss WinWin negotiation follow up 1 day Fri 9/20/13 Fri 9/20/13 39 Team members
41 Participate in WinWin negotiation #2 1 day Tue 9/24/13 Tue 9/24/13 Mr Dave,Mr Keith,Ms Kori,T
42 Discuss WinWin negotiation follow up 1 day Wed 9/25/13 Wed 9/25/13 Team members
43 Analyze Current System Environment 3 days Wed 9/25/13 Fri 9/27/13 40 Team members
44 Analyze current system architecture 2 days Wed 9/25/13 Thu 9/26/13 Mr Dave,Mr Keith,Ms Kori,T
45 Analyze applicant application form 1 day Thu 9/26/13 Thu 9/26/13 Mr Dave,Mr Keith,Ms Kori,T
46 Analyze the investigator's role in the system 1 day Fri 9/27/13 Fri 9/27/13 Mr Dave,Mr Keith,Ms Kori,T
5%
0%
0%
0%
0%
READY
NEW TASKS : MANUALLY SCHEDULED
6:07 PM
10/21/2013


GANTT CHART TOOLS
Week04_MPP_F13a_T09.mpp - Project Professional
FILE
TASK
RESOURCE
REPORT
PROJECT
VIEW
Team
FORMAT
Divya Nalam
Gantt Chart
Paste
Cut
Copy
Format Painter
Calibri
11
Mark on Track
Respect Links
Inactivate
Manually Schedule
Auto Schedule
Inspect
Move
Mode
Task
Summary
Milestone
Deliverable
Information
Notes
Details
Add to Timeline
Scroll to Task
Find
Clear
Fill
View
Clipboard
Font
Schedule
Tasks
Insert
Properties
Editing
TRACKING GANTT
Task Mode
Task Name
Duration
Start
Finish
Predecessors
Resource Names
Add New
Sep 15, '13
Sep 22
43 Analyze Current System Environment 3 days Wed 9/25/13 Fri 9/27/13 40 Team members
44 Analyze current system architecture 2 days Wed 9/25/13 Thu 9/26/13 Mr Dave,Mr Keith,Ms Kori,T
45 Analyze applicant application form 1 day Thu 9/26/13 Thu 9/26/13 Mr Dave,Mr Keith,Ms Kori,T
46 Analyze the investigator's role in the system 1 day Fri 9/27/13 Fri 9/27/13 Mr Dave,Mr Keith,Ms Kori,T
47 Study Possible Technologies 3 days Wed 9/25/13 Fri 9/27/13 46 Team members
48 Study PHP 1 day Wed 9/25/13 Wed 9/25/13 Shreyas
49 Study Salesforce 1 day Thu 9/26/13 Thu 9/26/13 Preethi,Rakesh
50 Study ColdFusion 1 day Thu 9/26/13 Thu 9/26/13
51 Study MySQL 1 day Fri 9/27/13 Fri 9/27/13 Team members
52 Develop VC Package 3 days Fri 9/27/13 Tue 10/1/13 51 Team members
53 Identify shared vision 1 day Fri 9/27/13 Fri 9/27/13 Rakesh,Preethi,Vaibhav,Di
54 Identify system transformation strategy 1 day Sat 9/28/13 Sat 9/28/13 Team members
55 Identify project risks 1 day Sun 9/29/13 Sun 9/29/13 Rakesh,Preethi,Vaibhav
56 Identify risk mitigation plans 1 day Sun 9/29/13 Sun 9/29/13 Rakesh,Preethi,Vaibhav
57 Submit VC Package 2 days Fri 9/27/13 Sun 9/29/13 56 Rakesh,Preethi,Vaibhav,D
58 Valuation Commitment Review 1 day Fri 9/27/13 Fri 9/27/13
59 Valuation Phase 14 days Fri 9/27/13 Wed 10/16/13 58
60 Study Possible Technologies 2 days Mon 9/30/13 Tue 10/1/13 58
61 Study DB2
62 Study MySQL 2 days Mon 9/30/13 Tue 10/1/13
63 Prototyping 2 days Fri 9/27/13 Mon 9/30/13 60
64 Develop online application module 1 day Sun 9/29/13 Sun 9/29/13
65 Develop reference tracking module
66 Develop user accoutn management module
READY
NEW TASKS : MANUALLY SCHEDULED
6:07 PM
10/21/2013


GANTT CHART TOOLS
Week04_MPP_F13a_T09.mpp - Project Professional
FILE
TASK
RESOURCE
REPORT
PROJECT
VIEW
Team
FORMAT
Divya Nalam
Gantt Chart
Paste
Cut
Copy
Format Painter
Calibri
11
Mark on Track
Respect Links
Inactivate
Manually Schedule
Auto Schedule
Inspect
Move
Mode
Task
Summary
Milestone
Deliverable
Information
Notes
Details
Add to Timeline
Scroll to Task
Find
Clear
Fill
View
Clipboard
Font
Schedule
Tasks
Insert
Properties
Editing
TRACKING GANTT
Task Mode
Task Name
Duration
Start
Finish
Predecessors
Resource Names
Add New
Sep 15, '13
Sep 22
63 Prototyping 2 days Fri 9/27/13 Mon 9/30/13 60
64 Develop online application module 1 day Sun 9/29/13 Sun 9/29/13
65 Develop reference tracking module
66 Develop user accoutn management module
67 Submit Initial Prototype 1 day Fri 10/4/13 Fri 10/4/13
68 Develop FC Package 14 days Fri 9/27/13 Wed 10/16/13 67
69 Define operational concept 3 days Fri 9/27/13 Tue 10/1/13 67
70 Elaborate on shared vision 1 day Fri 9/27/13 Fri 9/27/13
71 Define capability/organization goals 1 day Sat 9/28/13 Sat 9/28/13
72 Elaborate or purpose new operational concept 1 day Sun 9/29/13 Sun 9/29/13
73 Illustrate initial prototypes 1 day Sun 9/29/13 Sun 9/29/13
74 Develop requirement specfication 1 day Fri 9/27/13 Fri 9/27/13 73
75 Translate agreed win conditions to requirements 1 day Fri 9/27/13 Fri 9/27/13
76 Assign priorities to each requirement 1 day Fri 9/27/13 Fri 9/27/13
77 Develop system and software architecture 4 days Fri 9/27/13 Wed 10/2/13 76
78 Identify system architecture 1 day Wed 10/2/13 Wed 10/2/13
79 Identify system components and their correlations 1 day Wed 10/2/13 Wed 10/2/13
80 Identify candidate NDI products 1 day Wed 10/2/13 Wed 10/2/13
81 Elaborate development life cycle 0 days Sat 10/12/13 Sat 10/12/13 80
82 Identify stakeholders and rolese and responsibilities 1 day Sat 10/12/13 Sat 10/12/13 Divya,Preethi,Rakesh, Shreyas,Team members,
READY
NEW TASKS : MANUALLY SCHEDULED
6:08 PM
10/21/2013


GANTT CHART TOOLS
Week04_MPP_F13a_T09.mpp - Project Professional
FILE
TASK
RESOURCE
REPORT
PROJECT
VIEW
Team
FORMAT
Divya Nalam
Gantt Chart
Paste
Cut
Copy
Format Painter
Calibri
11
Mark on Track
Respect Links
Inactivate
Manually Schedule
Auto Schedule
Inspect
Move
Mode
Task
Summary
Milestone
Deliverable
Information
Notes
Details
Add to Timeline
Scroll to Task
Find
Clear
Fill
View
Clipboard
Font
Schedule
Tasks
Insert
Properties
Editing
TRACKING GANTT
Task Mode
Task Name
Duration
Start
Finish
Predecessors
Resource Names
Add New
Sep 15, '13
Sep 22
96 Elaborate verification and validation process 1 day Wed 10/16/13 Wed 10/16/13
97 Review team's artifacts 1 day Wed 10/16/13 Wed 10/16/13
98 Provide feedback and suggestion to team
99 Submit Core FC Package
100 Submit Draft FC Package
101 Submit FC Package
102 Foundations Commitment Review 1 day Fri 9/27/13 Mon 9/30/13
103 Prepare for presentation
104 Dry-run presentation
105 Attend FC review
106 Foundations Phase 36 days Fri 9/27/13 Fri 11/15/13
107 Update WikiWinWin Report
108 Prototyping 1 day Fri 9/27/13 Fri 9/27/13
109 Develop scheduling tool
110 Develop job request submission page
111 Develop personal information management
112 Develop DC Package 31 days Fri 10/4/13 Fri 11/15/13
113 Define operational concept 1 day Fri 10/4/13 Fri 10/4/13
114 Define detailed operational concept
115 Define operational/organizational transfor
116 Illustrate more elaborated prototypes
117 Develop requirement specfication 1 day Mon 10/7/13 Mon 10/7/13
READY
NEW TASKS : MANUALLY SCHEDULED
6:08 PM
10/21/2013


GANTT CHART TOOLS
Week04_MPP_F13a_T09.mpp - Project Professional
FILE
TASK
RESOURCE
REPORT
PROJECT
VIEW
Team
FORMAT
Divya Nalam
Gantt Chart
Paste
Cut
Copy
Format Painter
Calibri
11
Mark on Track
Respect Links
Inactivate
Manually Schedule
Auto Schedule
Inspect
Move
Mode
Task
Summary
Milestone
Deliverable
Information
Notes
Details
Add to Timeline
Scroll to Task
Find
Clear
Fill
View
Clipboard
Font
Schedule
Tasks
Insert
Properties
Editing
TRACKING GANTT
Task Mode
Task Name
Duration
Start
Finish
Predecessors
Resource Names
Add New
Sep 15, '13
Sep 22
S S M T W T F S S M
117 Develop requirement specfication 1 day Mon 10/7/13 Mon 10/7/13
118 Elaborate any changes of requirements
119 Update any changes in requirement priori
120 Develop system and software architecture 1 day Fri 10/11/13 Fri 10/11/13
121 Identify architecture choice
122 Elaborate each architectural component
123 Identify the NDI products used
124 Elaborate development life cycle 1 day Fri 10/4/13 Fri 10/4/13
125 Adjust schedule conflicts
126 Plan for development phase
127 Prepare feasibility evidence 1 day Mon 10/14/13 Mon 10/14/13
128 Elaborate architecture feasibility
129 Update all risks and their mitigation plans
130 Plan quality management 1 day Wed 10/16/13 Wed 10/16/13
131 Identify changed configuration/policy
132 Elaborate project artifacts
133 Elaborate verification and validation proces 1 day Fri 10/18/13 Fri 10/18/13
134 Review team's artifacts
135 Provide feedback and suggestion to team
136 Prepare for test plan 1 day Thu 10/17/13 Thu 10/17/13
137 Identify test procedures and cases for ma
138 Provide test plan
139 Submit Draft DC Package
140 Submit DC Package
READY
NEW TASKS : MANUALLY SCHEDULED
6:08 PM
10/21/2013

5. Resources

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

Table 2: Module lists and SLOC of each module

No.	Module Name	Brief Description	SLOC	REVL
1	Login Functionality	Login to the system to access it.	200	8%
2	Support Staff module	Enter applicant details and add references	600	8%
3	Investigator Module	View list of applicants, references and responses	800	5%
4	Reference Module	Ability to login and fill up the reference form	300	5%
5	Manager Module	Check applicants, investigators and support staff	1000	8%
6	Email Generation	Generate automated emails to the references.	200	5%

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

Table 3: COCOMOII Scale Drivers

Scale Driver	Value	Rationale
PREC	HIGH	The development team is familiar with this type of online application.
FLEX	NOMINAL	The system needs to conform the requirements specified by the client with some relaxation.
RESL	HIGH	By identifying the risk items we can conclude that there exists some uncertainty.
TEAM	HIGH	Each stakeholder synchronizes very well with each other and maintain considerable consistency of objectives.
PMAT	NOMINAL	The development team follows CMM Level 2 process maturity model.

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

Table 4: COCOMOII Cost Drivers of Module -1 - Login Functionality

Cost Driver	Value	Rationale
RELY	NOMINAL	If the system fails, it will cause inconvenience to the references and background investigators. But the system can be recovered within certain period of time.
DATA	HIGH	The ratio of bytes in the testing database to SLOC in the program is approximately less than 1000 because the database will store

		all information of candidate's reference, references' response which contains lot of data and candidates assigned to investigators.
DOCU	NOMINAL	Because the development process follows ICSM, the document for life-cycle needs is normal.
CPLX	HIGH	Few modules like authentication using LDAP, implementing manager module, investigator module requires complex programming.
RUSE	NOMINAL	The system is used by every department of the background verification organization and also used by the references.
TIME	HIGH	The percentage of available execution time expected to be used by the system and subsystem consuming the execution time resource is about 70% because this system is performing the database operation whenever any process is executed.
STOR	HIGH	The percentage of available storage expected to be used by the system and subsystem is about 70% because the most of the candidates' data is stored in the database. And this is used in every database operation.
PVOL	LOW	Major changes of the platform, i.e. ASP.net, DB2 and web browsers are approximately every year.
ACAP	HIGH	The analysts have good ability to analyze, design and communicate among others.
PCAP	HIGH	Programmers are capable, efficient and thorough. Although some of the team members lack knowledge about ASP.net and DB2.
PCON	LOW	Our team has 6 members and most of them do not plan to continue in CSCI577B.
APEX	NOMINAL	The average experience of the team members for this online web-based application is about one year.
LTEX	LOW	The development team plans to develop this web-based application with ASP.net, C# and DB2 language to query information from the database. The tools for programming are Microsoft Visual Studio. Therefore, the language and tool experience is low because only a few team members have at least one year experience with these languages and tools and rest are trying to learn.
PLEX	LOW	Most of the team members are inexperienced with ASP.net framework and database as DB2.
TOOL	LOW	The software tools development team plan to use is just simple, frontend and backend DB2.
SITE	VERY HIGH	In CSCI577a, six of seven team members are on-campus students. Additionally, we use wideband electronic communication and occasional video conference.
SCED	NOMINAL	The schedule is fixed for 12 weeks in Fall semester.

Table 7: COCOMOII Cost Drivers of Module - 2 - Support Staff module

Cost Driver	Value	Rationale
RELY	NOMINAL	If the system fails, it will cause inconvenience to the references and background investigators. But the system can be recovered within certain period of time.
DATA	HIGH	The ratio of bytes in the testing database to SLOC in the program is approximately less than 1000 because the database will store all information of candidate's reference, references' response which contains lot of data and candidates assigned to investigators.
DOCU	NOMINAL	Because the development process follows ICSM, the document for life-cycle needs is normal.
CPLX	HIGH	Few modules like authentication using LDAP, implementing manager module, investigator module requires complex programming.
RUSE	NOMINAL	The system is used by every department of the background verification organization and also used by the references.
TIME	HIGH	The percentage of available execution time expected to be used by the system and subsystem consuming the execution time resource is about 70% because this system is performing the database operation whenever any process is executed.
STOR	HIGH	The percentage of available storage expected to be used by the system and subsystem is about 70% because the most of the candidates' data is stored in the database. And this is used in every database operation.
PVOL	LOW	Major changes of the platform, i.e. ASP.net, DB2 and web browsers are approximately every year.
ACAP	HIGH	The analysts have good ability to analyze, design and communicate among others.
PCAP	HIGH	Programmers are capable, efficient and thorough. Although some of the team members lack knowledge about ASP.net and DB2.
PCON	LOW	Our team has 6 members and most of them do not plan to continue in CSCI577B.
APEX	NOMINAL	The average experience of the team members for this online web-based application is about one year.
LTEX	LOW	The development team plans to develop this web-based application with ASP.net, C# and DB2 language to query information from the database. The tools for programming are Microsoft Visual Studio. Therefore, the language and tool experience is low because only a few team members have at least one year experience with these languages and tools and rest are trying to learn.
PLEX	LOW	Most of the team members are inexperienced with ASP.net framework and database as DB2.
TOOL	LOW	The software tools development team plan to use is just simple,

		frontend and backend DB2.
SITE	VERY HIGH	In CSCI577a, six of seven team members are on-campus students. Additionally, we use wideband electronic communication and occasional video conference.
SCED	NOMINAL	The schedule is fixed for 12 weeks in Fall semester.

Table 8: COCOMOII Cost Drivers of Module - 3 - Investigator Module

Cost Driver	Value	Rationale
RELY	NOMINAL	If the system fails, it will cause inconvenience to the references and background investigators. But the system can be recovered within certain period of time.
DATA	LOW	The ratio of bytes in the testing database to SLOC in the program is approximately less than 1000 because the database will store all information of candidate's reference, references' response which contains lot of data and candidates assigned to investigators.
DOCU	NOMINAL	Because the development process follows ICSM, the document for life-cycle needs is normal.
CPLX	HIGH	Few modules like authentication using LDAP, implementing manager module, investigator module requires complex programming.
RUSE	NOMINAL	The system is used by every department of the background verification organization and also used by the references.
TIME	HIGH	The percentage of available execution time expected to be used by the system and subsystem consuming the execution time resource is about 70% because this system is performing the database operation whenever any process is executed.
STOR	NOMINAL	The percentage of available storage expected to be used by the system and subsystem is about 70% because the most of the candidates' data is stored in the database. And this is used in every database operation.
PVOL	LOW	Major changes of the platform, i.e. ASP.net, DB2 and web browsers are approximately every year.
ACAP	HIGH	The analysts have good ability to analyze, design and communicate among others.
PCAP	HIGH	Programmers are capable, efficient and thorough. Although some of the team members lack knowledge about ASP.net and DB2.
PCON	LOW	Our team has 6 members and most of them do not plan to continue in CSCI577B.
APEX	NOMINAL	The average experience of the team members for this online web-based application is about one year.
LTEX	LOW	The development team plans to develop this web-based application with ASP.net, C# and DB2 language to query information from the database. The tools for programming are

		Microsoft Visual Studio. Therefore, the language and tool experience is low because only a few team members have at least one year experience with these languages and tools and rest are trying to learn.
PLEX	LOW	Most of the team members are inexperienced with ASP.net framework and database as DB2.
TOOL	LOW	The software tools development team plan to use is just simple, frontend and backend DB2.
SITE	VERY HIGH	In CSCI577a, six of seven team members are on-campus students. Additionally, we use wideband electronic communication and occasional video conference.
SCED	NOMINAL	The schedule is fixed for 12 weeks in Fall semester.

Table 9: COCOMOII Cost Drivers of Module - 4 - Reference Module

Cost Driver	Value	Rationale
RELY	VERY HIGH	If the system fails, it will cause inconvenience to the references and background investigators. But the system can be recovered within certain period of time.
DATA	HIGH	The ratio of bytes in the testing database to SLOC in the program is approximately less than 1000 because the database will store all information of candidate's reference, references' response which contains lot of data and candidates assigned to investigators.
DOCU	NOMINAL	Because the development process follows ICSM, the document for life-cycle needs is normal.
CPLX	HIGH	Few modules like authentication using LDAP, implementing manager module, investigator module requires complex programming.
RUSE	NOMINAL	The system is used by every department of the background verification organization and also used by the references.
TIME	HIGH	The percentage of available execution time expected to be used by the system and subsystem consuming the execution time resource is about 70% because this system is performing the database operation whenever any process is executed.
STOR	HIGH	The percentage of available storage expected to be used by the system and subsystem is about 70% because the most of the candidates' data is stored in the database. And this is used in every database operation.
PVOL	LOW	Major changes of the platform, i.e. ASP.net, DB2 and web browsers are approximately every year.
ACAP	HIGH	The analysts have good ability to analyze, design and communicate among others.
PCAP	HIGH	Programmers are capable, efficient and thorough. Although some of the team members lack knowledge about ASP.net and DB2.

PCON	LOW	Our team has 6 members and most of them do not plan to continue in CSCI577B.
APEX	NOMINAL	The average experience of the team members for this online web-based application is about one year.
LTEX	LOW	The development team plans to develop this web-based application with ASP.net, C# and DB2 language to query information from the database. The tools for programming are Microsoft Visual Studio. Therefore, the language and tool experience is low because only a few team members have at least one year experience with these languages and tools and rest are trying to learn.
PLEX	LOW	Most of the team members are inexperienced with ASP.net framework and database as DB2.
TOOL	LOW	The software tools development team plan to use is just simple, frontend and backend DB2.
SITE	VERY HIGH	In CSCI577a, six of seven team members are on-campus students. Additionally, we use wideband electronic communication and occasional video conference.
SCED	NOMINAL	The schedule is fixed for 12 weeks in Fall semester.

Table 10: COCOMOII Cost Drivers of Module - 5 - Manager Module

Cost Driver	Value	Rationale
RELY	NOMINAL	If the system fails, it will cause inconvenience to the references and background investigators. But the system can be recovered within certain period of time.
DATA	HIGH	The ratio of bytes in the testing database to SLOC in the program is approximately less than 1000 because the database will store all information of candidate's reference, references' response which contains lot of data and candidates assigned to investigators.
DOCU	NOMINAL	Because the development process follows ICSM, the document for life-cycle needs is normal.
CPLX	HIGH	Few modules like authentication using LDAP, implementing manager module, investigator module requires complex programming.
RUSE	NOMINAL	The system is used by every department of the background verification organization and also used by the references.
TIME	HIGH	The percentage of available execution time expected to be used by the system and subsystem consuming the execution time resource is about 70% because this system is performing the database operation whenever any process is executed.
STOR	HIGH	The percentage of available storage expected to be used by the system and subsystem is about 70% because the most of the candidates' data is stored in the database. And this is used in

		every database operation.
PVOL	LOW	Major changes of the platform, i.e. ASP.net, DB2 and web browsers are approximately every year.
ACAP	HIGH	The analysts have good ability to analyze, design and communicate among others.
PCAP	HIGH	Programmers are capable, efficient and thorough. Although some of the team members lack knowledge about ASP.net and DB2.
PCON	LOW	Our team has 6 members and most of them do not plan to continue in CSCI577B.
APEX	NOMINAL	The average experience of the team members for this online web-based application is about one year.
LTEX	LOW	The development team plans to develop this web-based application with ASP.net, C# and DB2 language to query information from the database. The tools for programming are Microsoft Visual Studio. Therefore, the language and tool experience is low because only a few team members have at least one year experience with these languages and tools and rest are trying to learn.
PLEX	LOW	Most of the team members are inexperienced with ASP.net framework and database as DB2.
TOOL	LOW	The software tools development team plan to use is just simple, frontend and backend DB2.
SITE	VERY HIGH	In CSCI577a, six of seven team members are on-campus students. Additionally, we use wideband electronic communication and occasional video conference.
SCED	NOMINAL	The schedule is fixed for 12 weeks in Fall semester.

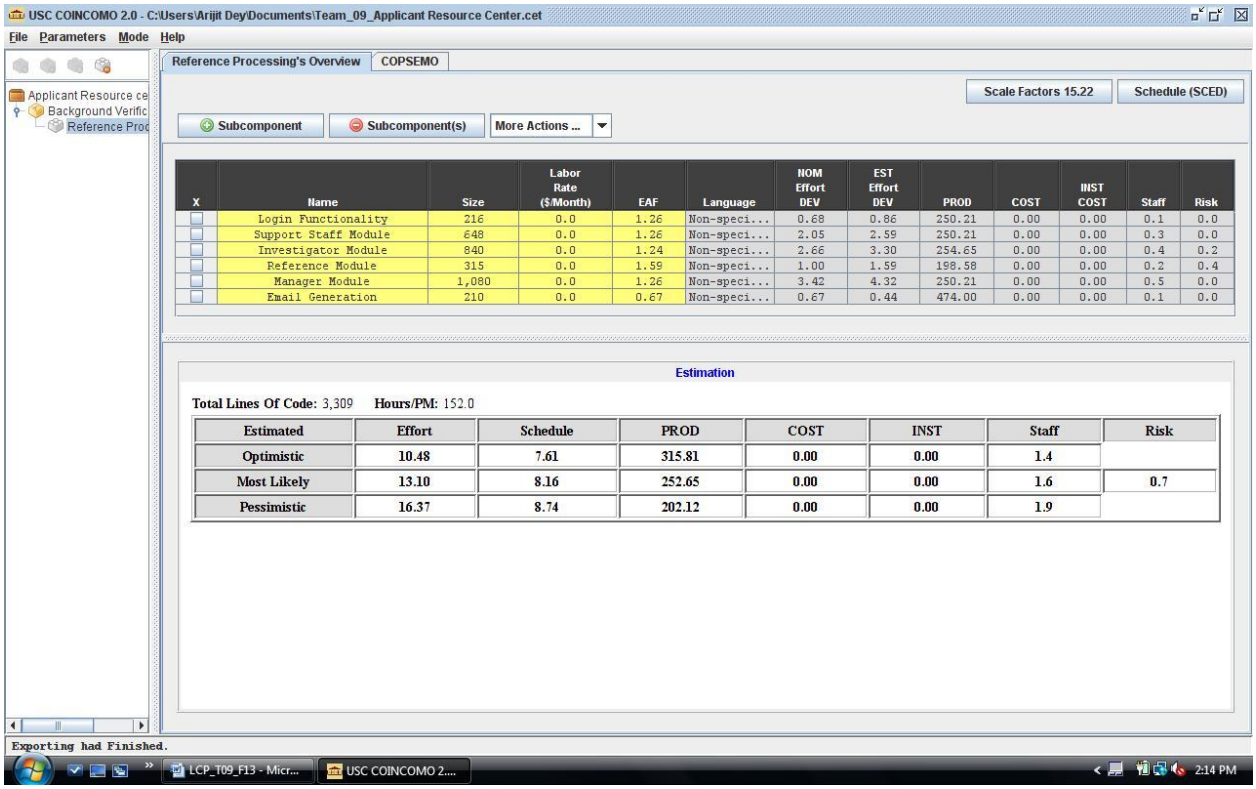
Table 11: COCOMOII Cost Drivers of Module - 6 – Email generation

Cost Driver	Value	Rationale
RELY	LOW	If the system fails, it will cause inconvenience to the references and background investigators. But the system can be recovered within certain period of time.
DATA	LOW	The ratio of bytes in the testing database to SLOC in the program is approximately less than 1000 because the database will store all information of candidate's reference, references' response which contains lot of data and candidates assigned to investigators.
DOCU	NOMINAL	Because the development process follows ICSM, the document for life-cycle needs is normal.
CPLX	NOMINAL	Few modules like authentication using LDAP, implementing manager module, investigator module requires complex programming.
RUSE	NOMINAL	The system is used by every department of the background verification organization and also used by the references.
TIME	HIGH	The percentage of available execution time expected to be used

		by the system and subsystem consuming the execution time resource is about 70% because this system is performing the database operation whenever any process is executed.
STOR	NOMINAL	The percentage of available storage expected to be used by the system and subsystem is about 70% because the most of the candidates' data is stored in the database. And this is used in every database operation.
PVOL	LOW	Major changes of the platform, i.e. ASP.net, DB2 and web browsers are approximately every year.
ACAP	HIGH	The analysts have good ability to analyze, design and communicate among others.
PCAP	HIGH	Programmers are capable, efficient and thorough. Although some of the team members lack knowledge about ASP.net and DB2.
PCON	LOW	Our team has 6 members and most of them do not plan to continue in CSCI577B.
APEX	NOMINAL	The average experience of the team members for this online web-based application is about one year.
LTEX	LOW	The development team plans to develop this web-based application with ASP.net, C# and DB2 language to query information from the database. The tools for programming are Microsoft Visual Studio. Therefore, the language and tool experience is low because only a few team members have at least one year experience with these languages and tools and rest are trying to learn.
PLEX	LOW	Most of the team members are inexperienced with ASP.net framework and database as DB2.
TOOL	LOW	The software tools development team plan to use is just simple, frontend and backend DB2.
SITE	VERY HIGH	In CSCI577a, six of seven team members are on-campus students. Additionally, we use wideband electronic communication and occasional video conference.
SCED	NOMINAL	The schedule is fixed for 12 weeks in Fall 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; 12–week schedule drives development of a set of top priority core capabilities. Therefore, the estimates show the effort required for the project.

According to COCOMO II Estimates for CSCI577, one team member effort = 1.67 COCOMO II person months. The total effort put forward by a team of 7 members is 7*1.67=11.69 person months, which is less than the most likely effort. The pessimistic effort from the COCOMO estimation above is 16.37, so the total team members need for this project = 16.37/1.67 = 8.6

Since, we have 7 people, from this effort estimation; we would not be able to finish the project completely in one semester.

As of now, we should focus on the core features and get back to the low priority features, if time permits.

6. Iteration Plan

6.1 Plan

After laying the foundations of development in the foundations phase, we now plan for the iterations to be executed in the development phase. The first iteration consists of the development of the core functionalities of the application resource center. Following it, we will test the functionalities and will do a drive through to check for user experience. Next iteration will consist of developing the low priority features.

6.1.1 Capabilities to be implemented

Below are the capabilities which our team plans to develop in the development phase. The priorities of each capability are different and implemented according to it.

Table 5: Construction iteration capabilities to be implemented

ID	Capability	Description	Priority	Iteration
1	Email Generation	Automated Email generation to references	HIGH	1
2	Reference Letter	Reference Letter Completion	HIGH	1
3	Review	Reference Review	HIGH	1
4	Resend Email	Reminder Sending	MEDIUM	2
5	Manger	Manager Reviews	MEDIUM	2
6	Investigator	Assignment of investigators	MEDIUM	2
7	Updating	Investigator Update	LOW	3

6.1.2 Capabilities to be tested

Below are the capabilities which are to be tested in the development phase. The testing will be initially done by the developers, followed by testing by all the team members and lastly the system needs to be tested by the clients and users.

Table 6: Construction iteration capabilities to be tested

ID	Capability	Description	Priority	Iteration
1	Email Generation	Automated Email generation to references	HIGH	3
2	Reference Letter	Reference Letter Completion	HIGH	3
3	Review	Reference Review	HIGH	3

6.1.3 Capabilities not to be tested

Almost all the capabilities of our system need to be tested. There does not exist any such capability which need not be tested.

6.1.4 CCD Preparation Plans

The system will be tested by David Lubeley, Kori Parraga, and other members of the City of Los Angeles public safety department for the entry of applicant and reference details, automated email generation and reference form filling. The system will be tested in different environment to check for the website's performance using different web browsers and real time data which will be provided by the client.

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 7: 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. >>