Project Plan

Online Book Store

Version 1.0

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CIS 895 – MSE Project

KSU

Major Professor

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1. Task Breakdown

1.1. Inception Phase

The inception phase will define all the project’s requirements. This phase will include the production of a Vision Document, a Project Plan, a Software Quality Assurance Plan, and a Demonstration.

Vision Document will include the project’s requirements and overview. It includes overview of the project, its purpose, goals, risks, constraints, and direction. It gives a listing of the main requirements and their respective Use case models to illustrate the functionality. Project Plan will detail the phases, iterations, and milestones that will comprise the project. It will include a timeline for the project and a cost estimate for completing this project. It includes the Architecture Elaboration plan will define the activities and actions that must be accomplished before the Architecture Presentation. Software Quality Assurance Plan describes the required documentation, standards and conventions test tracking and problem reporting, and tools used during the project. The plan will also identify the set of quality metrics used to assess product reliability. Demonstration of at least one executable prototype is required. Projects with a graphical user interface will include an executable prototype of the user interface.

This phase will be complete once the supervisory committee has approved all the above work.

1.2. Elaboration Phase

The elaboration phase defines the project’s architecture. This phase will include the production of revisions to the Project Plan and the Vision Document, an Architecture Design Plan, a formal specification, Test Plan, Formal Technical Inspection and Architecture Prototype.

Revision ofVision Document will be an updated version to provide a complete representation of all requirements. These requirements will be ranked according to importance, and a set of critical requirements identified. Appropriate changes that were suggested by the committee at the end of phase one will also be updated in the updated version of Vision Document. Revision of Project Plan will include updated timeline and cost estimate for the project. It also includes The Implementation plan which will define the activities and actions that must be accomplished during implementation. Formal Specification will include OCL. Architecture Design Plan will include the complete architectural design documentation using appropriate diagrams such as class diagrams, sequence/collaboration diagrams, etc. It also includes documentation of reuse of commercial or pre-existing components. Test Plan will address the required tests to show that the product satisfies the requirements. The test plan will identify a set of test cases, the types of tests that will be used for these test cases, the data that will be used for each case, and the requirement traces for each test case. Formal Technical Inspection will include inspections by two MSE students. One of the designs, formal requirement or
executable prototype is subjected to inspection. Architecture Prototype will address all critical requirements identified in the vision document.

This phase will be complete once the supervisory committee has approved all the above work.

1.3. Production Phase

The production phase defines the project implementation and testing. This phase includes the user manual, component design, assessment evaluation, project evaluation, references, and formal technical inspection.

User Manual includes an overview and explanations of common usage, user commands, error messages, and data formats. Component Design The internal design of each component will be documented using sequence/collaboration diagrams and state chart/activity diagrams. Source Code which corresponds to architecture and component design will be submitted. Assessment Evaluation will include a document detailing the testing done on the project. And Project Evaluation includes evaluation of the project ideas and quality. References and Formal Technical Inspection Letters will also be documented.

This phase will be complete once the supervisory committee has approved all the above work.

2. Cost Estimate

The Cost Estimate is done using the COCOMO model.

2.1. COCOMO

Project effort and time will be estimated using the COCOMO estimation model (Barry Boehm).

The Online Book store has an average complexity and fair flexibility. Therefore, it is classified as an organic mode project under the COCOMO model. The following formula is the COCOMO model for cost estimation for organic mode projects:

\[
\text{Effort} = 3.2 \times \text{EAF} \times (\text{Size})^{1.05} \\
\text{Time} = 2.5 \times (\text{Effort})^{0.38} 
\]

Where

- Effort = number of staff months (PM)
- EAF = effort adjustment factor
- Size = number of lines of code for completed product. It is measured in KLOC (thousands of lines of codes)
- Time = total number of months.

The Effort Adjustment Factor is the product of the 15 adjustment parameters. Each adjustment parameter is categorized as very low, low, nominal, high, or very high. All the adjustment parameters are listed below:
Online Book Store

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- RELY Required reliability 0.75 – 1.40
- DATA Database size 0.94 – 1.16
- CPLX Product complexity 0.70 – 1.65
- TIME Execution time constraint 1.00 – 1.66
- STOR Main storage constraint 1.00 – 1.56
- VIRT Virtual machine volatility 0.87 – 1.30
- TURN Computer turnaround time 0.87 – 1.15
- ACAP Analyst capability 1.46 – 0.71
- AEXP Applications experience 1.29 – 0.82
- PCAP Programmer capability 1.42 – 0.70
- VEXP Virtual machine experience 1.21 – 0.90
- LEXP Language experience 1.14 – 0.95
- MODP Use of modern practices 1.24 – 0.82
- TOOL Use of software tools 1.24 – 0.83
- SCED Required development schedule 1.23 – 1.10

Adjustment factors for the Online Book Store are listed below:

- RELY 1.00 Nominal
- DATA 1.00 Nominal
- CPLX 0.85 Low
- TIME 1.00 Nominal
- STOR 1.00 Nominal
- VIRT 0.87 Low
- TURN 0.87 Low
- ACAP 1.00 Nominal
- AEXP 1.13 Low
- PCAP 1.00 Nominal
- VEXP 1.00 Nominal
- LEXP 1.00 Nominal
- MODP 0.91 High
- TOOL 0.91 High
- SCED 1.00 Nominal

The EAF value evaluated to 0.60. I have estimated the size to be around 3.00.
From the calculation I got
EFFORT = 6.08
TIME = 4.96
3. Architecture Elaboration Plan

All the activities to be done before the Architecture Presentation are defined here.

3.1. Vision Document 1.0 Revision

Vision Document 1.0 will be revised and updated to Vision Document 2.0. The revisions will contain a complete representation of project requirements and these requirements will be ranked according to importance, and a set of “critical” requirements identified. It also contain changes suggested by the committee members following presentation one. This revision will be approved by the Major Professor.

3.2. Project Plan 1.0 Revision

Project Plan 1.0 will be revised and updated to Project Plan 2.0. The revisions will contain Implementation plan. The Implementation plan will define the activities and actions that must be accomplished during implementation. It also contain changes suggested by the committee members following presentation one. This revision will be approved by the major professor.

3.3. Formal Requirement Specification

One part of the project will be formally specified using OCL. The specification will represent the formal requirements of the project, described in the Vision Document. This will be approved by the major professor.

3.4. Architectural Design

Architectural Design will be documented using UML diagrams such as class, sequence, and state chart diagrams. All architectural components will be documented at interface level. This will be approved by the major professor.

3.5. Test Plan

Test Plan will be developed. The document will follow the requirement listings found in Vision Document 2.0. It will also identify a set of test cases, the types of tests that will be used for these test cases, the data that will be used for each case, and the requirement traces for each test case. This will be approved by the major professor.

3.6. Formal Technical Inspection

Two MSE students will act as technical inspectors. The technical inspection will assess the project architecture. It will also include a formal checklist to be used by the inspectors. This will be approved by the major professor.
3.7. Architecture Prototype

An executable prototype will be built including all critical requirements described in the vision document.