Project Plan 1.0

for

SnIPS Implementation and GUI

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1. Task Breakdown

The tasks of the project are divided into three phases – Inception, Elaboration, and Production. The content of each phase includes what works will be done at the end of every phase. All works in every phase will have to be approved by the committee before any further progress on the project.

1.1. Inception Phase

This phase will concentrate on project’s overview, requirements, and plans to carry out the project on time. The productions of this phase include a Vision Document, a Project Plan, a Software Quality Assurance Plan, and a prototype of SnIPS GUI.

1.1.1. Vision Document

Vision Document will include introduction, overview, and requirements of the project. The introduction contains motivation and background knowledge of SnIPS. The overview covers the goal and purpose of the project. The requirements will be elicited from use case diagram and all requirements must be label with Critical, Non-Critical, or Future to categorize the level of requirements.

1.1.2. Project Plan

Project Plan will include a timeline and a cost estimation of the project to complete the project on time. Timeline is a criterion that implies the progress of the project and it is based on milestones outline which contains Inception, Elaboration, and Production phase. The project will be using COCOMO methodology for cost estimation and provide a Gantt chart for better understand of project plan.

1.1.3. Software Quality Assurance Plan

Software Quality Assurance Plan will include the outline of required documents in every phase. Practiced standards and conventions will be monitor and followed to ensure software quality. Project reviews and responsibilities associated with SnIPS Implementation and GUI validation will be included in this document.

1.1.4. Prototype

At least one prototype will be developed to demonstrate the aspect of SnIPS GUI.

The completion of this phase is based on the committee agreement from 1.1.1 to 1.1.4.

1.2. Elaboration Phase

This phase will concentrate on project’s design architecture and revise the vision document and project plan done in inception phase. The productions of this phase include revised vision document and project plan, an architecture design plan, a formal specification, a test plan, and two architecture inspections.

1.2.1. Revision of Vision Document and Project Plan

All revisions and suggestions pointed out at the end of phase one from the committee will be added and updated in Vision Document and Project Plan.
1.2.2. Architecture Design Plan

The Architecture Design plan concentrates on using UML diagrams which depicts the project architecture in respect of Object Oriented based. Class diagrams, use-case diagrams, activity diagrams, and sequence diagrams will be the candidate diagrams for building this architecture design plan.

1.2.3. Formal Specification

The Formal Specification will cover at least one function of the software to be specified using USE/OCL.

1.2.4. Test Plan

The Test Plan will have a series of testing procedure for the project. Reports for testing and correct failed test will also be included in Test Plan.

1.2.5. Architecture Inspections

Two Architecture Inspections will be fulfilled by fellow MSE students at Kansas State University and their feedback will be posted on project’s website.

The completion of this phase is based on the committee agreement from 1.2.1 to 1.2.5

1.3. Production Phase

The production phase will have a complete project implementation and testing. This phase covers the project coding and documentation.

1.3.1. Project Coding

All committee approved and designated tasks to be coded and developed will be accomplished within project coding. Unit testing and integration testing will be performed throughout coding. Test cases will be developed according to the project requirements outlined in the Vision Document.

1.3.2. Project Documentation

A user manual will be created and will include a description of project installation, software usage requirements, and software usage. Two Architecture Inspections will be fulfilled by fellow MSE students at Kansas State University and their feedback will be posted on project’s website.

The completion of this phase is based on the committee agreement from 1.3.1 to 1.3.2

2. Cost Estimation

The Cost Estimation uses Work Breakdown Structure (WBS) based on Top-Down approach using tree structure to decompose the overall tasks for this project and estimate time distribution for each task within different phases. The WBS tree diagram decomposes tasks of the project from life-cycle phase and in turn decomposes each phase into artifact sets.
Subsequently, decomposes each artifact set into leaf node which is deliverable task. All tasks are divided in five artifact sets: Management, Requirement, Design, Implementation, and Deployment Set. This document first provides the work breakdown structure of the project and in turn uses Gantt Chart to depict the timeline and major milestones throughout the project.

Table 1 is the artifact set overview of this project. Management set captures the artifacts associated with process planning and execution. Requirement set captures the vision and requirement elicitation. Design Set captures the design needed for this project. Implementation Set captures the prototypes and final version of executable code. Deployment Set captures the user manual description document.

<table>
<thead>
<tr>
<th>Artifact</th>
<th>Manage. Set</th>
<th>Require. Set</th>
<th>Design. Set</th>
<th>Implem. Set</th>
<th>Deploy. Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Project Plan 2.0</td>
<td>4. Project Evaluation.</td>
<td>3. Final Project</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Test Plan 1.0</td>
<td>6. Testing Evaluation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1 Artifact Set Overview

Figure 1 depicts the decomposition of table 1 from top-level perspective. Every phase concentrates on different artifact sets and all phases require management set.
The next-level breakdown is shown from figure 2 to figure 4 which represents phase 1 to 3 respectively. The leaf nodes of figure 2 to 4 are deliverable productions at the end of each phase. In addition, figure 2 to 4 follows estimated duration and dependencies for each task.

### Phase 1 WBS Tree Diagram

<table>
<thead>
<tr>
<th>Task</th>
<th>Estimated Duration of Task</th>
<th>Task Dependencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Plan 1.0</td>
<td>30 days</td>
<td>Vision Document 1.0</td>
</tr>
<tr>
<td>SQAP</td>
<td>20 days</td>
<td>Vision Document 1.0, Project Plan 1.0</td>
</tr>
<tr>
<td>Vision Document 1.0</td>
<td>30 days</td>
<td></td>
</tr>
<tr>
<td>Prototype 1.0</td>
<td>90 days</td>
<td></td>
</tr>
</tbody>
</table>

### Phase 2 WBS Tree Diagram

- Project Plan 2.0
- Formal Requirement Specification
- Formal Technical Inspection
- Test Plan 1.0
- Vision Document 2.0
- Architectural Design 1.0
- Prototype 2.0
<table>
<thead>
<tr>
<th>Task</th>
<th>Estimated Duration of Task</th>
<th>Task Dependencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Plan 2.0</td>
<td>15 days</td>
<td>Vision Document 2.0</td>
</tr>
<tr>
<td>Formal Require. Spec.</td>
<td>10 days</td>
<td>Vision Document 2.0</td>
</tr>
<tr>
<td>Formal Tech. Inspec.</td>
<td>10 days</td>
<td>Formal Requirement Specification</td>
</tr>
<tr>
<td>Test Plan 1.0</td>
<td>7 days</td>
<td>Architectural Design 1.0</td>
</tr>
<tr>
<td>Vision Document 2.0</td>
<td>15 days</td>
<td></td>
</tr>
<tr>
<td>Architectural Design 1.0</td>
<td>30 days</td>
<td>Project Plan 2.0</td>
</tr>
<tr>
<td>Prototype 2.0</td>
<td>70 days</td>
<td></td>
</tr>
</tbody>
</table>

**Phase 2 – Tasks Estimated Duration and Dependencies**

**Phase 3**

- **Manage. Set**
  - Project Evaluation
  - Testing Evaluation
  - Assessment Evaluation
  - Reference
  - Formal Technical Inspection Letters

- **Design Set**
  - Component Design

- **Implem Set**
  - Final Project

- **Deploy. Set**
  - User Manual

**Figure 4 – Phase 3 WBS Tree Diagram**

<table>
<thead>
<tr>
<th>Task</th>
<th>Estimated Duration of Task</th>
<th>Task Dependencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Evaluation</td>
<td>15 days</td>
<td>Testing Evaluation</td>
</tr>
<tr>
<td>Testing Evaluation</td>
<td>7 days</td>
<td>Final Project</td>
</tr>
<tr>
<td>Assessment Evaluation</td>
<td>15 days</td>
<td>Testing Evaluation</td>
</tr>
<tr>
<td>Reference</td>
<td>1 days</td>
<td>Project and Assessment Evaluation</td>
</tr>
<tr>
<td>Formal Tech. Inspec. Letters</td>
<td>7 days</td>
<td>Testing Evaluation</td>
</tr>
<tr>
<td>Component Design</td>
<td>30 days</td>
<td></td>
</tr>
<tr>
<td>Final Project</td>
<td>30 days</td>
<td></td>
</tr>
<tr>
<td>User Manual</td>
<td>7 days</td>
<td>Testing Evaluation</td>
</tr>
</tbody>
</table>

**Phase 3 – Tasks Estimated Duration and Dependencies**
Figure 5 is the overall timeline for this project including major milestones which are the presentation at the end of each phase.

Figure 5 – SnIPS Project Timeline

3. Architecture Elaboration Plan Completion Criteria

The following is a list of tasks and artifacts that will be completed in the process of elaboration phase and prior to the second presentation.

3.1. Vision Document 2.0

Vision Document 2.0 will be the revision of Vision Document 1.0 based on suggestions and required modifications from the committee member following the first presentation. Vision Document 2.0 will be approved by the major professor.
3.2. Project Plan 2.0

Project Plan 2.0 will be the revision of Project Plan 1.0 based on suggestions and required modifications from the committee member following the first presentation. Project Plan 2.0 will be approved by the major professor.

3.3. Architectural Design 1.0

Architectural Design 1.0 will be documented using UML diagrams such as class and object diagrams, sequence/collaboration diagrams, state-chart/activity diagrams, hierarchy diagrams. All architectural components will be documented. Architectural Design 1.0 will be approved by major professor.

3.4. Prototype 2.0

Prototype 2.0 will develop the functionalities of SnIPS graphical user interface (GUI). Prototype 2.0 will also enhance Prototype 1.0 including additional web-based functionalities for SnIPS. Prototype 2.0 will be approved by major professor.

3.5. Test Plan 1.0

The production phase will have a complete project implementation and testing. This phase covers the project coding and documentation.

3.6. Formal Technical Inspection 1.0

Formal Technical Inspection 1.0 will be a checklist that is composed of requirements outlined in the Vision Document 2.0 and inspected by two MSE students at Kansas State University. Formal Technical Inspection 1.0 will be approved by major professor.

3.7. Formal Requirements Specification 1.0

At least one component of this project will be formally specified by using USE/OCL. The components specified by USE/OCL will be based on the software requirements stated in Vision Document 2.0 and specify the consistency with each software requirements. Formal Requirement Specification 1.0 will be approved by major professor.