* 1. **Project Summary**

**1.1.1 Purpose, Scope, and Objectives**

This document describes the software requirements for a Vehicle Training Simulator to be used for the training of ambulance and emergency rescue vehicle operators. This requirement specification outlines the initial release of this project and aims to encompass the entire system, including both its software and hardware components.

The system will consist of the software and a mechanical device that the driver will sit in. The mechanical device will contain the interface that the driver will use to control the ambulance and a viewing screen. The device will need to be able to realistically mimic the movements of an ambulance under various road conditions and in different situations. In order to do this the software will need to be able to perform large amounts of physics calculations. The system would sync up with a database that would keep track of the statistics of the driver and his performance that could be analyzed later and could show improvements over a period of time. The user interface of the machine could be basically a stripped down ambulance. Parts of the ambulance that need to be manipulated (such as the wheel, gas, brake and clutch pedals, shifter, wipers/lights etc) would now be set up as input devices ready to read the users actions and send the information to be handled by a main physics engine. These same input devices would also need to be output devices to a degree, where pedals would need to lock up and resist in certain conditions, and the wheel would pull toward centering the tires when the ambulance was accelerating. A visual display replacing the mirrors and windows in the car would be output only devices, and the same signal sent to them could also be sent to a monitor outside the simulator so a third party, such as the instructor, could monitor the simulation.

**1.1.2 Assumptions and Constraints**

The authors of this document are expected to complete the project within the Fall 2008 semester. This project will use resources in the form of time and effort that will be spent developing the project deliverables. We will be relying on 3rd party companies to design the physics calculator and all hardware components of the SRS.

**1.1.3 Project Deliverables**

The list of project deliverables is:

* The Project Summary
* References
* Definitions
* Project Organization
* Managerial Process Plans
* Technical Process Plans
* Supporting Process Plans
* Additional Plans

Refer to section 1.1.4 for the expected delivery dates of the project deliverables.

**1.1.4 Schedule and Budget Summary**

**Budget Summary:** “No budget required”.

A tentative schedule is as shown below in table 1.

Figure : Schedule

|  |  |
| --- | --- |
| Item | Due date |
| Project Summary | October 8, 2008 |
| References | TBA |
| Definitions | TBA |
| Project Organization | TBA |
| Managerial Process Plan | TBA |
| Technical Process Plan | TBA |
| Supporting Process Plan | TBA |
| Additional Plans | TBA |
| Project Management Plan | December 8, 2008 |

**1.2 Evolution of plans**

The preliminary drafts of the SPMP will be distributed to all contributing members for agreement and subsequently submitted to the supervising authority for approval. Any and all requirement changes will be handled under configuration management as outlined in Section 7.1. Document control and revision distribution will be also within the domain of configuration management.

1. **References**

None

**3.0 Definition**

3.1 Acquirer

A coalition of various emergency response companies will cooperatively specified requirements and take delivery of this project and all deliverable contained within its scope.

3.2 Baseline

The submitted and approved Software Requirements Specification will serve as a baseline for the product described within this SPMP.

3.3 Milestones

Progress will monitored at regular intervals. Specifically, reviews will be scheduled after delivery of each o f the following:

Acceptance Functional requirement specification

Acquirement of physics calculator from contracted source

Acquirement of contracted hardware platform

Completion of Feedback Module

Completion of Control Module

Completion of Simulation Setup Module

Completion of Simulation Record Module

Completion of Audio/Visual Output Module

Final Product Submission

3.4 Project Agreement

The Project Agreement shall consist of all documentations, requirements specifications and deliverables created in conjunction and connected to the project.

3.5 Project Deliverable

The Project Deliverable shall consist of the following:

SRS document to be reviewed and accepted

User Manuals

Training Aids

Maintenance Documentation

Source Code

Vehicle Simulator test results

Final Product of Vehicle Simulator

3.6 Software Project

Starting date for the project will be January 1, 2009. The project is estimated to end August 12, 2009. During the development cycle will include all

1. **Project Organization**
   1. ***External Interfaces***

The external interfaces for the project would be the members of the studio committee and Mrs. Judy Anderson, Secretary, Department of MCIS who is the stakeholder for this project.

* 1. ***Internal Interfaces***

None.

* 1. ***Roles and Responsibilities***

The software developer is responsible for all documentation to be developed and for all work to be done.

1. **Managerial Process Plans**
   1. ***Work Plan***
      1. **Work Activities**

Refer to section 5.1.2 Gantt chart.

* + 1. **Schedule Allocation**

**Figure 2: Gantt chart**

**MFAT Grading System Project Schedule**

**Kiran: Project Developer**

**Status date: January 8th, 2004**

**Due Date: December 2nd, 2004**

**Date Ending**

**Activity % Complete Status 1/29 2/27 3/18 10/08 10/28 11/16**

**User Analysis 0 S SSSSS**

**Full Specification 0 S SSSSSSSS**

**Architectural 0 S SSSSSSSS**

**Design**

**Detailed Design 0 S SSSSSSSS**

**Database 0 S SSSSSSS**

**Test Design 0 S SSSSSSS**

**Implementation 0 S SSSSSSSSS**

**Module Testing 0 S SSSSSSSSSSSSS**

**Integration Testing 0 S SSSSSSSSSSSSS**

**Project Status Symbols**

**S Schedule**

**A Satisfactory**

**C Caution**

**F Critical**

**Planning / Progress Symbols**

**B Work before Schedule Time**

**S Scheduled Activity Time**

**A Work after Scheduled Time**

**X Scheduled But Not Worked**

* + 1. **Resource Allocation**

This project will use resources in the form of time and effort that I shall spend developing the project deliverables as mentioned in section 1.1.3.

* + 1. **Budget Allocation**

None.

* 1. ***Control Plan***
     1. **Requirements Control Plan**

When changes are to be made in the requirements after the SRS has been released, the changes shall be brought to the attention of the committee and discussed. Any changes that are to be made will be with the prior approval of the committee and only if feasible and permissible within the constraints of the project mentioned in section 1.1.2, and resources in terms of knowledge and skill of the developer required. Once the changes have been made to the SRS document, an updated version of the SRS shall be released and circulated to the committee. However, no changes shall be made to the requirements once the SDD is completed.

* + 1. **Schedule Control Plan**

If the work scheduled in section 1.1.4 is gets behind, the developer is ready to spend extra time on the project in between and after the schedules and also during Summer 2004 to make up for the lost time and deliver the final project on time.

* + 1. **Budget Control Plan**

None.

* + 1. **Quality Control Plan**

Please refer to Software Quality Assurance Plan regarding Quality Control.

* + 1. **Reporting Plan**

The updated SPMP will be circulated as mentioned in schedule of section 1.1.4. Each of preliminary versions of all the documents and updates and status reports will be sent and discussed with the advisor and upon approval the approved document will be circulated to the other members of the committee. The report on the status of the project will be sent to the members of the committee at the beginning of the second semester of Studio.

* + 1. **Metrics Collection Plan**

None.

* 1. ***Risk Management Plan***

Risk # 1 “Deficiency in the knowledge and understanding of the problem and its solution” indicates that the developer does not have the complete understanding of the problem. This will affect the quality of the project in terms of requirements of the product and their fulfillment, which is not desirable. Building a prototype for the project model and doing an extensive literature search can overcome this. This will help the developer in delivering an efficient and quality product.

Risk # 2 “Lack of Skills and knowledge of tools needed for statistical analysis”, which means that the developer does not have knowledge about the tools and knowledge of working on statistical analysis. In this case, the developer is expected to update his / her knowledge of tools available for this purpose and decide the one that will be used in the project and master it. The developer may consult the faculty and other members of the committee especially, Dr. Jane Case for this purpose.

* 1. ***Closeout Plan***

All the details about the post-mortem debriefings, report on the lessons learnt, project objectives and the milestones achieved would be mentioned as part of the final studio paper at the end of the first semester of the studio component. At the end of the second semester of studio the developer will provide the committee with electronic version of the project code and documentation for future reference and maintenance purposes.

1. **Technical Process**
   1. ***Process Model***

The MFAT grading system for MCIS will be implemented and executed using the Waterfall Model and prototyping.

* 1. ***Methods, Tools, and Techniques***

Refer to section 6.1 (process model) for a description of the process. This process is described in [Braude] Software Engineering: An Object Oriented Perspective. This project adapts the system for use on a Personal Computer using a Visual Interface that would be built using Visual basic 6.0 and HTML, and Microsoft Access as its database management system. The tool for the statistical analysis is undecided at this point of time and would be mentioned in the updated version of this document.

* 1. ***Infrastructure Plan***

The hardware resources are two 333MHz Pentium computers running Windows 95 / 98 / 2000 Operating System. Each of these computers should have at least 128 MB RAM and a minimum of 4 GB of disk space.

* 1. ***Product Acceptance Plan***

The committee will test the final product / application for acceptance.

1. **Support Process Plans**
   1. ***Configuration Management Plan***

All the project deliverables are to be considered as configuration items. The configuration item as well as its file would be named after the document like SRS, SDD and followed by the version number. For example, all the preliminary versions that are submitted to the advisor for review would be named with the abbreviation followed by 0.1, 0.2. After the advisor approves the basic SPMP, this baseline document will be version 1.0 and is distributed to the committee members and stakeholders. Informal updates with the advisor will be numbered with 1.1, 1.2, etc. and the next full distribution to the committee would be version 2.0, etc.

* 1. ***Validation & Verification Plan***

A Verification and Validation Plan as a part of the Software Quality Assurance and Verification & Validation Plan will be developed following recommended departmental standards. See section 1.1.4 for its delivery date.

* 1. ***Documentation Plan***

The IEEE standards would be followed for all documentation purposes. All the documents would be discussed and reviewed with advisor before their baseline versions are issued and distributed to the members of the committee on the due dates mentioned in section 1.1.4 for delivery dates.

* 1. ***Quality Assurance Plan***

A Software Quality Assurance Plan will be developed following recommended departmental standards. See section 1.1.4 for its delivery date.

* 1. ***Review and Audits***

Review and Audits would be addressed as a part of the Software Quality Assurance and Verification & Validation Plan that would be developed following recommended departmental standards. See section 1.1.4 for its delivery date.

* 1. ***Problem Resolution Plan***

None, problems would be resolved informally between the developer, the advisor and the studio committee.

* 1. ***Subcontractor Management Plan***

None.

* 1. ***Process Improvement Plan***

None, this is a single software development experience and the lessons learned will be included in the final studio document.

**Index**

A

Application 1, 2, 10

C

CI 5, 6, 10

Client 1, 10

CRM 1, 10

I

IEEE 2, 10

IT 1, 10

S

SCMP 5, 6, 10

SDD 5, 10

SPMP 5, 6, 10

SQAP 5, 6, 10

SRS 5, 6, 10

Stakeholder / Customer 1, 3, 5, 10

STD 5, 6, 10

T

Tbd 10