CENG 491
Computer Engineering Design I

Senior Project
VIRTEC3D

Proposal Report

Aslı ÖZAL 1514868
Bahadır ÖZDEMİR 1395342
Duygu ATILGAN 1394667
Nilgün DAĞ 1394857

October 8, 2007
1. Table of Contents

1. Table of Contents.........................................................................................................................1
2. Project Team................................................................................................................................2
   2.1. Company Name...........................................................................................................2
   2.2. Team Members...........................................................................................................2
   2.3. Member’s Roles.........................................................................................................2
   2.4. Ground Rules...............................................................................................................2
   2.5. Contact Information.....................................................................................................3
3. Project..........................................................................................................................................3
   3.1. Project Name...............................................................................................................3
   3.2. Project Definition.........................................................................................................3
   3.3. Project Topic................................................................................................................3
   3.4. Project Description......................................................................................................4
   3.5. Project Features and Project Goals.............................................................................4
   3.6. Intended Hardware and Software Platforms.............................................................5
2. Project Team

2.1. Company Name
SpongeSoft

2.2. Team Members
(Alphabetically ordered)

<table>
<thead>
<tr>
<th>Name</th>
<th>Student ID</th>
<th>e-mail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aslı Özal</td>
<td>1514868</td>
<td><a href="mailto:itsasli87@gmail.com">itsasli87@gmail.com</a></td>
</tr>
<tr>
<td>Bahadır Özdemir</td>
<td>1395342</td>
<td><a href="mailto:e1395342@ceng.metu.edu.tr">e1395342@ceng.metu.edu.tr</a></td>
</tr>
<tr>
<td>Duygu Atılgan</td>
<td>1394667</td>
<td><a href="mailto:e1394667@ceng.metu.edu.tr">e1394667@ceng.metu.edu.tr</a></td>
</tr>
<tr>
<td>Nilgün Dağ</td>
<td>1394857</td>
<td><a href="mailto:nilgundag@gmail.com">nilgundag@gmail.com</a></td>
</tr>
</tbody>
</table>

- We give special importance to this project. We will perform our best to develop an application as good as possible. Therefore, we expect to get a good grade such as BA from this course.

2.3. Members’ Roles

Aslı Özal: Recorder, Gate Keeper, Optimist
Bahadır Özdemir: Gate Keeper, Initiator
Duygu Atılgan: Summarizer, Leader
Nilgün Dağ: Devil’s Advocate, Time Keeper

2.4. Ground Rules

1. We will do our weekly meetings on Monday between 9.00 am and 13.00 pm and on Friday between 12.30 pm and 15.30 pm. Any change of meeting time will be announced at the prior meeting.
2. Missing a meeting will not be tolerated, unless an acceptable reason is declared before.
3. Each member should come to meeting well-prepared and should have finished his task before the meeting.
4. Brainstorming and deciding about future steps in the project will be done on Monday meetings. Each member’s tasks of following week will be assigned on Friday meetings.
5. At each meeting, recorder will save the discussed topics, decisions, and completed task according to a previously prepared documentation template.

2.5. Contact Information

We have created a mail group (spongesoft@googlegroups.com) to communicate within team and to discuss our ideas easily through web.

Our contact person is:
Aslı Özal, itsasli87@gmail.com.

3. Project

3.1. Project Name

Our project name is “Savior”.

3.2. Project Definition

Savior is an online virtual team collaboration platform with 3D graphics.

3.3. Project Topic

Throughout history, wars have always taken place in the lives of people all over the world. The effects of a war differ for all people. For one, it could simply be another news in the evening, while for the other, it is the matter of being alive. The worst impact of wars are, without a doubt on innocent people. In our project, we have chosen to evacuate inhabitants of a city under a military invasion, thereby saving many blameless lives.

Rescuing people from a city is not an easy task. It requires to develop many skills in the four C’s: Command, Control, Coordination and Communication. To develop these skills and apply them in a real situation, people in charge should be well-trained and experienced. Knowing that repeated practice leads to success, we decided to develop an application which will be used to train responsible agencies. Our project is aimed to be an educating application to be used by civil defence organizations, and military units. Also, our program may be varied and used to simulate the situations such as natural disasters (flood, volcanic explosion..etc.) where city evacuation is obligatory.
3.4. Project Description

Main goal in our project is to develop an online virtual team collaboration platform with 3D graphics. We will set up a 3D environment in which the scenario will take place. Our scenario should be based on a task which will be accomplished by participants of a team who must cooperate with each other effectively. The aim of each participant is to achieve the common goal of the team while performing his own role. To add, participants should communicate vocally and coordinate with other team members so that limited resources will be used comprehensively.

3.5. Project Features and Project Goals

Our scenario is about evacuation of a city under military invasion. This scenario is played with 3 teams which are:

1- Savior Team: They find and rescue inhabitants who are sheltering in specific places.
2- Resource Maintainer Team: Supply resources (medicine, vehicle, etc.) to the savior team.
3- Backing Team: They include the members of first responder agencies such as police, firefighters, doctors.

The simulation is from first person view which ensures that emphasis is on the world around the characters instead of characters themselves. We aim our application to be easy to learn but difficult to master.

Our goals while developing the program are as follows:

1- Active Feedback: Since our application is an education program, it is important to give feedback to user according to his performance. This feedback will be given by comparing his achievements with possible optimum solutions.
2- Varieties of Scenario: We aim that our program has an educational purpose. Therefore, it would be inefficient if the program has the same scenario again and again. As a result, we will develop different situations and different conditions in each execution of the program. We will have a simple scenario generator to arrange buildings, people, resources, etc.
3- Levels of Difficulty: To make the application usable for all kind of users, we will offer different levels of difficulty. The application will offer three different levels according to its challenges in tasks and situations; beginner, intermediate and advanced. But even at the hardest, nothing will be impossible.
4- **Simplicity:** Good design is distinguished by simplicity. While designing, we plan to include only things that are necessary to create the desired effect. The user shouldn't be distracted with irrelevancies. Sometimes "Less is more."

5- **Reality:** We aim to give the illusion of a real world to the user. He should understand that this application is not a game and understand the criticalness of the situation he is in. There won't be any magical or mysterious events occurring. Also, to provide reality of real world to users, we will get support from authorities in Ministry of Interior, Civil Defense General Directorate and in Istanbul Technical University, Center of Excellence for Disaster Management.

3.6. **Intended Software Platforms**

We plan to use Java as the programming language, and Linux as the programming environment. However, the application will work on both Linux and Windows. For the graphics OpenGL (JOGL for Java) will be used. A 3D Scene Manager could also be used in the upcoming phases of the project to improve the graphics.

The game engine will include the following subcomponents:

- **The Rendering Engine:** This generates real time images making up the scenes of application. It simulates the appearance of real world textures, colors and objects.
- **Physics Engine:** This is needed for simulating real physics models. Open Dynamics Engine is a choice which will be decided later.
- **Network and Multiplayer co.:** Networking is an important part of our project, since the application relies on the coordination of the players. Audio support will be provided.
- **Scripting Languages:** Scripts will be used to extend game logic, tailoring the game engine to particular game data.
- **Sound Effects:** In order to provide a real environment, we need sound effects. The effects add a large portion of the flash and dazzle of the application. OpenAL is a choice for our cross-platform audio API.
- **AI:** Intelligent features will be possibly added to the project in the upcoming phases.