Project Hellknöw

Group 3
Henrik Sandström hsandst@kth.se
Jonas Lindmark jlindm@kth.se
Carl-Fredrik Sundlöf cfsu@kth.se
Tim Hao Li htli@kth.se

1. **Who are the users and what problem does the system solve for them?**

We are planning to implement a 2D shooter game that is mainly focused on multiplayer gaming. The main difference between our game and the games that are currently on the market is a so called Fog of War feature. Fog of War is a feature that is most commonly used in strategy games to hide parts of the course from the player. In our game the player will have a visual field that he can perceive, and the rest of the map will be blurred out or hidden in some way. This is revolutionary in the 2D-shooter game because usually the player can see things all around the figure on the screen, which is not realistic since one would not be able to see what is behind if one does not turn his head. One of the successful aspects of the 3D-shooter genre is the realness in perception. Often times in a 3D-shooter game, players are slaughtered from behind or above. Things like that happens only when the agent in the game sees only what a human is capable of seeing. And this attribute really makes the shooter game much more exciting. Therefore, our main goal is to implement the property of Fog of War in order to achieve this purpose.

Our main target audience are gamers in the age range of 14 to 27. The users should have previous experience with similar types of games, with the ability to maneuver proficiently with a mouse and keyboard simultaneously. However, this will not be a necessary requirement. A person with less experience with the computers might still enjoy the game, and become more skilled as he or she plays the game. The game should also offer something new and inventive to the 2D shooter genre, so it will appeal to gamers who enjoy 2D shooters but are looking for something new.

The game will solve the problem of boredom, relaxation. The aim is to keep the user entertained for a moderate amount of time, while the user is able to interact with friends. It allows friends to spend some quality time together, while doing something that they (hopefully) enjoy.

The game will be a alternative to the general 3D-shooter/FPS games that are on the market. Hellknöw will not require as much time or concentration as the 3D-shooters. The game will also be possibility for people who might not have a good enough computer to play the newest 3D-shooter.

2. **The main uses of the system.**

The system is generally going to be used for entertainment. It will give friends something to do together that they both can enjoy and talk about afterwards.

Scenario 1:

Martin has just arrived home after a long exhausting day at school. Martin does not want to do any more school work today. He sits down at his computer and logs on to his favorite chat client. He engages in a conversation with his good friend Åsa. Martin needs something more than just a simple conversation to get his mind off the school work. He decides to challenge Åsa to a game of Hellknöw. He tells Åsa that he wants to play and she accepts his challenge. Both Åsa and Martin have Hellknöw previously installed on their computers. They both start the game. Since there is nothing to load for previous sessions they can easily start a game. They decide that Martin will initiate the game and act as server. Martin gets his IP from the game, starts the server, and gives the IP to Åsa. Upon receiving the IP, Åsa enters it into the game and connects. While playing, Martin uses the chat function to comment on Åsa's skill with the pizza-weapon. They both have a good laugh about the comment. They play Hellknöw for about half an hour before crowning Åsa as the winner. They both disconnect by closing the game down. Martin feel

refreshed and really enjoyed the playing, now he will have something to talk about with Åsa at school tomorrow. He is now ready to resume his studies on the computer.

Scenario 2:

At home Martin just got beaten by his dear friend Åsa and was very upset. So he decided to practice his skills in just the single player mode. He was not very sure how the single player mode would differ from the multiplayer. Therefore, he opened the game, hit the single player mode, and found himself in the same environment he was beaten by Åsa except that he was all alone this time. He thought there would be some villains in the game in place of Åsa but found that it was just like the practice mode without any "intelligent" beings. "This way," he thought to himself, "I would be able to get really familiar with the environment without being blown to pieces by my best friend." "And she will be so impressed by my tremendous improvement in Hellknöw!" Armed with only a pizza for weapon he strolls around the level discovering an excellent spot for killing Åsa, a large pit of spikes. Satisfied with his devious plan he disconnects from the single player mode, thinking about the potential victory in the next game.

3. **The context/environment in which the system is to be used.**

Hellknöw can be played while sitting in the same room as the opponent and it can also be played against an opponent at the other side of the world. It is mainly supposed for home use, but it could also be played at LAN-parties (Local Area Network-parties) or at schools, workplaces and such (where gaming is allowed).

4. **The scope of the system.**

Since the game aims for people who want to pick up a small game during their free time, the game will not have too many or complicated features. However, it need enough material to keep the player entertained.

Topic	in	out
Game intro	X	
About Hellknöw...	X	
Help/ instructions	X	
Menu	X	
Submenu for single player	X	
Submenu for multiplayer	X	
More than 2 players		X
Sound	X	
Hot keys		X
Control modifiability		X
Connection notification	X	
Life/Hitpoints	X	
Multiple Weapons	X	

IP Listing	X	
Multiple Stages		X
Stage selection		X
Background music		X
Full screen mode		X
Updates		X
Chat	X	
Communication type		X
Artificial Opponents		X
Save Games		X
High Score		X

5. **The main factors that need to be taken into account when designing and building the system.**

To be able to implement a game with multiple programmers developing different features we need to agree on a good base structure to build upon. We also need to develop a protocol for network communication between the client/server side and the client side, that is effective and tolerant to errors like lag.

–   If one of the players loses his or her connection to the server, the game should be paused and the other player should be notified about this. The other player then has the choice of either try to reestablish the connection or close the game.

–   If one player has a slow or lossy connection, he should still be able to play the game. This means that the client must be able to manage updates when not receiving all the packages.

–   It should be possible for an enthusiast to either buy or download the source code several years from now and be able to add features without understand the whole code.

–   The game needs to have realistic system and network requirements to be played.

6. **Technologies and Risks**

We plan to implement the game in Java 6. For the graphic we are planning on using The Lightweight Java Game Library (LWJGL) , Java 3D or possibly Javax Swing. All in the group are experienced Java programmers, however, one risk is that we all lack experience with the 3D libraries. Even though the game is going to be in 2D, it would be beneficial to use a 3D library since it is usually faster than the 2D libraries. It also gives us the possibilities to improve on the visual effects. If we decide to use the LWJGL there is also the risk that a 3rd-party library might not be fully documented and it might be hard to get support from. Another problem with that visual part of the game is that none of us are graphical artists.

For the network interaction we are planning to use regular Java-sockets. The risks with this is that we lack experience with creating protocols and effectively transmitting them.

We choose Java as our programming language not only because we are all experienced Java

programmers, but also because it is platform independent. Platform independence makes it possible to both develop the game in school using the UINX computers, and it will also be possible to work and test it at home using the operating system of choice. The risk with platform independence is that we cannot use operating system dependent features like minimizing the game to the tray in windows, or hiding the game for a background update.

We need to be able to implement the Fog of War feature by relating it to the ray tracing. "Ray tracing is a general technique from geometrical optics of modeling the path taken by light by following rays of light as they interact with optical surfaces." (From: Wikipedia http://en.wikipedia.org/wiki/Ray_tracing). The risk with this is that do not at the moment know how to implement this.