Project: Jarl
User Requirements with Use Cases

Group Number: 18

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1 Glossary

Artificial Intelligence, a system that makes decisions based on experience and is able to acquire new knowledge. In this case, a computer controlled unit.

CPU, Central Processing Unit.

Game session, starts the moment the game world is shown and ends when the user returns to the lobby.

Game world, the 3D world in which the game session takes place.

Hero, a game element, whose movement is controlled by the user and can interact with other game elements.

Java, a programming language developed by Sun Microsystems, Inc. See http://java.sun.com.

Java Runtime Environment, the program required to run programs written in Java.

Java Webstart, a technology to enable users to start Java programs from a web browser.

JRE, see Java Runtime Environment.

Mac OS X Leopard, an operating system developed by Apple Inc. For more information see http://www.apple.com.

Micro-management, a term to describe very detailed management of units and resources.

OS, an abbreviation for Operating System.

Pentium III, a CPU produced by the Intel Corporation.

Ubuntu 7.10, an operating system developed by Canonical Ltd. For more information see http://www.ubuntu.com.

Unit, a game element whose movement is not controlled by the user.

Unit distribution, the ratio of attacking and defending units.

Windows XP, an operating system developed by the Microsoft Corporation. For more information see http://www.microsoft.com.

2 User requirements definition

2.1 Functional requirements

2.1.1 General

1. Number of players
   The system shall have at least 2 players per game session.

   Rationale: Two users is the minimal amount of users that is required for the game to be a multiplayer game.

2. Multiplayer
   The system shall use the internet for multiplayer connections.

   Rationale: Most users are at home or at work and wants to play with friends in other locations.

3. Key bindings
   The user of the system shall be able to change all key bindings. A key binding is an input event bound to a key on the keyboard or the mouse.

   Rationale: Users wants customize the key bindings to suit what they are used to in other games, or they may not like the default key bindings.

4. Resolution
   The user of the system shall be able to change the game resolution. The resolution can only be changed when the user is not involved in a game session.

   Rationale: The resolution of the game is a major factor on the amount of system resources the game uses. Users also have different monitors that supports different resolutions and they most likely want to run the game in a resolution that fits their monitor.

5. Java Webstart
   The system shall be startable via Java Webstart.

   Rationale: The user wants to be able to start the system via a web browser.

2.1.2 Lobby

6. Lobby
   The system shall provide a lobby in which the user can find game sessions that he wants to participate in.

   Rationale: A lobby is needed to make it possible for players to find each other.

7. Search game
   The user shall be able to search for game sessions in the lobby

   Rationale: The user wants a way to look for specific games.

8. JOIN
   A user shall be able to join a game session.

   Rationale: Because the system is a multiplayer game it is an essential feature for the use of the system.

9. QUICK GAME
   The user shall be able to join a game that the server chooses. The choice will be built upon the user's statistics and the players currently available for a quick game.

   Rationale: The user wants to be able to join a game without having to explicitly find one.

10. CHAT
    The user shall be able to exchange text messages with other players in the lobby.

    Rationale: The users wants to be able to talk with other users before joining a game or just to find other players to form a game with.

11. REGISTRATION
    The user shall be able to register a user account in the game. An account enables the system to keep track of the user over time.

    Rationale: A user account is needed to store information about a user between uses of the system.

12. USER STATISTICS
    The system shall keep statistics of the number of won and lost games for users with an account.

    Rationale: Many users are interested in statistics and comparing them selves against other users.

13. CREATE NEW GAME
    A user shall be able to create a new game session.

    Rationale: The users wants to be able to set-up a game with his own settings.

14. SETTING THE NUMBER OF PLAYERS
    A user who creates a new game session shall be able to set the number of players needed for that session.

    Rationale: Two players may want to play against each other without any other players interfereing.

15. GAME PASSWORD
    A user who creates a new game session shall be able to set a password that must be entered by other players in order to join that session.

Rationale: The user who creates a game may only want to play against players that he gives permission to.

2.1.3 Gameplay

16. Castle
The user shall have a castle at the beginning of the game session. If the castle is destroyed the user has lost the game session.

    Rationale: This is the key element for winning or loosing a game.

17. Production Buildings
The user shall be able to construct at least two types of buildings in his territory to enable him to create that building's specific type of unit.

    Rationale: Buildings are needed to create units. Different units are good at different things and this allows users to use different tactics.

18. Chat
The user shall be able to communicate with other users via text messages during a game session. The text messages will be seen by all users in the current game session.

    Rationale: Communicating during the game session will enable a user to discuss tactics and alliances with other users.

19. Artificial Intelligence controlled units
All units produced in a production building shall be controlled by AI. The user shall not be able to move these units explicitly, he will only be able to select the distribution of his attacking and defending units.

    Rationale: The user wants to focus on strategy instead of micro-management.

20. Hero
Each user shall have a hero that the user can control. The control shall include the movement of the hero. The user shall select a hero to use during the game session at the start of a game session.

    Rationale: The user wants to be able to interact with the game world using the hero.

21. Hero resurrection
When a hero has been defeated it shall be resurrected within 1 minute. When a hero is defeated it is no longer available in the game world, i.e. no interactions with the hero can be made until it is resurrected.

    Rationale: The users wants other users to be crippled for a short duration of time when their heroes are killed in battle.

22. **Upgrading**
    The user shall be able to upgrade his buildings. The upgrade of a building shall improve the units produced by that building. The effect of the upgrade will only apply to units produced after the upgrade has been completed.

    Rationale: The user wants to be able to upgrade his units which will increase the probability of the user to win.

23. **Minimap**
    The minimap shall show the user an overview of the game world.

    Rationale: The user wants to gain information about what happens outside his current game view.

24. **Winning**
    The user shall win when the castles of all of the other players is destroyed.

    Rationale: There must be a winner to end a game session.

25. **Losing**
    The user shall loose when his castle is destroyed. All of the loosing player's territory shall be added to the player who destroyed the castle. Loosing a game means that the affected user no longer is able to interact with the game, other than viewing the current game session.

    Rationale: In order for someone to win the game session some other player must loose.

26. **Move camera**
    The user shall be able to move the game camera which allows him to see other parts of the game world.

    Rationale: The user wants to be able see parts of the game world other than his initial game view in order to make tactical observations.

27. **Leave game**
    The user shall be able to leave the game at anytime during a game session. Leaving the game results in losing the ability to interact with the game session and the leaving user is moved to the game lobby.

    Rationale: The user wants to be able to leave the game if he feels the need to do so, for example, to answer a phone call.

28. **Distribute attacking and defending units**
    The user shall be able to distribute the amount of attacking and defending units.

    Rationale: The user wants to be able to control the amount of attacking and defending units in order to manage his tactics.

29. DEFENSIVE BUILDINGS
    The user shall be able to build at least one defensive building that attacks the other players' units and heroes.

    Rationale: The user wants to be able to defend himself from the other players to increase his probability of winning.

2.2 Non-functional requirements

30. OPERATING SYSTEMS
    The system shall run on Ubuntu 7.10, Windows XP SP2 and Mac OS X Leopard with a Java Runtime Environment installed.

    Rationale: These are three major OS:es and they covers most users. Also, if it works on Ubuntu it probably will work on any Linux distribution.

31. JAVA
    The system shall be written in Java and shall run on Java Runtime Environment version 1.5 and 1.6.

    Rationale: Java has good portability and there are Java libraries for game development that supports the operating systems that the system shall support.

32. SYSTEM REQUIREMENTS
    The system is required to run on standard PCs with moderate performance. The system shall run on a computer with at least a 1 GHz Pentium III CPU and 512 MB primary memory.

    Rationale: The user wants to be able to use the system although he do not have access to a high-end computer.

2.3 Use cases

2.3.1 Lobby system: Creating a game

Primary actor: The user

Scope: Lobby

Level: Summary

Stakeholders and interests:

- The user - To successfully create a new game.

Precond: The user has started the game.

Minimal guarantees: He is connected to the main server.

Success guarantees: The user starts playing in a game session.

Trigger: The user wants to create a game

Main success scenario:

1. The user opens the lobby.
2. The user creates a new game.
3. The user sets the user limit for the game to 4 players.
4. The user sets the password to 'cockburn' for the game session.
5. The user starts the game and waits for other players connect.
6. The user talks to 3 friends using the lobby chat and persuades them to join his game.
7. The game session starts when the three additional players have connected successfully.

2.3.2 Lobby system: Joining a game

Primary actor: The user

Scope: Lobby

Level: Summary

Stakeholders and interests:

- The user - To join a game session.

Precond: The user has started the game.

Minimal guarantees: The user is connected to the main server.

Success guarantees: The user starts playing in a game session.

Trigger: The user wants to join a game.

Main success scenario:

1. The user opens the lobby.
2. The user sees the option to register a user account in the lobby
3. The user choose to register.

4. The user searches for an existing game and finds a suitable one with a player limit of 4 players.
5. The user joins the game which now has 3 players and waits for another player to connect.
6. The user talks to the other players in the chat while they are waiting.
7. A fourth player joins the game session and the session starts.

Extensions:

3a.1. The user choose not to register.

2.3.3 Lobby system: A quick game

Primary actor: The user

Scope: Lobby

Level: Summary

Stakeholders and interests:

- The user - To join a quick game.

Precond: The user has started the game.

Minimal guarantees: The user is connected to the main server.

Success guarantees: The user starts playing in a game session.

Trigger: The user wants to quickly join a game.

Main success scenario:

1. The user uses the quick game feature to find a game.
2. The user gets connected to a game session that awaits one player.
3. The game session starts.

2.3.4 System start-up

Primary actor: The user

Scope: Start-up

Level: Summary

Stakeholders and interests:

- The user - To start the game.

Precond: The user has a web browser started on his computer.

Minimal guarantees: The user succeeds in downloading the game.

Success guarantees: The user starts the game.

Trigger: The user wants to try the game for the first time.

Main success scenario:

1. The user downloads the game executable to his computer.
2. The user starts the downloaded game and the lobby appears.

3. The user joins a game.
4. The game session starts.

Extensions:

1a.1. The user uses the webstart link available on the webpage and the game starts.

2a.1. The game resolution is not compatible with the user's monitor.
2a.2. The user changes the game resolution to be compatible with the user's monitor.

3a.1. The user notices that he can change his key bindings and changes them.

2.3.5 Beginning of a game session

Primary actor: The user

Scope: Game session

Level: Summary

Stakeholders and interests:

- All players involved in the game session - Everyone wants to win.

Precond: The user is involved in a game session that has just started.

Minimal guarantees: The user interacts with the game.

Success guarantees: The user gets an overview of the game world.

Main success scenario:

1. The user selects which hero he wants to use during the game session.
2. The user builds a production building in order to produce units.
3. The user uses the minimap to get an overview of how many buildings the opponents has.
4. The user notices how far behind he is and leaves the game.

2.3.6 The end of a game session

Primary actor: The winning user

Scope: Game session

Level: Summary

Stakeholders and interests:

- All players involved in the game session - Everyone wants to win.

Precond: The user is involved in a two-player game session.

Minimal guarantees: The user interacts with the game.

Success guarantees: The user wins the game.

Main success scenario:

1. The user changes the ratio of attacking and defending AI controlled units.
2. The user fends off an incoming attack using his hero.
3. The user upgrades the offensive capabilities of his units.
4. The user moves the camera to view his opponents advancing units.
5. The user builds defensive fortifications.
6. The user attacks his opponents offensive units using his hero.
7. The user mocks his opponent using the in-game chat.
8. The user destroys the opponents castle.
9. The user wins the game and the statistics is updated.

Extensions:

5a.1. The user does not build defensive fortifications.
5a.2. The user's castle is destroyed by the attacker.
5a.3. The user is defeated.

6a.1. The user's hero is killed.
6a.2. The user waits for the hero to be resurrected.