

PHEONIX KIT PROJECT

Enigma

Software Requirements Specification

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This document contains the details that will be used to implement the deliverables for the Enigma project and will be used to validate correctness & completion.



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Introduction

Purpose

The purpose of Enigma is multi-faceted. Massively multiplayer online role playing games are becoming more and more popular however there is little sample code out there on the scale necessary to help such development projects succeed.

With that in mind the primary purpose of Enigma is to provide a working example of an MMORPG. The secondary purpose of the project is to prove that open source technologies can be used to create commercial grade games and the extension of that goal is to reuse as much code as possible given quality and legal constraints.

Scope

This specification establishes the functional, performance, and development requirements for the Enigma game software which is part of the Enigma project.

Definitions

Client	A piece of software that interacts with corresponding server
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enigma

	software.
Enigma	A person, thing, or situation that is mysterious, puzzling, or ambiguous.
Guild	For the purposes of the game it is a player created organization within the game that provides benefits to its members. In addition it is typically long term in nature and allows players to achieve long term goals as a group.
MMORPG	Massively Multiplayer Online Role Playing Game
Party	For the purposes of the game it is a player created organization within the game that is typically short term in nature and allows players to achieve short term goals as a group.
Real-Time	Information and visual indicators are updated fast enough for the user to interact with the virtual environment.
Server	A piece of software that interacts with corresponding client software.



System Overview

At a high level the software system will include a client, server, and web software packages. The client will be the software package used by end users which will in turn interact with the server. The server will be the portion used by game maintainers and it manages the virtual world and provides connected client software with appropriate information. The web software package will be used for user self maintenance tasks such as password reset, account sign-up, and viewing general information about the game.

References



Overall Description

Product Perspective

The majority of MMORPGs available allow players to advance multiple characters through levels which increase their characters abilities and allow them to take on more difficult challenges. Players typically must obtain better equipment for their characters and perform other actions to ensure their success in completing quests, missions, etc. The specifics change from game to game however there are some common themes among these games. This project is an implementation from the ground up of an MMORPG which will include character customization and progression using items, classes, levels, skills, and guilds. The specification is open ended, in that a theoretically unlimited number of items, classes, levels, and skills can be added to the game.

Product Functions

Although there are server and client portions required to achieve most functional requirements the main functional areas are as follows.



Authentication Management

The system uses a simple login mechanism to authentication players giving them access to previously created characters and the ability to create new characters. After either character selection or creation the player is then able to enter the world.

Chat Management

Once a player's character has entered the world they are able to use a simple chat interface to contact other players. The scope of such communication can be world, map, party, guild, and individual.

Movement Management

Once a player's character has entered the world they are able to move their character around in the world, moving to different locations with different constraints on speed, gravity, etc based on skills, items, and other factors.

Combat Management

Once a player's character has entered the world they are able to engage in combat with monsters and other players using combat skills based on selections during character creation and character progression all of which fall under combat management.



User Characteristics

Client

The client portion of the game should be useable by any user with an account.

No special knowledge or skill should be assumed on the part of the user. Users should not be expected to learn a set of commands in order to start using the game; however such commands will be provided for users to desire to use them.

Server

The server portion of the game should be useable by server administrators.

Technical knowledge is assumed for users of the server and commands and administrative procedures are required for users to start using the server portion.

Web

The web portion of the game should be useable by any user with or without an account to the extent that account actions cannot be performed without an account. Users should not be expected to learn any technical details or procedures to use the web portion. Only experience with other web applications is assumed.



Constraints

All client, server, and web components must be able to run with minimal load on commodity hardware. The client must be able to achieve real-time rendering under those minimal load conditions on commodity hardware.

Assumptions

- It is assumed that the selected architecture will be able to meet the performance goals of the project.
- It is assumed that given the architecture select portions of the project could be used to speed up development on similar projects.
- It is assumed that the license that governs the code and resources would be acceptable to a business looking to reuse code to save development costs.
- It is assumed that by the time a release candidate is available multi-core desktops and servers will be common and relatively inexpensive.
- It is assumed that the overhead of thread safe collections is not greater than the performance gains from parallel programming.

Dependencies

No special dependencies have been identified.



Specific Requirements

External Interfaces

User Interfaces

All user interactions with the client will be via a graphical user interface with the exception of the test client which may optionally be a command line interface.

Once client application is started the user will be prompted for a username and password. Once the user has proved a valid username and password the user will be asked to create a new character or select an existing character. Once the user creates a character or selects an existing character the user's character will enter the world. Once the character is in the world the user will be able to move around the world and interact with other players as well as server controlled objects such as NPCs, monsters, and items.

Hardware Interfaces

None



Software Interfaces

The system shall be capable of running on any operating system for which stable & feature complete ports exist for all of the programming libraries the project uses. The system shall use cross-platform libraries for 3D rendering, network transmission, File I/O, audio playback, physics, artificial intelligence, and other misc operations.

Functions

Authentication Management

Chat Management

Movement Management

Combat Management

Stats

Skills

Classes



Performance Requirements

The system should perform operations in a real-time fashion.

Logical Database Requirements

User

The database must contain a user table preferably called “Users” which will contain the following attributes.

UserId	A unique Identifier preferable an integer or guid.
UserName	A unique user provided name which will be displayed as the name of the account/user.
Password	A hashed copy of the user provided password which will be used to authenticate users in conjunction with the username.



Design Constraints

Legal

All libraries used must be released under a license that allows them to be built against closed source projects. All reusable code must be released under a license that allows it to be included in a closed source project. Libraries or code which is known to be in violation of patent or other applicable law may not be used in the project until such a time as those issues are resolved. All tools, source code, and other materials used for project purposes must be obtained legally.

Technology

The client & server shall be coded in c/c++ to conform to industry standards and leverage existing examples where possible. The web portion should be asp.net to allow rapid application development however any modern web development environment with reasonable security and performance should be acceptable. The project will be multi-thread both the client & server. The server shall use a relational database as a backing store so that the web portion of the project can also access that information without connecting to the server and thus increasing the complexity of the project.



Key Features

- Multi-Threaded
- Cross-Platform
- Open Source
- Modular Design