

# System design document for Galactica: Space Force of Justice

Ludvig Andersson

Anthony Kalcic  
Rasmus Lindgren

Markus Pettersson

May 11, 2017  
Version 0.1

This version overrides all previous version

## Contents

<b>1</b>	<b>Introduction</b>	<b>2</b>
1.1	Design goals . . . . .	2
1.2	Definitions, acronyms and abbreviations . . . . .	2
<b>2</b>	<b>System architecture</b>	<b>2</b>
2.1	Game engine . . . . .	2
2.2	Cardboard support . . . . .	2
2.3	Math . . . . .	3
<b>3</b>	<b>Subsystem decomposition</b>	<b>3</b>
<b>4</b>	<b>Persistent data management</b>	<b>3</b>
4.1	Filetypes . . . . .	3
4.2	Naming . . . . .	3
4.3	Filestructure and storage . . . . .	3

# 1 Introduction

The application should be able to run on desktop, Android and Google Cardboard. For Cardboard some parts, like the menus, will have to be optimized for virtual reality. It should also be able to retrieve head rotation and render a stereoscopic image. The application should also be able to handle inputs from game pads.

## 1.1 Design goals

This document describes the construction of the “Galactica: Space Force of Justice” application specified in the requirements and analysis document.

- The MVC design pattern will be used as much as possible.
- Loosely coupled making it possible to switch game engine. Game model should be free from imported classes.
- For usability see RAD.

## 1.2 Definitions, acronyms and abbreviations

All terms regarding the actual game play is the same as in the RAD.

- LibGDX - Our game engine

See RAD document for more definitions etc.

# 2 System architecture

The application will be able to run on both a desktop and an Android device. On Android there will also be a special mode for running the game in Google Cardboard.

We’ll use Gradle for handling imports.

## 2.1 Game engine

We needed a game engine. We choose LibGDX [1].

## 2.2 Cardboard support

We used Yangwei’s “Libgdx-CardBoard-Extension” [2]

## 2.3 Math

# 3 Subsystem decomposition

Parallax currently only uses one service which is the controller package. The controller package is mostly self contained and

# 4 Persistent data management

## 4.1 Filetypes

Parallax uses three different file types:

**G3db** files are used for the 3d models in the game. Every 3d model that can be seen on the screen is loaded from a .g3db file. G3db files are the primary file-type used by LibGdx.

**Mp3** files are used to play audio from the game, both sound effects and background music. LibGdx uses .mp3, .ogg and .wav files. Parallax uses the mp3 file type because of its wide spread usage.

**Png** files are used for textures, both for 3d models and menu backgrounds. Parallax uses .png because of its wide spread use and that compared to .jpg, is losslessly compressing meaning that it doesn't lose information when compressed.

## 4.2 Naming

**3d model** files are named according to what they are, eg. if a spacecraft is named Agelion then the 3d model is named agelion.g3db. Textures used for the 3d models are named [3d model name]texture.png.

**Audio** files are named according to what their audio is, eg. an explosion sound is named explosion.mp3.

**Texture** files for on screen buttons or backgrounds are named after their usage in the application.

## 4.3 Filestructure and storage

The resources that are used in Parallax are stored in the same assets folder within the game folder. The application doesn't write any data to permanent memory. The file structure for resources in Parallax is mainly divided into three sections.

**3dmodels** contain sub-folders that correspond to every 3d model in the game, containing a 3d model and optionally a texture file for the specific 3d model.

**Sounds** contains two sub-folders; soundeffects and music. “soundeffects” is for shorter audio tracks that are loaded into the primary memory, while “music” contains larger files that are streamed into the game.

**Images** contains sub-folders for the different grouping of images, eg. touchpad, main-menu. Those sub-folders contain one or more images that are used for one purpose like displaying a menu with a background image and buttons that are images.

## References

- [1] M. Zechner. (2013). Libgdx, [Online]. Available: <https://libgdx.badlogicgames.com>.
- [2] W. Yang. (2016). Libgdx-cardboard-extension, [Online]. Available: <https://github.com/yangweigbh/Libgdx-CardBoard-Extension>.