



Design Document for:



Pigasus in Time is part of an academic project for FATEC São Caetano do Sul (São Paulo, Brazil)

Written by Anderson Lima, Diego Hortiz and Lucas Pina

Translated by Anderson Lima

Version # 1.00

Monday, May 11, 2015

PIGASUS IN TIME _____ ERRO! INDICADOR NÃO DEFINIDO.

GAME OVERVIEW _____ **4**

GAME GOALS _____ 4

Goal #1 _____ 4

Goal #2 _____ 4

COMMON QUESTIONS _____ 4

What is the game? _____ 4

Why create this game? _____ 4

Where does the game take place? _____ 4

What do I control? _____ 4

What is the main focus of this game? _____ 4

What's different from other similar games? _____ 4

FEATURE SET _____ **5**

GENERAL FEATURES _____ 5

GAME PLAY _____ 5

THE GAME WORLD _____ **6**

OVERVIEW _____ 6

THE LAB _____ 6

THE TIME MACHINE _____ 6

THE SPACE-TIME VORTEX _____ 6

THE PHYSICAL WORLD _____ 6

Overview _____ 6

Movements _____ 6

Objects _____ 6

Time _____ 6

Camera _____ 7

GAME ENGINE _____ 7

Overview _____ 7

Zoom _____ 7

Collision Detection _____ 7

LIGHTING MODELS _____ 7

Overview _____ 7

GAME CHARACTERS _____ **8**

OVERVIEW _____ 8

ENEMIES AND MONSTERS _____ 8

USER INTERFACE _____ **99**

OVERVIEW _____ 9

SMARTPHONE _____ 9

PERSONAL COMPUTER _____ 9

POWER-UPS _____ **10**

OVERVIEW _____ 10

INDESTRUCTIBLE _____ 10

BOOST _____ 10

MUSIC AND SOUND EFFECTS _____ **11**

OVERVIEW _____ 11

MUSIC _____ 11

SOUND EFFECTS _____ 11

GAMEPLAY _____ **12**

OVERVIEW	12
STORY	12
HOURS OF GAME-PLAY	12
VICTORY CONDITIONS	13
“OBSTACLES APPENDIX”	1414

Game Overview

Game Goals

Goal #1

To entertain people in a casual and interactive way using simple interface and controllers.

Goal #2

To transmit knowledge of our history/evolution by showing historical monuments or facts in the time machine.

Common Questions

What is the game?

Pigasus in Time is a casual “endless runner” game designed for personal computer and smartphones. Pigasus is a pig with chicken wings that was created by accident while scientists were conducting an experiment. The game illustrates adventurous travel of Pigasus in a time travel machine.

Why create this game?

We love pigs, but we also love science, so we decided to mix them to make it fun and simple with an educational perspective.

Where does the game take place?

The game takes place in the 80’s inside one of Dr. W. Hawking Mendel’s experiment: The time machine.

What do I control?

You will be in charge of controlling Pigasus, and ensuring it doesn’t hit any obstacles in the time machine.

What is the main focus of this game?

Your focus is to score as much as you can, avoiding the obstacles while the game increase its speed.

What’s different from other similar games?

Different from other similar games, *Pigasus in Time* brings a funny story with it, a nice travel in time with obstacles that were significant in those time and also you can control a Pigasus!

Feature Set

General Features

A Pigasus (Figure 1)
Infinity world
2D graphics
16-bit color

Gameplay

Play in your phone, tablet or computer
Easy to control: only 2 different commands
Casual: play whenever you want, for how long you want
Travel in time and learn about different ages
Be the best: Score more than your friends
Challenge yourself to go further than your highest score

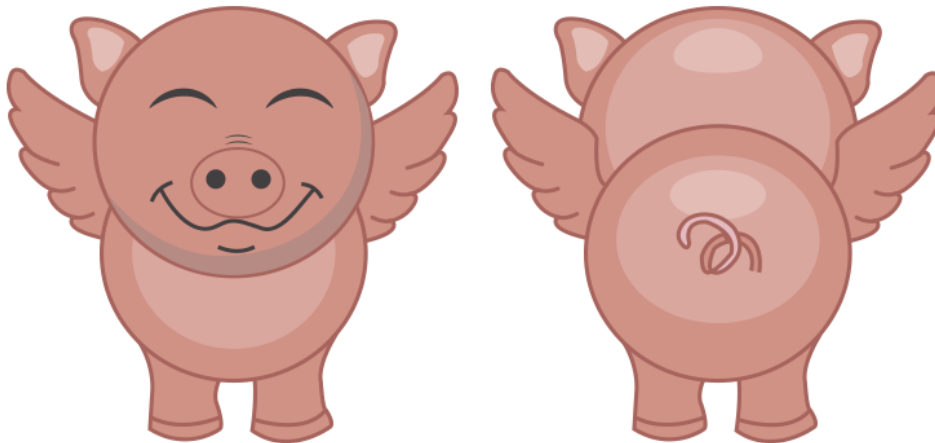


Figure 1 - Pigasus

The Game World

Overview

Everything happens inside space-time vortex. A small animation shows how you go inside the time machine and then the adventure begins.

The lab

The lab is not part of the gameplay, but Pigasus is a random result from an experiment inside the lab and it accidentally gets inside the time machine. The lab is a mess, full of files, some old computer screens showing graphics or black screen with green letters. In the lab there are also experiments and stuffs all over the place, the time machine is the biggest thing on it.

The time machine

The time machine looks like an old vault: it is huge with a big door that can be opened with a safe-crank that makes it very well sealed before it is on. It is made of a nice and shiny silver-colored material. We can also see some tubes on the top and at the back of the machine.

The space-time vortex

The space-time vortex is represented by an “infinite” gridded tube that releases a bright blue halo around it in a black background with some shiny dots like stars.

The Physical World

Overview

The world of the game is a representation of what Einstein defines as the place where time and space are woven together, forming a four-dimensional fabric: the space-time vortex. The entire gameplay takes place inside the space-time vortex except the initial animation in the lab before the game begins.

Movements

The player will control the Pigasus to the right or to the left, doing his/her best to avoid the obstacles that he/she comes across. The movement in this game is not linear, Pigasus will move in circles.

Objects

The obstacles in the game are objects from different places and ages. These objects approach Pigasus to hit it. Some obstacles have skills that might damage Pigasus in different ways. The objects change according to the age Pigasus is traveling.

See the “Obstacles Appendix” for a list of all the objects found in the world.

Time

Like most “endless runner” games, this game doesn’t use time as a limiting tool, but as a way to define difficulty levels for the game. The further and longer the player keeps Pigasus alive, the more he/she scores and the more frequent he/she approaches the obstacles.

Camera

The camera in this game is static with a third person view. The player sees the back of Pigasus, and the inside of vortex.

Game Engine

Overview

We are using Cocos2D to develop this game.

Zoom

This game will use a very efficient zoom effect to give impression of proximity from the obstacles to Pigasus.

Collision Detection

Game handles collision using Axis-Aligned Bounding Box techniques.

Lighting Models

Overview

The lighting works as a gradient, where the center will be the brighter part while the edges of the screen will be darker because the vortex concentrates more on the shiny halo as it tapers into the screen.

Game Characters

Overview

Pigasus is the only Character that the player controls. It is a Pig that was used in a lab experiment and became a pig with wings. It has no special power, but fly.

Enemies and Monsters

The enemies in this game are obstacles representing the time period/age that the player reaches. Each age is represented by specific objects or animals from that time period like dinosaurs, big inventions etc.

See the “Obstacles Appendix” for a list of all the objects found in the world.

User Interface

Overview

The UI is very intuitive so that the player commanding to move Pigasus become obvious according to the platform.

Smartphone

If using a smartphone, the movement can be easily done pressing the right half of the screen to move it to the right and left half of the screen to move it to the left.

Personal Computer

In case the player is using a PC, he/she must use the right or left arrow to move Pigasus in respective directions. The player can also configure the keyboard to change keys. We also preset two alternative suggestions: *A* for left and *D* for right or *Ctrl* for left and *Shift* for right.

Power-ups

Overview

Pigasus doesn't have any special power, but during the game it can pick certain items that will provide some temporary special skills. No action is required to activate a power-up. The moment a player picks certain items, power-ups are instantly activated

Indestructible

As name suggests, indestructible power-ups will make Pigasus indestructible for 7 seconds. With that power-up Pigasus can hit and destroy any obstacles without itself being hurt. Destroying an obstacle doesn't affect the score.

Boost

Boost power-up can be helpful or worthless. It will increase Pigasus's speed to a very high speed for 5 seconds. With that power, the player will not only travel faster, but will also face obstacles in a faster manner. This might give the player a tough time to avoid hitting the obstacles.

Music and Sound Effects

Overview

This game will have a background music during the gameplay, and also sound effects very well synchronized with all the visual content to make the experience more immersive.

Music

The music will be an exciting song that increases its beats to transmit more emotion to the player as the game speed increases.

Sound Effects

Sound effects will be played for all the events of the game. While few obstacles have particular sound effects, few will just have the sound effect of an object passing close to you with a certain speed. There will be sound effects when Pigasus flaps its wings, picks up an item and hits an obstacle with or without a power-up and each power-up has its own sound effects.

Gameplay

Overview

Pigasus in Time is a single-player endless runner game in which the player scores according to how further he/she goes. Short match of the game, the player's survival and competitive instincts as well as his/her success, makes the player play a new match to beat his/her previous score, or his/her friends' score. This game also explores curiosity with respect to the obstacles a player will face, the time period he/she will get into or what is next.

Below is a breakdown of key components of gameplay.

Emotions

The gameplay transmit great emotions to the player. No one likes the idea of staying stuck in a space-time vortex forever. The player wants to scape and give Pigasus a safe and happy travel and figure out a way to go back home. The wide possibilities that the story might assume stimulates the player to keep playing, going further, and helping Pigasus to come back. The game uses a great audiovisual synchronization to improve emotions and user experience.

Continuous gameplay

This game has continuous levels, it means the player doesn't have to beat a level to unlock a new level which usually requires an action (for e.g. - click to start the new level). Every time the player beats an age, it automatically starts the next age, and for *Pigasus in Time* ages are the way we represent the levels. Each age is more difficult than the previous one. Difficulty is imposed through speed increases and obstacles' skills.

Always a new experience

Bringing obstacles and power-ups in a random way makes the gameplay very different. The player will also have a different challenge from the previous times he/she played. That way the game won't be predictable or become boring with time.

Running

Pigasus always runs forward. As the player watches in a third-person view, obstacles come in Pigasus direction. The player must move right or left to avoid obstacles, but Pigasus won't move linearly, his movement will make a circle (Moving Pigasus to the left will make a circle in a clockwise direction and vice versa).

Story

During the 80's Dr. W. Hawking Mendel, an old scientist, was working in a time machine in his lab. The lab is a complete chaos full of experiments, paper and some pets, including a Pigasus (a Pig that accidently gained chicken wings as a result of some random experiment), which goes inside the time machine, accidently activates it, and stays stuck inside the space-time vortex. Then Pigasus travels through time, exploring different ages in the future (once the game passes on 80's we are able to represent obstacles from the "future") and past. His travel starts in the future, and goes back to the past.

Hours of Gameplay

The game is made to be casual with quick matches, in this way the player will be able to play it for 5 minutes, or 5 hours.

Victory Conditions

Pigasus never reaches an end. After passing through all the ages, Pigasus faces an unknown age, represented by three question marks that will actually mix all the previous obstacles, while the speed keeps increasing. The game ends when Pigasus is hit by an obstacle unless it is in an indestructible power-up mode. When game ends, an animation shows Dr. W. Hawking Mendel opening the time machine and rescuing Pigasus.



Figure 2 - Gameplay View

“Obstacle Appendix”

This appendix brings all the obstacles thought so far for this game.

- 2000's to nowadays: the player will face some Technology advances from that time as obstacles.
 - Smartphone: this obstacles releases network rays that damage Pigasus
 - Segway: no special skill.
 - Tablet: bigger than smartphone, has the same skill, but with larger rays.
 - Satellite: no special skill.
 - Virtual reality glasses: the player must watch out its projection. It also hurts.
- 1900's: the player will face some Technology advances and historical objects from that age as obstacles.
 - Abaporu: this is painting made by Tarcila do Amaral. It represents the Modern Art Week that happened in Brazil. Its big legs will give the player a tough time.
 - Atomic bomb: it comes with a big smoke to confuse the player.
 - Liberty: known from an Eugene Delacroix painting (Liberty leading the people), Liberty waves her flag to hit Pigasus.
- 1800's – 1400's: the rise of capitalism and the falling of the feudalism will be represent in this ages, but also some great inventions from that time will be used as obstacles.
 - Caravel: this old ships throw cannon balls that hurts Pigasus.
 - Mona Lisa: the famous Da Vinci painting splashes ink that makes hard to see where the obstacle is.
 - King: representation of the feudal system, throw his crown to hit the character.
 - Money suitcase: this obstacle throws dollar bills to hurt Pigasus.
 - Da vinci helicopter (Figure 3): approaches faster the other obstacles.



Figure 3 – Helicopter projected by Leonardo da Vince

- Middle ages: also known as “Dark Ages” because of the deterioration of culture and economy, was the period of the Crusades and has a very strong architecture and art.
 - Crusade squad: this guys come with a long spear trying to stick Pigasus.
 - Castle: No special skill, but is huge.

- Trebuchet (Figure 4): it's a catapult typical of the middle ages. It throws a stone and its long shape is hard to dodge.
- Dark knight: dark medieval armor its pieces come spread on the screen.



Figure 4 –Trebuchet

- Ancient history: Period of a lot of religions rising as well as the apex of Greek philosophy and the age of a lot of civilizations development as Egyptians and Greeks.
 - Pyramid: no special skill, but is huge.
 - Sphinx (Figure 5): inspired by Michaels Ende's sphinx in his book *The Neverending Story*, our sphinx projects a beam that burns the character.
 - Mummy: its bandages unrolls as closer it comes. Hitting the bandages hurt Pigasus.
 - Coliseum: no special skill, but is huge.
 - Parthenon: watch out its columns!



Figure 5 - Sphinx

- Prehistory: When the homo-sapiens appears and start to evolve.
 - Mammoth: it has a huge snout.
 - Bonfire: it throws sparks.
 - Prehistorical weapon: tools made of wood and stone that can hurt Pigasus.
 - Cave paints: they are harmless, but we cannot say the same from the big rocks where they were painted.
- Jurassic Period: Dinosaurs appears and are extinct here.
 - Triceratops: you can only dodge between its horns.
 - Velociraptor: follows Pigasus as if it was hunting it.
 - Brontosaur: It has such a long body that comes as a spiral, making the player move in spiral to avoid hitting this obstacle.
 - Pterodactyl: open its wings occupying a lot of space in the screen.
 - Dinosaur eggs: it can appear along with other obstacles, or can come in big quantities.
 - Asteroid: the same thing that ended dinosaurs' life on earth might be what ends the game. It also comes with a smoke that leads to a difficulty in seeing.