GDD – Pong – New Dimension

Craig Lovell	Jasper Eyers	Joel Cefai	Rachel Espinosa	Alexandra Smirnova	Daniel Leonards
Programmer	Designers	Designers	Artists	Artists	Artists

Contents

Version history

13-10-2021	Started documentation (gameplay design)
18-10-2021	Continued documentation (gameplay design)
19-10-2021	Continued documentation (User Interface and Controls and Project overview)
20-10-2021	Finalised documentation

Project Overview – PONG – New Dimension

1-Line Summary

3D Pong with shifting camera angles based on level progression

Description

PONG – New Dimension is a modern remake of the classic duel game. A player must manipulate their paddle to bounce a ball past the other sides paddle to score points.

The primary difference from regular pong is when a point is scored the camera will rotate towards the player who scored until eventually the gameplay switches to 3D gameplay.

PONG – New Dimensions also includes collectable powerups and destructible objects.

Target Market

This is a Persona created for representing the market we are targeting this game to.

Name: Bryce Hallaway

Gender: Male

Age: 32

Occupation: Employee

Income: $350/week

Marital Status: Married

Location: Greenway Dr, West Hoxton NSW

Bio: Bryce Hallaway is a 32-year-old employee who loves playing modern video games with close friends when he has time and his family.

Motivations/Goals

- A fan of arcade games

- Loves games with responsive controls.
- Progressive difficulty.

Frustrations

- Gameplay with little variance
- Rough controls

Behaviours

- Plays with his mates and family members
- He doesn't like spending money on games

Competitor Analysis

Pong: The Next Level

Position- It's the first remake of the classic Pong with 3D graphics and new elements like power ups and environmental gimmicks in the levels.

Strengths- There is a variety of game level themes that have their own environmental gimmicks like in the penguin pong, there is two penguins that are obstacles to both players.

- The use of power ups is fairly good for the players in certain levels.
- The 3D design of the game is fairly good during the time, with the level environments of each level.

Breakout

Position- It uses the pong concept and change it to a single player game where the player must hit the ball to the objects to get rid of them.

Strengths- The concept of the game is fairly good during the time.

- It has a straightforward design.
- It has a simple UI design.

PONG Quest™

Position- It is combining the concept of the classic Pong with an RPG style.

Strengths- It has a variety of gameplay using the Concept of PONG like two verses two, shooting giant bugs, getting rid of objects like breakout etc.

- An excellent use of customization of the main character for the player to use.
- It keeps a simpler design of the entire game.

Design Pillars

- **Pong remake** - 1v1 ball bouncing between 2 paddles each controlled by a separate player
- **dynamic camera** - 2D/3D camera shift influences gameplay
- **Progression** - breakable objects, upgrade, powerups

Gameplay Design

Synopsis of Gameplay

The basic gameplay consists of a player deflecting a ball coming towards them, stop it from going behind them whilst making sure the ball passes the opponent by translating a rectangular paddle over a 2d area.

Game Mode - Duel

Description
basic duelling system with the camera and gameplay shifts

Objectives / Goals

- **Score goals**
  deflect ball behind opponent's paddle
- Goal streak/lead
  must make a set number of goals without letting opponent make any goals or must have a set number of goals more than your opponent

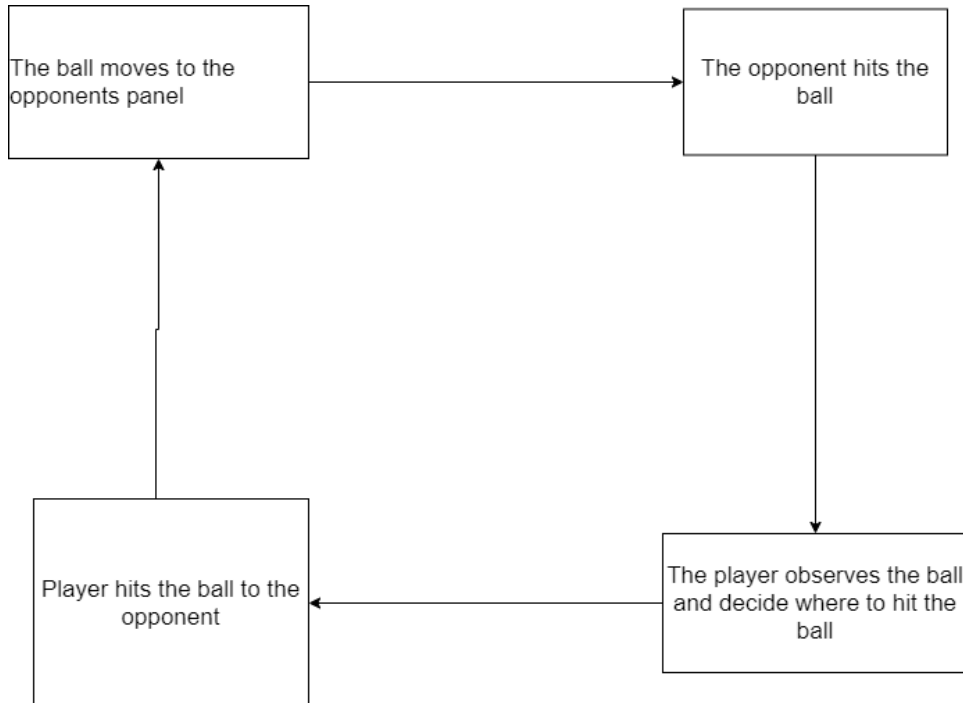## Game Mode - Campaign

Description
single player mode with increasingly difficult levels
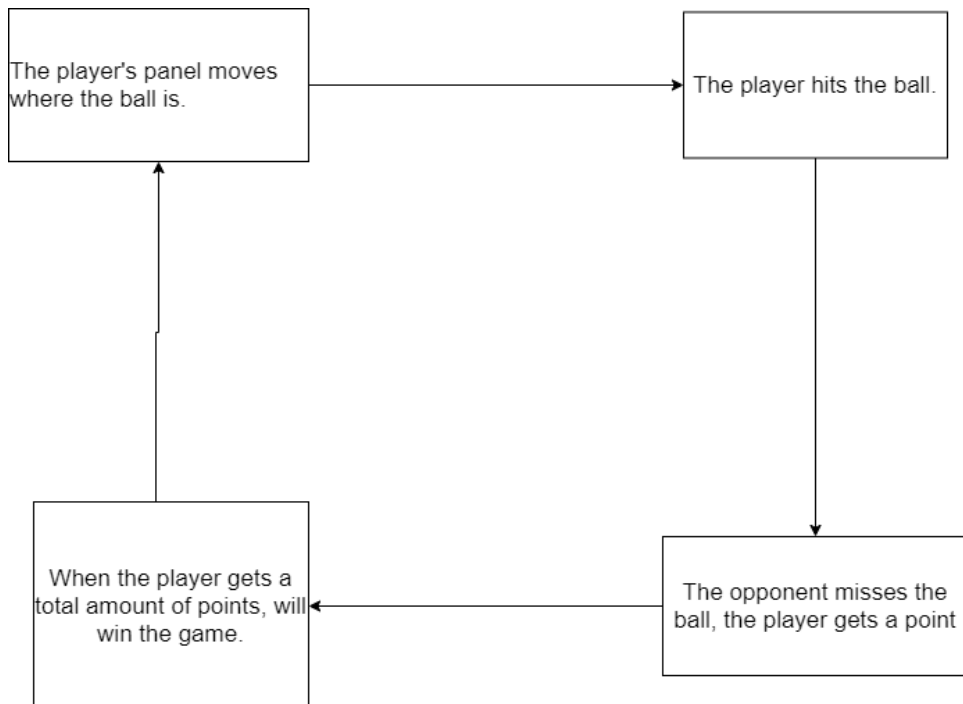
Objectives / Goals

- **Score goals**
  Deflect ball behind opponent's paddle
- **hit targets**
  must strike all set targets

Game Loops

Point to point

```
┌─────────────────────┐                      ┌─────────────────────┐
│ The ball moves to the│ ───────────────────▶ │ The opponent hits the│
│ opponents panel      │                      │        ball         │
└─────────────────────┘                      └─────────────────────┘
         ▲                                              │
         │                                              ▼
┌─────────────────────┐                      ┌─────────────────────┐
│ Player hits the ball │ ◀─────────────────── │ The player observes  │
│ to the opponent      │                      │ the ball and decide  │
│                      │                      │ where to hit the ball│
└─────────────────────┘                      └─────────────────────┘
```

Meta loop

```
┌─────────────────────┐                      ┌─────────────────────┐
│ The player's panel   │ ───────────────────▶ │ The player hits the  │
│ moves where the ball │                      │        ball.         │
│ is.                  │                      │                     │
└─────────────────────┘                      └─────────────────────┘
         ▲                                              │
         │                                              ▼
┌─────────────────────┐                      ┌─────────────────────┐
│ When the player gets │ ◀─────────────────── │ The opponent misses  │
│ a total amount of    │                      │ the ball, the player │
│ points, will win the │                      │ gets a point         │
│ game.                │                      │                     │
└─────────────────────┘                      └─────────────────────┘
```

Game Mechanics

Mechanics List

- Paddle movement
    - up and down (2D mode)
    - full WASD movement (3D mode)
- Ball physics
    - Bounce (will bounce off obstacles and paddles in a reasonable manner
- Obstacle breaking
    - Health for obstacles
    - Obstacle collision
    - Breaking of objects

Controls – 2D paddle movement

Summary: WASD/Arrows movement in the Y-axis

Details:

- Responsive movement
- Constant speed
- Up and down

Related mechanics & systems:

- Ball physics
- score

Controls – 3D paddle movement

Summary: WASD/arrow key movement in the X-axis and Y-axis

Details:

- Responsive movement
- Constant speed
- Up, down, left and right

Related mechanics & systems:

- Ball physics
- score

Game management – Ball physics

Summary: bouncing and movement for the ball

Details:

- Predictable bounces

- Constant (accelerating) speed
- Instant bounces

Related mechanics & systems:

- Movement (2D)
- Movement (3D)
- Score

Gameplay – Powerups

Summary: collectable powerups that can affect the advantages and disadvantages of the players

Details:

- Affects statistics such as paddle size, ball speed and some other factors
- Creates distinct advantages or disadvantages towards one player (the last player to hit the ball)
- Are collected when the ball hits the powerup

Related mechanics & systems:

- Movement (2D)
- Movement (3D)
- Ball physics

Gameplay – Obstacles

Summary: destructible objects

Details:

- Obstacles that are stationary or follow a set path
- Can be destroyed once enough damage has been dealt

Related mechanics & systems:

- Ball physics

Rules & Systems

Score

- When the ball moves behind one sides paddle (where it cannot be interacted with) the other side scores a point
- Every point adds to the score

- The Camera rotation will be based off the score (rotating around toward leaders side (sees leaders paddle from back))

Ball speed

- The ball will constantly accelerate throughout a level to increase the pressure on the players.
- The balls speed will reset when a point is scored.

Powerups

- A player may only use a single powerup at a time
- If a player acquires a powerup while they have another in effect the first powerup will be replaced by the second

Game Economy

Economy overview:

The economies of this game are simple variables comprised of

- Score (can scale from positive to negative (arbitrarily assigning teams to positive and negative)) [see rules and systems]
- Obstacle health (amount of hits an obstacle must take before being destroyed) [see mechanics]
- **Ball speed** (variable constantly rising throughout the match) [see mechanics]

<u>User Interface & Controls</u>

User Interface Design

Score

Provides visual context for who is winning and the state of the game

Powerup slot

Shows the players active powerup (if any)

Feedback Systems

- collision [Audio] {a sound que will be played when the ball collides with walls or paddles (separate noise for paddles)}
- scoring [Visual] {particle effects will be used to emphasis when a point is scored}
- progression [Visual] {dynamic background will be stylised according to the side that is winning}
- active powerup [Visual] {trail and ball animation will change according to active powerup}
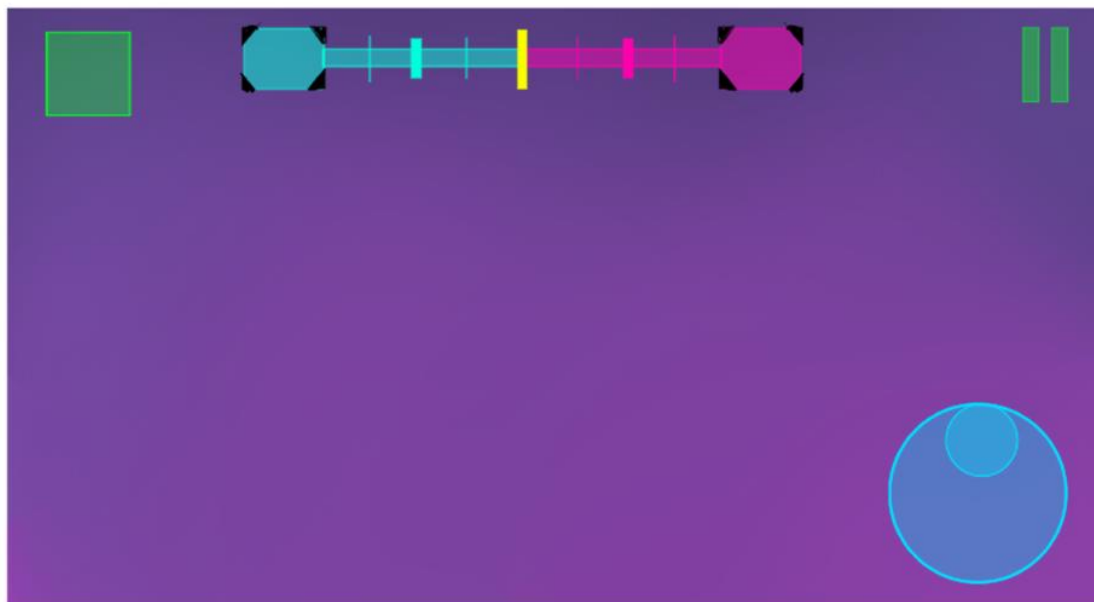
Controls

Control	PC	PC (alternate)	Mobile
Move up	Up arrow	W	Thumb stick
Move down	Down arrow	S	Thumb stick
Move left	Left arrow	A	Thumb stick
Move right	Right arrow	D	Thumb stick
Reset Ball (Testing)	Z	Z	NA

UI Mockups – Multiple platforms

Main menu

In game UI (with mobile thumb stick)

Game Content

Content Types

- Powerups
- Obstacles
- Team themes

Powerups

Type	Description
Size	Increases size of players paddle
Damage	Can instantly destroy obstacles
Slow	Slows down the incoming ball
speed	Speeds up the outgoing ball

Obstacles

Type	Description
Static	Obstacles that do not move
Mobile	Obstacles that follow a set path
Regenerating	Obstacles that regenerate shortly after being destroyed

Themes

Type	Description
Futurescape	Purely aesthetic dynamic background theme
fire/volcano	Purely aesthetic dynamic background theme
Underwater	Purely aesthetic dynamic background theme