

TowAR Defense

Cogswell College
Game Studio 2

Introduction:

TowAR Defense is a mobile AR tower defense game made in unity where the player uses physicals cards to control/move their towers around the level to defend their base. Timing towers with the music and using the right buffs at the right time is key to victory against the aliens invading the world of music!

Genre:

AR sci-fi/fantasy tower defense game

Description:

You start the game by scanning a flat surface to spawn the current level. You will have four (4) cards that act as your towers and you can move them at any time to best defend your base. In each level you will find ammo charging stations that charge your towers with a damage type. Depending on the type of enemy, certain ammo charges can either have increased or decreased damage output. Because of this, you will have to learn what towers and ammo charges work best against different types of enemies. Your towers level up and can be upgraded after they defeat enemies and earn XP. Each upgrade will power up the tower's existing attack style.

Key Features:

- Movable towers
 - In game towers are attached to real world cards that the player moves throughout a level to defend their base
 - Ammo Charging stations can be used to change the way towers damage enemies
 - Tower types can be selected before starting the round for a variety of ways to play.
- Dynamic music
 - Towers and enemies add to the game music
 - Each tower will add unique beats/sound that add to the games music
 - Enemies create music as they spawn and progress through the level
 - Music will change depending on how the round is progressing (if enemies are approaching the base, if enemies are being pushed back, etc.)

Platforms:

Primarily on iOS, then ported to Android.

Target Audience:

Mobile gamers, AR enthusiasts, Tower Defense players, tactical/strategy mobile players, ages 12 and up.

Reference Titles:

Bloons

TowerMadness 2

Rayman Legends

Risks and Mitigation:

Our primary risk is centering the game around a new mechanic: freely movable towers. While designing around this risk presents a significant balancing challenge, we are mitigating the risk by limiting the number of other mechanics and types of towers and enemies to design around. For example, Ammo Charging Stations are static so the player doesn't have to worry about managing them and also integrate the main mechanic of moving towers, requiring towers to be moved to them in order to activate. The mechanic of moving towers also seems to be fun and unique, which mitigates the risk of an unfamiliar mechanic appealing to players.

Our other major risks deal with the game's audio and is twofold: syncing the game components with dynamic music/sound and players actually hearing the audio. Designing the towers, enemies, and sound to all work together in sync could be difficult from a technical standpoint and potentially just not feel good to the player if something is slightly off. However, we have been rapidly prototyping audio ideas that seem like they will work well and are doable to mitigate this risk. Since the game will be played on mobile devices, there is also the possibility that players simply won't have their sound turned on. While we can't prevent this, to mitigate this problem we will also design with visual communication in mind so that the game's environment still makes sense when the sound is turned off.

Tower Types:

- "Rifle" type - Moderate damage and rate of fire; single-target
- "Minigun" type (could be a constant laser) - Low damage and high rate of fire; single-target
- "Sniper" type - High damage and low rate of fire; single-target
- "Cannon" type - Moderate damage and low rate of fire; projectile AOE

Tower Upgrades:

- Rifle
 1. Standard
 2. Increased damage
 3. Burn effect over time
- Minigun
 1. Standard
 2. Increased damage
 3. Seeks 2 targets
- Sniper
 1. Standard
 2. Increased fire rate
 3. Adds a follow-up shot (less damage than initial shot)
- Cannon
 1. Standard
 2. Increased blast radius
 3. Adds AOE Slow
- Stretch goal:

1. 4th tower level creates an element effect (ammo type) -> Red = burn, Blue = slow, Green = something else

Each tower earns experience points by killing enemies and can be upgraded twice (stage 2 and stage 3) when they earn a level.

Ammo/Resistance Types:

- Red (+Green, -Blue)
 - Strong against Green
 - Weak against Blue
- Green (+Blue, -Red)
 - Strong against Blue
 - Weak against Red
- Blue (+Red, -Green)
 - Strong against Red
 - Weak against Green

Ammo Charging Stations:

When a player drags a tower to an Ammo Charging Station, the tower's attack is charged with the corresponding ammo type over a period of 3 seconds. The player must leave the tower at that station until it is fully charged for the ammo charge to actually take effect. Once the tower is moved away from the station, the tower's charge is slowly depleted, lasting for 15 seconds. When the charge is lost, the tower's ammo reverts to normal.

Enemy Types:

- Basic Infantry - Moderate health and speed
- Swarms (Speed Slugs) -Low health, high speed
- Tanks (Rock Monsters) - High health, low speed
- Bruisers - Moderate health, low speed
 - Special: Every 3 seconds a bruiser may stun a tower for 3 seconds
- Ray Shield Caster - Moderate health, moderate speed
 - Special: Projects shield that blocks all projectiles from the front

Colored variations change resistance to ammo type (e.g. red infantry is resistant to green ammo but vulnerable to blue ammo). Variations can also include layers of resistance where after taking enough damage a unit's type will change to a different color.

On death, enemies will spawn a death particle (sparks, explosion, etc.) before being destroyed and removed from the game.

Enemies spawn from a Mothership that comes through a time portal. The Mothership has a zone where towers can't be placed and can't hit enemies to prevent players from placing all towers at the spawn zone.

Game Mechanics:

- Physically moving towers
- Charging ammo (drag tower to charging station)
- Upgrading towers (per level)
- Tower range shows when picking up card

Physical cards:

Cards are printed out on paper from an online resource. A player's device will recognize the pattern of each of the four (4) cards that the player uses, and each card controls the location of a separate tower. Which tower a card controls is decided by the player before a level begins and the player may choose more than one of the same tower if they so desire.

Level Design:

There will be three levels.

Level Progression:

- Level 1 – 2 minutes in length, “easy” difficulty. Introduces player to tower, enemy types.
- Level 2 – 3 minutes in length, “normal” difficulty. Introduces player to ammo charging stations.
- Level 3 – 4 minutes in length, “hard” difficulty. Tests the player's skills.

Level Menus: Each level menu describes the composition of enemy types and how many. The level menu is also where players choose which types of towers to attach to their cards. They can have a maximum of 4 tower cards.

NOTE: Check if pause is abusable during playtesting.

Progression:

Each level will increase in length, utilize and demonstrate different enemy types, and challenge the player with different enemy combinations. The levels should not be significantly challenging, but allow for different play styles using different tower types.

Narrative Design:

Aliens want to conquer the human race because they hate our non-EDM music. Using the power of human instruments, the player must defend against the aliens attacking through time portals. Each level takes place in a different area and time period of the real world.

The player acts as an Instrumental Tower Commander that controls the placement and type of towers deployed to fight the extra-terrestrial invaders.

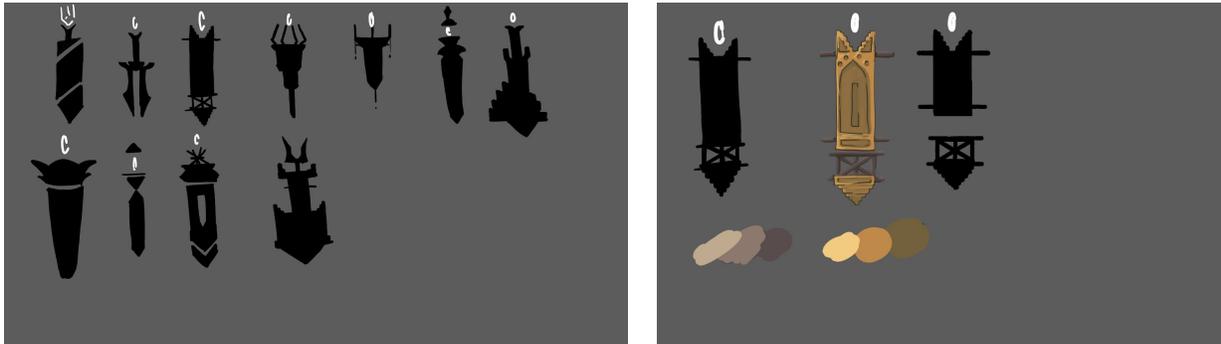
Potential Narrative Components:

- On-screen dialogue pop-ups
- Intro slide-show movie

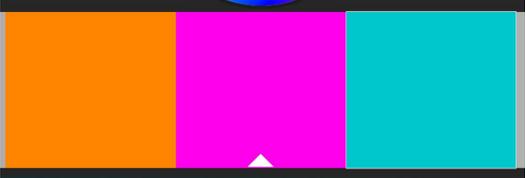
AI System:

- Towers: Targets whatever enemy is in range and furthest along the path.
- Enemies: Move constantly along the path toward the player's base.
 - Bruisers: Stuns whatever tower is closest to the unit.
 - Swarms: Fast weak enemies that spawn in groups.
 - Splitters: Multiple armor types; after destroying one layer, a different armor type appears.

Concept Art:



Art Style:

- Human Color Palette:
 - Stone and Earth colors for the towers
 - Magic Effects: Basic CM(O)K
- 
- Integrated XP Bars, to be a basic color.
- Towers:
 - Light Tower: Narrow
 - Medium Tower: Average Thickness
 - Heavy Tower: Base Heavy Triangle
 - AOE: Inverted Triangle
- Alien Palette:
 - Units: Neon Color-ranges, and high contrast textures.

AR Design:

Players will use their device to scan a flat surface that will be used as the map area. Each level path will spawn in this area in AR as well as all other assets besides the towers. Towers display in AR where their corresponding cards are placed and Ammo Charging Stations locations are based off of the level path.

Geometry in levels will cast a shadow to create a more realistic shadow.

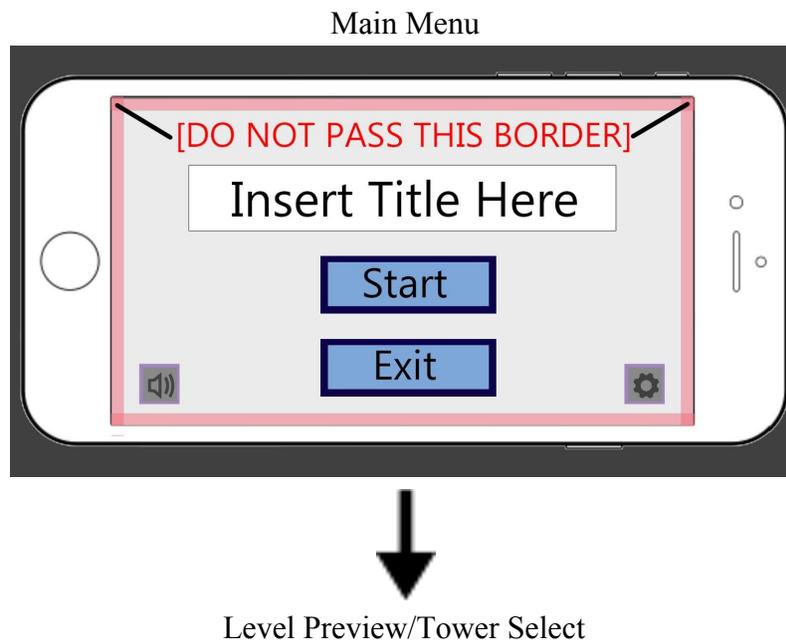
UI Design:

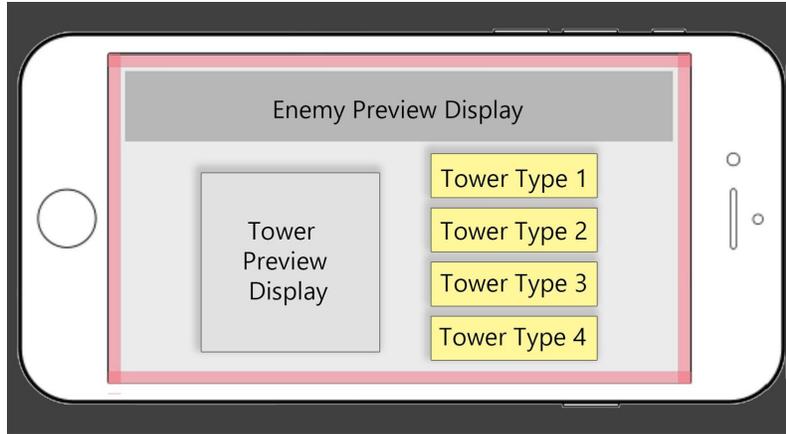
The UI during the level will be kept simple. There will be a pause button (or function such as double-tapping on the screen), a button to bring up the options menu, and a display indicating the health of the player's base.

HUD:

Base Health: The health of the base that players must defend will be represented by a 3-section health bar that faces the camera. Progression: Green -> Yellow -> Red. The base will feature a particle system on its roof to indicate health as well.

Screen Flowchart:

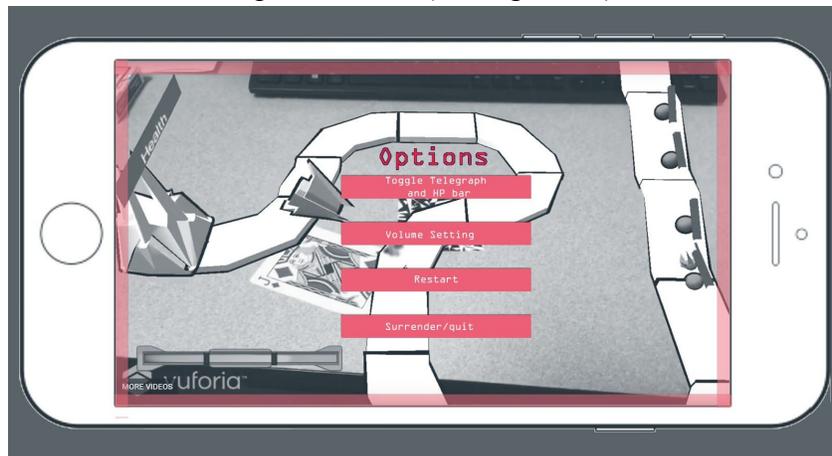




In-Progress Level



Options Menu (During Level)



Environments:

The level environments will be from different places and time with the following themes:

- Level 1 Environment: Jungle
- Level 2 Environment: Desert (Babylonian Empire)
- Level 3 Environment: Snow/Medieval (Dark Ages)

Music and Sound Effects:

- Aliens produce EDM-based sounds.
- Towers produce instrumental-based sounds.
 - Level 1 Theme: Jazz
 - Level 2 Theme: Classical
 - Level 3 Theme: Rock & Roll