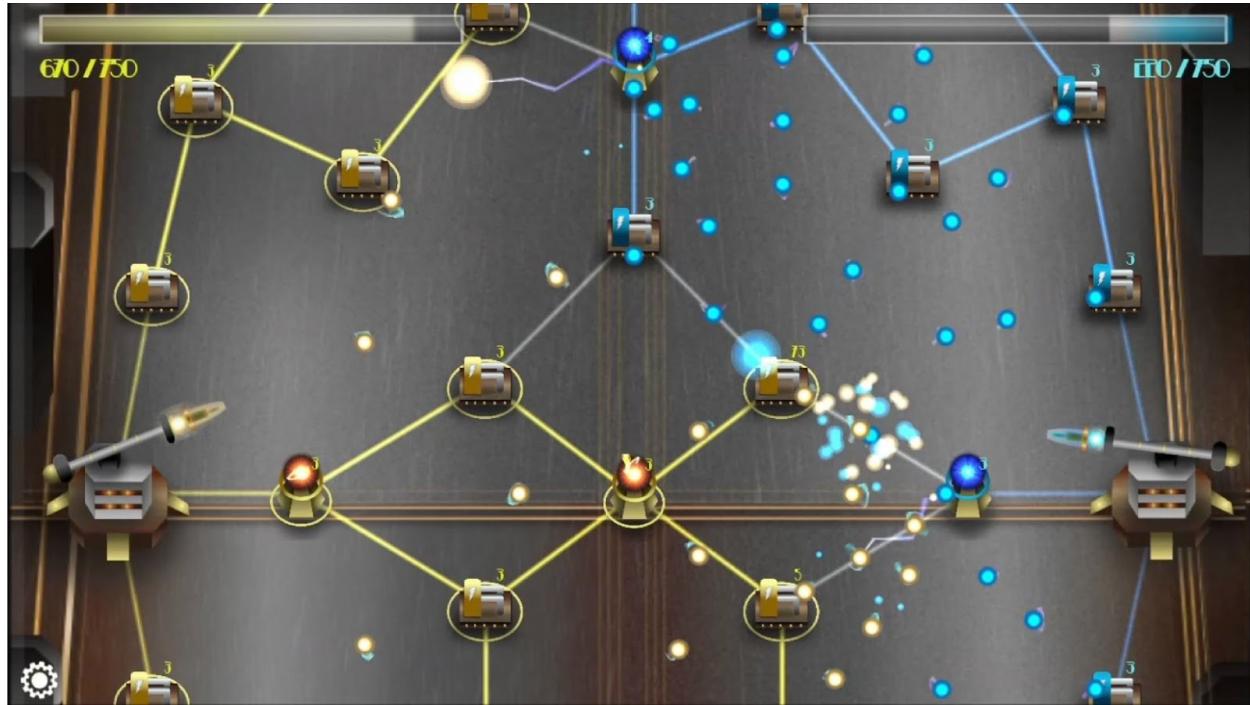


Design Document  
VERSION 1.0  
April 24, 2014



# Kill A Watt

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**The Electric Shepherds**

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## Version History

### **Version 0.1**

First version of the document, Removed some redundant aspects of the template. Initial game design idea for Insect Arena.

### **Version 0.2**

- Changed narrative direction of the game.
- Removed the ability to upgrade units
- Removed evolution chambers
- Changed names of buildings and units
- Changed combat system
- Changed two main protagonists
- Changed look and feel i.e. art direction and sound
- Changed win condition
- Added additional resources

### **Version 0.3**

- Changed the game name
- Fixed some grammar and technical issues

### **Version 0.4**

- Made changes to game mechanics
- Deleted some redundant information

### **Version 0.5**

Added the power linking gameplay feature

Updated battle UI

## 1.0

Updated user powers

Updated win conditions

Updated art design

Updated Narrative Direction

# Game Overview

## Game logline

~~Insect Arena Pits two mad scientists insect experiments against each other in a push pull battle to prove who the best scientist really is.~~

~~Kill A Watt is an alternate history where the greatest electrical engineers of all time, Nikola Tesla and Thomas Edison Simultaneously invent sentient electrical beings that they call their “electricity minions”. Nikola Tesla’s minions are a product of his Alternating Current where Thomas Edison utilized his Direct Current technology. The these long feuding geniuses both claimed that the others electro minions were inferior. After a drunken brawl at the 23rd annual Royal Electric Scientists Convention, the men challenged each other to a duel to prove who the best scientists really is. However this duel would take place on a scale model city built by Edison and Tesla for the convention. The city contains working generators, streetlights, buildings that are all powered by electricity. The two engineers jerry rig the scale model to provide power to deathrays aimed at each other. Tesla and Edison will command their electric minions across this scale model capturing building and destroying opposing minions. The first to reach 100% power fries the other scientist.~~

~~Kill A Watt pits two players against each other as they try to out strategies and out capture their opponents.~~

**Gameplay synopsis:** ~~Insect Arena pits two mad scientist against each other in a game of numbers and strategy. Rather than a tower defence it's a tower attack. Two or more player take control of mutant insect armies as they try to out number and out strategies their opponents. These mad scientist will use whatever tools at their disposal to win.~~

~~Kill A Watt is a game of numbers and control points. Rather than a tower defence it's a tower attack. Two players take control of electricity minions as they try to out number and out strategize their opponent. Players fight over power generator and shock tower control~~

points as they try to charge their power bars, and eliminate their enemy by capturing all of their structures.

## Game Details

**Description:** Insect Arena pits two mad scientist against each other in a game of numbers and strategy. Rather than a tower defence it's a tower attack. Two or more player take control of mutant insect armies as they try to out number and out strategies their opponents. These mad scientist will use whatever tools at their disposal to win.

Kill A Watt is a game of numbers, movement, and strategy. Two players battle over strategic points in hopes of eliminating the opposing force. Players can achieve victory by taking all of their opponents towers.

### Game Genre

Tower Attack

### Is this single-player or multiplayer game?

Multiplayer

### Is this 2D or 3D?

2d

### Where does the game take place?

Insect arena is set in the near future in the persona lab of two mad scientists. These mad scientists use their mutated insects to keep themselves entertained and acquire bragging rights by playing against each other.

Kill A Watt takes place in the early 1900's at the height of the Tesla and Edison Rivalry. The game begins at the 23rd annual Royal Electric Scientists Convention in England. Edison and Tesla are both there to demonstrate their AC/DC energy creatures. After a few too many drinks the feuding scientists challenged each other to a duel to prove who's energy creatures are superior. The battlefield is a scale model of a proposed "city of tomorrow" that has working structures and power subsystems.

Kill A Watt takes place on a metropolis city inspired battlefield.

### What do I control?

The mad scientists mutant insect armies ranging from 50-100 units depending on the map. The player controls electric minion armies that range between 100-300 units per player.

### What is the main focus?

The main focus of ~~insect arena~~ Kill A Watt is capturing various strategic towers and eventually capturing all of the opponents towers to win.

### **How long do matches last ?**

Between 3-10 minutes

## **Comparison**

### **Mushroom wars**

- ~~Units are not upgradable~~
- Units do not fight on the battlefield
- There are no player powers
- No power grid system

### **Little Wars**

- ~~Units are not upgradable~~
- There are not multiple structure types
- No multiplayer

### **Phage Wars 2**

- Units do not fight on the battlefield
- Only one structure type
- No player powers
- No multiplayer

## **What is unique**

~~The ability for players to evolve(upgrade their units) as well as unique mad scientist super powers that can be used to turn the tide of the battle.~~

Multiplayer gameplay, player powers, power linking structures to charge power meter to use powers, and unique collision combat mechanic.

### **Why create this game?**

We are creating this game because we love the concept of tower attack games. They are a relatively new and up and coming genre and we wanted to show the class something that they haven't seen before.

## **Audience, Platform and Marketing**

### **Target Audience**

Our target audience are gamers who enjoy competitive strategy games. The gamers that play RTS, Tower Defence, and Turn Based Strategy games are who we are targeting this game primarily to.

## Platform

1. Engaging game design that hasn't been done before.
2. Entertaining characters and world.
3. Fun quick competitive gameplay.
4. Cool powers to change the course of the game.

## Top Performers

1. Mushroom Wars: is the most popular version of this type of game and the only version I could find that was paid for.
2. Catowar: Free but a very popular tower attack game.
3. Phage Wars 2: Also free, Phage Wars 1 is considered the original tower attack game.

## Feature comparison

### Mushroom wars

- Units are not upgradable
- Units do not fight on the battlefield
- Power linking structures to charge deathray
- No powe

### Catowar

- There is no multiplayer
- Power linking structures to charge deathray
- Collision battle mechanic
- No superpowers

### Phage Wars 2

- Units do not fight on the battlefield
- Only one structure type
- No super powers
- No multiplayer

## Game Mechanics/Feature Set

### Overview

~~Insect Arena pits two mad scientist against each other in a game of numbers and strategy. Rather than a tower defence it's a tower attack. Two or more player take control of mutant~~

~~insect armies as they try to out number and out strategize their opponents. These mad scientist will use whatever tools at their disposal to win.~~

Kill A Watt is a game of numbers and control points. Rather than a tower defence it's a tower attack. Two players take control of electricity minions as they try to out number and out strategize their opponent. Players fight over power generator control points as they attempt to fill their death ray to maximum power in order to vaporize the opposing player.

### **Structure types and function**

~~Each player will starts out with one or more hives located on the map. each hive produces a certain number of units per second. Players use these units to take over neutral or enemy structures such as hives, towers(turrets), Evolution Chamber(upgrade) and reinforce their own structures. Units can only travel between structures. The players do not control the units once they have left the building they were occupying. The player only order units from structure to structure. I am going to go into more depth on each of these mechanics below.~~

Each player will starts out with one or more generators located on the map. each generator produces a certain number of units and power per second. Players use these units to take over neutral or enemy structures such as generators and towers(turrets) as well a reinforce their own structures. Units can only travel between structures. The players do not control the units once they have left the structure they were occupying. The player only order units from structure to structure. I am going to go into more depth on each of these mechanics below.

### **Voltage Meter**

Generators not only produce units but they also produce power. The power accumulated by generators is measured by a voltage meter. As power is generated the Voltage meter slowly increases. Once it has reached a 100% the game ends and the player with a voltage meter at 100% wins the game. Power can also be used to cast "powers" which use voltage. Using powers causes the voltage meter to decrease.

### **The Power Grid**

All structures generate 10 power every few seconds. In order to bring that power back to the death ray the towers must be linked back to the death ray. This is visualized by a glowing line that connects the towers together.

### **The Hive**

~~The hive is the primary unit producer and also sets the maximum unit capacity. It can create as units as well as garrison units inside of it.~~

### **Generator**

The generator is the primary unit producer as well as the power producer that charges voltage meter. It can create as well as garrison units inside of it.

### **There are three levels of generators**

- **Level 1:**

Population cap increase: 15

Spawn speed: 1 units per second

Power gain: +1 power per second

~~Upgrade to next level cost: 10 garrisoned units~~

- **Level 2:**

Population cap increase: 25(+10 over level 1)

Spawn speed: 2 units per second

Power gain: 2 power per second

~~Upgrade to next level cost: 15 garrisoned units~~

- **level 3:**

Population cap increase: 35(+10 over level 2)

Spawn speed: 3 units per second

Power gain:: 3 power per second

~~Upgrade to next level cost: 25 garrisoned units~~

- **level 4:**

~~Population cap increase: 35(+10 over level 2)~~

~~Spawn speed: 3 units per second~~

~~Power gain: 3 power per second~~

### **Upgrading**

~~In order to upgrade the hives to the next level the number of garrisoned units must match the population cap increase that the building provides. for example a level one requires a 10 unit garrison to upgrade. When the structure is upgraded the unit garrison after the upgrade is the count of units before the upgrade divided by two. For example if I upgrade to level 2 from level 1 the units garrisoned after the upgrade would be 5. if the number is an odd number like level 2 to level 3 than total after the upgrade is rounded down. so in level 2 to level 3 the total would be 7. This is done for balancing reasons to prevent players from massing units too quickly.~~

### **Population**

~~For example if I have 4 level 1 structures the population cap would be 40 units. Each hive evenly produces units until the population cap has been reached. In order to ensure that the buildings reach upgrade capacity each hive can only have the exact number of units~~

~~associated with it. For example a level 2 building can only have 15 units generated by it on the field at anytime.~~

For example if I have 4 level 1 structures the population cap would be 40 units. Each generator evenly produces units until the population cap has been reached. Each generator can only have the exact number of units associated with it. For example a level 2 building can only have 15 units generated by it on the field at anytime.

### **Tower(turrets):**

Turrets can be garrisoned as well as attack the opposing players units as they move across the battlefield. Turrets are a valuable asset as they can kill an opposing player's units before they reach friendly structures. They can also support the players units as they move across the battlefield.

### **Evolution Chamber:**

~~The evolution chamber upgrades the player units that is in control of it. It upgrades the damage as well as the armor of the players units. Controlling an evolution chamber upgrades your units one tier. units can be upgraded to a maximum of tier 3. A play would achieve tier 3 by controlling two evolution chambers.~~

## **Capturing structures & combat**

### **Capturing**

In order to capture a building a player must move his units from one of his structures to either a neutral or enemy structure. In order to capture a structure you must reduce the count of the units garrisoned in the structure to zero and then occupy it with at least one unit. Once a unit reaches a structure and enters the structure it will subtract -1 from the structures garrison per unit. For example, if i send 5 units to a structure with a 10 person garrison it will reduce the garrison by -5 if they all reach the structure. Once the units reaches an enemy structure they will enter the structure and essentially die while reducing the garrison count by one. If the building has been upgraded it retains those upgrades when it has been captured. It is not required for a player to keep units garrisoned in his structures to keep them in their control. A structures can have a garrison of zero and remain in the control of the player. For example I can capture a tower and then remove all my units from the tower. The tower will still be under my control and fire at passing units but it will have a garrison of zero.

### **Unit Movement**

Units only can move to and from structures. All units move at the same speed acrossed a map. Since units can move only to and from structures there are only a set number of paths units can take. Whenever units are moved from a structure the number of units moved is the total garrison divided by 2. If it is an odd number it automatically rounds up so 5 units garrisoned would result in 2 units moving. If there is only one unit left than that one unit moves. You can keep sending units to a structure until all units have been sent, The larger the garrison the larger the first group of units moving from the garrison will be. This simple solution for moving units while not overwhelming the player with lots of micromanagement. Units move to and from structures in a single file line. ~~If I move 6 units they would move in two rows of three, if I moved 5 units it would be one column of 3 and a column of 2.~~ Figure 2 below depicts the possible units movements a player can make.

### **Combat**

~~As units move across the battlefield they may engage in combat if they run directly into enemy units or pass close by them they enter into a combat. Each unit has a small agro field around them and attack opposing units that come into contact with them. For example if my soldiers pass nearby a group of my opponents soldiers the soldiers on the edges closest to the enemy group would be pulled and engage in a combat. If I am moving some of my units to one of my opponents hives and he moves his units from that hive to the hive my units just departed they will run directly into each other. In this case all the units would be engaging in combat. Combat is resolved when one side of the engaging force is completely eliminated. After the combat the surviving units move on to the structure that they were originally ordered to.~~

Combat occurs when two opposing units collide with each other. When a collision occurs both units are destroyed.

### **Upgrading Units:**

~~Upgrades become active as soon as units are moved out of a garrison. Upgrades only come into effect when units are moving across the battlefield. Upgraded units are permanent and they retain any upgrades researched at the evolution chamber.~~

#### **Upgrade path**

##### **Tier 1**

**Condition:** none

**Attack Damage:** 1 damage per .5 second

**Health:** 3 health

**Movement:** Equal for all units

~~(upgrades have no effect on capture rate 1 unit always reduces the garrison by 1)~~

##### **Tier 2**

**Condition:** Player is in control of 1 evolution chamber

**Attack Damage:** 1.5 damage per .5 second

**Health:** 4 health

~~**Movement:** Equal for all units~~

~~(upgrades have no effect on capture rate 1 unit always reduces the garrison by 1)~~

### **Tier 3**

~~**Condition:** Player is in control of 2 evolution chambers~~

~~**Attack Damage:** 2 damage per .5 second~~

~~**Health:** 5 health~~

~~**Movement:** Equal for all units~~

~~(upgrades have no effect on capture rate 1 unit always reduces the garrison by 1)~~

## **The Battlefield**

All battlefields structures will be pre set on various battlefields. All battlefields will be balanced and feature different structures in various arrangements in order to create intriguing and varying gameplay.

## **Player Powers**

Scientists will be able to use powers to influence the tide of battle. Players will be able to cast powers that create barriers, kill units, and power up their units.

- **Magnet**
  - Causes a group of minions to die
- **Iron Curtain**
  - Creates a barrier that kills minions when they collide with it.
- **Frequency boost**
  - Increases the movement speed of your minions.

## **Multiplayer**

The game will have competitive 2 player multiplayer. Player will either be Tesla or Edison and then select a map and play against each other. Figure1 below depicts what a 1v1 map could look like.

## **Game Types & Win/Loss Condition**

- Annihilation: All structures are under one players control.
- Zapped: Players death ray reaches a 100% power and zaps the opponent

### Example Starting Map Setup

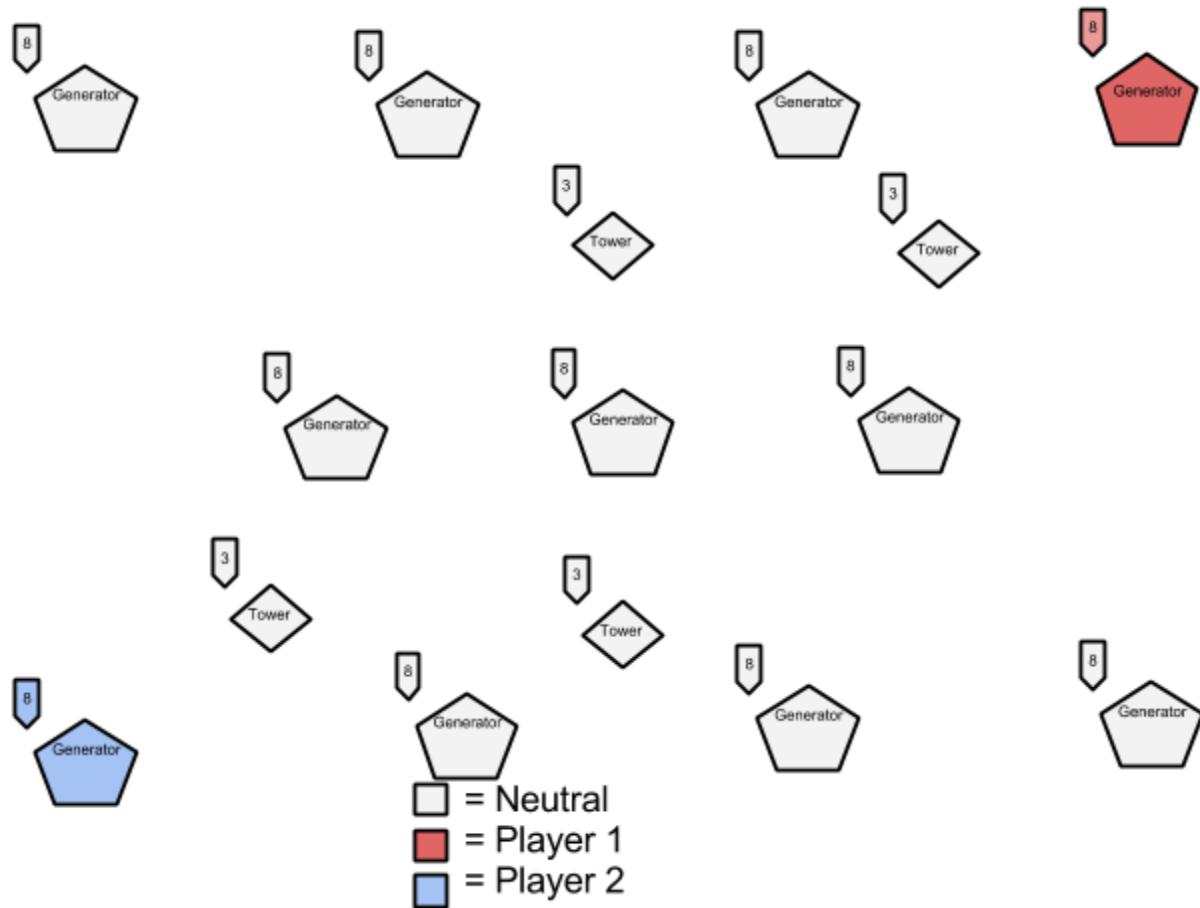


Figure 1

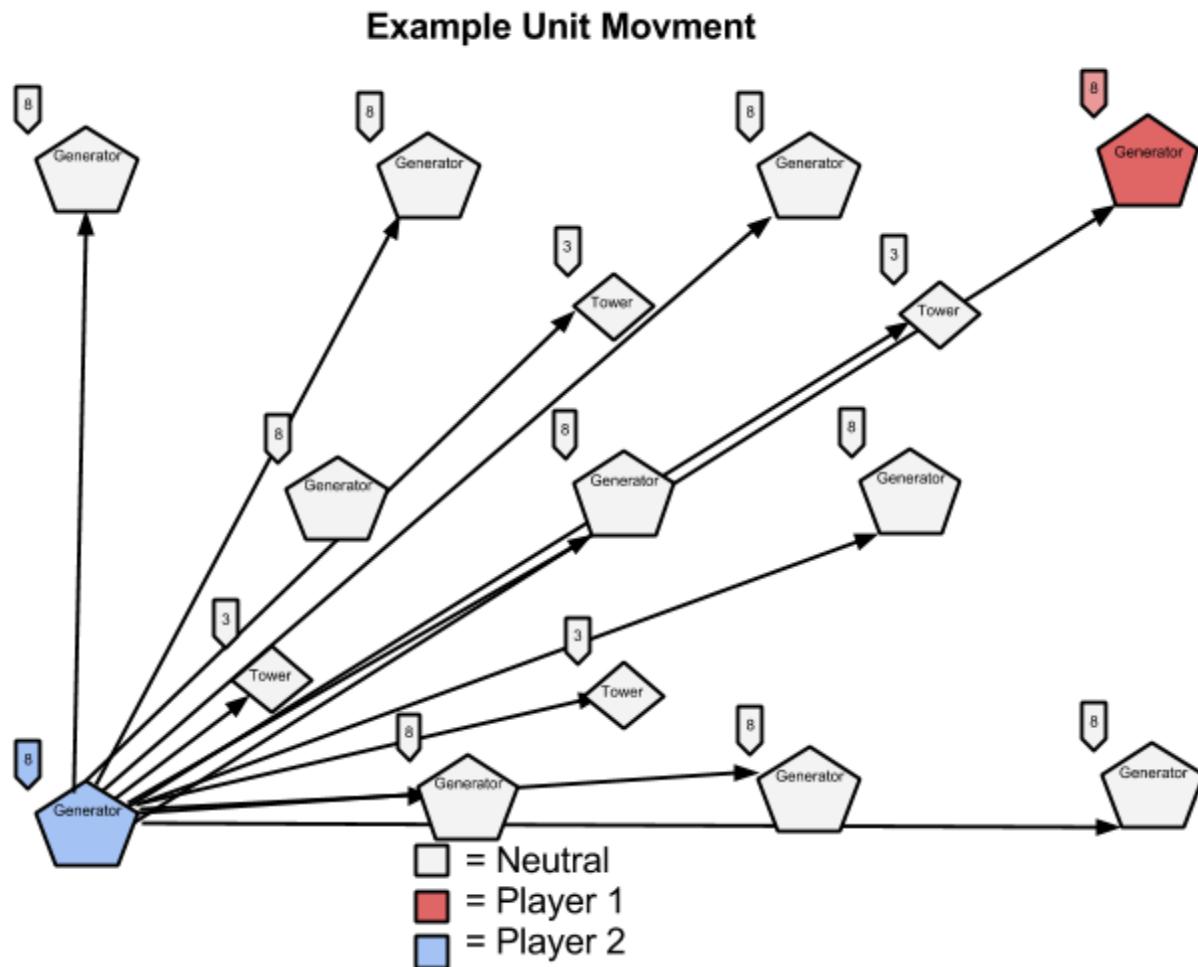


Figure 2

## The Game World

### Overview

The game will take place in various locations inside the mad scientist's laboratory. The game takes place at the 23rd annual Royal Electric Scientists Convention in England. The actual battlefield is a scale model of the "town of tomorrow".

### Key locations

- Laboratory table
- Giant tabletop ant farm
- Lab rat maze
- Mad scientist bathroom
- Scale model of devonshire "town of tomorrow"

## **Travel**

The player moves around to these various locations on the scale model by selecting the location from a location list that the player will choose from in the game lobby.

## **Scale**

The game takes place in a micro world.

## **Objects**

The various objects in our games are going to scale models of a city as well as electricity themed objects like tesla coils, capacitors and generators.

## **Weather**

No weather features in the game.

## **Day and night**

There will be no day or night cycles.

## **Time**

No time feature in the game.

## **Water**

none

## **Other elements**

No other elements as of now.

# **Camera**

## **Overview**

The camera will be a fixed top down camera. Figure 1 depicts how the camera would look over the battlefield.

# **Game Characters**

## **Overview**

~~The games two main protagonists are retired mad scientists who are looking for some entertainment. the actual units that are being used in combat are the mad scientist mutant insects.~~

The game's two main characters are Nikola Tesla and Thomas Edison. The units they control are AC/DC electric minions that they use to take over buildings and capture things.

### **Character creation**

There is no character creation feature in the game.

### **Enemies and monsters**

The enemies and monsters are the opposing players -~~mutant insects~~- electric minions.

## **User Interface**

### **Overview**

The user interface will be very similar to the game mushroom wars. It will essentially be the top down view depicted in figure 1. Much of the important information will be displayed on the battlefield view itself. At the top of the screen there will be a voltmeter that charges as you conquer and control generators. Between the voltmeters will be icons representing the various powers that players can use. When players use these powers their icon will turn black and a cool down timer will appear on top of the icons. There will also be portraits of Edison and Tesla flanking their voltmeters. There will be a main menu where the player can adjust settings as well as get to the multiplayer battle menu.

### **Menu UI**

The menu will display a background and contain two buttons a settings button and a multiplayer battle button.

### **Multiplayer Menu**

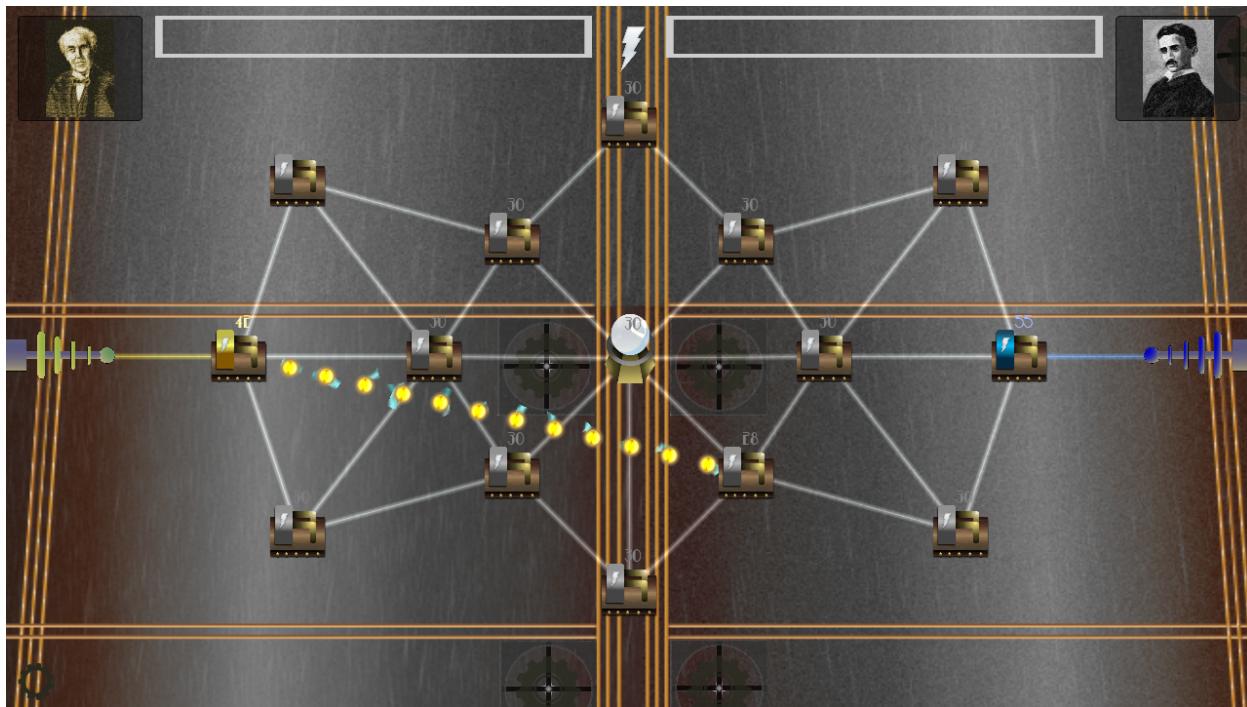
The player will see a menu of open multiplayer lobbies on their screen that they can join. They will also see buttons to return to the main menu as well as create a new game.

### **Game lobby/Creation Menu**

The game lobby will show the player inside the lobby as well as the map that has been chosen and details about that map. The details will include structures types how many structures there are as well as starting player structures. There will also be an image of the map that the player can view with various player starting locations. If i am the host of the game i will be able to click on the arrows by the selected map and scroll through various maps. When all the players are ready to begin the game they click a ready button that adds a check next to the player name signifying that they are ready to start the match.

## The Battle UI

The user interface will be very similar to the game mushroom wars. It will essentially be the top down view depicted in figure 1. Much of the important information will be displayed on the battlefield view itself. There will also be a bar at the bottom that shows the total unit count for each army. At the top of the screen there will be a voltmeter that charges as you conquer and control generators. There will also be portraits of Edison and Tesla flanking their volt meters. All structures will have a small icon next to them containing a number of the units garrisoned inside the structure. Towers will have a circle around them showing the range at which the towers can hit units. Generators produce power and overtime they will increase the power on the voltmeter. Players will also have small icons representing their abilities at the bottom of right of the screen. When these abilities are used a cool down timer will appear over the top of the buttons.



Current Battle U.I.



Mushroom Wars Battle UI

## Music and Sound Effects

### Overview

Music and sound effects will feature laboratory noises and maniacal mad scientist laughter. The music will be menacing but also playful and feature various laboratory noises. Music and sound effects will feature songs from the early 1900's including electricity sounds such as tesla coils.

### Music tracks

Music tracks will feature music from the early 1900's.

### Sound effects

Sound effects will contain sounds for various actions within the game.

**Menus**

- Sound effect when buttons are clicked
- Background music

**Battle Field**

- Sound effects for objects like generators and towers
- Sound effect when units enter combat
- Sound effect when structure is taken
- Sound effect when a player uses a power
- Sound effect when a unit dies
- Background Music

**Art**



### What kind of style will be used in the game?

Cartoon style similar to futurama mixed with early 1900's art styles. We will be using very similar art style to the image above. Capturing that same typeface as well as imagery.

#### Menu models:

- Buttons
- Minimap of the battlefield

#### Building models

- Hive
- Evolution Chamber
- Generator
  - Tier 1-4
- Tower(Tesla Coils)?

#### Scenery models

- Laboratory table
- Giant tabletop ant farm
- Lab rat maze
- Mad scientist bathroom
- Scale model of "Town of Tomorrow"
- Blue Prints

#### Character models

- Mad scientist (figure 3)
- Insects

- ⊖ Ants (figure 4)
  - ⊖ Mantis
- Nikola Tesla(Figure 5)
  - Thomas Edison (Figure 6)
  - Electro Minions, these minions are pretty small about the size of a quarter. Attached below is a mock up of the scale of our game.(Figure 7/8)
    - AC Version(Tesla)
    - DC Version(Edison)

## Art Examples



Figure 3



Figure 4

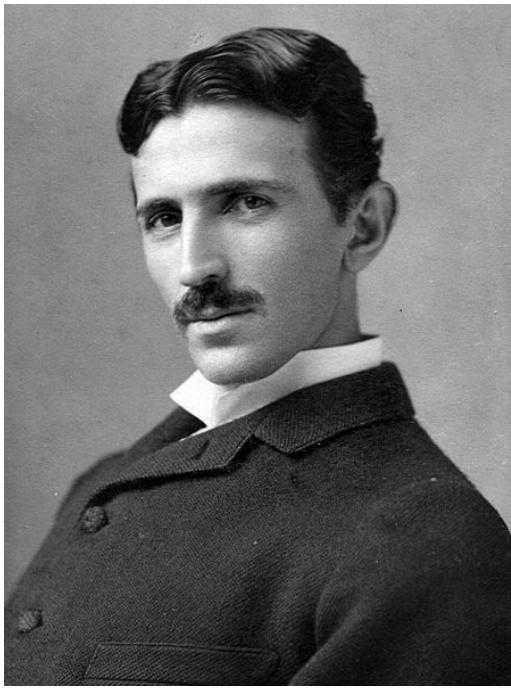


Figure 5 Tesla

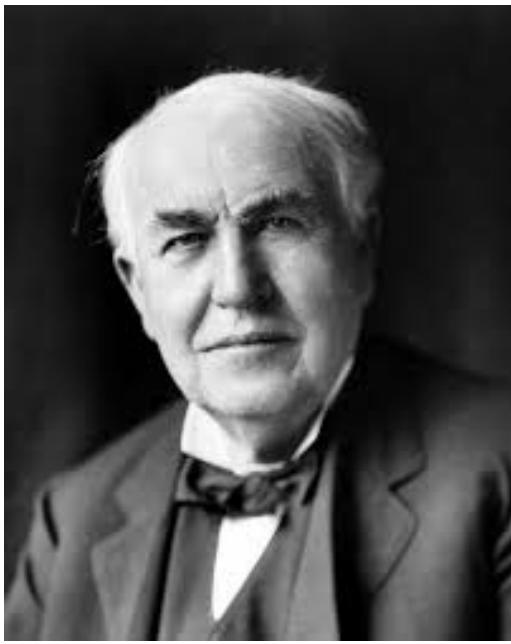


Figure 6 Edison

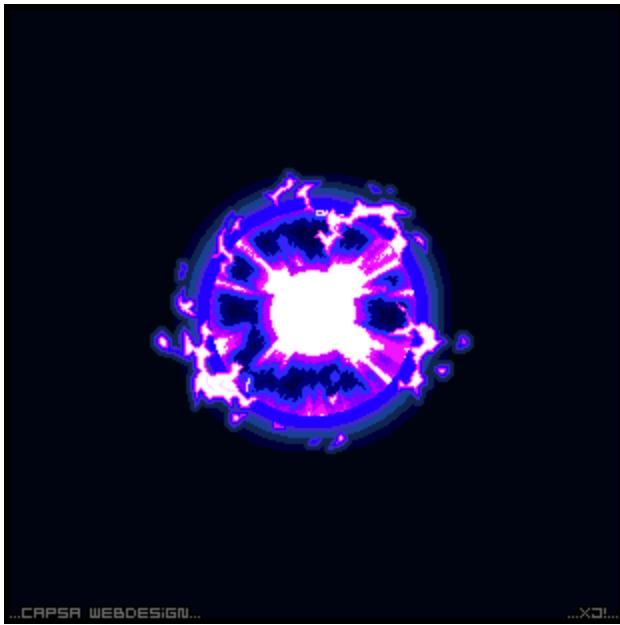
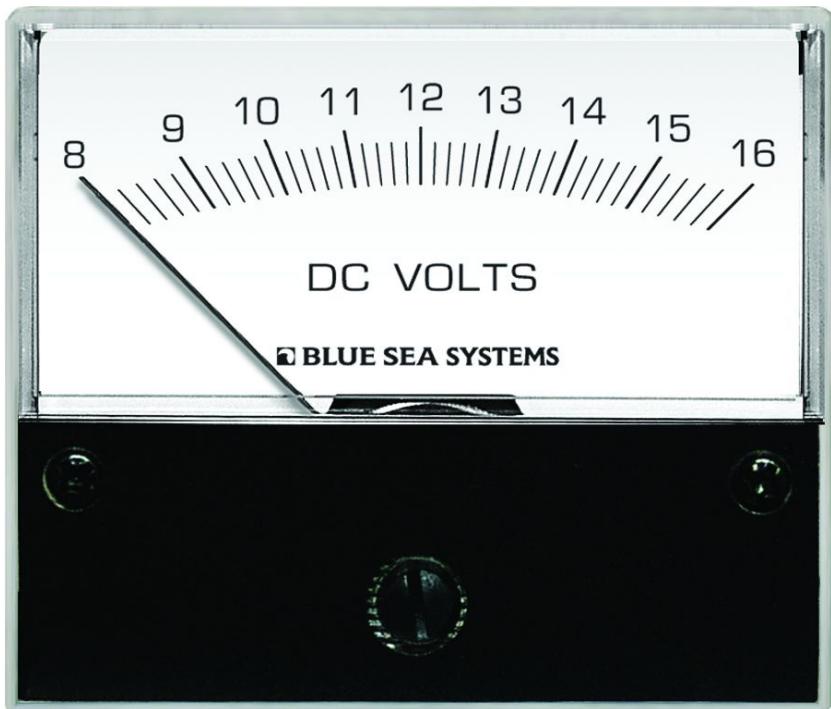


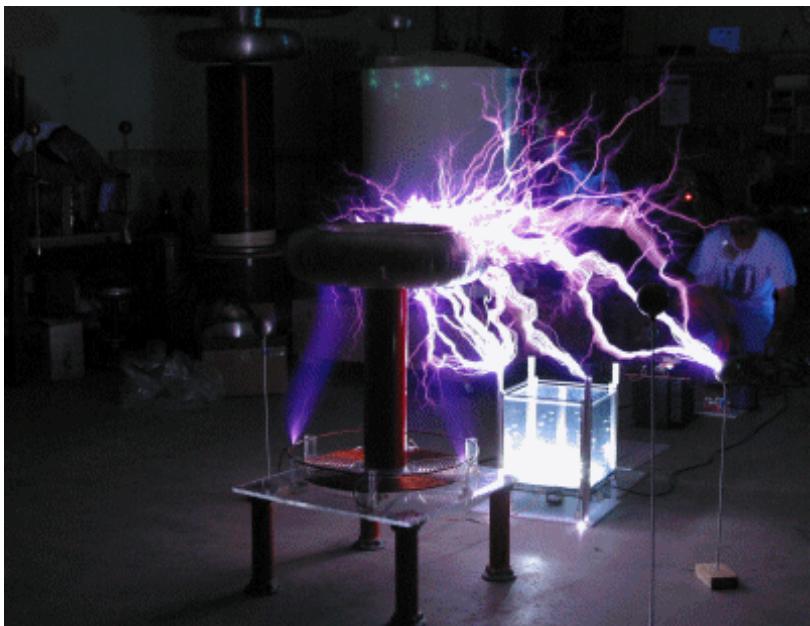
Figure 7 Possible Electro Minion look



Arcing Electricity



Voltage Free



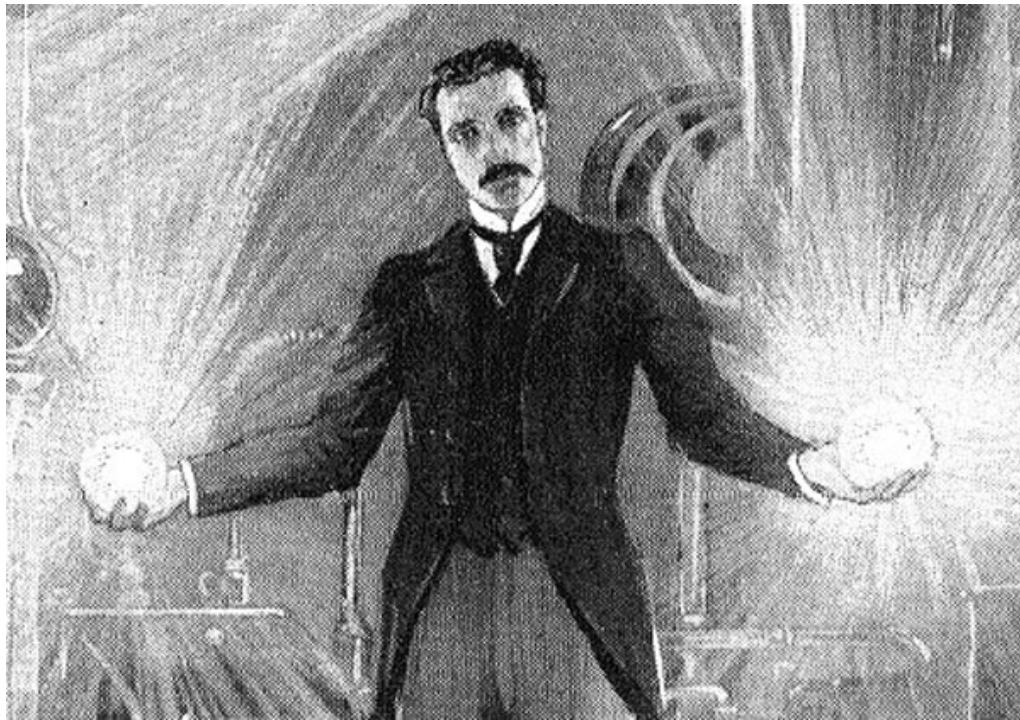
Tesla Coil(possible tower design)



"Town of Tomorrow"



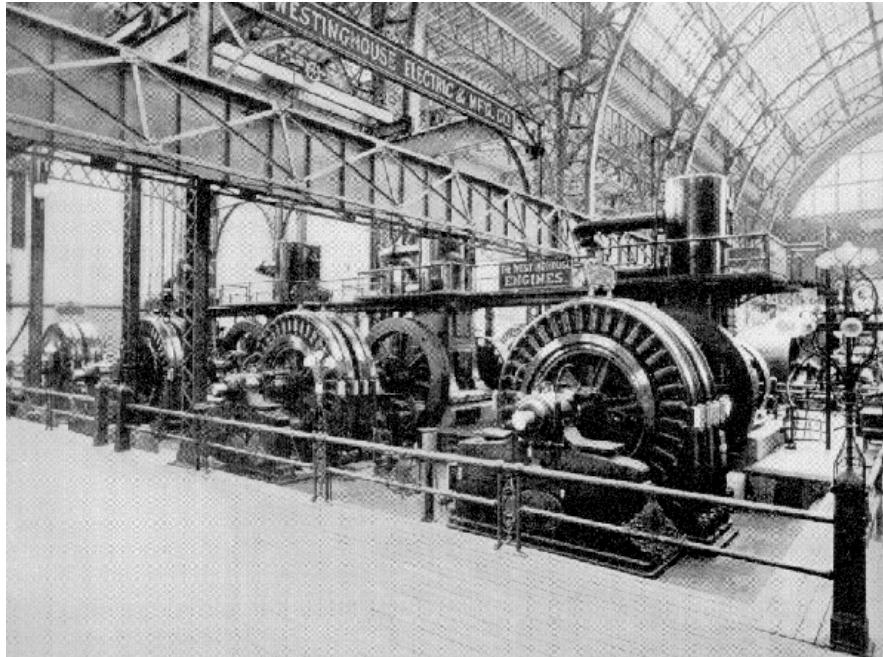
What the map of the town might look like in the multiplayer menu.



Tesla



Tesla's Magnifying Transmitter



Power Generators



Power Station

## Multiplayer Game

### **overview**

The multiplayer game pits two mad scientist against each other in a game of “Tower Attack”. Its a game of numbers and strategic movements.

### **Max players**

2 players

### **Servers**

Dedicated Server any host can act as a server.

### **Customization**

none

### **Is the world persistent or not**

Not a persistent word

### **Scores**

~~Scoring will be vary depending on the game type. There are three game types Annihilation, King of the Hill, and Territories. There will also be a unit counter showing the unit count of the two sides during the game.:~~

- ~~Annihilation mode victory will occur when all the structures have been taken.~~
- ~~King of the Hill mode a timer will countdown from 1:00 for each player. When the timer reaches 0 the player with the timer at 0 wins.~~
- ~~Territories each territory increased the players victory points by 1 for each second. The first player to 100 total victory points wins the game.~~

~~Scoring will essentially be directly reflected in the volt meter. As the volt meter charges the player will slowly approach a 100% charge where it will then electrocute the other player and the game will end. The game will also end if all the structures on the map are captured.~~

## **Resources**

[www.towerattackgames.com](http://www.towerattackgames.com)

[www.youtube.com/watch?v=qJ1Mz7kGVf0](http://www.youtube.com/watch?v=qJ1Mz7kGVf0)

<http://mentalfloss.com/article/30140/acdc-tesla%20%93edison-feud>

[http://en.wikipedia.org/wiki/War\\_of\\_Currents](http://en.wikipedia.org/wiki/War_of_Currents)

