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Quiropraxis MPD

❓ Unmet needs

🏹 Objectives

👥 User personas

Demography

- Age: 15-30 years
- Gender: Men and women
- Income: Low, Medium.
- Marital Status: Single
- Occupation/Industry: Students/Part-time work/Junior
- Educational Level: High School/Bachelor's Degree

Interest/Activities

- They like independent games.
- They like puzzle games.
- They like to consume video games with different proposals.
- They enjoy talking to friends about their experiences with video games.
- They enjoy participating in online communities to discuss video games.

Attitudes/Opinions

- They consume unpopular things.
- They feel smart.
- Engage in communities to discuss puzzles.
- They feel good when they feel they are consuming something special/unique.

Personas

Persona 01

Name:

Alex

Profession:

College student

Age:

18

Interests:

- Videogames
- Science
- Sci-fi
- Reddit

Behaviours:

- Play different games often
- Spend a good part of the day on computer

Powers:

- Has an online social circle
- Introduce new things on forums
- Re-forward trending indie games

Values:

- Intelligence
- Pioneer
- Innovation

Needs:

- Unique games to talk about
- Things that make him feel smart

Aspirations:

- Find the next indie game that will become popular before everyone else
- Share amazing and unique solutions to puzzles

"My name is Al3x_BackJog, I live in Lansing, and I'm just starting college. I like to spend my day on my computer playing totally underground indie games and talk to my internet friends about the games I found the coolest or the shitly. I'm always in the indie game forums and communities looking for something new that no one has heard of yet."

Persona 02

Name:

Mike

Profession:

Twitch Streamer

Age:

27

Interests:

- Videogames
- Food
- Boxing
- Sports

Behaviours:

- Always on the lookout for new and interesting games
- Their daily routine involves playing some games after their morning workout

Powers:

- Has an influence over a large audience
- Introduce new trends
- Spreading “memes”

Values:

- Energy
- Engagement
- Interpersonal relationships

Needs:

- Interesting games to play and entertain their audience
- Moments that will get their audience excited

Aspirations:

- Make the audience excited about the games they are playing
- Entertain the audience with wacky approaches to game challenges

"My name is Mike_1, I live in LA, and I’ve been streaming on Twitch for the last 8 years. When I’m streaming, I try to create moments of excitement for the audience by trying out crazy strategies or solutions that somehow work out in the end. I like to play games that give me lots of agency to do what I want to do and allow me to find my own solutions to challenges."

💪 Jobs we want to cover

- When I
- I want to
- So I can

📜 Some history

👀 Constraints

🗺️ Explorations + Decisions

📅 Releases

Release Name	Value it adds	Scope	Status	Completed date
Proof of concept	Demonstrate the functionality of the proposed mechanics and system in a practical way		IN PROGRESS	20 Oct 2022

MVP	Demonstrate the final functionality of the project with a minimal product that contains all final features.		TO DO	01 Dec 2022

Next steps

SET A STATUS

Impact

Other documents

- SharePoint: Quiropraxis Team

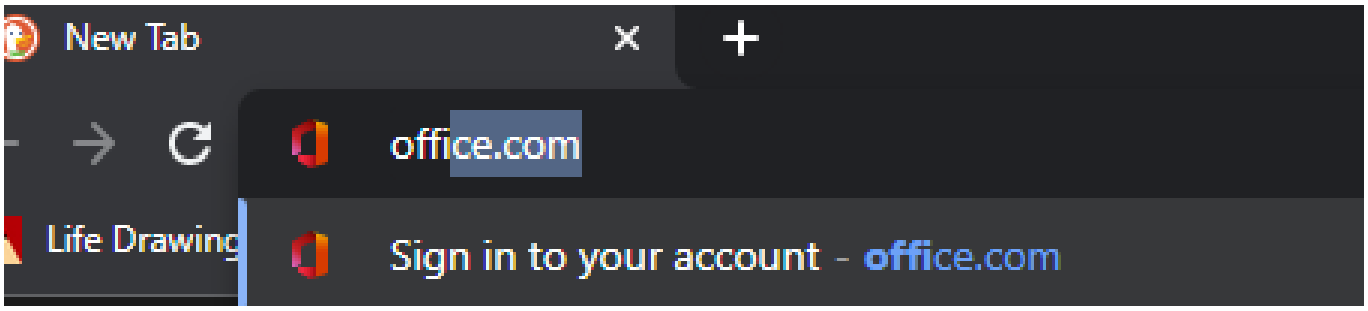
Tutorials

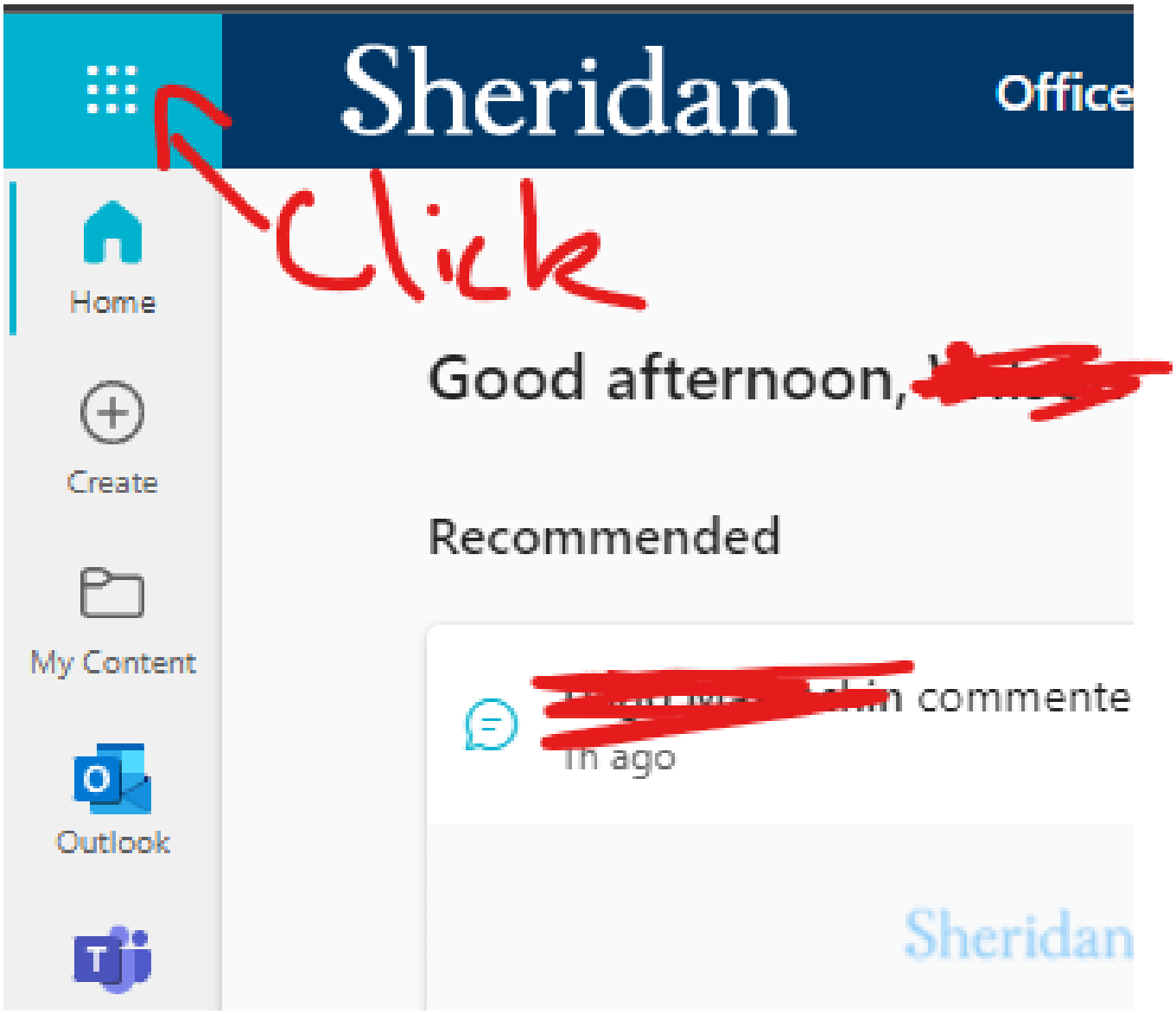
Collection of guidelines and tutorials useful for the project

Search

Expand all Collapse all

Using Sharepoint to Host Deliverables - Steps

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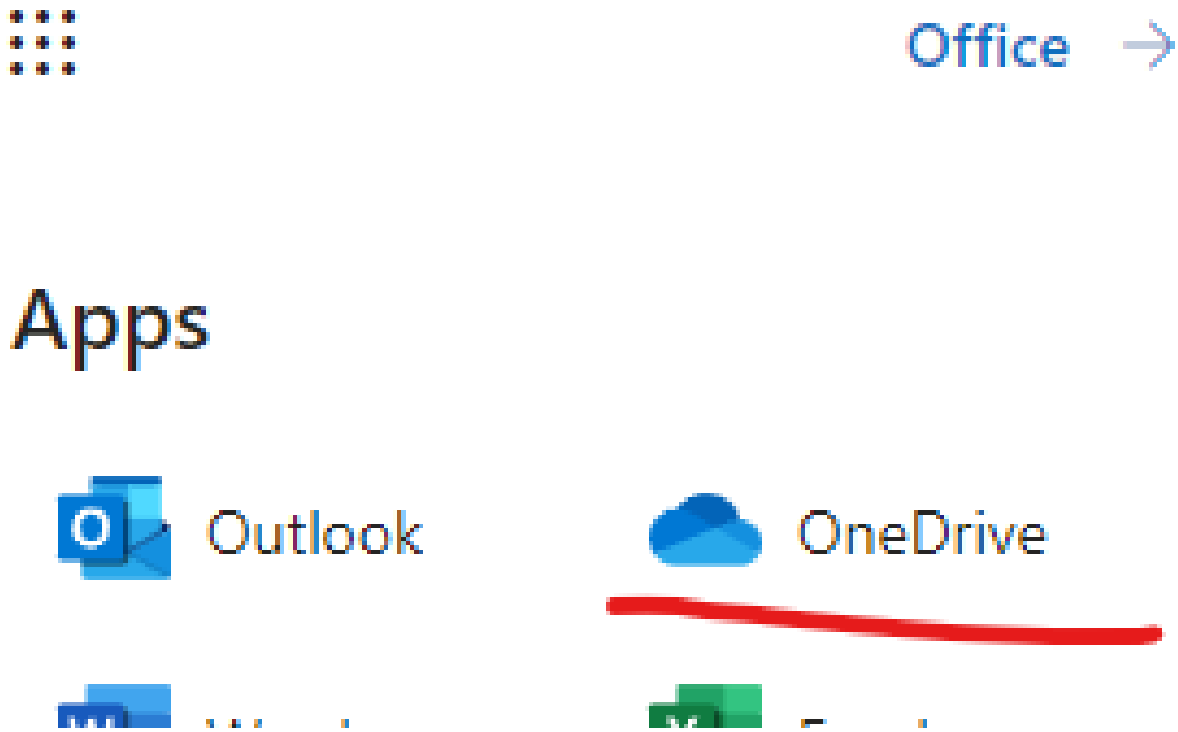
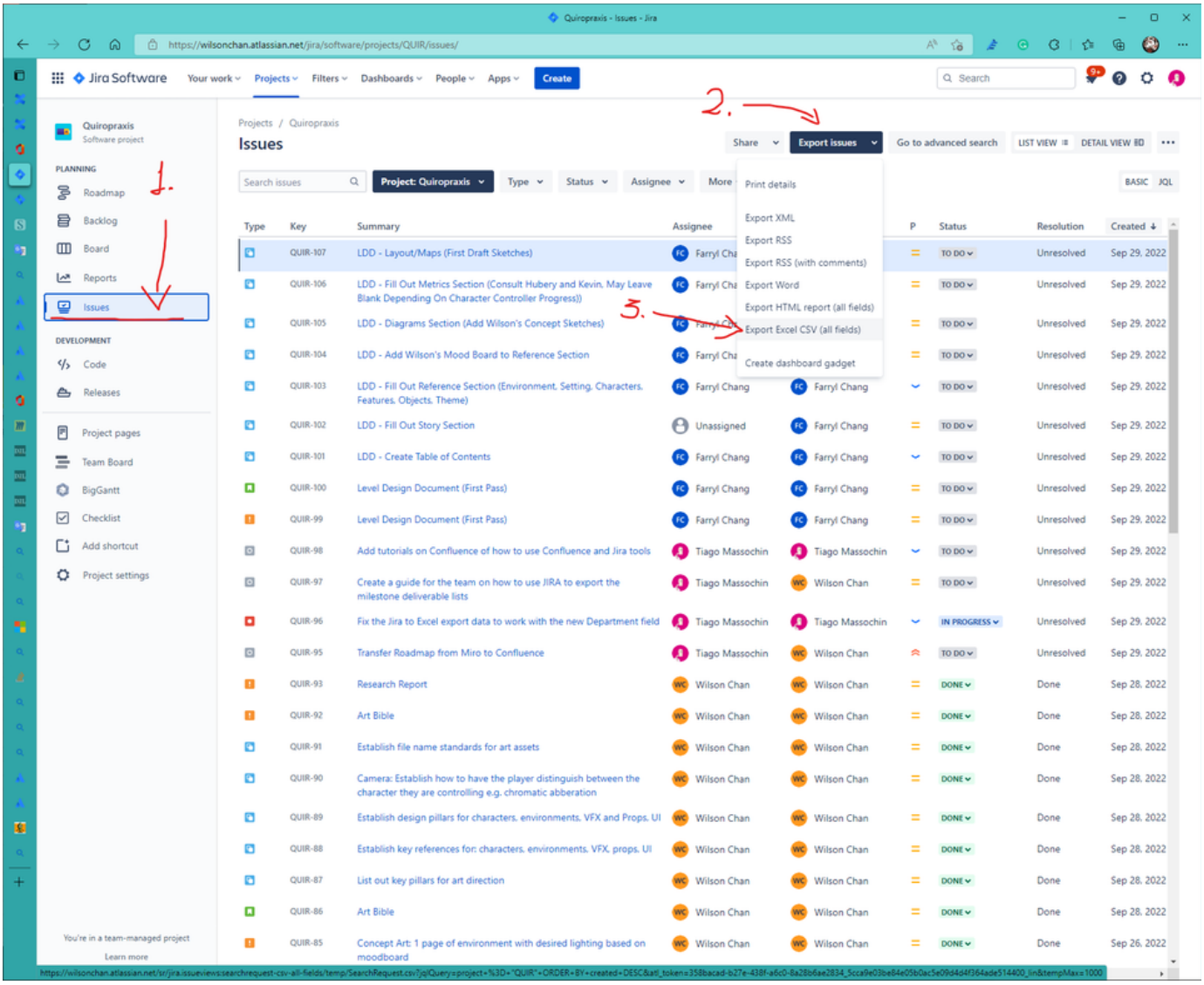


Updating Excel Spreadsheet - Milestone Task & Deliverable List - Team 10 - Quiropraxis

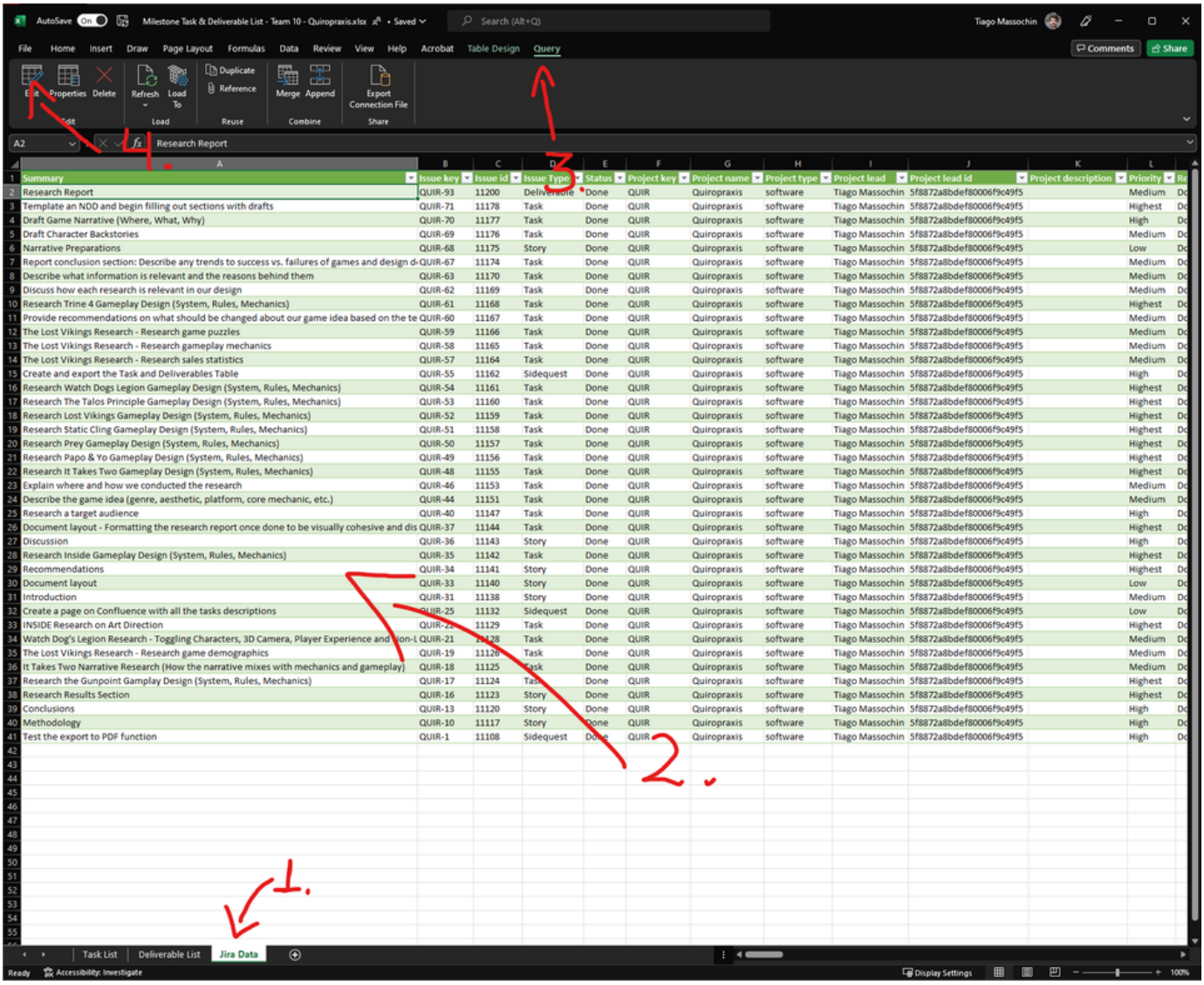
On the Quiropraxis Jira board go to

1. Issues
2. Export issues
3. Export Excel CSV (all fields)
4. Save the file to your computer



Open the Excel Milestone Task & Deliverable List - Team 10 - Quiropraxis spreadsheet using the E**xcel Desktop App** then fallow those steps to open the Power Query

1. Click on the **Jira Data** sheet tab
2. Click **anywhere inside** the table
3. Click on the **Query** tool tab at the top
4. Click on the **Edit** button

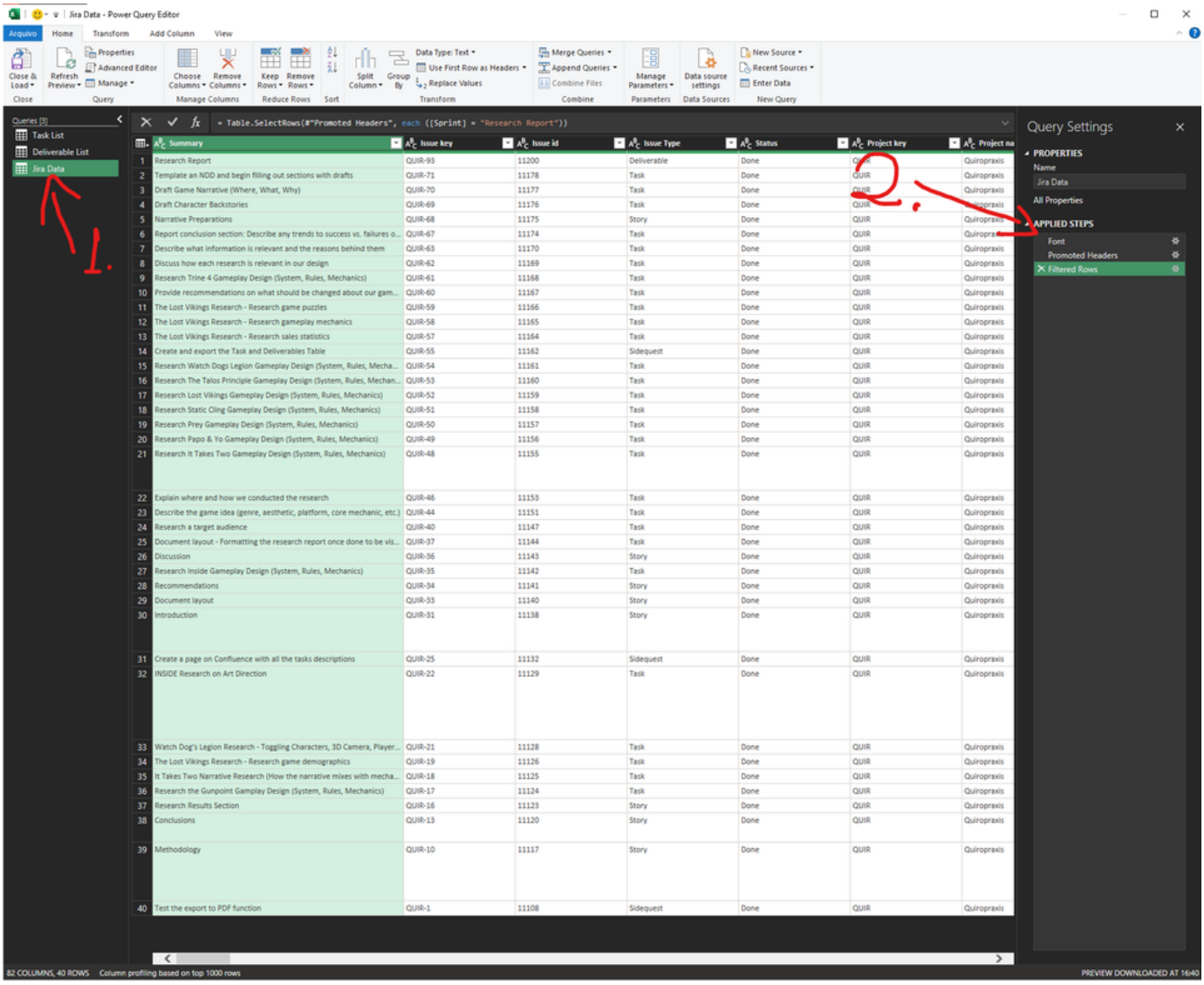


Summary	Issue key	Issue id	Issue Type	Status	Project key	Project name	Project type	Project lead	Project lead id	Project description	Priority	Re
Research Report	QUIR-93	11200	Deliverable	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Medium	Do
Template an NDD and begin filling out sections with drafts	QUIR-71	11178	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Highest	Do
Draft Game Narrative (Where, What, Why)	QUIR-70	11177	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		High	Do
Draft Character Backstories	QUIR-69	11176	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Medium	Do
Narrative Preparations	QUIR-68	11175	Story	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Low	Do
Report conclusion section: Describe any trends to success vs. failures of games and design d	QUIR-67	11174	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Medium	Do
Describe what information is relevant and the reasons behind them	QUIR-63	11170	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Medium	Do
Discuss how each research is relevant in our design	QUIR-62	11169	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Medium	Do
Research Trine 4 Gameplay Design (System, Rules, Mechanics)	QUIR-61	11168	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Highest	Do
Provide recommendations on what should be changed about our game idea based on the te	QUIR-60	11167	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Medium	Do
The Lost Vikings Research - Research game puzzles	QUIR-59	11166	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Medium	Do
The Lost Vikings Research - Research gameplay mechanics	QUIR-58	11165	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Medium	Do
The Lost Vikings Research - Research sales statistics	QUIR-57	11164	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Medium	Do
Create and export the Task and Deliverables Table	QUIR-55	11162	Sidequest	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		High	Do
Research Watch Dogs Legion Gameplay Design (System, Rules, Mechanics)	QUIR-54	11161	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Highest	Do
Research The Talos Principle Gameplay Design (System, Rules, Mechanics)	QUIR-53	11160	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Highest	Do
Research Lost Vikings Gameplay Design (System, Rules, Mechanics)	QUIR-52	11159	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Highest	Do
Research Static Cling Gameplay Design (System, Rules, Mechanics)	QUIR-51	11158	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Highest	Do
Research Prey Gameplay Design (System, Rules, Mechanics)	QUIR-50	11157	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Highest	Do
Research Papo & Yo Gameplay Design (System, Rules, Mechanics)	QUIR-49	11156	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Highest	Do
Research It Takes Two Gameplay Design (System, Rules, Mechanics)	QUIR-48	11155	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Highest	Do
Explain where and how we conducted the research	QUIR-46	11153	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Medium	Do
Describe the game idea (genre, aesthetic, platform, core mechanic, etc.)	QUIR-44	11151	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Medium	Do
Research a target audience	QUIR-40	11147	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		High	Do
Document layout - Formatting the research report once done to be visually cohesive and dis	QUIR-37	11144	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Highest	Do
Discussion	QUIR-36	11143	Story	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		High	Do
Research Inside Gameplay Design (System, Rules, Mechanics)	QUIR-35	11142	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Highest	Do
Recommendations	QUIR-34	11141	Story	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Highest	Do
Document layout	QUIR-33	11140	Story	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Low	Do
Introduction	QUIR-31	11138	Story	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Medium	Do
Create a page on Confluence with all the tasks descriptions	QUIR-25	11132	Sidequest	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Low	Do
INSIDE Research on Art Direction	QUIR-22	11129	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Highest	Do
Watch Dog's Legion Research - Toggling Characters, 3D Camera, Player Experience and Non-L	QUIR-21	11128	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Medium	Do
The Lost Vikings Research - Research game demographics	QUIR-19	11126	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Medium	Do
It Takes Two Narrative Research (How the narrative mixes with mechanics and gameplay)	QUIR-18	11125	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Medium	Do
Research the Gunpoint Gamplay Design (System, Rules, Mechanics)	QUIR-17	11124	Task	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Highest	Do
Research Results Section	QUIR-16	11123	Story	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		Highest	Do
Conclusions	QUIR-13	11120	Story	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		High	Do
Methodology	QUIR-10	11117	Story	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		High	Do
Test the export to PDF function	QUIR-1	11108	Sidequest	Done	QUIR	Quiropraxis	software	Tiago Massochin	5f8872a8bdef80006f9c49f5		High	Do

After that, the Power Query tool will open on a new window.

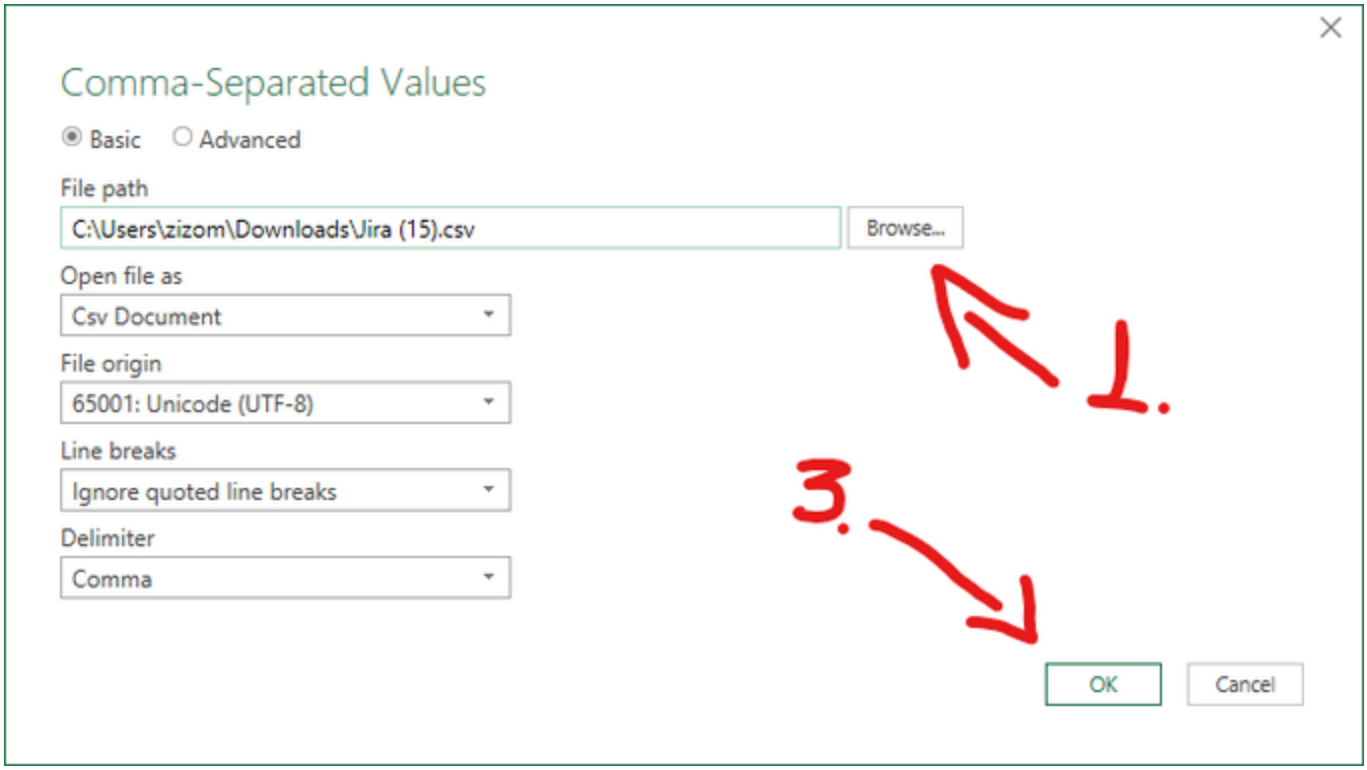
Then fallow those steps to update the data on the table with the file that you downloaded from Jira on the first part:

1. Click on **Jira Data** if the query is not already selected
2. Double click on **Font** step inside the **Applied Steps**



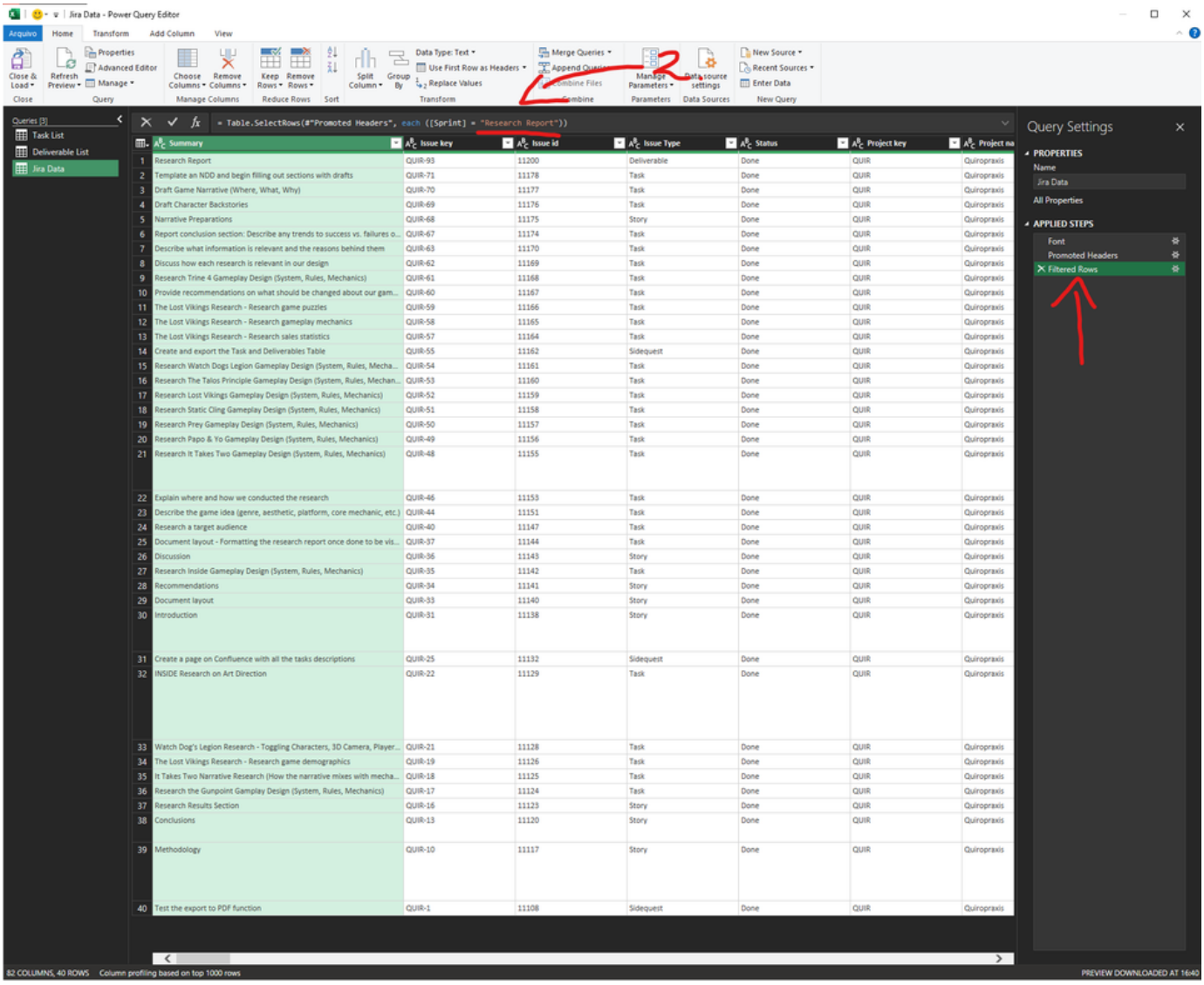
A new window will open in

1. Click on **Browse**
2. **Select the CSV file** downloaded from **Jira** on the first steps
3. Click on **OK**



This will update the data in the Jira Data query. Now just filter the correct data to match the team's current Sprint following the next steps:

1. Click on the step **Filtered Rows** inside the **Applied Steps**
2. Replace the Sprint name under the "_" with the desirable Sprint name



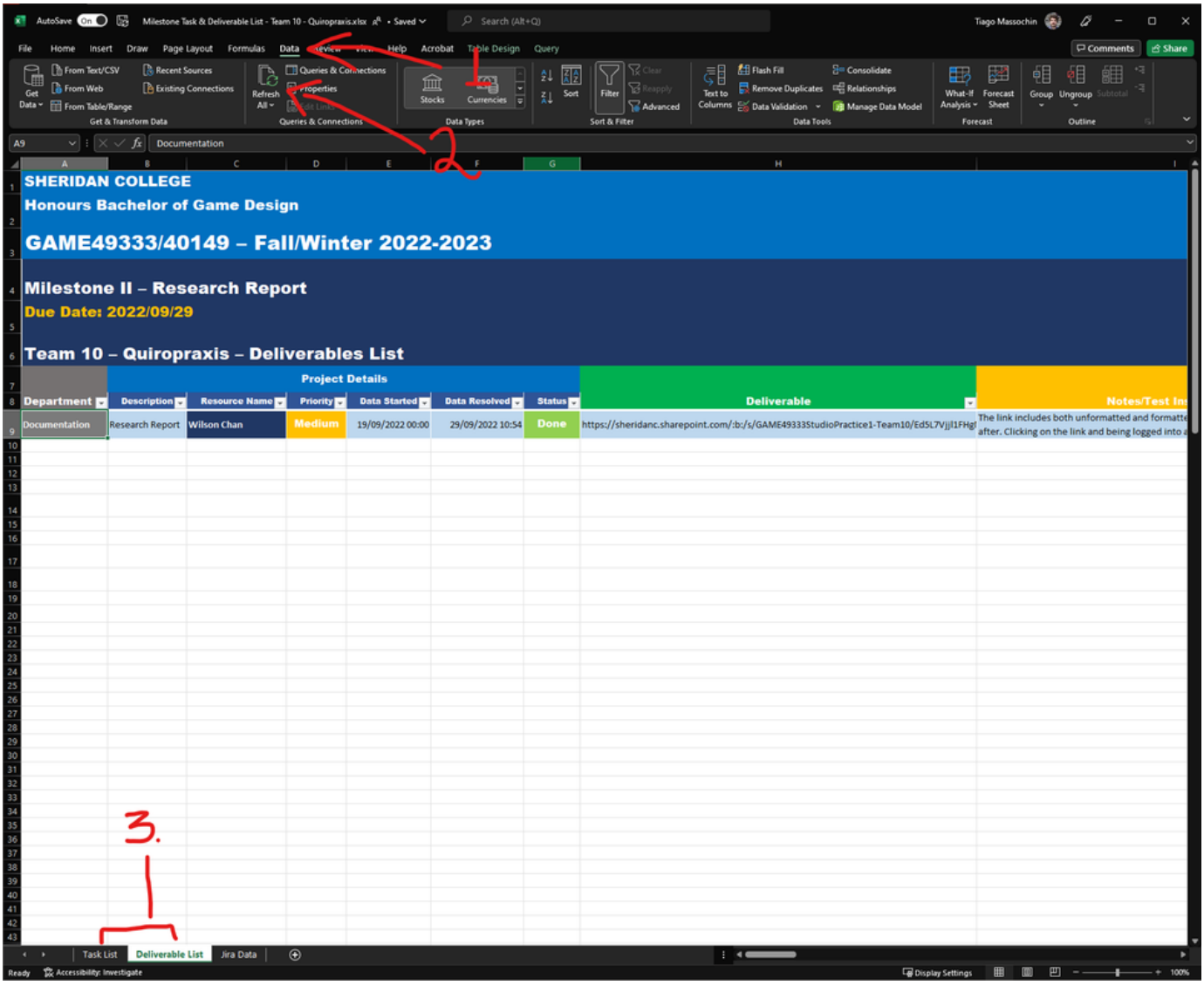
	Summary	Issue key	Issue id	Issue Type	Status	Project key	Project na
1	Research Report	QUIR-93	11200	Deliverable	Done	QUIR	Quiropraxis
2	Template an NDD and begin filling out sections with drafts	QUIR-71	11178	Task	Done	QUIR	Quiropraxis
3	Draft Game Narrative (Where, What, Why)	QUIR-70	11177	Task	Done	QUIR	Quiropraxis
4	Draft Character Backstories	QUIR-69	11176	Task	Done	QUIR	Quiropraxis
5	Narrative Preparations	QUIR-68	11175	Story	Done	QUIR	Quiropraxis
6	Report conclusion section: Describe any trends to success vs. failures o...	QUIR-67	11174	Task	Done	QUIR	Quiropraxis
7	Describe what information is relevant and the reasons behind them	QUIR-63	11170	Task	Done	QUIR	Quiropraxis
8	Discuss how each research is relevant in our design	QUIR-62	11169	Task	Done	QUIR	Quiropraxis
9	Research Trine 4 Gameplay Design (System, Rules, Mechanics)	QUIR-61	11168	Task	Done	QUIR	Quiropraxis
10	Provide recommendations on what should be changed about our gam...	QUIR-60	11167	Task	Done	QUIR	Quiropraxis
11	The Lost Vikings Research - Research game puzzles	QUIR-59	11166	Task	Done	QUIR	Quiropraxis
12	The Lost Vikings Research - Research gameplay mechanics	QUIR-58	11165	Task	Done	QUIR	Quiropraxis
13	The Lost Vikings Research - Research sales statistics	QUIR-57	11164	Task	Done	QUIR	Quiropraxis
14	Create and export the Task and Deliverables Table	QUIR-55	11162	Sidequest	Done	QUIR	Quiropraxis
15	Research Watch Dogs Legion Gameplay Design (System, Rules, Mecha...	QUIR-54	11161	Task	Done	QUIR	Quiropraxis
16	Research The Talos Principle Gameplay Design (System, Rules, Mechan...	QUIR-53	11160	Task	Done	QUIR	Quiropraxis
17	Research Lost Vikings Gameplay Design (System, Rules, Mechanics)	QUIR-52	11159	Task	Done	QUIR	Quiropraxis
18	Research Static Cling Gameplay Design (System, Rules, Mechanics)	QUIR-51	11158	Task	Done	QUIR	Quiropraxis
19	Research Prey Gameplay Design (System, Rules, Mechanics)	QUIR-50	11157	Task	Done	QUIR	Quiropraxis
20	Research Papo & Yo Gameplay Design (System, Rules, Mechanics)	QUIR-49	11156	Task	Done	QUIR	Quiropraxis
21	Research It Takes Two Gameplay Design (System, Rules, Mechanics)	QUIR-48	11155	Task	Done	QUIR	Quiropraxis
22	Explain where and how we conducted the research	QUIR-46	11153	Task	Done	QUIR	Quiropraxis
23	Describe the game idea (genre, aesthetic, platform, core mechanic, etc.)	QUIR-44	11151	Task	Done	QUIR	Quiropraxis
24	Research a target audience	QUIR-40	11147	Task	Done	QUIR	Quiropraxis
25	Document layout - Formatting the research report once done to be vis...	QUIR-37	11144	Task	Done	QUIR	Quiropraxis
26	Discussion	QUIR-36	11143	Story	Done	QUIR	Quiropraxis
27	Research Inside Gameplay Design (System, Rules, Mechanics)	QUIR-35	11142	Task	Done	QUIR	Quiropraxis
28	Recommendations	QUIR-34	11141	Story	Done	QUIR	Quiropraxis
29	Document layout	QUIR-33	11140	Story	Done	QUIR	Quiropraxis
30	Introduction	QUIR-31	11138	Story	Done	QUIR	Quiropraxis
31	Create a page on Confluence with all the tasks descriptions	QUIR-25	11132	Sidequest	Done	QUIR	Quiropraxis
32	INSIDE Research on Art Direction	QUIR-22	11129	Task	Done	QUIR	Quiropraxis
33	Watch Dog's Legion Research - Toggling Characters, 3D Camera, Player...	QUIR-21	11128	Task	Done	QUIR	Quiropraxis
34	The Lost Vikings Research - Research game demographics	QUIR-19	11126	Task	Done	QUIR	Quiropraxis
35	It Takes Two Narrative Research (How the narrative mixes with mecha...	QUIR-18	11125	Task	Done	QUIR	Quiropraxis
36	Research the Gunpoint Gamplay Design (System, Rules, Mechanics)	QUIR-17	11124	Task	Done	QUIR	Quiropraxis
37	Research Results Section	QUIR-16	11123	Story	Done	QUIR	Quiropraxis
38	Conclusions	QUIR-13	11120	Story	Done	QUIR	Quiropraxis
39	Methodology	QUIR-10	11117	Story	Done	QUIR	Quiropraxis
40	Test the export to PDF function	QUIR-1	11108	Sidequest	Done	QUIR	Quiropraxis

After these steps, the **Jira Data** query should present all the issue cards present in the current Sprint.
If the **data is correct**:

1. Click on **Close & Load**

This will take you back to Excel, now you just need to update the data in the Task List and Deliverable List tables following these steps:

1. Click on the **Data** tab at the top
2. Click on **Refresh All**
3. Check the **Task List** and **Deliverable List** tabs to verify the results



The End

Jira Guidelines

Jira Guideline

Jira should be used as a way for the team to organize project-related features, tasks, deliverables, and milestones.

All team tasks must be distributed in issue cards with their respective hierarchy.
Team members should always work on tasks that are previously listed in Jira, avoiding working autonomously or without the knowledge of other team members.

Hierarchy

- **Milestone**
  - **Story**
    - **Task**
  - **Deliverable**
  - **Bug**
    - **Task**
  - **Sidequest**

Hierarchy details

Milestone

A marker on a project that signifies a change or stage in development.

Milestones are assigned to us by Capstone course advisors.

Milestones are the issues that contain all other issue types.

Story

Short requirements or requests are written from the perspective of an end user. They can define features, states, components, etc.

Stories are contained within Milestones and **ALWAYS** contain Tasks as child issues.

The member designated as responsible for a Story **is not responsible** for its development, only for its management.

Deliverable

Issues related to the **content to be delivered** to the Capstone advisor.

Contains a link that directs to a file that compiles the result of one or several Tasks.

Deliverables **DO NOT** have child issues and are individual for each team member.

The member designated as responsible for a Deliverable **is responsible** for including a link in the issue card that shows its development and results.

Bug

Bugs are issues resulting from unforeseen issues during project development.

Bugs should **ALWAYS** be linked to the problems that caused them.

Bugs can contain Tasks as child issues if they need multiple steps or more than one team member to resolve them.

The member designated as responsible for a Bug **is responsible** for its development. If the Bug **HAS** child issues, the person responsible for the Bug **is responsible** for its management.

Sidequest

Small issues that have no direct relationship to Stories, Bugs, Tasks or Deliverables and are too small to be considered any of the above.

Can be completed in less than 1 day.

The member designated as responsible for a Sidequest **is responsible** for its development and conclusion.

Sidequest **DO NOT** have child issues and are individual for each team member.

Task

An activity that needs to be carried out within a defined time period or within a deadline to work towards goals related to its parent issue. It is an essential little piece of work that serves as a means of differentiating various components of a parent issue.

Tasks are child issues of Stories and Bugs.

The member designated as responsible for a Task **is responsible** for its development and conclusion.

Tasks **DO NOT** have child issues and are individual for each team member.

Tasks **are included** in the task list worksheet that is delivered every two weeks to the Capstone advisor.

Story Points Estimation

Below you will find an agile story point estimation table example that has 6 outcomes:

- 1 SP
- 2 SP
- 3 SP
- 5 SP
- 8 SP
- 13 SP

In the proposed example 8 story points are a lot and have the potential to being broken down into smaller work items. While 13 is already too high risk and must be broken into smaller items. Just beware – breaking down large items as 13 points, should not mean that two items of 8 SPs and 5 SPs will remain… Story points math is a bad practice. Each broken down item should be estimated again individually, such can result in three items of 5 SPs each after breaking down one item of 13 SPs.

Story point estimation table

Disclaimer: by using this table we do not propose to convert story points into time or vice versa. The main goal is to have a faster calibration of estimations for Teams who got recently assembled or just started doing Scrum. To dive deeper into what is story points, how they are measured, and why time as work effort can still make sense, we suggest watching the legendary presentation on Story Points by Mike Cohn from Google.

How much is known about the task	Everything	Almost everything	Something	Almost nothing	Nothing	Nothing
Dependencies	None	Almost none	Some	Few	More than few	Unknown
How much work effort	Less than 2 hours	Half a day	Up to two days	Few days	Around a week	More than one week
Story Points	**1**	**2**	**3**	**5**	**8** ⚠ **Should be split into smaller items**	**13** ⊗ **Must be split into smaller items**

If you are interested to learn more about why it is important to break down large user stories or epics, read this post. What is more, if you are not sure what are the reasons behind different aspects which involve story points size as we used Dependencies, Unknowns, Work effort, dive deeper by reading about what impacts work item size.

Story point estimation problems?

While there are many various significant issues, we recognize based on our and our customer experience the top 3:

1. **Mapping story points directly to time/hours.** Time effort is only a part of complexity formula, hence it should not be directly mapped. Though naturally it seems that longer duration means more complexity
2. **Miss-alignment between team members**. This usually can be solved by planning poker and calibration sessions
3. **Allowing high/complex effort estimations**. This can be solved by forcing a breakdown from certain size. Doing it, will make sure you are better at refining work items as well as reducing of not delivering large pieces of work during sprint

Team Charter

Link is old: Just for our submission - Keep updating this page instead https://sheridanc-my.sharepoint.com/:w:/g/personal/pritcjos_shernet_sheridancollege_ca/EWX9_96bAI9CuQ09X2sssVQBkxFDzXrTF7642A5nT06aCg?e=y8K1fY

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Charter Introduction

Document Change Control

Version	Date	Comment
Current Version (v. 21)	**Nov 07, 2022 16:09**	**Tiago Massochin**
v. 20	Oct 06, 2022 18:22	Tiago Massochin
v. 19	Oct 06, 2022 17:40	Hubery Chu
v. 18	Oct 06, 2022 17:32	Tiago Massochin
v. 17	Oct 06, 2022 17:14	Tiago Massochin
v. 16	Oct 05, 2022 19:16	Joshua Pritchett
v. 15	Sep 23, 2022 17:53	Tiago Massochin
v. 14	Sep 23, 2022 17:52	Tiago Massochin
v. 13	Sep 23, 2022 17:51	Tiago Massochin
v. 12	Sep 23, 2022 17:40	Tiago Massochin
v. 11	Sep 23, 2022 17:16	Tiago Massochin
v. 10	Sep 23, 2022 17:16	Tiago Massochin
v. 9	Sep 23, 2022 17:08	Tiago Massochin
v. 8	Sep 23, 2022 17:06	Tiago Massochin
v. 7	Sep 23, 2022 17:05	Tiago Massochin
v. 6	Sep 23, 2022 16:52	Tiago Massochin
v. 5	Sep 23, 2022 16:50	Tiago Massochin
v. 4	Sep 22, 2022 22:50	Tiago Massochin
v. 3	Sep 22, 2022 18:23	Wilson Chan
v. 2	Sep 15, 2022 17:38	Tiago Massochin
v. 1	Sep 15, 2022 17:18	Wilson Chan

Executive Summary

Goals and Objectives

Firstly, we aim to deliver an engaging and innovative project within the constraints of capstone that excites our peers in the games industry. Secondly, each member of the team will have an opportunity to develop the core skillset that aligns with their desired career goals and have a tangible artifact that provides evidence to their competence and value. Thirdly, the project is an avenue to completing our degree requirements and develop lasting relationships.

Major milestones

1. Market and project research – Expected September 29, 2022
2. Prototyping – Expected October 13, 2022

3. Production Planning – Expected October 27, 2022
4. MVP – Expected December 15, 2022

Key deliverables

1. Team Charter
2. Research Report
3. Proof of Concept
4. Project Plan
5. Game Design Document
6. MVP

Key risks & Constraints

Key risks

1. A core member of the team unable to continue participating
   a. e.g., the main programmer cannot continue
   b. To address this, we will reassess their tasks, how they affect the project and reassign updated tasks to members with that as a secondary skillset.
2. We get stuck on features that result in missing deadlines
   a. To address this, we will have constant progress updates to discover and solve challenges and seek aid from outside sources like team advisors and our peers. We will also assess how core the feature is to our desired game experience and how closely it relates to our pillars. If it doesn't meet those criteria, it is likely we will cut it. With this methodology, we can quickly redistribute resources without having wasted time on a non-core feature.

Key constraints

1. Resource
   a. Team members aren't working full time on this project and have external responsibilities
2. Transit
   a. Difficulty getting on campus which limits opportunities of working together on-campus
3. Financial
   a. How much money the team is willing to invest into the project

Key Resources

Authoring Tools

- Adobe Illustrator
- Adobe Photoshop
- Adobe Animate
- Zbrush
- Maya
- Blender
- Substance Painter
- Ableton Live 11

Assembly Tools

- Unity 2020.3.8f1
- Fmod

Playable Requirements

- Windows PC
- Steam Account
- Controller/Keyboard

Some of our key resources include:

- Capstone workspace
  - Cintiqs and shared workspace

- Professors
- Capstone advisors
- Our peers
- Educational Licenses
  - Unity
  - Adobe Animate
  - Photoshop
  - Zbrush
  - Maya
  - Blender
  - Substance Painter

Team

This project charter formally introduces the game project, *Electric Potential*, and provides the project team with direction to apply resources to project activities described herein. If there is a change in the project scope, the project charter will be updated and submitted for re-approval.

Name: Joshua Pritchett

Role: Project Manager, Narrative Designer, Level Designer, Playtest Coordinator

Name: Wilson Chan

Role: Concept Designer and Game Artist (2D/3D)

Name: Farryl Chang

Role: 3D Artist, Programmer, Level Designer

Name: Tiago Massochin

Role: Project Manager, Game Designer, UX/UI Designer, Sound Designer

Name Hubery Chu

Role: Programmer, Publication / Marketing

Name: Kevin Jacob Stanly

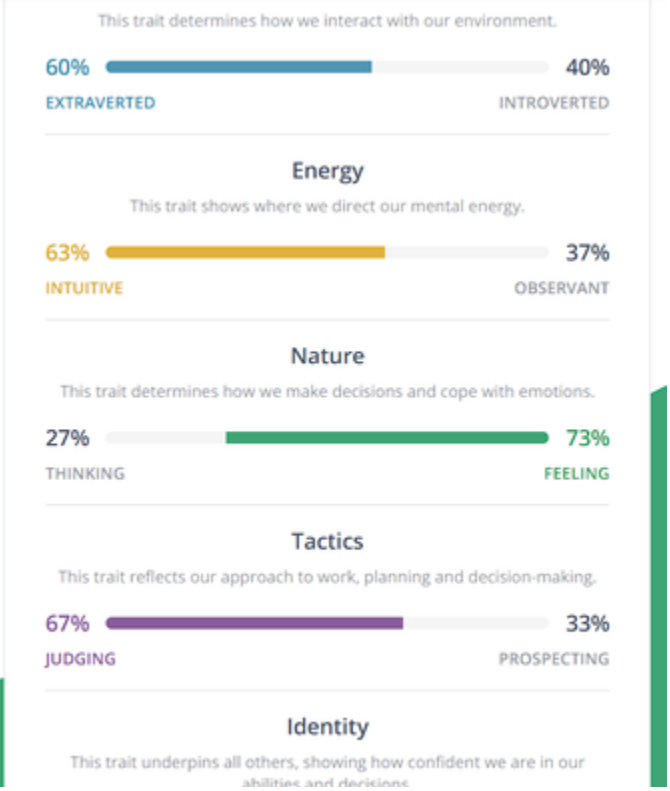
Role: Gameplay Programmer, UI Programmer

Eduardo Hulshof

Team Mentor

Team Personality

Test results by 16Personalities



Protagonists (ENFJs) are warm, idealistic, charismatic, creative, and social. With this wind at their backs, these types can thrive in many diverse roles, at any level of seniority. Moreover, they are generally likable and good-natured – qualities that can propel them to success wherever they have a chance to work with others.

Protagonist Subordinates

As employees, Protagonists often push themselves to prove their merit and make a good impression on their managers. Perceptive and dedicated, people with this personality type can take on multiple responsibilities with competence and good cheer.

Protagonists are hardworking, reliable, and eager to help – but these strengths can become a double-edged sword.

Protagonist (ENFJ) workplace habits

Unfortunately, some managers may take advantage of Protagonists' work ethic by making too many requests or overburdening them with extra work. Although these personalities are more than capable of standing up for themselves, they may still accept all of these additional tasks in order to keep the peace and avoid letting others down.

Protagonist Colleagues

As colleagues, Protagonists stand out for their desire to collaborate. They are always on the lookout for opportunities to create win-win situations and help their coworkers reach their full potential. These personalities foster equitable team environments where everyone – whatever their job title – can feel comfortable expressing their opinions and ideas.

Protagonists' tolerance and easy sociability makes it easy for them to relate to their colleagues.

That said, Protagonists' tendency to take charge may sometimes ruffle their coworkers' feathers. With their strong drive to lead, Protagonists may sometimes be tempted to make decisions or suggest changes that go beyond the scope of their authority – leading their colleagues to ask, "Hang on, who put you in charge?"

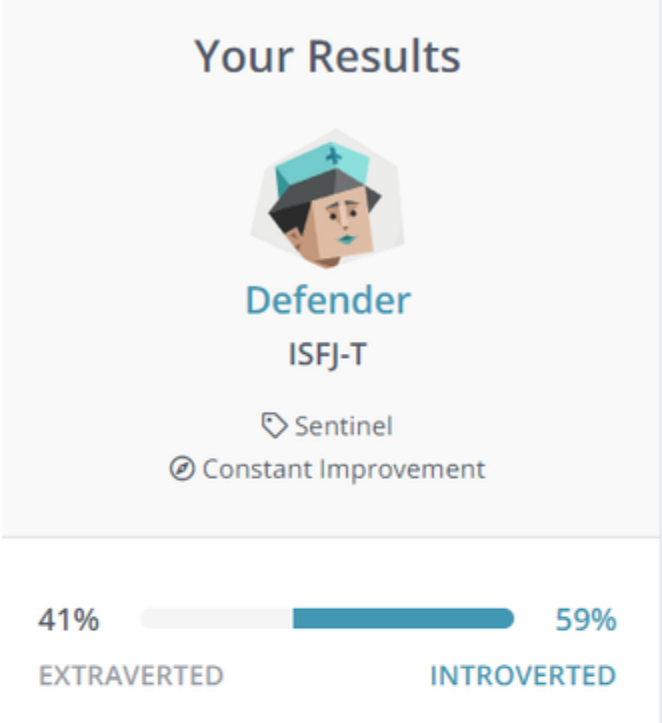
Protagonist Managers

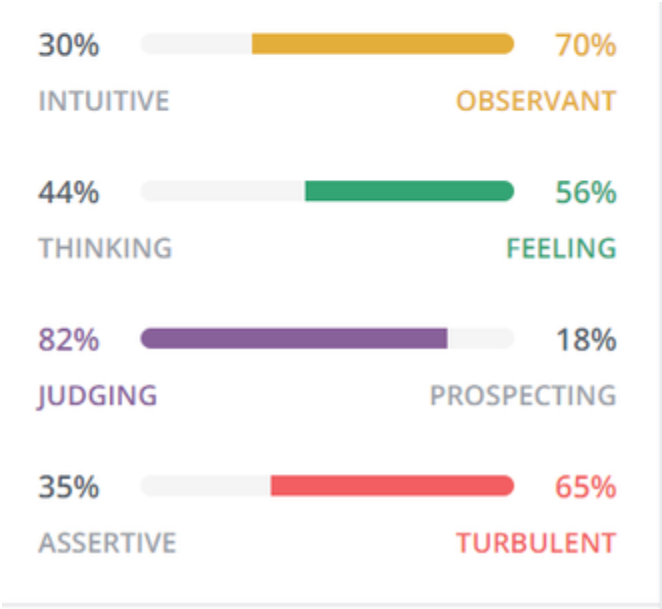
Many Protagonists feel called to roles as managers and leaders. With their charisma, their insight, and their inspiring way of expressing themselves, people with this personality type often shine when given the opportunity to lead a team – and they make sure that their team shines as well.

As managers, Protagonists make the people who work for them feel not just motivated but also inspired.

These types tend to see each member of their team as a person with important gifts and unique potential. As a result, working for a Protagonist can feel meaningful and exhilarating – it's a chance to develop as a person as well as an employee.

That said, Protagonists' idealism may prevent them from recognizing the real limitations of their employees. At times, managers with this personality type may give team members assignments that they simply aren't ready for – an approach that all too often backfires. Fortunately, Protagonists can use their emotional intelligence and personal judgment to find a balance between encouraging their employees to grow and pushing them too far.





Wherever they may be on the career ladder, Defenders share the goal of putting good service and dedication above all else. People with this personality type can always be relied on for their kindness and ability to listen carefully to concerns – and to find ways to resolve them. Win-win situations are Defenders' bread and butter, and no other personality type can quite match the satisfaction that they take in finding practical, clear resolutions to day-to-day challenges.

Defender Subordinates

As employees, Defenders exemplify the strength of humble dedication. Relied on and respected for their patience and commitment, people with this personality type really only need one reward for their work: the satisfaction of knowing that they've helped someone. And if that person expresses a bit of gratitude, so much the better.

Defender (ISFJ) workplace habits

At times, Defenders' radical humility can hold them back. They tend to be unwilling to play up their achievements, often for fear of creating unnecessary friction. Unfortunately, this can make it all too easy for their bosses to overlook them when opportunities for promotion come along.

Defenders' humility is a strength – but people with this personality type may struggle to get new opportunities unless they learn to take at least some credit for all the work that they do.

Defenders' loyalty and dependability often makes them invaluable to their bosses. In general, people with this personality type can be trusted to carry out their tasks precisely and without complaint. But Defenders' aversion to rocking the boat may make it difficult for them to correct or disagree with their bosses or coworkers, even when it's necessary to do so in order to avoid wasted time and energy. Fortunately, with time, many Defenders learn to express their opinions (and corrections) in a gentle, nonjudgmental way.

Defender Colleagues

For Defenders, an ideal work environment is founded on working together with colleagues rather than competing against them, with everyone collaborating toward the shared goal of getting the job done. Close-knit and supportive teams are what Defender personalities enjoy most, allowing them to express their altruistic spirit among people who rely on their dedication and warmth.

Defenders build relationships with their colleagues naturally – a skill that they use to keep things running smoothly, not to ingratiate themselves with others.

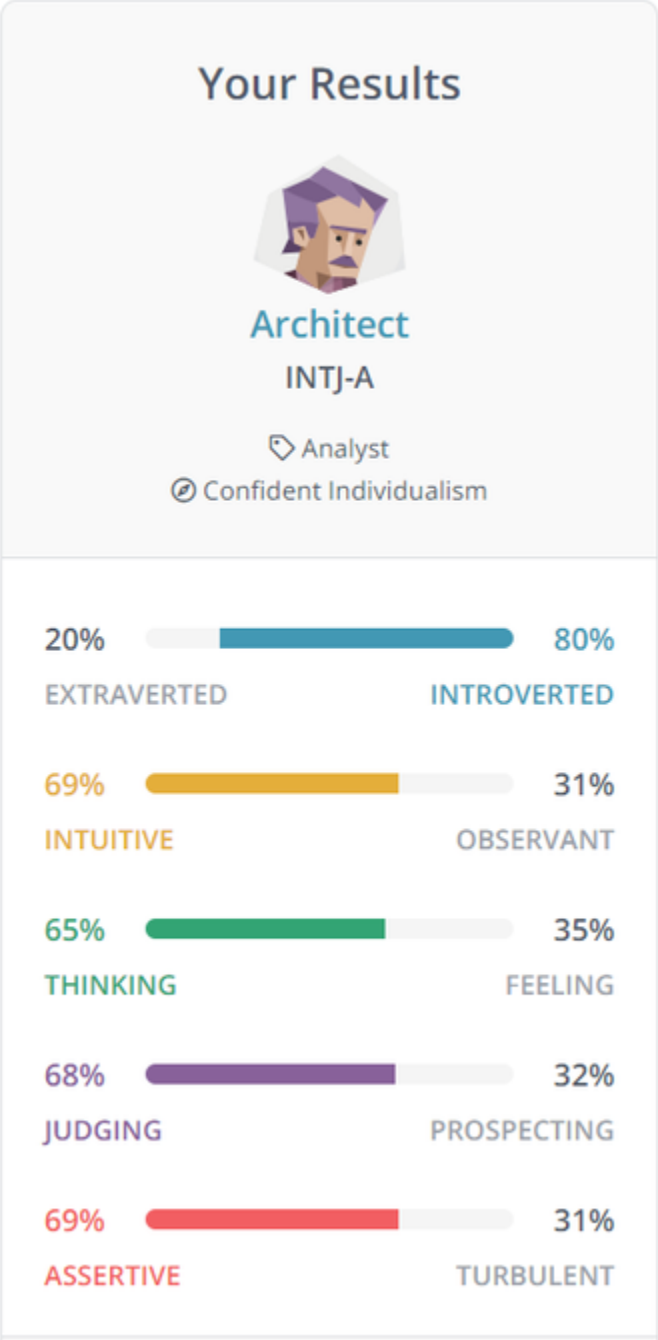
These strengths can become drawbacks, however, as Defenders' aversion to conflict and their desire to help can be abused by less scrupulous colleagues. Instead of only asking for help when they need it, some colleagues may heap extra work on Defenders' desks, knowing that Defender colleagues have a hard time saying no. Unless they learn to set boundaries, Defenders can feel overburdened and stressed – and not a little taken advantage of.

Defender Managers

Defenders don't always raise their hands for leadership opportunities, but their interpersonal skills and work ethic can lend themselves quite well to managing others. As managers, Defenders tend to be warm and approachable, always willing to answer questions and always ready to step up and help. Having no real desire to exercise power over others, Defender personalities prefer to work alongside their subordinates, keeping things running smoothly and minimizing conflict.

Defenders bring a team spirit to their work, and they aim to impart this spirit to the people they manage.

Defender managers care about efficiency and effectiveness, but never at the expense of maintaining a positive relationship with their subordinates. Change can be a challenge for bosses with this personality type – including the none-too-pleasant change of firing someone who isn't working out. At times, Defender managers may sink a bit too much of their energy into an underperforming employee – but they'd much rather make this mistake than the mistake of giving up on someone who just needed another chance.



Wherever they may be on the career ladder, Architects (INTJs) want to pursue their professional goals according to their own standards. And if any personality type has high standards for themselves, it's almost certainly Architects.

In theory, this attitude makes for a model employee and coworker. And in many ways, Architects are exactly that. But people with this personality type may be harsh or dismissive toward coworkers they don't respect – and unfortunately, losing Architects' respect can be all too easy. In particular, Architects may struggle to work with colleagues who prioritize convenience over innovation or socializing over success.

Architect Subordinates

Architects are known for their independence. Their worst nightmare would be a micromanaging boss who monopolizes their time with pointless meetings, insists on useless rules, or appraises employees' performance based on how likable they seem rather than their actual merits.

Architect (INTJ) workplace habits

Even in entry-level jobs, Architect personalities may chafe at anyone who tries to limit their freedom.

Titles mean little to Architects, and they often struggle to defer to a manager they consider less intelligent than themselves. They might also find it difficult to restrain themselves from offering their bosses feedback and criticism – an approach that, depending on the boss, can backfire. In the real world, not all bosses will be as logical or open-minded as Architects might prefer. But that doesn't mean that people with this personality type should allow a less-than-ideal manager to hold them back.

Architects can use their creativity and ingenuity to expand their responsibilities and develop their expertise – even if they don't have the independence that they crave. To do this, they may need to prioritize building a productive and respectful relationship with their manager, no matter how far from perfect that person may be.

Architect Colleagues

Few Architects choose jobs that require constant teamwork or social interaction. To these personalities, most team-building techniques and group meetings are a waste of time. And chitchat, gossip, and office politics – well, those can be nothing short of workplace plagues. Even a brainstorming session, normally a delight for Architects, can become tedious if it just goes in circles without leading to clear action.

Most Architects would rather work alone than be slowed down by a pleasant but unfocused coworker.

Fortunately, their determination and focus often enable Architects to produce effective results, even without the help of others. That's not to say that Architects can't work with others – in fact, they may achieve some of their greatest successes this way. Relentlessly curious and capable, they can make for excellent collaborators. People with this personality type may never enjoy pairing up with just anyone, but if they look more closely, they often find that at least some of their coworkers deserve their respect. And in the company of trusted colleagues, Architects' brainstorming sessions may become even more electric.

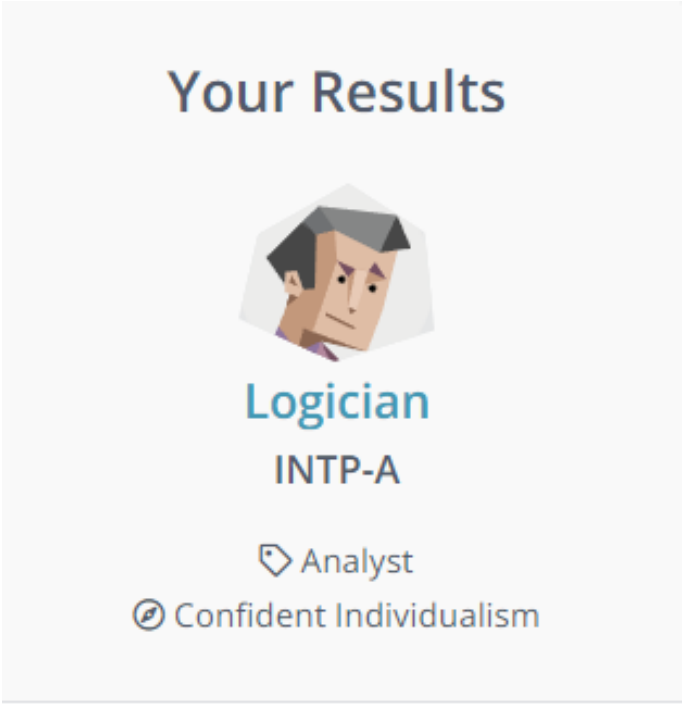
Architect Managers

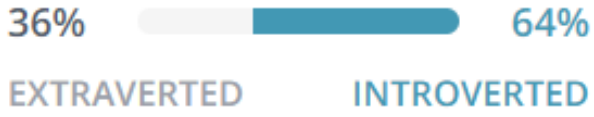
Though they may be surprised to hear it, Architect personalities can make great leaders. In the workplace, they rarely throw around their authority just to prove that they're in charge. Instead, they look for ways to promote innovation and effectiveness – even if that means breaking with established hierarchies.

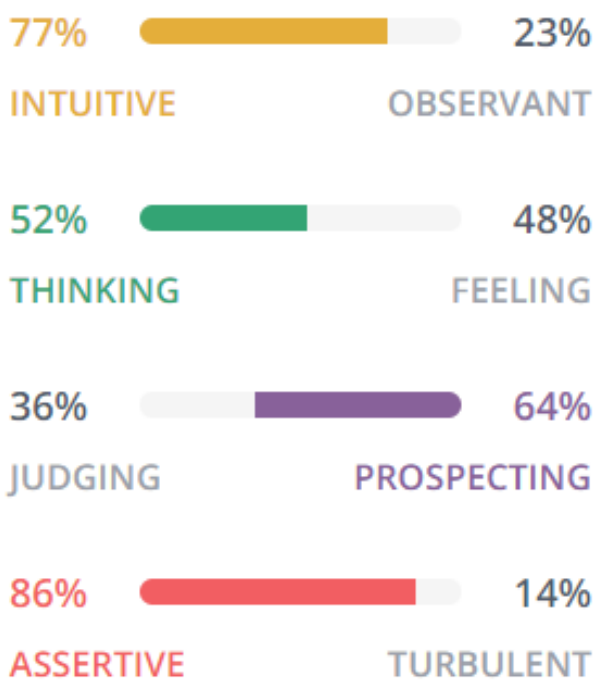
Some managers might enjoy being pandered to, but Architects would rather be successful than constantly validated.

Generally speaking, Architects prefer to treat those who work for them as equals. Rather than micromanaging, these personalities aim to direct broader strategies while letting other people handle day-to-day activities. That's not to say that they're completely hands-off, however. Architect bosses want to know exactly what's going on and when, and they're always ready to drill into any level of detail necessary to find out.

These managers respect and reward proactive behavior, delegating responsibilities to employees with the strongest critical-thinking skills. But this independence isn't just granted – it's required. Employees who struggle to direct themselves – who just want to be told what to do – may have a hard time meeting Architects' standards. And anyone who tries to cover up bad results with flattery or excuses is likely to be disappointed, as those strategies almost never fool Architects.







For Logicians, the ingredients for workplace satisfaction are fairly simple. People with this personality type crave intellectual stimulation, freedom to pursue their ideas, and opportunities to solve challenging puzzles. And if they can fulfill these needs with minimal social obligations and humdrum administrative tasks, so much the better.

Though some Logicians may scoff at the notion, they often do their best work in collaboration with other people. These personalities tend to live in their heads, coming up with thoughts and insights faster than they know what to do with them. Logicians may sometimes feel irritated when managers or coworkers force them to slow down and figure out how to implement their ideas – but in the long term, such colleagues can be the secret to Logicians' success.

Logician (INTP) workplace habits

Logician Subordinates

Under the right conditions, Logician employees are innovative and resourceful, easily wrapping their minds around whatever complex problems are placed in front of them. But in work environments that limit their independence or force them to do "grunt work," these personalities may lose motivation quickly.

This can create an unfortunate catch-22. Logicians are often tempted to put off tasks that seem boring or beneath them, but until they "pay their dues" by doing these tasks, their bosses probably won't grant them the freedom and latitude that they crave. Although Logicians might wish that they could just skip ahead to the interesting stuff, they need to prove themselves to their managers first.

There's good news, though: Logicians' time at the bottom of the job ladder can actually help them build new skills and habits that will help them succeed later on. People with this personality type have many strengths, but completing projects doesn't tend to be one of them. Logicians can chafe at the oversight and limitations that they encounter early in their careers – or they can use the additional accountability and structure to their advantage, learning to become more effective at turning their ideas into reality.

Logician Colleagues

At times, Logicians may see their colleagues not as a group of people to socialize and work with but rather as a series of potential distractions who sometimes provide useful knowledge. This isn't to say that people with this personality type never enjoy their coworkers' company, but the prospect of watercooler chitchat isn't going to get Logicians out of bed in the morning.

That said, most Logicians can benefit from their colleagues more than they might realize. By surrounding themselves with people who challenge them, these personalities can make sure that they're actually doing their best work. And although Logicians aren't exactly social butterflies, they often find that the workday goes by a little faster when they have a chance to bounce their ideas off of coworkers they respect.

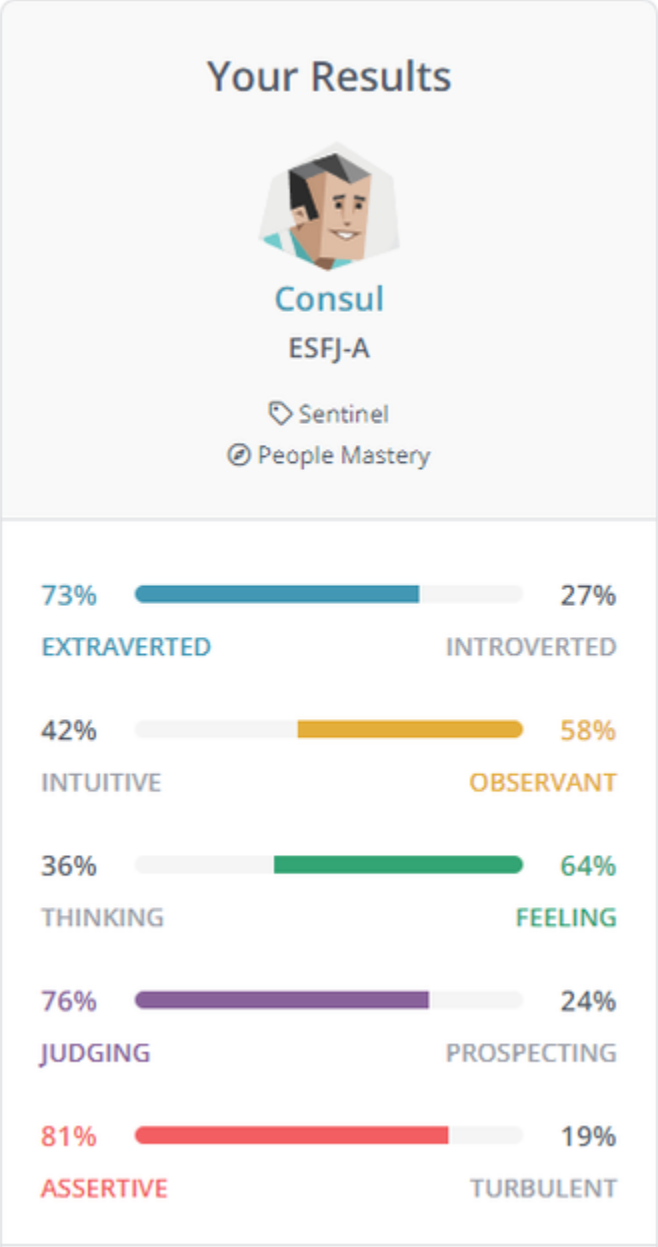
Although people with this personality type might say they love to focus, they secretly crave variety too. Logicians who build positive relationships are more likely to get asked to contribute their ideas and expertise to new projects. If they want to stay on the cutting edge of the most interesting new things happening at their workplace, Logicians would do well to establish themselves as helpful collaborators, not lone wolves.

Logician Managers

Logicians generally don't care about having power over others, but they often enjoy management positions. When they're in charge, people with this personality type can delegate the administrative tasks that make their eyes glaze over and focus on the good stuff: coming up with new ideas.

As managers, Logicians tend to be tolerant and flexible. They're open to suggestions (as long as those suggestions are logical, of course), and they allow their employees a fair amount of freedom. But this freedom comes at a cost – Logician managers have high standards, and they expect others to grasp their insights instantly and provide their own in equal measure.

Bosses with this personality type can have a reputation for being exacting. They quickly pick up on discrepancies in their employees' work, and they may not hold back when it comes to doling out negative feedback. As they gain experience, Logician managers often discover that balancing criticism with praise and encouragement allows their team to enjoy higher morale – and, just as importantly, better results.



When it comes to the workplace, Consuls have clear tendencies that show through regardless of their position. People with the Consul personality type thrive on social order and harmony, and use their warmth and social intelligence to make sure that each person knows their responsibilities and is able to get done what needs to get done. Consuls are comfortable, even dependent on clear hierarchies and roles, and whether subordinates, colleagues or managers, Consul personalities expect authority to be respected and backed up by rules and standards.

Consul Subordinates

With clearly defined responsibilities and a sense of purpose, Consuls are patient, efficient, hard-working people who respect the authority of their managers. While Consuls may struggle with too much freedom and improvisation, they thrive in workplaces with structure, safety and guidelines. Routine tasks are not a problem for Consuls, and their dedication and loyalty earn them the respect of their managers.

Consul Colleagues

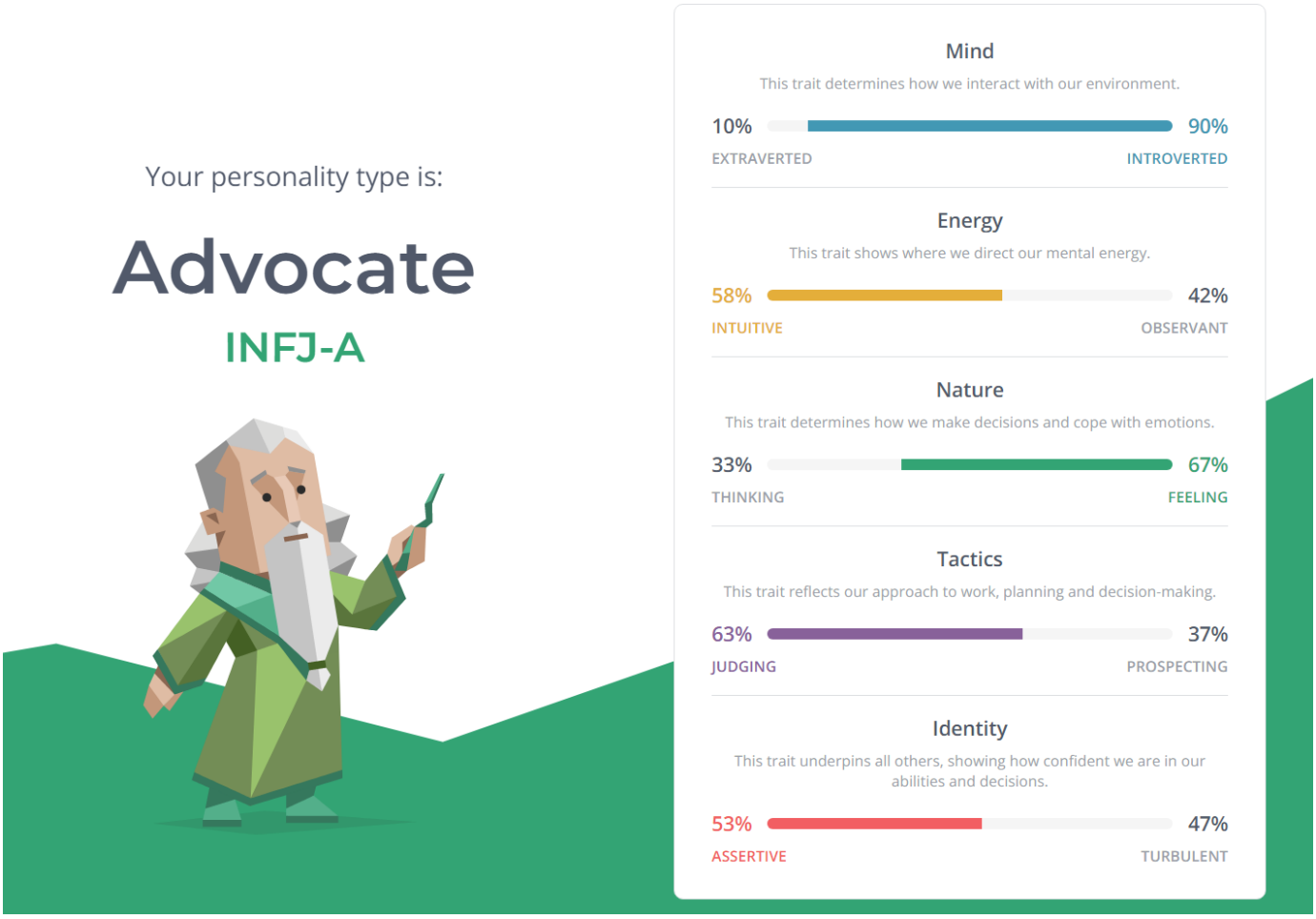
Teamwork is a concept that Consuls have no trouble putting into practice. Often seeking friends at work, people with this personality type are almost always willing to lend a hand when and where it's needed. Excellent networkers, Consuls always seem to "know just the guy" to bring a project together on time. On the other hand, Consuls often need to work on a team – being stuck alone chipping away at paperwork for days on end just leaves them tired and unfulfilled.

Consuls take pride in these qualities, which has the side effect of making them particularly sensitive when they come under criticism. When their suggestions and help are turned down, Consul personalities can take it personally. Already somewhat vulnerable to stress, rejections like these can be pretty demoralizing, and Consuls may need their coworkers to make an effort to express their appreciation from time to time.

Consul Managers

Consuls enjoy the responsibility that comes with organizing social situations, and the enjoyment they feel in managing other people translates well into management positions. As team leaders, Consuls find ways to make everyone feel involved, uniting people and smoothing relations in order to get things done.

At the same time, Consuls have a strong respect for traditional power structures, and if after all their efforts convincing their subordinates to work together someone ends up challenging their authority, they can stress out, lose their temper, and just generally react badly. People with the Consul personality type are sensitive about their status and dislike conflict, and prefer situations where everyone knows their role. So long as expectations are clearly outlined, Consuls are effective and enjoyable managers.



Advocates (INFJs) have some specific needs when it comes to a satisfying work environment. For people with this personality type, the most rewarding work allows them to help others while also growing as a person. And it's a given that an ideal career for Advocates must be in line with their individual values.

Anything that gets in the way of these values – from red tape and meaningless rules to office politics and unscrupulous coworkers – can seriously sap Advocates' motivation. This is a personality type that thrives in environments that promote fairness and equality. Most Advocates prefer not to think of themselves as above or below anyone else – no matter where they are on the job ladder.

Advocate (INFJ) workplace habits

Advocate Subordinates

Advocates value cooperation, sensitivity, and independence. As employees, they gravitate toward managers who are open-minded and willing to consider their input. Advocate personalities may become frustrated when they feel unheard, so having a manager who listens to them can make all the difference.

Ideally, Advocates will find a manager whose values align with their own and who offers them encouragement and praise.

Because Advocates tend to act on their convictions and aim to do their best, their morale can be vulnerable to criticism, particularly if it's unwarranted. Other morale killers for these personalities may include strict rules, formal structures, and routine tasks. They may find it especially dispiriting when they're asked to redo their work, particularly if it's for a reason that just doesn't seem valid to them.

Of course, a perfect work environment isn't always possible. Advocate employees with less-than-ideal managers may need to draw on their inner resilience and seek out other mentors. The good news is that people with this personality type are more than capable of handling workplace challenges, including the challenge of having a difficult manager.

Advocate Colleagues

As colleagues, Advocates can be quite popular and well respected. People with this personality type are often seen as helpful, eloquent, and capable coworkers. Among their greatest strengths is their ability to identify others' motives and understand the root causes of conflict before anyone else even senses a disturbance.

At times, efficiency may be less of a priority for Advocates than collaborating with and helping colleagues who need a boost. While this is usually a strength, there is a risk that others will take advantage of Advocates' desire to help. They may find themselves picking up the slack for their less dedicated coworkers at the expense of their own energy and well-being.

Advocates' determination to be helpful can leave them feeling taken advantage of.

Although they tend to be well liked among their colleagues, Advocates are still Introverts. From time to time, they may need to step back and work alone, pursuing their own goals in their own ways. This isn't a sign of resentment or ill will – but rather a signal of Advocates' need to balance serving others with their own self-care.

Advocate Managers

As managers, Advocates may dislike wielding their power. They prefer to think of everyone as equals, no matter what a person's business card might say. Rather than micromanage their subordinates, Advocates often prefer to empower them to think and act independently. They work hard to encourage others and promote an atmosphere of mutual respect.

Compassionate and fair, Advocate managers often take pride in identifying their subordinates' unique strengths.

That's not to say that Advocates have low standards – far from it. Their sense of equality means that they expect their subordinates to live up to the standards that they set for themselves. Bosses with this personality type want their employees to be rigorous, motivated, reliable, and unfailingly honest, and they will notice if anyone misses the mark.

Advocate managers can be particularly stern if they catch someone behaving in a way that they consider unethical. These personalities have little tolerance for lapses in reliability or morality. When their employees' good intentions match their own, however, Advocate bosses work tirelessly to ensure that their entire team feels valued, fulfilled, and successful.

Project Overview

Project Summary

We are a team of 6 experienced developers that have worked together for multiple years. Each member is specialized within the major aspects of game design and have professional experience using those skills for clients (art, programming, sound, etc.). As a result of our experience together, we have also developed workflows and processes that have been refined through multiple long-term projects. These processes will allow us to overcome challenges and reduce risk. Therefore, Team Quiropraxis can deliver a high-quality product that is pleasing in all regards.

"You play as a pair of characters with experimental powers. One character manipulates and mix electricity to solve puzzles. The other carries the other character in their battery while evading and distracting security long enough to solve the puzzles and escape."

Our project aims to create an engaging experience that interests peers in the industry and allows members to develop their core skills for future careers within the 2023 academic year. This is done by exploiting opportunities for puzzle design, character mechanics, narrative wrapper, artistic designs and industry advice on our designs and processes.

When it comes to what our team can complete within scope of the allocated time for the project, the major limiting factor is the content we look to create for the game. All of what can be found in this document is what we believe we can create within the year we have to develop the project.

Project Design Outcomes

No.	Objectives	Design Outcomes	Measurement Criteria
1	• Properly scope the project	• All the planned project features are achieved upon completion • Reserved time for polishing towards the end	• The Gantt Chart and schedules remain on track, and deliverables are consistently met within expectations
2	• Release the game on platforms such as Steam	• The game is published on Steam under the ownership of the entire team • Time reserved for marketing / Begin gaining publicity upon complete a vertical slice	• We pass all the Steam publisher guidelines and become greenlit for publishing

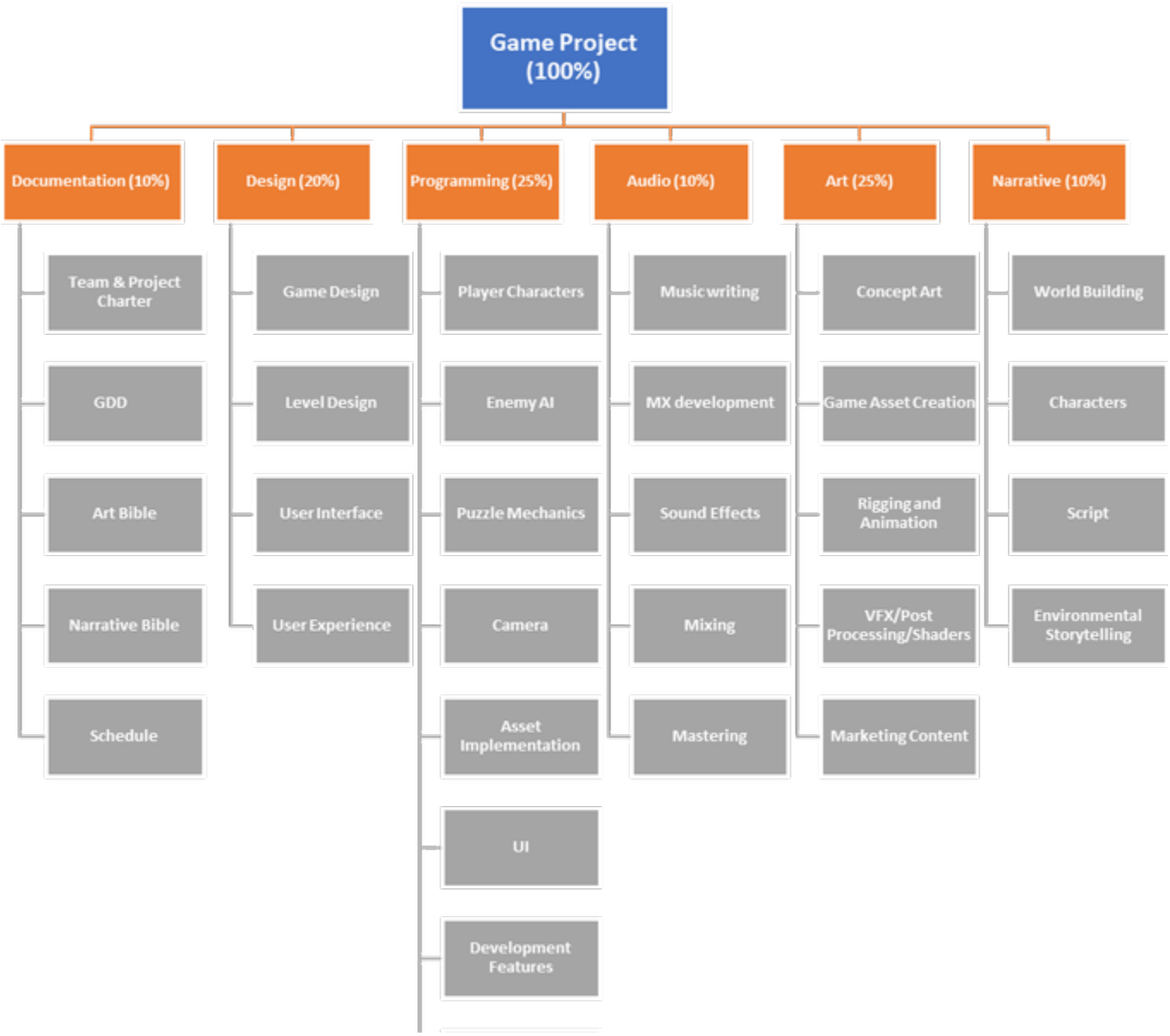
3	• Full team commitment and involvement throughout the project	• Every one of the team has constructively added to the project with their efforts and can proudly state their accomplishments afterwards	• All team members are required to report their progress during team meetings and to present their completed tasks to the team as confirmation
4	• Deliver a high-quality product with effective design	• Unique narrative • Well-balanced puzzle design • Pleasing visuals • Bug free	• Final playtests reveal little flaws • Playtest surveys reveal (via quantitative & qualitative measurements) the game to have a memorable narrative, engaging beat-to-beat gameplay, and clearly understood puzzles

Project Scope

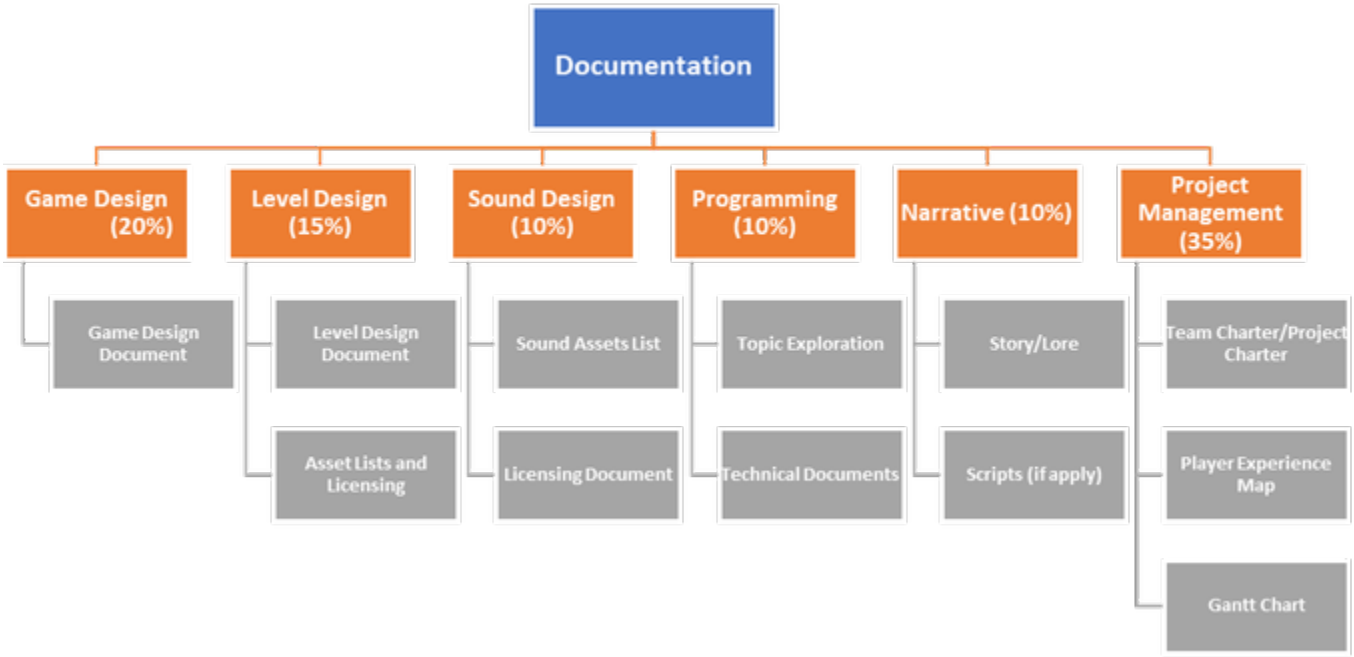
Product Description

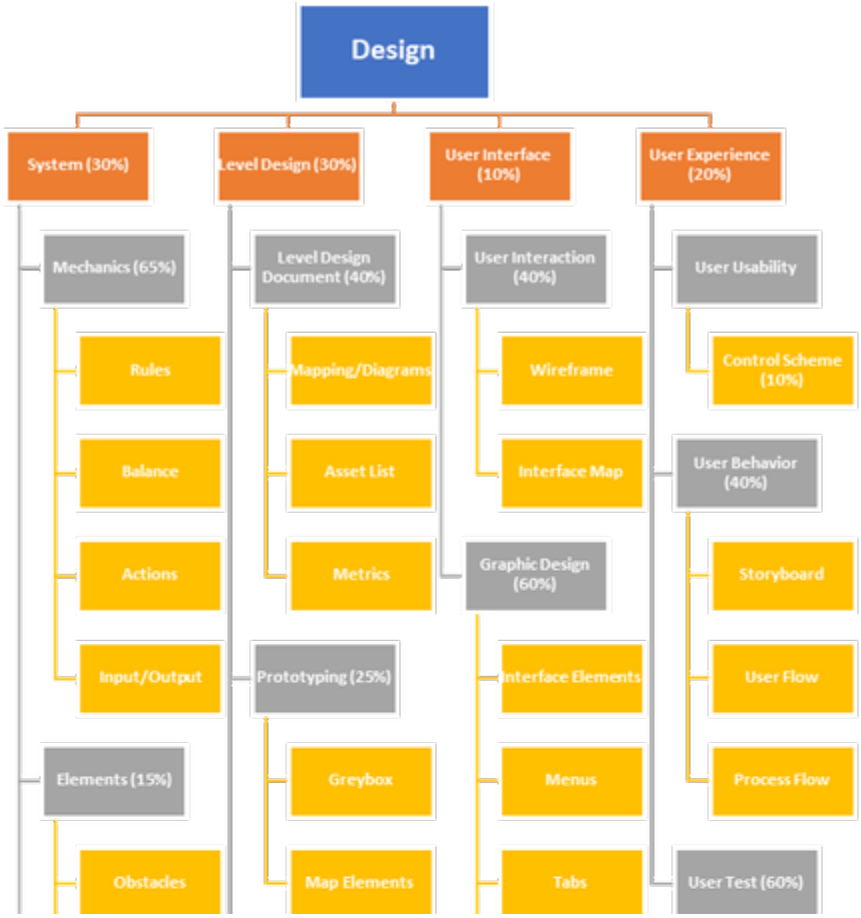
Electric Potential is a third person single player puzzle-based game with electricity as the main thematic where you play as a pair of characters with experimental powers that must rely on each other to succeed. One character manipulates and mix electricity to create unique powers to solve puzzles whereas the other carries them in their battery where the former cannot go. The goal is to escape the derelict facility.

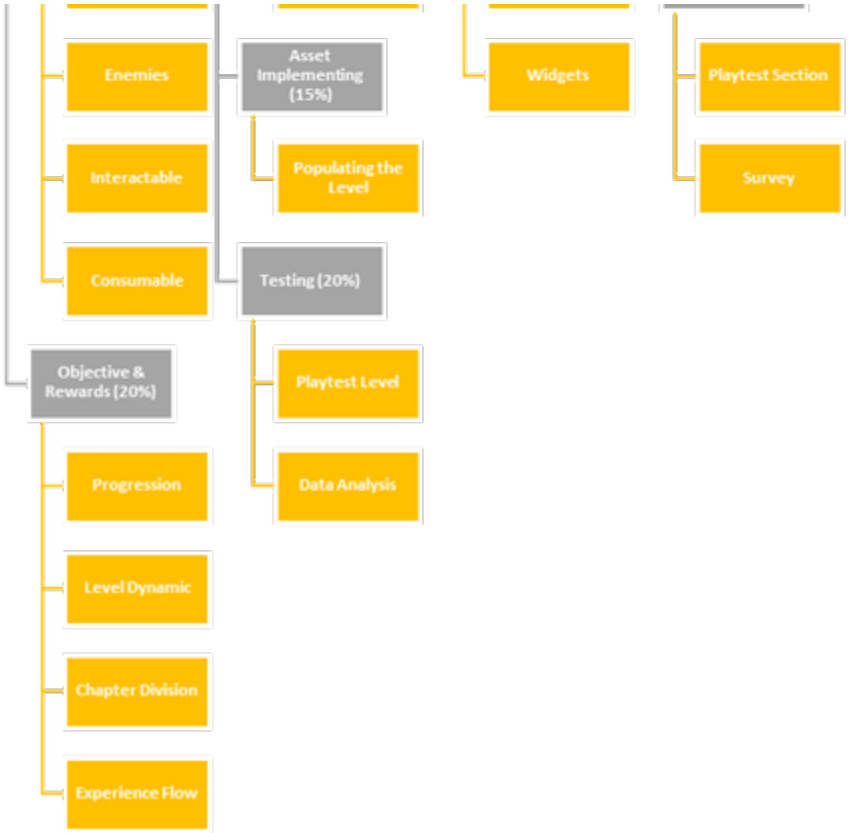
Product Breakdown Structure

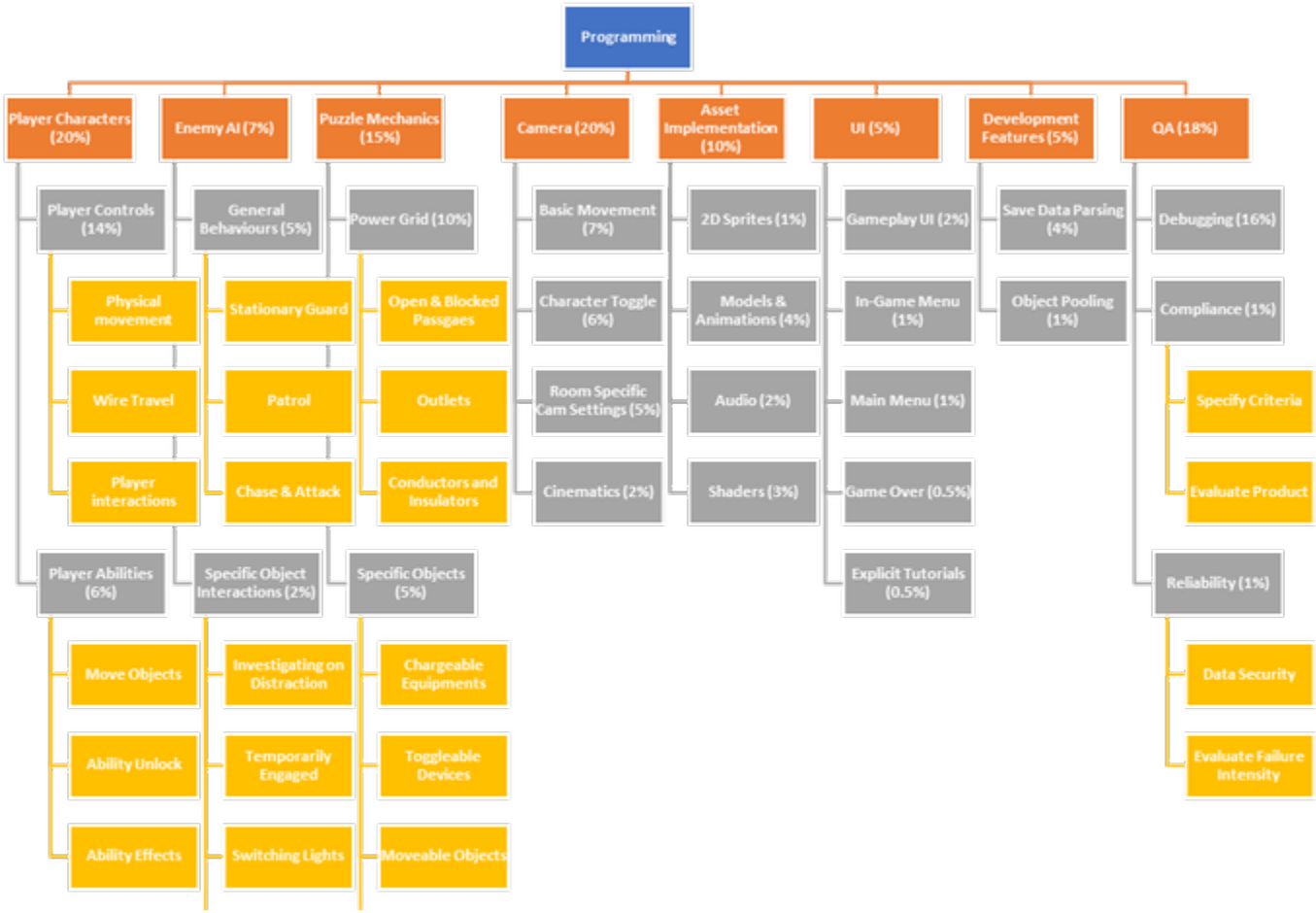


Work Breakdown Structure

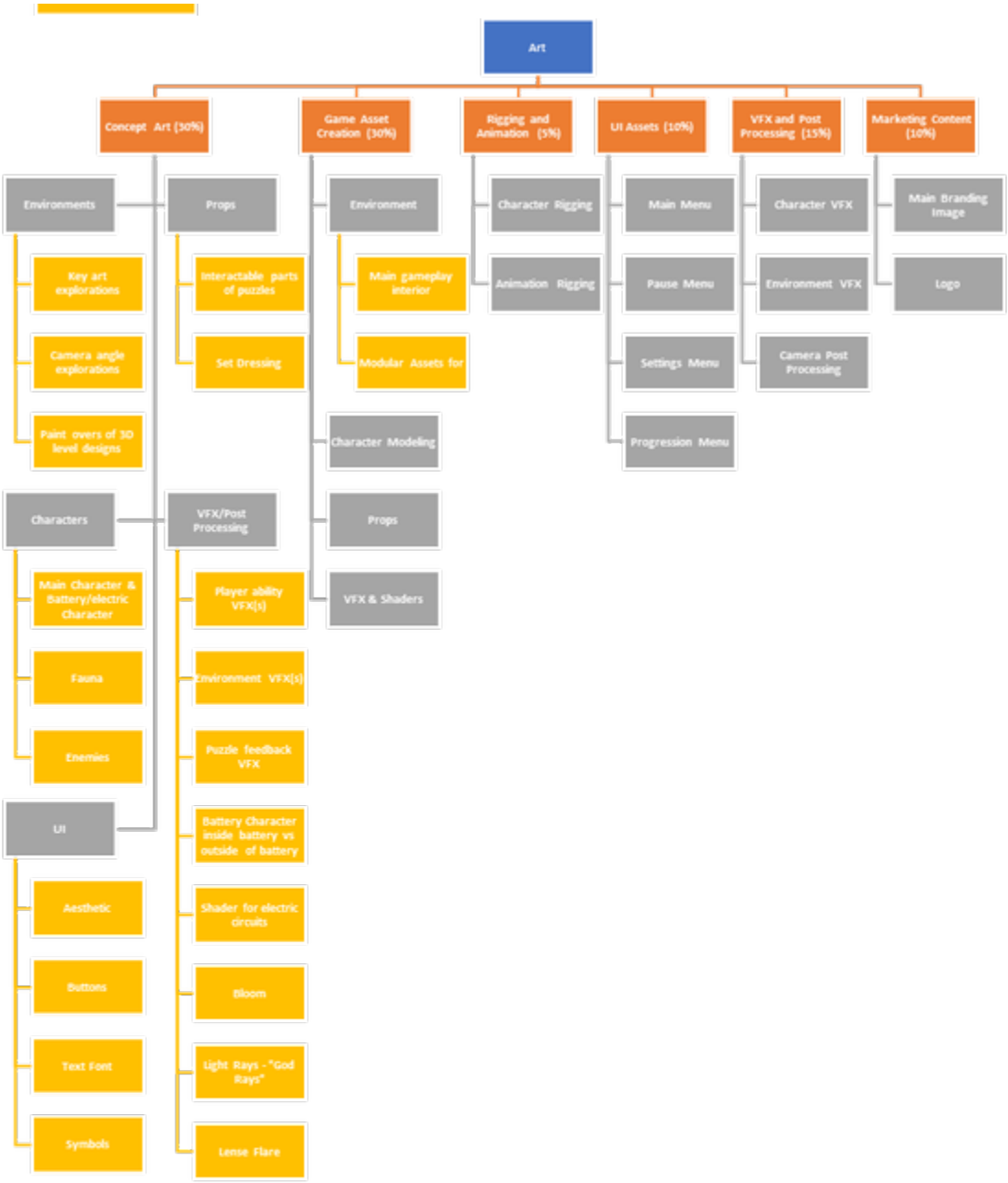




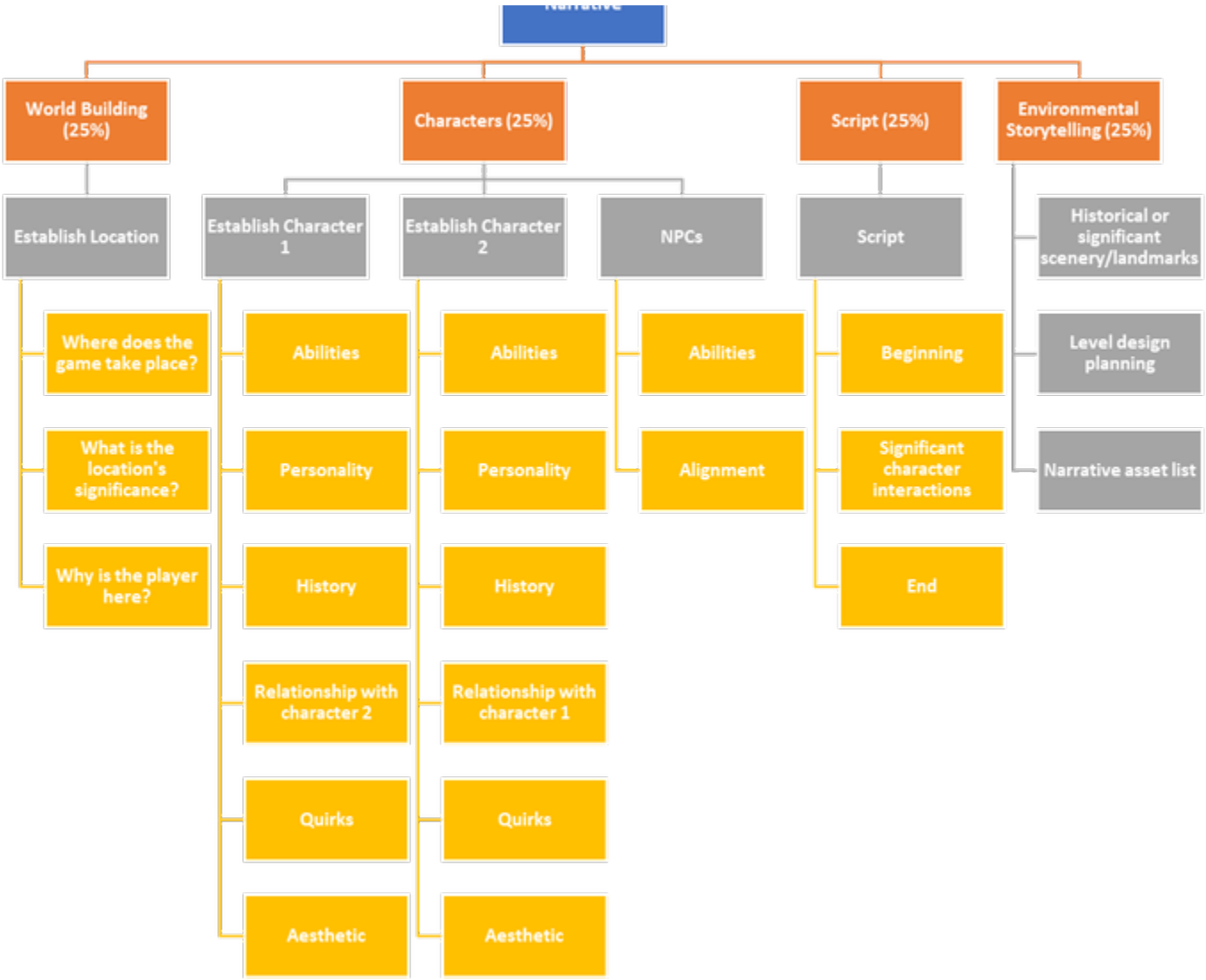

Enemies
Interactable
Consumable
Asset Implementing (15%)
Populating the Level
Testing (20%)
Playtest Level
Data Analysis
Objective & Rewards (20%)
Progression
Level Dynamic
Chapter Division
Experience Flow
Widgets
Playtest Section
Survey


Programming
Player Characters (20%)
Enemy AI (7%)
Puzzle Mechanics (15%)
Camera (20%)
Asset Implementation (10%)
UI (5%)
Development Features (5%)
QA (18%)
Player Controls (14%)
General Behaviours (5%)
Power Grid (10%)
Basic Movement (7%)
2D Sprites (1%)
Gameplay UI (2%)
Save Data Parsing (4%)
Debugging (16%)
Physical movement
Stationary Guard
Open & Blocked Passgaes
Character Toggle (6%)
Models & Animations (4%)
In-Game Menu (1%)
Object Pooling (1%)
Compliance (1%)
Wire Travel
Patrol
Outlets
Room Specific Cam Settings (5%)
Audio (2%)
Main Menu (1%)
Specify Criteria
Player interactions
Chase & Attack
Conductors and Insulators
Cinematics (2%)
Shaders (3%)
Game Over (0.5%)
Evaluate Product
Player Abilities (6%)
Specific Object Interactions (2%)
Specific Objects (5%)
Explicit Tutorials (0.5%)
Reliability (1%)
Move Objects
Investigating on Distraction
Chargeable Equipments
Data Security
Ability Unlock
Temporarily Engaged
Toggleable Devices
Evaluate Failure Intensity
Ability Effects
Switching Lights
Moveable Objects

Damage by specific objects
Objects with Unique Functionalities
Audio
Music writing (50%)
MX development (30%)
Mixing (5%)
Mastering (5%)
Sound Effects (10%)
Research (5%)
Reference
Themes
Genre
Style
Roles and Functions(2.5%)
Asset List (7.5%)
Sound Palet Expansion (5%)
Composition (30%)
Main Theme
Experimental/Interative Tracks
Global Tracks
Sound Design (2%)
Atmosphere
Sonic textures
Synthetization (1%)
Sound development (7%)
SFX
FOL
BG
Music Loops (18%)
Waveform Shapes and Direction
Transient and Legato Elements
Crossfading
Tempo
Meter
Performance
Horizontal Resequence (5%)
Vertical Layering (5%)
Tone Colour (2%)
Equalization (1%)
Volume (0.5%)
Panning (0.5%)
Imaging (0.5%)
Dynamics (0.5%)
Effects (1%)
Layering Plan (1%)
Compression (0.8%)
Equalization (0.8%)
Surround Sound (0.4%)
Engine Implementation (0.5%)
Ambient and Procedural Sound Design (2%)
Audio Engine Priority (0.5%)


Art
Concept Art (30%)
Game Asset Creation (30%)
Rigging and Animation (5%)
UI Assets (10%)
VFX and Post Processing (15%)
Marketing Content (10%)
Environments
Key art explorations
Camera angle explorations
Paint overs of 3D level designs
Characters
Main Character & Battery/electric Character
Fauna
Enemies
UI
Aesthetic
Buttons
Text Font
Symbols
Props
Interactable parts of puzzles
Set Dressing
VFX/Post Processing
Player ability VFX(s)
Environment VFX(s)
Puzzle feedback VFX
Battery Character inside battery vs outside of battery
Shader for electric circuits
Bloom
Light Rays - "God Rays"
Lense Flare
Environment
Main gameplay interior
Modular Assets for
Character Modeling
Props
VFX & Shaders
Character Rigging
Animation Rigging
Main Menu
Pause Menu
Settings Menu
Progression Menu
Character VFX
Environment VFX
Camera Post Processing
Main Branding Image
Logo

Narrative



Boundaries

	Activities in Scope	Activities Out of Scope
1	**Core mechanic: player swaps between two characters**	Two player co-operative play (networked/local)
2	**Creating a single large level where the player has multiple branching paths**	Creating enough paths and options to fill a multiple hour-long play session
3	**A few options for players abilities/playstyle**	A grand tree of different unlockable abilities for the players character
4	**AI enemies that the player can hide from**	A wide variation of enemy types

1. The player can swap between two different characters with different mechanics to solve puzzles throughout the game. Both characters move together with one being the main transporter until the second character is dropped off inside a power grid, where they can move through the wiring. The player can swap between the two different perspectives of the characters at will. The idea of two player cooperative play came up during brainstorming discussions, but we believe this is out of scope because of the time that would be required to do the networking. Local multiplayer could be another option, but we believe that we should concentrate our efforts on the original single player experience to remain with the scope of the project and deadlines.

2. The entirety of the game takes place within a single grand level that opens more and more as the player solves different puzzles. The player can see the end goal from the beginning and can experience a feeling of satisfaction and pride when they look back at what they accomplished from the end of the game. However, the number of paths and options will need to be limited for us to be able to create a complete experience within the given deadlines. Because of this the gameplay sessions will not reach more than 2 hours.
3. The player will progressively unlock a few new abilities as they complete certain sections of the map – These abilities could be combined to create different outputs, which will enable the player to access new areas & solve previously unsolvable puzzles. This system of ability unlock will be kept simplistic and easily understandable, however - A complex, branching skill tree will not be included.
4. A stealth element will be included within the gameplay and blend itself into our puzzle design. AI enemies will have basic, easily understandable behaviours (including patrolling, stationary guarding, investigating on distractions). Varying enemy types and abilities will not be our focus, as the inclusion of enemies is meant to enhance our puzzles, not combat.

Milestones

	Project Milestone	Description	Expected Date
1	**Team Charter**	This document will establish our team roles, responsibilities, governance, risks, goals and, project	15 Sep 2022
2	**Research Report**	Involves conducting research on the target market and project unknowns. At the end of this milestone, the team will have a thorough analysis of the target market and all known unknowns will be addressed or resolved. Involves exploring a variety of possible designs based on the core game idea. This is done through building rapid prototypes focusing on core features and mechanics. At the end of this milestone, the team will have a clear common vision of the final product.	29 Sep 2022
3	**Proof of Concept**	Involves developing a schedule for the completion of tasks and features throughout production. At the end of this milestone, the team will have a clear image of how much work needs to be done and when each feature will be complete.	20 Oct 2022
4	**Team Defined**	Begin development on the game's character, camera, and controller. At the end of this milestone, the player controller will be functional and integrated into the game.	TBD
5	**Project Plan**	Begin development on the core puzzle mechanics, with a first draft of the puzzles that will be in the game. At the end of this milestone, the game's starting puzzles will be functional and integrated into the game.	10 Nov 2022
6	**GDD**	Involves tweaking camera works, implementing basic shaders, polishing character models & animations, and implementing important sound effects. At the end of this milestone, the core gameplay experience will be polished.	24 Nov 2022
7	**Minimum viable product**	An executable build of the game including all core features and mechanics. The state of the build should be as close to the final product as possible.	01 Dec 2022

Deliverables

Project Deliverable 1: Team Charter	
Stakeholder:	Zain Dinath
Description:	A document detailing the team's work process, conflict resolution, and contingency plans. Used as a reference by advisors and stakeholders.
Acceptance Criteria:	• First pass of team charter complete. • Includes roles and responsibilities of team members. • Includes the team's decision-making process in detail. • Includes the team's conflict resolution plan in detail. • Includes actionable risk contingency plans.
Due Date:	15 Sep 2022

Project Deliverable 2: Research Report	
Stakeholder:	Zain Dinath
Description:	A document detailing initial research conducted about the game's design.
Acceptance Criteria:	• Answers any unknowns about the project or the design.

	• Includes a detailed breakdown of the methodology used to conduct the research. • Includes a detailed breakdown of the results obtained and their relevance to the project. • Includes a detailed discussion of recommended changes to the project based on the results obtained.
Due Date:	29 Sep 2022

Project Deliverable 3: Proof of Concept	
Stakeholder:	Zain Dinath
Description:	A functional and playable build used to determine whether the game idea and be made into a reality.
Acceptance Criteria:	• Demonstrates the game's core mechanic and hook. • Answers whether the game idea is feasible with the team and time frame. • Includes an executable build.
Due Date:	20 Oct 2022

Project Deliverable 4: Alfa Version	
Stakeholder:	Zain Dinath
Description:	Begin development on the game's mechanics, character, camera, and controller. At the end of this milestone, the player controller will be functional and integrated into the game
Acceptance Criteria:	• Solidified game mechanics • Camera working properly • Switching between characters working properly • Controls working properly • Essential elements added to the development playground
Due Date:	TBD

Project Deliverable 5: Project Plan	
Stakeholder:	Zain Dinath
Description:	A document that details the goals, tasks, and resources needed to complete the project.
Acceptance Criteria:	• Identifies the purpose and scope of the project. • Identifies project constraints. • Includes a minimum of two personas representing different user types that might play our game. • Includes a WBS detailing a breakdown of the work required to complete the project. • Includes a PBS detailing a breakdown of the features and components of the project. • Includes a schedule that details when work is expected to be complete.
Due Date:	10 Nov 2022

Project Deliverable 6: Game Design Document	
Stakeholder:	Zain Dinath
Description:	A first-pass document detailing all features of the final product.
Acceptance Criteria:	• Includes a detailed breakdown of the game's systems and mechanics. • Includes a detailed breakdown of the game's scope and proposed assets. • Includes a detailed breakdown of the game's player experience and intended audience. • Includes a detailed breakdown of each puzzle and level that will be in the game. • Includes a detailed breakdown of the game's art, narrative, and sound direction. • Includes a detailed breakdown of the game's technical tools and constraints.
Due Date:	24 Nov 2022

Project Deliverable 7: MVP	
Stakeholder:	Zain Dinath
Description:	Present a minimal version of the game that demonstrates the potential of the project

Acceptance Criteria:	• Hands-on demonstration of the idealized • Version of the final game • Functional gameplay • Minimum progression • Clear demonstration of all functions and elements • Presentation of aesthetics
Due Date:	01 Dec 2022

Dependencies

Dependency Description	Critical Date	Contact
No dependencies for this project		

Project Risks and Constraints

Risks

	Risk Description	Probability (H/M/L)	Impact (H/M/L)	Risk Management Plan	Member Responsible for Resolution
1	**A core member of the team is unable to continue participating.**			If our core programmer is unable to continue, we will reassess the technical scope of our game and redesign content to fit the capabilities of the remaining programmers which will include, Kevin, Tiago, Farryl and Wilson. If our core sound designer is unable to continue, we will seek open-source sound libraries for us to implement and focus on visual signifiers instead. If our core artist is unable to continue, we will reassess our art asset list and focus on core assets required for the player to have the intended user experience. We will also re-assign artistic tasks to Farryl and Joshua.	• **Joshua** • **Tiago**
2	**Our target audience is not interested in our game.**			We will use data, research, and competitor analysis of our target audience to discover their preferences which we can exploit earlier in the project. Every week we will refer to our design pillars and target audience and ask, will they be interested? Rework the gameplay loop & rebalance the progression and difficulty	• **Wilson** • **Tiago**
3	**We are stuck on a feature's implementation resulting in missing deadlines.**			When tasks are assigned, we will give story point estimates to assess difficulty of tasks. We will have at least 2 meetings per week where we will assess progress of tasks and address challenges. Hard blocks in tasks will result in the team reconsidering its necessity by referencing our hook, anchors, core user and emotional experience and design pillars.	• **Tiago** • **Joshua**
4	**Puzzles are not beatable because of poor design like forgetting key game mechanics needed for progression.**			We will have a spreadsheet that lists out each level and includes puzzles and what is required to progress. Before each build, we will check if each level that exists has everything in the spreadsheet. If players get stuck, we will also include timed hints to ensure players can proceed.	• **Joshua** • **Farryl** • **Tiago**
5	**Optimization issues arise, causing our game's performance to fall.**			Analyze & identify causes of performance issues via profiler. Implement coding algorithms to drastically improve performance (e.g., object pooling, binary trees). Experiment with other asset importation algorithms & adjust assets where applicable	• **Hubery** • **Kevin** • **Farryl**

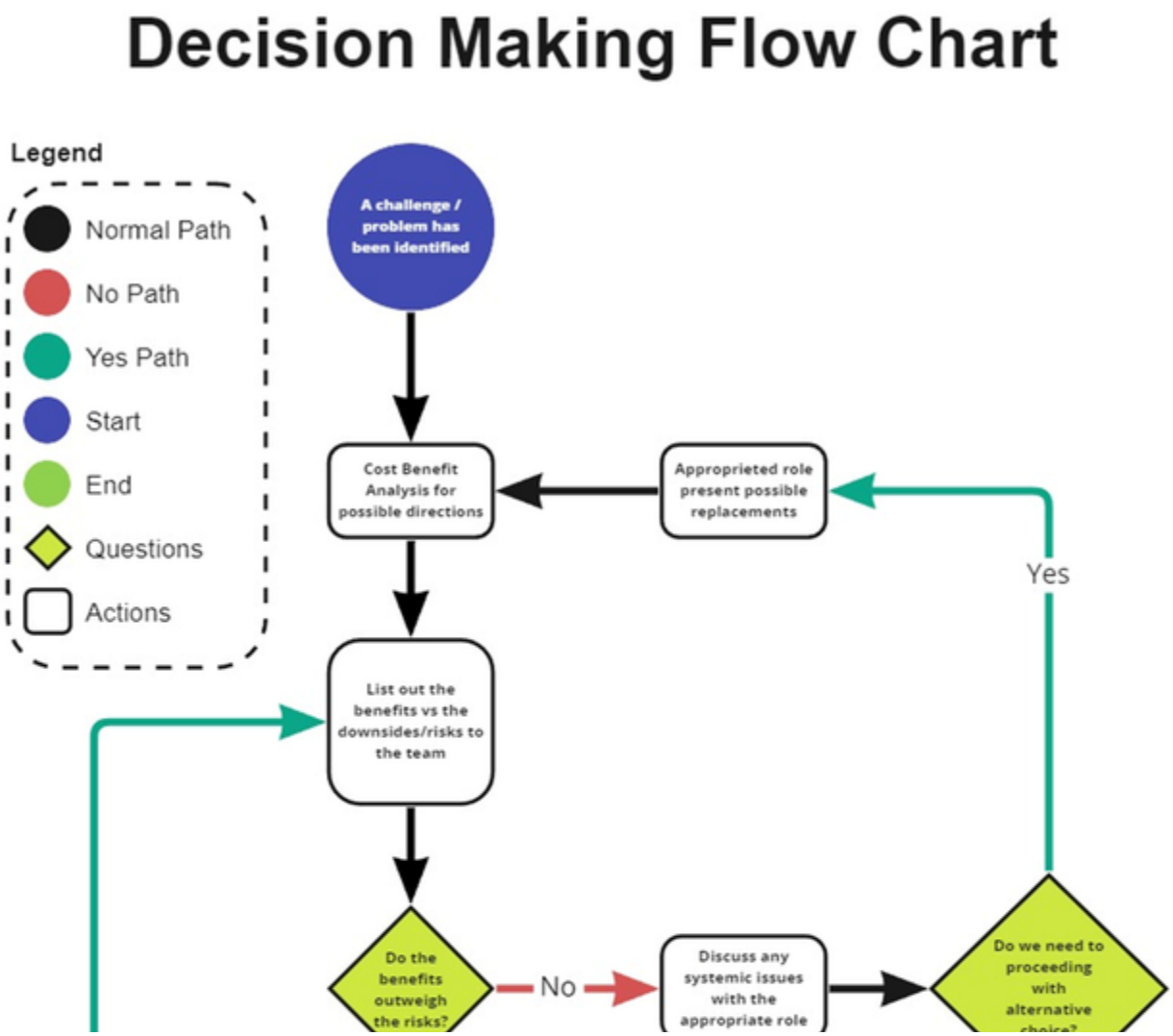
Constraints

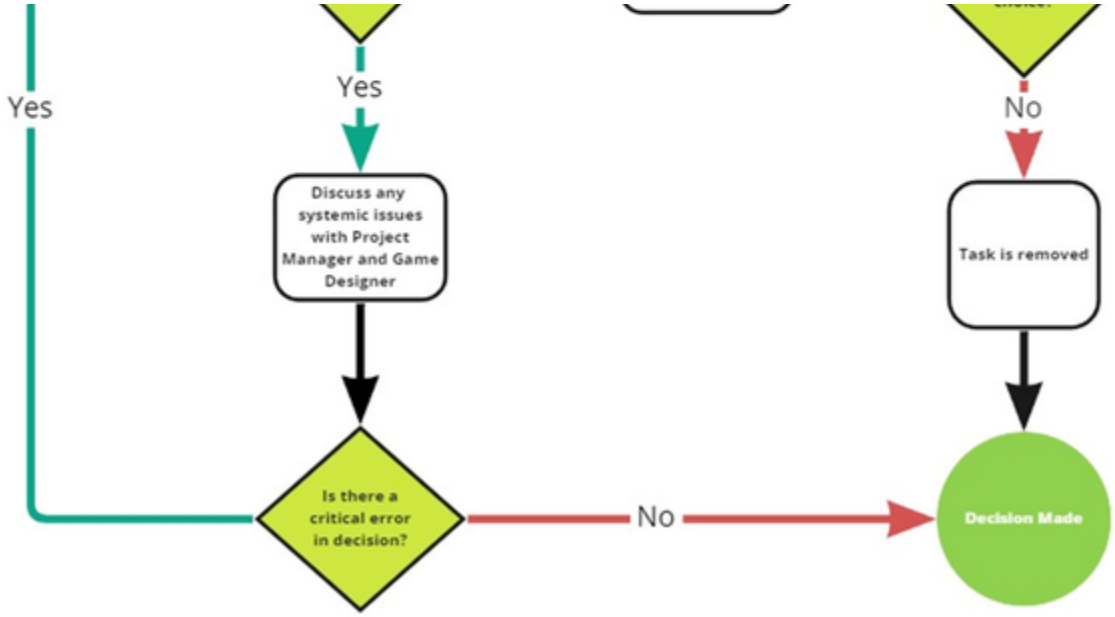
	Category	Constraints
1	**Time**	Milestones, weekly tasks to complete for advisor review, final deadline for release
2	**Resource**	Group members need to attend to personal projects, part-time jobs, slightly different college schedules, etc.
3	**Financial**	Money the group is willing to invest in purchasing assets and programs
4	**Transit**	Difficulty getting on campus – limits opportunities of physical meetings

Project Organization

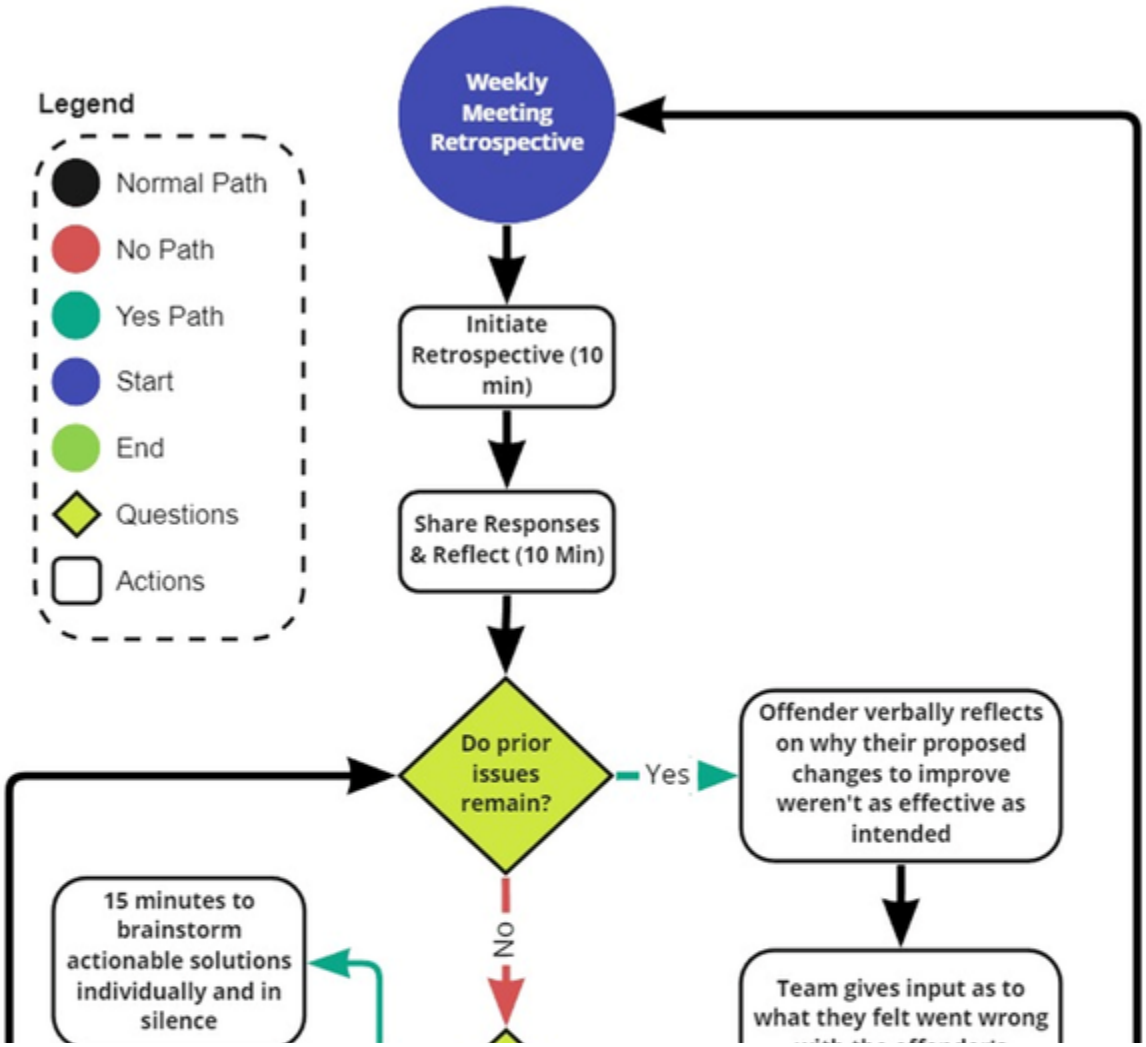
Project Governance

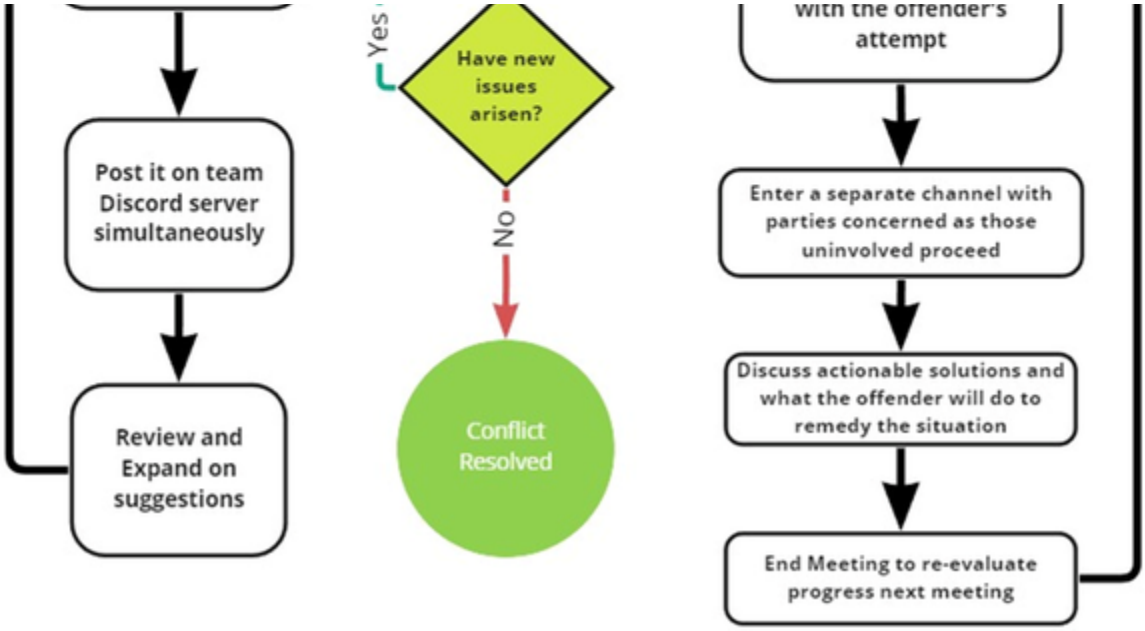
- *This project will comply with Sheridan College policies including:*
- *Acceptable Use Policy*
- *Code of Conduct*
- *Copyright / Intellectual Property*
- *Harassment and Discrimination Policy*
- *Student Code of Conduct*
- *All other applicable Sheridan policies and procedures https://policy.sheridanc.on.ca>*





Conflict Resolution Flow Chart





3.2 Roles and Responsibilities

Project Role	Responsibilities	Assigned to
Project Manager	Responsible for managing/updating documentation related to the project's development. Will observe the current flow of progress to determine if content will need to be cut, or if a team members effort can be placed elsewhere to optimize efficiency.	Tiago Massochin
Project Coordinator	Responsible for managing the team's efforts towards the project. Manages schedules, meeting times, deadlines/milestones, and dedication of tasks for team members. If a team member or task has fallen behind, this person is responsible for delegating resources to assure the task or team member is supported properly. If a task or deadline is clearly not going to be met, a meeting with the project manager must take place to decide further course of action.	Joshua Pritchett
Game Designer	Responsible to conceptualize and maintaining gameplay systems. Create and develop the game core, systems, mechanics, rules, puzzles. Monitoring work and ensure that the tasks are still applicable to the project. When the team comes to a split decision on design choices, this person makes the final call to keep the team moving forward.	Tiago Massochin
Level Designer	Responsible for the development and management of the project's layouts /levels. Must work in tandem with the Game Designer to assure that all core mechanics are effectively used in each level. Must communicate with the 2D and 3D artists to assure that the levels are populated with assets cohesively, and without losing the functionality of the level.	Joshua Pritchett Farryl Chang
Playtest Coordinator	Responsible for finding willing play testers for the project and making sure the tests are compliant with the Sheridan College policies. Creates surveys, questionnaires, and data sheets for play tests. Creates the testing space to make sure that all potential variables are accounted for in the tests and reflected in the data.	Joshua Pritchett

Narrative Designer	Responsible for designing the projects narratives and updating relevant team members on this content to assure that all assets remain in line with the narrative context.	Joshua Pritchett
Concept Designer	Responsible for converting high level design ideas into visual concepts that fit within the project and team constraints. Responsible for ensuring there is visual parity amongst all designs and communicating them to production artists.	Wilson Chan
2D Artist	Responsible for producing 2D visual assets based off concept art is created and ensuring it is testable in the engine. Responsible for creating illustrations/marketing assets that capture the value proposition of our game.	Wilson Chan
3D Artist	Responsible for the quality and optimization of 3D assets in the final build. Responsible for the implementation of 3D assets into the game engine. Responsible for the impact of 3D assets on the game's performance.	Farryl Chang Wilson Chan
Gameplay Programmer	Responsible for programming core game mechanics that meets project's design goals and are reasonably bug-free.	Hubery Chu Kevin Jacob Farryl Chang
UI Programmer	Responsible for implementing assets & UI menu functionalities.	Kevin Jacob
Sound Designer	Create soundscape, Sound effects, Sound Atmosphere, Mixing, Mastering, Monitoring levels and adjusting volume settings. Editing audio files by cutting and splicing sounds. Implement the Sounds and Music on the game engine, Creating and Develop soundtracks.	Tiago Massochin
UI/UX Designer	Investigating user experience and requirements; Produce wireframes, visual and graphic Designs, diagrams, UI elements. Testing UI elements, user experience and guidance on the implementation of UX research methodologies and testing activities to analyze and predict user behavior.	Tiago Massochin
UI Artist	Responsible for creating visuals for the User Interface that match's the UI /UX designer's vision.	Wilson Chan
Marketing	Responsible for marketing the project (gathering public awareness, reaching out to potential audiences) via social media & real-life events.	Hubery Chu
Publication	Responsible for coordinating the publication processes of showcase demos as well as the final product on platforms (e.g., http://itch.io , Steam, Epic).	Hubery Chu
License Coordinator	Responsible for organizing external asset licensing & ensuring the project complies to terms & conditions of specific publication platforms.	Kevin Jacob

Project Plan

- Project Overview
  - 1.1 Purpose, Scope, and Objectives
  - 1.2 Project Goals
  - 1.3 Marketing Analysis
    - Target Audience
- Demography
- Interest/Activities
- Attitudes/Opinions
- Personas
  - Persona 01
    - Name:
    - Interests:

- Values:
- Profession:
- Behaviours:
- Needs:
- Age:
- Powers:
- Aspirations:
- Persona 02
  - Name:
  - Interests:
  - Values:
  - Profession:
  - Behaviours:
  - Needs:
  - Age:
  - Powers:
  - Aspirations:
  - 1.4 Evolution of the Plan
  - 1.5 References
  - 1.6 Definitions and Acronyms (omit if not applicable)
- 2. Project Organization
  - 2.1 Internal Structure
  - 2.2 Roles and Responsibilities
- 3. Managerial Process Plans
  - 3.1 Start-up Plan
    - 3.1.1 Project Staff Training
  - 3.2 Work Plan
    - 3.2.1 Product Breakdown Structure
    - 3.2.2 Work Breakdown Structure
    - 3.2.3 Schedule Allocation
  - 3.3 Project Tracking Plan
    - 3.3.1 Requirements Management
    - 3.3.2 Schedule Control
    - 3.3.3 Quality Control
    - 3.3.4 Reporting
  - 3.4 Risk Management Plan
- Constraints
- 4. Supporting Process Plans
  - 4.1 Documentation
  - 4.2 Quality Assurance
  - 4.3 Subcontractor Management (omit if not applicable)
  - 4.4 Process Improvement

Document Change Control

Version	Date	Comment
Current Version (v. 52)	**Nov 23, 2022 23:24**	**Tiago Massochin**
v. 51	Nov 09, 2022 22:24	Farryl Chang
v. 50	Nov 09, 2022 22:20	Farryl Chang
v. 49	Nov 09, 2022 22:19	Farryl Chang
v. 48	Nov 09, 2022 22:07	Farryl Chang
v. 47	Nov 09, 2022 21:44	Farryl Chang
v. 46	Nov 08, 2022 17:34	Tiago Massochin
v. 45	Nov 08, 2022 17:22	Farryl Chang
v. 44	Nov 08, 2022 16:52	Farryl Chang
v. 43	Nov 08, 2022 16:17	Joshua Pritchett
v. 42	Nov 08, 2022 16:01	Tiago Massochin

v. 41	Nov 08, 2022 14:48	Farryl Chang
v. 40	Nov 08, 2022 14:41	Farryl Chang
v. 39	Nov 08, 2022 14:29	Farryl Chang
v. 38	Nov 08, 2022 13:59	Farryl Chang
v. 37	Nov 08, 2022 13:18	Farryl Chang
v. 36	Nov 08, 2022 13:09	Farryl Chang
v. 35	Nov 07, 2022 19:14	Wilson Chan
v. 34	Nov 07, 2022 18:41	Farryl Chang
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v. 30	Nov 06, 2022 23:57	Farryl Chang
v. 29	Nov 06, 2022 23:32	Farryl Chang
v. 28	Nov 06, 2022 20:36	Farryl Chang
v. 27	Nov 06, 2022 20:33	Farryl Chang
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v. 9	Nov 03, 2022 17:18	Tiago Massochin
v. 8	Nov 03, 2022 17:11	Wilson Chan
v. 7	Nov 03, 2022 17:10	Joshua Pritchett

v. 6	Nov 03, 2022 17:03	Tiago Massochin
v. 5	Nov 03, 2022 17:01	Joshua Pritchett
v. 4	Nov 03, 2022 17:00	Joshua Pritchett
v. 3	Nov 03, 2022 16:51	Tiago Massochin
v. 2	Sep 23, 2022 17:06	Tiago Massochin
v. 1	Sep 15, 2022 00:51	Tiago Massochin

Project Overview

1.1 Purpose, Scope, and Objectives

- The purpose and scope of the project include:
  - Develop a 1-hour long play experience that capitalizes on the unique mechanic of being able to control two characters simultaneously
  - Develop a project that demonstrates the technical and design skills of the team in a professional manner
- Considerations of scope or objectives to be excluded from the project or the deliverables include:
  - More than 3 abilities per character will be excluded
  - High-poly assets with detailed textures will be excluded
  - Dialogue systems and complex narrative systems will be excluded
- Our statement of scope is consistent with the scope defined in the team charter as listed:

	Activities in Scope	**Activities Out of Scope**
1	**Core mechanic: player swaps between two characters**	Two player co-operative play (networked/local)
2	**Creating a single large level where the player has multiple branching paths**	Creating enough paths and options to fill a multiple hour-long play session
3	**A few options for players abilities/playstyle**	A grand tree of different unlockable abilities for the players character
4	**AI enemies that the player can hide from**	A wide variation of enemy types

- Business needs to be satisfied by the project include:
  - The final game will be published on Steam and itch.io and will be available to play for free
- Summary:
  - Project objectives include:
    - The final design successfully reflects the team's vision, hook, and core pillars
    - The development process demonstrates the technical skills of the team
    - The final build is successfully published
  - The deliverables required to satisfy the project objectives include:
    - Team Charter
    - Research Report
    - Proof of Concept
    - Project Plan
    - Game Design Document
    - MVP
    - Final Build
  - The criteria by which satisfaction of the objectives will be determined include:
    - Does the play experience reflect our hook and core pillars? Could a player who's unfamiliar with the game's development identify the hook and core pillar easily and accurately?
    - Would potential employers be interested in the technical skills required to develop each aspect of this project?
    - Is the final build accessible to users on Steam and itch.io?

1.2 Project Goals

- In lieu of strategic or business goals of the project, the goals of this project include:
  - Delivering an engaging and innovative project within the constraints of capstone that excites our peers in the games industry

- Allowing each member of the team to have an opportunity to develop the core skillset that aligns with their desired career goals and have a tangible artifact that provides evidence of their competence and value
- Developing the project as an avenue to completing our degree requirements and forming lasting relationships

1.3 Marketing Analysis

- The current industry trends and market outlook for your project include:
  - The trend toward 3D games in the games industry
  - The popularity of narrative-driven puzzle platforming games like Inside in the current market

Target Audience

Demography

- Age: 15-30 years
- Gender: Men and women
- Income: Low, Medium.
- Marital Status: Single
- Occupation/Industry: Students/Part-time work/Junior
- Educational Level: High School/Bachelor's Degree

Interest/Activities

- They like independent games.
- They like puzzle games.
- They like to consume video games with different proposals.
- They enjoy talking to friends about their experiences with video games.
- They enjoy participating in online communities to discuss video games.

Attitudes/Opinions

- They consume unpopular things.
- They feel smart.
- Engage in communities to discuss puzzles.
- They feel good when they feel they are consuming something special/unique.

Personas

Persona 01

Name:

Alex

Profession:

College student

Age:

18

Interests:

- Videogames
- Science
- Sci-fi
- Reddit

Behaviours:

- Play different games often
- Spend a good part of the day on computer

Powers:

- Has an online social circle
- Introduce new things on forums
- Re-forward trending indie games

Values:

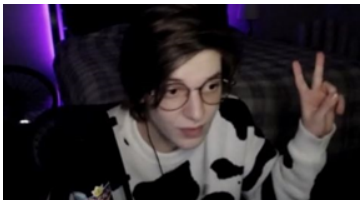
- Intelligence
- Pioneer
- Innovation

Needs:

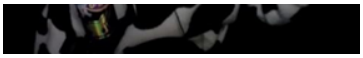
- Unique games to talk about
- Things that make him feel smart

Aspirations:

- Find the next indie game that will become popular before everyone else
- Share amazing and unique solutions to puzzles



"My name is Al3x_BackJog, I live in Lansing, and I'm just starting college. I like to spend my day on my computer playing totally underground indie games and talk to my internet friends about the games I found the coolest or the shitly. I'm always in the indie game forums and communities looking for something new that no one has heard of yet."



Persona 02

Name:

Mike

Profession:

Twitch Streamer

Age:

27

Interests:

- Videogames
- Food
- Boxing
- Sports

Behaviours:

- Always on the lookout for new and interesting games
- Their daily routine involves playing some games after their morning workout

Powers:

- Has an influence over a large audience
- Introduce new trends
- Spreading “memes”

Values:

- Energy
- Engagement
- Interpersonal relationships

Needs:

- Interesting games to play and entertain their audience
- Moments that will get their audience excited

Aspirations:

- Make the audience excited about the games they are playing
- Entertain the audience with wacky approaches to game challenges

"My name is Mike_1, I live in LA, and I’ve been streaming on Twitch for the last 8 years. When I’m streaming, I try to create moments of excitement for the audience by trying out crazy strategies or solutions that somehow work out in the end. I like to play games that give me lots of agency to do what I want to do and allow me to find my own solutions to challenges."

How our project and its unique features will meet the needs of the market:

- Our hook of simultaneous ability usage allows players to solve puzzles in lots of different ways
- Describe any competitive projects already in the market
  - Static Cling
    - Makes use of the electricity theme in a similar way
  - Fireboy and Watergirl
    - Allows the player to control two characters simultaneously in a similar way
- The competitor’s strengths and weaknesses include:
  - Static Cling
    - Strength: its nouns and verbs are very well defined and fit the electricity theme perfectly
      - We can build upon this strength by analyzing the elements that made their nouns and verbs so effective
    - Weakness: most of its puzzles require the player to solve them in a specific way
      - We can resolve this weakness by designing our puzzles in such a way that the player can experiment and find multiple solutions
  - Fireboy and Watergirl
    - Strength: the game makes effective use of the core mechanic of controlling two characters in their levels
      - We can build upon this strength by analyzing the elements that made their levels work so well for their core mechanic
    - Weakness: although it is possible to play the game alone, it is intended to be a two-player game and thus, the singleplayer experience can feel lackluster at times
      - We can resolve this weakness by focusing our puzzle designs for a singleplayer experience
- Barriers to Entry for the project include:
  - Access to a computer that can run the build
  - Basic pre-existing knowledge of electricity and its capabilities

1.4 Evolution of the Plan

- The team member who is responsible for updates to this Plan is the project manager
- Plans for producing both scheduled and unscheduled updates to this Plan include:
  - Scheduled updates will be made alongside each deliverable as defined in the Team Charter
    - Scheduled updates will detail any changes or deviations made to the Project Plan

- Unscheduled updates will be made whenever an unplanned major change or delay is made to the project
  - Major changes include but are not limited to:
    - The removal of a feature
    - Absence of a team member
    - Expected technical issues
- Updates to this Plan shall be disseminated according to each team member's roles and responsibility
  - For example, the level designers will be tasked with making updates that relate to level design

1.5 References

- Watt, Adrienne. *Project Management – 2nd Edition*. BCcampus, 14 Aug. 2014, http://opentextbc.ca/projectmanagement/chapter/chapter-14-quality-planning-project-management/. Accessed 8 Nov. 2022.

1.6 Definitions and Acronyms (omit if not applicable)

- Define, or provide references to any documents or annexes containing the definition of all terms and acronyms required to properly understand this Plan.

2. Project Organization

2.1 Internal Structure

- Describe the internal structure of the project organization (how the project will be managed).
- Use organizational charts or diagrams to depict the lines of authority, responsibility and communication within the project.

Decisions (Below) | Actors (Right)	Project Manager	Project Coordinator	Game Designer	Level Designer	Narrative Designer	Concept Designer	2D Artist	3D Artist	Gameplay Programmer	UI Programmer	Sound Designer	UI/UX Designer	UI Artist	Marketing	Publication
Allocate Resources	A	R	I	I	I	I	I	I	I	I	I	I	I		
Change in Design Specification	C	C	R	C	C	C	I	I	C	I	I	I	I		
Change in Schedule	R	C	I	I	I	I	I	I	I	I	I	I	I		
Change in Visual Direction	A		C	I		R	I	I					I		
Change in Technical Specification	A	I	I	I					R	C					
Change in Narrative Design	A	I		I	R										
Change in Level Design	A	I	I	R	C										
Development of 2D Assets	I	I				C	R								
Development of 3D Assets	I	I		I		C		R							
Change in Sound Design	A	I	C								R				
Change in UI/UX Design	A	I										R	C		
Change in Marketing Specification	A	I												R	C

Legend

R - Responsible

A - Approve

C - Consult

I - Inform

2.2 Roles and Responsibilities

- Identify and state the nature of each major work activity and identify the individual that are responsible for those processes and activities using a table.

Project Role	Responsibilities	Assigned to
Project Manager	Responsible for managing/updating documentation related to the project's development. Will observe the current flow of progress to determine if content will need to be cut, or if a team members effort can be placed elsewhere to optimize efficiency.	Tiago Massochin
Project Coordinator		Joshua Pritchett

	Responsible for managing the team's efforts towards the project. Manages schedules, meeting times, deadlines/milestones, and dedication of tasks for team members. If a team member or task has fallen behind, this person is responsible for delegating resources to assure the task or team member is supported properly. If a task or deadline is clearly not going to be met, a meeting with the project manager must take place to decide further course of action.	
Game Designer	Responsible to conceptualize and maintaining gameplay systems. Create and develop the game core, systems, mechanics, rules, puzzles. Monitoring work and ensure that the tasks are still applicable to the project. When the team comes to a split decision on design choices, this person makes the final call to keep the team moving forward.	Tiago Massochin
Level Designer	Responsible for the development and management of the project's layouts/levels. Must work in tandem with the Game Designer to assure that all core mechanics are effectively used in each level. Must communicate with the 2D and 3D artists to assure that the levels are populated with assets cohesively, and without losing the functionality of the level.	Joshua Pritchett Farryl Chang
Playtest Coordinator	Responsible for finding willing play testers for the project and making sure the tests are compliant with the Sheridan College policies. Creates surveys, questionnaires, and data sheets for play tests. Creates the testing space to make sure that all potential variables are accounted for in the tests and reflected in the data.	Joshua Pritchett
Narrative Designer	Responsible for designing the projects narratives and updating relevant team members on this content to assure that all assets remain in line with the narrative context.	Joshua Pritchett
Concept Designer	Responsible for converting high level design ideas into visual concepts that fit within the project and team constraints. Responsible for ensuring there is visual parity amongst all designs and communicating them to production artists.	Wilson Chan
2D Artist	Responsible for producing 2D visual assets based off concept art is created and ensuring it is testable in the engine. Responsible for creating illustrations /marketing assets that capture the value proposition of our game.	Wilson Chan
3D Artist	Responsible for the quality and optimization of 3D assets in the final build.	Farryl Chang Wilson Chan

	Responsible for the implementation of 3D assets into the game engine. Responsible for the impact of 3D assets on the game's performance.	
Gameplay Programmer	Responsible for programming core game mechanics that meets project's design goals and are reasonably bug-free.	Hubery Chu Kevin Jacob Farryl Chang
UI Programmer	Responsible for implementing assets & UI menu functionalities.	Kevin Jacob
Sound Designer	Create soundscape, Sound effects, Sound Atmosphere, Mixing, Mastering, Monitoring levels and adjusting volume settings. Editing audio files by cutting and splicing sounds. Implement the Sounds and Music on the game engine, Creating and Develop soundtracks.	Tiago Massochin
UI/UX Designer	Investigating user experience and requirements; Produce wireframes, visual and graphic Designs, diagrams, UI elements. Testing UI elements, user experience and guidance on the implementation of UX research methodologies and testing activities to analyze and predict user behavior.	Tiago Massochin
UI Artist	Responsible for creating visuals for the User Interface that match's the UI/UX designer's vision.	Wilson Chan
Marketing	Responsible for marketing the project (gathering public awareness, reaching out to potential audiences) via social media & real-life events.	Hubery Chu
Publication	Responsible for coordinating the publication processes of showcase demos as well as the final product on platforms (e.g., http://itch.io , Steam, Epic).	Hubery Chu
License Coordinator	Responsible for organizing external asset licensing & ensuring the project complies to terms & conditions of specific publication platforms.	Kevin Jacob

3. Managerial Process Plans

3.1 Start-up Plan

3.1.1 Project Staff Training

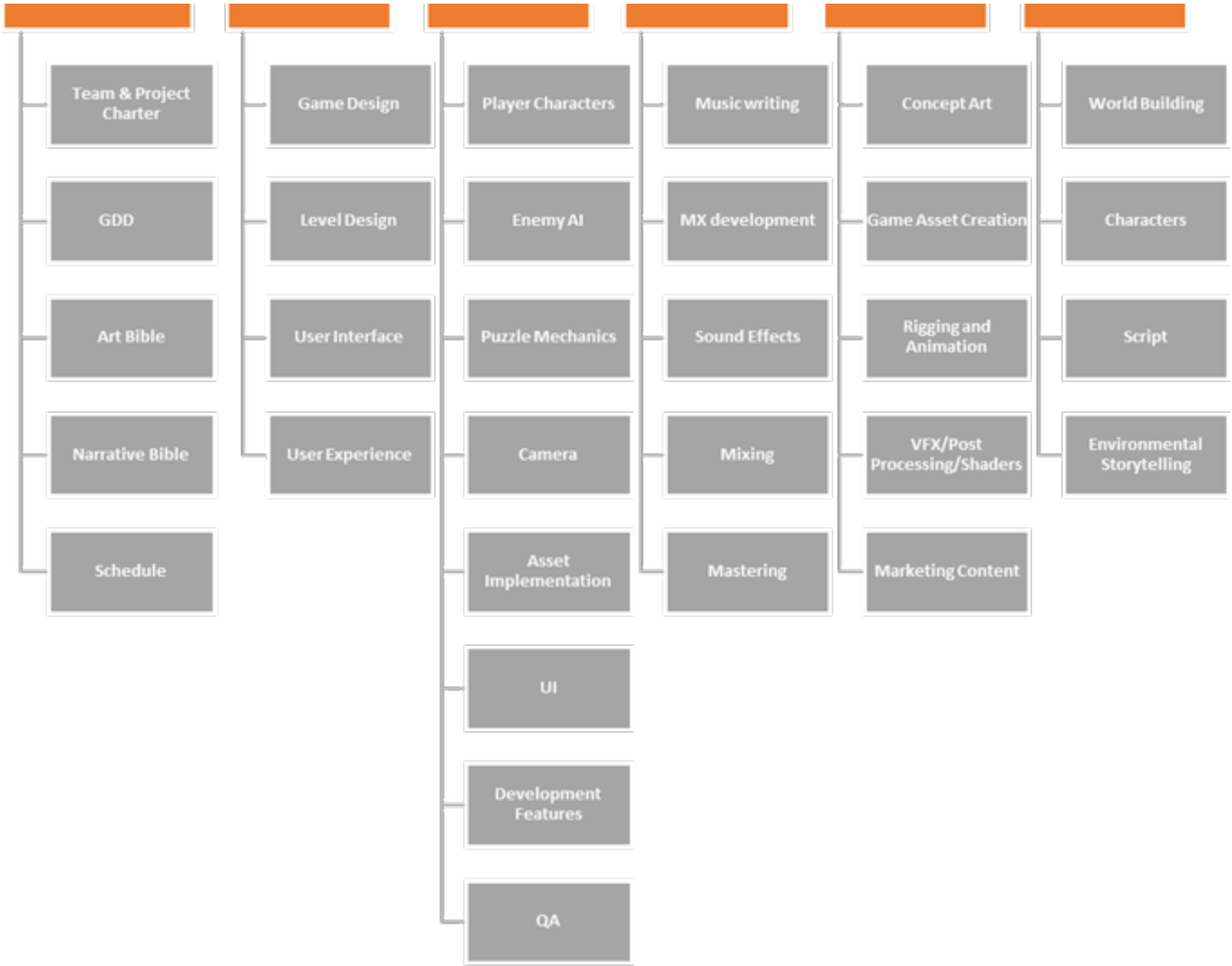
- Skills required by individual team members to successfully conduct the project include:
  - Wilson
    - Rigging 3D characters and in-game objects
    - Proficiency with shaders and VFX
  - Joshua
    - Proficiency with team management and scheduling
    - Creating narrative through world-building and environmental storytelling
    - Creating 3D animations for both gameplay and cutscenes

    - Tiago
        - Proficiency with scheduling and documentation
        - Proficiency with 3D audio implementation
    - Hubery
        - Proficiency with camera programming
        - Procedural mesh rendering
    - Kevin
        - Character ability programming
        - UI ability wheel programming
    - Farryl
        - Proficiency with level design tools MAST and YuME
        - Proficiency with texturing tool Substance Painter
- Staff plans to acquire these necessary skills to complete the project via the following methods:
    - Wilson
        - Reading documentation and watching Youtube tutorials on rigging and VFX implementation
    - Joshua
        - Delving into a masterclass on writing meaningful and emotional characters for all kinds of media
        - Researching online tutorials for animation and rigging methods
    - Tiago
        - Consulting prior knowledge of audio design and implementation
        - Researching online tutorials on 3D audio implementation
    - Hubery
        - Researching video tutorials and online forums on procedural mesh rendering
    - Kevin
        - Researching video tutorials and online forums on UI ability wheel implementation
    - Farryl
        - Researching tool documentation on MAST and YuME
        - Researching video tutorials on Substance Painter
- Training as needed in technical, managerial, and supporting activity skills include:
    - Wilson
        - Training in3D rigging and animation
        - Training in VFX implementation in Unity
    - Joshua
        - Training in balancing workloads according to team skills
        - Training in environmental storytelling
        - Training in 3D animation in Maya and Unity
    - Tiago
        - Training in milestone prioritization and scheduling
        - Training in 3D audio implementation
    - Hubery
        - Training in camera programming
        - Training in procedural mesh rendering
    - Kevin
        - Training in gameplay programming
        - Training in UI implementation
    - Farryl
        - Training in level design tools MAST and YuME
        - Training in texturing tool Substance Painter

3.2 Work Plan

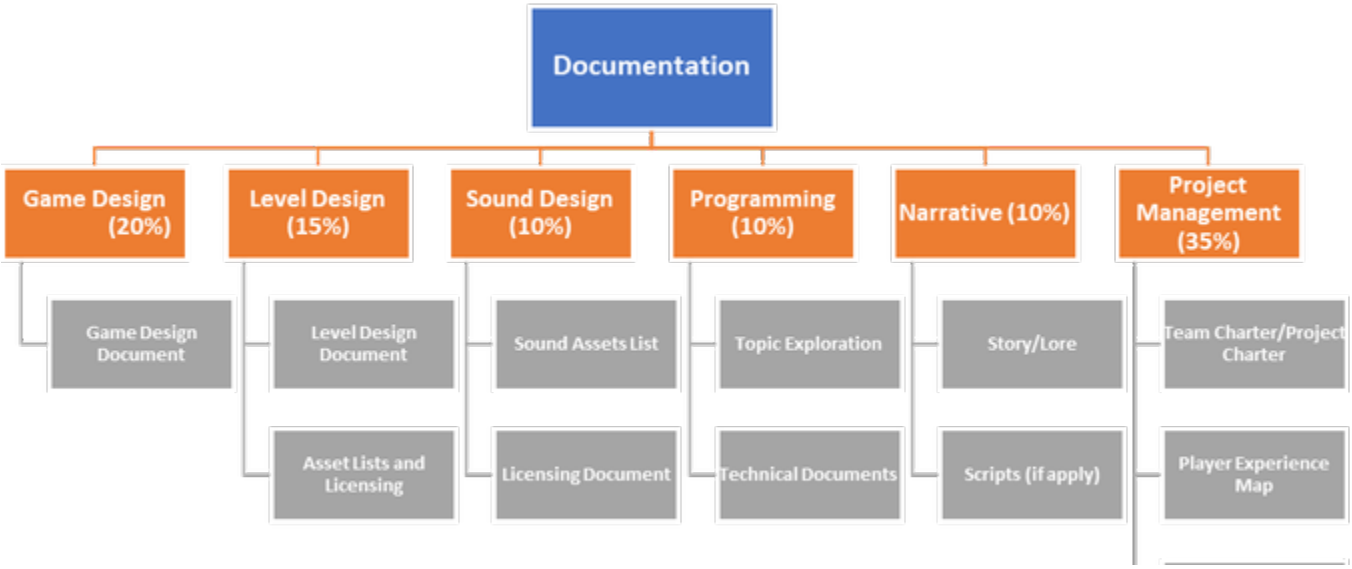
3.2.1 Product Breakdown Structure

- Product breakdown structure (link to Miro)

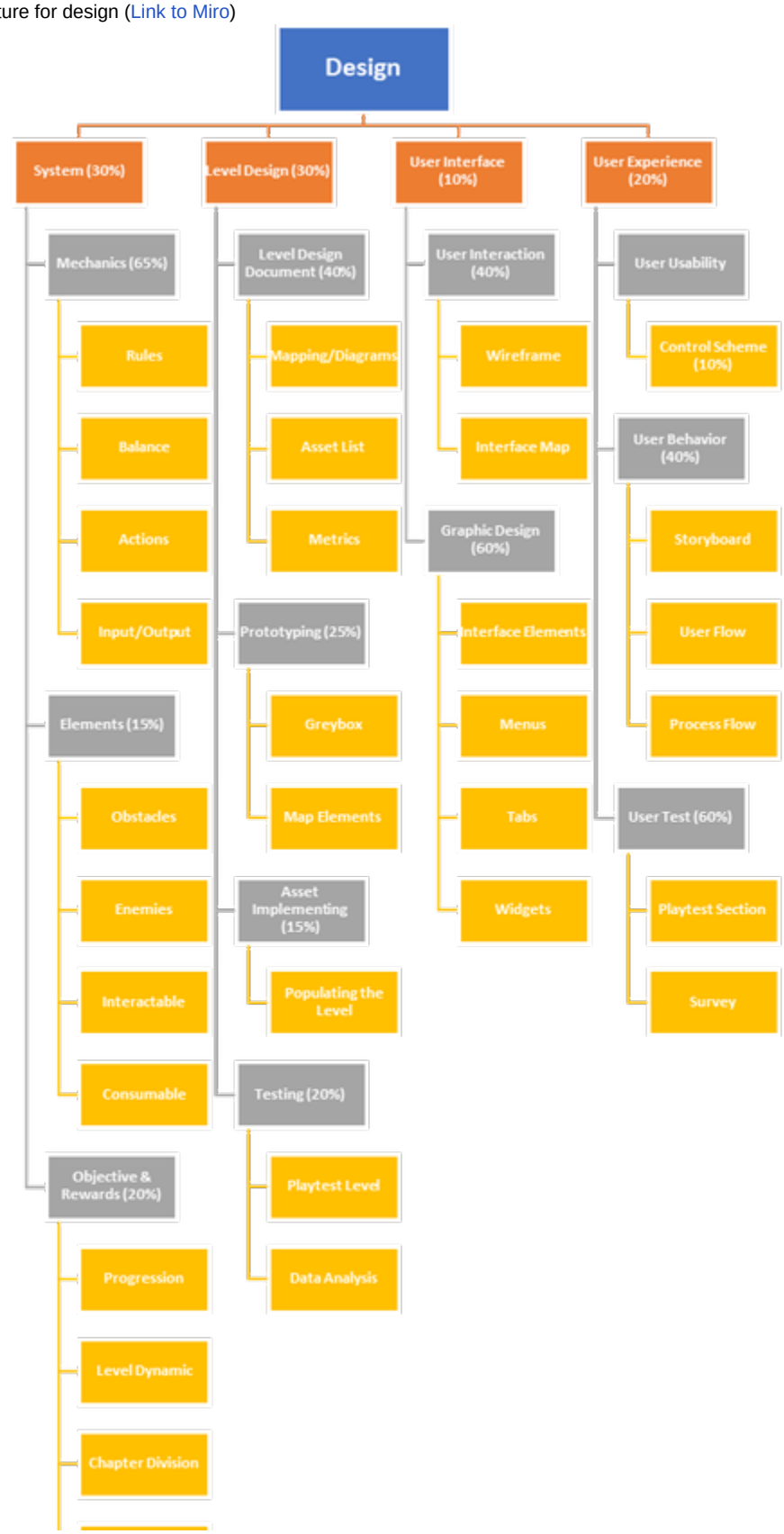


3.2.2 Work Breakdown Structure

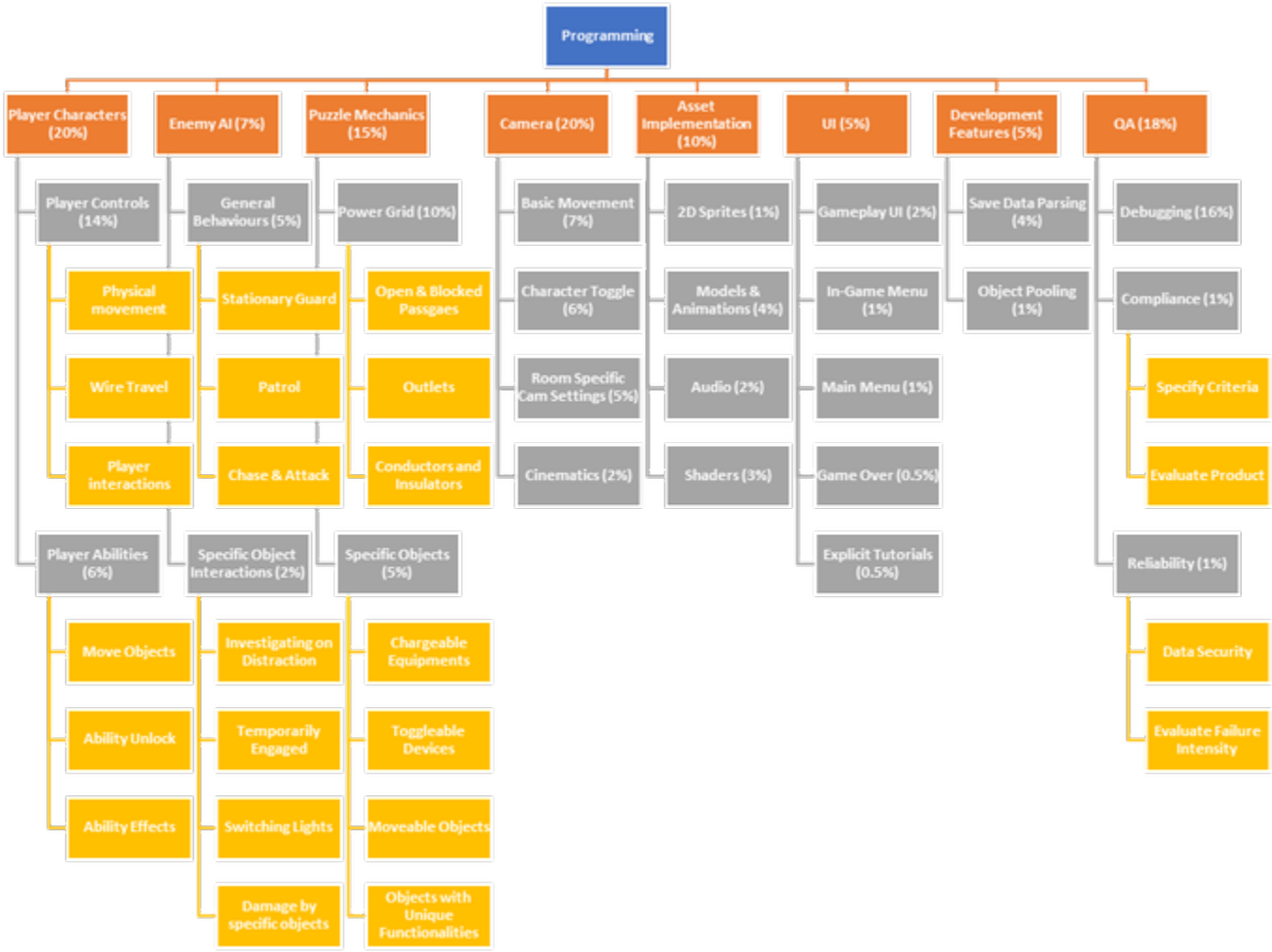
- Work breakdown structure for documentation (Link to Miro)



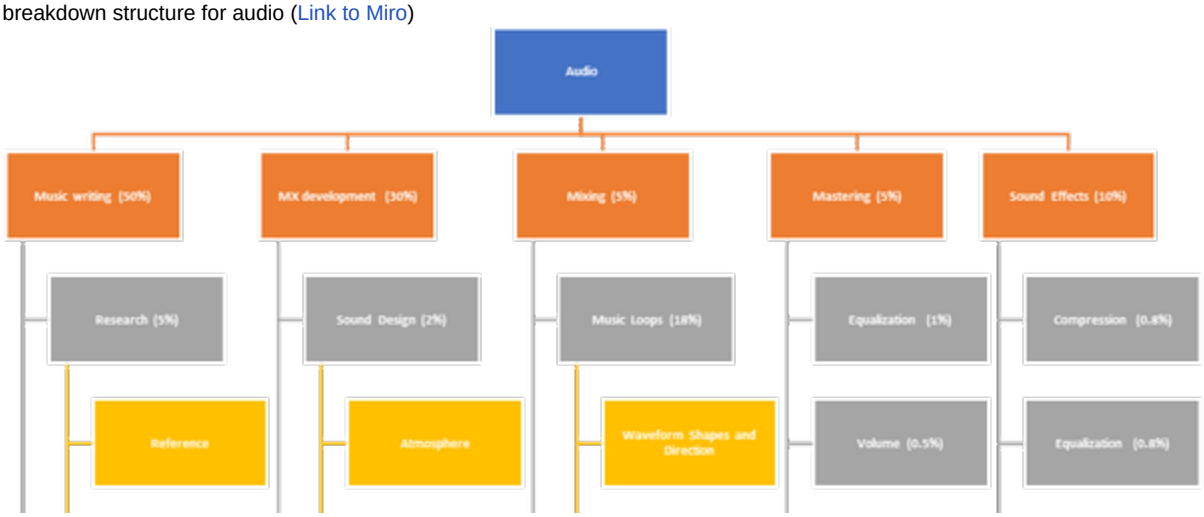
- Work breakdown structure for design (Link to Miro)



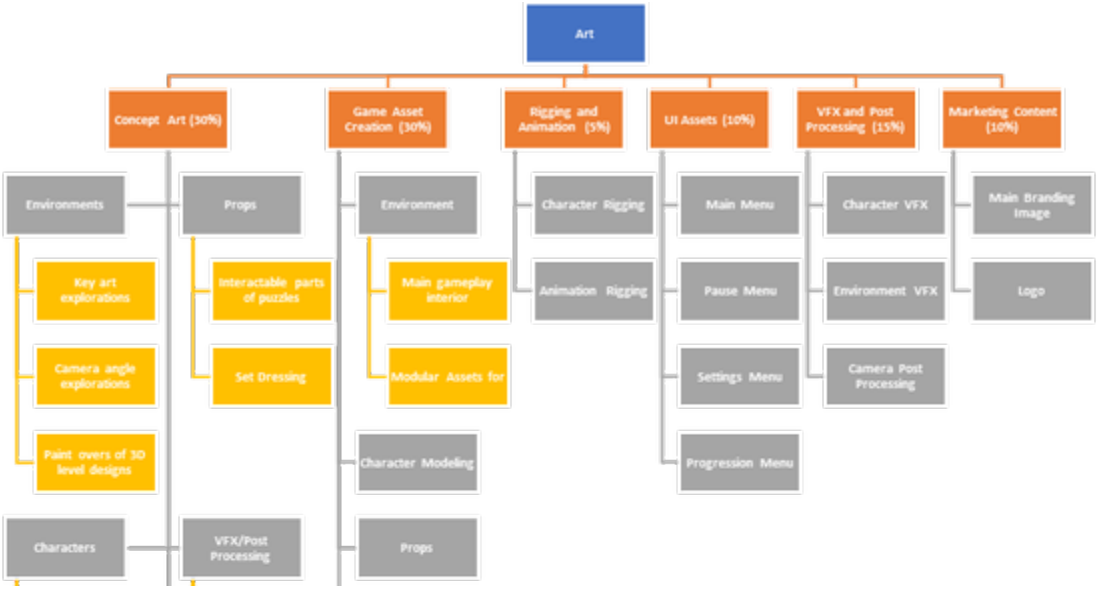
- Work breakdown structure for programming (Link to Miro)

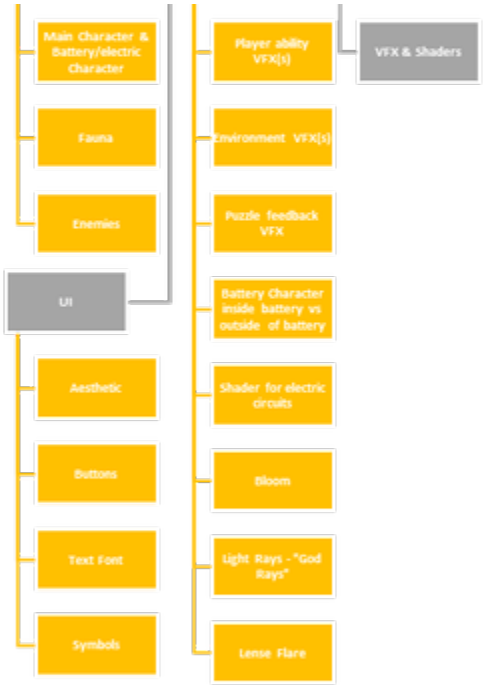


- Work breakdown structure for audio (Link to Miro)

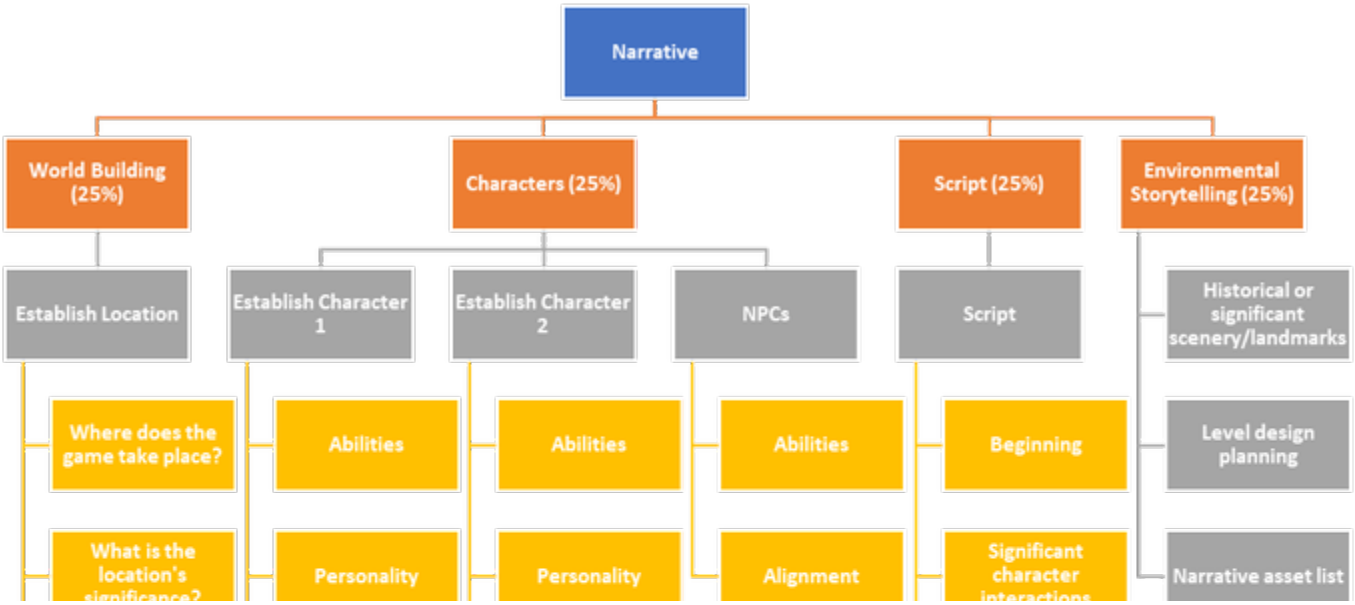


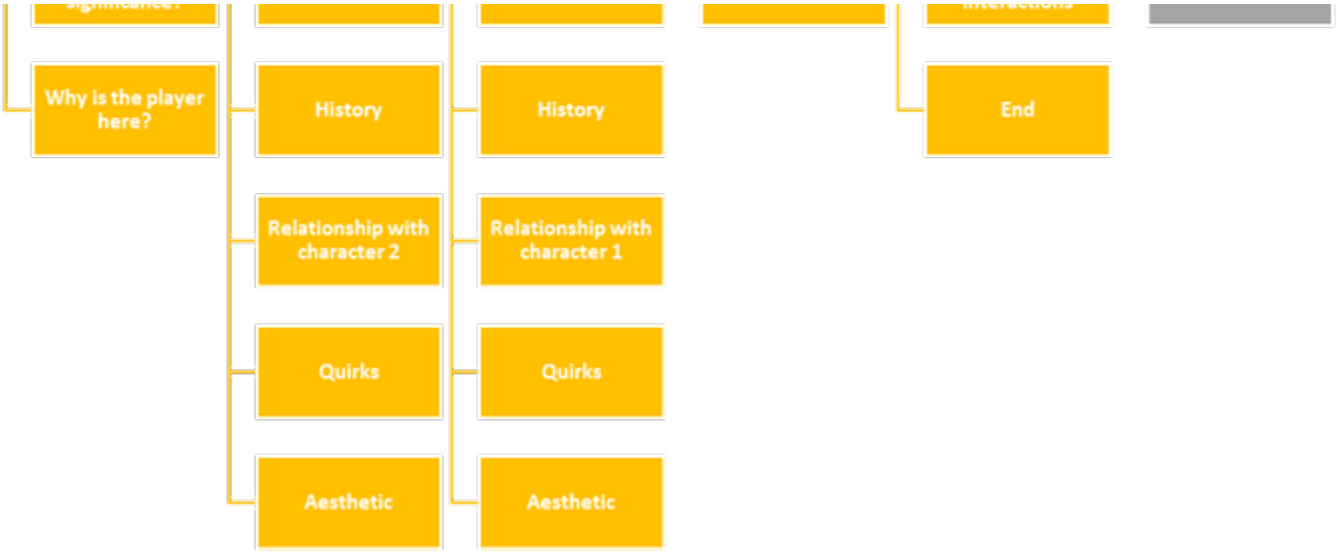
- Work breakdown structure for art (Link to Miro)





- Work breakdown structure for narrative (Link to Miro)





3.2.3 Schedule Allocation

- Link to project milestone schedule
- Link to project master schedule Gantt chart

3.2.4 Resource Allocation

- Required allocation of resources:
  - Personnel
    - Project Management
      - Tiago M.
      - Joshua P.
    - Game Design
      - Tiago M.
    - Level Design
      - Joshua P.
      - Farryl C.
    - Concept Design
      - Wilson C.
    - Asset Creation
      - Wilson C.
      - Farryl C.
    - Programming
      - Hubery C.
      - Kevin J. S.
    - Sound Design
      - Tiago M.
  - Computing resources
    - 1 workstation per team member in G404 at Sheridan College Trafalgar Campus
  - Software tools
    - Adobe Illustrator
    - Adobe Photoshop
    - Adobe Animate
    - Zbrush
    - Maya
    - Blender
    - Substance Painter
    - Ableton Live 11
    - Unity
    - Visual Studio
    - FMOD
  - Special testing and simulation facilities

    - None
- Administrative support
    - Advisor
        - Eduardo Hulshof

3.3 Project Tracking Plan

3.3.1 Requirements Management

- The process for measuring, reporting and controlling changes to the project requirements is as follows:
    - Changes to the project are measured and reported via Jira, and each team member provides a summary of their changes at the end of each sprint during the Thursday progress meetings (as specified in the communication chart below)
    - Changes to the project are controlled via Git and must follow the best practices outlined in the Technical Design Document

3.3.2 Schedule Control

- Processes to be used for the following purposes:
    - Measuring the progress of work completed at the major and minor project milestones:
        - Progress of work completed at major and minor milestones are accompanied by a build and playtesting sessions to determine:
            - How closely the build aligns with the intended vision and play experience
            - Features or designs that need to be changed or fixed
            - Priority of tasks to be done based on the previous two points
    - Comparing actual progress to planned progress:
        - Development progress is evaluated against the project Gantt chart to determine whether development is ahead or behind planned progress
    - Implementing corrective action when actual progress does not conform to planned progress:
        - The project coordinator will speak to team members who are most affected by the delay in progress and try to identify causes and solutions
        - If the problem persists, members of the team who are not affected by the delay will take on tasks assigned to the affected members in an attempt to reduce their workload
        - If the problem persists, the team will hold a meeting to discuss areas of the game that need to be cut
- The methods and tools that will be used to measure and control schedule progress include:
    - Jira and the Roadmap feature found in Jira will be used to measure and control schedule progress
        - The process is linked to the reporting of tasks on the Jira task board and thus it is automatic, but the Project Manager will be responsible for maintaining the tool
- The objective criteria that will be used to measure the scope and quality of work completed at each milestone, and hence to assess the achievement of each schedule milestone, include:
    - Is the intended play experience communicated to at least 80% of playtesters?
        - Measured numerically via pre-test and post-test surveys
        - Includes communication of the following:
            - Puzzle solutions
            - Functionality of game objects
            - Narrative context
    - Are 100% of playtesters able to play the game from beginning to end?

3.3.3 Quality Control

Make sure to specify a based on formal references

- The processes to be used to measure and control the quality of the work and the resulting work products are as follows (references *Project Management – 2nd Edition* by Adrienne Watt as listed in section 1.5):
    - Cost-benefit analysis
        - “Looking at how much [our] quality activities will cost versus how much [we] will gain from doing them” (Watt)
            - In our case, refers to making design changes based on playtest feedback and determining whether the benefit to the play experience is worth the work needed to make the change
        - “The main benefits are less reworking, higher productivity and efficiency, and more satisfaction from both the team and the customer” (Watt)
    - Benchmarking
        - “Using the results of quality planning on other projects to set goals for your own” (Watt)
            - In our case, “other projects” can refer to other projects we’ve worked on or games that we are referencing
    - Design of experiments
        - “…all the kinds of test procedures you’ll do, the approaches you’ll take, and even the tests themselves” (Watt)
            - In our case, it refers to our playtesting procedures and approaches
            - Used to measure the quality of the resulting product

3.3.4 Reporting

- The reporting mechanisms, report formats, and information flow to be used within the project and to entities external to the project are as follows:
  - Internal team reports for tasks and design decisions will be conducted through Jira and Confluence
  - The report format for biweekly deliverables to stakeholders is defined by the Milestone Deliverable Template provided by the stakeholder
- The methods, tools, and techniques of communication include:
  - Discord for internal team communications
  - Zoom for external communications with stakeholders
- The frequency and detail of communications are as follows:
  - Internal team meetings are conducted three times a week and are used to discuss project progress and design decisions
  - External team meetings with stakeholders are conducted once every two weeks and are used to report project progress to stakeholders
- Communication chart below:

Type of Communication	Method/Tool	Frequency/Schedule	Information	Participants / Responsibilities
Internal Communications				
Project Update Meetings	In-person	Weekly Every Tuesday @ 10:00 AM to 1:00 PM in G404	Project status, problems, risks, design decisions	Entire Team
Progress Meetings	Discord	Weekly Every Monday @ 12:00 PM and Thursday @ 11:00 AM	Project status (progress)	Entire Team
External Communications				
Production Meetings	Zoom	Every two weeks	Project update	Entire Team Stakeholders

3.4 Risk Management Plan

- Risk Analysis Plan:

	Risk Description	Probability (H/M/L)	Impact (H/M/L)	Risk Management Plan	Member Responsible for Resolution
1	**A core member of the team is unable to continue participating.**			If our core programmer is unable to continue, we will reassess the technical scope of our game and redesign content to fit the capabilities of the remaining programmers which will include, Kevin, Tiago, Farryl and Wilson. If our core sound designer is unable to continue, we will seek open-source sound libraries for us to implement and focus on visual signifiers instead. If our core artist is unable to continue, we will reassess our art asset list and focus on core assets required for the player to have the intended user experience. We will also re-assign artistic tasks to Farryl and Joshua.	• **Joshua** • **Tiago**
2	**The campus closes due to an outbreak of an illness such as Covid-19.**			We will pivot to a completely remote workflow and use the time we normally have on campus to hold a virtual meeting over Discord instead. The project coordinator will organize and guide this shift in workflow.	• **Joshua**
3	**We are stuck on a feature's implementation resulting in missing deadlines.**			When tasks are assigned, we will give story point estimates to assess difficulty of tasks. We will have at least 2 meetings per week where we will assess progress of tasks and address challenges. Hard blocks in tasks will result in the team reconsidering its necessity by referencing our hook, anchors, core user and emotional experience and design pillars.	• **Tiago** • **Joshua**
4	**The GO transit strike currently happening continues indefinitely, preventing some team members from being able**			We will continue our in-person meetings with the members who are able to attend. The project coordinator will follow up with members who were unable to attend and provide a summary of the points discussed during the meeting.	• **Joshua**

	to come to campus once a week.				
5	**Optimization issues arise, causing our game's performance to fall.**			Analyze & identify causes of performance issues via profiler. Implement coding algorithms to drastically improve performance (e.g., object pooling, binary trees). Experiment with other asset importation algorithms & adjust assets where applicable	• **Hubery** • **Kevin** • **Farryl**

Constraints

4. Supporting Process Plans

4.1 Documentation

- All project documentation that require regular updates are as follows:
  - Game Design Document
  - Art Bible
  - Level Design Document
  - Narrative Design Document
  - Technical Design Document
  - Project Plan
- The plans for updating said documents are as follows:
  - Game Design Document
    - Update mechanics and noun-verb relationships as the project develops and new design decisions are made
    - Update rules and interactions as playtests reveal new insights
    - Update alongside every deliverable defined in the Team Charter
  - Art Bible
    - Update technical specifications of 2D and 3D assets as the project develops and technical limitations are revealed
    - Update the visual direction of the project to resolve any clarity issues that might arise during playtests
    - Update concept designs of centerpiece assets as the project develops to reflect narrative and level design needs
  - Level Design Document
    - Update map layouts and diagrams when major changes are made (e.g. if a section of a level needs to be removed)
    - Update LDD to include feedback and results from playtesting whenever a new set of playtesting is conducted
    - Update alongside every deliverable defined in the Team Charter
  - Narrative Design Document
    - Update the narrative needs of the game as the project develops and new design decisions are made
    - Update the narrative interactions in the game as levels are updated and changed
  - Technical Design Document
    - Update technical specifications whenever a new feature is implemented
    - Update instructions for tools whenever a new tool is implemented for designers
  - Project Plan
    - Update the master schedule whenever there is a substantial advance or delay in development
- The entities responsible for updating and reviewing the project documentation are as follows:
  - GDD
    - The game designer is responsible for updating the GDD
    - The level designers are responsible for reviewing the GDD whenever a major change is made
  - Art Bible
    - The concept designer is responsible for updating the Art Bible
    - The 2D and 3D artists are responsible for reviewing the Art Bible whenever a major change is made
  - Level Design Document
    - The level designers are responsible for updating the LDD
  - Narrative Design Document
    - The narrative designer is responsible for updating the NDD
    - The level designers are responsible for reviewing the NDD whenever a major change is made
  - Technical Design Document
    - The gameplay programmers are responsible for updating the TDD
  - Project Plan
    - The project manager is responsible for updating the Project Plan
- Additional information for the distribution of documents includes:
  - List of documents to be prepared and updated:
    - GDD
    - Project Plan

- The one who will prepare both documents is the project manager
- The one who will update and review each document is the project manager
- The one who will distribute the document to various stakeholders is the project manager
- One copy of each document will be distributed to stakeholders

4.2 Quality Assurance

- How the team proposes to main a high standard of quality for the project:
  - At the end of each sprint, the entire team will conduct a meeting to review each team member's progress
    - During these meetings, each team member's work will be evaluated against the project pillars to determine whether any changes need to be made
  - Whenever a new build version of the game is complete, playtesting sessions will be conducted to evaluate the quality of the play experience
    - If the play experience does not satisfy the project pillars or the project vision described in the project charter, the team will discuss possibilities for improvement
- The quality assurance procedures to be used are as follows:
  - Weekly team meeting structure:
    - Each team member goes through the list of tasks they worked on during the past sprint and presents their work to the team
    - If there are any concerns over whether the presented work fits the project pillars, the team will discuss improvements to be made using the decision-making process outlined in the Team Charter
  - Playtest session structure and script:
    - Note: add link to playtesting script and surveys

4.3 Subcontractor Management (omit if not applicable)

- Not applicable

4.4 Process Improvement

- The plans for periodically assessing the project are as follows:
  - A new build will be made for each deliverable or milestone and will be evaluated by the team according to project objectives and pillars
  - For each build, playtesting sessions will be conducted to determine the success of the build to convey the intended play experience as outlined in the Project Charter
- The plans for determining areas for improvement are as follows:
  - If there are any concerns over whether the current build fits the project pillars, the team will discuss improvements to be made using the decision-making process outlined in the Team Charter
  - After playtesting is completed for a given build, the team will have a meeting to discuss feedback and results and then discuss improvements to be made using the decision-making process outlined in the Team Charter
- The plans for implementing the improvement plans are as follows:
  - Areas for improvement will be broken down into tangible tasks and added to Jira according to priority
    - High-priority tasks will be added to the following sprint to implement

Project Overview

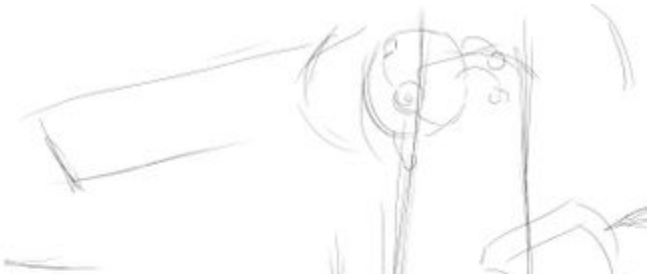
Switching Mechanic

1. Toggle between characters AND DO NOT ALLOW simultaneous character control
   a. We won't need to show both characters at the same time

Core User Experience

As a player I want to feel like I escaped out of hell(my prison) and look down to see how far I've come. Each puzzle connects to a central pillar that goes upward.

https://youtu.be/WsZG_NbY5OY?t=18



Core Emotional Experience

Design Challenges

- How to make each character is unique and separate
  - Though keep in mind it is single player but we don't want players to be like "oh no, a non-electric section again 😡😭 "
  - Keep the player from getting too disoriented during the switch
  - **Introduce one character before bringing in the other character so learning is more gradual**
- Ensure the player is always aware of what each character is doing independently
  - e.g. notifications of "hey the human guy is about to get kicked out" so the electric guy can do something
  - Maybe the electrical guy can light a path through his abilities and when stopping time, they can identify enemies and keep their companion safe - this way players don't need to keep track of both of them at the same time
- How do we handle swapping characters?
  - Is it dynamic and up to the player?
  - Is it based on scripted events?
  - **Is it based on specific requirements to switch? Seems to be where we are going**
    - e.g. there are appliance elements that are required to be able to swap to the other charracter

Core Mechanics - What are some verbs the player can do for each?

Camera

- You can switch between characters at any time - dynamically
  - Ensure player remains aware

Characters:

1. **(Stealth elements) Human Character (He is goofy like)**

   - Design Goal: How to make them feel like they need

   a. e.g. they are a fake scientists and must stay under cover so electric guy can keep going
   b. **When you are this character, the electric guy returns to the battery of this character**
   c. How will they distract other enemies
   d. Transport
   e. Distract the guards/scientists
2. **(Higher paced combat specialist) Electric Character**
   a. How do they modify the environment?
   b. Movement
   c. Hack electronic systems

    d. Defend with puzzle tools
    e. **Pausing Time (May not be required as it is more of a narrative explanation of why the other character doesn't do anything)**
        i. They will still be
    f. **Powering Objects Up**
3. Have moments after building up reliance to take away one character and add time pressure for the other character remaining to succeed

Narrative Ideas

- **Siblings**
  - Older character never got spend time to the younger one due to the facility being active but when the falls apart, they get to spend more time together
- **A New Phase**
  - e.g. destroying the base at the end as the facility trapped them
- **Power Difference**
  - Having the human character be inferior and goofy
  - The electrical character is more arrogant because he has all the super powers
- **Making sure each character narratively feels required to help each other**
  - **When the player swaps from human to electric, the game world SLOWS DOWN - so that explains why the human character is just idle**
- **Coexistence**
  - One character requires the other character to operate as he is the battery
  - So the main character just gets shut down but they need each other to escape

Art Direction: Will it be 2.5D or 3D?

- Likely 3D
- A central pillar, where like the citadel archives in ME3, where things move in and out and move around
- **Electricity lights up completed puzzles**
  - **Landmarking**
    - Create color/some form of **landmarking** so players know how to backtrack and if they are in the right section
    - Even using Art on the wall maybe its like a mural per section
    - Since abilities are different tech are developed in a lab with its own color code, you'll also know where to use them e.g. the blue section
-

https://youtu.be/WsZG_NbY5OY?t=18

- **Enemies/Designs**
  - There are enemies that are shown earlier in the game before being able to access it
  - Tease players with things that look interesting and make player start to think about going back

Level Design:

- Every puzzle is embedded in the walls
- A central pillar that rotates and allows the player to progress
- Maybe the pillar leads to different rooms
- Require multiple tools like a metroidvania
- **Make sure it is obvious there is multiple paths to solve puzzles and you can go back to solve previous puzzles**
- We can also just design a certain part of the level with in scope and the entire cylinder is modeled and designed
  - We can still allow players to succeed with like an elevator to still maintain the fantasy of getting to the top

Game Pillars

Pillars

Quality over quantity	**Player agency**	**Play With Two Characters**

Project Analysis

Genre

- Third Person
- Puzzle
- Traversal Obstacles

Play Time

1-2 Hours

Target Platform

Game Engine

The game will be assembled in **Unity 2020.3.8f1**

System Hardware Requirements

- **OS**: Windows 10 64-bit
- **Processor**: Dual Core Processor at 2.3+ GHz or better
- **Memory**: 4 GB RAM
- **Graphics**: 1024 MB Nvidia or ATI graphics card
- **DirectX**: Version 11
- **Storage**: 6 GB available space

Game Format

The game will be an application in .exe format for the **Windows** operating system, available for download at the Steam Store.

Key Resources

Authoring Tools

- Adobe Illustrator
- Adobe Photoshop
- Adobe Animate
- Zbrush
- Maya
- Blender
- Substance Painter
- Ableton Live 11

Assembly Tools

- Unity 2020.3.8f1
- Fmod

Playable Requirements

- Windows PC
- Steam Account
- Controller/Keyboard

Some of our key resources include:

- Capstone workspace
  - Cintiqs and shared workspace
- Professors
- Capstone advisors
- Our peers
- Educational Licenses
  - Unity
  - Adobe Animate
  - Photoshop
  - Zbrush
  - Maya
  - Blender
  - Substance Painter

Marketing Analysis

Qualitative Analysis Table

https://sheridanc.sharepoint.com/:x:/s/GAME49333StudioPractice1-Team10/EfGx-SIg1dNCi3loShoDiGwB9_3RTnzC4srYFrLVmHUf4A?e=O2ZxHd

Roadmap

https://wilsonchan.atlassian.net/jira/software/projects/QUIR/boards/12/roadmap

Milestones

	Project Milestone	Description	Expected Date
1	**Team Charter**	This document will establish our team roles, responsibilities, governance, risks, goals and, project	15 Sep 2022
2	**Research Report**	Involves conducting research on the target market and project unknowns. At the end of this milestone, the team will have a thorough analysis of the target market and all known unknowns will be addressed or resolved.	29 Sep 2022

		Involves exploring a variety of possible designs based on the core game idea. This is done through building rapid prototypes focusing on core features and mechanics. At the end of this milestone, the team will have a clear common vision of the final product.	
3	**Proof of Concept**	Involves developing a schedule for the completion of tasks and features throughout production. At the end of this milestone, the team will have a clear image of how much work needs to be done and when each feature will be complete.	20 Oct 2022
4	**Team Defined**	Begin development on the game's character, camera, and controller. At the end of this milestone, the player controller will be functional and integrated into the game.	TBD
5	**Project Plan**	Begin development on the core puzzle mechanics, with a first draft of the puzzles that will be in the game. At the end of this milestone, the game's starting puzzles will be functional and integrated into the game.	10 Nov 2022
6	**GDD**	Involves tweaking camera works, implementing basic shaders, polishing character models & animations, and implementing important sound effects. At the end of this milestone, the core gameplay experience will be polished.	24 Nov 2022
7	**Minimum viable product**	An executable build of the game including all core features and mechanics. The state of the build should be as close to the final product as possible.	01 Dec 2022

Deliverables

Project Deliverable 1: Team Charter	
Stakeholder:	Zain Dinath
Description:	A document detailing the team's work process, conflict resolution, and contingency plans. Used as a reference by advisors and stakeholders.
Acceptance Criteria:	• First pass of team charter complete. • Includes roles and responsibilities of team members. • Includes the team's decision-making process in detail. • Includes the team's conflict resolution plan in detail. • Includes actionable risk contingency plans.
Due Date:	15 Sep 2022

Project Deliverable 2: Research Report	
Stakeholder:	Zain Dinath
Description:	A document detailing initial research conducted about the game's design.
Acceptance Criteria:	• Answers any unknowns about the project or the design. • Includes a detailed breakdown of the methodology used to conduct the research. • Includes a detailed breakdown of the results obtained and their relevance to the project. • Includes a detailed discussion of recommended changes to the project based on the results obtained.
Due Date:	29 Sep 2022

Project Deliverable 3: Proof of Concept	
Stakeholder:	Zain Dinath
Description:	A functional and playable build used to determine whether the game idea and be made into a reality.
Acceptance Criteria:	• Demonstrates the game's core mechanic and hook. • Answers whether the game idea is feasible with the team and time frame. • Includes an executable build.
Due Date:	20 Oct 2022

Project Deliverable 4: Alfa Version	

Stakeholder:	Zain Dinath
Description:	Begin development on the game's mechanics, character, camera, and controller. At the end of this milestone, the player controller will be functional and integrated into the game
Acceptance Criteria:	• Solidified game mechanics • Camera working properly • Switching between characters working properly • Controls working properly • Essential elements added to the development playground
Due Date:	TBD

Project Deliverable 5: Project Plan	
Stakeholder:	Zain Dinath
Description:	A document that details the goals, tasks, and resources needed to complete the project.
Acceptance Criteria:	• Identifies the purpose and scope of the project. • Identifies project constraints. • Includes a minimum of two personas representing different user types that might play our game. • Includes a WBS detailing a breakdown of the work required to complete the project. • Includes a PBS detailing a breakdown of the features and components of the project. • Includes a schedule that details when work is expected to be complete.
Due Date:	10 Nov 2022

Project Deliverable 6: Game Design Document	
Stakeholder:	Zain Dinath
Description:	A first-pass document detailing all features of the final product.
Acceptance Criteria:	• Includes a detailed breakdown of the game's systems and mechanics. • Includes a detailed breakdown of the game's scope and proposed assets. • Includes a detailed breakdown of the game's player experience and intended audience. • Includes a detailed breakdown of each puzzle and level that will be in the game. • Includes a detailed breakdown of the game's art, narrative, and sound direction. • Includes a detailed breakdown of the game's technical tools and constraints.
Due Date:	24 Nov 2022

Project Deliverable 7: MVP	
Stakeholder:	Zain Dinath
Description:	Present a minimal version of the game that demonstrates the potential of the project
Acceptance Criteria:	• Hands-on demonstration of the idealized • Version of the final game • Functional gameplay • Minimum progression • Clear demonstration of all functions and elements • Presentation of aesthetics
Due Date:	01 Dec 2022

MVP - Necessary – Nice to have – Save it for sequence

	Necessary	**Nice to have (For Release)**	**Save it for Circuit Breakout 02**

Abilities	Use both characters abilities simultaneously
	
	• Make it intuitive and natural
	• Magnetic Field:
		Particle effects as signifiers
		
		• Gravity Shift without connections between electric plates
		• Silhouette highlights on objects
		• **Surge**
		  • **Energy Beam**
		  • **Quantum Entanglement**
			• Combat and skill trees
			• Stealth
			• Break things with Data

	- To move object from one place to another within a field radius
	- Change the VFX signifiers
	- Stretchy Arms
	  - Physical Interactions
	  - Wrap around obstacles
	  - Surge can travel through Data's arms
	  - Data can use her arms to connect powered elements
	- Playable Levels/Puzzles
	  - Easy level introductions for each mechanic or ability
	  - Higher level puzzles where a combination of mechanics and/or abilities are used
	  - At least one puzzle per floor
	- Playtesting
	  - Get results on level design and mechanic/ability functionality
	  - Iterating on playtest feedback
	
	RECONSIDER # OF MECHANICS:
	
	- Each New mechanic = 3x levels, Relighting each level, bug testing each interaction
		- **Data**
		  - **Crane/Servo-Tractor**
		  - Interconnected cranes
		  - Advance crane puzzles
		- **Beam Mirror**
		- **Energy Repeaters**
		- **A Flashlight from her Chest to progress through the darkest regions**
		- **Playtesting**
		  - Get results on level design and mechanic/ability functionality
		  - Iterating on playtest feedback
		- **One Open World scene with seamless loading**
		- **World exploration abilities for Data**
		  - Grabling hook
		  - Jumping catapult
		  - Flashlight	

Elements	☑ **Electric Pole (Data)**
	
	- Art: Mix shader and implement on and off through a red and green light
	
	☑ **Rail Inductor (Surge)**
	
	- Shape needs to be remake
	  - Surge needs to move directly after interaction
	
	☑ **Electric Rail (Surge)**
	☑ **Arc Ladder (Surge)**
	
	- Indicate when they have power or not
	
	☑ **Capacitor (Surge)**
	
	- Indicate the charging /discharging status
	
	☑ **Metallic Cubes (Surge)**
	
	- Need to be larger them what we have right now
	  - Need to respawn when needed
	
	☐ **Electric Grid (Surge)**
	
	- Turn on or off and limit Surge movement
	
	☑ **Electric Connections**
		- **Environment props**
		  - Column elevator
		  - Surge holding cell
		  - Blocking field update
		  - Modular
		  - wall segments to populate the main room
		  - Trim sheet for wall segments (Normal bake) since most of them are going to be inaccessible
		  - Blue cloudy skybox with Trees surrounding the circumference of the main room
		  - Animation blending for movements & interactions
		- **Electric Connections**
		  - Wire builder w/ spline curves
		- **Surge**
		  - Surge's battery pack 3D asset & Electric Pole
		  - Emissive texture
		  - Surge bouncing around inside
		  - Surge moves from the antenna on Surge's battery to the Electric Pole
		- **Enemies**
		- **On/Off Light**
		- **Charging Field**
		- **Discharging Field**
		- **Energy Receptor**
		- **Mechanical Piston**
			- **Environment**
			  - Variations of common props like walls and floor tiles
			  - PBR texturing of all assets

	• Visual feedbacks on charged wire segments & flow direction of electricity
	
	☑ **Mechanical Bridge (Data)**
	
	• Art: Mix shader and implement on and off through a red and green light
	
	☑ **Blocking Field (Data)**
	
	• Change to block the path when energised
	
	☑ **Switch: (Data)**
	
	• Data can move them from point A to B to turn Electric Connections On or Switch the power between two Electric Connections
	• Data should use the L-Ctrl and Space to interact with them
	
	☐ **Breaker (Data)**
	
	• Work as the Switches, but need Data constantly interaction to keep the position
	
	☑ **Crane/Servo-Tractor (Data)**
	
	• **Passive:**
	  • Move crane elements to solve puzzles and position remains unchanged after interaction
	• **Active:**
	  • Move crane elements to solve puzzles and position remains comes back to original position after interaction
	
	☐ **Permanent Generator (Data)**
	
	• After interaction, keeps the power going
	  • Turn on generator central portion to glow
	
	☐ **Main Electric Panel**
	
	• Needs to be a good landmark signing the end of the puzzle
	
	☐ **Catwalk (Data)**
	
	• Set the modular pieces and scales		

UI Elements	☑ **Simple Main Menu**
	☑ **Start Button**
	☑ **Exit Game**
	☑ **Placeholder Background art with Data & Surge + Circuitry**
	☑ **Our Logo for Circuit Breakout**
		• **Diegetic Communication when Surge is using abilities**
		  • VFX for the antenna lighting up when surge uses an ability and sends an electric arc to Surge's location
		• **UX Settings**
		  • Save game/load game	

	☑ Escape menu ☑ Return to main menu ☑ Exit Game	• Control Settings (Keybinds) • Graphic Settings	

Performance		• **Unity Profiler**
		  • Look at any memory leaks
		  • Performance draw backs
		  • our average frame rate/ms response
		• **LODs - Unity**
		  • Figure out how to use Unity to load LODs, will be especially important when player reaches the main game level
		• **Lighting**
		  • Set up layers for shadows and baked lights
		  • Allow dynamic lights to render on Data and Surge while everything else is baked
		• **Other stuff**
		  • Occlusion culling	

Game Features

- 1 Version 1.0 - PoC
  - 1.1 As a Player: I want to move around in a 3D environment
  - 1.2 As a Player: I want to be able to look around
  - 1.3 As a Player: I want to grab or put Surge at the level
  - 1.4 As a Player: I want to know if Surge is with Data or not
  - 1.5 As a Player: I want to switch between both characters
  - 1.6 As a Player: I want to know where I'm aiming
  - 1.7 As a Player: I want to move Surge freely
  - 1.8 As a Player: I want to move objects to connect Electric Paths
  - 1.9 As a Player: I want to slide through wires and move Surge around
  - 1.10 As a Player: I want to be able to turn things on or off using Data
  - 1.11 As a Player: I want to use my abilities to solve a puzzle
  - 1.12 As a Player: I want to be able to unlock a new area within the puzzle
  - 1.13 As a Player: I want to know what I turning on or off
  - 1.14 As a Player: I want to charge things using Surge
- 2 Version 2.0 - MVP
  - 2.1 As a Player: I want to charge things using Surge and keep them charged
  - 2.2 As a Player: I want to use more than one Metallic Objects to connect Electric Paths
  - 2.3 As a Player: I want to create new paths that Surge can walk in
  - 2.4 As a Player: I want to know where if an Electric Path has energy or not
  - 2.5 As a Player: I want to shoot energy at things
  - 2.6 As a Player: I want Switches that offer a more interesting challenge than normal ones
  - 2.7 As a Player: I want to force overloaded Circuit Breakers to stay on
  - 2.8 As a Player: I want to use machines and make them move things for me
  - 2.9 As a Player: I want to be able to create new paths for Data to move through the puzzles and unlock an area within the puzzle
  - 2.10 As a Player: I want more challenging puzzles that separate or join Surge and Data in unusual ways
  - 2.11 As a Player: I want to be able to create new paths for Data to move through the puzzles
  - 2.12 As a Player: I want to know that I finished a puzzle
- 3 Version 3.0 - Alfa
  - 3.1 As a Player: I want to explore a facility with multiple puzzles
  - 3.2 As a Player: I want to know which puzzle I can do
  - 3.3 As a player: I want to know which element Data is targeting or interacting
  - 3.4 As a Player: I want to use Surge's abilities in an unusual way
  - 3.5 As a Player: I want to know what ability Surge is using and switch freely between them
  - 3.6 As a Player: I want to use the Energy Beam in more interesting ways
  - 3.7 As a Player: I want Switches that offer more than just an on/off state
  - 3.8 As a Player: I want to move Servo Tractors that move other Servo Tractors
  - 3.9 As a Player: I want to rotate some Servo Tractors
  - 3.10 As a Player: I want to turn on machines in the facility and see them moving things
  - 3.11 As a Player: I want to understand how many connections I need to turn something on
  - 3.12 As a Player: I want to being able to move Surge around the map using dynamic gravity to solve puzzles
  - 3.13 As a Player: I want some threats to avoid
  - 3.14 As a Player: I want to feel observed and unwelcome in the facility
  - 3.15 As a Player: I want to Switch between Surge abilities easily
  - 3.16 As a Player: I want to see a main menu when the game starts

- 3.17 As a Player: I want to pause the game, be able to quit it or change options
- 3.18 As a Player: I want to know when an object is properly making a connection between two Electric Paths
- 4 Version 4.0 - Beta
  - 4.1 As a Player: I want to know more about the game's story
  - 4.2 As a Player: I want to feel that Surge is smaller than Data
  - 4.3 As a Player: I want a final screen to know that I finished the game

Version 1.0 - PoC

As a Player: I want to move around in a 3D environment

Players need to be able to move both characters in a 3D environment and understand how they are moving around.

CB-208 - Getting issue details... STATUS

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1	DESIGN	@ Tiago Massochin	Define the movement mechanics	2h	None
2	PROGRAMMING		Set Data player character movement in Unity		
3	PROGRAMMING		Set Surge player character movement in Unity		
4	ART		Set Data player character base movement animations on Unity		
5	ART	@ Wilson Chan	Set Surge player character base movement animations on Unity -By @ Wilson Chan : Likely will be a small humanoid mesh with a shader to look electric+particles to avoid animating it for now.		
6	AUDIO	@ Tiago Massochin	Set Data's Character Movement SFX in Unity	2h	
7	AUDIO	@ Tiago Massochin	Set Surge's Character Movement SFX in Unity	2h	

As a Player: I want to be able to look around

Players need to be able to move the characters' cameras in a 3D rotation and be able to see the level where they are.

CB-210 - Getting issue details... STATUS

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1	PROGRAMMING		Set Data's camera movement in Unity		
2	PROGRAMMING		Set Surge's camera movement in Unity		

As a Player: I want to grab or put Surge at the level

Players need to be able separate Surge from Data putting (or getting) him at Electric Poles.

CB-213 - Getting issue details... STATUS

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1	PROGRAMMING		Move Surge from Data's battery and place it on the Electric Pole when Data gets close to an Electric Pole		

2	PROGRAMMING		Replace Surge on Data's Battery if she leaves an Electric Pole without Surge leaving the Electric Pole		
3	PROGRAMMING		Move Surge to Data's battery when Data gets close to an Electric Pole with Surge		
4	ART	@ Farryl Chang ???	3D model of Data's Batter(the core thing we need is the antenna, everything else isn't important) -Likely need to have it rigged so there is a joint for the antenna and then everything else -This way @ Wilson Chan can use VFX graph to only target the antenna when this occurs.		
5	ART	@ Wilson Chan	Basic animation of Surge moving from Data's Battery to Electric Pole -WC: Shader+VFX using a 3D asset to try and make it still feel like its surge rather than a general VFX		
6	ART	@ Wilson Chan	Basic animation of Surge moving from the Electric Pole to Data's Battery -WC:Likely be mostly solved once above is done		
7	ART	@ Wilson Chan	Basic animation for when Surge is on Electric Pole -Similar to row 4 above		
8	AUDIO	@ Tiago Massochin	Basic SFX of Surge moving from Data's Battery to Electric Pole	1h30	
9	AUDIO	@ Tiago Massochin	Basic SFX of Surge moving from the Electric Pole to Data's Battery	1h30	
10	AUDIO	@ Tiago Massochin	Basic SFX for when Surge is on Electric Pole	1h30	

As a Player: I want to know if Surge is with Data or not

Players need a signifier that indicates when the two characters are together.

CB-214 - Getting issue details... STATUS

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1	ART	**I believe** @ Hubery Chu already has enough for the PoC on this	Basic signifier that demonstrates that Surge is on Data's battery		
2	ART	**I believe** @ Hubery Chu already has enough for the PoC on this	Basic signifier that demonstrates that Surge is not on Data's battery		

As a Player: I want to switch between both characters

Players need to be able to switch between both characters when they are not together.

CB-215 - Getting issue details... STATUS

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1	PROGRAMMING		Program camera switching between characters in Unity		
2	PROGRAMMING		Program character controller switching between characters in Unity		

3	ART	@ Farryl Chang 's work has enough for PoC I believe	Data's basic idle animation for when she is not being controlled		
4	ART	We don't need this for now, @ Hubery Chu 's VFX pack for current Surge works for PoC	Surge's basic idle animation for when he is not being controlled		
5	AUDIO	@ Tiago Massochin	Basic SFX for when players switch from Surge to Data	1h	
6	AUDIO	@ Tiago Massochin	Basic SFX for when players switch from Data to Surge	1h	

As a Player: I want to know where I'm aiming

Players must have an icon to indicate the characters' aim.

CB-216 - Getting issue details... STATUS

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1	ART		Add a center crosshair that shows players where they are aiming		
2	ART		Add an outline to Metallic Objects when Surge is targeting them and they are in Electric Arc's range		
3	ART		Add an outline to Switches when Data is targeting them, and they are in her interaction range		

As a Player: I want to move Surge freely

Players need to be able to move Surge around only on electrified Grid Plates.

CB-218 - Getting issue details... STATUS

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1	PROGRAMMING		Limit Surge's movement to Grid Plates only		

As a Player: I want to move objects to connect Electric Paths

Surge needs to be able to use the Electric Arc power to move Metallic Objects and be able to use the Metallic Objects to connect two Electric Paths.

CB-219 - Getting issue details... STATUS

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1	PROGRAMMING		Allow Surge to grab and move Metallic Objects when they are in Electric Arc's range		
2	PROGRAMMING		Create distinct connection points for Electric Paths		
3	PROGRAMMING		Allow Metallic Objects to transmit energy from one Electric Path to the other when touching two connection points from two different Electric Paths		
4	ART	@ Wilson Chan	Set a simple Electric Paths connection points format		

5	ART	@ Wilson Chan	Set a simple effect between Surge and the Metallic Object to represent when he is using Electric Arc on the object		
6	ART	The general electricity VFX should work for this	Set a simple effect for the Metallic Objects connected two Electric Paths to demonstrate that the connection is working.		
7	ART	The general electricity VFX should work for this	Set a simple effect for the Metallic Objects when disconnected two Electric Paths to demonstrate that the connection is not going anymore.		
8	AUDIO	@ Tiago Massochin	Basic SFX for when Surge starts to use the Electric Arc	30m	
9	AUDIO	@ Tiago Massochin	Basic SFX for when Surge is using the Electric Arc	30m	
10	AUDIO	@ Tiago Massochin	Basic SFX for when Surge stops to use the Electric Arc	30m	
11	AUDIO	@ Tiago Massochin	Basic SFX for when a Metallic Object connects two Electric Paths	30m	
12	AUDIO	@ Tiago Massochin	Basic SFX for when a Metallic Object disconnect two Electric Paths	30m	

As a Player: I want to slide through wires and move Surge around

Surge needs to be able to “slide” on electrified Metallic Rails.

CB-222 - Getting issue details... STATUS

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1	PROGRAMMING		Set the state variation of a Metallic Rail between on and off		
2	PROGRAMMING		Allow Surge to change between the Grid Plate to the powered Metallic Rails		
3	PROGRAMMING		Allow Surge to move "inside" a powered Metallic Rails between one section to another		
4	PROGRAMMING		Allow Surge to exit a powered Metallic Rails when next to a Grid Plate		
5	PROGRAMMING		Allow Surge’s camera to move freely when he is “inside” a powered Metallic Rails		
6	PROGRAMMING		Allow Surge’s to stop at connecting nodes and choose which direction to go.		
7	ART	Should be covered by general electricity VFX	Basic idle effect that demonstrates Surge's position on Metallic Rail		
8	ART	Out of scope	Basic movement effect that demonstrates Surge's movements on Metallic Rail		
9	ART	Out of scope	Basic effect that demonstrates Surge's transition between the Grid Plate through the Metallic Rail		
10	ART	Out of scope	Basic effect that demonstrates Surge's transition between the Metallic Rail throw the Grid Plate		
11	ART	Should be covered by general electricity VFX @ Wilson Chan	Basic movement effect that demonstrates if the Metallic Rail has energy or not		
12	AUDIO	@ Tiago Massochin	Basic SFX for when Surge enters the Metallic Rail	30m	
13	AUDIO	@ Tiago Massochin	Basic SFX for when Surge exits the Metallic Rail	30m	
14			Basic SFX for when Surge is idle on the Metallic Rail	30m	

	AUDIO	@ Tiago Massochin			
15	AUDIO	@ Tiago Massochin	Basic SFX for when Surge is moving on the Metallic Rail	30m	
16	AUDIO	@ Tiago Massochin	Basic SFX for when a Metallic Rail is turned on	30m	
17	AUDIO	@ Tiago Massochin	Basic SFX for when a Metallic Rail is turned off	30m	

As a Player: I want to be able to turn things on or off using Data

Players need to be able to interact with Switches using Data and turn the energy on or off on Electric Paths.

CB-220 - Getting issue details... STATUS

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1	PROGRAMMING		Set the state variation of a Switches between on and off		
2	PROGRAMMING		Set the Electric Path energy variation according to the connected Switch state		
3	PROGRAMMING		Define Data's interactions with the Switch when it is in range		
4	ART	@ Wilson Chan	Set a simple format for the Switch		
5	ART	@ Wilson Chan	Vary the shape/position of the Switch according to its state in a visual and understandable way for players		
6	ART	@ Farryl Chang	Simple Data Animation using the Switch		
7	ART	@ Farryl Chang	Simple animation of Data not being able to use the Switch		
8	AUDIO	@ Tiago Massochin	Basic SFX for when a Switch turned on	30m	
9	AUDIO	@ Tiago Massochin	Basic SFX for when a Switch turned off	30m	
10	AUDIO	@ Tiago Massochin	Basic SFX for when Data can't use Switch	30m	

As a Player: I want to use my abilities to solve a puzzle

Players need a puzzle demo where they can use Surge's Electric Arc to move objects and interact with Switches using Data to solve the puzzle.

CB-227 - Getting issue details... STATUS

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1	DESIGN	@ Joshua Pritchett	Create a greybox for the first puzzle	4-6hrs	
2	DESIGN	@ Joshua Pritchett	Populate the first puzzle with the necessary game objects	1-2hrs	
3	DESIGN	@ Farryl Chang	Draft the second puzzle	3-5hrs	
4	DESIGN	@ Farryl Chang	Greybox the second puzzle	4-6hrs	
5	DESIGN	@ Farryl Chang	Populate the second puzzle with the necessary game objects	1-2hrs	

6	DESIGN	@ Joshua Pritchett	Draft and greybox the central column room	3-4hrs	

As a Player: I want to be able to unlock a new area within the puzzle

Players should be able to turn Blocking Field on or off.

CB-230 - Getting issue details... STATUS

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1	PROGRAMMING	@ Farryl Chang	Set the state variation of the Blocking Field between on and off		
2	PROGRAMMING	@ Farryl Chang	Set the characters collision state variation of the Blocking Field when it's on and off		
3	ART	@ Farryl Chang	Set a simple format for the Blocking Field Poles		
4	ART	@ Farryl Chang	Set a simple format for the Blocking Field barrier when its on		
5	ART	@ Farryl Chang	Simple animation for when the Blocking Field turn on/off		
6	ART	@ Farryl Chang	Simple animation for when the characters collide against a Blocking Field		
7	AUDIO	@ Tiago Massochin	Basic SFX for when a Blocking Field turned on	30m	
8	AUDIO	@ Tiago Massochin	Basic SFX for when a Blocking Field turned off	30m	
9	AUDIO	@ Tiago Massochin	Basic SFX for when a character collides against a Blocking Field	1h	

As a Player: I want to know what I turning on or off

Players need to be able to see Electric Paths between connected elements and understand what elements they are connecting.

CB-231 - Getting issue details... STATUS

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1	ART	@ Wilson Chan	Set the Electric Paths format		
2	ART	@ Wilson Chan	Set the Electric Paths visuals for when they are with power or not		

As a Player: I want to charge things using Surge

Players should be able to use Surge's Electric Arc ability to charge Mini Generator.

CB-232 - Getting issue details... STATUS

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1	PROGRAMMING		Change the state of Mini Generators to on or off whether Surge is using Electric Arc on them or not.		
2	PROGRAMMING		Mini Generators must emit an on/off signal through the Electric Path connected to it, in order to turn on/off whatever is connected to the Electric Path according to the state of the Mini Generators.		
3			Set the Mini Generator Basic Format		

	ART	@ Wilson Chan			
4	ART	@ Wilson Chan	Set the Mini Generator FX/animation to when it is on		
5	AUDIO	@ Tiago Massochin	Basic SFX for when a Mini Generators are turned on	30m	
6	AUDIO	@ Tiago Massochin	Basic SFX for when a Mini Generators are turned off	30m	
7	AUDIO	@ Tiago Massochin	Basic SFX for when a Mini Generators has power	30m	

Version 2.0 - MVP

As a Player: I want to charge things using Surge and keep them charged

Players should be able to use Surge's Electric Arc ability to charge Capacitor.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to use more than one **Metallic Objects** to connect **Electric Paths**

Players need to be able to align Metallic Objects in order to make electric current pass through them and thus be able to turn on **Electric Paths** with a larger gap.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to create new paths that Surge can walk in

Players should be able to turn Grid Plate on or off and create new paths options to Surge.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to know where if an **Electric Path** has energy or not

Players need to be able to see if the Electric Paths are electrified or not.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to shoot energy at things

Players must be able to use Surge's Energy Beam ability and turn Energy Receptor on.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want Switches that offer a more interesting challenge than normal ones

Players should be able to use Data to turn on Circuit Breakers that have a charge capacity and trips if overloaded.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to force overloaded Circuit Breakers to stay on

Players should be able to use Data to force a Circuit Breaker to stay on even when it is overloaded.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to use machines and make them move things for me

I want more challenging puzzles that separate or join Surge and Data in unusual ways. use Machine Possession to manipulate Servo Tractors and make them move things.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to be able to create new paths for Data to move through the puzzles and unlock an area within the puzzle

Players should be able to turn Energy Bridge/Blocking Field on or off.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want more challenging puzzles that separate or join Surge and Data in unusual ways

Players should be able to interact with Charging Fields and Discharging Fields, and separate/join Surge and Data by passing through them.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to be able to create new paths for Data to move through the puzzles

Players should be able to turn Energy Bridge on or off.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to know that I finished a puzzle

Players should interacting with a Computer Terminal at the end of the puzzles and understand that the puzzle is completed.
Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

Version 3.0 - Alfa

As a Player: I want to explore a facility with multiple puzzles

Make a grey box for players with a level hub with a level design that allows - and instigates - exploration and puzzle solving.
Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to know which puzzle I can do

Update Electric Poles so that they clearly demonstrate to players what abilities a puzzle requires to be accessed and what abilities players currently have.
Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a player: I want to know which element Data is targeting or interacting

When Data is looking at an object that is passive for interaction, that object should present an aura/outline that demonstrates that it can be activated. When the object is under Data's control, it must have a different aura/outline that indicates its current state.
Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to use Surge's abilities in an unusual way

Surge needs to be able to use the Electric Attraction ability to move Ferromagnetic Objects and be able to them to connect two Electric Paths.
Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to know what ability Surge is using and switch freely between them

Players should be able to see clear signifiers in Surge that indicate what abilities he currently has equipped, and they should be able to easily switch to another ability he has available.
Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to use the Energy Beam in more interesting ways

Players need to be able to reflect the Energy Beam on Reflector to solve puzzles.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want Switches that offer more than just an on/off state

Players should be able to interact with more complex versions of Switches that can be used to change the direction of output, inverting which objects are on/off.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to move Servo Tractors that move other Servo Tractors

Servo Tractors must be able to move other Servo Tractors, increasing the possibilities and complexity of the puzzles. Players must be able to move each Servo Tractor individually.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to rotate some Servo Tractors

Servo Tractors must have parts that rotate their structure. These parts are limited to single rotations of 90 degrees, and can only vary the maximum rotation limit possible. (90-180-270-360)
When the part of the Servo Tractor that rotates makes a rotation, all elements attached to that part must rotate as child elements.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to turn on machines in the facility and see them moving things

Players should be able to turn Electric Pistons on or off and move things with them.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to understand how many connections I need to turn something on

Players needs On/Off Lights to be able to understand how many powered Electric Paths an element with multiple inputs actually needs to be powered on and how many Electric Paths are sending power to the element at the moment.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to being able to move Surge around the map using dynamic gravity to solve puzzles

Grid Plates must have a dynamic gravity system, where all nearby objects are pulled against it when turned on. Surge must be able to move around the Grid Plates in order to vary the direction of the "gravitational" pull exerted on him.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want some threats to avoid

Players need to interact with Electric Spiders elements so that they are a threat to the player and also increase the complexity of the puzzles.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to feel observed and unwelcome in the facility

Players need to interact with Sentinels elements so that they are a threat to the player and also increase the complexity of the puzzles.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to Switch between Surge abilities easily

A UI system that allows players to change Surge's abilities easily.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to see a main menu when the game starts

A main menu where players can launch the game, load saved games, or modify options.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to pause the game, be able to quit it or change options

A pause screen where players can pause the currently game, load other saved games, modify options, or quit the game.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to know when an object is properly making a connection between two Electric Paths

Objects need to change color to indicate to the player when they are properly connecting two Electric Paths.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

Version 4.0 - Beta

As a Player: I want to know more about the game's story

Add cutscenes and animations to gesturally tell the game's story to players.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want to feel that Surge is smaller than Data

Surge needs to take a different and distorted view in order to exemplify its small size to players.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

As a Player: I want a final screen to know that I finished the game

A credits screen that indicates the end of the game with proper credits.

Story Required Tasks

	Department	Assigned	Description	Time estimation	Blocked by
1					

Alpha - Necessary – Nice to have – Save it for sequence

Necessary	Nice to have (Beta)	Save it for Circuit Breakout 02

HIGHEST PRIORITY
Data Mechanical Arms
☑ Physical Interactions
☑ Wrap around obstacles
☑ Animation
☑ Blending walking direction with arms raised
☑ An animation per arm as you can choose which one independently
☑ Visuals
☑ Shader for arms extended that matches the material for the hair to cue the connectedness' of the two
☑ Make it a world space texture so it isn't stretched
☑ Reference the ground material on our main floor tiles
☑
	• Particle effects as signifiers
	• Data
	  • Crane/Servo-Tractor
	  • Interconnected cranes
	  • Advance crane puzzles
	  • A Flashlight from her chest to progress through the darkest regions
	  • Left right arm differentiators on the cursor to help with which arm is being used
	  •
	  • Make the arms different colors
	  • Make pigtails different colors
	  • Make the UI pop ups match those colors, Left vs Right arm
	  • Allow rebindable controls
	  • Must need to update each UI indicator with it
	• One Open World scene with seamless loading
	• Environment props
		• Combat and skill trees
		• Stealth
		• Break things with Data
		• World exploration abilities for Data
		  • Grabling hook
		  • Jumping catapult
		  • Flashlight
		• Surge
		  • Energy Beam
		  • Quantum Entanglement
		• Data
		  • Beam Mirror
		  • Energy Repeaters
		  • Jumping catapult
		• Variations of common props like walls and floor tiles
		• Environment
		  • PBR texturing of all assets
		  • movements & interactions
		  • Rework Emissive functionality since there will only be 1 material required to do it
		• Electrical Panel:
		  • Visual signifiers that requires Surge and Data to interact

- [ ] Allow the color to be changed in an exposed parameter
- [ ] SFX

Data Electric Arm

- [x] Surge can travel through Data's arms
- [x] Place Surge through Data's arms
- [ ] Relocate old Electric Pole to be consistent with the new ability
- [ ] SFX

Electric Grid

- [ ] Gravity Shift without connections between electric plates
- [ ] Turn On/Off and limit Surge movement

Electric Panel

- [ ] Needs to be a good landmark signing the end of the puzzle
- [ ] Wires extend from the top that creates a tree silhouette that is visible from afar so players know where to exit - Create them using Hubery's Node System) to have more freedom with the shape and placement
- [ ] Mini game to grab Surge
- [ ] Update old puzzles to match the new element.
- [ ] Electric Panel breaking SFX
- [ ] Electric Panel with Surge SFX
- [ ] Turn the lights On after interaction

Playable Levels/Puzzles

- [ ] Easy level introductions for each mechanic or ability
- [ ] Higher level puzzles where a combination of mechanics and/or abilities are used
- [ ] At least one puzzle per floor

HIGH PRIORITY

Lighting

- [ ] Set up layers for shadows and baked lights
- [ ] Allow dynamic lights to render on Data and Surge while everything else is baked
- [ ] Try mixed lighting since we would want ambient light so the game isn't pitch black
- [ ] Fiddle with lightmap sizes and how much Resolution each occupies

Playtesting

- Column elevator
- Surge holding cell
- Blocking field update
- Modular
  - wall segments to populate the main room
  - Trim sheet for wall segments (Normal bake) since most of them are going to be inaccessible
- Blue cloudy skybox with Trees surrounding the circumference of the main room
  - Animation blending for
- On/Off Light To Signify Progress
  - Entrances to rooms light up so when you are in central column ,you can see where you have already been
- Seamless opening from the main menu to the game on starting a new game.
  - Main menu is an overhanging shot of the walkway into Surge's holding cell. When you press start game, Data walks from the bottom of the screen towards the door in and the camera follows behind her. As she enters, the camera follows in and the door closes behind her. Player then controls the game.

Hint Narrative Audio

- Testing bantar and hints at gameplay

Unity Profiler

- Look at any memory leaks
- Performance draw backs
- our average frame rate/ms response

LODs - Unity

- Figure out how to use Unity to load LODs, will be especially important when player reaches the main game level

Other stuff

- Occlusion culling

Second character location assistance

- [ ] Second character highlight(maybe a beam of energy from the respective character colored to match each and implemented /beacon)
- [ ] Camera movement through second character direction
- [ ] VFX for the antenna lighting up when surge uses an ability and sends an electric arc to Surge's location and one for Data as well to express where Data is - the point is to lead the player to where the other character is

Game objects:

- [ ] Use similar visual language of a handle animating when it is interactable and not to each game object

Data interaction point:

- [ ] together to unlock Surge to progress
  - e.g. Panel heats up for Surge interacting
  - e.g. Data must use her arms to break out
  - Panel will explode and VFX to show Data being upgraded to have longer arms

Game ENDING

- At the top in the final area , have a final elevator in a dark room with a light shaft revealing the sky but then cut the black and have final audio lines of the two talking about Surge's first experience in the world
- We could also do a concept art style shot at the end of the game

Lightswapping

- Each time conductors are connected, lights change in the scene(purely visual, puzzles won't have time to be designed around this)
- Charging Field
- Discharging Field
- Energy Receptor
- Mechanical Piston

Stretchy Arm

- Have Arm point at target after launching
- Limit rotation of player when moving so it doesn't go behind

Data pigtails

- [ ] Change in length based on maximum length of Data's arms
  - [ ] e.g. reference Data's max arm variable and * by a percentage so it doesn't get ridiculous
  - [ ] Find a way to make the hair flow while not moving, like adding a noise texture to drive the horizontal movement

Hanging Bars

- [ ] Hanging bar model
- [ ] Hanging bar animation
- [ ] Move Data to specific points by throwing her arms
- [ ] Develop puzzles that require knowledge of the ability
- [ ] Data moving SFX

Data Electric Arms

- [ ] Data can use her arms to connect powered elements
- [ ] Power Socket 3D model

- [ ] Get results on level design and mechanic/ability functionality
- [ ] Reduce cognitive load by redesigning Holding Cell puzzle
- [ ] Reduce cognitive load by redesigning Bridge puzzle
- [ ] Reduce cognitive load by redesigning Second Crane puzzle

MEDIUM PRIORITY

Magnetic Field

- [x] To move object from one place to another within a field radius
- [x] Change the VFX signifiers

Arc Ladder (Surge)

- [x] Indicate when they have power or not

Capacitor (Surge)

- [x] Indicate the charging/discharging status
- [ ] SFX

Breaker (Data)

- [x] Work as the Switches, but need Data constantly interaction to keep the position
- [ ] SFX

Permanent Generator (Data)

- [x] After interaction, keeps the power going
- [x] Turn on generator central portion to glow
- [x] SFX

Catwalk (Data)

- [x] Set the modular pieces and scales

~~Data flashlight~~

- [ ] ~~Cone Light on her chest that turns on (Automatic)~~
- [ ] ~~Light on/off SFX~~

Surge battery

- [ ] Battery Pack clearly and noticeably shows when Surge is inside with Data
- [ ] Sparks play for whenever he is inside rather than when he enters it
- [ ] Surge bouncing around inside

Electric Pole

- [ ] A common handler across all objects so players can understand where Data can interact.

Switch/Breaker VSF

- [ ] Make the connection bar of both elements emitting light according to the wires they are connect
  - [ ] Split up the materials per component, and split the switch object's t bar to be separate

Crane

- [ ] Make the crane bob up and down slightly to indicate it being on
- [ ] Add more movement in other ways like gears turning to say it is turned on

Shaders

<u>Stretchy Arms:</u>

- [ ] Make a vertex shader that moves the arm based on noise so that code wise, it still functions properly
- [ ] Have it occur when the arm slaps back and is launched
- [ ] Heavier distortion at base

<u>Electricity wires:</u>

- [ ] When the electricity is charging objects, have it flow into the wires
- [ ] Use things like smoke, lightning and other moving VFX that calls the eye to the interactable elements rather than just light
- [ ] Sparks that play randomly when the items are idle
- [ ] Sparks when things move like switch moving, crane sliding and so on
- [ ] Surge's wires should have a similar treatment to stretchy arms where you can see power and circuitry flowing through it subtly but gets more pronounced when Surge is inside

Lighting

- [ ] Increase contrast to interactable objects
- [ ] Increase darkness level so it isn't as dark
- [ ] Make things easily identifiable

Packages to add

- [ ] ProBuilder
- [ ] Vector Graphics (SVG)

- [ ] Update visuals to clearly signify when data is accessible vs not and when it is powered on and not
  - [ ] A dome that closes around surge when not powered
  - [ ] Increase emissive mask to rest of it

Crane

- [ ] Communicate the interaction point that is on the crane object itself rather than the horizontal part long part
- [ ] Communicate with movement when something is on
- [ ] Maybe the balloons scale up and down to move

Narrative Audio

- [ ] Solely narrative triggered around long walking segments to avoid testing hints
- [ ] Audio voice acting

VFX

- [x] Particle systems that represent emotions
- [ ] Diegetic Communication when Surge is using abilities

UX Settings

- [ ] Save game/load game
- [ ] Control Settings (Keybinds)
- [ ] Graphic Settings

UI

- [ ] Resizing for different resolutions
- [ ] Loading floors when player reaches the second floor on the way up the elevator
- [ ] Restrict player movement when on elevator so we ensure they are going up
- [ ] Unload levels when players go down

Electric Gate

- [x] 3D model
- [x] Pass energy only when all the inputs are on

Controller Support

- [x] Control map diagram
- [ ] Control functionality in game

Beta: Necessary – Nice to have – Save it for sequence

Necessary

HIGHEST PRIORITY

Ending

- [ ] Ending screen @ Wilson Chan
  - [ ] Environment art(trees), short path after exiting in a forest, game fades to black and back to menu
    - [ ] **Rock at the end with our credits in the path**
  - [ ] Blue cloudy skybox with Trees surrounding the circumference of the main room and forest scene above it
- Animation blending for
- [ ]
  - [ ]
- [ ] Load Main Menu + Credits
- [ ] Level Design flow to get out

Voice Over

- [ ] New trigger box for the narrative audio
- [ ] Voice Lines for the end
- [ ] Emotion VFX and such
- [ ] Testing bantar and hints at gameplay

Playtesting

- [ ] Get results on level design and mechanic/ability functionality
- [ ] Reduce cognitive load by redesigning Holding Cell puzzle
- [ ] Reduce cognitive load by redesigning Bridge puzzle
- [ ] Reduce cognitive load by redesigning Second Crane puzzle
- [ ] Figure out why the breaker - breaks when in build but not in editor - **progression blocking**

UX Settings

- [ ] Save game/load game
- [ ] Control Settings (Keybinds)
- [ ] Graphic Settings

HIGH PRIORITY

Lighting

Nice to have (Gold)

Lighting

- [ ] Set up layers for shadows and baked lightsTry mixed lighting since we would want ambient light so the game isn't pitch black
- [ ] Fiddle with lightmap sizes and how much Resolution each occupies
- [ ] On/Off Light To Signify Progress
  - [ ] Entrances to rooms light up so when you are in central column ,you can see where you have already been
  - [ ] Seamless opening from the main menu to the game on starting a new game.
  - [ ] Main menu is an overhanging shot of the walkway into Surge's holding cell. When you press start game, Data walks from the bottom of the screen towards the door in and the camera follows behind her. As she enters, the camera follows in and the door closes behind her. Player then controls the game.

Environment

- [ ] Set up layers for shadows and baked lights

Data flashlight

- [ ] Cone Light on her chest that turns on (Automatic)
- [ ] Light on/off SFX
- [ ] A Flashlight from her chest to progress through the darkest regions

Surge battery

- [ ] Battery Pack clearly and noticeably shows when Surge is inside with Data
- [ ] Sparks play for whenever he is inside rather than when he enters it
- [ ] Surge bouncing around inside

VFX

- [ ] Diegetic Communication when Surge is using abilities

Lighting

- [ ] Set up layers for shadows and baked lights
- [ ] Try baking lights in separate scenes then loading them into the main scene

Save it for Circuit Breakout 02

- Combat and skill trees
- Stealth
- Break things with Data
- World exploration abilities for Data
  - Grabling hook
  - Jumping catapult
  - Flashlight
- Surge
  - Energy Beam
  - Quantum Entanglement
- Data
  - Beam Mirror
  - Energy Repeaters
  - Jumping catapult
- Variations of common props like walls and floor tiles
- Environment
  - PBR texturing of all assets
  - movements & interactions
  - Rework Emissive functionality since there will only be 1 material required to do it
- Electrical Panel:
  - Visual signifiers that requires Surge and Data to interact together to unlock Surge to progress
    - e.g. Panel heats up for Surge interacting
    - e.g. Data must use her arms to break out
    - Panel will explode and VFX to show Data being upgraded to have longer arms

Game ENDING

- At the top in the final area , have a final elevator in a dark room with a light shaft revealing the sky but then cut the black and have final audio lines of the two talking about Surge's first experience in the world
- We could also do a concept art style shot at the end of the game

Lightswapping

- Each time conductors are connected, lights change in the scene(purely visual, puzzles won't have time to be designed around this)
- Charging Field
- Discharging Field
- Energy Receptor
- Mechanical Piston

Stretchy Arm

- Have Arm point at target after launching
- Limit rotation of player when moving so it doesn't go behind

Data pigtails

- [ ] Change in length based on maximum length of Data's arms
  - [ ]

- [ ] Light first 5 levels + central column room for judges
- [ ] Add a global directional light so its not too dark

Controller Support

- [ ] Control functionality in game

Env Art

- [ ] Set up art assets in each level
- [ ] Texture Wilson's environment kit as its just metallic now

UI

- [ ] Loading floors when player reaches the second floor on the way up the elevator
- [ ] Restrict player movement when on elevator so we ensure they are going up
- [ ] Unload levels when players go down
- [ ] Left right arm differentiators on the cursor to help with which arm is being used

- [ ] Make the UI pop ups match those colors, Left vs Right arm
- [ ] Make the arms different colors
- [ ] Make pigtails different colors
- [ ] Allow rebindable controls
  - [ ] Must need to update each UI indicator with it

SFX

- [ ] Capacitor (Surge)
- [ ] Breaker (Surge)
- [ ] Data Arm (Data)

Warden

- [ ] Teleports to relevant rooms
- [ ] Has code that easily calls audio
- [ ] Trigger boxes that activate audio and tag certain audio

Game objects:

- [ ] Use similar visual language of a handle animating when it is interactable and not to each game object

and making a build to see if it can get us more detailed lightmaps (Be careful with file size and pushing)

Electricity wires

- [ ] Use things like smoke, lightning and other moving VFX that calls the eye to the interactable elements rather than just light
- [ ] Sparks that play randomly when the items are idle
- [ ] Sparks when things move like switch moving, crane sliding and so on
- [ ] Surge's wires should have a similar treatment to stretchy arms where you can see power and circuitry flowing through it subtly but gets more pronounced when Surge is inside

Conductor

- [ ] Make the connection bar of both elements emitting light according to the wires they are connect
  - [ ] Split up the materials per component, and split the switch object's t bar to be separate
- [ ] Particle effects as signifiers

Unity Profiler

- [ ] Look at any memory leaks
- [ ] Performance draw backs
- [ ] Our average frame rate/ms response

Other stuff

- [ ] Occlusion culling

e.g. reference Data's max arm variable and * by a percentage so it doesn't get ridiculous

- [ ] Find a way to make the hair flow while not moving, like adding a noise texture to drive the horizontal movement

Hanging Bars

- [ ] Hanging bar model
- [ ] Hanging bar animation
- [ ] Move Data to specific points by throwing her arms
- [ ] Develop puzzles that require knowledge of the ability
- [ ] Data moving SFX

Data Electric Arms

- [ ] Data can use her arms to connect powered elements
- [ ] Power Socket 3D model

Crane

- [ ] Interconnected cranes
- [ ] Advance crane puzzles

LODs - Unity

- [ ] Figure out how to use Unity to load LODs, will be especially important when player reaches the main game level

Data interaction point: - [ ] A common handler across all objects so players can understand where Data can interact. **MEDIUM PRIORITY** **Level Update** - [ ] Change the Mechanical Bridge rotation to be in a visible position **Rocket Arm** - [ ] Allow players to launch them anytime so players get feedback when they aren't looking at the right object - [ ] Re-export the grids so they fit better and emissive masks as well **Main Menu** - [ ] Final version - [ ] Have the mouse cursor on top of the rest of the canvas **Packages to add** - [ ] ProBuilder - [x] Vector Graphics (SVG) **Second character location assistance** - [x] Second character highlight(maybe a beam of energy from the respective character colored to match each and implemented /beacon) - [ ] Camera movement through second character direction - [ ] VFX for the antenna lighting up when surge uses an ability and sends an electric arc to Surge's location and one for Data as well to express where Data is - the point is to lead the player to where the other character is		

Technical Design

Technical Goals

The game should developed in a way that makes it easy to maintain and add additional features in the future. It should also be flexible enough that removing a feature will not compromise the integrity of the code.

The game will be developed in Unity 2020.3.8f1 for Windows 10. We are expecting to release the game on Steam so the game will need to complete Steam's review process and meet their release standards (see more details here).

Technical Risks

Risk	Contingency Plan

Having too many particle effects on-screen or in the environment due to Surge's electrical abilities may cause performance issues.	If we are experiencing performance issues because of this reason, we will reduce (or if necessary, remove entirely) the amount of particle effects that play when Surge uses his abilities.
In order to create the dark, moody aesthetic that we envision for the game, we will need to make heavy use of lighting which may cause performance issues.	If we are experiencing performance issues because of this reason, we will limit our use of lighting to key areas and moments in the game. Within these areas, we will limit the number of assets that need to be rendered so that there are less interactions for the lighting.

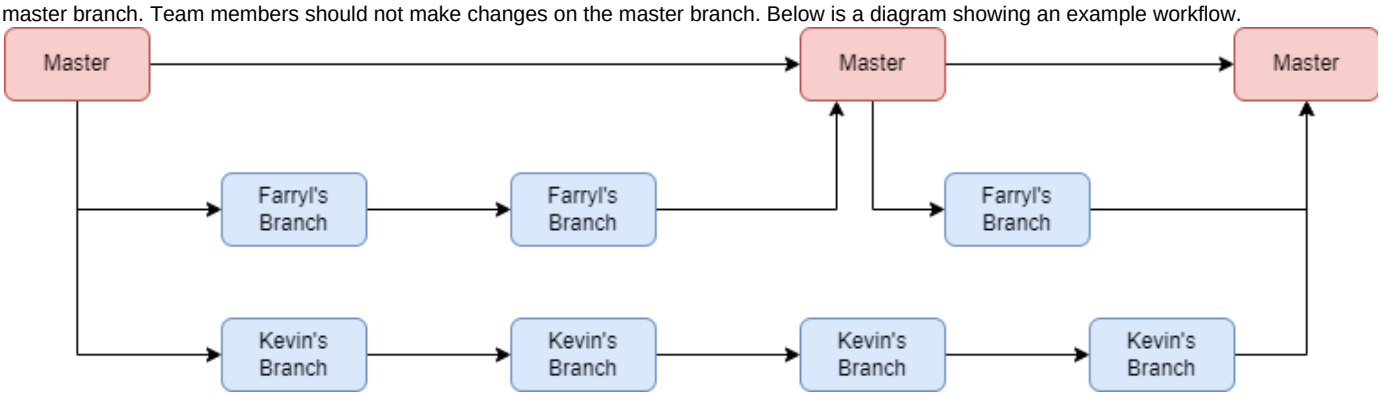
Code Style Guidelines

All variables and functions should be named using camel case (i.e. without spaces and indicating separate words with a single capitalized letter). For example, naming a variable "moveSpeed" instead of "move_speed".

All constants should be named using constant case (i.e. all letters capitalized and indicating separate words with an underscore). For example, naming a constant "CONSTANT_VOLTAGE" instead of "constant_voltage".

Branching Policy

When working on the project, each team member will create a personal branch where they will make their changes before merging with the master branch. Team members should not make changes on the master branch. Below is a diagram showing an example workflow.



When creating a git commit, add an issue number at the start of the commit message when applicable. The issue number is the associated code found on Jira and correlates to each coding task.

Specific Mechanics

Console Commands

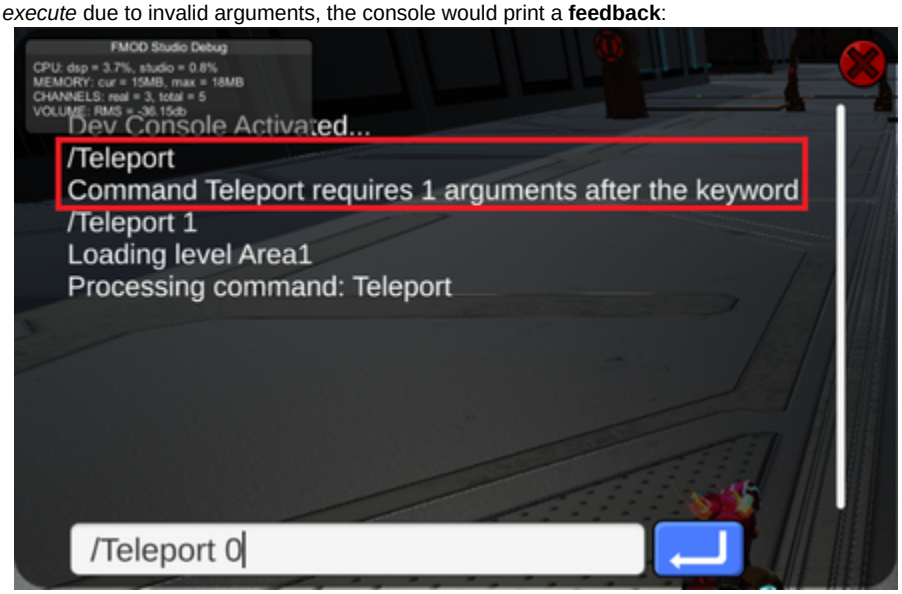
The *Command Console* can be activated by pressing ` on your keyboard (to the *left* of *number **1***)

The console **auto-completes** command inputs:

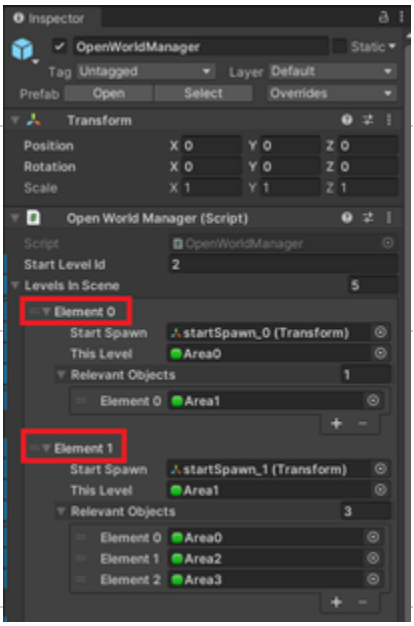
- Once you see the command suggestion, hit **ENTER** to execute command
- Use **right arrow** to skip to the end of the suggested command if you need to input additional arguments

Some commands require additional arguments:

- Arguments are separated by **space**
- If a command *fails to execute* due to invalid arguments, the console would print a **feedback**:



/Teleport <Int>



Teleports Data to a specific level inside the scene;

Must be followed by **a number** (The *ID of destination level*, as seen in the scene's **OpenWorldManager** object's ***LevelsInScene*** *array*)

/SurgeRecall

Returns Surge back into Data's Battery Pack;

Call if you teleported without Surge inside, or if you encountered the Surge Spark glitch where it overshoots its destination node and continues travelling infinitely

---

/UnlockAllFeatures

Updates your save file to gain access to all unlockable features (e.g. abilities, character swap, battery pack);

Does *not* need to be called every session - Once the save file is updated, it remains so outside of the game's runtime;

Call if you need to test features that cannot yet be unlocked via finished levels

---

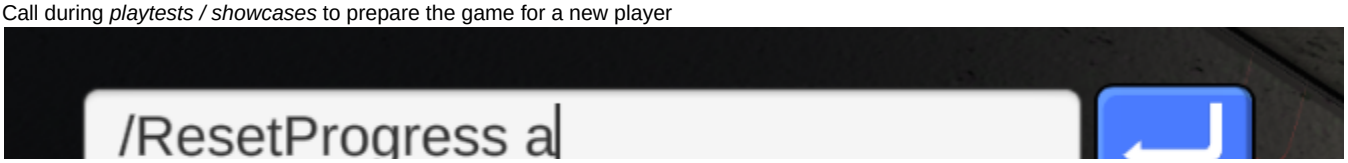
/ResetProgress <T>

Return to the Main Menu & Restores the current save to the default settings as if the game was launched for the first time;

Must be followed by any *single argument* as **confirmation** of the total permanent reset;

The game may *freeze temporarily* after command execution due to scene load;

Call during *playtests / showcases* to prepare the game for a new player



Consider pasting this path into your *File Explorer* instead to manually modify the save: %userprofile%\AppData\LocalLow\Quiropraxis\Circuit Breakout

- The save file is *named* "**User1_save**"
- Save the file *before* you hit play
- Manually modifying the save file instead of calling the console command lets you *skip* the scene load and *avoid resetting everything* - Makes testing easier!

/NoClip

Allows Data and Surge Boy to freely traverse and clip through walls;

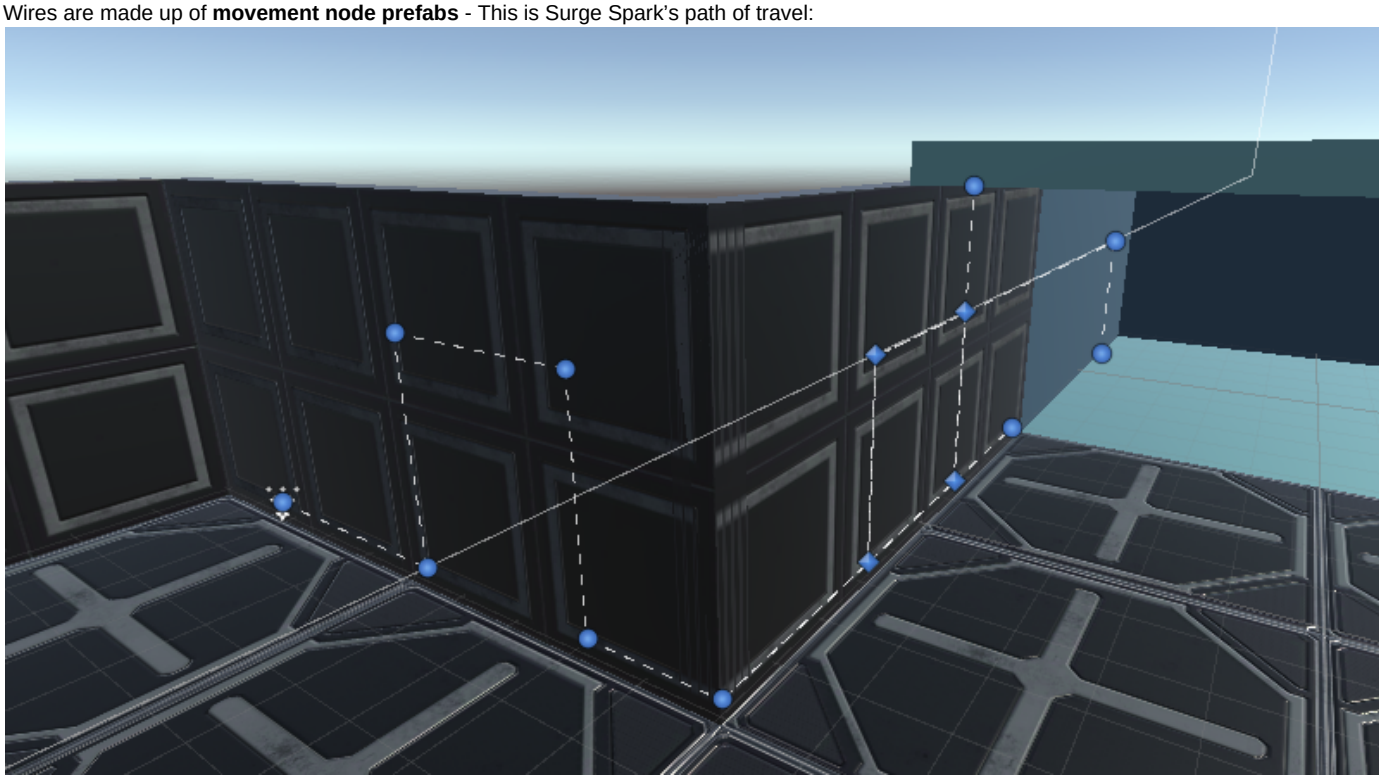
Travel through air by pointing your *camera* upwards / downwards;

Call the command *again* to **turn off** "no clip"

Wire Rail Building

Movement Rail

Wires are made up of **movement node prefabs** - This is Surge Spark's path of travel:



To place a new node, duplicate the node prefab and keep it as a **child** of the **MovementRail** object;

Each network of nodes would be under a separate **MovementRail** object within the scene;

(MovementRail will be able to get reference to its nodes as long as they are its children)

Hold down Ctrl + Shift then drag a node scene object to **snap** it to a **wall surface**;

After placing a node on a wall, move the node **1 unit away** from the wall (*add 1* to its x *or* z position)

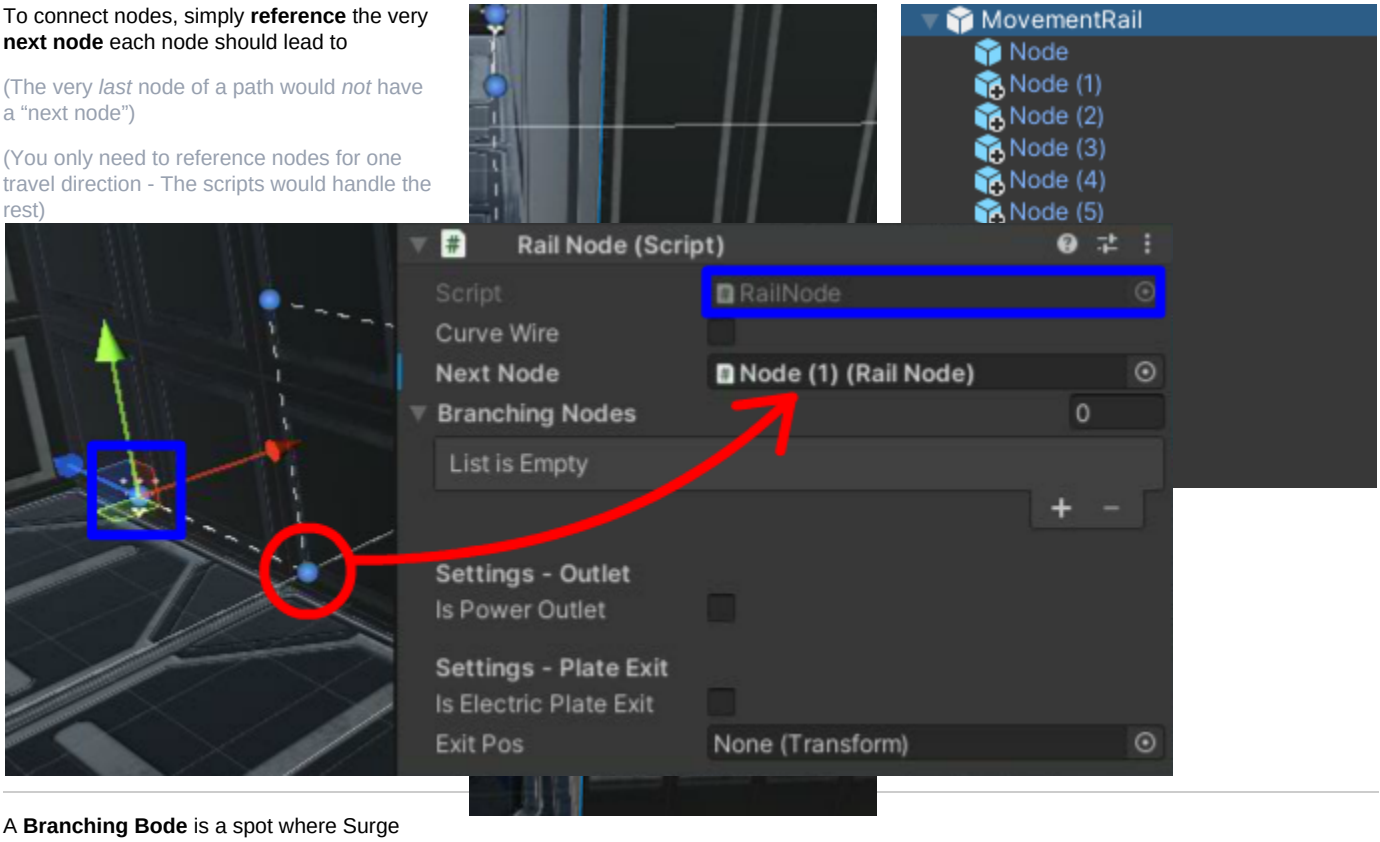
(If a node is directly at the corner edge of a wall, add 1 to *both* its x and z positions)

(In order for Surge Spark's camera to function properly, there must be a small amount of space between wire nodes and the wall surface!)

To connect nodes, simply **reference** the very **next node** each node should lead to

(The very *last* node of a path would *not* have a “next node”)

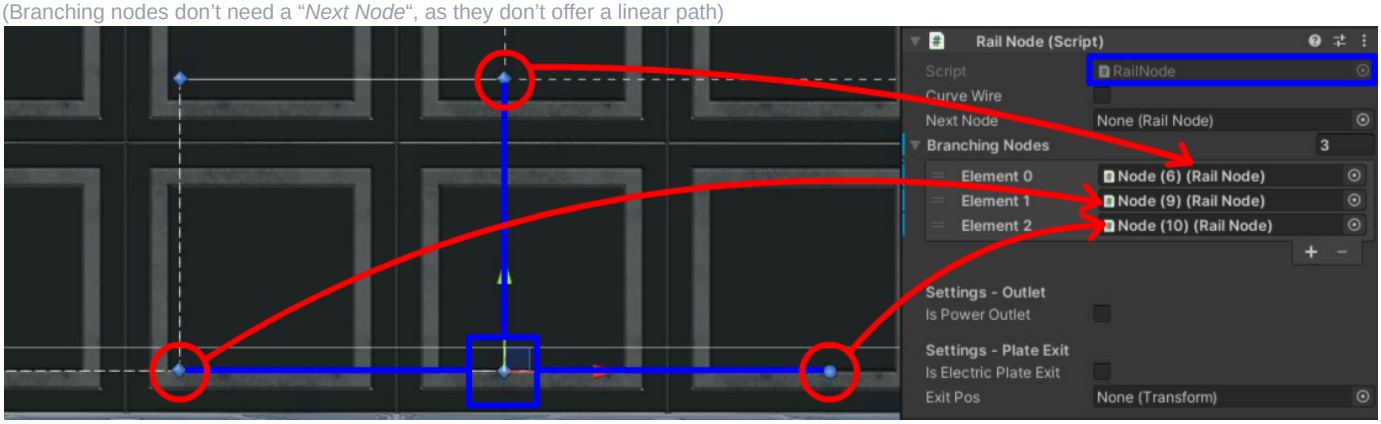
(You only need to reference nodes for one travel direction - The scripts would handle the rest)



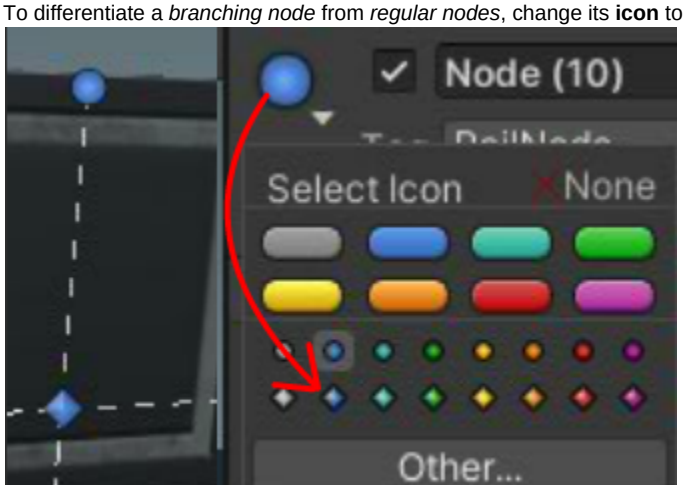
A **Branching Bode** is a spot where Surge stops and awaits a choice from the player;

Reference all neighboring nodes this node can ***directly* lead to** in the **“Branching Nodes“ array**;

(Branching nodes don’t need a “*Next Node*“, as they don’t offer a linear path)

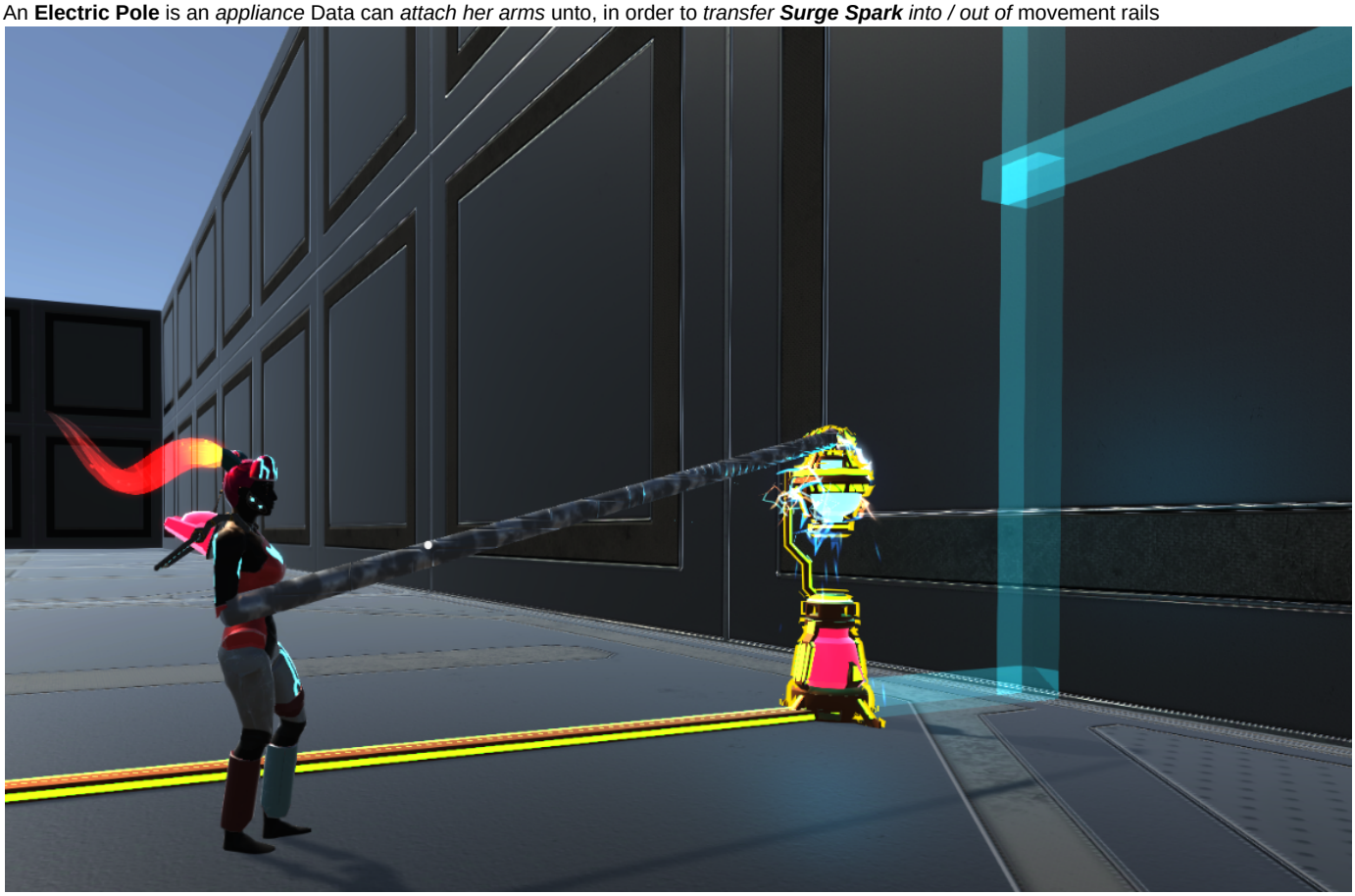


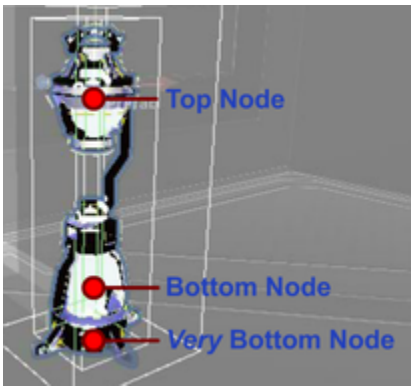
To differentiate a *branching node* from *regular nodes*, change its **icon** to **diamond**, as opposed to **circle**



Electric Pole

An **Electric Pole** is an *appliance* Data can *attach her arms* unto, in order to *transfer* ***Surge Spark*** *into / out of* movement rails





The Electric Pole prefab consists of *3 movement nodes*:

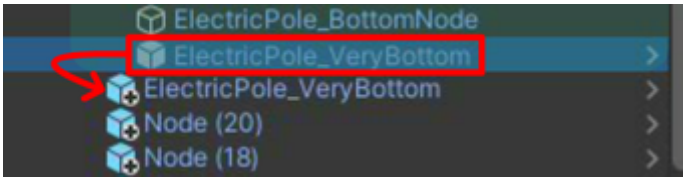
1. **Top Node** - center of the top compartment, where Surge *enters* into a pole from Data's arm
2. **Bottom Node** - inside the bottom compartment, where Surge stops if pole is not powered and there is no way back to Data
3. **Very Bottom Node** - the node that actually connects with outside wires

The **Top Node** is placed on the **parent** of the *Electric Pole prefab*

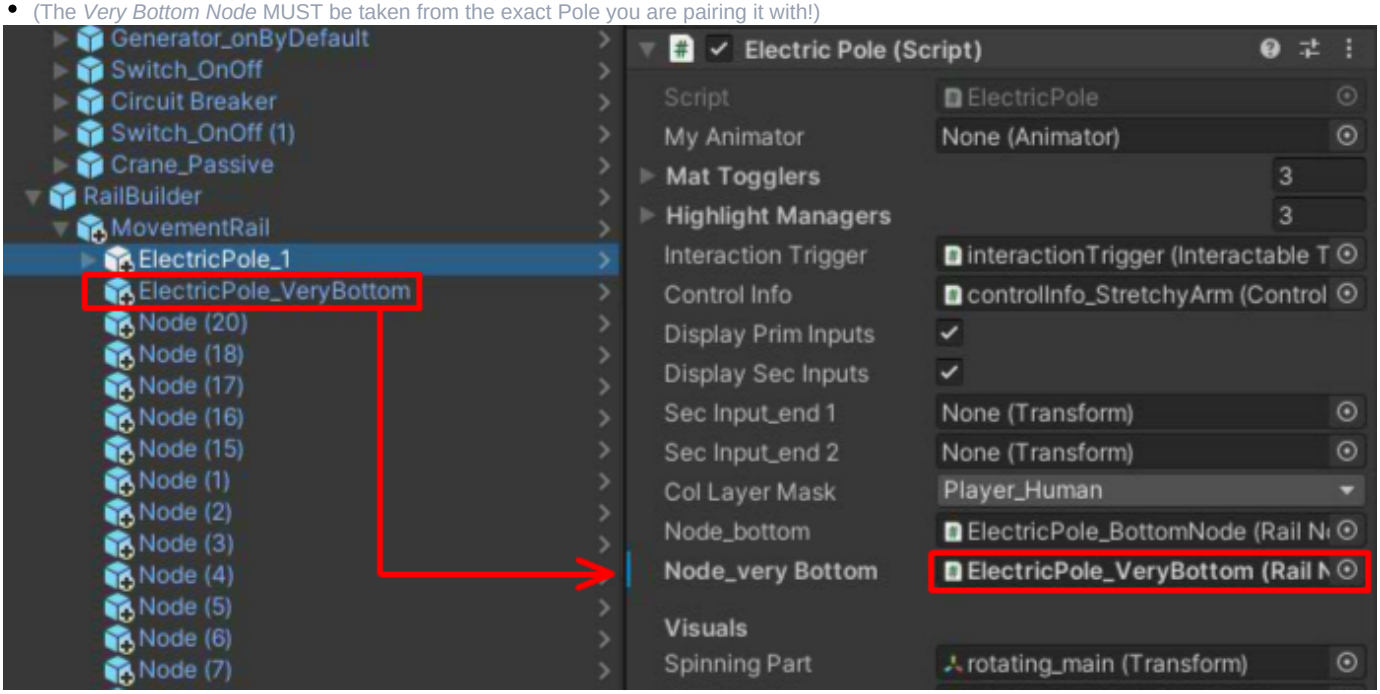
- Hence, the *Electric Pole prefab* itself is a type of *movement node*, and MUST be placed *under* a **Movement Rail**
- Despite being a movement node, the *Top Node* should *not* lead to any outside nodes, nor should any other nodes have it as their "next node"
- (You don't really need to touch the Top Node at all)

The **Very Bottom Node** is the node that will actually *connect* with the rest of the *Movement Rail*

- Expand the Electric Pole prefab, locate the **Very Bottom Node** that has been **disabled**
- **Duplicate** said node, **unparent** it, and place it inside the same *Movement Rail hierarchy*



- Upon enabling the new *Very Bottom Node*, **reference** it inside the **Electric Pole** script
- (The *Very Bottom Node* MUST be taken from the exact Pole you are pairing it with!)



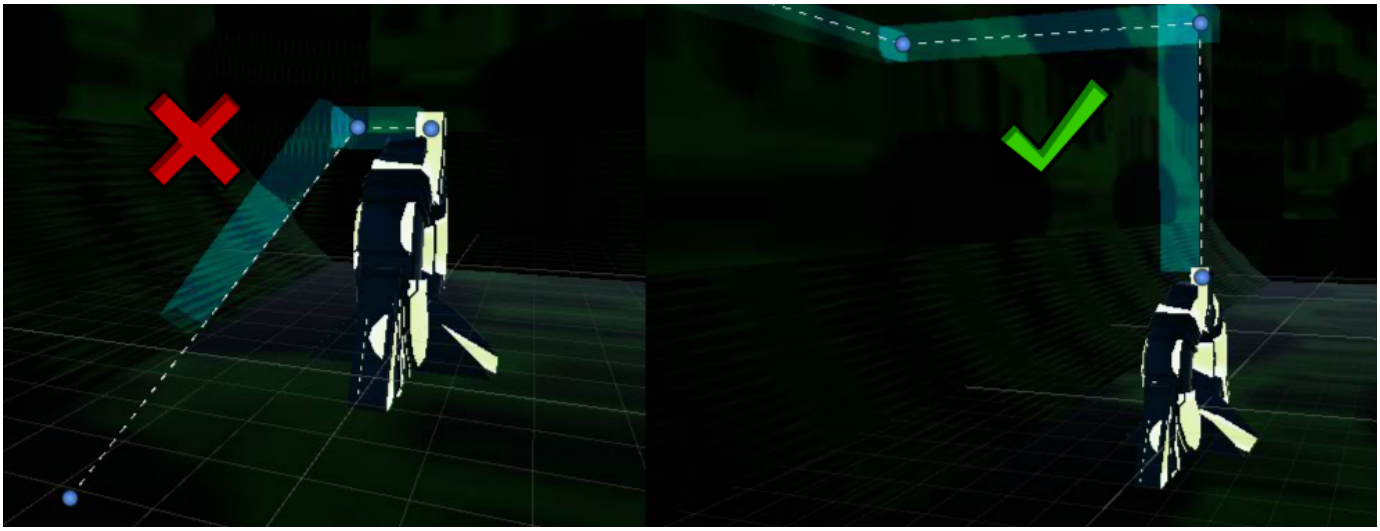
- *Connect* the **Very Bottom Node** with other wire nodes outside the Pole and profit!

Inductor

An **Inductor** causes Surge to *exit out of the wire* upon arrival at the node (switching from “Spark form” to “**Boy form**” who exists on **electric grids**)

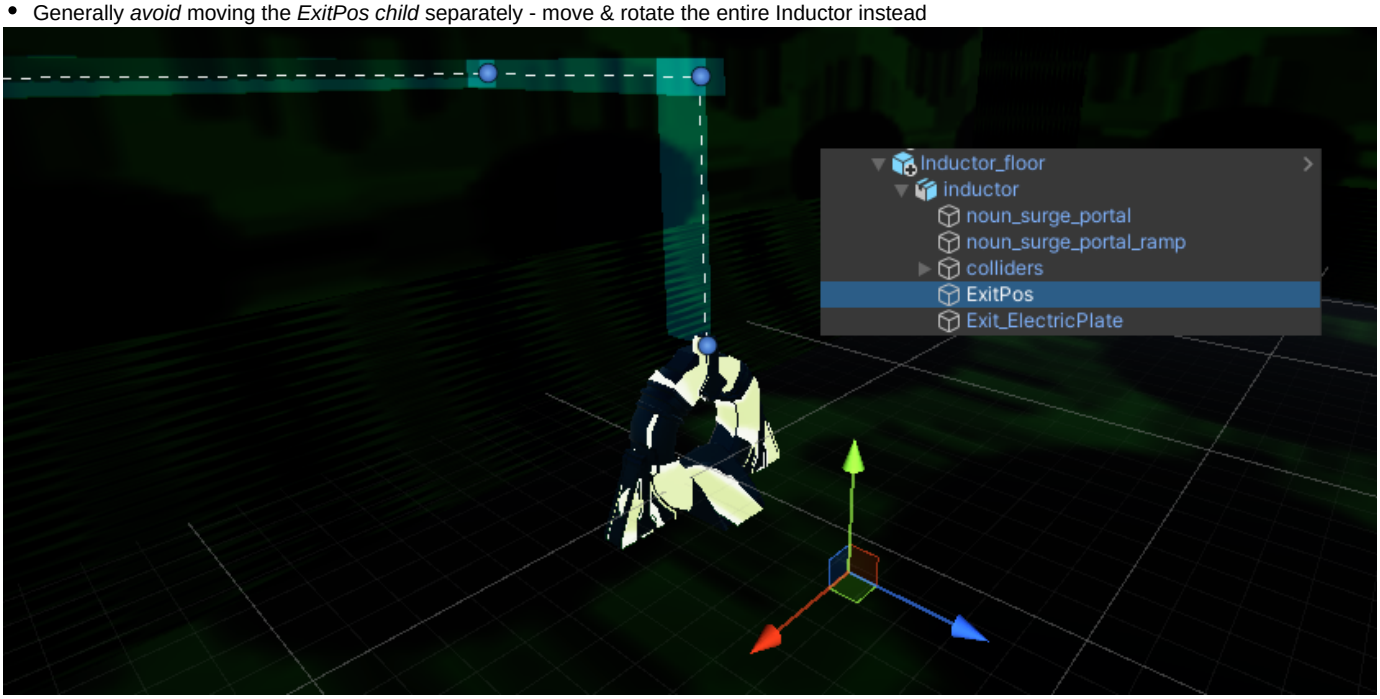
The *Inductor prefab* itself is a type of *movement node*, and MUST be placed *under* a **Movement Rail**, connected to other nodes within the rail

- When connecting wires to Inductor, *avoid* having any wire come close to *intersecting* the Inductor’s *gate* (Could cause glitches with Surge Spark’s travel pattern)



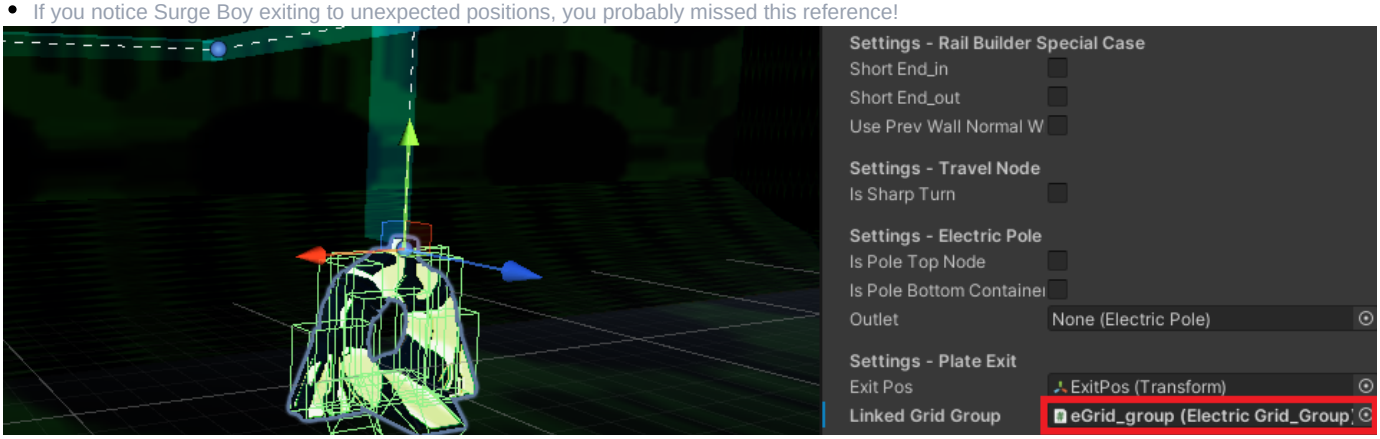
The *Inductor prefab* has an "**ExitPos**" child

- The "**exit position**" specifies where Surge Boy is spawned upon exiting the *Inductor*, and which way he will face
- Generally *avoid* moving the *ExitPos child* separately - move & rotate the entire Inductor instead

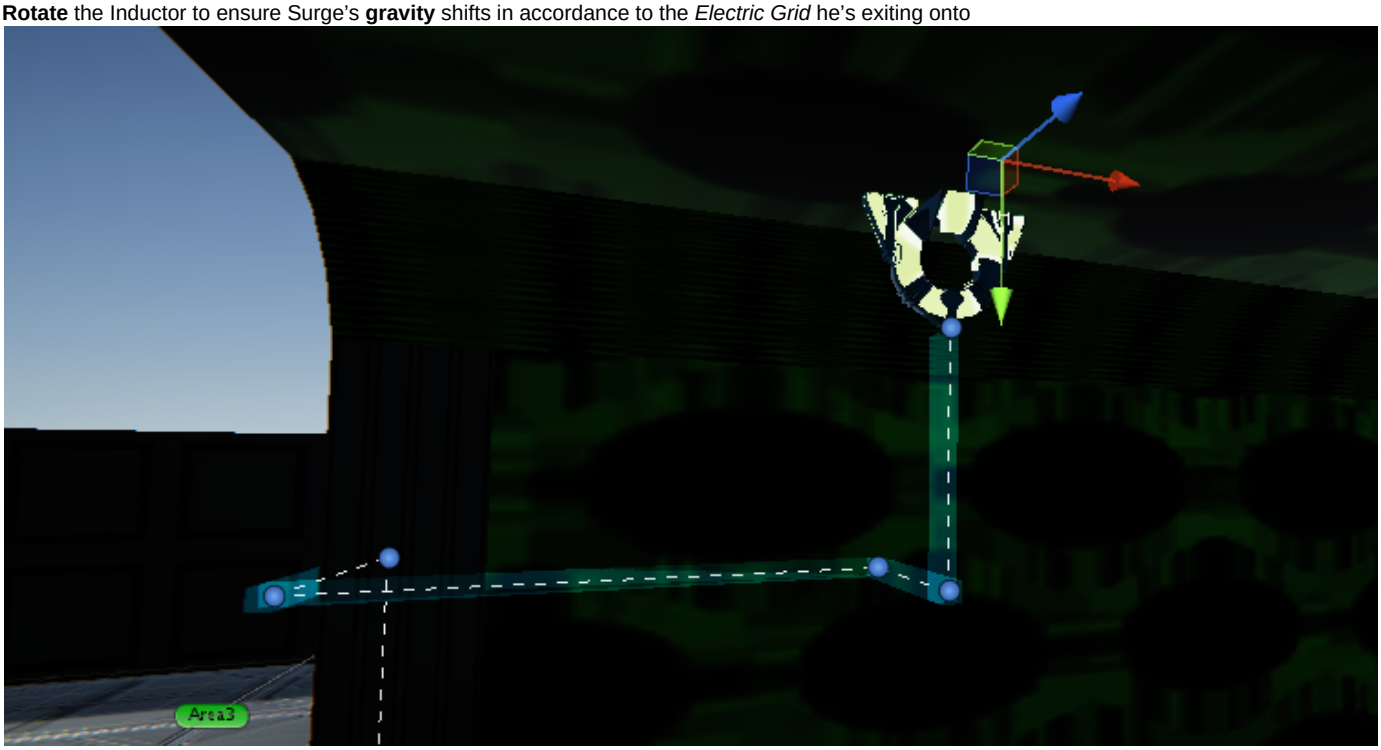


If an Inductor is placed on top of an **Electric Grid**, be sure to *reference* the **grid group** inside the Inductor script

- This *prevents* Surge from exiting out of the Inductor if the grid underneath is ***not powered***
- If you notice Surge Boy exiting to unexpected positions, you probably missed this reference!

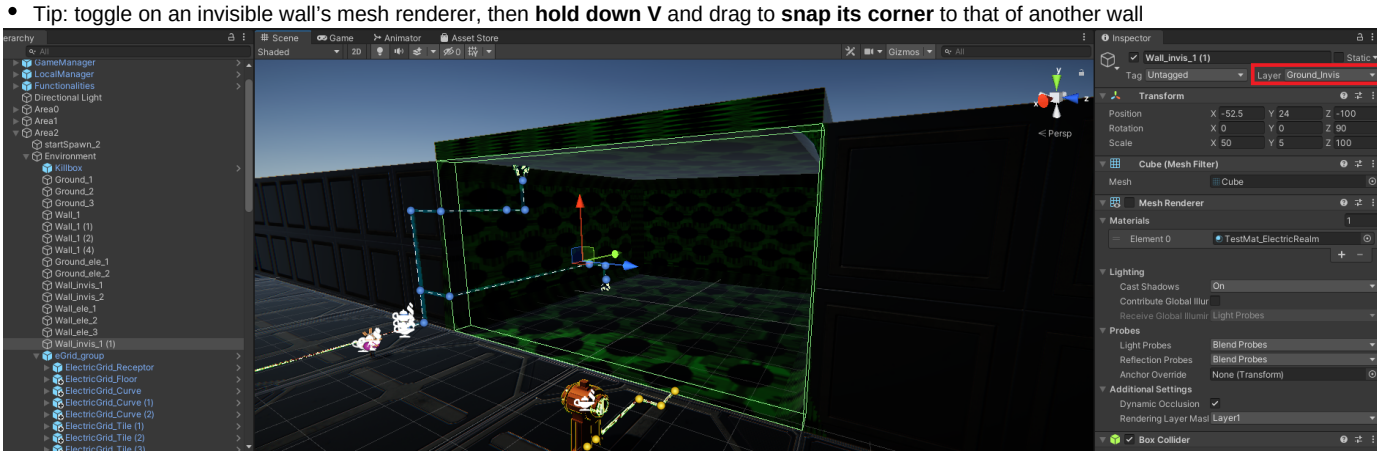


Rotate the Inductor to ensure Surge's **gravity** shifts in accordance to the *Electric Grid* he's exiting onto



Electric Grids must be *blocked off / surrounded* by **invisible walls**;

- Neither Surge nor Data can cross those barriers, so that they cannot enter each other's realms (and so that Surge can't fall off of plates);
- There barriers should be of the Layer "**Ground_Invis**" (affects collision behaviour & tells the camera to not try to avoid them);
- Regular floors, ceilings, and walls are of the **"Ground"** layer;
- Tip: toggle on an invisible wall's mesh renderer, then **hold down V** and drag to **snap its corner** to that of another wall



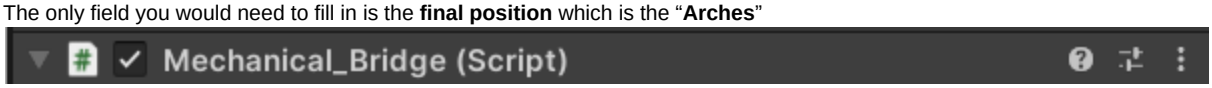
Gameplay Elements

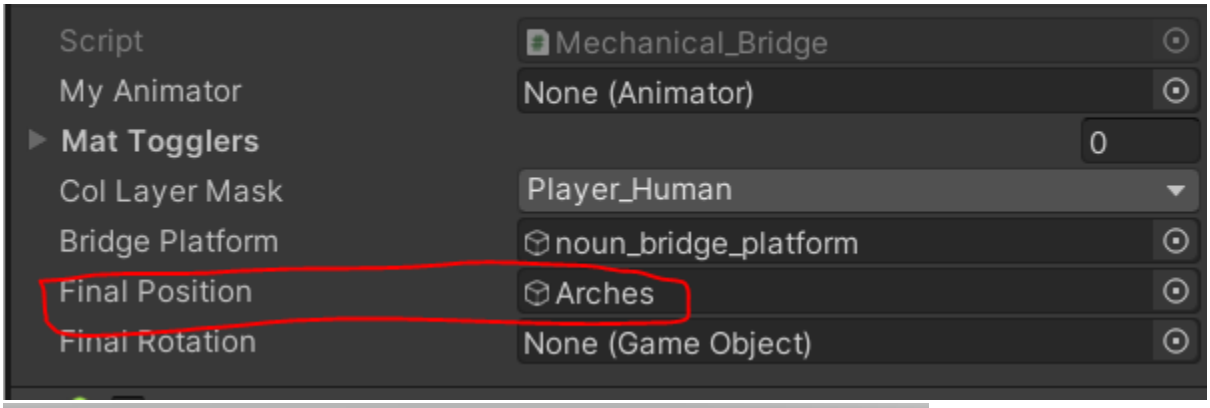
Servo Tractor

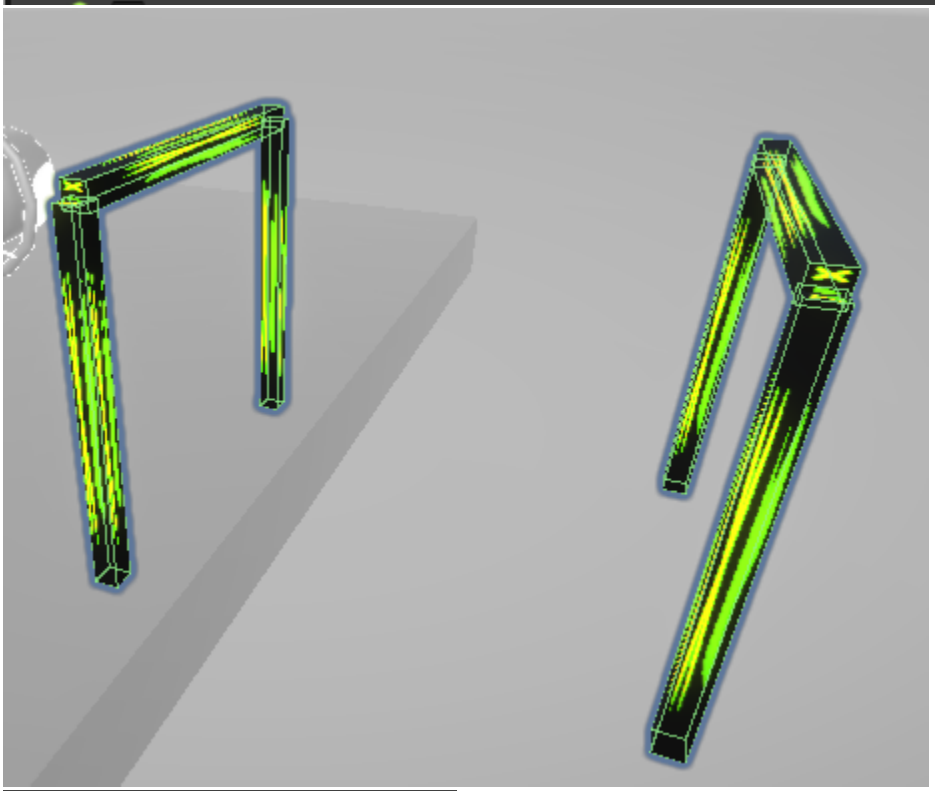
Mechanical Bridge

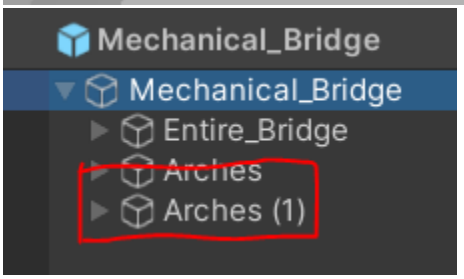
Search "**Mechanical_Bridge**" in the project folders, and drag and drop it into the scene.

The only field you would need to fill in is the **final position** which is the "**Arches**"

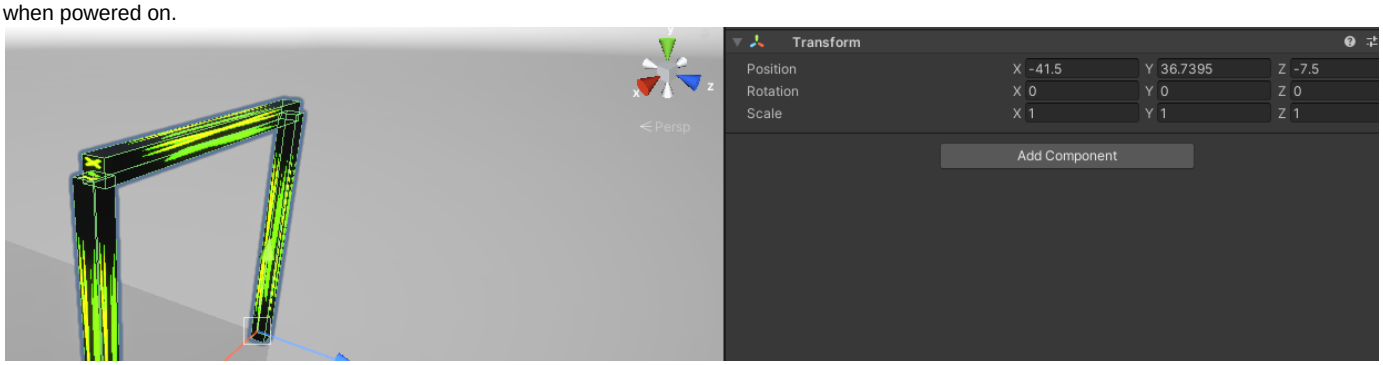








You would need only **one arch** attached to the script. Make sure to snap the **arches** on top of the ground floor so the bridges alight perfectly when powered on.



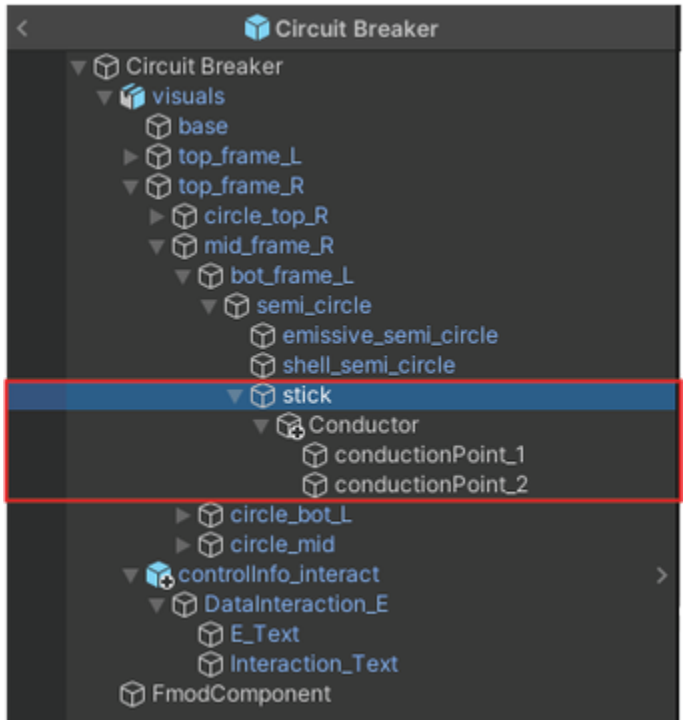
Make sure you copy the '**Y**' value and paste it for both the arches as the bridge only moves to the '**Y**' position of the arch (final position).

Circuit Breaker

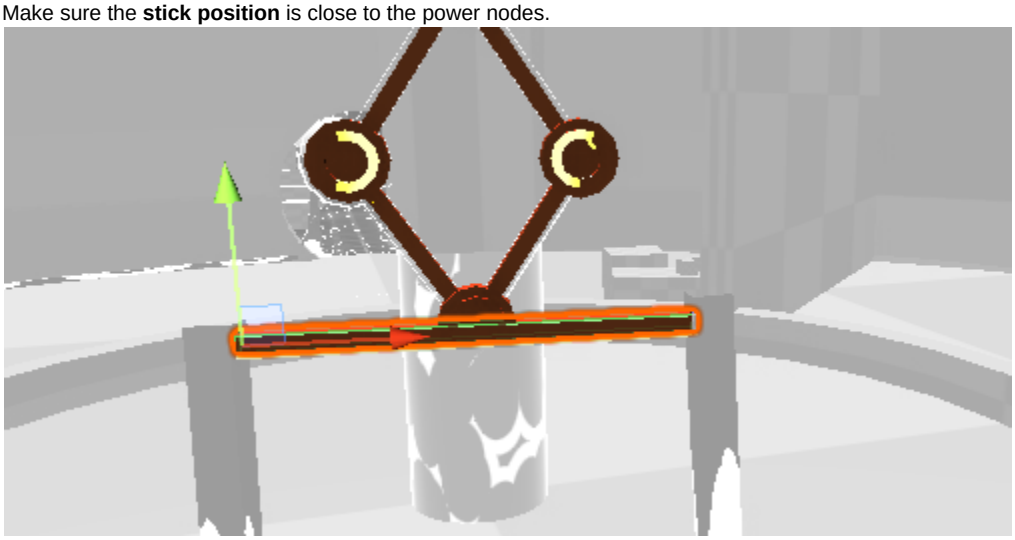
The player has to look at the **Circuit Breaker** and **hold down 'E'** to keep powering the nodes.

As the '**Extend**' and '**Retract**' are animations there is not anything huge to set up in Editor. The animation speed is set up in code.

The only thing to keep in mind is the **conductor stick.** As the final position of the **Circuit Breaker** is not defined and is an animation you will have to **manually** set it up in the **editor.**

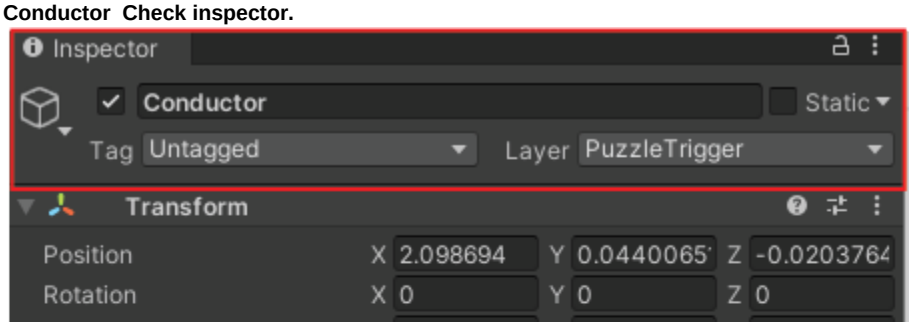


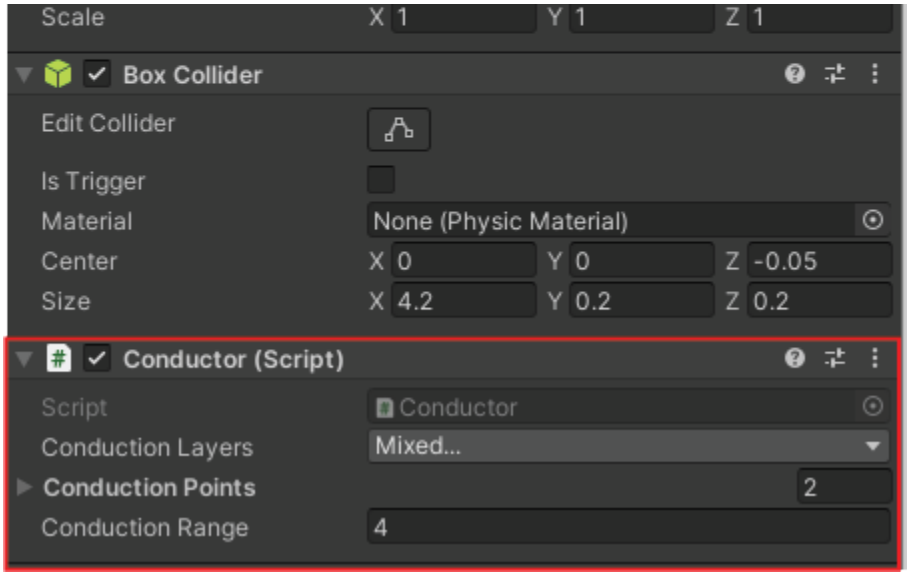
Make sure the **stick position** is close to the power nodes.



As the stick is a **conductor** and has a **conductor script**. As long as the **conductor stick** is **close to the wires** during extending it will **power up** the wires.

Note: IF the wires still don't power up, try to **increase Conduction Range** in the **conductor script** in the inspector. Where to find it? **stick Conductor Check inspector.**



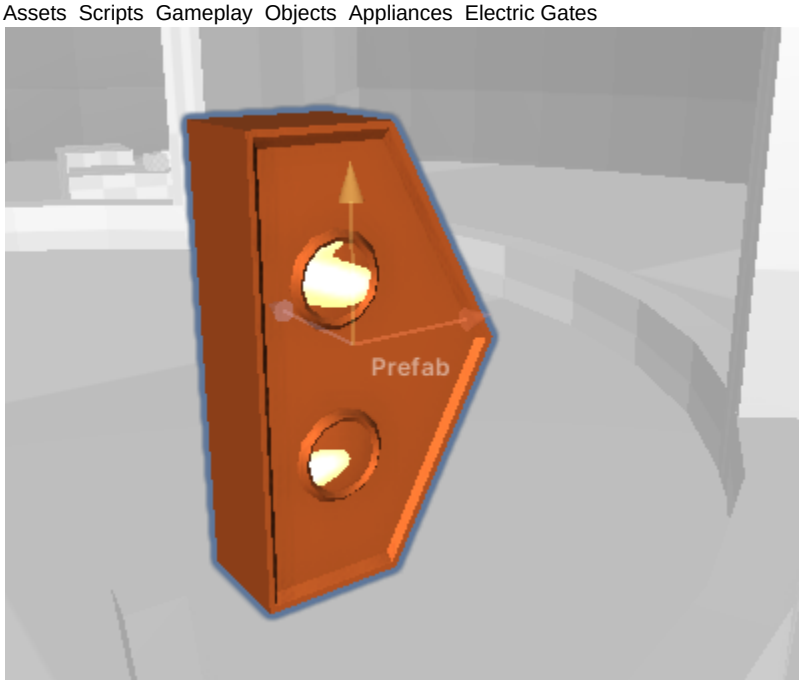


Electric Gates

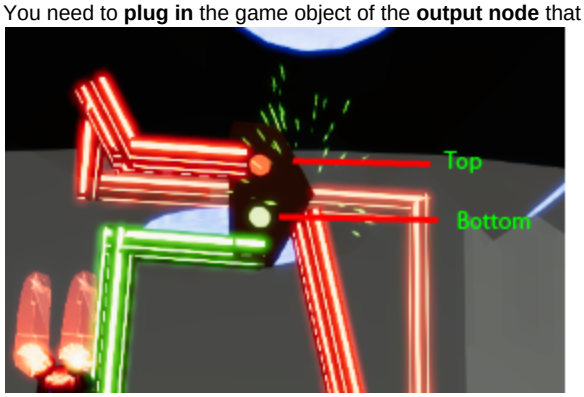
Two-Way Electric Gate

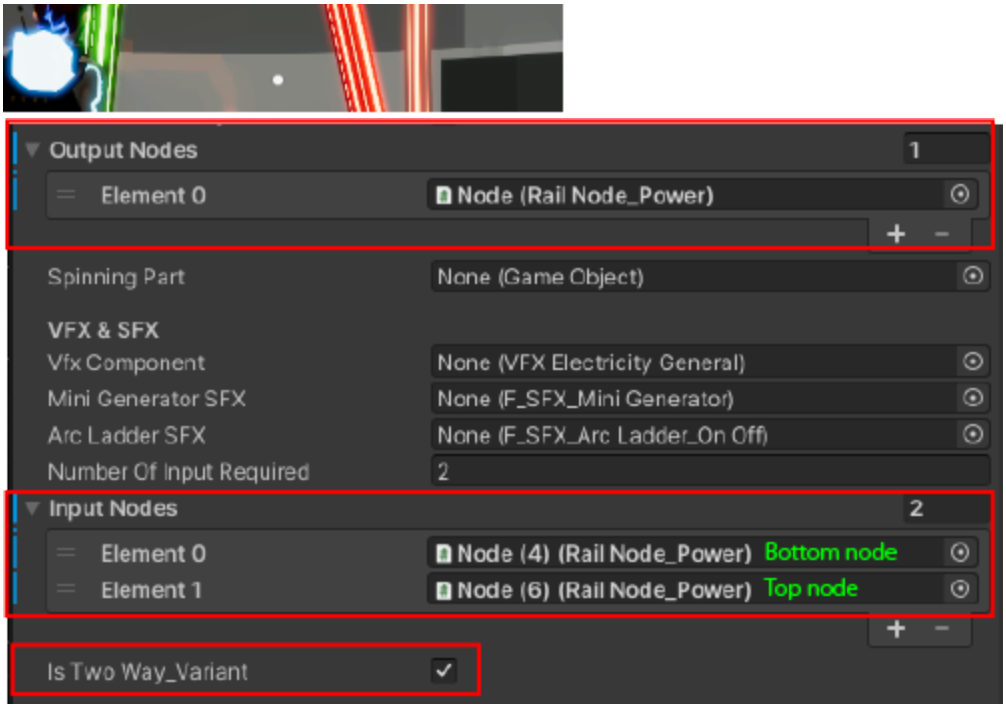
Drag and drop the Two-Way Electric Gate to the scene

Assets Scripts Gameplay Objects Appliances Electric Gates

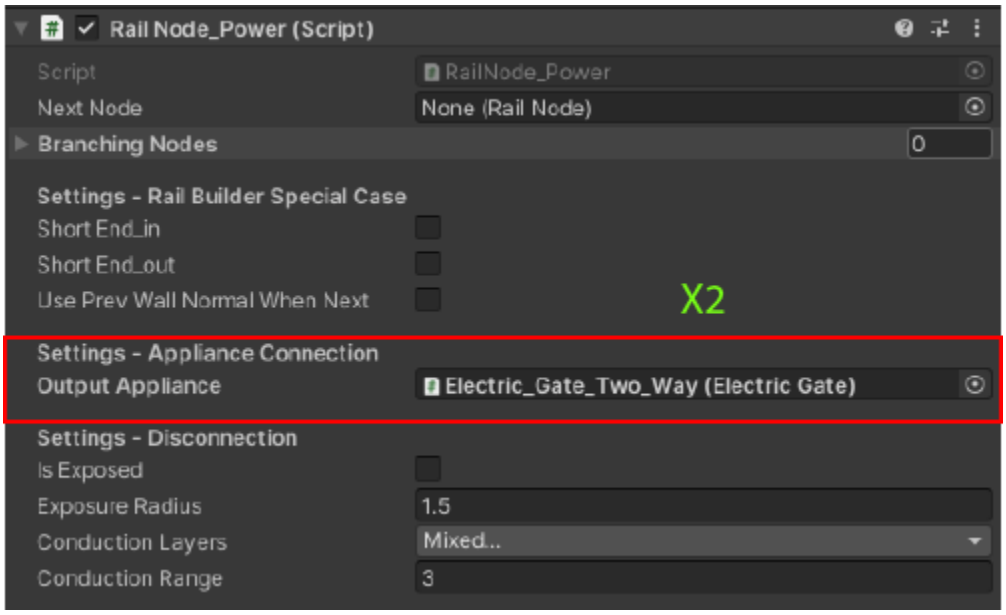


You need to **plug in** the game object of the **output node** that sends **power.**





You need to **plug in** the **input nodes** in the right order in the inspector as mentioned above in the screenshot **(Bottom and Top)**. Finally don't forget to check the **IsTwoWay_Variant!**

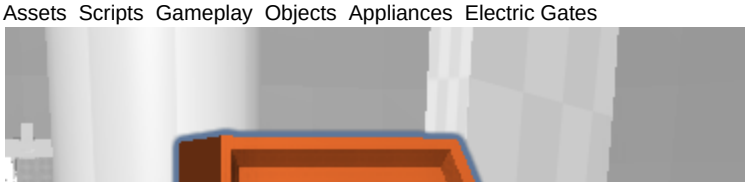


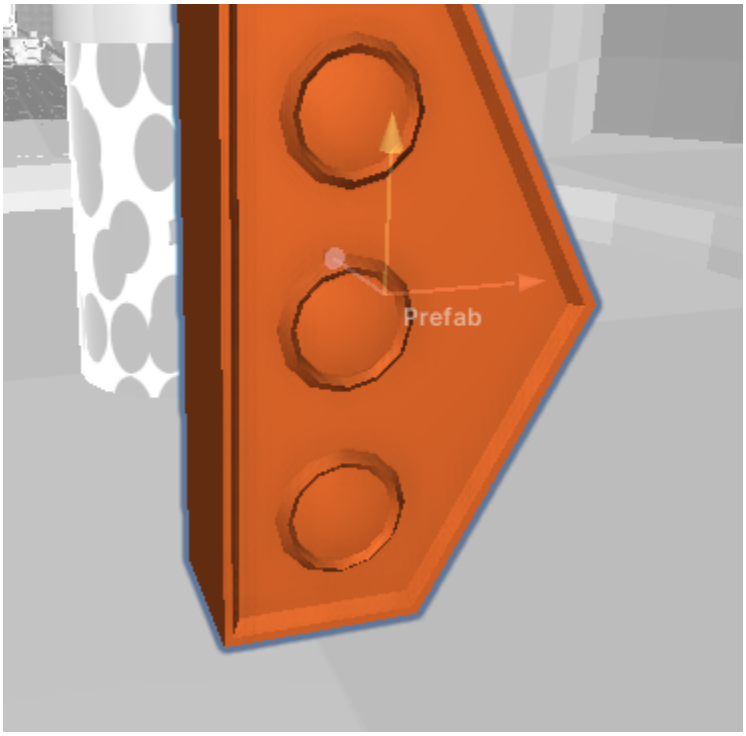
You have to make sure that **two wires(input)** are connected to the "**Connected Appliance**" and it should be the **Electric Gate**.

NOTE: You need to connect **TWO wires** to the **Electric Gate** as the **Connected Appliance.**

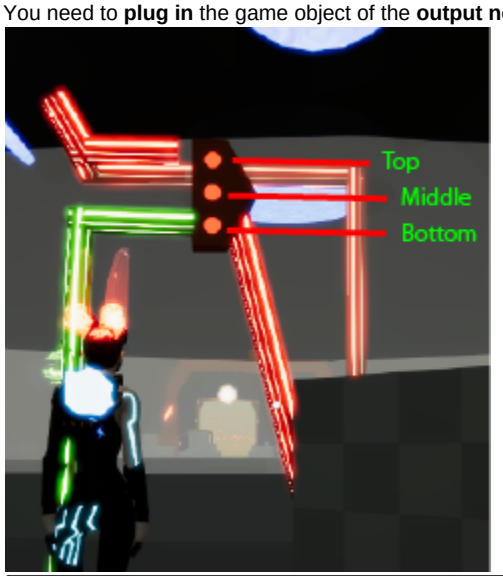
Three-Way Electric Gate

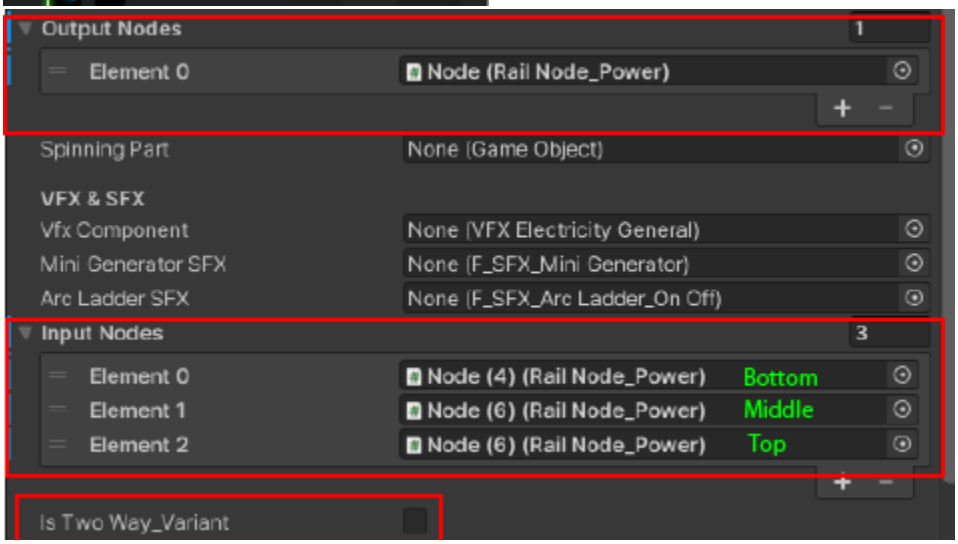
Drag and drop the Two-Way Electric Gate to the scene
Assets Scripts Gameplay Objects Appliances Electric Gates



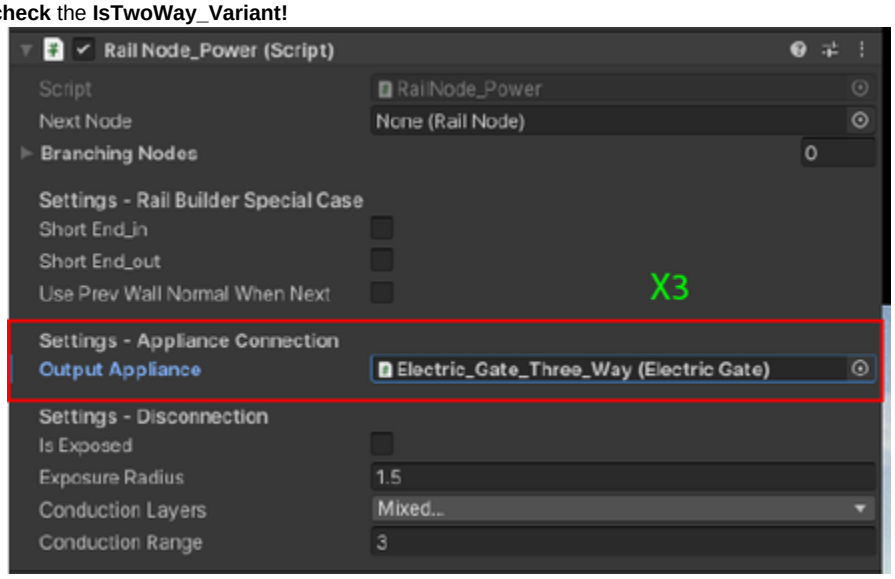


You need to **plug in** the game object of the **output node** that sends **power.**





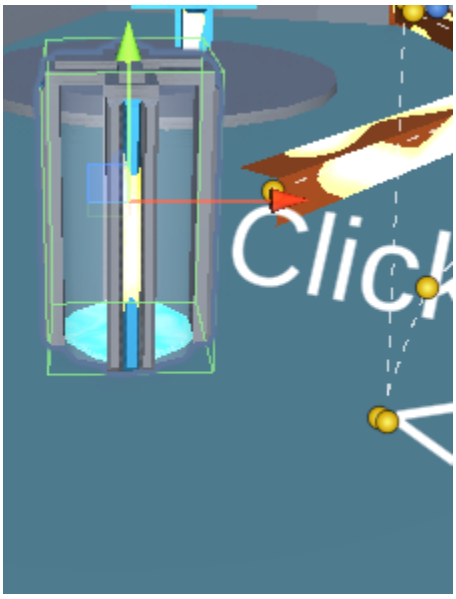
You need to **plug in** the **input nodes** in the **right order (Bottom, Middle and Top)** in the inspector as mentioned above in the screenshot. Finally don't forget to **uncheck** the **IsTwoWay_Variant!**



You have to make sure that **three wires(input)** are connected to the "**Connected Appliance**" and it should be the **Electric Gate**. And then **powe r** will be sent to the **output node**

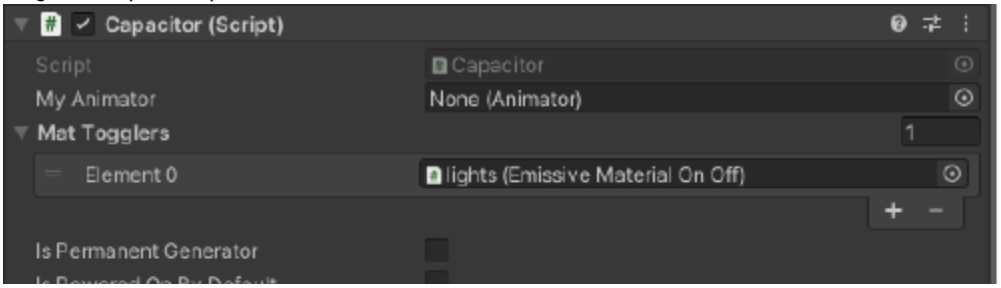
NOTE: You need to connect **THREE wires** to the **Electric Gate** as the **Connected Appliance**

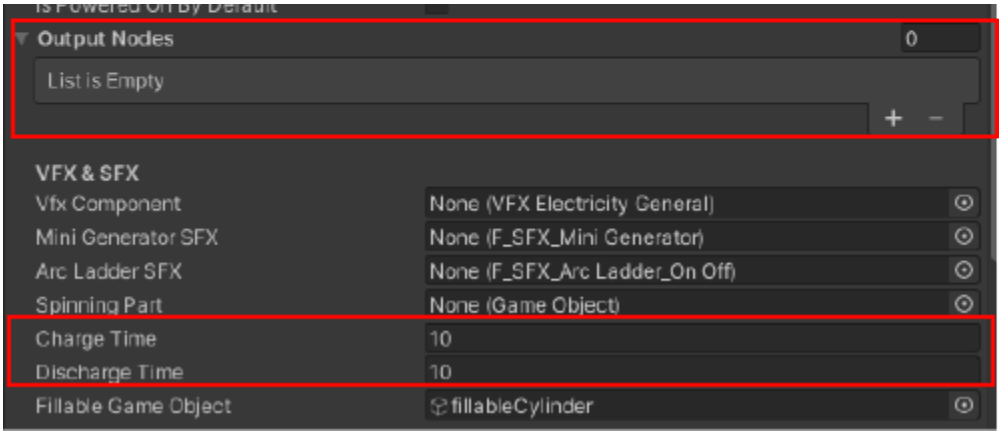
Capacitor



Capacitors can be charged only by Electric Arc (Right mouse click). If the charge is 0, no power flows through the nodes.

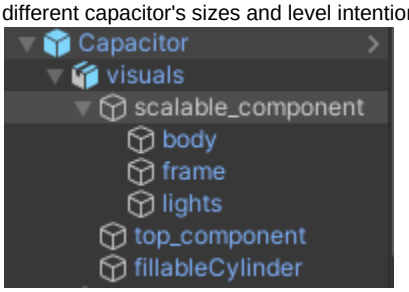
Drag and Drop the Capacitor to the scene.



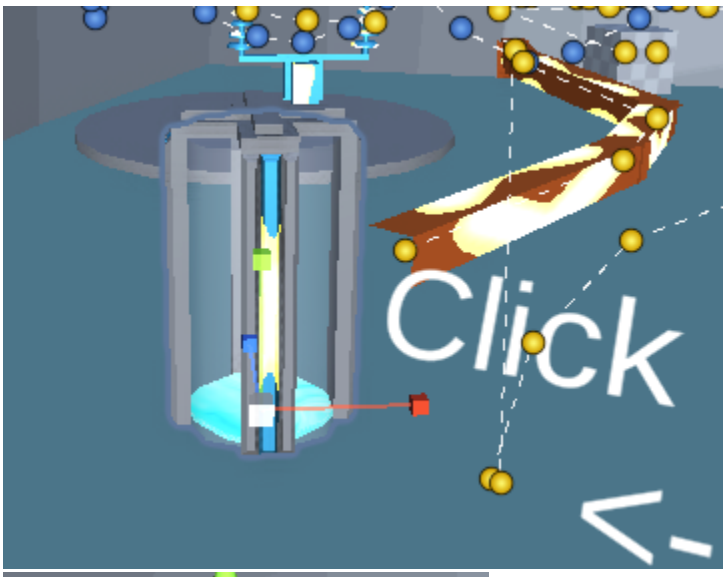


The only thing that needs to be plugged in is the **output nodes**.

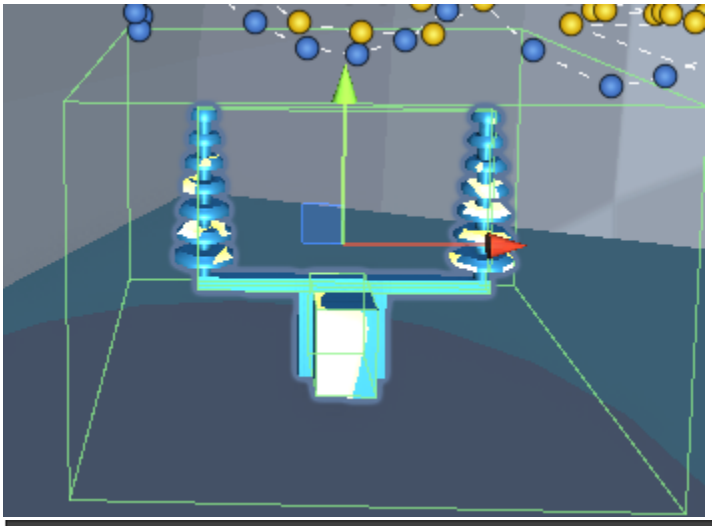
If you want to edit the **charge time** and **discharge time**, you can change those numbers in the inspectors to reflect the changes according to different capacitor's sizes and level intentions.

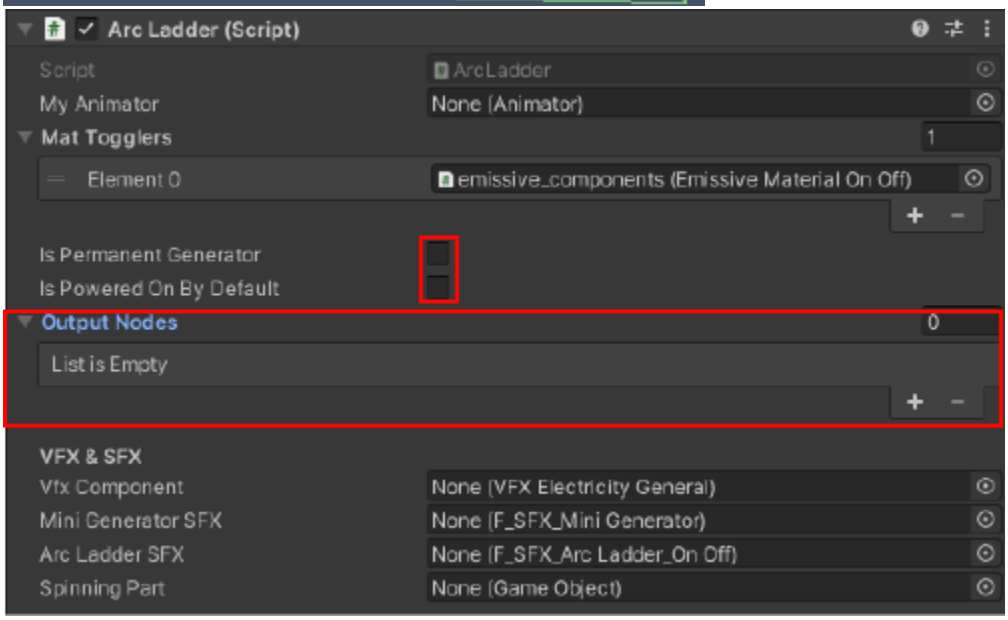


To update the height of the capacitor you need to scale along the **'y'** of the '**scalable_component'** and move the **top_component** to fit at the top of the capacitor.



Arc Ladder



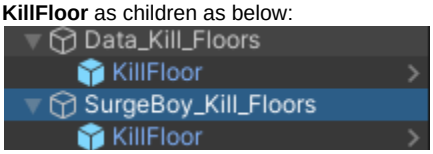


Make sure the **Output Nodes** are plugged in and the **toggles** are as above. That's all you need to do for making the arc ladder functional.

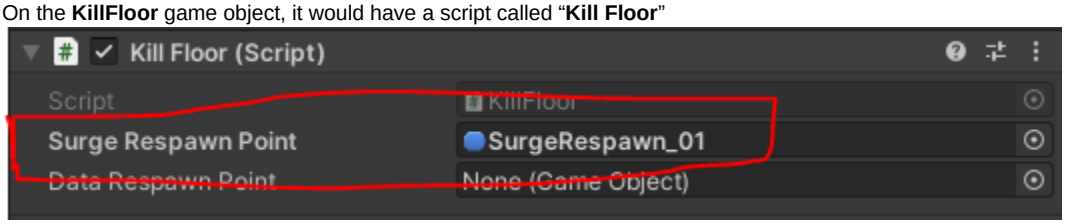
KillFloor, Respawn Points and Respawn UI

KillFloor

Drag and drop the **"KillFloor"** prefab to the scene and separate them to Surge and Data's KillFloors. Make empty game objects that have these **KillFloor** as children as below:



On the **KillFloor** game object, it would have a script called “**Kill Floor**”

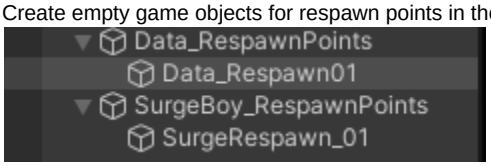


Only drag the respective **respawn points** to the kill floor. Data and Surge would have different respawn points as they both are in different perspectives in the world.
Note: Each KillFloor floor would have only one respawn point attached (either Data or Surge)

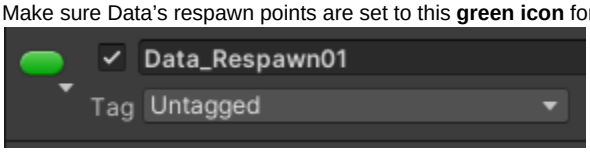
IMPORTANT NOTE: There can be many kill floors depending on many situational mechanics such as Mechanical Bridge

Respawn Points

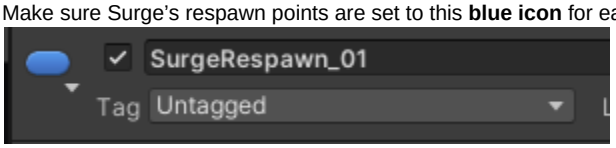
Create empty game objects for respawn points in the scene. Have them under a parent game object to keep this organized (as below)



Make sure Data’s respawn points are set to this **green icon** for easier identification in the future.



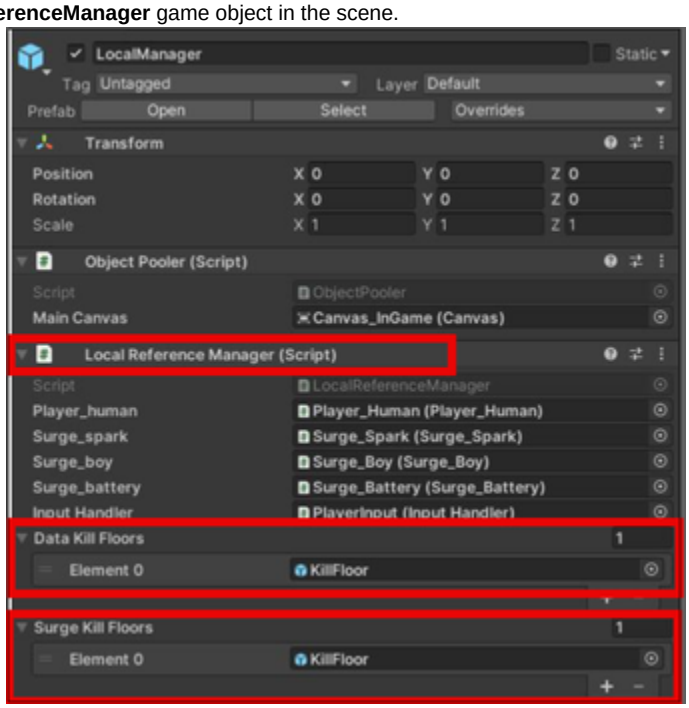
Make sure Surge’s respawn points are set to this **blue icon** for easier identification in the future.



Respawn UI

Players will be able to **respawn to the closest respawn point** from the **Pause Menu**.

To achieve this, go to **TheLocalReferenceManager** game object in the scene.



Attach all **Kill Floors** related to Data to the "**Data Kill Floors**". Attach all **Kill Floors** related to Surge to the "**Surge Kill Floors**". This is used to calculate the closest respawn points for data and vice versa for surge

Note: Once this is done, the Respawn from the Pause Menu will work!

Characters

Surge

The character of Surge is currently represented by **3 separate game objects** in each scene;

Only **1 of the 3 objects can be enabled** at the same time, as Surge's form switch process;

Each scene has a **LocalManager singleton** that holds **reference** to all 3 Surge forms

---

Surge - Spark Form

Surge Spark only exist inside **wire rails**;

It zaps through an entire connection of **nodes** given a single key input

It stops at "**stop nodes**" to await a directional input (relative to the camera's facing direction);

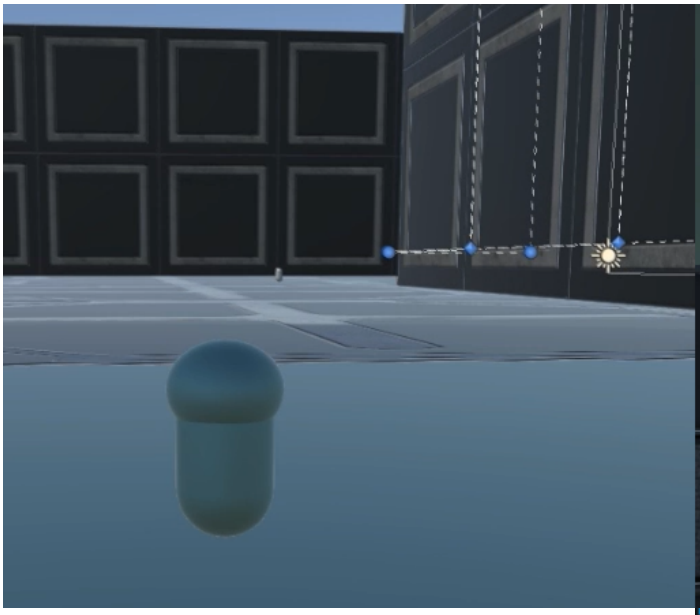
It has **free camera view** of its entire surroundings

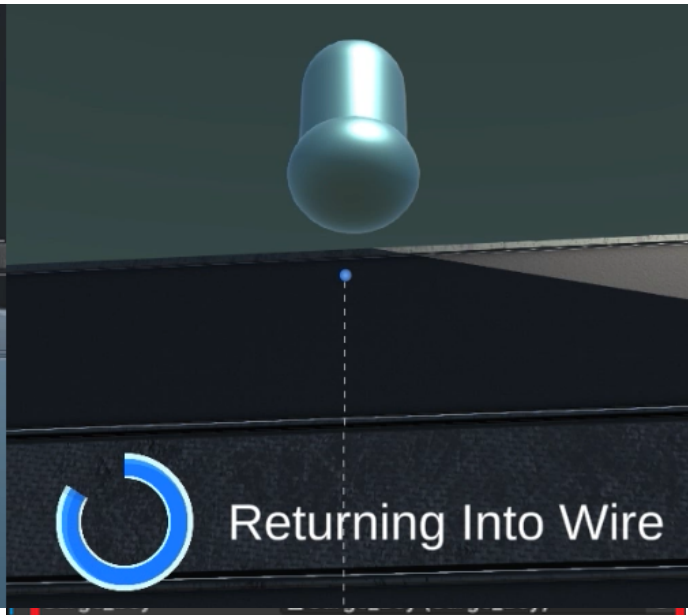
Surge - Boy Form

When Surge Spark reaches an "**exit node**", Surge switches to his "Boy form";

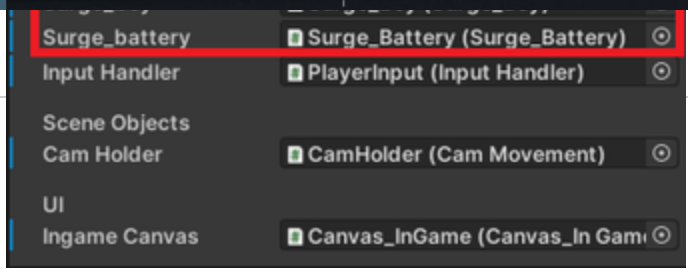
Surge Boy **moves around in 3D space** similar to Data does, but only on "**electric plates**" inside the power grid, which a wire led to;

His **gravity** is **shifted** towards whichever orientation the "electric plate" is of (He *sticks to any surface*);





He **returns to Spark form** back into wires by *staying near* an "**exit node**" for 2 seconds



Surge - Battery Form

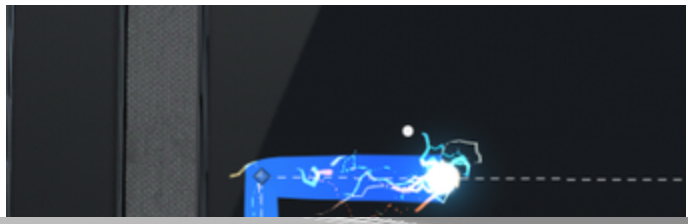
When **recalled** into Data's battery pack, Surge essentially seizes to exist as a separate character;

Surge Battery is a **child object of Data** (the human character);

It **does *not* freely move around** on its own, and *cannot* be toggled to control;

It will curiously look around and have limited reactions to the surrounding environment;

It can be **released back into wires** (Spark form) when Data stays near a "**power outlet**" for 2 seconds

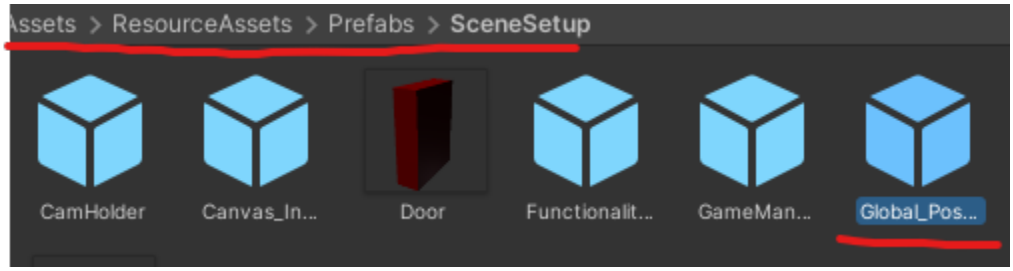


Elements

Capacitor Charge	• Charge Unity = 6 • Charge Speed = 1 sec * 2 charge units • Discharge speed = 1 sec * -0.5 charge units

VFX

Tools:

- VFX Graph
- Global Post Processing volume (Prefab 'Global_PostProcessingGO' must exist in scene)
  - 

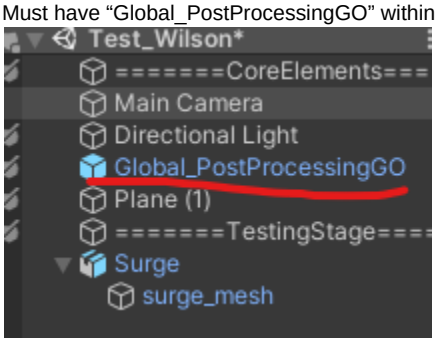
- Shader Graph

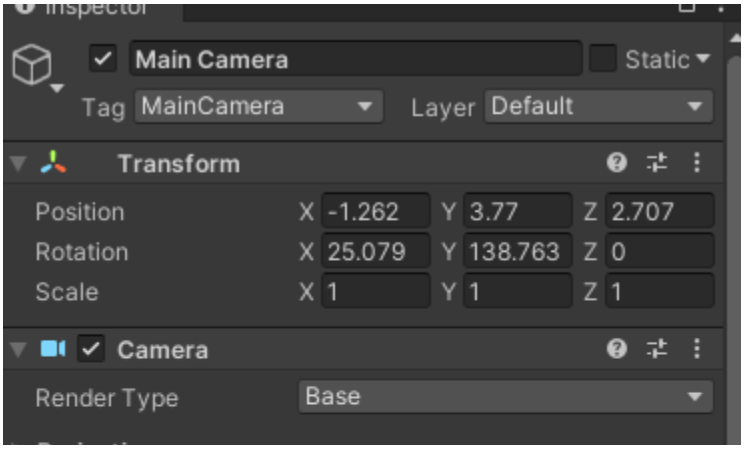
Post Processing

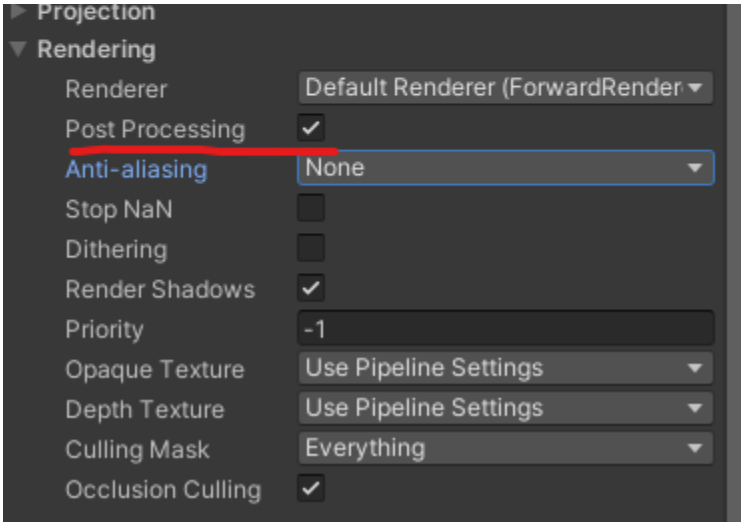
Why is my UI canvas flashing?

- It is likely because of Post processing being checked on the UI camera - for some reason, currently its the only way for Post Processing to work in game view

Why isn't Post Processing Working in Game View?

1. Must have "Global_PostProcessingGO" within the scene. This is a prefab so just drag it into the scene


2. Make sure "main game camera" has **Post Processing Checked**
   a. 



Why isn't Post Processing Working with our Custom Camera?

How come Post Processing isn't working with Our Custom Camera?

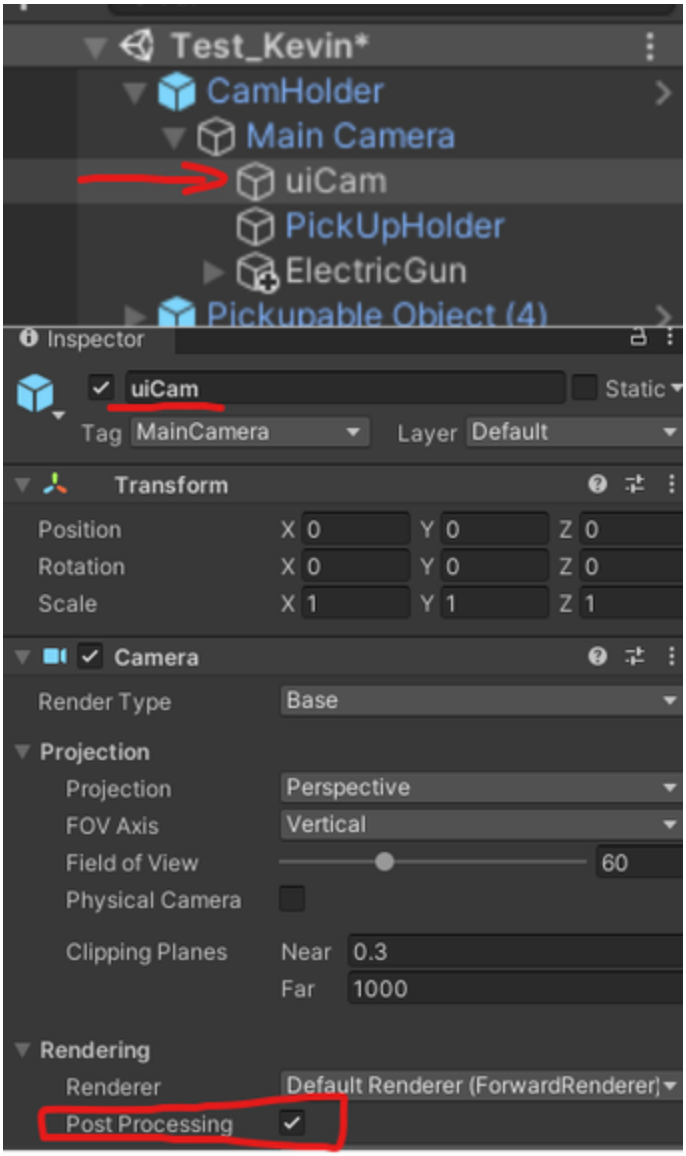
1. You must select the '*uiCam*' object within the prefab
2. Enable Post Processing

Main Electricity VFX

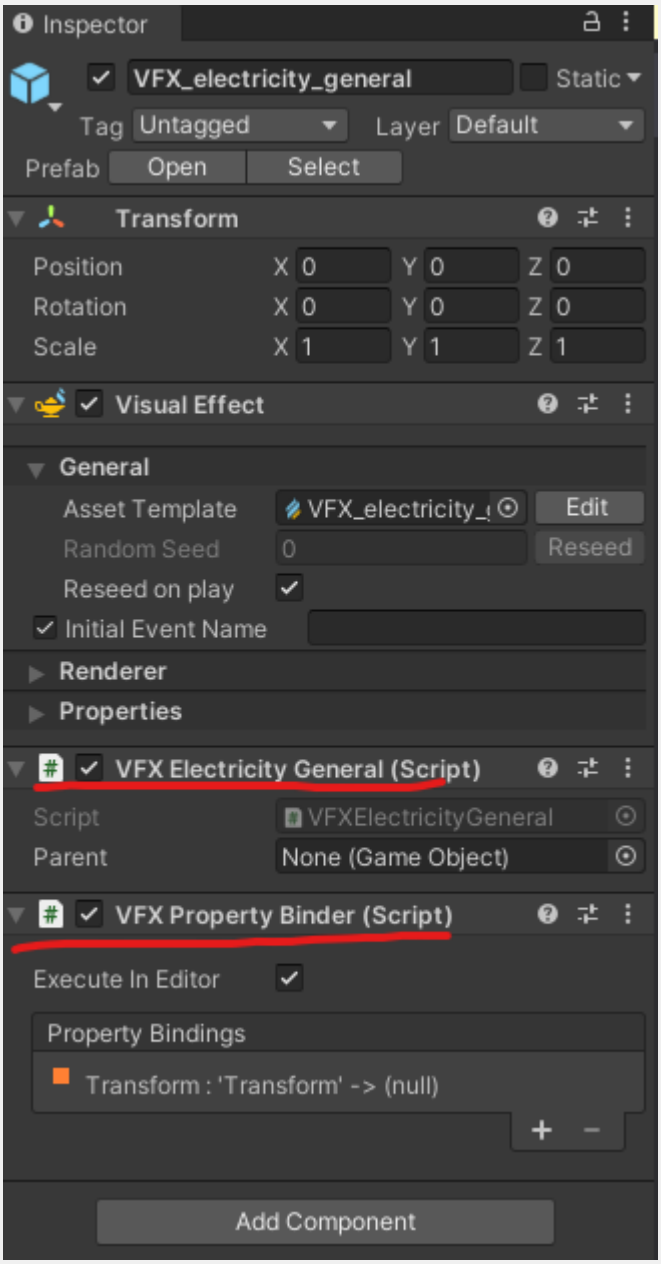
How do I get it to work on Electric Arc?

Prefabs

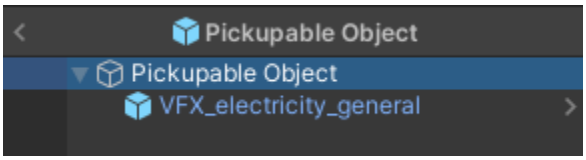
Ensure the following components exist on the prefabs:



Prefab Name	Inspector	Description
1. VFX_electricity_general		**<u>VFXElectricityGeneral(Script)</u>** **This script has the required code to find the parent object. The result is that the VFX follows the parent's transforms while its particles can independently scale without becoming visually unpleasing.** **<u>VFXPropertyBinder</u>** **This is VFX graph's default script and is necessary to bind properties within VFX Graph Asset. Without this, it is like never assigning a value to a variable in C#.**



Game Object Hierarchy



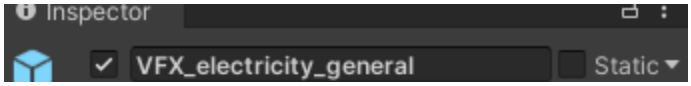
You **must** child the *VFX_electricity_general* prefab **to the game object you want the VFX to appear on** otherwise it will generate the visuals in WORLD space at world origin. It may appear like it isn't working.

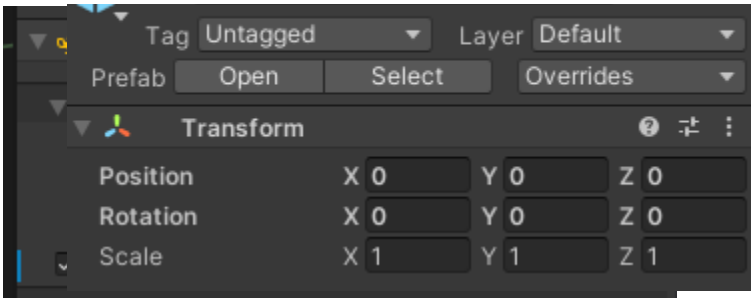
Why is the VFX not playing on game start?

You must check "Initial Event Name" and leave it **blank**. However, this means that you must invoke play through code as it will stop it from following the object picked up by Electric Arc.

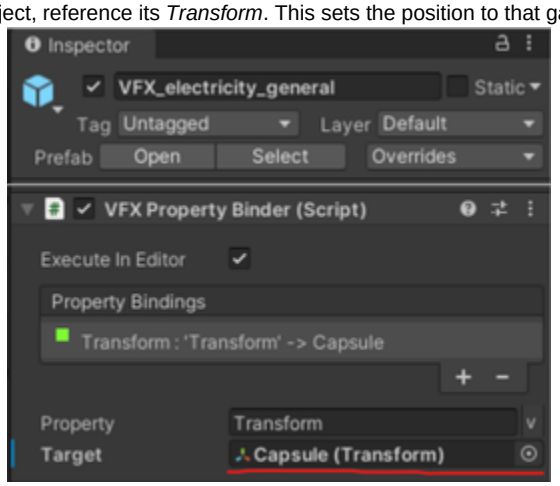
This is applied on objects affected by Surge's abilities.

1. Assets>ResourceAssets>Materials>VFX-Shaders folder, you will find a *'VFX_electricity_general'* prefab
   a. This prefab is required for the VFX to appear on game objects
2. Ensure transform values are all frozen/zero'd

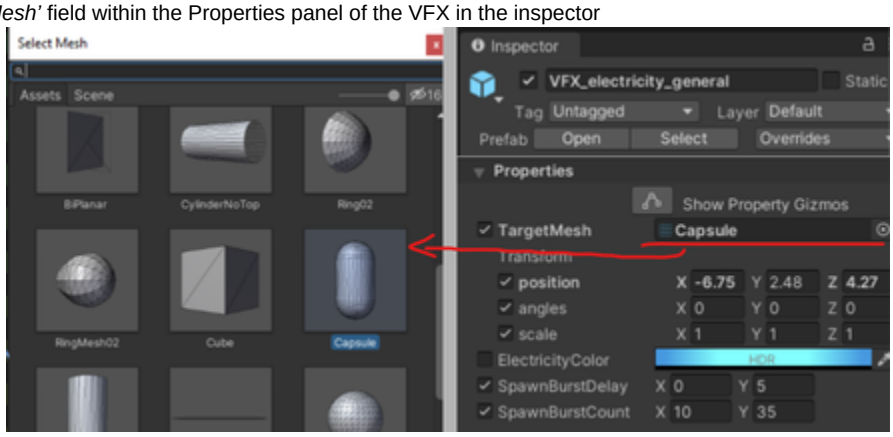




3. How do I have the VFX track the target game object?
   a. To apply this VFX to a target game object, reference its *Transform*. This sets the position to that game object
   b.



4. How do I make the VFX appear on top of the target mesh?
   a. Access the '*TargetMesh'* field within the Properties panel of the VFX in the inspector
   b.

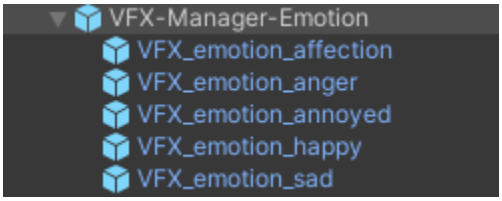


   c. Reference the *Mesh Component* of the target game object. Some instances may require using different mesh components like for **wires** , the *CylinderNoTop* works well to have the VFX appear along the entire cylinder rather than the omitting part of it.

Emotional VFX

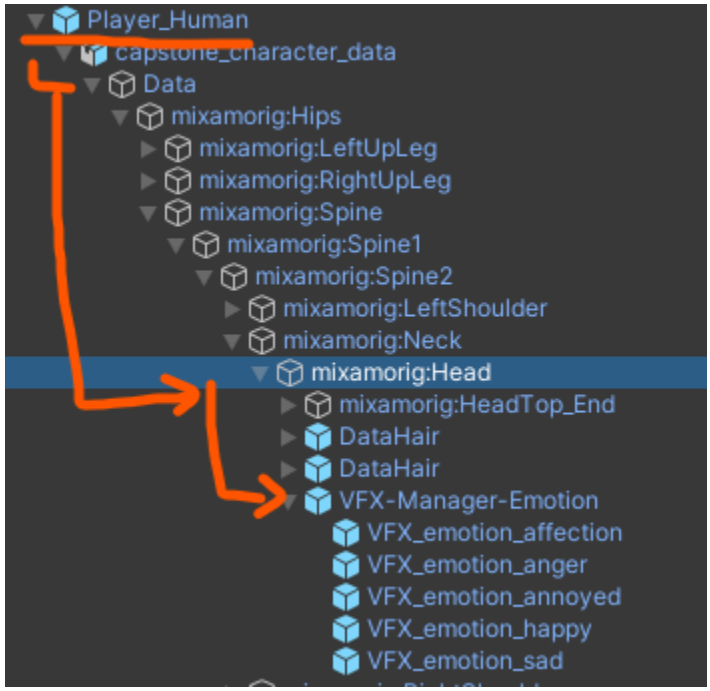
Required Components

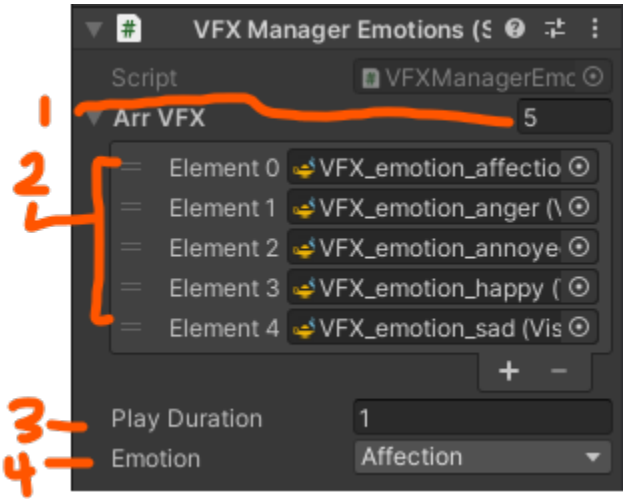
1. **VFX-Manager-Emotion**
   a.

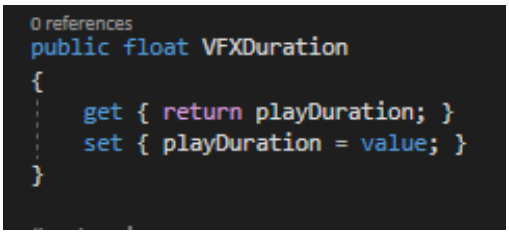


2. **VFXManagerEmotion.cs**

How to use

1. **What if I can't find the asset?**
   a. Look in Player_Human prefab Under "*mixamorig:Head*" — This was done so the VFX is in sync with Data's head to avoid visual oddities while she moves
   b. 

2. **Ensure inspector appears like below:**
   a. 

   b. **1.** Array references 5 Visual Effect Components (Affection, Anger, Annoyed, Happy, and Sad)
   c. **2.** List elements in array **in this order as seen above** - This is relevant because the script uses an Enum where Affection = 0, Anger = 1, etc…
   d. **3.** Play Duration is exposed but can be accessed using:
      i. 
```
0 references
public float VFXDuration
{
    get { return playDuration; }
    set { playDuration = value; }
}
```
      1. Getter method: Reference like so: VFXManagerEmotions *variableName= **Drag reference from scene***
      2. VFXManagerEmotions is the class, followed by the variable name
3. **Get a reference to the VFXManagerEmotion in the script you use to handle them at Runtime for narrative events and the like**

```
public void HandleEmotionVFX(EmotionalState emotion, float duration)//Use this method from other scripts to call
{
```

```
    if (PlayEmotionVFX != null)
    {
        StopCoroutine(PlayEmotionVFX);
        int index = (int)emotion;
        DisableVFX();//Stops the VFX so another one CAN'T start in case one is triggered recently to stop from doubling up
    }
    if (emotion == EmotionalState.None) return;//Skips if there is no emotion as no VFX exists for "None"
    PlayEmotionVFX = StartCoroutine(CoEmotionVFX(emotion, duration));
}
```

a. Call the method: HandleEmotionVFX(EmotionalState emotion, float duration)
   i. The method requires an argument for “EmotionalState” which isan enum to make it easier to understand the correlation to the indices of the Array for VFX
      1.
```
[SerializeField] private EmotionalState _emotion;
5 references
public enum EmotionalState
{
    Affection, Anger, Annoyed, Happy, Sad, None
}
```

b. Select the emotion you want Data to express by referencing the script
   i.
```
vfxManagerEmotions.HandleEmotionVFX()
void VFXManagerEmotions.HandleEmotionVFX(VFXManagerEmotions.EmotionalState emotion, float duration)
```

   ii.
```
vfxManagerEmotions.HandleEmotionVFX(VFXManagerEmotions.EmotionalState., vfxManagerEmo
```

Affection
Anger
Annoyed
Happy
None
Sad

```
vfxManagerEmotions.HandleEmotionVFX(VFXManagerEmotions.EmotionalState., vfxManagerEmotions.Duration);
```

   iii. vfxManagerEmotions.Duration is getting the set value in the root script. You can override it like this as well:

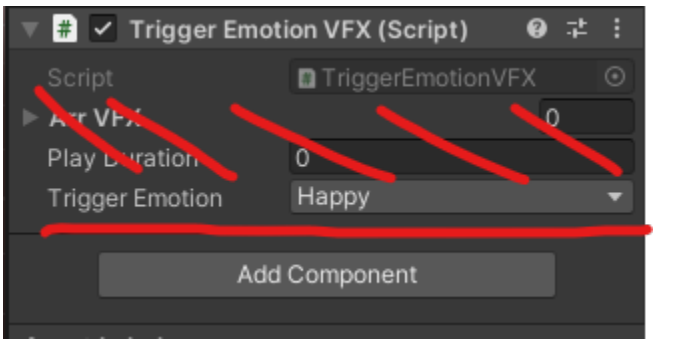
```
vfxManagerEmotions.HandleEmotionVFX(VFXManagerEmotions.EmotionalState.Happy, 12f);
```

      1. The Duration value (above it is 12f) is used in a CoRoutine so it represents seconds that the VFX will last
         a.
```
1 reference
private IEnumerator CoEmotionVFX(EmotionalState emotion, float duration)
{

    int index = (int)emotion;//Casts emotion enum as an integer and sets references the index associated within the game.
    arrVFX[index].Play();
    yield return new WaitForSeconds(duration);
    arrVFX[index].Stop();
}
1 reference
```

      2. **Ideally we keep values to <4 seconds as there may be issues with swapping Emotion VFX**

Emotional VFX Trigger Box

Assets > ResourceAssets > Prefabs > SceneSetup
- CamHolder
- Canvas_InGame
- Functionalities
- GameManager
- Global_PostProcessingGO
- KillFloor
- LocalManager
- TriggerEmotionVFX

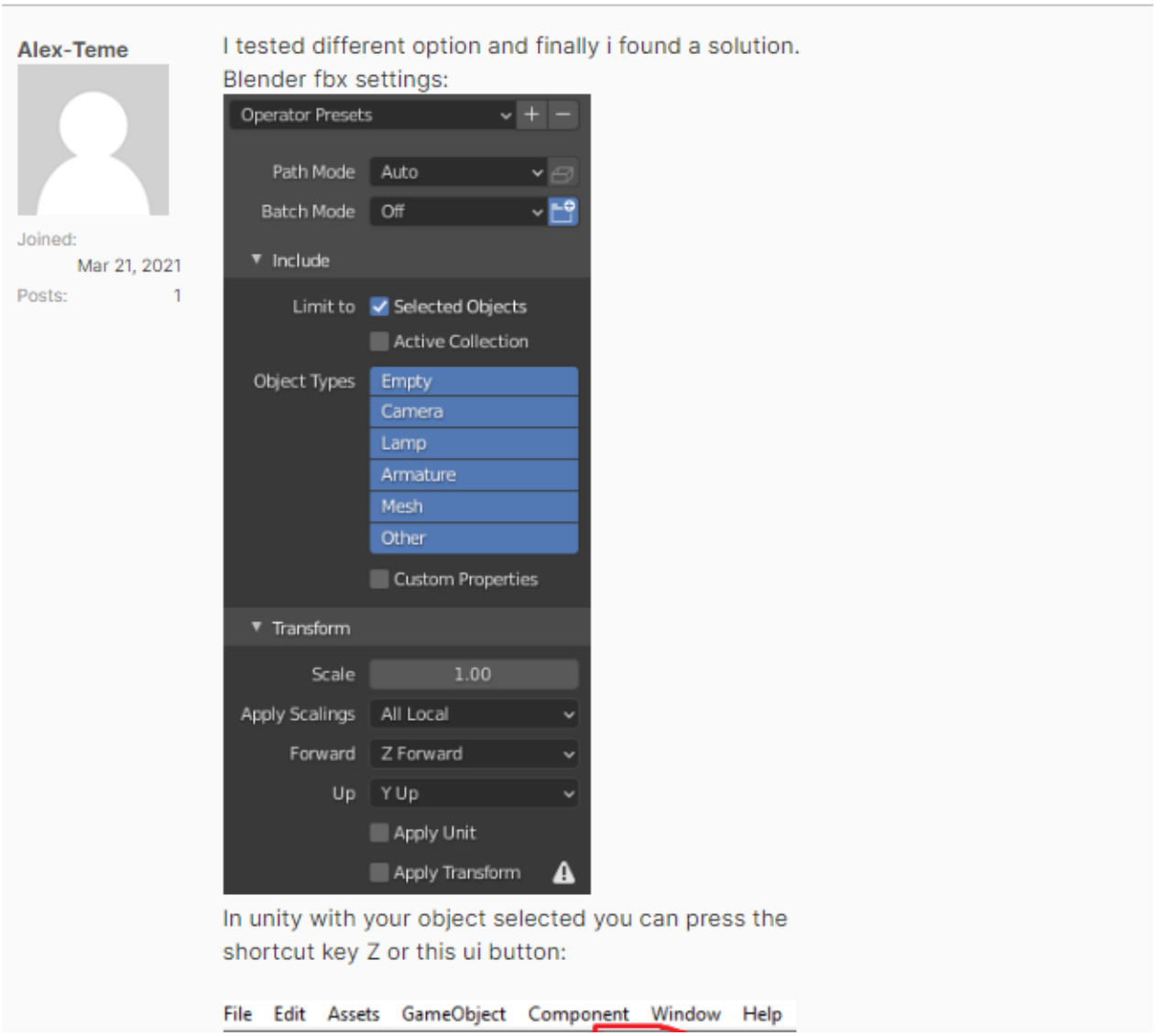


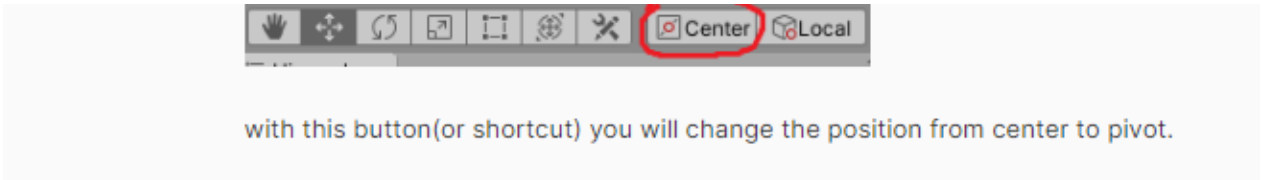
- Inspector on the prefab, simply select what Emotion you want played - Ignore the two values above since it is due to it inheriting from VFXManagerEmotions because I wanted to make sure the emotions were the same

3D Assets

Why is my object pivot different from 3D package to Unity?

1. Check all transforms are frozen
2. Check that the object in 3D package is in its world origin (0,0,0)
   a. Ensure this is true for child objects too
3. Check to see if Unity is using “Pivot” setting on the asset

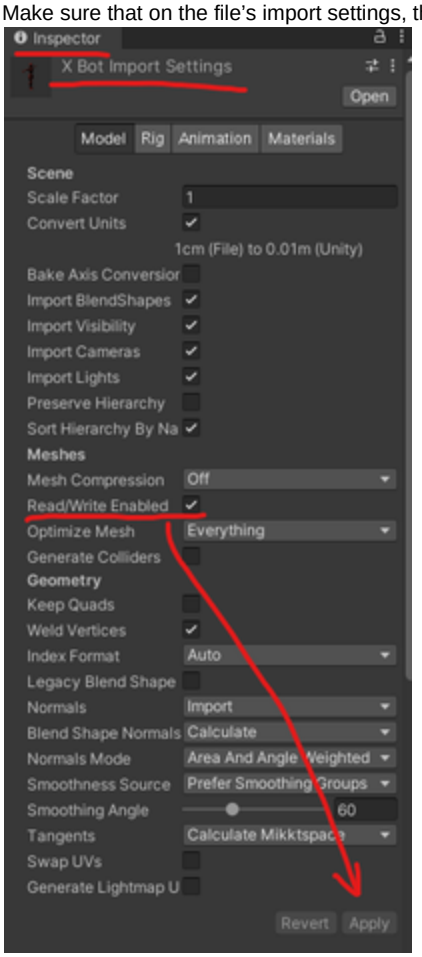




a. Select the 3D asset in the scene
b. **Press shortcut 'Z' or find the above UI**

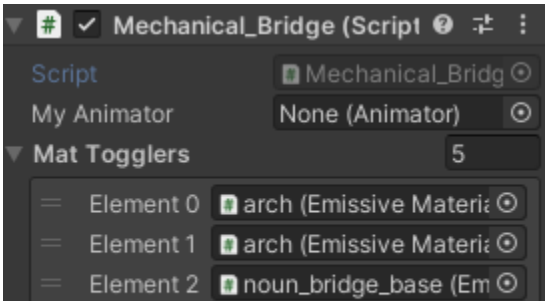
Why is my VFX not working on 3D assets?

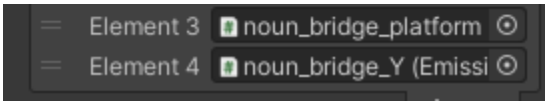
Make sure that on the file's import settings, that "read write" is enabled.



Why are there so many Mechanical Bridge Arches in a series of bridges?

1. There are two assets for the Arches per mechanical bridge prefab
2. In a series of bridges, there will be 2x the # of arches per bridge but you only need **a start and end arch that signifies those points**
3. Choose one pair of arches to keep and delete all others (**make sure the arch pair is a child of the same prefab)** to avoid potential issues when referencing things
4. To have the emissive parts react to the game, you must reference the child object with the Emissive On Off component script attached





a. **Make sure you are referencing the correct 'arch' asset**
   i. The Mat Togglers need to look at all 3D models that have a emissive part

b. The references are the ones childed to the 3D asset

Why is my emissive objects not selecting the right color when it is off by default?

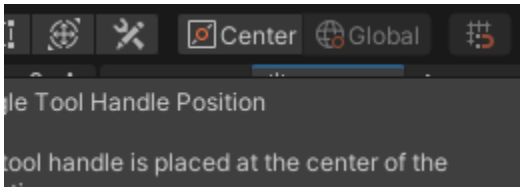
- https://docs.unity3d.com/Manual/shader-loading.html

```
4 references
public class EmissiveMaterialOnOff : MonoBehaviour
{
    [SerializeField]private MeshRenderer meshRenderer;
    public Texture2D emissiveMask;
    [SerializeField]private Color emissiveColorON;
    [SerializeField]private Color emissiveColorOFF;

    0 references
    void Awake()
    {
        meshRenderer = gameObject.GetComponent<MeshRenderer>();
        emissiveColorON = meshRenderer.materials[1].GetColor("_eColorON");//References colors within the shader graph
        emissiveColorOFF = meshRenderer.materials[1].GetColor("_eColorOFF");
        SetEmissiveMask();
    }

    1 reference
    private void SetEmissiveMask()
```

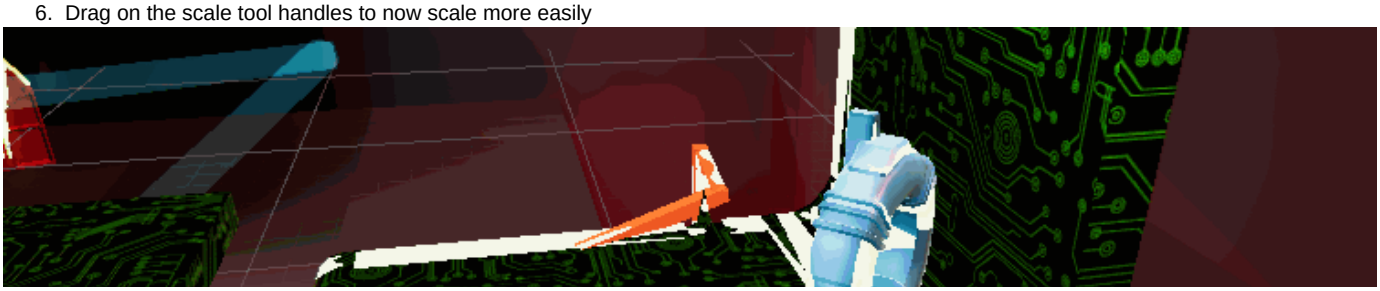
- The emissiveColorON/OFF was moved to Awake() to reference the Mesh Renderer to get the color for the material **FROM THE VARIABLE DECLARATION AREA**
  - However, we can't use a Mesh Renderer reference above when declaring the variable
- **SOLUTION: Keep variable declaration like above image, but set the references outside of Awake() in a way that it gets called at runtime.**

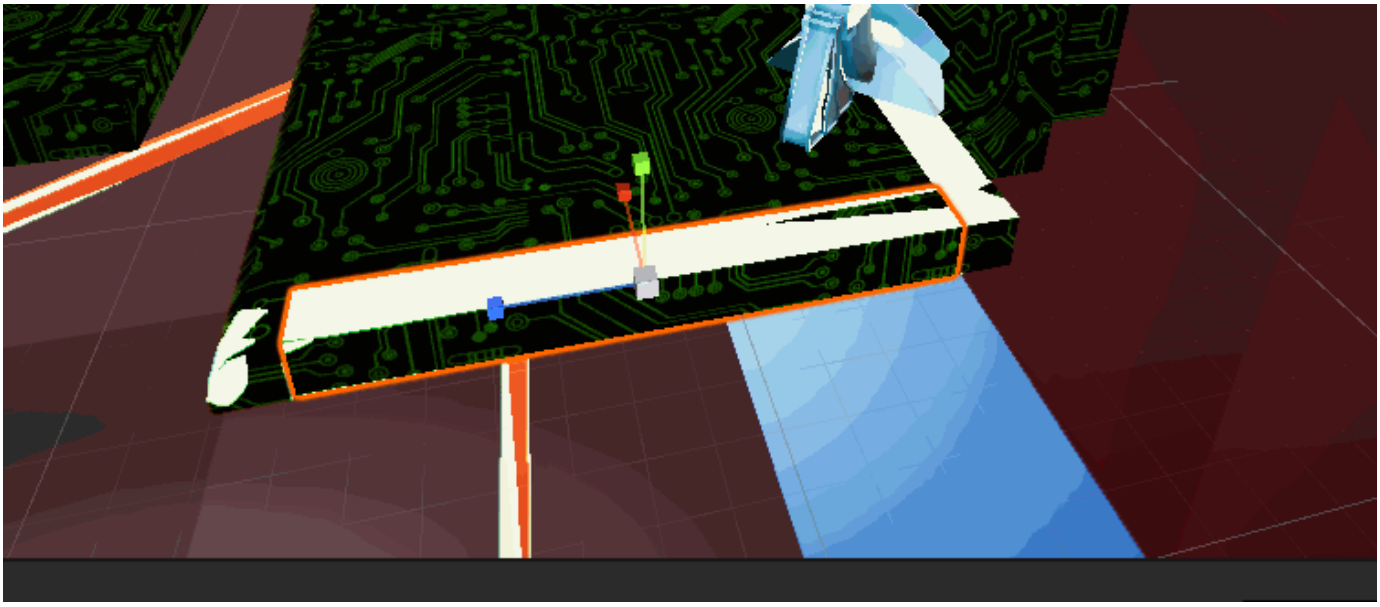
Electric Grid Movement/Scaling to Vertex

When positioning these grids that signify powered state do these steps: **Scale to Vertex**



1. Ensure pivot is "Center"
2. Move Tool (W)
3. Press and HOLD (V) and move your cursor to a corner of the box
4. Select that corner while still holding (V)
5. Press (R) for scale tool
6. Drag on the scale tool handles to now scale more easily





Project Risks and Constraints

Risks

	Risk Description	Probability (H/M/L)	Impact (H/M/L)	Risk Management Plan	Member Responsible for Resolution
1	**A core member of the team is unable to continue participating.**			If our core programmer is unable to continue, we will reassess the technical scope of our game and redesign content to fit the capabilities of the remaining programmers which will include, Kevin, Tiago, Farryl and Wilson. If our core sound designer is unable to continue, we will seek open-source sound libraries for us to implement and focus on visual signifiers instead. If our core artist is unable to continue, we will reassess our art asset list and focus on core assets required for the player to have the intended user experience. We will also re-assign artistic tasks to Farryl and Joshua.	• **Joshua** • **Tiago**
2	**Our target audience is not interested in our game.**			We will use data, research, and competitor analysis of our target audience to discover their preferences which we can exploit earlier in the project. Every week we will refer to our design pillars and target audience and ask, will they be interested? Rework the gameplay loop & rebalance the progression and difficulty	• **Wilson** • **Tiago**
3	**We are stuck on a feature's implementation resulting in missing deadlines.**			When tasks are assigned, we will give story point estimates to assess difficulty of tasks. We will have at least 2 meetings per week where we will assess progress of tasks and address challenges. Hard blocks in tasks will result in the team reconsidering its necessity by referencing our hook, anchors, core user and emotional experience and design pillars.	• **Tiago** • **Joshua**
4	**Puzzles are not beatable because of poor design like forgetting key game mechanics needed for progression.**			We will have a spreadsheet that lists out each level and includes puzzles and what is required to progress. Before each build, we will check if each level that exists has everything in the spreadsheet. If players get stuck, we will also include timed hints to ensure players can proceed.	• **Joshua** • **Farryl** • **Tiago**
5	**Optimization issues arise, causing our game's performance to fall.**			Analyze & identify causes of performance issues via profiler. Implement coding algorithms to drastically improve performance (e.g., object pooling, binary trees).	• **Hubery** • **Kevin** • **Farryl**

				Experiment with other asset importation algorithms & adjust assets where applicable	

Constraints

	Category	Constraints
1	**Time**	Milestones, weekly tasks to complete for advisor review, final deadline for release
2	**Resource**	Group members need to attend to personal projects, part-time jobs, slightly different college schedules, etc.
3	**Financial**	Money the group is willing to invest in purchasing assets and programs
4	**Transit**	Difficulty getting on campus – limits opportunities of physical meetings

Miscellaneous Notes

Back up risks:

5	Optimization issues arise, causing our game's performance to fall.	M	M	Analyze & identify causes of performance issues via profiler; Implement coding algorithms to drastically improve performance (e.g. object pooling, binary trees); Experiment with other asset importation algorithms & adjust assets where applicable	Hubery, Kevin, Farryl
7	Our product does not meet the technical requirements for Steam publication.	M	L	We will attempt to identify the issue that is causing us to be rejected for Steam publication. If we cannot resolve the issue, we will pivot towards a release on itch.io instead.	Hubery