

PROJECT 3

EXPERIENCE DESIGN

TEXT ADVENTURE GAME DEVELOP ENGINE

This project raises a proposal to develop a **game engine for Text Adventure Games (TAGs)** which also supports cooperation and publication.

BACKGROUND 1

Text Adventure Games (TAGs) are games that use texts as its major expression. They are also known as **interactive fiction** or **interactive novel**. Players read stories through making different choices, and usually these games are equipped with beautiful illustrations and intriguing characters.



Old Primitive TAGs

Primitive TAGs look just like this -- very straightforward dialogues equipped with illustrations that depicts the plots.

Gal-games

Gal-games are typicals modern TAGs, where character designs are more elaborate and text user interfaces are more attractive and easy to focus.



Modern TAGs have developed to face-to-face modes -- for example, in China a table-based game called **Live Action Role Play Game (LARPG, 剧本杀)** are popular among the teenagers.



Live Action RPG

Players follow a written story script and play their assigned part of different characters. They keep their secrets from others and exchange clues only when necessary. Their goal is to reach the end of story, usually find the culprit of a crime or similar.

2 CURRENT SITUATION

TAG developments are still popular among game industry. Current situation of a TAG development usually involves the following roles.



Playwrights

Playwrights write the story for the TAG. They decide the branches and the choices that may result in a different ending of the story.



Artists

Artists draw the illustrations for the TAG, not only the scenery illustrations but also the character illustrations.



Musicians

Musicians compose the background music for the TAG. A TAG usually requires several BGMs, and this is a very important part of a good game.



Programmers

Programmers write the codes for the TAG. They also decide the algorithms behind the branching, usually also manipulate the game variables with the plots.

Surprisingly, a TAG does not require a large team. The cost of making a TAG thus is very low, so it is usually the primary choice when a new game designer wish to make a game that tells a good story rather than offer great game mechanics.

However, even with such a low cost, making up a small team for a TAG still becomes the main challenge for game designers to make such game.



I have a good story but I have not idea who can design the appearance for my characters... I have no artist friends!!



Well... I really want to make a game full of cute boys and girls, but I have no idea of a good story! I can draw everything if there is a story!

Powerful game engines may not be a necessary requirement for TAGs, but a good team is always of the first priority -- also the primary challenge.

3 MARKETING RESEARCH

Products with similar functions are popular among the market. The following part analyzes how these competitive products state the concerns of the stakeholders.

The following terms are concerned in this research.

Newcomer Friendliness

Newcomer Friendliness states how friendly the engine is to a user that is not familiar with it. The higher the friendliness, the easier the user can use it.

Version Control

Version Control states if the engine supports version controlling. The version control should support branching and reverting.

Feature Set Abundance

Feature Set Abundance states the abundance of the engine's supported feature sets. The engine can make a larger game with a more powerful feature set.

Cooperation

Cooperation states if the engine is specified for teamwork, especially synchronous cooperation.

Distribution

Distribution states if the engine helps the game designers to distribute their game, either commercial or free.

Low Pecuniary Cost

Low Pecuniary Cost states how expensive it is if a user choose to use the engine. The higher the value is, the less expensive the engine is.

Newcomer Friendliness	Figma	Bilibili Interactive Video	Unity	RPG Maker
Mandatory New User Tutorial	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Complete Feature Set Document	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Optional Tutorial	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>

Cooperation

Synchronous Cooperation	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Comments	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Project File Easy Sharing	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Multiuser Editing for a Single Project	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Version Control

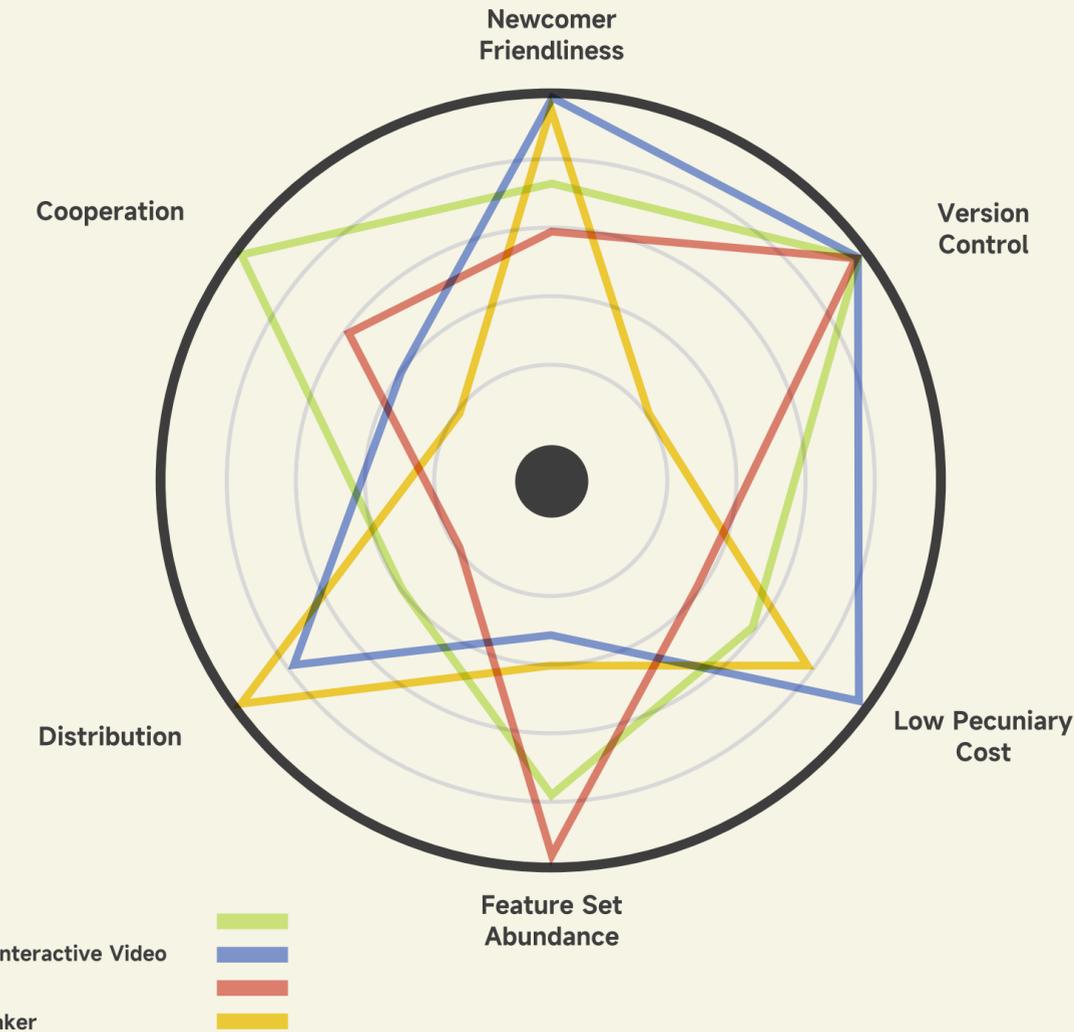
Reverting	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Branching	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Distribution

Native Distributing Platform	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Third-party Distributing	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Player Feedback	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Player Evaluation Rank	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Platform Promotion	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

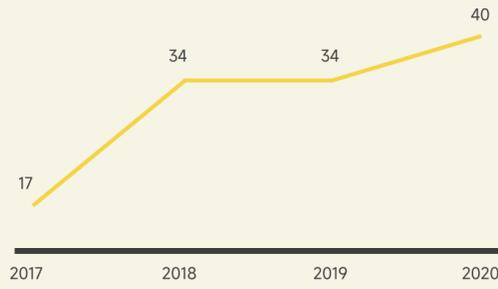
Low Pecuniary Cost

Free Version	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
No Additional Charges For Commercial Use	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>



Figma
Bilibili Interactive Video
Unity
RPG Maker

Feature Set Abundance	Figma	Bilibili Interactive Video	Unity	RPG Maker
Standard TAG Support	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
2D Support	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
3D Support	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Programming-based Features	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Third-party Plug-in Support	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Graphic Editing and Producing	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Native Project Management	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Non-programmer Friendly Interface	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>



4.1 TAG Published on Steam(China) from 2017-2020



4.2 TAG Sale Amount on Steam(China) in 2020

The above shows Chinese TAG developed in 2020. Since China is one of the largest TAG producing country, the statistics is a proof that TAG is still a preferred game genre.

4 TAG SITUATION

5 USER JOURNEY MAP

Phase 1 Stakeholders come together to set up a game team.

Phase 2 They come up with a proposal for game design.

Phase 3 They start to develop and prepare materials.

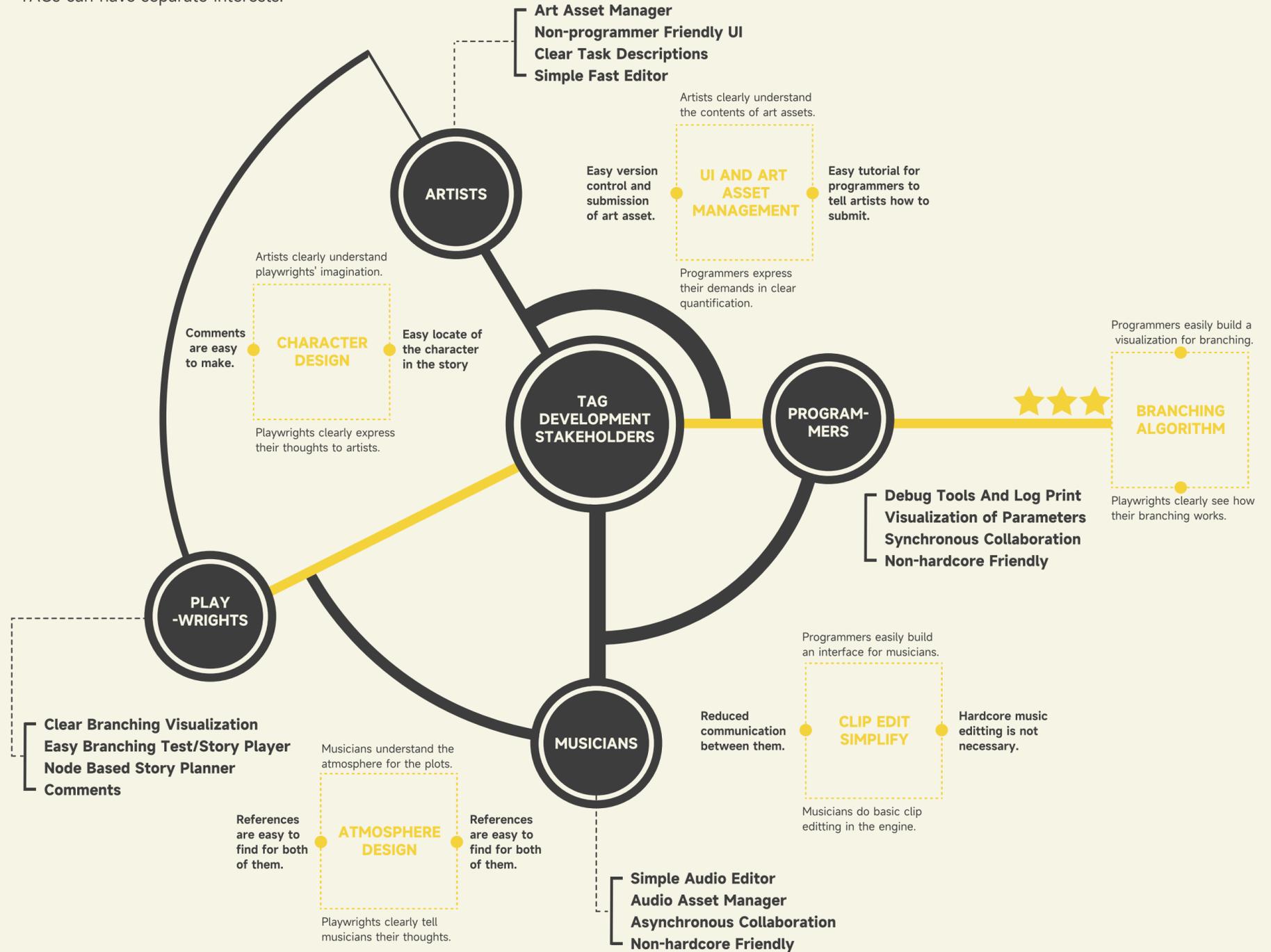
Phase 4 They test the quality and stability of the game.

Phase 5 They distribute their game to the players.

Setting Up A Team	
Problem	Solution
<ul style="list-style-type: none"> Stakeholders may not be familiar with each others. They do not have a good place to find team members. 	<ul style="list-style-type: none"> We make a social connection for the stakeholders. On our platform, the stakeholders will find suitable teammates, even they don't know each other.
Proposing A Game	
Problem	Solution
<ul style="list-style-type: none"> Stakeholders may not have a good reference for brainstorming. Race analysis and survey may be another challenge. 	<ul style="list-style-type: none"> The engine automatically lists some similar works for references. The engine analyses the reasons for being success for the well-sold games.
Implement A Game	
Problem	Solution
<ul style="list-style-type: none"> They may not find an engine easy enough for making a TAG. Consequently they may start to use a bunch of software. 	<ul style="list-style-type: none"> Make the functions and UI minimalistic and user-friendly. Integrate the functions that are required by a TAG in a single engine.
Test A Game	
Problem	Solution
<ul style="list-style-type: none"> They may have difficulty in finding qualified volunteers for testing their game. They also want to see if the software runs stably. 	<ul style="list-style-type: none"> Use our platform to find volunteers or to set up beta servers. The engine supports realtime test play (as what is supported in Unity).
Distribute A Game	
Problem	Solution
<ul style="list-style-type: none"> Distributing can be a challenge under the strict censorship due to different platforms. A satisfied profit from the game is also necessary for most game makers. 	<ul style="list-style-type: none"> Use our platform to distribute this game, or export it to other platforms. There will be an relatively low upper bounder for profit taken by the platform.

6 STAKEHOLDER MAP

Considering the individuality of the workloads of different roles in a team, the stakeholder of making a game engine that is specified to making TAGs can have separate interests.



INTERVIEW 7

To better understand how the game engine can bring convenience to related stakeholders, several interviews are necessary.

The following are collected from first-hand interviews.

CowardPiglet 📍 Nanjing, China

Age 23
From Oberlin College

Playwright who has worked with several for different projects. He designed vivid characters and wonderful plots for these games.

What kind of tools would you use when you plan to design a character?

Microsoft Word with Excel will be totally enough for listing information. Some random generators are useful when naming characters. Some mindmap creators also help.

What difficulties have you met when using these tools?

Though Word and Excel are useful for listing information, they are not a good visualization. A great layout for showing information such as character relationships or plots branching will solve a bunch of difficulties.

Any difficulties when collaborating with other teammates?

Communications are basically lowly-efficient, especially when team members hold different views for a certain design. Sometimes I want the materials to be settled, but, say, artists nominate another idea and works along without a discussion.

What is your most-wanted function in a game engine?

As said before, a relationship graph will be very useful. Also, I would like my key information to be listed in a straightforward visualization, and highlighting will also be preferred. Finally, locking on terms so that others cannot modify will also be desired.

Derek Sun 📍 Irvine, California

Age 24
From University of California, Irvine Campus

Game Designer who has designed indie games of different genres, such as RPG and interactive novels. TAG becomes a superset of interactive novel, so he is interested in making such a game.

What kind of tools would you use when you plan to design a character?

I will use notebooks and pencils for sketches. Maybe Wikipedia for some background information. I search my games in steam or use my experience as references.

What mechanics is suitable for designing a TAG?

TAGs have texts occupying the majority, and I assume that people who love playing TAG refuse hardcore operations like battling or combating. I will involve some easy puzzle games or some hardcore mysteries in the games.

Any difficulties when collaborating with other teammates?

Programming based questions will be hard to solve. For me, it is not hard to communicate with artists or musicians, but for programmers sometimes I myself am not aware of how hard a mechanic can be when implementing.

What is your most-wanted function in a game engine?

I think a branching tool for scripts will be very useful. This visualization will be quite straightforward if I want to comment something for the plots, or I just want to add some mechanics into the TAG.

Xiwei Wang 📍 Rochester, New York

Age 22
From University of Rochester

Programmer who has worked with several teams for making different spectacular indie-games. He is proficient even in making 3D games, so 2D TAG may be too easy for him.

Generally, are you willing to be a programmer for a TAG? Why?

I am willing to be such a programmer, especially if it is designed to be a great work. But compared to games like Monument Valley I think TAG sounds a little bit boring and deadpan.

What do you think is the most important technique for making a TAG?

Definitely the branching algorithm and data structure for saving branches. TAG development costs lots of time in translating a playwright script to a programmable script. A frame that realize this part will be most important.

Any difficulties when collaborating with other teammates?

QA and programmers usually hold different opinions when the demands or requirements make vague description. I hope that descriptions of tasks can be more straightforward and more accurate.

What is your most-wanted function in a game engine?

Node-based framing for texts so that I will not need to organize the texts from playwrights by doing repetitive works, especially for branching the plots.

Sidious Chen 📍 Nanjing, China

Age 23
From Rensselaer Polytechnic Institute

Gamer who have no game-making experience. Factors that prohibit him from making a game are various, but he is interested in learning a low-cost game engine.

What is the most important factor that prohibits you from making a game?

Making a game sounds like a very burdensome business. I definitely prefer playing a game to making a game.

What kind of position would you like to take if you join a game-making team?

What kind of tools would you use when you plan to design a character?
What kind of tools would you use when you plan to design a character?

What is the max time you can agree to spend in learning a game engine?

I can spend half a month, and 4 hours maximum per day.

What is your most-wanted function in a game engine?

No programming. Node based game making will be the most desired function.

PERSONA 8

To better understand how the game engine can bring convenience to related stakeholders, interviews are necessary.

The following is one representative persona analyses summarized from an interview.

LARPG Playwright

CowardPiglet

Name	CowardPiglet
Age	23
Role	Playwright
Personality	Creative New to Programming

"I've got a very good story to tell, but that is not saying I have a good game to deliver."

Behavior

- Extrovert
- Happy with challenges
- Happy with learning new technology
- Enjoy learning everything

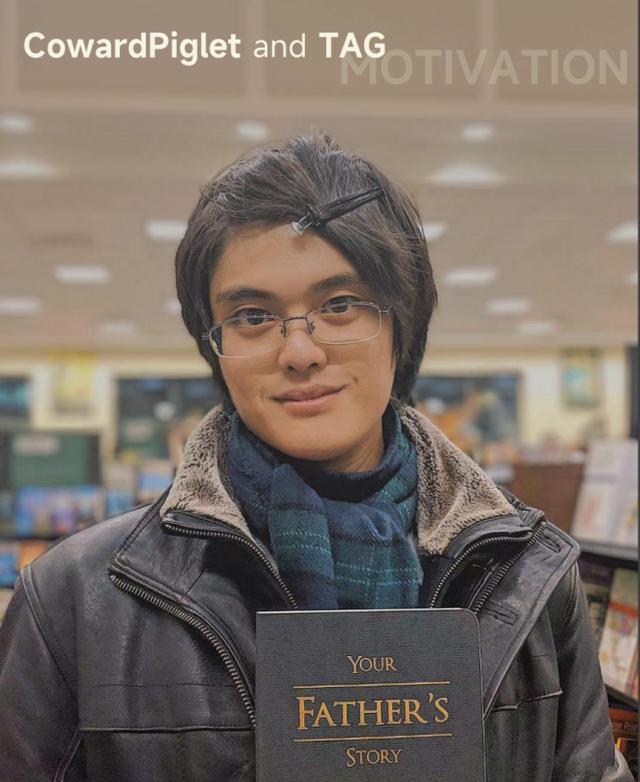
Concerns

- Interesting mechanics may be hard to program.
- Large story may be hard to branch and organize.
- Powerful game engines may be hard to master.

Goals

- Make text games that delivers some philosophy.
- Master some game engines that allows more story branchings and with lower learning cost.

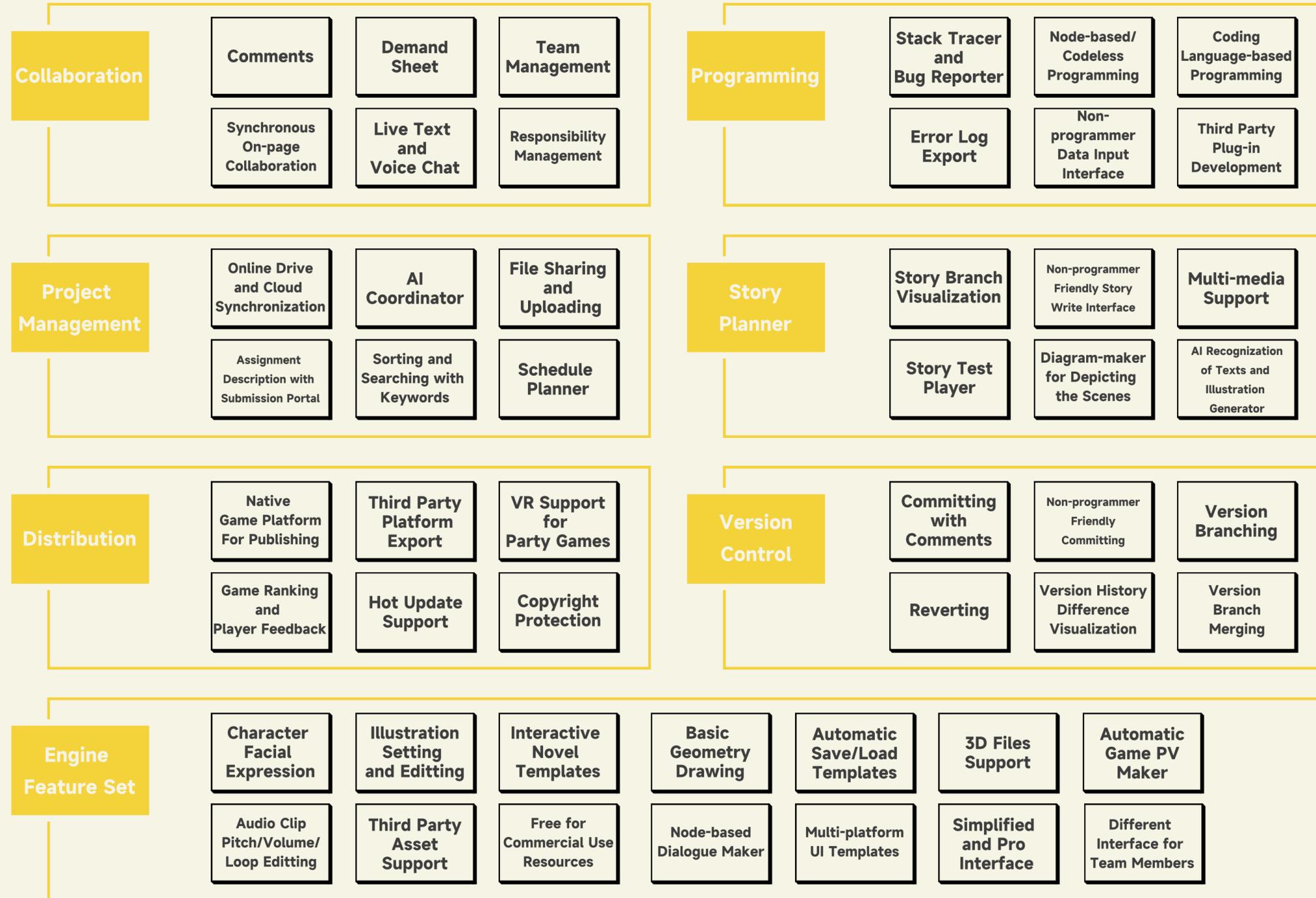
CowardPiglet and TAG



MOTIVATION

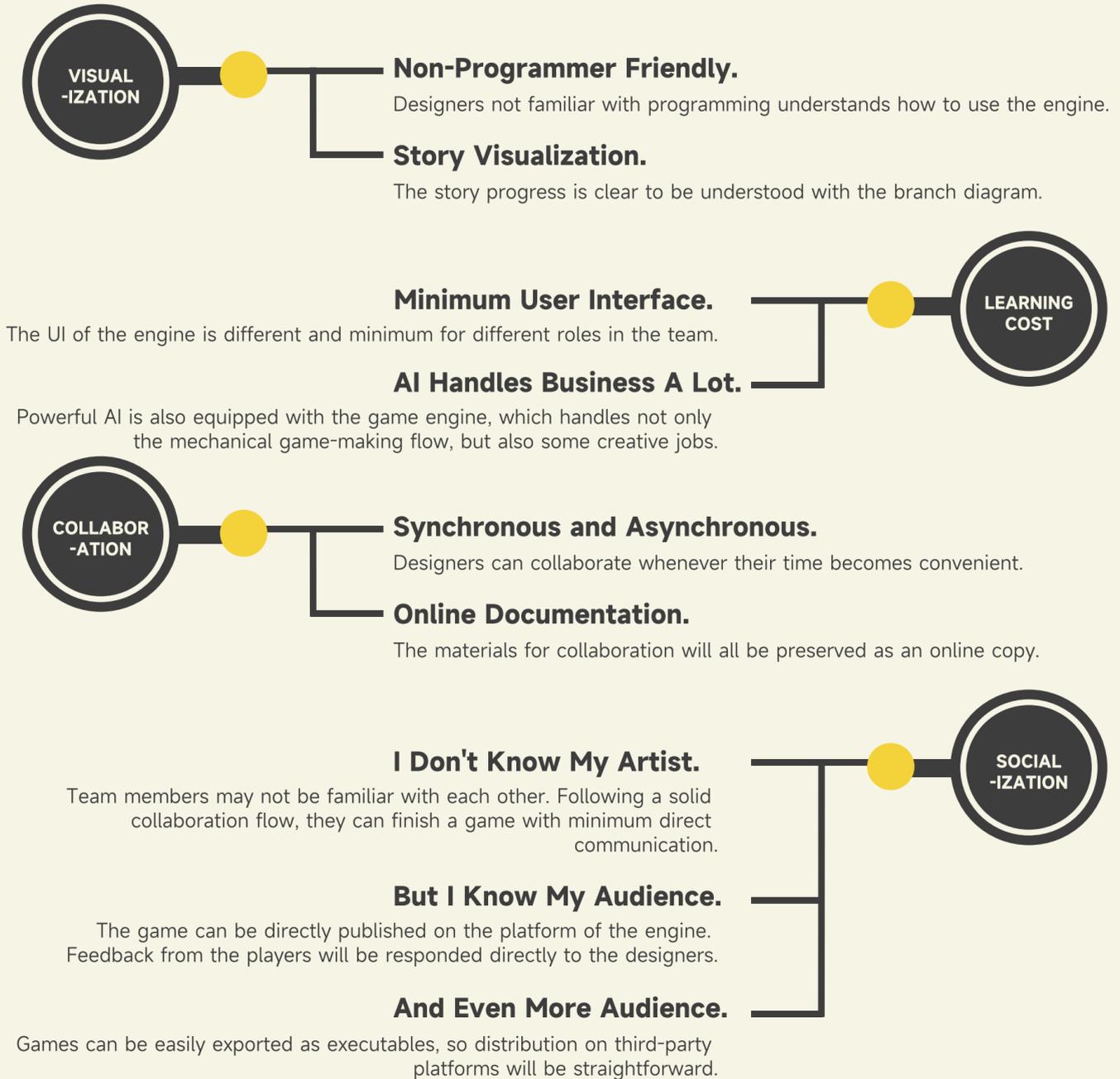
9 CARD SORTING

The following showcases the card sorting of potential functions of the proposed engine.

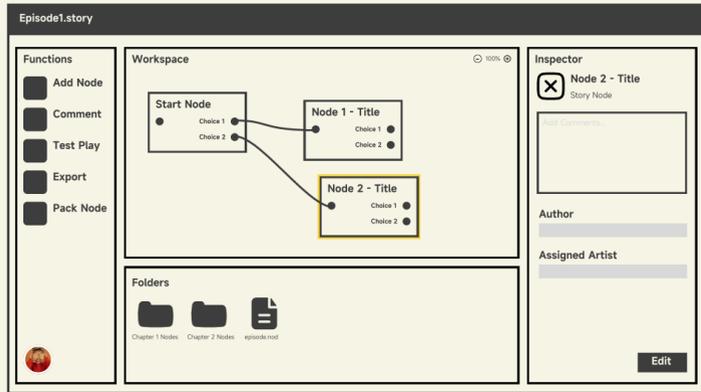


10 DESIGN POLICIES

The cards showcase the concrete functions that may be implemented in this engine. These functions are following the design policies specified in this part. Namely, all of these functions are supporting the engine through **visualization, learning cost, collaboration** and **socializing**.

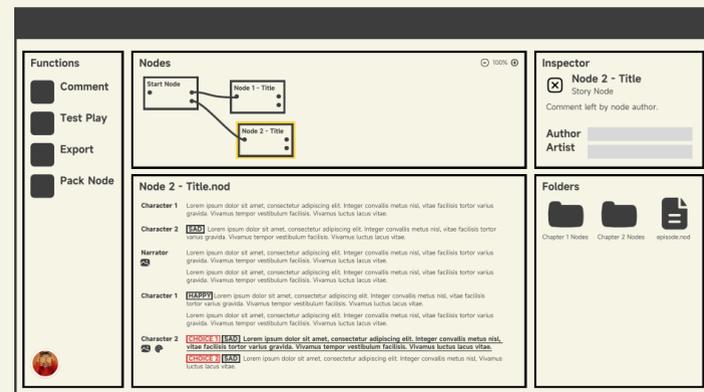


Game Engine



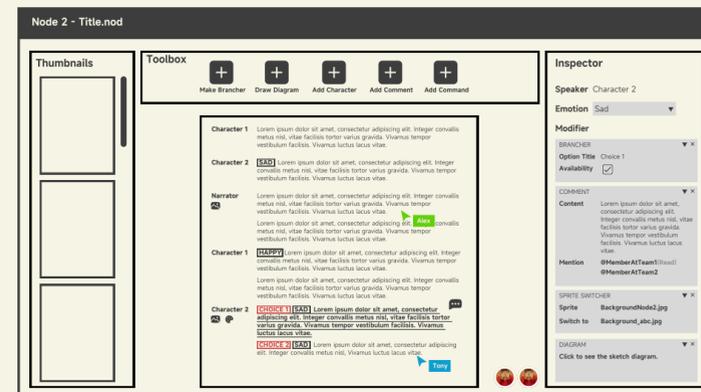
Story Planner (Playwright Mode)

Playwrights add story nodes driven by choices in this interface. They can double click the nodes or click the edit in the inspector and enter the **text edit mode** to edit the content.



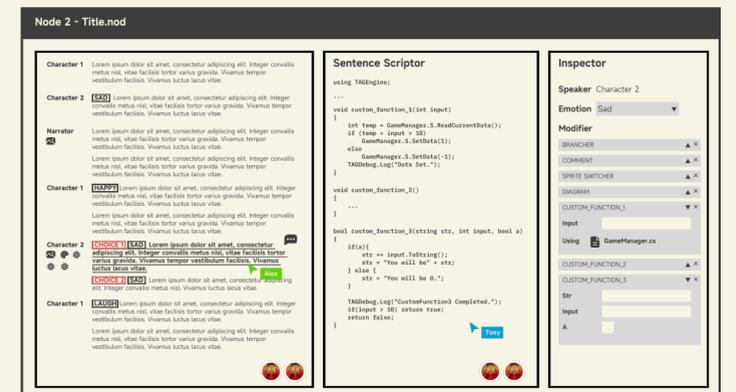
Story Planner (Non-edit Mode)

Team members, such as musicians, who are not particularly interested in editing story nodes may read the nodes in the simple mode of story planner so they can get a more straightforward reading experience.



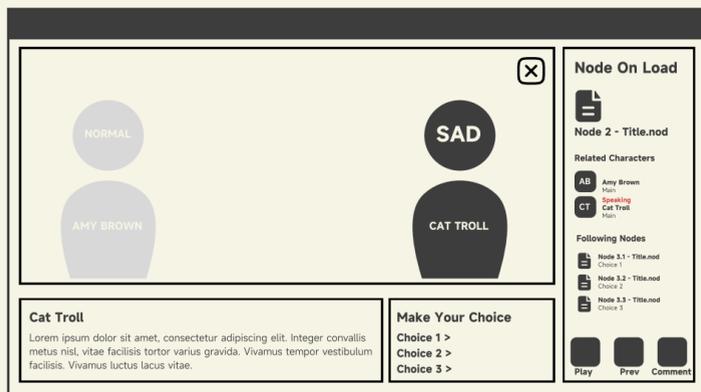
Text Edit Mode (Playwright Mode)

Playwrights edit the story texts in this mode, like what they can do with a Microsoft Word or Google Doc. They can add choices/branches for the text, and **draw diagrams** for showing their imagined scene to the artists. It supports multi-user editing.



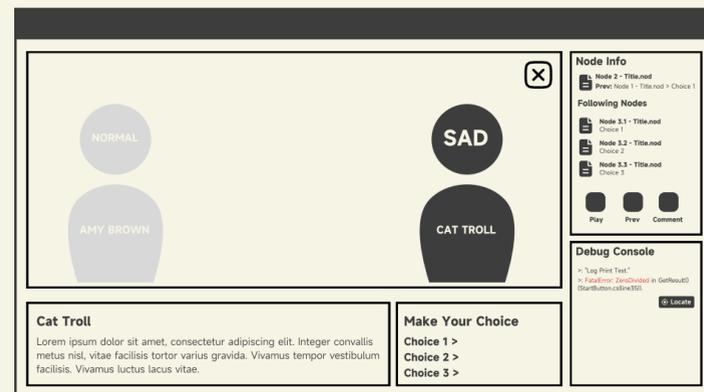
Text Edit Mode (Programmer Mode)

In the programmer mode of the **text editor**, the programmer will be able to add some more powerful modifiers by using a fast **sentence scriptor** which transfers every sentence into a game object that allows a script to be loaded. It also supports multi-user synchronous co-working.



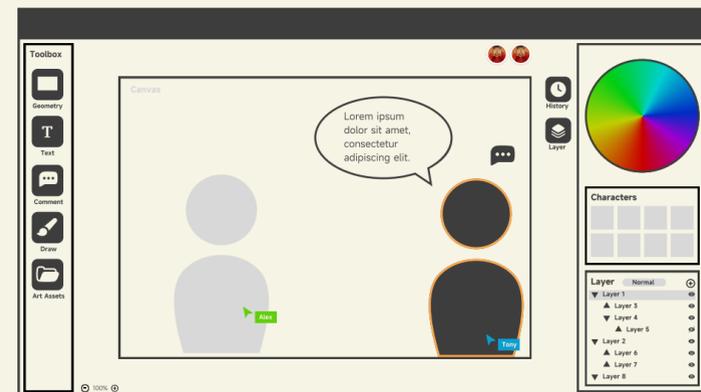
Story Text Player

Playwrights can play a minimum demo version by using the **story text player**. They can then test if the jumping logic of their nodes are valid or see if there are some unexpected behaviors their stories may perform.



Story Text Player (Programmer Mode)

In programmer mode of the **story text player**, the debug console is activated so that the programmer can always know what causes a bug whenever the game has some unexpected behaviors.



Sketch Diagram Maker (Playwright Mode)

Playwrights **draw diagrams** in order to show their thoughts more directly. These diagrams can be attached to specific texts so that artists understand the playwrights' imagination. Also, it supports multi-user cooperation.



Sketch Diagram Maker (Artist Mode)

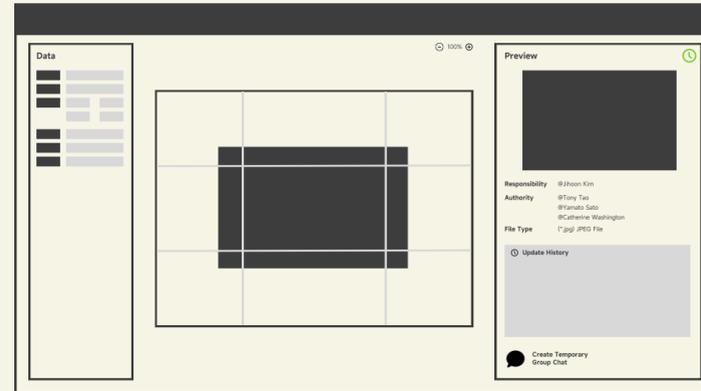
In artist mode, the artist can directly **replace the Lo-Fi version** of the diagrams from the playwrights into a Hi-Fi version, maybe an illustration or a well-down GUI component. This will help them to generate some fast renders without opening up a new Photoshop file.

Game Engine



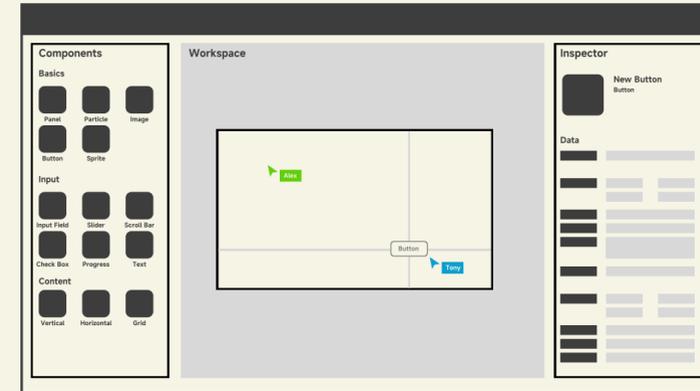
Asset Manager

Team members use the **asset manager** to manage their resources. The manager also has a collaborate system for the team members to ask the people in responsible for a specific asset whenever anyone feels confused about their tasks.



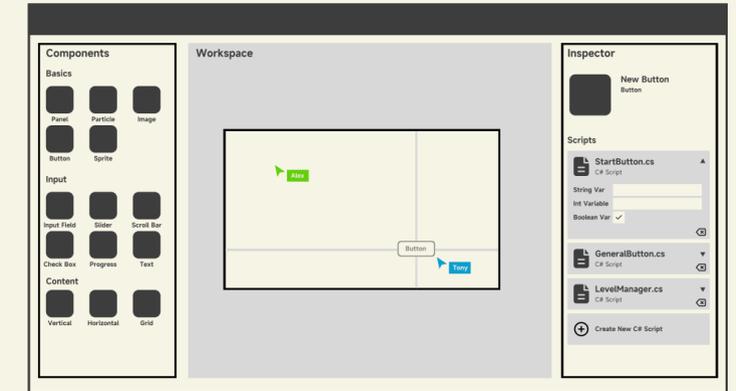
Sprite Editor

Artists sometimes need to edit sprite in the game engine, and the **sprite editor** will satisfy their demands.



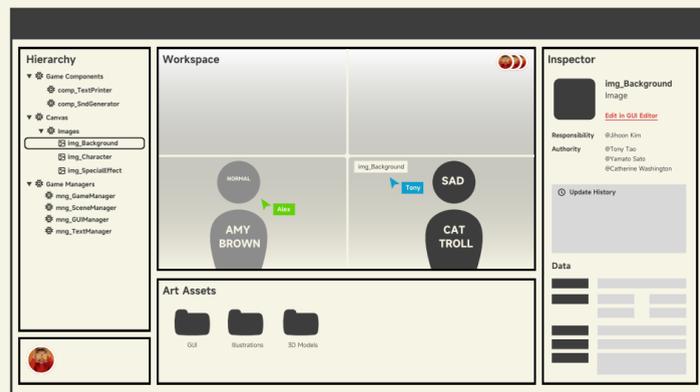
GUI Editor (Artist Mode)

Artists, especially UI/UX designers, will edit the user interface with the **GUI Editor**. The editor allows the designers to add components such as input fields or buttons, and also allows them to adjust the positions.



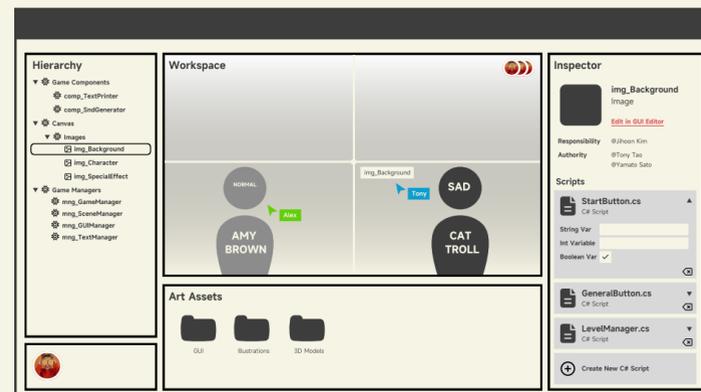
GUI Editor (Programmer Mode)

In programmer mode of **GUI Editor**, the programmers will not be able to adjust the properties set by artists, such as positions or sprites. Instead, they will load scripts to add functions for them. Public variables will be shown and adjust easily. They may also add additional components to the screen, but they will leave the property to be set by artists.



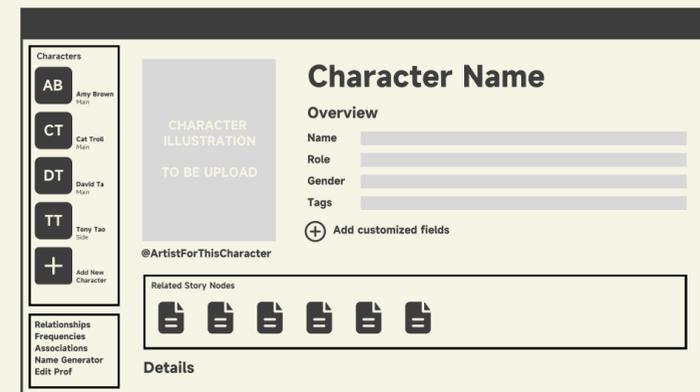
Scene Editor (Artist Mode)

Users edit the game scene with the scene editor. They can directly drag resources from the **art asset manager** to the scene workspace. The **hierarchy** functions as a layering tool that allows them to see the relationship of the on-load game components. It also support **synchronous online co-working**.



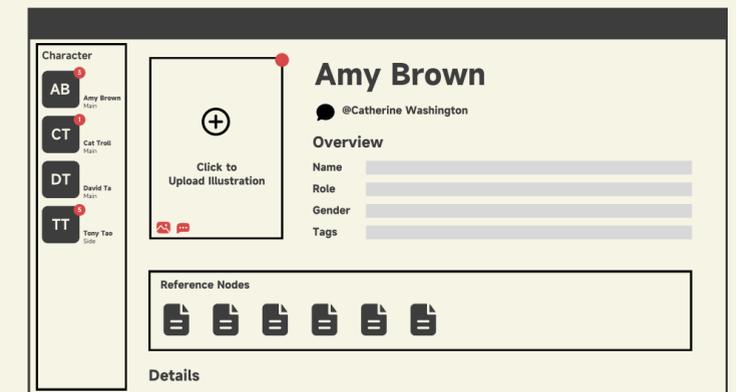
Scene Editor (Programmer Mode)

Similar as GUI Editor, in programmer mode of the **scene editor**, the programmers will be able to load scripts to the game objects. The artistic data will also not be varied by programmers. Specially, if a component is a GUI component, the programmer can also load scripts in the GUI editor.



Character Designer (Playwright Mode)

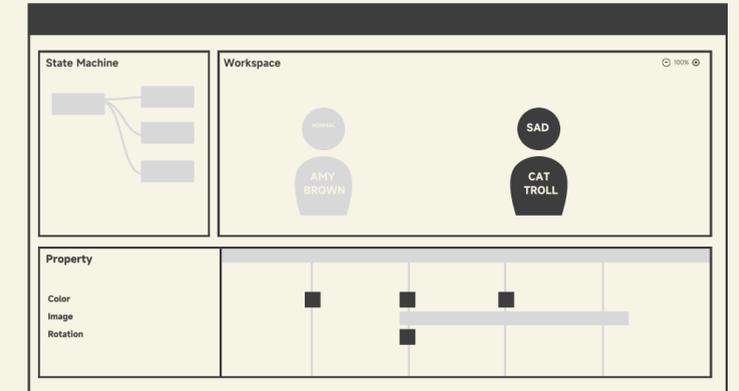
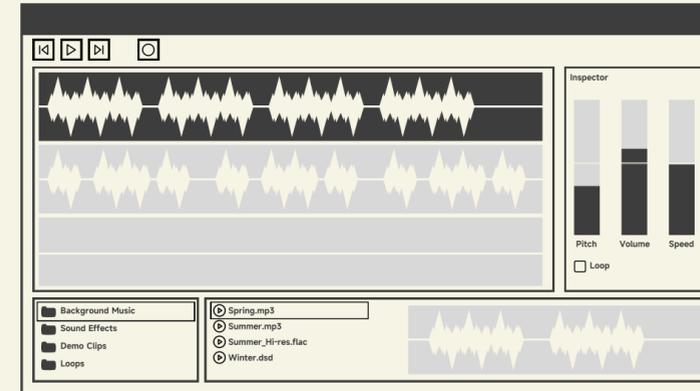
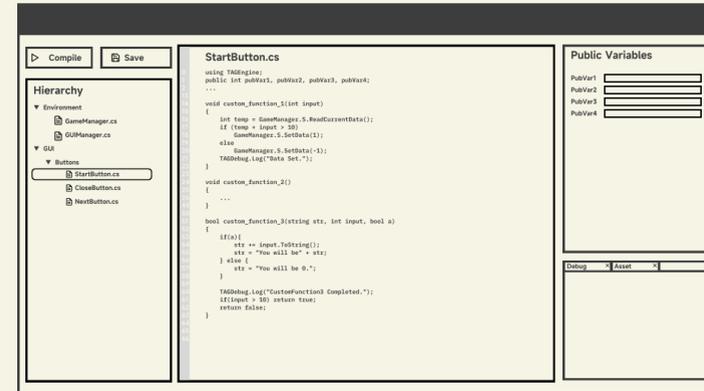
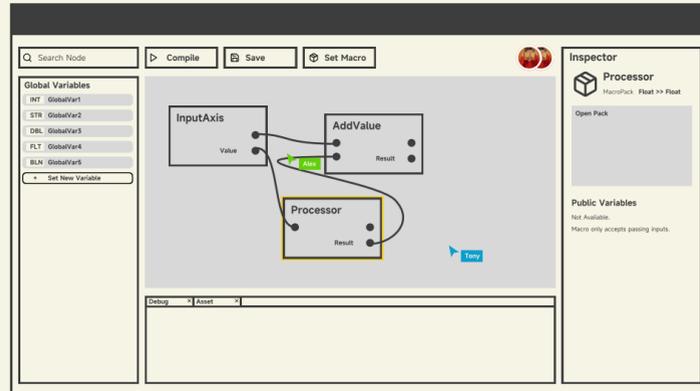
Playwrights **design characters** in this interface. They can add details to the profile of a specific character. By double clicking the names in the **text edit mode**, the playwrights can enter the character's profile page conveniently.



Character Designer (Artist Mode)

In artist mode, the artists easily find the missing art resources for **designing a character**. They will submit the required art resources as simply as filling in blanks. Whenever they have questions, they can start a chat with the corresponding playwright.

Game Engine



Node Programming Interface

The **node programming interface** is prepared for those game designers who are not familiar with any coding languages. Simply using these nodes will allow them to finish a non-trivial TAG.

Script Programming Interface

The **script programming interface** is prepared for the designers who are convenient with a programming language. Adding public variables will automatically add an input interface for non-programmers to adjust parameters.

Audio Clip Editor

Musicians use the audio clip editor to simply **edit the audio files**.

Animation Editor

Artists use **animation editor** to edit the keyframes of the animations. Though complicated post effects are not supposed to be supported in this engine, basic animation editing will be robust.



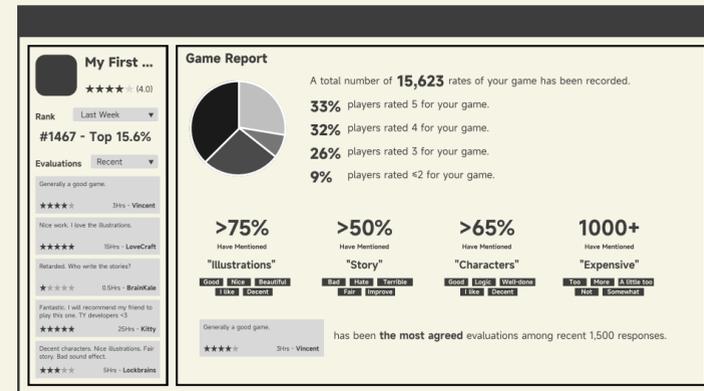
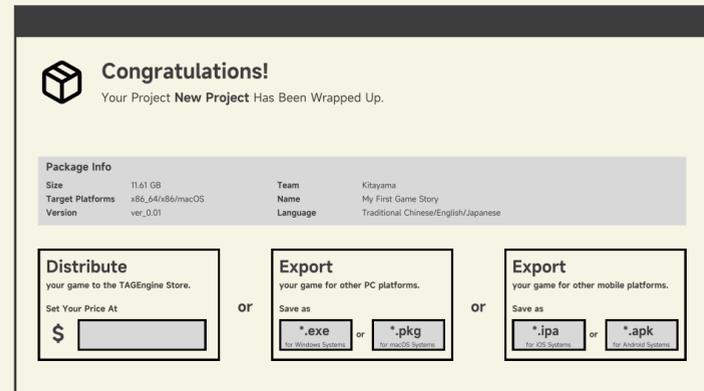
Post Processor

Artists may also need to apply some post process to the scenes. The **post processor** helps them with making a better render to the visual effect. Though many of the functions are designed for processing 3D scenes, many templates may also work for 2D renderings.

Engine Studio UI

This is the interface where the users talk and share files with their team members, which works like a **workshop studio**. Users will be notified if their colleagues are online, away or offline. They can also know the details like what a specific member is working on.

Distribution



Distribute Your Project

When a game is finished with the engine, it could be **uploaded and distributed to the first party platform** run by the engine. Games can be either free or with a reasonable price. Also, games can be exported as executables (*.exe/*.pkg) for third party platform publications.

Understand Your Performance

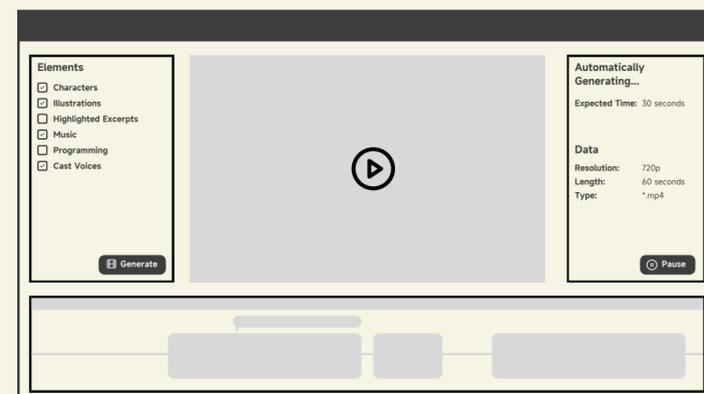
If your game is uploaded to the first party platform, you will **receive evaluations** from your players and you can **see your rank** among your peers. A professional report will tell you the advantage and disadvantages of your game.

Play A Game

The engine is not only a game maker, but also a **game player**. All the games distributed on the first party platform can be run by the engine, so that you can create, upload and download a game with a uniform tool.

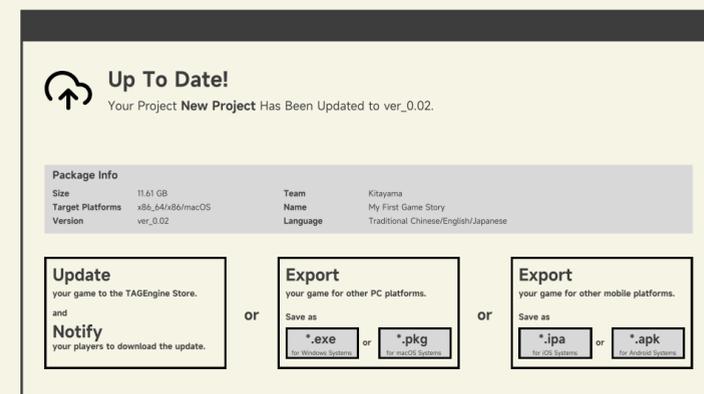
Table Party Games Are On Table!

If a game is uploaded as a party game, such as a Live Action RPG, it can be **natively transformed to a VR game** that make you feel you are just sitting next to them. Enjoy this game by wearing on a VR device, and play the table game on the virtual table, a much more realistic party experience.



Promote Your Project with A PV

A good PV(promotion video) is essential for making a game famous. If you are feeling confused by making such a PV, our engine **automatically generates one** for you. It can be as easy as making a slide.

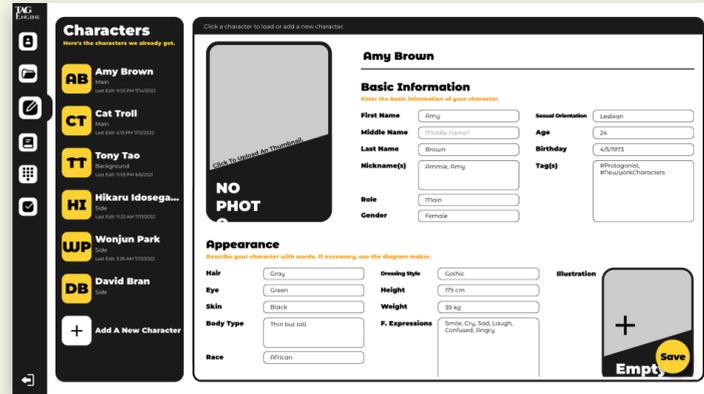


Control Your Versions

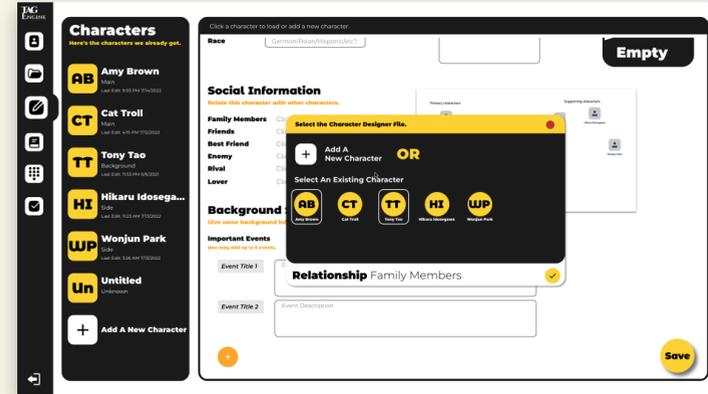
Version control is not only required for making a game; it is also important for keeping games up-to-date. **Hot updates** will be supported by the engine, so whenever you are making an updated game version, just click "Update" and the players will **be notified to update their games**.

Need A Narrator? Here She is.

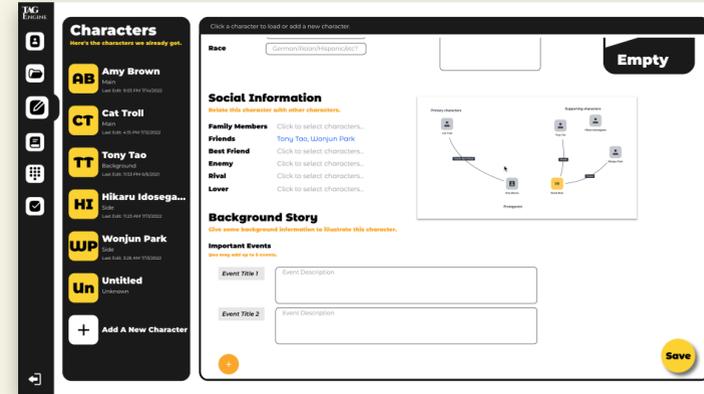
Party games with hosts can be made by this engine with a native package which automatically trains an AI to be a good host. Want to find an absolute indifferent, fair, and objective host? Our AI wins this job.



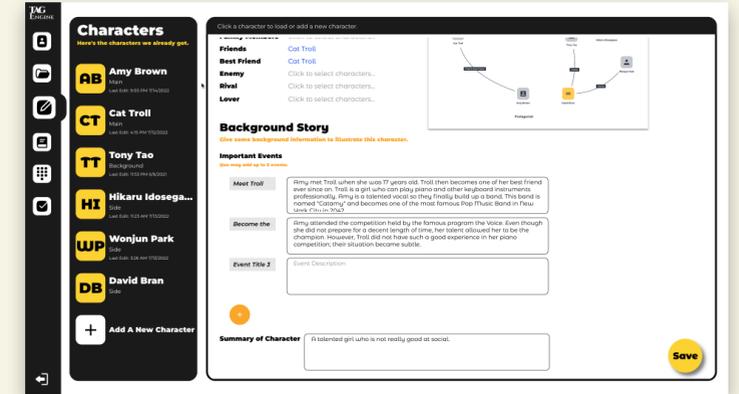
Character Designer Basic Information



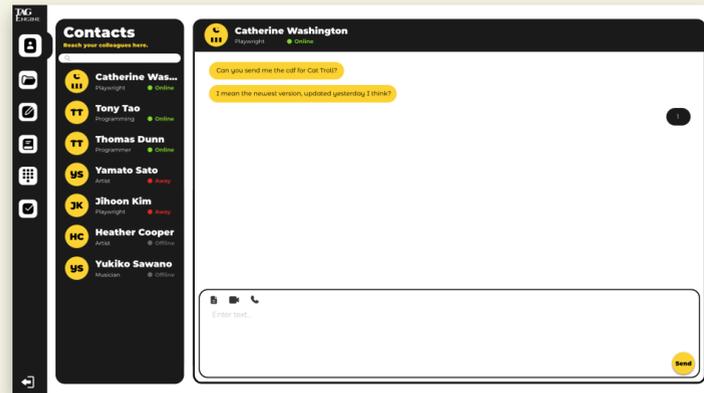
Character Designer Adding Character Relationships



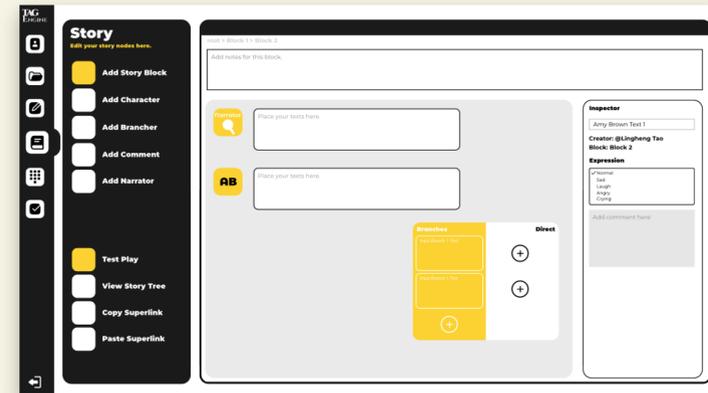
Character Designer Social Relationships



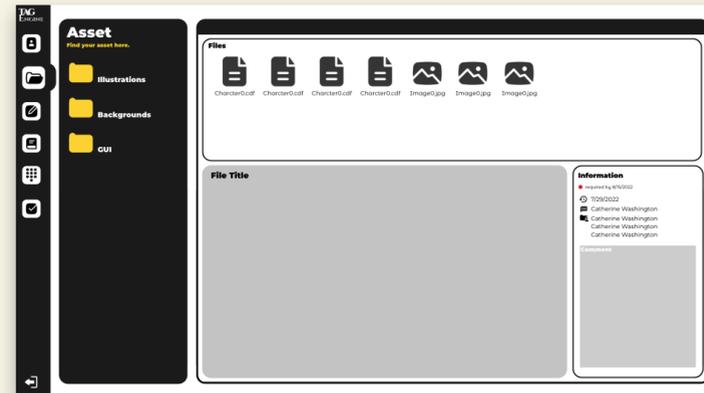
Character Designer Adding Background Story



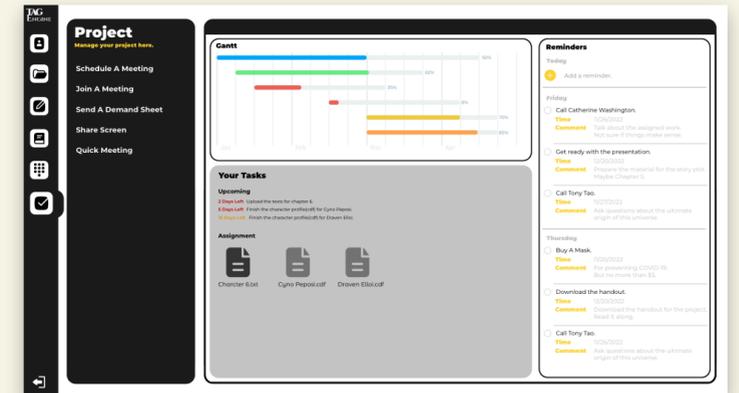
Team Realtime Chat



Story Node Editor



Asset Manager



Project Management