University of Wollongong

23rd of October, 2016

Dear Mr. Halliwell and Mr. Freeman,

We are submitting the attached Planning Documentation. This paper will discuss what the team has been investigating and considering regarding current project. It covers the functional and non-functional system requirement in more detail. It also deals with the product's final user interface and its design justification.

This paper should be final, in a sense that there will be no changes along the way. If there are any changes along the timespan of this project, however, the latest copy of project requirement paper will be sent to the appropriate stakeholders. The team can be officially contacted through mha682@uowmail.edu.au.

I hope you find this report satisfactory.

Thank you and have a nice day,

Muhammad Harits Abiyyudo

Project Leader

Planning Documentation

For the

Social Interactive E-Learning System

By

Group 05 (ZeeTech)

Held at

Wollongong, Australia

In

October, 2016

EXECUTIVE SUMMARY

There are two parts of system requirement; functional and non-functional. Functional deals with the level of importance and list of functional requirements according to their level of importance. The non-functional requirements contain the usability, reliability, performance, supportability and other requirements.

Site map is useful for this project, as it have to be easily accessible yet not cluttered to make a clean presentation while showing how it can be done. Navigational elements will be tackled in the Navigational Structure section.

Labelling is pretty important, as it is used to generalize the main idea of particular webpage. As far as labelling goes, this project is pretty straight forward. Since a lot label are generally simple or commonly used nowadays. The hardest part would be to give a proper label some of the elements in the back-end. Wireframe and wireflows is then created to give the general idea of the more in-depth connection between each page.

User interaction will be discussed according to the low-fidelity design, high-fidelity design and storyboard. Both low and high-fidelity covers the front-end and back-end design of the system. The storyboard shows the most possible scenario for front-end and back-end using scenario mapping.

CONTENTS

INTRODUCTION

This planning documentation focuses to describe the information architecture and design aspects of the project. Since the main goal of the project is to develop a web app for e-training purposes, the information architecture will reflect the structural design of that web app including the site organization and navigational structure. In addition, the designs for user interface will provide reader with a detailed simulation of how the site will appear and interact with users. The designs presented will be accompanied by a comprehensive explanation for any particular selection of design patterns and interaction sequences and for the functionality of each visible element.

The previous documentation of system requirements determines the content presented in this report. Based on the functional and nonfunctional requirements of the system, the functionalities and interface of the web app are developed accordingly. For referential purposes, we have rearranged the requirements in a clearer format by adding identification number to each requirement as well as coming up with a number of new requirements complementing the previous ones without altering any important concepts.

This document outlines the information architecture and user interface designs as two solid foundations for future development of the project. The information architecture section includes the site map, navigational structure, labeling, wireframes, and wireflows. These components have been developed in earlier stages before the actual interface design took place. The user interface design (or user interaction) section describes interface users will be interacting with (high fidelity design), as well as the process of development (low fidelity design) and justification for each design patterns. Again, all the designs strictly follow the requirements stated in the previous report.

The planning documentation acts as a solid foundation for the project as a whole. There will be changes in the future as a result of the iterative development process, but these modifications should only be either nonfunctional or complementary features that will not considerably affect the course of the project.

1. INFORMATION ARCHITECTURE

1.1 SYSTEM REQUIREMENTS

The system requirements section presented in this report is the extended version of the system requirements identification document (A3). Changes include a redesign of presentation format, which gives each requirement an identification number and a level of importance to the functional requirements, and an addition of several more functional requirements concluded from the development process.

1.1.1 FUNCTIONAL REQUIREMENTS

1.1.1.1 LEVEL OF IMPORTANCE

The following table specifies the level of importance for each requirement

Level of Importance	**Description**
High	A mission critical requirement, required for next release.
Medium	A requirement that support necessary system operations required eventually but could wait a later release if necessary.
Low	A functional or quality enhancement would be nice to have if resources permit.

1.1.1.2 LIST OF FUNCTIONAL REQUIREMENTS

Each functional requirement is assigned a unique key (FR-XX) where xx is a sequence number starting from 01.

Functional Requirement	**Description**

ID	
FR-01 (High)	The system must identify each user by means of a registration process. The system must register each user with one and only one account to be used across all devices.
FR-02 (High)	The system must allow trainers to modify modules with options to add, edit, delete, set access, analyse, and statistics.
FR-03 (High)	The system must provide each user with a personalised profile along with functionalities to add/remove post, change credentials, comment, like, and share
FR-04 (High)	The system must allow players to access modules with options to run, save, load, and view Leaderboard and achievement(s).
FR-05 (High)	The system must provide a content management system exclusively for administrators to login, add/remove user, reset password and edit/delete content
FR-06 (High)	The system must perform encryption on all user sensitive data.
FR-07 (High)	The system must enable synchronous collaboration. Users must be able to work in a real-time online environment, irrespective of distance.
FR-08 (Medium)	The system must support user customization. User must be able to organize materials according to preferences.

FR-09 (Medium)	The system must be adaptable to different learning methodologies. Users must be allowed to use external tools that fulfill their particular needs, if any built-in tools do not provide the desired functionality.
FR-10 (Medium)	The system must enable synchronous communication. This functionality includes document sharing, voice over Internet, instant messaging, video over internet.
FR-11 (Low)	The system must provide a web conferencing environment that integrates all the features mentioned in functional requirement FR-10.
FR-12 (High)	The system must enable asynchronous collaboration and communication. This functionality includes thread-based discussion boards, outgoing email to groups or individuals, wikis, workgroup, and group calendaring.
FR-13 (Medium)	The system must enable a broad range of assessment.

1.1.2 NON-FUNCTIONAL REQUIREMENTS

Each non-functional requirement is assigned a unique key (XX-xx) where xx is a sequence number starting from 01 and XX identifies the type of requirement (e.g. UR for usability requirement).

1.1.2.1 USABILITY REQUIREMENTS

Usability Requirements ID	**Description**
UR-01	The interface must be easy to learn and navigate.
UR-02	The interface must be easy to use.

UR-03	The interface must be appealing.
UR-04	Buttons, headings, and help/error messages must be simple to understand.
UR-05	Undo should be available for most actions.
UR-06	Actions which cannot be undone should ask for confirmation.
UR-07	The interface must be compliant to Level A of the Web Content Accessibility Guidelines 2.0 (WCAG 2.0) standard.
UR-08	The system must be customizable to meet specific user needs in the future.

1.1.2.2 RELIABILITY REQUIREMENTS

RR-01	The system must be in operation 7 days a week, 24 hours a day.
RR-02	The system must be tolerant to operational errors.
RR-03	The system must function reliably, with few or no interruptions.
RR-04	The system must be able to recover cleanly from incidents such as power cuts or other disasters.

1.1.2.3 PERFORMANCE REQUIREMENTS

Performance Requirement ID	**Description**

PR-01	The system must be operational 24x7 under high information load. The system must be able to support at least 100 concurrent users.
PR-02	The system must respond rapidly to user requests. The acceptable response time is within 5 seconds.
PR-03	The system must allow background tasks continue to run while user performs foreground tasks.

1.1.2.4 SUPPORTABILITY REQUIREMENTS

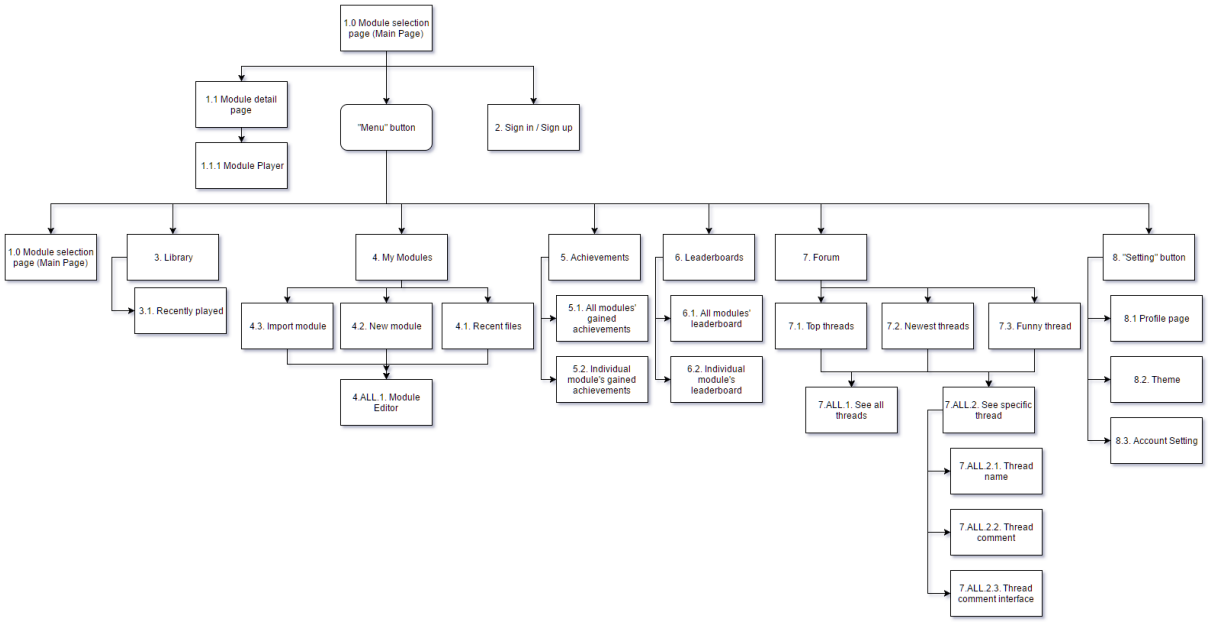
Supportability Requirement ID	Description
SR-01	The system must be maintainable and extensible.
SR-02	The system must ensure compatibility to migrate to upgraded hardware or new version of operating systems.
SR-03	The system must be compatible with Chrome, Firefox, and Internet Explorer 11.

1.1.2.5 OTHER REQUIREMENTS

Other Requirement ID	Description
OR-01	The system must be designed with the expectation that its operational lifetime will be many years.

1.2 SITE MAP

Site map is useful for this project, as it have to be easily accessible yet not cluttered to make a clean presentation. This notion is the driving force of “Menu” button, as it makes the UI cleaner with an exchange of one extra click. Figure below shows how the system handles the users’ movement.



1.3 NAVIGATIONAL STRUCTURE

- MODULE SELECTION
  - Module detail
  - Module player
- LIBRARY
  - Library
  - Recently played
- PERSONALISED MODULES
  - Import module
  - Modify module
  - Create module
  - Recent files
- ACHIEVEMENT
  - All possible achievements
  - Personal achievements

- LEADERBOARD
    - All module leaderboard
    - Individual module leaderboard
- FORUM
    - Top threads
    - New threads
    - Create threads
- SETTING
    - Profile
    - Theme
    - Account setting

1.4 LABELING

As far as labelling goes, this project is pretty straight forward. Since a lot label are generally simple or commonly used nowadays. The hardest part would be to give a proper label some of the elements in the back-end. Here are the list of what is the general idea of the product's element and label we use.

1.4.1 FRONT-END

General Idea	Label used
Sign the user up	Sign Up
Log the user in	Log In
Shows the possible hub for user to access such as forums, achievement, and leaderboards.	☰ Menu
Take the user back to main menu, which contains the access to module.	Main Menu
Shows the recently played modules.	Library
Access the back-end, in this case the module creator. Keep in mind that this menu did not show up to all of the users.	My Module
Shows player's achievement on modules that support it	Achievements
Locked achievement	
Show score leaderboard for modules that support it	Leaderboards
Take the user to forum part of the website	Forums
- Take user to profile page - Take user to account setting - Allow user to change theme color	

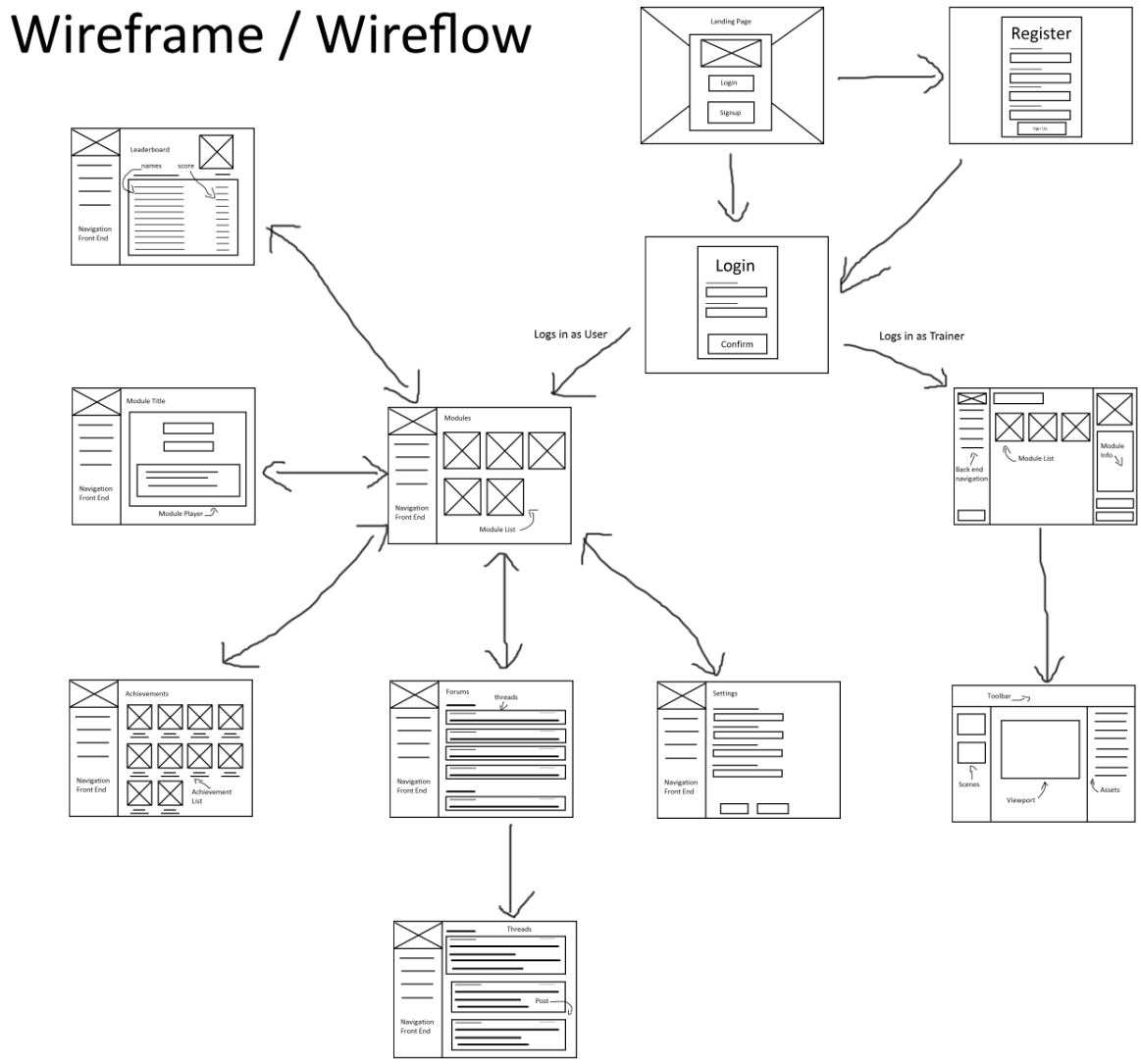
1.4.2 BACK-END

General Idea	Label Used
Default name for the file	Project1
Shows the number of scenes and the selected	Scenes
Shows the names and number of scene entities	Scene Content
Toggles to hide the scene entities	

Toggles visibility in the scene	
Scene entity is fixed and unable to be modified	
- Shows properties of the whole scene - Shows properties of scene entity	Properties
Can spawn an already existing behavior	Add Components
Similar to that of add components however must be created manually	Add Script
Default name of current scene	Scene1
Displays the process of the scene in each frame	Sequence
Frame (number) and the actions within it	
Toggles to hide the sequence of one frame	V
Adds new frame action	+
Shows the logic the module	Diagram
Starting point of the module	Start
Function to initiate which scene that plays	Play Scene
Create two scenario that can be accessed depending on previous outcome	IF
Terminates module	End

1.5 WIREFRAMES & WIREFLOWS

Below are some initial sketch ups on the UI layout as well as the general flow of the web application.

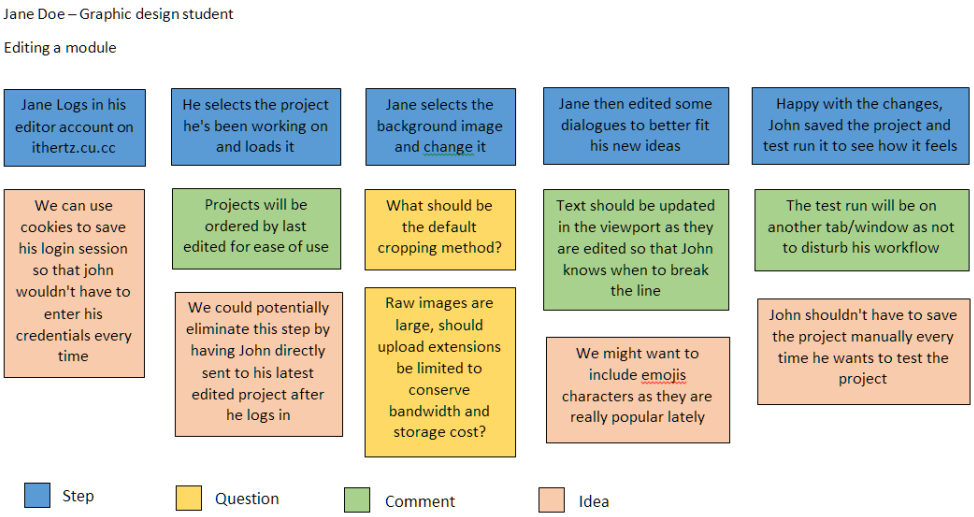


ZEETECH

2. USER INTERACTION

2.1 STORYBOARD

The first storyboard is directed to how a user would play a module for the first time. First the user is required to search the web application via URL or search engine. This takes the question of should it be easy to navigate to the website through these two methods. Second step is for the user to few the main menu directories. As it is explained before and also part of a feature plan for the user to be able to click in the name of the genre to be able to see more of the modules for that genre. The third step is the user clicking the module proceeding to the module description screen. For the question here should the group create further categories instead of only genres? For future development the system may remove the vertical scrolling and replacing it next and previous button. Skipping forward to step five which displays the importance of user to have a profile set up for the system. This way the system will be able to track user statistics throughout their time in the web application. Lastly, the user is directed to game screen.

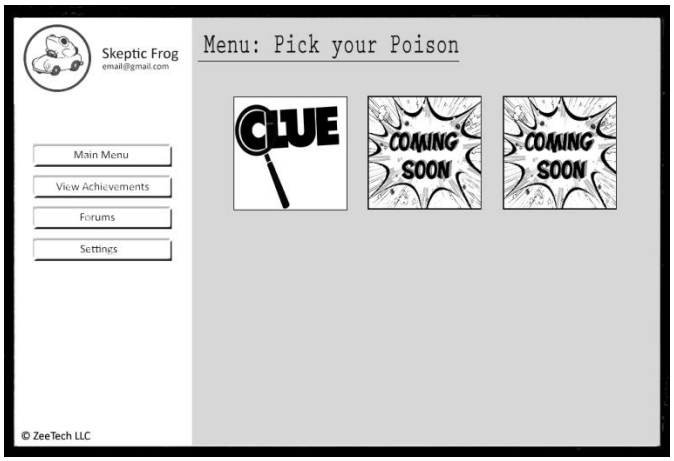


The second storyboard focuses on the users accessing the back end of the system which is the module editor and simply editing their project. The steps have drastically been simplified due to the complexity of the system. For step one user logs in to their editor account, an idea is use cookies to save the user's login credentials so that it the user would not repeatedly typing their username and password often. From the menu editor user clicks their project, this will make use of the recent files option where it will display the most recent project. Another proposal here is to have the system immediately sending the user to the scene editor menu of their recent project after logging in. From the scene editor in step three user selects the background scene entity most the question here is regarding how far the image can be manipulated and what should be tools suited to provide this function. The second part of the question is considering how the file size for an image is limited to conserve the cost of bandwidth and storage of the system. The fourth step the user also edit their dialogue text, the system should provide a continuous update in the viewport so that user will be able to know when to break a line. In addition to the text, the system might include emoji characters. The last step is the user viewing their already edited project. During this process the system prompts a new screen for viewing the project only and for future development plan the system should be able to auto-save.

2.2. LOW-FIDELITY DESIGN

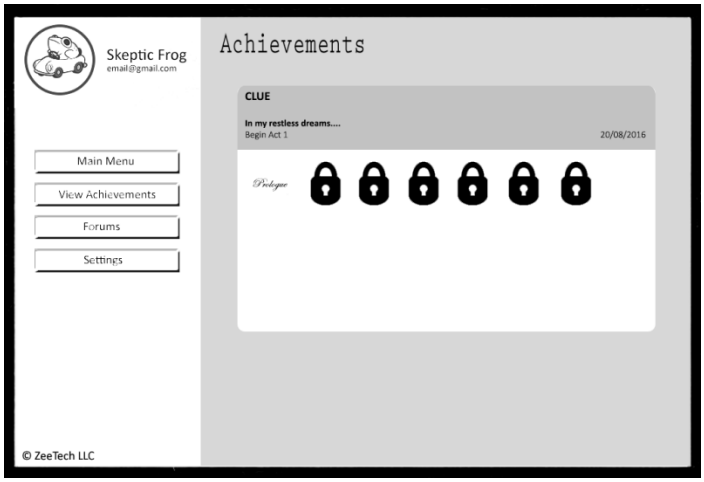
2.2.1 FRONT-END

Main Menu



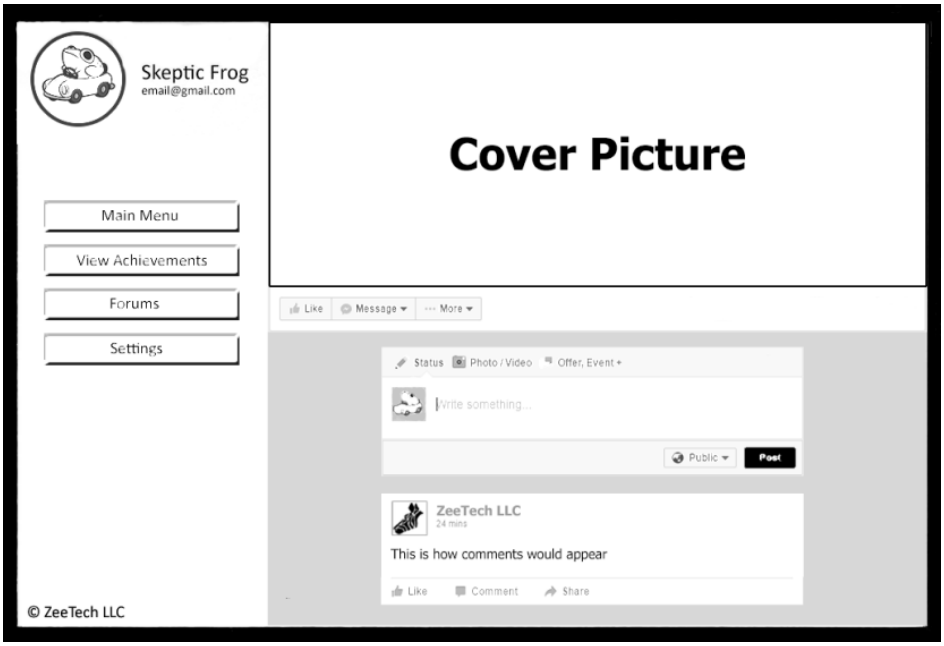
From the original designs of the main menu, the static bar that the user should be able to interact with is placed on the left hand side. Its main purpose is to give accessibility to the user when navigating through the page. On the top left of the screen, the user profile image, user name, and email address is displayed to show that the user is logged in within the system. On the rest of the right hand side the user is treated to the main menu page which displays the available modules within the system. The large square thumbnail of each of the menu is to provide simplicity and straight forward.

Achievement



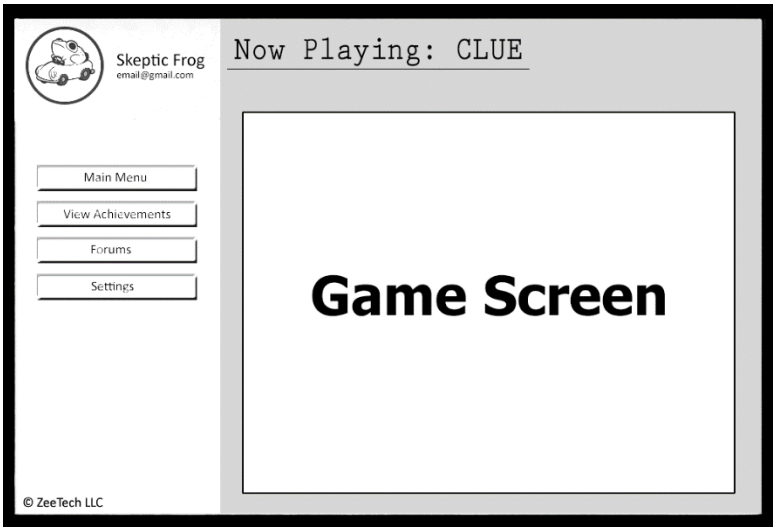
The core requirement based on the client needs is to have the E-Learning system be incorporated with gamification; this is where the achievements page is necessity when implementing that element. The achievements displayed here is a sample of what one game would appear originally. The top box under the dark grey tint displays the game name and below is the name of the selected achievement, how the user obtains the achievement and the date to which the user obtains this achievement. Besides the title of the game, the information below will change depending on what achievement the user selected. On the inside of the achievement box user can see the achievement they have unlocked and is indicated by the unique image and the ones they have not unlocked based on the black locks. The very design of the achievement box entirely is based on the premise that user of the console generations may and should be able to recognize this type of visual display. To which it is also concluded that this UI is simply understandable when other users sees it at a glance.

Forum



As one of the client requirements, the system should have social media embedded to it. Based on the actual overall user interface itself, it has a clear resemblance towards that of a Facebook group interface. Similarities include a like button, creating new post and clear example of how the post should appear in the screen. User can use this function to communicate to other users regarding some topics related to the modules similarly towards how social media is used.

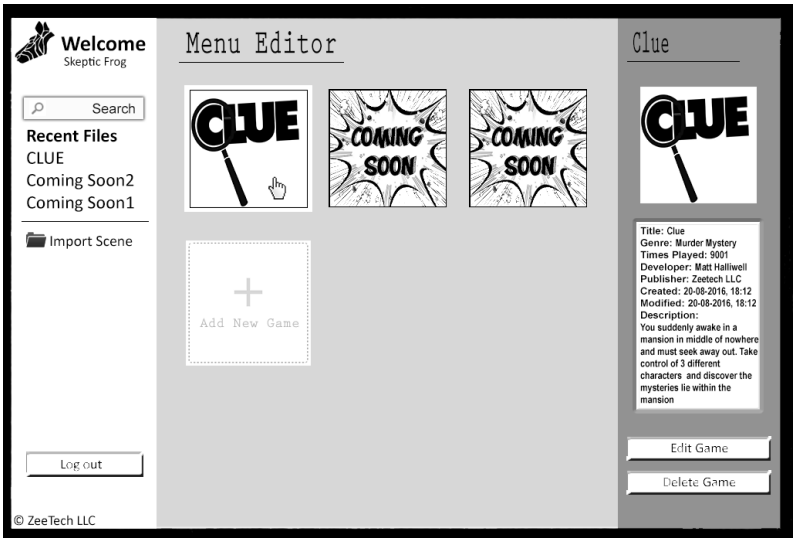
Game Screen



For the game screen or the in-game module is quite straight forward, the header above shows the name of the module the user is currently playing and the large white box shows the where the user can interact the module. The interesting feature that is point out here is how cursor of the system and the game screen can change depending where the cursor is hovering.

2.2.2 BACK-END

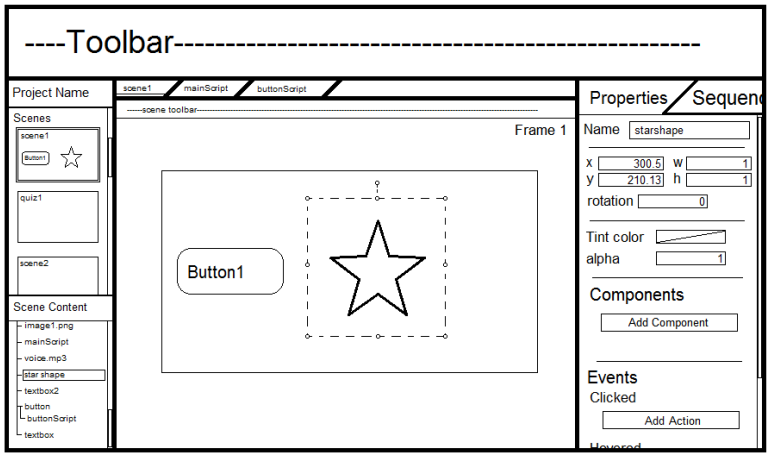
Menu Editor



For the User Interface on the left side starting from the top both the logo welcome is the system's logo and a static wording. Below it is the username logged in the web application. User can user the search bar to find their module if the recent files section does not display the module they want. If user is currently running the system in another computer and have the scene files on hand they can import it using the import scene function. And down below is a simple log out button and it is important for the user to return to this screen to log out. In the middle the listing is similar to that of the main menu

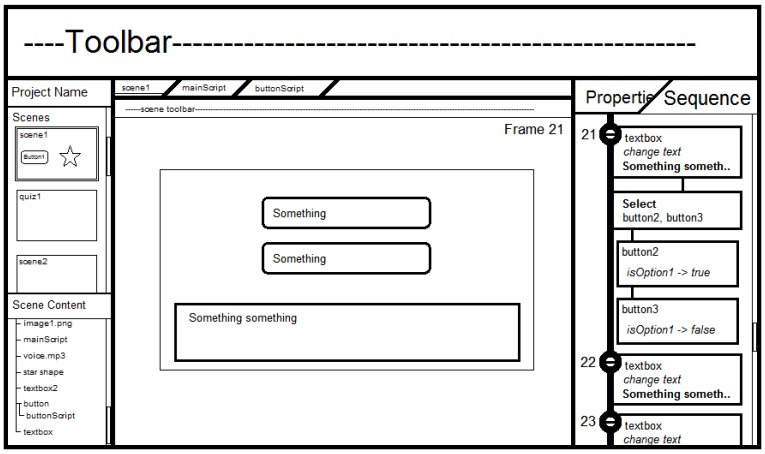
in the front end of the system for the purpose of familiarity and the structure of the main menu will change depending on the changes here. For the features here when the cursor selects a module the prompt on the right will appear that lists the whole description of the module and the option to edit and delete it. User can easily create a new module with the press of the “add new game” button. For the whole overall screen most of the placement of the functions is a clear inspiration from PowerPoint creation screen.

Scene Editor



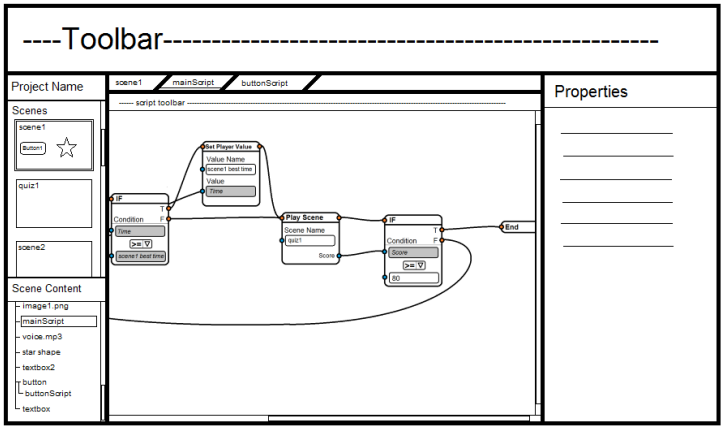
The scene editor is where the module designer will work in to create their e-training modules. In this version, the screen is divided into 4 panels which are the toolbar, project panel, viewport, and the properties panel. User can select the scene they wanted to edit from the project panel and add or edit sprites or entities directly by WYSIWYG from the viewport or the properties panel. The scene content will list and index the entities that are added on to the scene. User can add components to any of the entities or sprite which are built-in behaviors such as animation, object pick, drag-able, etc. or creates their own behaviors manually by utilizing the events functionalities.

Scene Editor Sequence

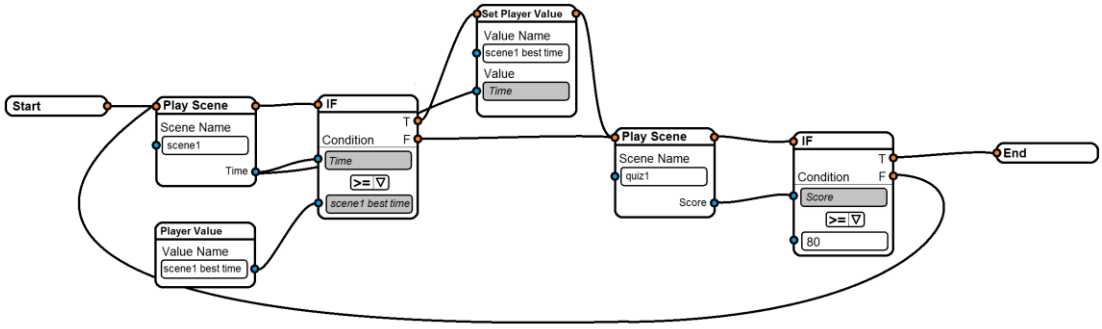


The sequence panel lists the actions or flow of events of the module. The user may add or edit this via the toolbars and the properties panel. The middle line between some sequences indicates that it will be executed at the same time while no line indicates that it will be executed after the previous sequences are done. The numbers at the left hand side of the sequence describes the frame number and the horizontal line inside the circle on the top left of the sequence shows that the sequence is the first sequence of the frame. A user interaction will be needed to for the flow of events to continue to next frame.

Scene Diagram



Scene Diagram Close up

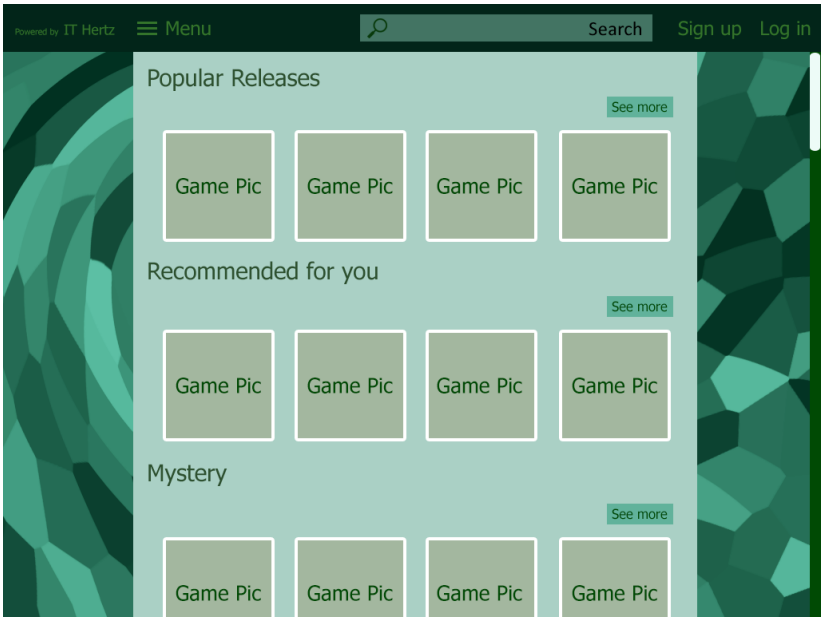


The scene diagram displays the main logic of the module. This let the user to manually describe the flow between scenes by adding, editing, and connecting nodes. This type of diagram will also be used for the user when creating component behaviors manually which will avoid using codes or script to do so.

2.3 HIGH-FIDELITY DESIGN

2.3.1 FRONT-END

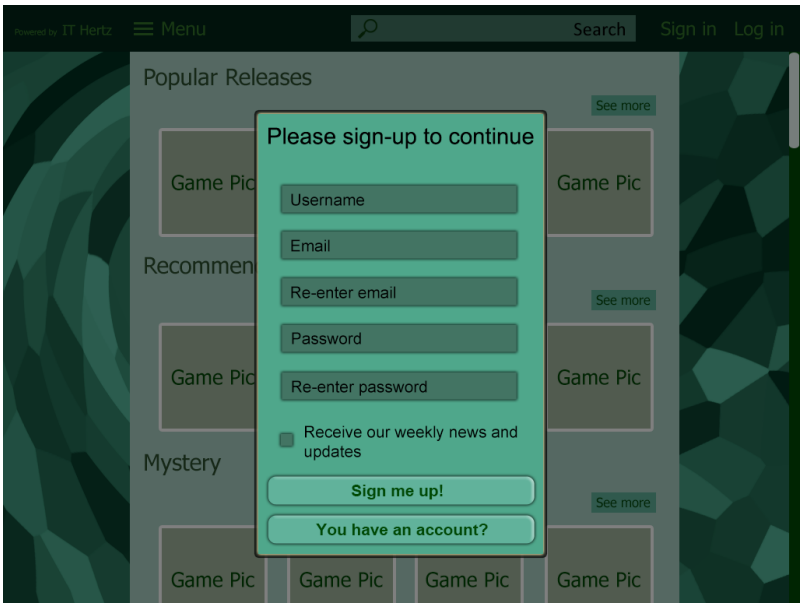
Main Menu

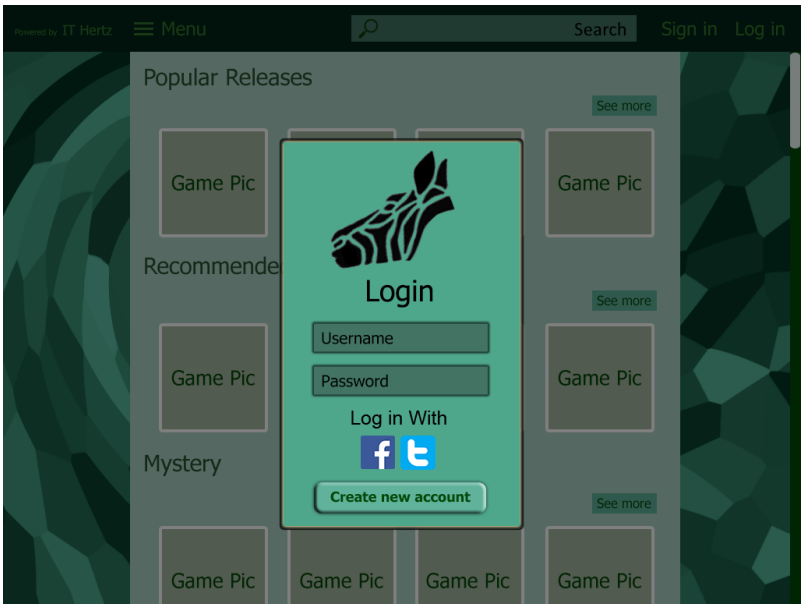


This is the new main menu, functionality wise it is similar to the first version. So this explanation will be leaning towards the new functionalities. First is the static bar on the left side is removed then replaced to the top instead. The top bar includes a hamburger menu, a search bar to find specific modules, sign up and log in button. For the main menu here the modules is displayed based on genre. If the user wants to see more of the modules a certain

genre, they can by clicking the see more button or the name of the genre. This design is specifically chosen due to how the client mentions the system as a web application or web app for short. For this statement it is suited to make the format like that when opening a small application which is simple and straight forward.

Sign Up and Log In





Both the sign up and log in will appear to overlay whatever the current page is, however when prompted outside the main menu when accessing the web application the overlay background will just be the mosaic green pattern seen on the sides of the menu screen.

Hamburger Menu Tab

When user clicks on the hamburger menu, the system will show all of the pages the user can navigate to. The ability to toggle on and off the menu here is much more convenient and making the actual application less cluttered.

Module Description

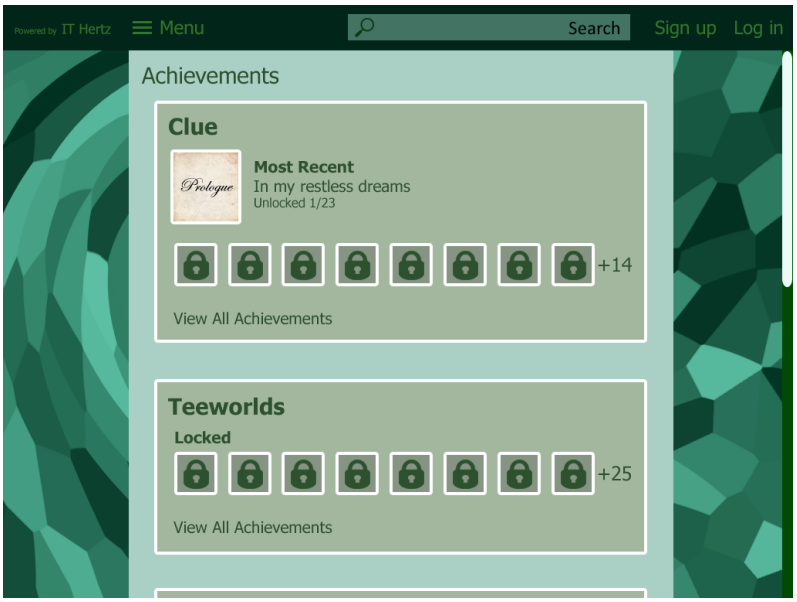
Once on a module is clicked the user can see the brief description of that module, an enlarge thumbnail of the module and few screenshots. It is then followed by the small description of the module story, the genre along with number of times played and the requirement to pass the module for example scores for quiz. Following the modern design of moving picture

slides the screenshots will move on to the next when idle and user can see the screenshots by clicking in the arrow in the picture or the circles in the bottom.

In-Game Screen

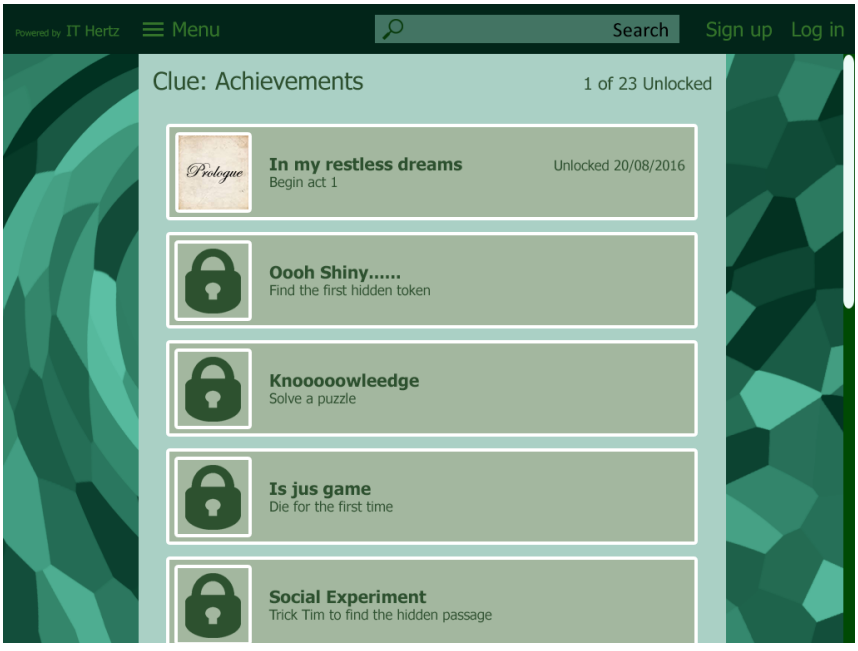
From the module description and clicking the play button will introduce the user to the in-game screen. Aside from the same functionality of changing cursors, if need be user can toggle full screen of the game by clicking the button on the keyboard shown in the top right to increase immersion. The whole interface of the game is depends on the designer making it, so it does not include to the specifications for the current state of the UI.

Achievement List



The achievement page here will list the modules the user has played due to this fact it is important for the user to log in to the system. The whole format of the achievements page is completely altered into this new version simply because most gamers may be familiar with this achievement interface and this interface is opted more to computer users seeing that it is a web application.

Achievement List within a game

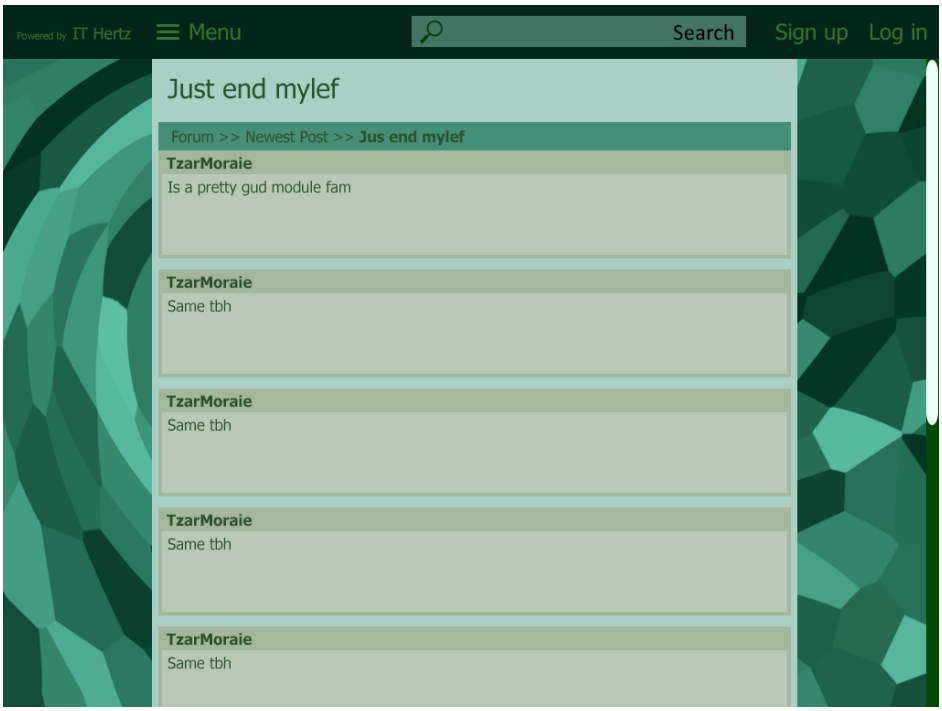


Selecting one module will display all of the achievements the user has or has not achieved for that module. Each one will display the achievement name, how to obtain it and when it was earn if it is unlocked.

Forum

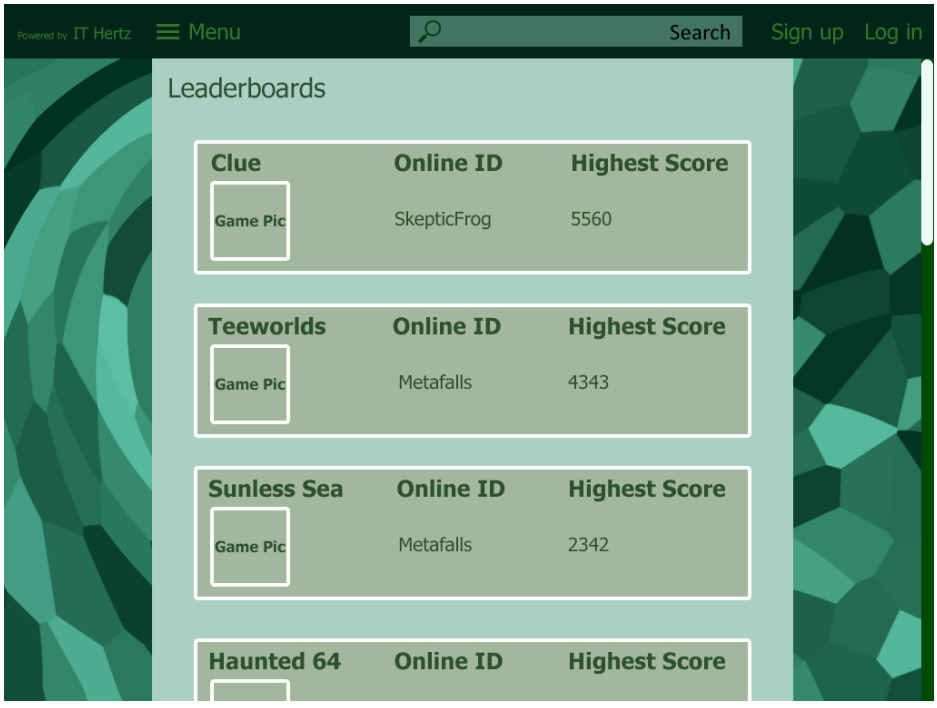
Typically from the Facebook format of the original design was completely altered to that of an actual forum. It takes the same samples that of a forum each divided with a specific category for a certain thread. Each thread has a topic associated to it and the number of post according to how many user responds to the topic also listed under the heading Posts and the last date a user posted in that topic. The reason for the original format's drastic change was due to variety. If the format was kept specifically like the original posts, different topics will get mixed and induce confusion. User will ask a topic that has already mentioned ask before making it redundant. Through this approach the problem should be solved

Post within topic



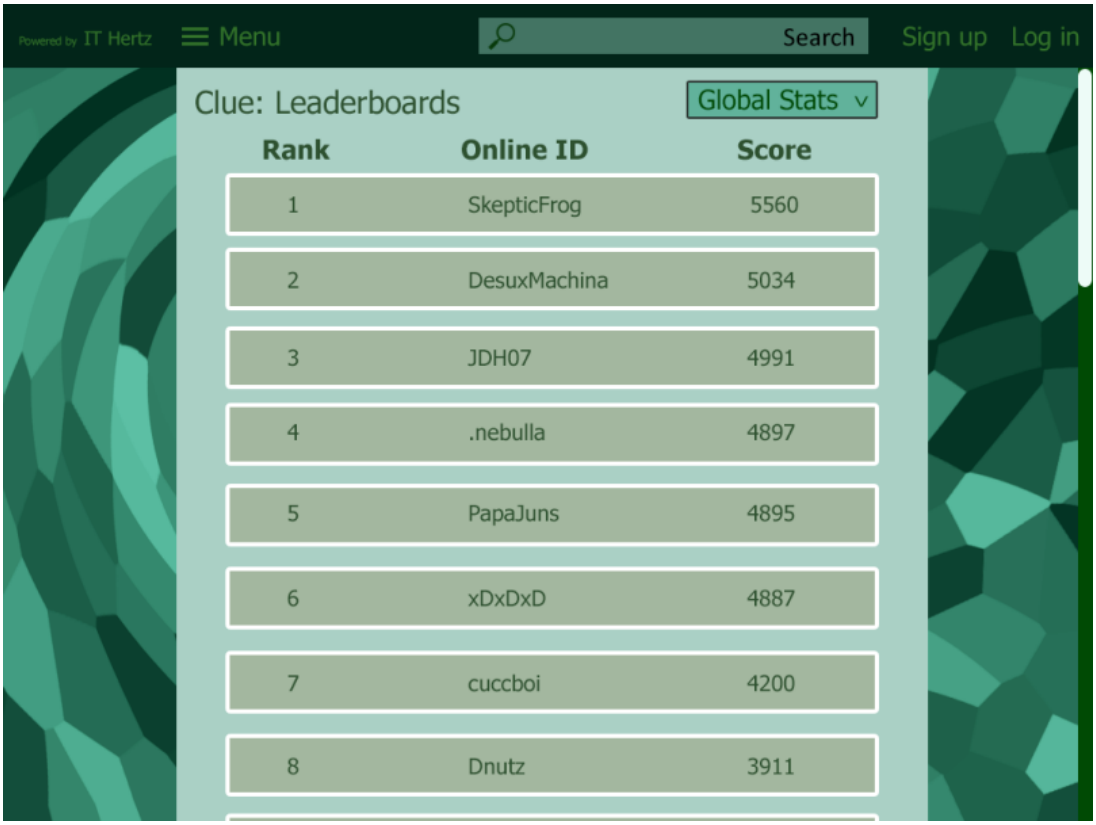
This screen is the format within a topic; user can navigate to previous pages through the top heading that has arrow indicators. Newest posts will appear at the first page or the top.

Leaderboards



A new addition to the element of gamification within the system is leaderboards. This idea was forwarded by the client after the original design was shown thus the missing samples. In particular format the each module not under a specific order currently shows the player with the highest score within that particular module. The reason for the current structure is due to mainly keeping each page has a similar if not same format so that it does not confuse users.

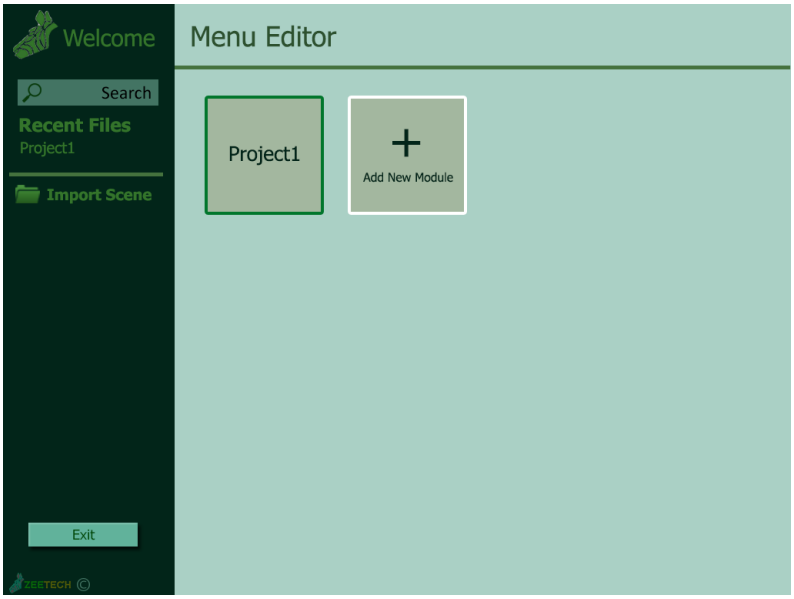
Leaderboard within module



Same concept as achievements page, clicking one will result in showing the users that have played the module and their corresponding ranks. User can also narrow the ranking in just the user's friends under the global statistics.

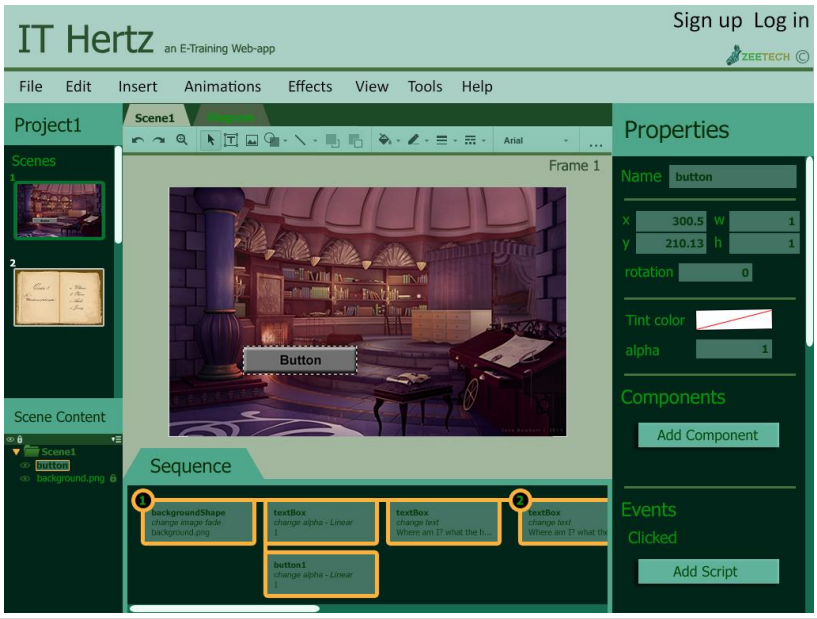
2.3.2 BACK-END

Menu Editor



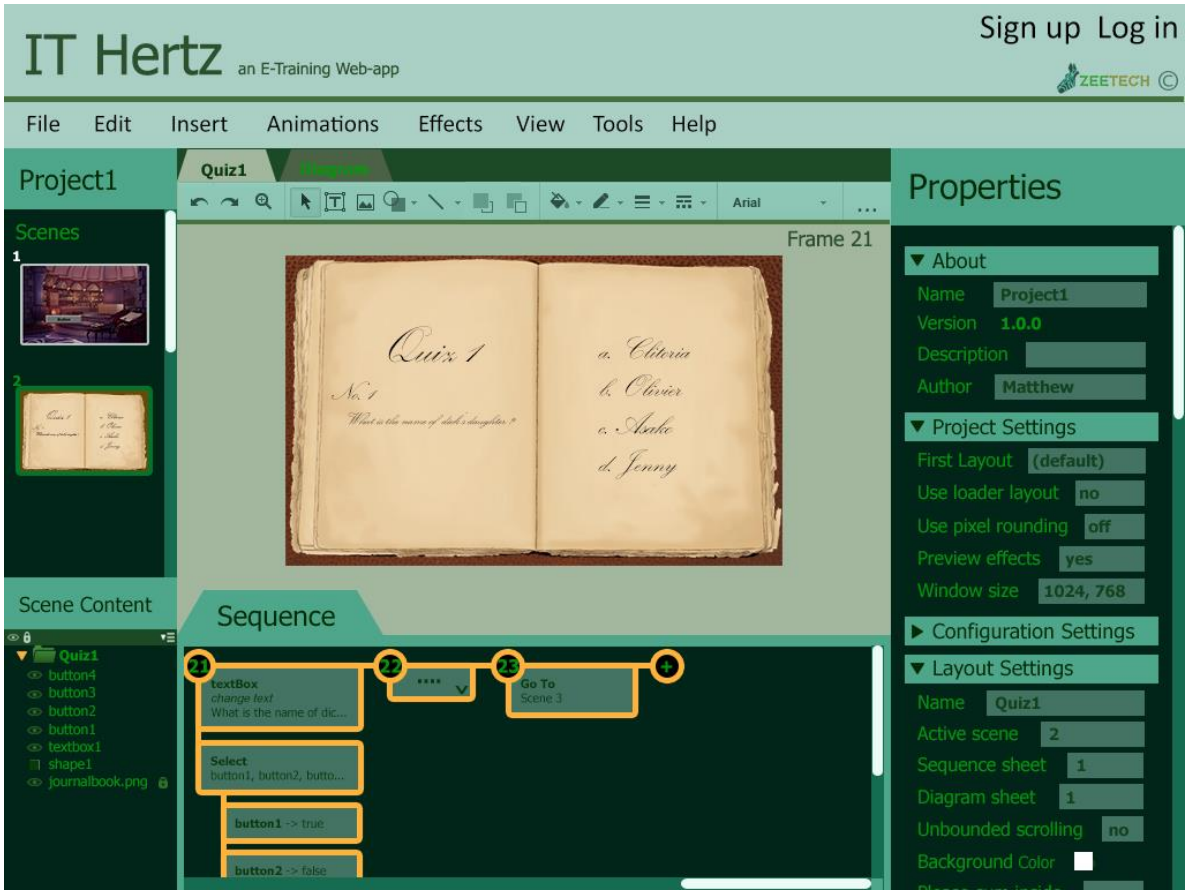
For the menu editor, most of the original design was kept and changes merely due to new insights from client meetings. First in the bottom left of the screen, the button was renamed to exit instead of log out due to the fact that the group now know only a few users can access this menu editor which is the designer and admin. And when highlighted or selected by cursor the right side panel will not appear due to merely waste the space of the screen instead user can just edit and delete once the module is selected.

Scene 1 + Sequence Editor



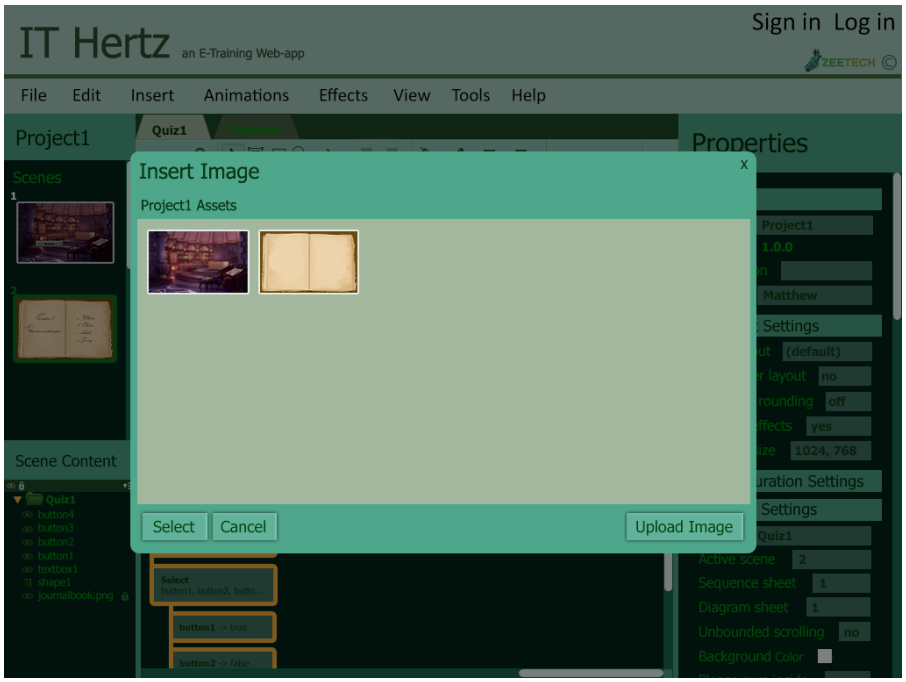
Since the core concepts of how the system work in this menu remains the same the overall color scheme and structure is the one different. The top toolbar functions will clarify further as development of system progresses but for now these are the placeholders for the tools the user can use. From the left panel the same format of the original design, the bottom left for the scene content however the structure was change to simulate more on users who are familiar with the layering of Photoshop with the top being top layer and bottom otherwise. The properties bar remain to be the same in terms of structure only that add action button was renamed add script to remove confusion. The sequence was here was separated from the properties for the reason that switching from properties and sequence can prove to be much easier that clicking the tabs. Speaking of tabs unnecessary tabs can be removing or toggle to hide by clicking the header name and image will resize accordingly.

Quiz 1 + Sequence Editor



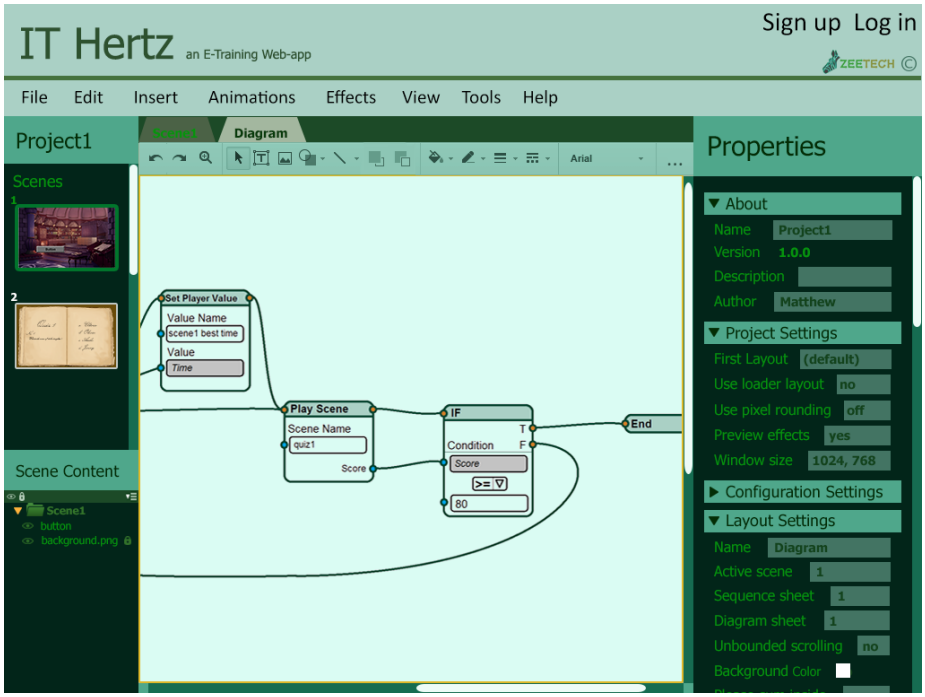
Two major components shown here, first the new properties bar display. Since the user is not selecting any object, as a default parameter the properties bar will display the properties of the whole scene file. From the sequence in frame 22 users can minimize the branching sequences by clicking the arrow symbol and the plus sign to add a new frame sequence.

Adding Image

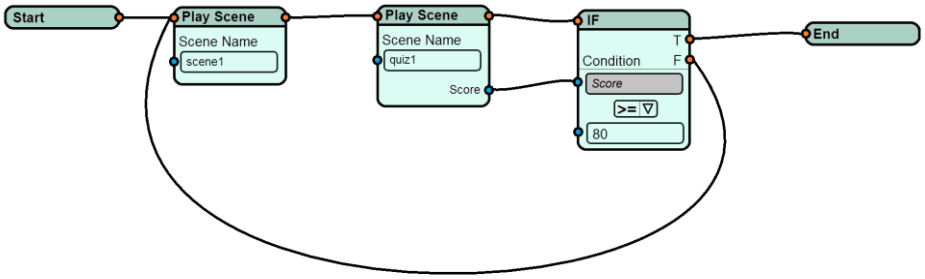


Adding new images for the scene is simple by clicking the insert and add new image. This will open a sub menu that will list not only the images the user adds it also list the images currently used in the module. This format heavily taken from how Facebook adds new images using the album which most people have gone accustomed

Scene Diagram



Scene Diagram Close Up



In comparison to the first diagram structure on how to create logic was simplified to this format for the reason that complexity of the first diagram might confuse some users. From the starting node, scene1 is the first to run. During this time all sequences of scene1 should finish so that it can move on to quiz1. After a sequence in quiz1 is completed, “if condition” node is used to check whether the user scores below or above 80. If the user scores above 80 then the user has completed the module as intended however if not user will be forcibly moved to the starting node to do all of the sequences again.

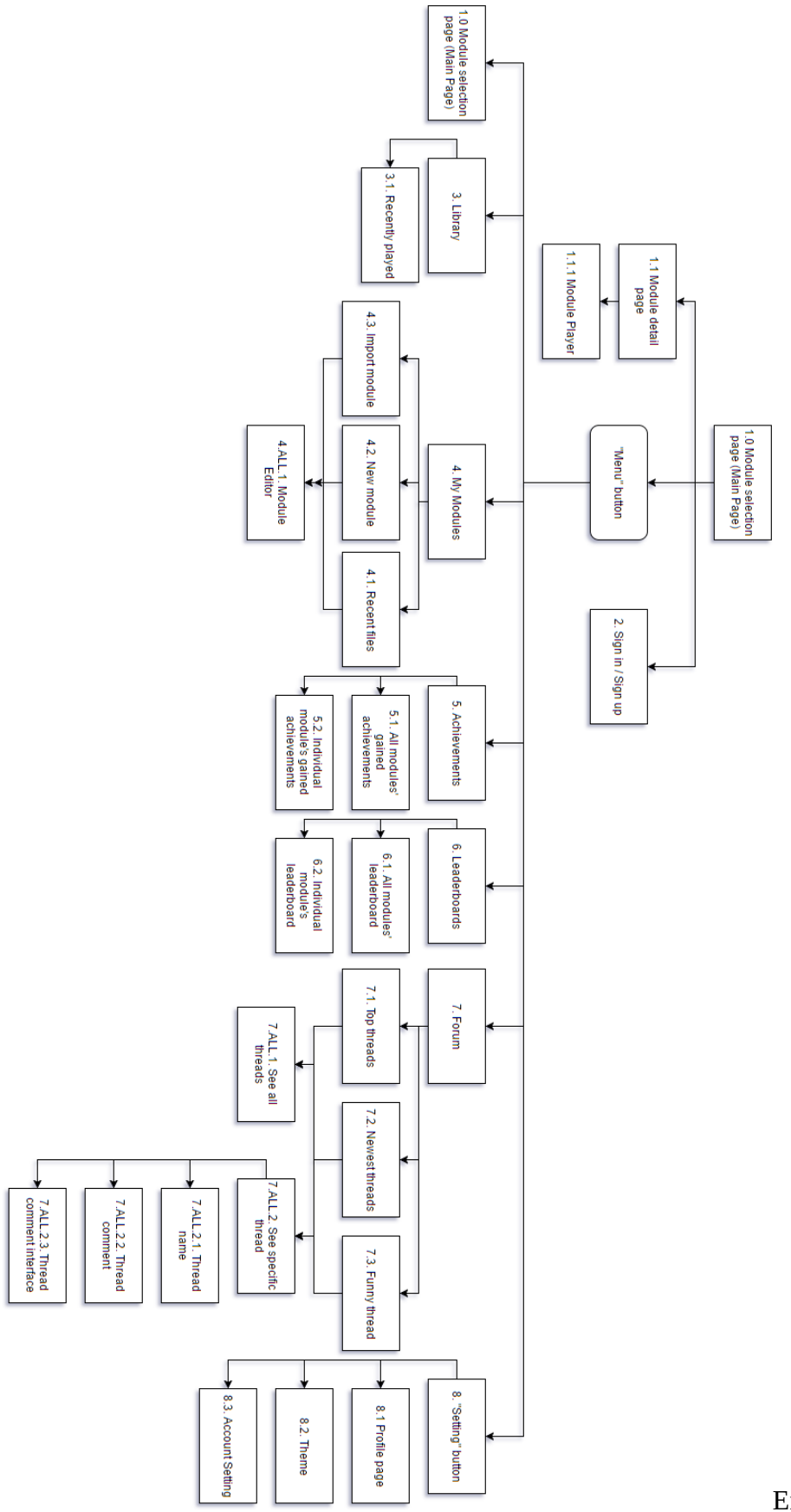
For the overall color scheme which each page will be similar is chosen only because originally the client did not specify further what the User Interface would look like in color. This green hue is chosen in order to determine what the client wants in his User Interface and when green is presented the client agrees with the color scheme.

CONCLUSION

The planning documentation outlines the information architecture and interface of the E-training system, following the requirements proposed in the previous report. Although the project is currently in development process, this report provides a foundation that any addition or modification in the future should follow. These changes are no doubt inevitable in an iterative process, they should not remarkably alter any key points presented, but rather complement them.

The organzational structure and interface of the product presented in the report satisfy all of the requirements described in section 1.1. These requirements have been rearranged in a clearer format to support referential purposes as well as provide grounds for future modifications, if any. For the user interface, all designs were chosen according to user's preferences through a comprehensive analysing process. In addition, detailed explanations have been made to thoroughly justify each design pattern and functionality.

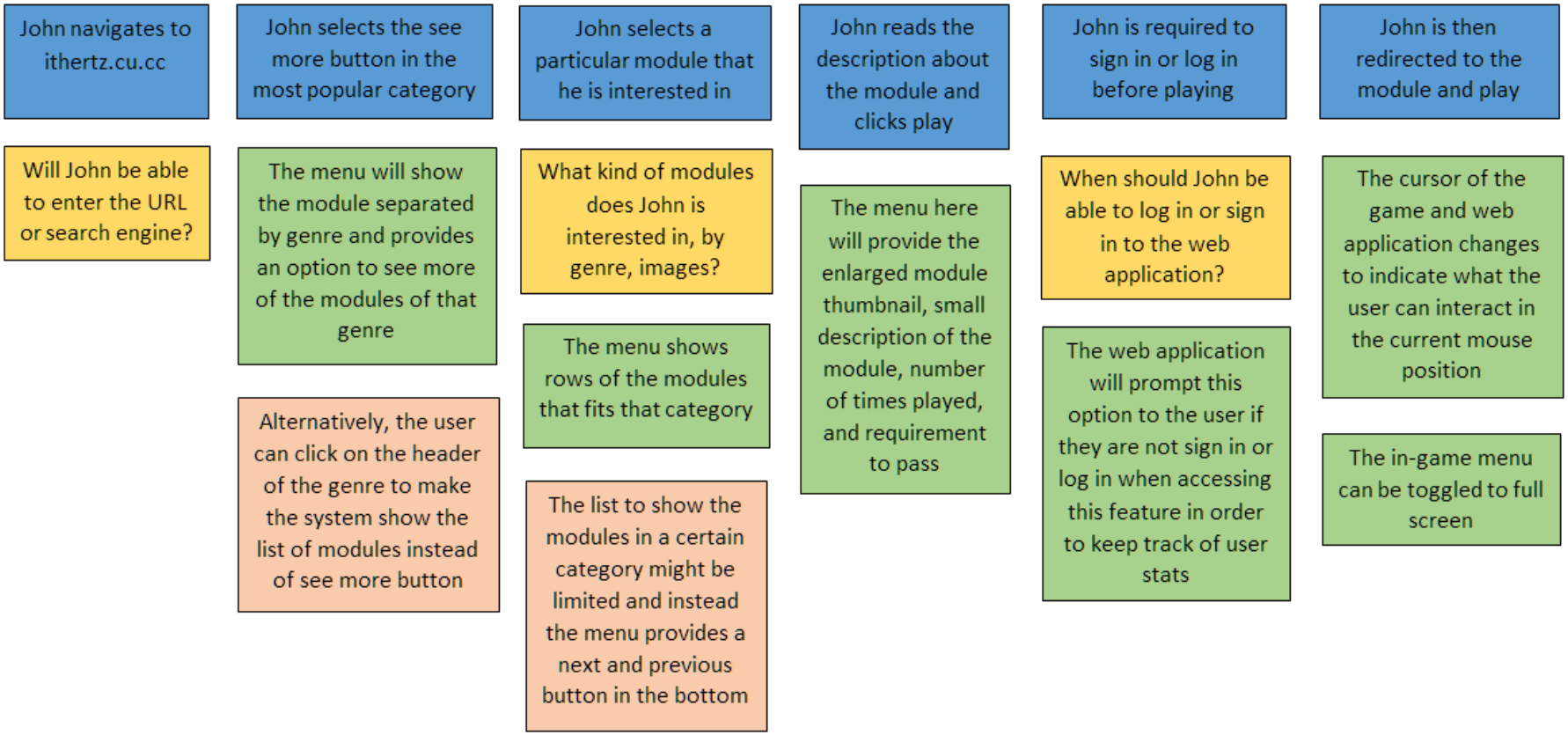
Following this report will be the actual implementation of the proposed design, In this process, new features shall be added on a continual basis, leading to new requirements as well as new sections in the information architechture. These adjustments, again, should complement the current progress to achieve the highest user satisfaction.



Enlarged Site map

John Doe – online student

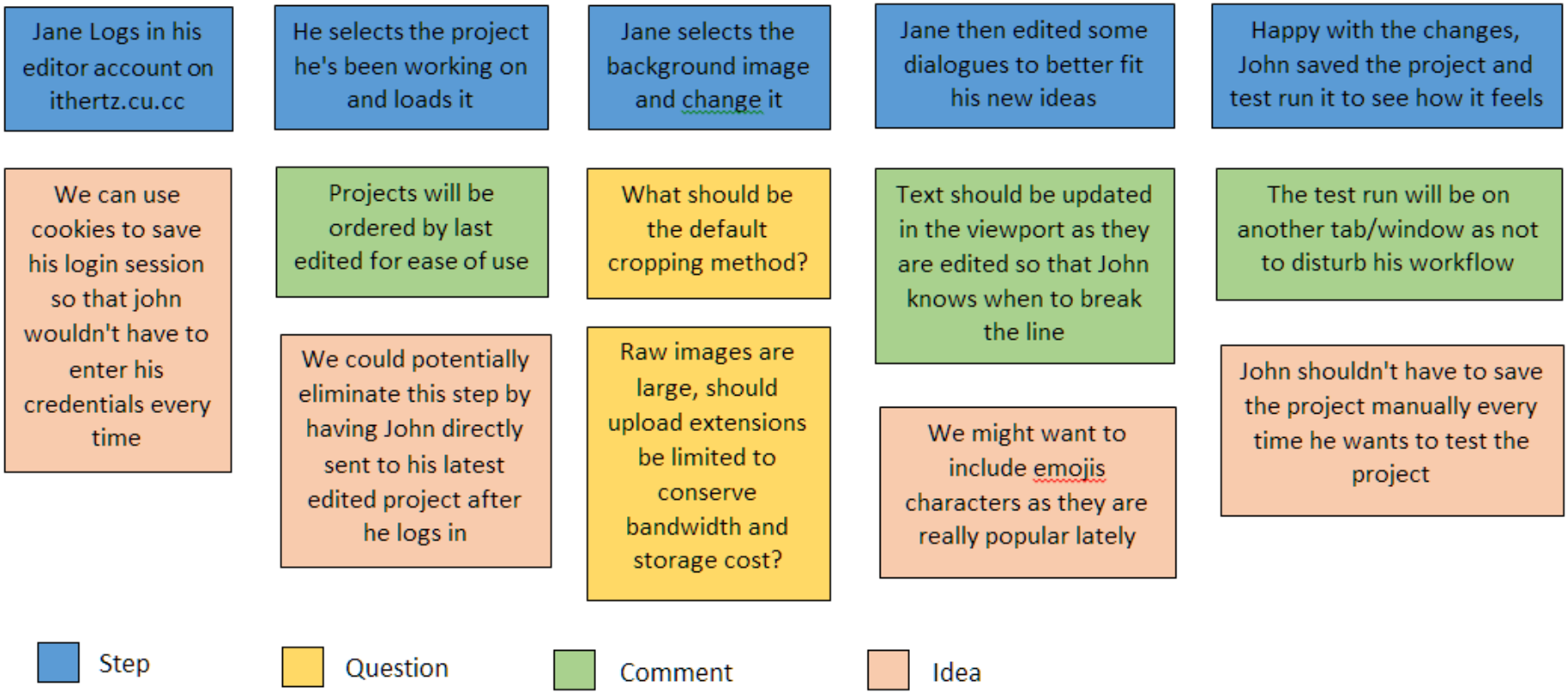
Wants to play a module



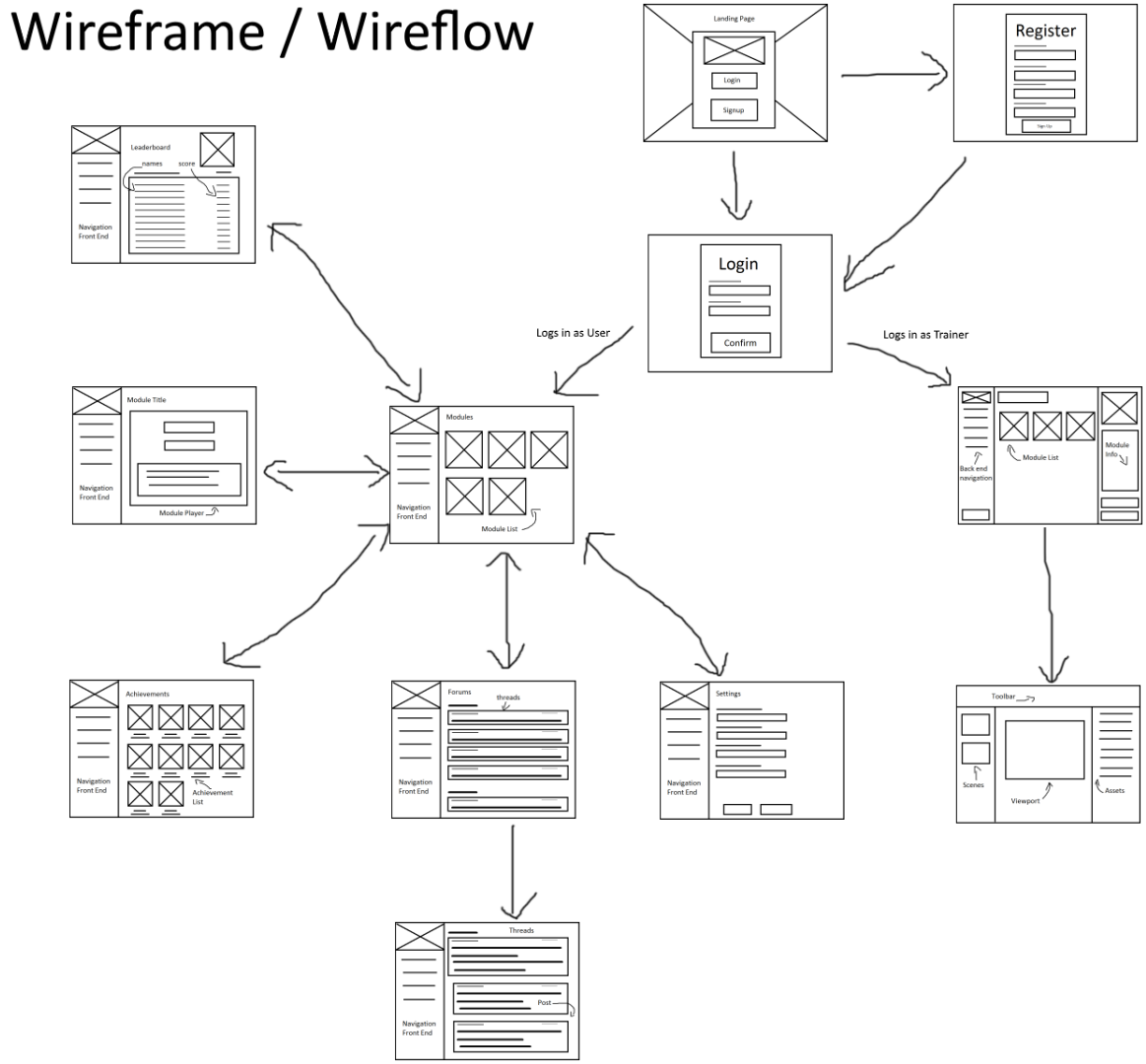
Possible back-end scenario

Jane Doe – Graphic design student

Editing a module



Wireframe / Wireflow



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