Educational web game for public engagement -

Feature List

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| --- | --- |
| Author: | Mal80 |
| Date: | 06/02/2019 |
| Version: | 0.2 |
| Status: | Draft |

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# INTRODUCTION

In this document the elements of the project will be highlighted. The elements will be underlined as features that will make up the core functionality of the game. The purpose of this document is to make the reader aware of the features that the project will include. The features are broken up into sections which state what function of the system the features correlate to.

# Filteration of water

In this section the document will highlight the features that will go into producing accurate water filtering simulation.

## Filters becoming dirty

This feature will concern the idea of having a filter within the game become dirty and clogged up with waste over the course of the game.

This can be highlighted by having the filter change colour slightly or by having a “clean” percentage that goes down over time. The idea of this feature is to convey to the player that the filters become dirty over time and action needs to be taken in order to keep the filters and in conjunction, the water that is filtered.

This feature will happen automatically over the course of the game, however different weather effects can change how fast the filters become dirty as well as, elements talked about further in this document.

## Taking filters offline

This feature is very important to the overall gameplay of the game. The idea here is, that the user has to isolate a dirty filter from the system of filters that will be present in the game. This will have adverse effects on the filters within the immediate area.

The idea here is that the filters that are still operational will have to cope with the water that would have been filtered in the offline filter. This can have the effect of the filters becoming dirty faster, and having some water wasted as there is no where for the water to be filtered.

This feature will have the user thinking about how to manage a dirty filter so that the other filters do not suffer as a result. This feature can be implemented by having the filter colour change when it needs cleaning, and when it is offline the surrounding filters change colour faster, to signify the change in water allocation.

This feature will work by having the user click on a specific filter and have the open to “take offline for cleaning”. This will need to be done when a filter is dirty to reduce the chance of issues occurring. A warning could appear if the filter is taken offline, when the surrounding filters cannot cope with the excess water.

## Cleaning the filters

This feature would require the user to click and hold the mouse button down over the areas of the filter they want to clean. The cleaning will feature some water effects that will clean all the waste from the filter for it to be used. An alert will be displayed once the filter has been correctly cleaned with water.

This feature can have several mechanics, such as having to add more chlorine to the filter to help break-up germs and waste within the water. This would work similar to the controls of the water cleaning, but can have different consequences and advantages towards this action.

To get this feature to function, mouse controls will need to be implemented to allow the user to hold the mouse button down for a number of seconds to clean the filter, or choose how much chlorine will be added to the filter.

# Alerts

This section will highlight the feature of message alerts being presented to the player. These alerts can have a variety of content and can appear randomly or after certain actions have been performed.

## Water Analysis alerts

The first type of alert feature that will need to be addressed is the “report” that gets presented to the player from “computer scientists” about the water that the player has marked as okay.

These alerts can be in the form of text reports, which generate a short report for the player based on the quality of the water that was sent out. These reports are important for the game as they highlight the importance of computer science in water filtering. The results of the tests are presented to the player in a email fashion and suggest to the player, some elements which need to be changed.

This feature can be implemented by having a timer count the amount of seconds since water has been sent to the nearby village, and then after a certain time a notification can be presented to the user which documents the success of the water shipment.

## Filter Issues

This alert feature can work differently from the previous alert. The idea here is to have an alarm sound if there is a problem with a filter, so that the player can act upon the issue. This can be implemented by having a sound linked to the event that occurs in regards to the filters.

This feature can be overlooked, but it will be easier for the user to understand when something is wrong and can enhance the experience.

# Water waste management

## Discarding dirty water

This feature will give the user the option to discard water that cannot be filtered to a healthy state. This will give the user the option to reduce the amount of health risks that may occur. This feature will not have any educational merit, but will create a more streamlined experience for users of the game, by having the option to discard water that is not ideal for the villages within the game.

However it can be used to show the user that discarding water costs a lot of money, so making sure that this process is only done under extreme circumstances will be good for the user to be aware of.

This feature can be implemented by having the option to discard the water be in the form of a button as the water is being analysed just before it is sent to the main water system.

## Location of discarding water

This feature is important to implement within the project because it can be used to teach the user of the game that where dirty water is discarded matters. The idea for this would for the user to decide where the water will be discarded in regards to the location of the water and water works.

It is important to let the user chose where they want to discard the water for themselves, this is because, the location of the water is important to the health of the lake water. For example if the user decides to discard the water in a place where the runoff can return into the lake, then the next water load will be contaminated and cause a lot of issues for the users.

This feature will be implemented for the purpose of letting the user understand that where the waste water is discarded matters to future water supplies and the overall health of the water source. This can be implemented by having the user click on a space on the screen to discard the water, which will have some information related to the safety of the area and the effects the discarding may create.

# Weather patterns

## Seasons of weather

This feature is important to keep the game interesting and different for users. The idea with this feature would be to have some weather effects within the game which, change the water level in the lake, change the demand for water and cleanliness of the water for example.

This feature can be done by having a “weather report” within the game, which alerts the player of the current weather. With this the points made above should change, for example, if it is raining outside the amount of water in the lake should rise, which could prompt the user to allocate the flow of water accordingly as to reduce excess flow.

This feature should be implemented with some level of randomness according to the season. An example of this would be that in Summer, the amount of rainfall will be decreased, so the lake becomes dry faster as apposed to Winter, where the rainfall will be increased.

This can be implemented by having the chance of rainfall occurring correlated to the season that is currently operational.

# Villages

## Review system

The main idea of the village feature is to have a way to convey to the users how clean the water that was approved was. The villages will work in a similar way to the system present in “SimCity” [1] in which there will be some messages related to the village “mood” and “health”. The idea with this is to alert the user that the choices they make when it comes to cleaning the water will have an effect on the local areas.

This feature is heavily related to the educational aspect in which, the alerts and “mood” of the villages should teach the user that, cleaning and changing the water PH can have effects on the local area. This should be created to be an accurate simulation of how people would react to changes in their water supply.

This feature can be done visually by having some graphics on the screen present to alert the user that the water is of high quality or bad quality based on the “locals” opinion.

# Economy

## Company budget

The idea with this feature is to give the company that the user has to manage a budget for the amount of money they can spend on cleaning filters and replacing equipment.

The general idea of this is to have some sort of “lose condition” to the game while also getting the user to think about the money they have, as described in the section below. This can be manged by having a starting amount of money, which can be increased by sending cleaner and healthier water to residents so that the usage goes up and money can be made.

However the money can decrease as well based on points discussed in the below section, but the main idea here is to have the game end if the budget for the company falls into the negative numbers for a set amount of time.

## Health care fines

This feature works on the idea of being fined for wasting water and endangering residents. The reason this would make a good feature is to help enforce to the user the expenses of wasting and cleaning water. Water filtering costs a lot of money, and by not properly filtering the water most of that unclean water will need to be thrown away. This will cost a company a lot of money in the real world, this is the reason why this feature would be good to include within the game.

Having fines for shipping out dirty water or throwing water away in large quantities will help users manage the amount of water they throw away and get them to think of more efficient ways of cleaning water, so that these fines can be avoided.

Bibliography

[1] Electronic Arts, Inc., “SimCity Games” 2019. [Online].

Available: <https://www.ea.com/en-gb/games/simcity>. [Accessed 07/02/2019].

*SimCity is a life simulation game created and produced by Electronic Arts. The game offers a player to take control of a city area, in which they can interact and create residents and public projects to help improve the life of their virtual residents. This website offers insight into the range of games that have been created with this idea in mind, and helps the users of the website understand the concepts of the franchise.*

*I have taken inspiration for my project from this game concept and idea, in which you control an area of land and improve life for its residents.*

DOCUMENT HISTORY

| *Version* | *CCF No.* | *Date* | *Changes made to document* | *Changed by* |
| --- | --- | --- | --- | --- |
| N/A | 1 | 2019-02-06 | N/A - original version. | Mal80 |
| 0.1 | 1 | 2019-02-06 | Information added and layout was changed | Mal80 |
| 0.2 | 1 | 2019-02-07 | Continued work on the feature list and the inclusion of an annotated bibliography. | Mal80 |