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# Planning Analysis Sheet

This document describes the deliverable 2 project.

# Project Conceptualisation and Planning

The Project was split into three phases.

1. Identifying the gaps in current Smart Agriculture Technology today which is an area of interest as I am from a farming background.
2. Design of Website for Farmers that can address some of these challenges they face with data.
   1. Project Structure
   2. Wireframes and website layout
   3. Key pages
   4. Navigation
   5. Design and development of each page of the website
3. Testing of Website on different Browers and Devices

# Design of Website

## Website Link

The website is accessible at <https://ivcos.github.io/DairyCowManager/Index.html>

## Website Title

FARMAI – Farmers in Control of Their Data

## Website Goal:

I am interested in Farming and am keen to address the challenges farmers have today around data. Farmers must deal with a large amount of data, much of which is paper based. The goal of this website is to provide a Smart Agriculture Management System that is based purely on electronic data. The goal of the website is to highlight to famers the capabilities of the technology our fictious company FarmAI support. Tools are also available for the farmer on the Website that allow them:

* to calculate winter fodder requirements (WinterFodderManagement\_grid.html).
* slurry tank capacity requirement (SlurryManagement.html) and slurry capacity required.
* register animal details:
  + birth, new animal,
  + new animal on farm
  + Artificial Insemination (AI) and
  + sale of animals (HerdManagement.html)

I have attempted to keep the website straightforward as I have had feedback that some farmers do have not have good IT skills. So, I attempted to:

* Make the Website easy to navigate.
* Make the Website mobile friendly as data would be entered from the phone in most case as the farmer is out and about on the farm.
* Allow the data to be entered easily for the tools and forms available on the Website.

## Wireframe:

The wireframe is a sketch or blueprint of the site, it shows the structure of the basic page including the elements. I have tried to keep the layout and structure as straight forward as possible.

* Header
* Navigation
  + Primary Navigation changed to a burger bar on mobile,
* Main
  + Content
* Footer

In general, the website follows the Responsive Layout with media queries as outlined in page 38/50 of the Unit 7 slides in the First set of lectures on HTML and CSS. I have used Flexbox and CSS Grid as much as possible. The flex layout when used means that items can shrink and stretch inside their containers preventing wasted space and overload, making the layouts to fit a variety of view port sizes. The ‘nav’ is in burgerbar mode for small screens.

A screenshot of a computer

Description automatically generated

*Figure 1 Wireframe Layout of Website*

## Website Structure:

Figure 2 shows the basic structure of the FarmAI Site Layout of the planned layout for this site. However, note that only some of the functionality is not implemented in the submission.

A diagram of a company

Description automatically generated

*Figure 2 FarmAI Site Diagram*

## Source of images:

* Photographs taken from an Irish farm and some stock images from <https://unsplash.com/>

## Styles Sheet:

* A single external style sheet was used as specified in the assignment.

# Header

The Header is made up the logo and the H1 heading.

# Navigation

The navigation is built as a list of links to provide semantic meaning. This is an unordered list. The **link**, **visited**, **hover**, and **active** are pseudo-classes used to define the styles of links based on their states are defined for the main navigation bar. This allows different appearances for links depending on whether they are being hovered over, have been visited, or are active (clicked). All the links are defined as inline-block.

The navigation bar changes to a burger bar at 768px. ChatGpt3.5 was used to provide sample code on how a burger bar could be built. The code was modified to suit this project. Additions were made to the styles.css and a function was added to each .js file to make the navigation bar behaviour consistent across all pages.

# Main

TBA

# Footer

A Basic Footer is created that is consistent across all pages.

## General Notes on Website Design:

1. One style sheet for all Web pages as the look must be consistent across all HTML pages.
2. Used the information in <https://stackoverflow.com/questions/6885099/css-html-javascript-tricks-to-print-a-web-page-without-images> to prevent printing of the images to avoid unnecessary use of color ink.
3. The largest width for smart phones is 412px, so this is the default.
4. ***Width= device-width*** on all html pages. This tells the browser to set the width of the viewport to the width of the device screen. The initial scale is set to 1 (100%)
5. Used internal links to navigate in the home page. Add a link back to the top of the Home page to make navigation easier.

## Home Page

The Home page include an introduction and describes FARMMAI features. The Homepage describes the capability of the services offered by FARMMAI. Soon, all services will be available on the App. Each of the main services are described on the home page.

## HTML

Each of the main items are flex boxes. I had some problem get the image and paragraph lining up. The image in the flexbox was disappearing when the flexbox was set to column.

I found some material on the <https://stackoverflow.com/questions/69028147/flexbox-image-disappear-with-column>. This helped to resolve the issues I was having.

## CSS

Media Queries are applied to make the home page responsive. All images with the exception of the first one is removed from the view when on viewing the Home page on a mobile. The first image was included in the mobile view and all other images were hidden.

## Javascript

Javascript for the Home page is included in the index.js file.

# Farm Management

All the forms that are available in this section are using flexboxes and CSS Grids. This page has the form that includes a Form to Register an animal at birth or add any animal. In the first project, I used the standard Form Layout. But this time, I have made the Form more responsive having read Chapter 19 (Learning Web Design, Robbins) by making each <li> item more responsive. I’ve used Flexbox to make the labels stack on top of their respective inputs when and fieldsets on narrow screens, so that there is no wasted space.

## Herd Management

This webpage provides several options to the farmer for Herd Management.

## HTML

In the Herd Management main page, there are several menu options presented to the user for, when clicked a corresponding form will be opened:

1. Birth Registration- Register the birth of a calf with the current date automatically populated into the form.
2. Animal Registration – A new animal bought into the farm.
3. AI Registration – Register Artificial insemination (with Calving date automatically calculated)
4. Animal Sale
5. Herd Health and EBI (This is a Roadmap feature)
6. Update Animal Information: lost Tag, animal health etc (This is a Roadmap feature)

I have used Flexbox feature predominantly in this page as I wanted the main top-level flexbox to change as the screen widths vary. The six flex items themselves are fixed but this works quite well as each of the flex items stack nicely in tablet and mobile view.

## CSS

Styling for the HerdManagement,html is in the styles.css. All the buttons on the form have consistent colour and behaviour.

## Javascript

There are several functions and eventlisteners defined in the RegisterCowandCalf.js files. The main Event Listeners are:

* Event Listeners are created for each of these six buttons/options on the HerdManagement.html. All forms are hidden initially and are revealed when the selects one of the options.
* Event Listeners for each Button on each of the Forms.

The main functions defined are:

* Function ***hideFlexItems()*** – Hides all the flex item options when the user has selected one of the six options
* Function dislayFlexItems – Displays all the flex items when the user has closed the form (error here with close form)
* Function ***getAIDate()-*** Auto populates the AI Form with the current Data and automatically updates the Calving Date text box by adding nine months and 7 days. [**Note to Self 1].** Need to add javascript to auto update the calving date if the user manually changes the date in the form.
* Function ***formatDate()*** The date is automatically populated with today’s date.
* Some of the fields have default data set when the Form is opened.
* Function ***validateAlphanumeric ().*** Validation to ensure that the user has entered valid data in the first three fields in the form. Only alphanumeric character are allowed to be entered. If the user enters anything else, then an error will be generated and displayed in Red under the label where the erroneous value is entered.
* Functions for each of the Form submissions to ensure that all the important fields have a value are not left blank.

## Slurry Management

This page provides:

* an application that allows the farmer to calculate the slurry tank capacity on his farm.
* an application to allows the farmer to calculate the estimated slurry that will be produced by his herd of animals.

If the capacity is greater than the expected volume, then the farmer has sufficient capacity for the winter period. If the expected volume of slurry exceeds capacity, it means that the farmer does not have enough slurry tank capacity.

## HTML

There are two CSS Grids setup for the Slurry Capacity Calculator and the Slurry Storage Required.

## CSS

CSS Media queries were added to resize elements as the screen shrinks and grows.

## Javascript

There are a number of functions and Event Listeners created for the Slurry Management,html

The function calculate automatically returns the capacity of the Slurry Tank based on the data input by the user. The user is not allowed edit the Capacity value as it is set to read only.

## Winter Fodder Management

This page provides a tool to allow the farmer to input the numbers of cattle of different ages that on the farm and the tool automatically calculate the amount of winter fodder that he requires for the winter period. The tool works on all devices.

## HTML

Header – As Standard across all pages

Navigation- Standard across all pages

The calculator is a Grid (class= “grid-container”).

## CSS

The styling specific for WinterFodderManagement\_grid.html begins at line 746 in the styles.css.

## Javascript

The Javascript file is WinterFodderManagement.js. This file includes a number of event handlers and functions.

### Javascript- Event Handlers

When the HTML page has been loaded and parsed, the “DOMContentLoaded” event is triggered. The event handler function defined in WinterFodderManagement.js triggers two other event handlers to be setup; the eventlistener for the calculate silage button and the clear button. Once the DOM is loaded the program has now entered the event driven phase of the program

1. EventListener for button “Calculate Silage Required”
2. EventListener for button “Clear to reset values”

### Javascript- Functions

* CalculateDofferRequired() to calculate fodder required based on user inputs
* cleaForm() clears all the user entered data

# AgriIoT

## HTML

Basic Introduction to AgriIoT functionality

## CSS

Basic CSS for the page

## Javascript

Javascript for the burgerbar menu handling

# About Us Page

The About Us Page describes who we are and the mission statement of the website.

## HTML

Basic HTML Page.

## CSS

CSS for the Form

.

## Javascript

The Javascript code for the carousel was developed with the assistance of ChatGPT3.5.

# Contact Us Page

## HTML

Basic HTML Page.

## CSS

CSS for the Form

## Javascript

Javascript code to check that all the mandatory fields are entered. On successful completion a message “DATA ENTERED SUCCESSFULLY” returned in the form.

## Testing with Desktop

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Windows Desktop | | | | Macbook Desktop | | |
| Page | Chrome | Safari | Edge | Firefox | Chrome | Safari | Edge |
| Index.html | OK | TBT | OK | OK | OK | OK | TBT |
| Herd Management.html | OK | TBT | OK | OK | OK | OK | TBT |
| SlurryManagement.html | OK | TBT | OK | OK | OK | OK | TBT |
| AgriIoT.html | OK | TBT | OK | OK | OK | OK | TBT |
| ContactUs.html | OK | TBT | OK | OK | OK | OK | TBT |
| AboutUs.html | OK | TBT | OK | OK | OK | OK | TBT |

TBT: To be Tested

*Figure 3 Browser Testing Results for Desktop*

## Testing with Mobile

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | iPhone(portrait) | iPhone(landscape) | Android(Potrait) | Android(Landscape) | iPhone(emulator) |
| Page | Safari |  | Chrome | Chrome | Safari |
| Index.html | OK | OK | OK | OK | TBT |
| Herd Management.html | OK | OK | OK | OK | TBT |
| SlurryManagement.html | OK | OK | OK | OK | TBT |
| AgriIoT.html | OK | OK | OK | OK | TBT |
| ContactUs.html | OK | OK | OK | OK | TBT |
| AboutUs.html | OK | OK | OK | OK | TBT |

*Figure 4 Browser Testing Results for Mobile*

## Testing with Tablet

|  |  |  |
| --- | --- | --- |
|  | Ipad (potrait) | Ipad (landscape) |
| Page | Safari | |
| Index.html | OK | OK |
| Herd Management.html | OK | OK |
| SlurryManagement.html | OK | OK |
| AgriIoT.html | OK | OK |
| ContactUs.html | OK | OK |
| AboutUs.html | OK | OK |

*Figure 5 Browser Testing Results for iPad*

## Web Accessibility

Ran the WAVE tool on website on all four pages. Contrast Error on the SlurryManagement.html. Working through this to improve the contrast ratio.

## SilkTide

Ran the Silktide tool on the four pages, just focusing on Blindness. Overall the pages read like were meant to, so semantically the site is setup well.

## Page Speed Insights

Below are the result for from pagespeed.web.dev carried out on the 10th December 2023..



*Figure 6 PageSpeed Results for Mobile. See Note 1 below.*



*Figure 7 PageSpeed Results for Desktop. See Note 1 below.*

Note 1: The main page(index.html) is performing poorly as shown in the figure below.



*Figure 8 PageSpeed Results for Tablet*

# Search Engine Optimisation

I did not do any search optimsation for this assignment. But will include in next version of this project.

## HTML Validation

SEO is improved if there are no HTML errors. HTML validation completed on <https://validator.w3.org/>

* Index.html passed (2 Errors, these are understood and will be resolved. There is a space in the Herd Management folder and identified as issue. Will not change at late stage in project.)
* HerdManagement.html (No Errors)
* WinterFodderManagement\_grid (1 Error, same as the issue with Index.html)
* AboutUS.html (1 Error, same as the issue with Index.html)
* ContactUS.html (1 Error, same as the issue with Index.html)
* SlurryManagement.html (1 Error, same as the issue with Index.html)

## CSS Validation

SEO is improved if there are no CSS errors. CSS Validation passed on the 11/12/2023

# Outstanding Items to fix

1. Images are too large and need to be reduced in size. This error was flagged with the Webspeeddev
2. Eliminate ‘render-blocking-resources” errors being generated reducing performance to 92% on some pages. Investigating this issue.