IT: PRACTICE CONSULTANCY PROJECT FINAL REFLECTION REPORT

Client: TRESAcic

Abstract

Final reflection report by Group 2, reflecting on the consultancy project with our client TRESAcic

Group 2

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1.0 Introduction

This report presents an examination of the methodologies adopted by Group 2 in addressing the dual objectives of developing a mapping system and increasing community awareness through Social Media channels for the voluntary organisation, TRESA (Totterdown Residents Environmental & Social Action). According to (Al-Kwifi & Aouf, 2021), mapping technologies play a crucial role in enhancing community engagement through Social Media platforms. This document will also detail the set objectives, the development and implementation phase, alongside an in-depth discussion on encountered challenges and learning outcomes.

The report's framework is structured around time box parameters, with explanations of each task undertaken. Additionally, it incorporates individual appraisals and self-reflection, highlighting the cohesive narrative and operational efficacy demonstrated by the group.

TRESA, an organisation dedicated to safeguarding and enhancing the local environment in Bristol through volunteer engagement, collaborated closely with Group 2. This collaboration involved extensive consultations with various TRESA personnel to discern the requisites for the project's specifications, particularly regarding the creation of a mapping platform facilitating data collection from residents.

Our initial learning objectives centred around acquiring experience in collaborative consultancy while developing our technical knowledge and exercising communication skills with stakeholders. "Studying Information Technology in Organisations: Research Approaches and Assumptions" (Orlikowski & Baroudi, 1991) provide insights into studying Information technology in organisational contexts, emphasising the significance of understanding the socio-technical dynamics involved in the implementation of mapping technologies, as observed in our collaboration with TRESA.

Over the duration of our project, we would work closely with these members of staff at TRESA:

- **Suzanne Audrey, Chair**. Suzanne was involved with most of the communication from initial meeting minutes, regular meetings and follow-ups, as well as signing off deliverables.
- **Simon Hobeck, Treasurer**. Besides managing finances, Simon also oversees the TRESA website as well as other technical areas including Social Media Platforms.
- **Anne Silber, Vice Chair/Membership Secretary**. Although Anne would communicate sporadically and offer feedback, her involvement in the project and impact was comparatively limited.

1.1 Client Overview

TRESA is a Community Interest Company (CIC) that "brings together residents in Totterdown with the aim of improving and protecting our local environment and to promote a vibrant cultural life." Founded in 2005, it aims to promote environmental action within the Totterdown area through local activities and campaigns. Their major contributions to the local area consist of the introduction and maintenance of designated community spaces and campaigns for the introduction of local equipment and facilities such as parks and bicycle racks. The organisation

consists of 7 directors and over 100 members. You can find the client's website here for more information.

TRESA's goal for our project was to create a method for collecting and mapping data of local and private green spaces and wildlife. This would be used to promote and visualise the establishment of the Totterdown Urban Nature Reserve within the local area. Although specific details were never shared with us by the client, there was an understanding that the client had reached some form of agreement with the local council that designating 30% of the Totterdown area as nature and wildlife would allow for the creation of the Urban Nature Reserve.

In the initial brief provided to us, the client stated that funds would have to be raised to undertake the project and that it would be difficult to cover large expenses. From the initial brief and following the initial meeting, the client also relayed that they had no specific vision or requirements other than to collect and map the data and allowed us freedom in considering and designing what we deemed to be the best solution.

1.2 Project Objectives and Scope

1.2.1 Develop Tailored Mapping Software:

- Design and develop customised mapping software tailored to TRESA's requirements and the unique characteristics of Totterdown's green spaces.

1.2.2 Enhance Data Collection and Analysis:

- Develop a systematic approach to data collection, including the design of digital forms and databases for efficient data capture.
- Implement analytical tools to process and analyse collected data, generating valuable insights into green space usage patterns, environmental factors, and community preferences.
- Incorporate features such as geospatial visualisation, interactive mapping, and data overlay capabilities to provide comprehensive information about green space distribution and accessibility.

1.2.3 Ensure User-Friendly Experience:

- Prioritise user experience in software design, focusing on intuitive interfaces, simplified workflows, and accessible functionalities to encourage community engagement.
- Conduct user testing and feedback sessions to iteratively refine the software interface and enhance usability based on user preferences and needs.

1.2.4 Facilitate Sustainable Practices:

- Integrate sustainability principles into the design and development of software features, promoting eco-friendly behaviours and practices among community members.
- Offer resources and guidance through the software platform to support sustainable initiatives, such as community gardening, wildlife conservation, and waste reduction efforts.

2.0 Timebox Overview

All deliverables will include a link to the deliverable can be viewed and marked.

Timebox 2: Establish Team Working and Client Relationship	
Objectives	Deliverables
- Contact the client and establish regular meetings	- Delivered the PID (Project Initiation Document) but not signed off by the client yet.
- Create project objectives by meeting the client	
- Complete the PID (Project Initiation Document)	

Timebox 3: Sign Off PID and Gather Project Requirements	
Objectives	Deliverables
- Gather technical requirements and get them reviewed	- Signed PID here
- Gather functional requirements and get them reviewed	- Signed Functional and Technical Requirements Document here
- Explore different mapping tool	
- Prepare a Social Media Strategy Document	

Timebox 4: Project Development	
Objectives	Deliverables
- Choose the most suitable mapping tool	- PUGH Matrix used to choose the most suitable mapping tool here
- Create a form for resident input data	- Data flow diagram here and prototype resident form created **[see 5.0 Key Outcomes for Client]**
- Complete prototype web platform	
- Prepare a Social Media Strategy Document	

Timebox 5: Project Finalisation	
Objectives	Deliverables
- Get the Prototype signed off	- Prototype web platform signed off **[see 5.0 Key Outcomes for Client or GitHub Repository** here**]**
- Get the Social Media Strategy Document signed off	- Social Media Document created and signed off here
- Project Sustainability and Maintainability	- Project Integration here, Maintainability here and Future Possibilities here Documents

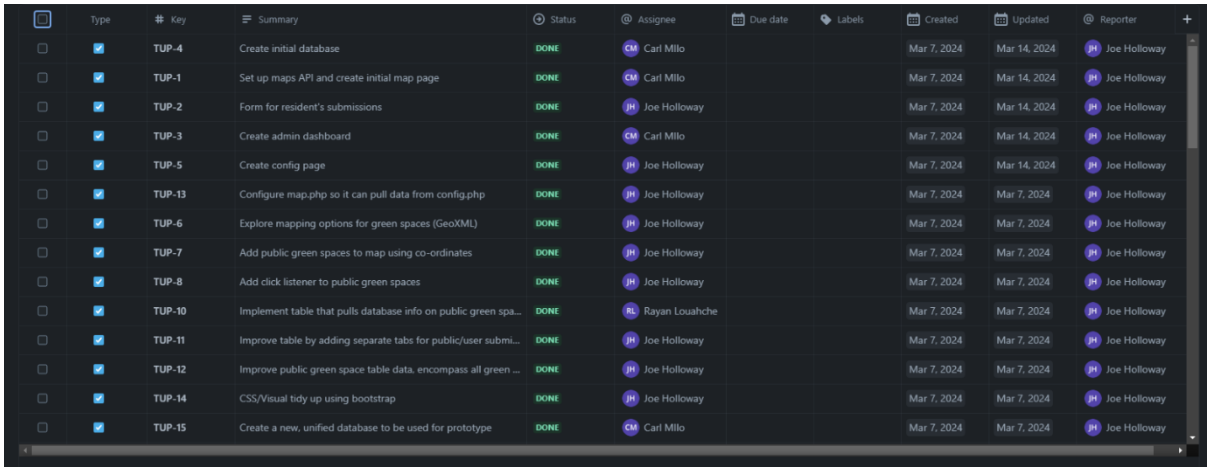
3.0 Methodology

For the development of the mapping system for the client, we used Kanban, as we identified that it was a good fit for our project given that it can be both AGILE and Lean. We wanted to implement a lean methodology as it was made clear by the client within our meetings that they wanted a simple-to-use application that implemented all the functionality agreed upon as stated in our Functional and Technical Requirements document. The key concept we focused on from the lean methodology is eliminating waste, "anything that doesn't either add customer value directly or add knowledge about how to deliver that value more effectively" (Poppendieck & Cusumano, 2012). Throughout our development cycle, we put a heavy emphasis on this and developed functionality in a manner that balanced ease of use and the necessary functionality. This meant that as a group and individually we avoided time being wasted on development that either was not necessary or was not of a high priority at that time. Lean methodology also focuses on "optimising the whole", meaning that the development should be founded on an understanding of what the client wants. As previously mentioned, we had an agreed-upon outline for functionality with the client, but during development, we also sought out feedback on our software. An example of this is when we asked for feedback on what particular wildlife categories the client would want to add to the mapping software, we knew that the client wanted categories from our requirements document, but we did not know the specific categories that the client had envisioned for the project to implement. Other lean principles include optimising the whole, building quality, learning constantly, delivering fast, engaging everyone, and getting better. During development we accounted for and made sure to acknowledge the importance of these principles, however, they did not have as major an effect on our methodology. In our opinion, this is because these principles were implemented more instinctively than the previous two that we detailed, and there was no need to highlight their importance throughout development. In reflection, we believe that a focus on a lean methodology for the project was successful and that its adoption was the correct decision due to the balance needed between simplicity and functionality for the client.

Out of all AGILE methodologies we chose Kanban, and we implemented it through Jira. In our development process, we adhered to the two main axioms of Kanban development: "It is possible to divide work into small value-adding increments that can be independently scheduled" and "It is possible to develop value-adding increments in a continuous flow, from the requirement to deployment" (Ahmad, et al., 2013). This approach allowed us to limit the work in progress at any point in time so that is manageable for our 3 Software developers and allowed for easy visualisation of the status of each piece of functionality that needs to be implemented. These axioms worked very well alongside our lean methodology, as a focus on value-adding increments within our development allowed us to decompose each piece of functionality into separate tasks. We were then able to complete these separated tasks independently, and then combine all the work done by our group members to create each piece of functionality necessary for the project. This approach was especially significant for initial development, as the systematic decomposition of functionalities into tasks allowed us to easily find a starting point for the project and develop in an AGILE manner from there (Corona & Pani, 2013). Although our implementation of Kanban was successful its adoption and use were not as successful. Despite the implementation of the Kanban board, it was not always the first port of call for our development members when it came to the decomposition and allocation of

tasks, and often this was done through our WhatsApp communication channel instead. However, in these scenarios, we always reflected this onto our Kanban board, so that there was always an up-to-date workflow during the development for those who chose to stick to the Kanban methodology. The reasoning behind these issues is tough to pinpoint, however, at the very least, there was a split within the development team in individual methodologies that led to the lack of adherence to a group methodology. Although we were still able to deliver a high-quality software solution on time, it should be noted that a more thorough adoption of the Kanban methodology would have led to at the very least a smaller development timeframe, which could have been used for further development and functionality if the client deemed it necessary. For example, in our PID we stated that we would integrate the software solution into the client's website, and despite other unforeseen circumstances stopping this from being delivered it cannot be argued that with more time there would have been a possibility for its delivery.

In total during our development, we had 53 tasks on our Kanban board. Below is an example of these tasks listed after the completion of development.



Type	Key	Summary	Status	Assignee	Due date	Labels	Created	Updated	Reporter
☑	TUP-4	Create initial database	DONE	CM Carl Mllo			Mar 7, 2024	Mar 14, 2024	JH Joe Holloway
☑	TUP-1	Set up maps API and create initial map page	DONE	CM Carl Mllo			Mar 7, 2024	Mar 14, 2024	JH Joe Holloway
☑	TUP-2	Form for resident's submissions	DONE	JH Joe Holloway			Mar 7, 2024	Mar 14, 2024	JH Joe Holloway
☑	TUP-3	Create admin dashboard	DONE	CM Carl Mllo			Mar 7, 2024	Mar 14, 2024	JH Joe Holloway
☑	TUP-5	Create config page	DONE	JH Joe Holloway			Mar 7, 2024	Mar 14, 2024	JH Joe Holloway
☑	TUP-13	Configure map.php so it can pull data from config.php	DONE	JH Joe Holloway			Mar 7, 2024	Mar 7, 2024	JH Joe Holloway
☑	TUP-6	Explore mapping options for green spaces (GeoXML)	DONE	JH Joe Holloway			Mar 7, 2024	Mar 7, 2024	JH Joe Holloway
☑	TUP-7	Add public green spaces to map using co-ordinates	DONE	JH Joe Holloway			Mar 7, 2024	Mar 7, 2024	JH Joe Holloway
☑	TUP-8	Add click listener to public green spaces	DONE	JH Joe Holloway			Mar 7, 2024	Mar 7, 2024	JH Joe Holloway
☑	TUP-10	Implement table that pulls database info on public green spa...	DONE	RL Rayan Louahche			Mar 7, 2024	Mar 7, 2024	JH Joe Holloway
☑	TUP-11	Improve table by adding separate tabs for public/user submi...	DONE	JH Joe Holloway			Mar 7, 2024	Mar 7, 2024	JH Joe Holloway
☑	TUP-12	Improve public green space table data, encompass all green ...	DONE	JH Joe Holloway			Mar 7, 2024	Mar 7, 2024	JH Joe Holloway
☑	TUP-14	CSS/Visual tidy up using bootstrap	DONE	JH Joe Holloway			Mar 7, 2024	Mar 7, 2024	JH Joe Holloway
☑	TUP-15	Create a new, unified database to be used for prototype	DONE	CM Carl Mllo			Mar 7, 2024	Mar 7, 2024	JH Joe Holloway

Figure 1, Example of tasks that would have been on our Kanban board during development.

The other methodology that we considered for our project was Scrum. The main advantages of Scrum are its formalised structure for meetings and roles, the prevalence of effective communication, its ability to perform and adapt to changes and scalability. However, we felt that these advantages were not entirely beneficial as compared to the advantages of the Kanban methodology we chose. Firstly, Scrum requires a Scrum master, a person to take a leadership role throughout the development and co-ordinate the implementation of the methodology. We felt that this was not a good fit for our team as we all engaged and collaborated within the project equally up until development, and although we had a Project Manager who fulfilled his management responsibilities there was a bigger focus on the team as a whole. Secondly, Scrum's formalised structure for meetings and sprints is something that we thought would not be successfully achievable by our team, due to our group consisting of students who all have other modules and projects that can take priority at any given time. Finally, given that one of the major advantages of the scrum was its scalability, we felt that it was not the right fit as our project has no intent for increased scale or functionality from the

client. This is due to the small non-profit nature of the client's company and limited financial and organisational resources. However, one aspect of Scrum that would have benefited us is the emphasis on effective and regular communication with both group members and the client. This is something we did not excel in with our project, which will be discussed in our Key Challenges Faced section. In conclusion, we felt that despite Scrum being the most prevalent AGILE methodology with a multitude of benefits, it was not a good fit for our project that its benefits would not shine through, and that overall, both at the time and retrospectively Kanban was a better fit (Srivastava, et al., 2017).

For our version control, we created a GitHub repository that stored the code for the mapping system. You can find the GitHub repository here. The use of GitHub during our development allowed for all of our development team to have access to a centralised version of the project, and for independent work to be done by individuals on their local computers to complete tasks and implement functionality. The ability for all team members to access the current and previous versions of the project allowed for smooth development cycles that created a collaborative environment for the project (Zolkifli, et al., 2018).

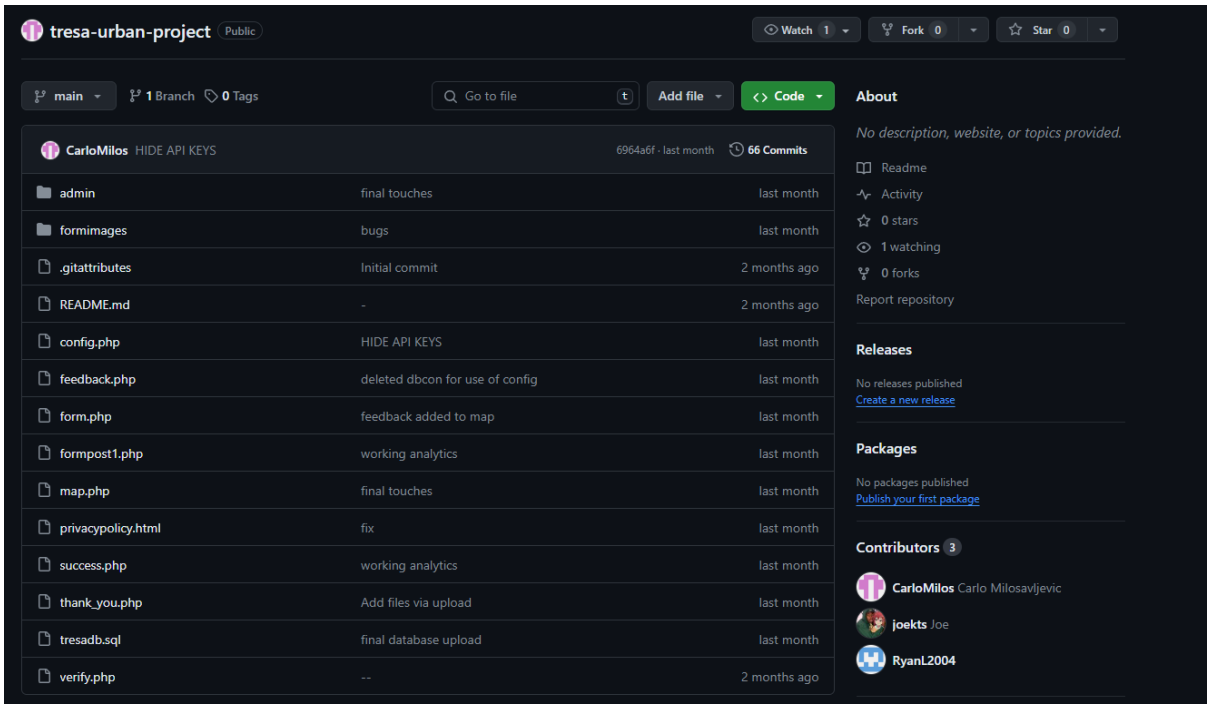


Figure 2, Main page of our GitHub repository containing all the project files.

4.0 Project Tasks and Outcomes per Timebox

4.1 Timebox 2

4.1.1 Tasks and Objectives

- **Contact the client and establish regular meetings –** setting up initial meetings with the client and establishing a consistent routine for meetings and discussion.
- **Create project objectives from meeting the client –** Have a strategy plan and proposal ready to discuss with the client and finalise some project objectives.
- **Complete the PID (Project Initiation Document)** - Finish off the PID to be signed off by the client and begin the development of strategies.

4.1.2 Deliverables

- Delivered the PID (Project Initiation Document) but not signed off by the client yet.

4.1.3 Methodology

Timebox 2 operates on a structured methodology aimed at initiating client engagement and delineating project objectives. Its primary purpose is to establish a framework for effective communication and collaboration with the client while laying down the foundation for project development (Hartnett, et al., 2012).

The methodology begins with contacting the client to schedule initial meetings, thereby fostering a consistent channel for ongoing discussions. Subsequently, project objectives are formed based on client input, developing a comprehensive strategy plan and proposal for review.

A pivotal aspect involves the completion of the Project Initiation Document (PID), a document outlining project scope, objectives, and deliverables. Although the PID is completed, its finalisation awaits client approval, marking a critical milestone for project progression. Through these structured tasks and objectives, Timebox 2 aims to align stakeholder expectations, establish project direction, and pave the way for project execution.

4.1.4 Review and Reflection

Reflecting on Timebox 2 as a team, it's evident that we made significant strides in establishing client engagement and laying down the groundwork for project development. Our proactive approach to initiating regular meetings with the client allowed for effective communication and alignment of expectations. By developing project objectives from client input, we ensured that our strategy plan and proposal were rooted in client needs and aspirations.

The completion of the Project Initiation Document (PID) signifies a crucial milestone in defining project scope and direction. However, the delay in obtaining client sign-off on the PID prompts us to reevaluate our communication strategies and possibly streamline the approval process for future milestones.

Overall, Timebox 2 served as a valuable learning experience, highlighting the importance of client collaboration and the need for efficient documentation and approval procedures to drive project success.

4.2 Timebox 3

4.2.1 Tasks and Objectives

- **Technical requirements gathering** – outline the technical and non-functional requirements of the mapping solution.
- **Functional Requirement gathering** – outline the functional requirements of the mapping solution.
- **Sign off on technical and functional requirements** – combine both the technical and functional requirements into a single document and get this signed off by the client.
- **Explore different mapping options and select one** – find a suitable GIS API or software solution for the mapping project.
- **Creation of social media strategy document** – prepare a social media strategy document ready to present to the client for the following timebox.

4.2.2 Deliverables

- Signed PID here
- Functional and Technical Requirements document here

4.2.3 Methodology

The primary purpose of this Timebox was to lay the foundations for the development of the mapping application, mainly through the creation of the technical and functional requirements document. This document allowed for the agreement of the main functionalities of the system and allowed us to discuss with the client what features they wanted and what features were feasible for us to implement in the application.

The creation of agreed-upon functionality for the project allowed us to detail the specific requirements of the project, and the technical requirements allowed us to form a high-level understanding of what the application would consist of and implement. This would then allow us to analyse potential mapping tools and APIs as detailed in our Potential Mapping Tools/APIs/Software wiki page, and thus ultimately help us choose Google Maps API as our GIS of choice. With all of this signed off and agreed upon with the client these foundations were created. With that being said the choice of mapping API was not formally completed within this timebox, but rather agreed upon as a team within Timebox 4 once development started through the use of a PUGH matrix.

Finally, within this timebox we created a social media strategy ready to show and discuss with the client, to help the client create a strategy for the promotion of the mapping application once it was developed.

4.2.4 Review and Reflection

Within this timebox, we delivered the functional and technical requirements document and social media strategy document on time and to a high standard. As briefly mentioned in the methodology although the exploration of the mapping options was completed, it had not been fully discussed as a team yet and instead a formal choice was made in the next timebox.

When presenting both completed documents to the client, we received positive feedback and were able to produce documents that were integral to the progression of the project. In particular, the creation of an agreed-upon function was very key to the project's success, as it

produced an understanding between us a team and the client for the key functionality and acceptance criteria for the successful development of the mapping application. This allowed us to successfully decompose each piece of functionality into separated tasks on our Kanban board, allowing for our AGILE workflow to run smoothly.

4.3 Timebox 4

4.3.1 Tasks and Objectives

- **Confirm the choice of API/Software to integrate into our application.**
- **Start development of the Mapping Web Application.**
    - Create a Database to store resident information.
    - Create a form for residents to input their data regarding their private green spaces.
    - Start on the Graphical User Interface (GUI) for the main page of the mapping application.
- **Prepare a social media document to present to the client.**

4.3.2 Deliverables

- PUGH Matrix to finalise the mapping tool. here
- Prototype form and database **[see 5.0 Key Outcomes for Client]** (incl. data flow diagram here)
- Social Media Strategy Document here

4.3.3 Methodology

Urban Mapping Application:

One of the first tasks of this timebox was to finalise the mapping tool which we needed to integrate into our urban mapping application. Although we had agreed on the choice as a team, we were advised by our supervisor to use the PUGH matrix, so we could systematically weigh the pros and cons before making a final decision. A PUGH matrix is a decision-making tool which evaluates and prioritises a list of options and it allows the team to break down the decision and find the most optimal solution which meets the requirements gathered in Timebox 3. The PUGH matrix confirmed our decision that the 'GoogleMaps API' was the most suitable for TRESA's urban mapping application.

After confirming the mapping tool, it was time to roll out the development of the prototype. We used a few tools to help us document the progress of the development of our prototype.

As a team, we aimed for an agile approach, initially opting for scrum. However, the team lacked consistent motivation, so scrum was not effective, prompting us to transition to a kanban board, which better suited our team dynamics. You can find our kanban board in Figure 1.

In addition, we utilised a GitHub repository here to monitor the progress of our prototype. This tool facilitated collaboration, especially when face-to-face meetings weren't possible.

As a team that has had experience developing applications, we already knew the logical steps in meeting the needs of the client.

First, the team developed a data flow diagram to understand the types of data we would need to store. As we used MySQL Workbench to complete the data-flow diagram, the creation of the database was straightforward.

Then we developed a form so that residents could input specific data regarding their private green spaces. The data was then stored in the database, ready to be called up from the main mapping application.

Finally, TRESA made it clear that they wanted to have an element of control over the data which was displayed on their Urban Mapping Application. Therefore, we also implemented an Admin Dashboard as a deliverable for this timebox. The admin dashboard allowed TRESA admins to create, read, update and delete all the data they stored.

Social Media Strategy Document:

The team had not yet completed the social media strategy from the last timebox, so we needed to do so this timebox. We also had to adapt to a new stakeholder taking a lead over the Social Media strategy during this timebox. The new stakeholder, Simon, disagreed with some of the proposed strategy which meant the team had to be flexible in the approach. Over email, the team discussed with the stakeholder's reasonable social media implementation and the needs of the organisation.

4.3.4 Review and Reflection

During this timebox, the team suffered from internal problems rather than external ones. The application development team suffered from poor team communication but prior client communication around requirements enabled smooth development. At the start of the timebox, the new Social Media Lead at TRESA did not agree with the social media document as they believed it was 'too corporate'. However, the Social Media Strategists maintained consistent communication over email and were able to work towards a strong strategy that TRESA could use in the future, highlighting the team's ability to incorporate 'learning objective 2'.

Urban Mapping Application:

Client Communication

In this development phase, we understood that we would not complete the prototype in its entirety, but we put together key components of the Urban Mapping application. The communication with our client in Timebox 3 enabled us to have a clear understanding of what the client wanted in terms of the Urban Mapping Application. A clear understanding of the requirements and needs meant that we did not need to have excessive contact with clients who had to maintain other projects. That being said, it would have been a good idea to maintain client communication over this timebox regarding the application. In terms of client relationship, the team could have kept TRESA updated on the progress of the

Team Communication

The development team suffered from poor internal communication during this timebox. A mixture of holidays and personal circumstances created some weeks when the team felt disconnected. Sometimes this led to the same function being made twice. For example, we had

two members develop very similar resident forms and databases. As a result of the poor communication, we wasted productivity we could have used to push the prototype further into development over the course of this timebox.

Deliverables:

In terms of learning objectives 1 and 2, we delivered deliverables which highlight our consulting abilities to understand the needs of the client and create an application which meets those needs. Having the functional and technical requirements documents enables the team to easily breakdown the application and ensure the client's needs are met.

The PUGH Matrix deliverable is a great example of 'Learning Objective 3', which demonstrates a critically aware approach to deciding which mapping tool will be most suitable for this project.

Although our deliverables all met the learning objectives and goals of this timebox, I believe better communication, teamwork and consistency would have led to a stronger timebox in terms of productivity and output.

Social Media Strategy Document:

The first social media strategy document did not sit well with the new stakeholder, Simon, the Social Media lead. He believed, and in hindsight, rightly so, that the strategy was 'too corporate' and that their residents wouldn't be using much social media anyway.

Essentially, we had to refine the proposed approach after Simon's critical review and tailor the strategy to meet TRESA's culture.

Our response involved active communication with Simon, focusing on understanding TRESA's specific business needs and refining our strategy accordingly. This collaborative approach emphasised flexibility and client-centred problem-solving, resulting in a more tailored and effective strategy in Timebox 5.

This experience underscores the importance of adaptive communication and client-centric thinking in consulting projects.

4.4 Timebox 5

4.4.1 Tasks and Objectives:

- Finalise Prototype Development
    - Objective: Complete the development of the mapping web application prototype, incorporating key functionalities and features.
    - Approach: Utilised an iterative development approach, focusing on refining and enhancing the prototype based on user feedback and testing.
    - Outcome: Successfully finalised the prototype, ensuring it aligns with TRESA's requirements and objectives for the urban mapping application.

- Database Development for Resident Information:
    - Objective: Create a database to store resident information related to private green spaces.
    - Approach: Implemented database schema design principles to establish a structured and efficient data storage system.
    - Outcome: Developed a robust database infrastructure capable of securely storing and managing resident data for use in the mapping application.
- Graphical User Interface (GUI) Development:
    - Objective: Design and implement the GUI for the main page of the mapping application, focusing on usability and visual appeal.
    - Approach: Utilised UI/UX design best practices to create an engaging user interface.
    - Outcome: Developed a user-friendly GUI that provides residents with easy access to mapping functionalities and information about green spaces in Totterdown.
- Social Media Strategy Document Preparation:
    - Objective: Prepare a comprehensive social media strategy document for presentation to the client.
    - Approach: Conducted thorough research and analysis to identify key social media platforms and strategies aligned with TRESA's goals and target audience.
    - Outcome: Developed a tailored social media strategy document outlining recommended platforms, content strategies, and engagement tactics to enhance TRESA's online presence and community outreach efforts.

4.4.2 Deliverables:

Finalised Prototype Development:

Completed mapping web application prototype, incorporating key functionalities such as data visualisation, search, and filtering. Implemented user feedback and testing results to refine and improve the prototype's usability and functionality [see 5.0 Key Outcomes for Client or GitHub Repository here].

Database Development for Resident Information:

Established a secure and scalable database infrastructure to store Private greenspace and residential information ensuring data integrity and confidentiality. Implemented data validation and access control measures to protect sensitive resident data from unauthorised access or modification [see 5.0 Key Outcomes for Client or GitHub Repository here].

Graphical User Interface (GUI) Development:

Designed and implemented an intuitive and visually appealing GUI for the mapping application's main page, promoting ease of use and navigation for residents. Incorporated interactive elements and visualisations to enhance user engagement and facilitate exploration of green spaces in Totterdown [see 5.0 Key Outcomes for Client or GitHub Repository here].

Integration Document here:

Developed an integration document detailing the process and protocols for integrating the project's external APIs and software components into the mapping application. Documented compatibility requirements, data exchange formats, and authentication mechanisms to ensure seamless integration and interoperability.

Maintainability Document here**:**

Prepared a maintainability document detailing best practices and guidelines for maintaining and updating the mapping application post-deployment. Included information on code documentation, version control practices, and troubleshooting procedures to facilitate efficient maintenance and support.

Future Projects Document here**:**

Compiled a future project document outlining potential enhancements, features, and expansions for the mapping application beyond the initial scope. Identified opportunities for further development and innovation based on user feedback, technological advancements, and evolving community needs.

Social Media Strategy Document here**:**

Developed a comprehensive social media strategy document outlining recommended platforms, content themes, posting schedules, and engagement strategies.Tailored the strategy to TRESA's organisational culture and communication preferences, emphasising authenticity, community engagement, and storytelling.

4.4.3 Methodology:

Urban Mapping Application:

The development of the mapping web application followed an agile methodology, allowing for flexibility and adaptation to changing requirements and priorities.

Iterative development cycles were conducted, with regular feedback sessions and testing to validate design decisions and functionality implementations.

Client Communication:

Continued communication with the client ensured alignment between project objectives and deliverables, minimising the need for extensive client involvement during the development phase.

Timely updates and progress reports were shared with the client to maintain transparency and accountability throughout the project lifecycle.

Team Communication:

Improved internal communication and collaboration efforts were implemented to address previous challenges and enhance productivity.

Regular team meetings and status updates facilitated coordination and alignment on tasks and objectives, mitigating potential duplication of efforts and missed deadlines.

4.4.4 Review and Reflection:

During this Timebox Despite some Implementation challenges planned deliverables, and client expectations were met on time and were successfully delivered. The client was satisfied with the overall work done and signed off the acceptance form handled with the final deliverables. the project was successfully achieved despite the numerous challenges faced, fortunately, the supervisor gave additional advice to help get over everything and still close put the project realisation to an end.

Reflection on the timebox highlighted the importance of effective teamwork, collaboration communication, and consistency in achieving project goals and maximising productivity. Enhanced client communication and stakeholder engagement strategies contributed to the successful refinement of the social media strategy document, demonstrating the team's adaptability and client-centric approach.

5.0 Team Processes

5.1 Team Roles

Joe – Quality assurance manager, Software developer (technical development team)

Joe, Directed the establishment of functional requirements and made substantial contributions to API integration and data display tool creation. Joe additionally managed the quality of team documentation and presentations, as well as the project's compliance with its stated goals and client expectations.

Carl - Software developer, Communication Officer (technical development team)

Carl concentrated on the development of technical specifications, database construction, and integration. Moreover, he also took part in producing documentation, such as the Technical Requirements Document as well as the Admin Dashboard.

Rayan - Project Manager, Communication Officer, (technical development team)

Led project management operations, organised and handled communication, conducted meetings and maintained regular contact with clients and team members. Rayan took control of technical and functional needs and handled the Gantt chart for the project as well.

Abdihakim - Content creation supervisor (Social media strategy team)

Preparing for and participating in client meetings, taking notes, and interpreting comments. He also worked directly on the social media deliverables, developing a Twitter content calendar and devising strategies for optimal social media interaction. He also assisted with changing deliverables based on client needs and comments.

Airen - Content creation coordinator (Social media strategy team):

Airen helped develop and implement social media strategies, including thorough plans and a detailed Facebook content calendar that were suited to the client's objectives. He worked closely with teammates to ensure that deliverables were client-focused and met societal goals.

5.2 Wiki Notes

What went well:

The consistent scheduling and detailed documenting of client and supervisor sessions were significant advantages. These procedures kept the project on schedule and guaranteed that all talks and decisions were well documented, which is essential for management and progress tracking. The use of project management technologies such as JIRA and the Kanban board greatly enhanced task visibility and management, resulting in a more organised workflow. Moreover, assigning roles, such as a Quality Assurance Manager, as well as organising the team into specialised groups, such as the Development Team and the Social Media Strategy Team, helped to focus efforts and maximise individual expertise.

What could be better next time:

The project faced initial difficulties in establishing contact with the client, which could have an impact on the overall project timeframe. Prioritising early client engagement in future projects may help create clear expectations and gather critical requirements from the outset. While the project had feedback tools, there appeared to be a delay in incorporating this feedback into project deliverables. Streamlining this process is likely to improve efficiency and client satisfaction. Furthermore, risk management appears to be more reactive than proactive. Establishing a structured risk management approach from the start of a project can help to address possible risks ahead of time and reduce their impact.

6.0 Key Outcomes for the Client

The TRESA project's primary target for establishing the Totterdown Urban Nature Reserve was to develop an application that would assist in making it easier to collect and map data about local and public green areas, as well as wildlife in the Totterdown area. Moreover, this application was designed to be a valuable tool for promoting and visualising the construction of the Urban Nature Reserve by allowing community interaction and participation in conservation efforts.

Moreover, the application was developed to allow residents and visitors to directly contribute by uploading new locations to the dynamic map and marking sites of newly discovered species, new green spaces, and parts that require preserving efforts.

As part of our final report on the Totterdown Nature Reserve project, it is critical to outline how the application and social media were used not only by the project team but also by the end users. Recent advances in technology can assist in improving conservation outcomes. The application allows consumers, especially residents to explore a map of Totterdown's designated wildlife and green space zones.

6.1 Main Webpage (map.php)

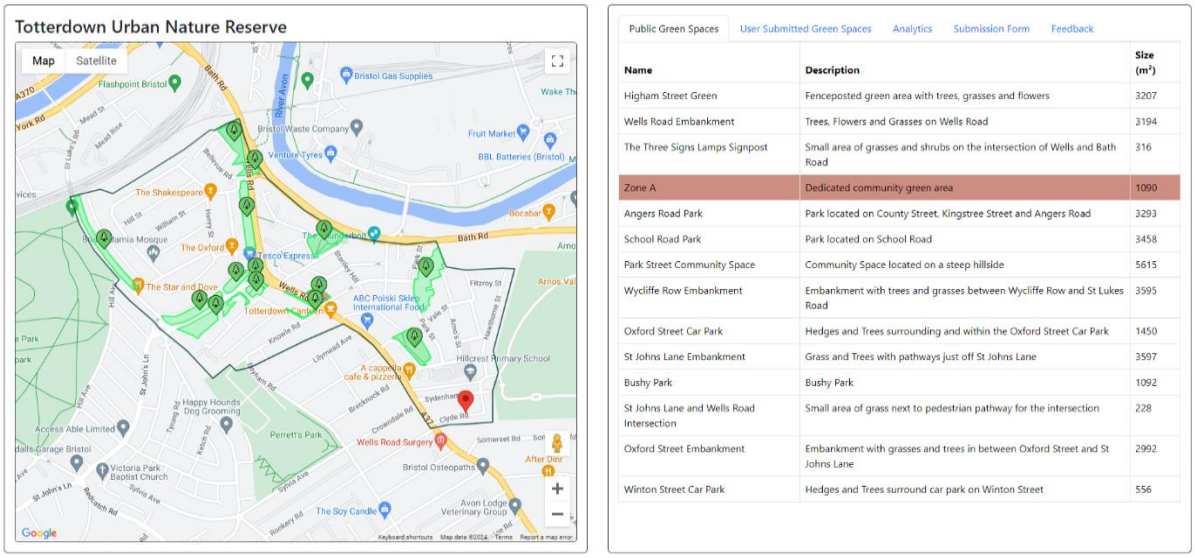


Figure 3: (map.php) The main page on our application highlights public green spaces in the Totterdown area.

When users launch the application, they get presented with a detailed, map of the Totterdown Urban Nature Reserve. This map highlights public and private dedicated green spaces for various wildlife and plant species. Each clickable location on the map gives users detailed information such as the name, size, description, and image of the area. This page also acts like a navigation page so users can browse the application seamlessly. This is to improve accessibility for all residents.

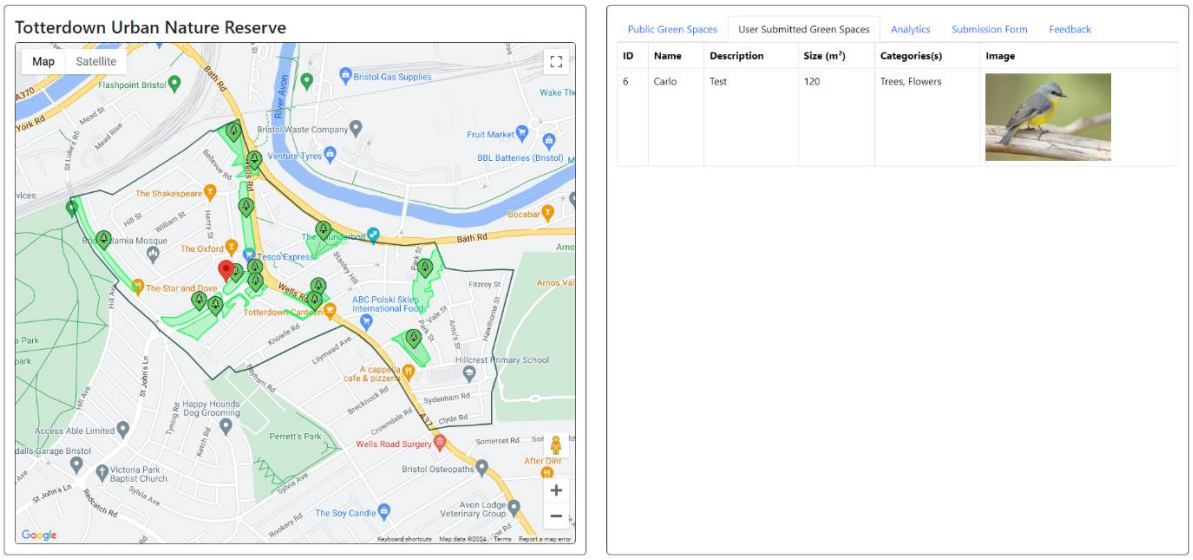


Figure 4: (map.php) The main page also displays private green spaces in the Totterdown area uploaded by residents.

6.2 Resident Form

The application also includes a simple form for local residents to upload their private green spaces to the dynamic map. The form will collect personal data such as name and email as well as data regarding the private green space such as description, dimensions, image and category.

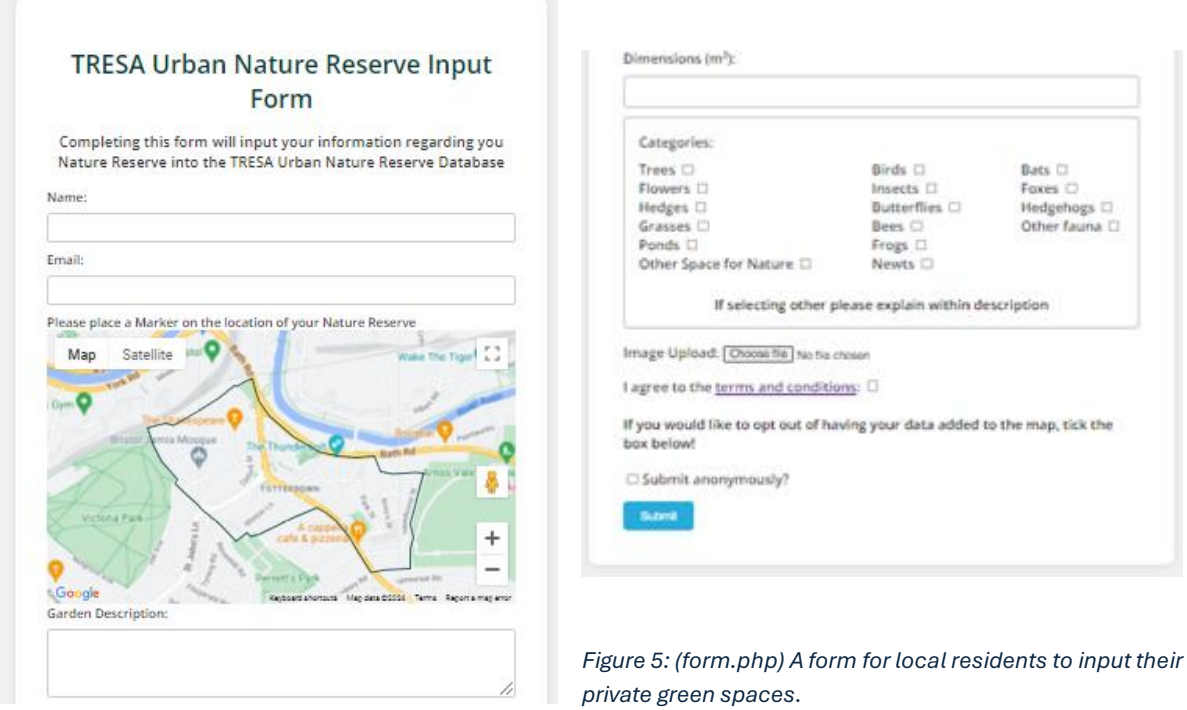


Figure 5: (form.php) A form for local residents to input their private green spaces.

The team came into conflict at this point regarding the way a resident should be able to measure the dimensions of their green spaces. Some argued the point that residents should be able to use a tool to map out the size of the green space whereas others thought it would be much easier to allow residents to manually put in the dimensions. However, due to limiting constraints on the project such as cost, the only viable option was for residents to manually calculate and input the dimensions of their green space.

6.3 Admin Dashboard

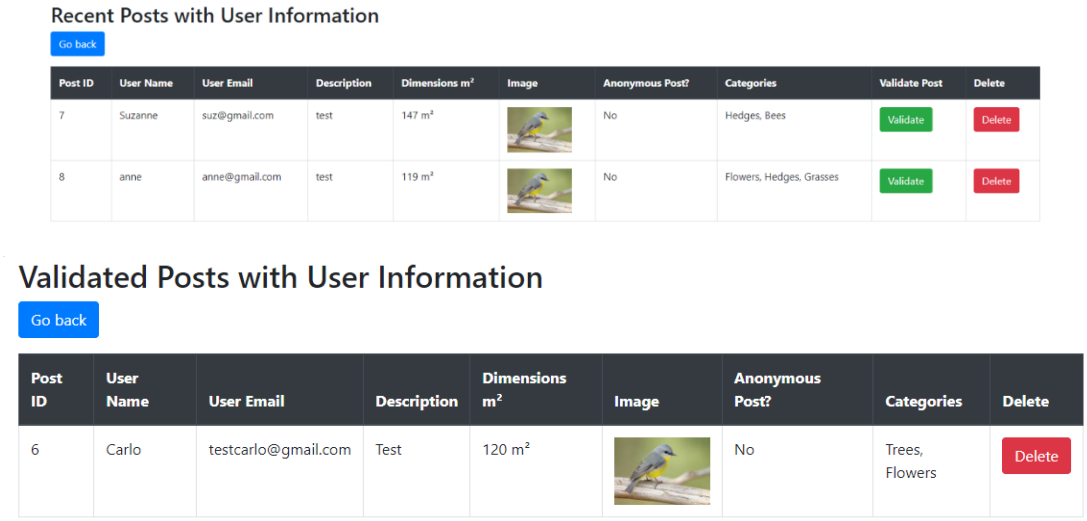


Figure 6: (admin/admin.php) Displays all the information found on the main web page, allowing an admin to read, validate and delete data handed in from local residents.

To ensure the validity and suitability of the information contributed, all local resident submissions will be moderated. TRESA staff members can review new locations and supporting information before they appear on the map for all users. This phase is critical for maintaining the integrity and scientific precision of the data within the application. This was a key point brought up by the client and the admin dashboard enables this. It prevents the map from being spammed with explicit or poor data.

6.4 Analytics Page

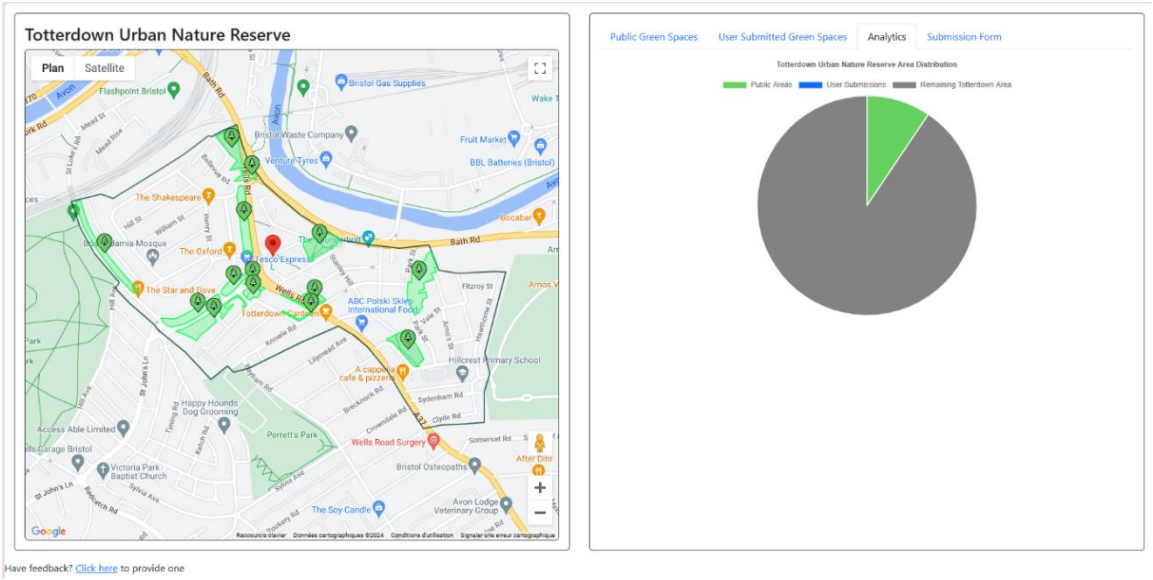


Figure 7: (map.php) Shows how much public green space occupies the Totterdown area.

The application will have an analytics part where users can view visual data visualisations including a pie chart. This pie chart will demonstrate the proportion of the Totterdown region designated as public areas for the Urban Nature Reserve compared to non-designated areas.

Furthermore, visual data presentations, such as pie charts, tend to be more effective in engaging consumers than written information. The feature can keep community members up to date and interested in the reserve's development as well as the green space distribution. Moreover, this feature aids Tresa members by enhancing resource management and decision-making by clearly identifying regions under conservation and those that may require additional attention or development.

The key reason for the analytics page was to display to the TRESA organisation and local stakeholders, how much of the Totterdown area could be classed as a green space by the local council. To be considered an urban nature reserve they must have 30% of the local area regarded as 'dedicated to nature'.

6.5 Feedback Page

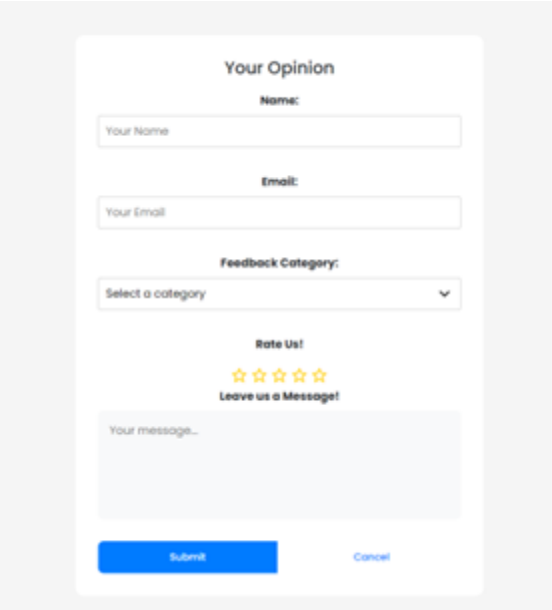


Figure 8: (feedback.php) A form for users to feedback on the application.

The application allows users to offer feedback on their interactions and recommended improvements. Moreover, users can do this by filling out the form on the application, which allows them to communicate with the TRESA team. Besides that, this feature enables a direct connection between users and the TRESA team, encouraging the community-centric approach required for environmental management.

Secondly, by delivering personalised interaction and fast response capabilities, users will feel valued and heard, increasing their engagement with the application and the project. On top of this, collecting feedback through the application offers valuable information which can be utilised for application development as well as reserve management improvements (Wellsandt, et al., 2014). Over time, this input can reveal trends which help highlight areas of enhancement.

6.6 Project Integration, Maintainability and Future Possibilities Document

To finalise the project the client received three documents related to the map which can help them integrate, maintain, and enhance the project. These documents were key in helping the main stakeholder understand the application.

Integration Document – Included text related to the integration of the mapping software into the TRESA website. Although this task was in our PID, the current cost constraints of TRESA, as mentioned by Suzanne **[see 8.1 Client Feedback**], meant that the PHP database could not be included in their current website. This was a poor choice on our end, and we should have looked for a database which could be implemented into their website for free.

Maintainability Document – This document includes information related to maintaining the application with descriptions of each web page and the schema. As per the client's request **[see 8.1 Client Feedback**], this was put in 'plain English' so they could understand how the application worked.

Future Possibilities Document – This document enabled the client to keep using UWE CAKE for consultancy projects in the future. We gave them potential ideas which could further improve this project in years to come.

6.7 Social Media Document

Social media presence is also another deliverable for the TRESA project since the presence on the apps creates magnificent benefits such as increased interaction as well as extensive collaboration in the long term. Therefore, we've decided to design a strategy document which deeply explains the importance of social media presence, especially as a voluntary organisation. Additionally, the social media strategy document presents a solid plan regarding the usage of Facebook and Twitter for TRESA whilst ensuring that all content is consistent with the organisation's objective to promote and conserve the Totterdown Urban Nature Reserve.

Moreover, the strategy document outlines the various social media platforms applicable for TRESA, along with an example content calendar for Facebook. This calendar displays the scheduled posting schedule for a month, giving a clear picture of the content strategy in action.

Moreover, the use of social media to promote the Totterdown Urban Nature Reserve application is crucial to growing its reach and efficiency (Zimba & Gasparyan, 2021). Furthermore, social media platforms provide a creative and collaborative way for TRESA to publish engaging nature reserve-related content, such as wildlife photographs. Moreover, social media enables TRESA to receive immediate input and engage in interactions with people.

This document took a lot of client communication to refine and work for TRESA's current needs. We had to ensure that the document was not 'corporate' and fit the organisation correctly.

7.0 Key Challenges Faced

7.1 External Communication Issues

A major challenge we faced within our project was communication issues, in particular with our client and the two key stakeholders: Suzanne Audrey and Simon Hobeck. Throughout the course of the project at varying points, these two key stakeholders were unavailable or had limited availability due to personal circumstances, and as such there were occasions when we needed feedback or deliverables signed off and we were quite constrained and rushed with our client communications and meetings as a result. Although these situations were not our fault, as in line with the 2nd learning objective we failed to define, plan, and manage these issues as effectively as we could have.

Another key communication issue we had was due to a failure to correctly analyse the key stakeholders in the client organisation, and as a result, we did not put as much emphasis as was needed on communication with Simon Hobeck. Simon handled the technical and technology side of the client organisation, and as such had relevant information and opinions on the client website and client social media aspects of our project that would have been extremely beneficial for us. This led to us agreeing in our PID that we would handle the integration of the mapping solution into the client's website, without us knowing that the client's website would need an upgraded WordPress membership plan that would require the organisation to find a source of funding. Secondly, it created a conflict with the social media aspect of our project, as we were unaware of previous endeavours by the client organisation with social media that had not gone to plan. This meant that the Social Media Strategy document was not received well, and ultimately did not fulfil or benefit the client as much as it could or should have. This failure links to the 1st learning objective, as this lack of communication led to an incomplete analysis of the client organisation's communication practices and social aspects.

7.1.1 Improvements

To improve in a future project, we would put a heavy emphasis early in the project to properly analyse all the key stakeholders within the client organisation. This would make sure that all the necessary opinions and knowledge from these key stakeholders are gathered so that the project can progress with a clear understanding of the client organisation. This would allow for effective planning and management of the consultancy project to create sustainable improvements for the client organisation.

7.2 Internal Communication Issues

Internally, our team suffered notable difficulties in communication, although we ensured that these issues were not apparent to the client. Several factors contributed to our internal communication struggles, including busy schedules, holiday absences, and at times, a lack of motivation.

This lack of effective communication became particularly evident within the development team, where instances arose of team members inadvertently working on different versions of the same component. This duplication of efforts not only resulted in productivity losses but

also introduced unnecessary complications and delays in our project timeline. To address this, we recognised the need for a more structured approach and implemented the Kanban method in our project management using Jira. This method proved beneficial in helping us track various aspects of the mapping application's development and ensuring coordination among team members however, it was not always updated which created confusion. Furthermore, when uploading work to GitHub, some team member made changes without communicating with their team members leading to a loss of work.

Furthermore, a disconnect emerged between the social media strategy team and the development team due to inadequate communication practices. Both teams failed to consistently include each other in communications, leading to a lack of mutual understanding regarding respective roles and progress. This oversight resulted in issues such as double-booking client meetings and suboptimal alignment of efforts.

7.2.1 Improvements

Firstly, to address the instances of team members inadvertently working on the same component, we should have implemented a more structured approach to project management. This includes vigorous adoption of the Kanban method in our project management using Jira or similar tools. By maintaining a centralised task board and updating it consistently, we can ensure clear visibility of project progress and minimise the risk of duplicated efforts.

Furthermore, to mitigate the disconnect between the social media strategy team and the development team, we should prioritise the establishment of clear communication channels and collaboration processes. This involves regular cross-functional meetings or check-ins to facilitate information sharing and alignment of efforts. Additionally, we should have encouraged the use of collaborative tools such as shared calendars or project management software to coordinate schedules and tasks effectively.

7.3 Challenges with Social Media Development

While Airen and Abdi both have a deep background and a variety of experiences in Social Media Marketing, it was an oversight that working with each new and individual client comes with very specific requirements and specifications. Despite their personal how certain social media platform algorithms work to increase traffic, ultimately, there was a lesson learned on compromise and priority of client satisfaction rather than what the team understood to work.

Throughout this project, detailed research was carried out to present social media strategies, including the organisation of content using a content calendar, specifically catered for each type of social media and their demographic, and target demographic. The presented research also included copywriting, media, and content to cater to each target demographic.

Later down the project line, it was another oversight to not ensure the team had talked to every key client that would be involved or had previously been involved with social media at TRESA. While meeting regularly with Suzanne, we had concluded that their primary objective was to get the community more involved with submitting their content to be displayed on their social media accounts as well as their website, in which Simon was later cc’d into the email chain and

had expressed how Facebook as a platform had severely damaged TRESA as an organisation previously which halted not only that process implementation but the rest of the strategy.

In the end, both Simon and Suzanne were involved in the communication and planning of a new strategy with days left before signing off, which included a brand-new content calendar catered specifically to each social media platform and their target demographics while adjusting to their time availability to maintain consistency. The challenges we had initially faced were swiftly overcome, not only by working with Simon efficiently but also by concluding that Facebook as a social media platform would be included in our strategy moving forward.

8.0 Individual Reflective Reports

8.1 Joe Holloway

8.1.1 Introduction

“I initially did Automotive Engineering at UWE for my first year, as I had an interest in cars. However, as I finished my first year, I had a coding module that captivated me more than the rest of the course had combined, and as such it made me transfer to my current course. Now I'm having a lot more fun coding”.

8.1.2 Project Contribution

Throughout this project, I feel that I have maintained high engagement and attendance levels and made large contributions towards the project as a whole and through my involvement in the development of the mapping solution. I endeavoured to attend as many meetings with the team, supervisor, and client as possible throughout the project. Although this was not always possible due to personal circumstances and the timings of certain meetings, I always made sure to communicate any absence with team members and our supervisor and made sure to be aware of what happened in missed meetings.

For the project I was assigned to be the Quality Assurance Manager, to perform checks and reviews of the documentation we produced and sign it off. This was done alongside my individual tasks on the documentation, and I also shared the responsibility of taking and recording meeting minutes with other team members. During the development of our mapping solution, I created and managed our Kanban board on Jira and was the second biggest contributor to GitHub for the project, with 18 commits. Although this is not a foolproof method of analysing my contributions to the project, I believe that my work was key to the delivery of a high-quality project alongside my other two development team members: Rayan and Carlo.

8.1.3 Improvements

There are two key learning points that I have analysed from our project both personally and as a team. Firstly, I would emphasise more direct and succinct communication with our client at the beginning of the project. Due to a lack of understanding of the client’s current website deployment and infrastructure, we agreed in our PID that we would integrate the mapping solution on the client’s website. As the project progressed however it became apparent that this would not be possible as the client’s WordPress website would require a monthly subscription for said integration, hence funding would need to be sourced not allowing us to fulfil this. Retrospectively, I would increase communication with Simon Hobeck at the beginning of the project, as our initial communication was focused on Suzanne Audrey who lacked the technical knowledge that Simon possessed to avoid this mistake from occurring.

Secondly, I would aim to collaborate more closely with the social media side of the team: Abdi and Airen. Through the course of the project, we created a separation between the social media and development teams, and I think this may have been a factor in some of the failings the social media side of our project faced. This problem once again also links back to a failure in identifying Simon Hobeck as a vital stakeholder whom we needed to communicate with more effectively.

8.1.4 Learning Objectives Review

LO1: I believe we did a good job in analysing the aspects of the client organisation and were able to effectively improve the goals of the client organisation by creating a mapping solution that would allow them to map the green spaces in the Totterdown area to help with their goal of designating and creating the Totterdown Urban Nature Reserve. However as previously mentioned we did not effectively analyse and understand all the key stakeholders in the client organisation which led to problems with the social media aspect of our project.

LO2: Through our endeavours as a team and the leadership of our project manager I believe we were able to effectively complete consultancy projects, producing high-quality deliverables for the client.

LO3: Throughout the project, we approached methodology, risk, and uncertainty through a variety of techniques such as our requirement gathering, our Kanban/Lean development approach, the PUGH matrix and regular team meetings.

LO4: After each timebox, we reviewed the team and individual contributions for our project, and I believe we were able to effectively progress with the project through our cycles of creating goals, deliverables and then reflections.

LO5: This may have been our weakest point, as although we critically evaluated our work and development, we had some failings in assessing and communicating with the client as effectively as possible.

8.1.5 Peer Review by Carlo

Joe maintained strong attendance and consistent value in his work throughout the consultancy project. He played a large role in assuring that the quality of the deliverables was of a high standard and providing great communication to do so. As a student of software engineering, Joe could have improved his input around the development of the application, but his strong understanding of the client's needs facilitated seamless improvements.

8.2 Carlo Milosavljevic

8.2.1 Introduction

"I've believed 'Modern Problems require Modern Solutions' since a young age and have always loved taking part in problem-solving activities. I enjoy coding my solutions, my most recent being a Sudoku Solver using Python and Image Processing Tools."

8.2.2 Project Contribution

Over the course of this project, I played a role in maintaining client relations, developing the application, and leading the team. I had good attendance, engagement, and productivity to push the team when someone needed to do so.

My role as communication manager meant I had to communicate with the client about meetings and updates. I helped the team build a strong rapport with the client by initiating meetings in Totterdown where the team could get a feel for the community and organisational culture. I also kept the client updated about the progress of the project throughout each timebox. I was able to discuss the progress we made during the project and feed recommendations from the client back to the team over WhatsApp. My communication initiatives had a good impact on the rapport between the team and the client but, there were misunderstandings around integrating the project into the client's webpage and associated costs **[see 7.2.3 Improvements].**

In terms of the development of the application, I played a key role in understanding the requirements gathered from Rayan and then creating an application which met the needs of the client. I helped develop all aspects of the mapping application such as the database, resident form, admin dashboard and elements of the main user interface. To document the change, I added my parts to the Gannt Chart and Kanban Board. It was also my idea to use a GitHub repository to track changes and updates, hence why I was the biggest contributor towards this aspect of the project. I believe my contributions and team communication were significant to the completion of this project.

Although I was not a dedicated team leader, I had to take initiative during some parts of the project to keep the team motivated and the ball rolling in terms of project work. Using WhatsApp and face-to-face communication, I motivated the team by creating a good example of good work and productivity as I believe the best way to lead, is to lead by example. I felt this approach had a positive impact on my team, as they could see me consistently working hard, even during times when team motivation was low.

8.2.3 Improvements

From my perspective, there are some key improvements I could have made to my contribution which would have excelled my decent performance in this module.

One key learning point is my communication with the team and client. Firstly, although myself and the team had the necessary pathways to communicate, I still found myself completing tasks which other members had already done such as the resident form and database. This led to wasted productivity which could have been used to push the project forward and get more deliverables out within the timebox. Especially during the development phase in timebox 3, we

could have got a lot more development completed so we would not need to rush it in timebox 4. Having clearer communication with my team would have led to a clear understanding of what everyone would be doing. In terms of the client, we failed to communicate with the client in key areas such as cost limitations. By not understanding their cost limitations we ended up with a deliverable which could not be fully integrated into the client's webpage. This then led to the team failing to deliver on the Project Initiation Document which is a catastrophic mistake in the real world.

I also believe that I could have done more to push stronger documentation. For example, we slowly lost the motivation and ability to maintain documentation on client, supervisor and team meetings. Having done so would have enabled us to keep on top of the information we were receiving and utilise it purposefully. If done correctly, we could have consistently made informed decisions regarding development and the social media strategy.

Another area of improvement could have been my teamwork. I felt having one team focused on the social media strategy and one focused on the Urban Mapping Application led to a disconnect within the team. This is because communication broke down and the development team where not aware of the work being produced by the social media strategy team. We could have had one team member to oversee both projects within the team which would have improved the overall teamwork.

8.2.4 Learning Objective Review

LO1: From my perspective, the team successfully analysed and communicated our technical skills with the client to create an innovative project. We were lucky in the sense that the client had a clear goal for this project, and we just needed to execute it by understanding their needs and requirements. From a social aspect, we were mediocre. We made an effort to meet with the client, but we should have scheduled regular meetings to maintain a strong relationship throughout. Overall, we did meet their objective of creating an application to map out the green spaces in Totterdown.

LO2: We did successfully document the progress of this consultancy project however to do so, we needed strong guidance from our supervisor. As this way of working is new to the whole team, it took us a while to understand the importance of documenting the progress of this project. I feel like we only used tools to document the Mapping Application development like a Gannt Chart, Kanban board and a GitHub Repository. We could have done more to document the progress like documenting client and supervisor meetings and creating an activity timesheet. Overall, I would argue that we successfully met the majority of this learning objective as we delivered an application for the client which can improve the organisation while also providing project sustainability and maintainability documents.

LO3: Personally, I think we could have done more to approach methodology, risk and uncertainty. I had hints of methodology use such as my PUGH Matrix but as a team, we could have done more. I think we could have used methodology to make better decisions regarding the development of the application such as a decision matrix for aspects of the resident form.

Furthermore, with this project specifically, we did not need much risk management or uncertainty as the client was clear about the goals of the mapping application, so we knew what we needed to do, it was just working out how.

In hindsight, while we made some strides in addressing methodology, there was room for improvement.

LO4: In the complex, changing environment of our consultancy project, we were able to reflect on our progress at the end of each timebox. We compared our goals with the deliverables and established the quality of our deliverables.

Through regular reflection at the end of each timebox, I gained valuable insights into my productivity and contributions. This process helped me recognise areas where I fell short of my goals, motivating me to strive for improvement in subsequent timeboxes.

LO5: When evaluating how we adopted a critical and self-critical approach, we did so when we were determining the requirements of the mapping application. One of the first issues we found was legal ones surrounding data storing, usage and validity.

However, we did not realise the economic limitation of the client which meant we could not integrate the mapping application as we hoped. This is because they did not want to pay for a database plugin on their WordPress website. This meant we failed to meet our objectives in our Project Initiation Document however this was communicated with the client who was happy to not integrate this year.

Although we were constrained by the project to critically evaluate a range of implications of the project, we took the legal, social and sustainability issues into account with a lack of consideration for economic and strategic issues.

8.2.5 Peer Review by Rayan

Carlo has been a valuable member of our project team, contributing to the successful realisation and delivery of the project. His dedication played a crucial role in the project's finalisation, and his input has been instrumental in overcoming various challenges along the way. However, it's important to address some areas where Carlo could improve. There have been instances where Carlo's demeanour appeared poor, and his professionalism seemed lacking. This behaviour could potentially impact team morale and cohesion, so it's essential for Carlo to always maintain a positive and respectful attitude towards team members. Additionally. Overall, Carlo's contributions to the project have been invaluable, and with some adjustments in attitude and attendance, he has the potential to further enhance his effectiveness as a team member.

8.3 Airen Ng

8.3.1 Introduction

"Software Engineering for Business will be my second degree, my first being in Biomedical Science. I had also previously worked in St. George's Hospital doing data analytics and entry as well as having my own Web Development Company, experience in stakeholder relations and marketing."

8.3.2 Project Contribution

For this project, I initiated separating our team into two groups, mapping and social media. I had carefully considered and discussed our ability as a group to be able to manage more than one key objective. While I took the initiative to be on top of the Social Media side of the project, me and Abdi had excellent communication and overcame a variety of challenges that faced us and was able to constantly adapt to our client's changing strategies and being able to present to them a plan that they were satisfied with.

Not only am I satisfied with my communication and ability to manage stakeholder relations, but I also took the lead in developing and delivering social media strategy proposals and adapting to the client's requirements of increasing community engagement. I mainly focused on Instagram and Facebook deliverables including, content calendar scheduling and content creation for when they could post content. The contribution to the social media strategy was a team effort between me and Abdi, as well as the back-and-forth email communications with TRESA.

As a whole, I believe I had contributed a fair amount from start to finish, being involved with initial client meetings, PID, development and implementation and the handover sign-off. Constant communication with the client is something I am most proud of and believe has aided in our success in the project.

8.3.3 Improvements

One of the main learning points for myself was to ensure that all clients that are related to our social media objective are involved. I take responsibility for our setback in deliverables due to planning our strategy for the social media with Suzanne later on when we wanted to involve Simon in integrating content onto the website, he had some strong disapproval of parts of our strategy.

My lack of understanding of relevant clients had set us back in time which could have been used towards developing the deliverables. However, me and Abdi took very swift action to communicate with Simon, to understand what he disapproved of and strategised a new plan which was signed off by TRESA as a whole.

The other personal improvement I would like to have made was also having more contributions towards the technical side of the mapping with the other half of the team. While I was able to recognise my strengths in marketing, I was nervous to contribute and offer support to the technical side of coding and will personally aim to keep improving my coding ability to further aid and take some workload of my team members.

8.3.4 Learning Objective Review

LO1: Throughout our collaboration with the client, we successfully delved into understanding their information practices, considering the intricate business operations, social dynamics, and technical infrastructure. This deep analysis allowed us to identify key areas where aligning business goals with technological capabilities presented significant opportunities for improvement.

LO2: As a team, we meticulously defined, planned, and executed the consultancy project, ensuring it met project management principles. Our efforts culminated in sustainable improvements in the client's information practices, evidenced by thorough documentation of our process and outcomes.

LO3: Throughout the project, we demonstrated an enhanced capacity for information practice by critically evaluating methodologies and addressing risks and uncertainties with a thoughtful and analytical approach. This allowed us to navigate challenges effectively and achieve favourable outcomes for the client.

LO4: Our engagement with the client provided opportunities for reflective practice, enabling us to continually refine our professional skills and knowledge within the complex socio-technical context. Through effective communication, we shared our insights and outcomes, fostering a culture of learning and growth within the team and with the client.

LO5: In evaluating our consultancy interventions, we adopted a critical and self-critical approach. This comprehensive appraisal ensured that our interventions were aligned with the client's needs despite some of our setbacks while mitigating potential risks and maximising positive impact.

8.3.5 Peer Review by Abdihakim

Airen has been an excellent teammate to work with throughout the project. He excelled at managing client relationships, deftly negotiating problems, and contributing to dispute resolution in a way that not only handled immediate concerns but also prevented foreseeable ones, assuring customer satisfaction. His dedication to quality was shown by his proactive approach to both the development of the social media strategy and client interaction. On top of that the content calendar he created for Facebook was very detailed and informative which therefore led to a satisfied client

8.4 Abdihakim Omar

8.4.1 Introduction

Growing up in both the Netherlands and the United Kingdom, I was immersed in a world filled with digital gadgets and technology. I've always had a passion for investigating companies and figuring out their online presence. My innate curiosity drove me to enrol in the ITMB programme so I could learn more about the wonderful world of technology and all of the different ways it is used in different businesses. I get a great deal of pleasure from comprehending how technology subtly alters the way that we connect and acquire knowledge.

8.4.2 Project Contribution

During this project, our team naturally divided into two separate teams, each using the unique abilities and competencies of its members. This deliberate division proved crucial, allowing individuals to succeed and contribute more effectively by concentrating on their areas of strength. This method not only increased overall productivity but also promoted a stronger sense of engagement and satisfaction among team members by allowing them to focus on assignments that matched their capabilities.

Additionally, working with Airen on this project was an incredible experience. Airen's presence and experience greatly improved our team's chemistry. I helped create regular contact with the client, prepare for meetings, and document essential goals and comments. This preliminary effort was critical in laying the groundwork for the thorough planning and implementation that was to follow.

The content calendar I created was designed specifically for a month, however, it may also be used as a framework for continuing social media maintenance. This realistic approach made the social media strategy tangible and easy to understand for the client. Moreover, TRESA provided an outstanding response after showing the content calendar and example posts.

Lastly, The TRESA project was essential in establishing and implementing a social media strategy that not only improved the project's outreach efforts but also created the groundwork for future interaction with the community.

8.4.3 Improvement

One important lesson from this project was the value of effective client communication. We first had miscommunication concerns because we coordinated solely with Suzanne and did not involve Simon. This oversight caused issues with our project's social media aspects, resulting in delays in deliverables. When we realised there was a problem, my teammate Airen and I acted quickly to clarify the original arrangements with Simon. This experience demonstrated the need to include all relevant participants in discussions to guarantee consistency and avoid oversight. Going forward, we will adopt a more inclusive communication plan of action, incorporating Simon and Suzanne in all relevant talks to improve project coordination and execution.

Furthermore, I hope to boost my confidence in technical skills by becoming more involved in the technical components of our projects. Coordinating closely with all team members will increase my abilities while also deepening my awareness of the project's numerous aspects. In accepting challenges and interacting with many perspectives within the team, I hope to

promote a more holistic and comprehensive approach to issue-solving. This proactive involvement is critical to my professional development and will provide me with the tools necessary to contribute more successfully to future projects.

8.4.4 Learning Objective Review

LO1: Through the TRESA project, especially when developing and establishing a social media strategy, we effectively analysed and modelled the client's information actions within their socio-technical surroundings.

LO2: The TRESA project demonstrates our capacity to handle a consulting project from start to finish. During the initial client meetings, I assisted in defining the project's goals, planning the deliverables over several timeframes, conducting the necessary research, and managing the creation and implementation of the social media strategy.

LO3: We demonstrated this through our versatility in designing content strategies geared to various platforms, and responding to analytics, and feedback. Furthermore, we responded to changing client expectations and incorporated new information into the project strategy, demonstrating a critical approach to managing technical difficulties.

LO4: Our participation in the project demonstrates the use of reflective practice to further our professional development. By identifying the need for increased participation and collaboration in future timeboxes, as well as reflecting on the social media strategy's effectiveness.

LO5: We critically evaluated the social media strategy's connection with TRESA's aims and impact on the community. Also, the ability to alter the strategy in response to client feedback, and our reflective attitude to the project's problems and outcomes, demonstrate a profound knowledge of the broader implications of consultant work.

8.4.5 Peer Review by Airen

Abdi has been a delight to work with, he has been very involved and diligent in maintaining communication with both me and the clients, while also giving valuable input throughout the social media strategy with his expertise in Twitter. He also did a great job working alongside me with conflict resolution with the client and escalating the issues to come to an efficient resolution that satisfied the client. His input overall was displayed in his technical knowledge of social media marketing as well as attendance and communication with the team.

8.5 Rayan Louahche

8.5.1 Introduction

From a young age, my fascination with technology ignited a passion that would shape my journey into the world of coding and software development. At just eight years old, I received my first computer, marking the beginning of an immersive exploration into the digital world. Initially drawn to games like Minecraft, I soon realised the underlying mechanics that powered these virtual worlds, sparking my curiosity to delve deeper into the realm of coding. As I spent countless hours experimenting and tinkering with the game, I gradually uncovered the intricacies of Java programming, laying the foundation for my coding journey.

My self-directed learning extended beyond gameplay as I sought out online resources and observed my uncle's expertise in developing applications. Through YouTube tutorials and observing my uncle's projects, I absorbed knowledge and honed my skills, driven by an insatiable desire to understand the inner workings of software development. With each line of code I wrote and every problem I solved, my passion for coding flourished, propelling me towards a future dedicated to mastering this craft.

Upon graduating from high school in France, I made the bold decision to pursue my coding aspirations in England. Recognising the country's reputation for excellence in informatics education and its thriving tech industry, I saw England as the ideal environment to nurture my passion and expand my knowledge base. Embracing this new chapter in my life, I embarked on a journey filled with challenges, opportunities, and endless possibilities in the dynamic world of coding.

As I reflect on my journey thus far, I am filled with gratitude for the experiences that have shaped me and the opportunities that lie ahead. From my humble beginnings as a curious child with a computer to my pursuit of coding mastery in a new country, my journey embodies a relentless pursuit of knowledge, growth, and innovation. With each step forward, I am fuelled by a profound sense of purpose and excitement for the boundless potential that awaits in the ever-evolving landscape of coding and software development.

8.5.2 Project Contributions

Throughout the project, I have served as the Communication Officer, responsible for facilitating effective communication channels, coordinating meetings, and ensuring alignment between team members and stakeholders. My role has been pivotal in maintaining clear and transparent communication, both within the team and with our client, TRESA. Here is a detailed overview of my contributions during each timebox:

Timebox 2: As the Communication Officer, I took the initiative to establish and organise regular meetings with the client, ensuring consistent communication and fostering a collaborative environment. I facilitated these meetings by booking specific rooms and taking detailed notes of the client's requirements, which were then uploaded into our communication platform, Teams. Additionally, I made significant contributions to the Project Initiation Document (PID) by drafting sections and incorporating feedback from our supervisor. Furthermore, I played a key role in designing a functional and user-friendly Gantt Chart to track project progress and

milestones. Throughout this timebox, I also undertook general wiki maintenance to ensure documentation accuracy and accessibility.

Timebox 3: In Timebox 3, I continued to fulfil my role as the Communication Officer while also taking on leadership responsibilities in technical and functional aspects of the project. I led the discussions and documentation of technical requirements, organising individual meetings with stakeholders and gathering crucial insights. Similarly, I collaborated with team members to prepare functional requirements, ensuring a comprehensive understanding of project needs. Furthermore, I facilitated communication between team members by compiling stakeholder responses and questions into a centralised document, keeping everyone informed and aligned. Additionally, I contributed to general wiki maintenance and Gantt Chart management to support project tracking and coordination.

Timebox 4: During Timebox 4, although I took a supportive role as Carlo led the team, I continued to make valuable contributions to the project. Despite facing personal challenges, I demonstrated resilience and dedication by creating the required database using Mongo DB and managing tasks through the Gantt Chart. Additionally, I invested time in creating a comprehensive presentation for a scheduled meeting, showcasing our project progress and achievements. Despite encountering obstacles, I remained committed to advancing the project and fulfilling my responsibilities to the best of my ability.

Timebox 5: This timebox presented significant personal challenges for me, yet I persevered and continued to contribute substantially to the project. Despite experiencing the loss of a close family member, I channelled my efforts into work, demonstrating resilience and determination. I took on various tasks, including database creation, algorithm development, and interface enhancements, to further project objectives. Additionally, I devoted considerable time to styling and refining project elements, ensuring a polished and professional appearance. Furthermore, I authored critical project documents, such as the Maintainability Document and Integration Document, to support TRESA's long-term sustainability and operational efficiency.

Overall, my contributions as the Communication Office, Project Manager and technical collaborator have been instrumental in driving project progress and facilitating effective collaboration. Despite facing personal challenges, I remained dedicated and focused on delivering value to our client and team. Moving forward, I am committed to continuing my contributions and supporting the project's success.

8.5.3 Improvements

Reflecting on my contributions and the overall project journey, I recognise several areas for improvement that could enhance our project outcomes and team dynamics. Here are some key areas where I believe we could focus on improvement:

Enhanced Communication Strategies

While I strived to maintain clear communication channels throughout the project, there were instances where communication breakdowns occurred, particularly during Timebox 4. Moving forward, I aim to implement more robust communication strategies, such as regular check-ins and status updates, to ensure all team members are aligned and informed.

Proactive Task Management

During Timebox 4, I faced challenges in effectively managing tasks and maintaining productivity, partly due to personal circumstances. In the future, I intend to adopt a more proactive approach to task management, setting clear priorities and deadlines to optimise team efficiency and project progress.

Strengthened Resilience and Adaptability

The personal challenges I encountered during Timebox 5 underscored the importance of resilience and adaptability in navigating unforeseen obstacles. In the future, I aim to cultivate these qualities further, developing strategies to cope with adversity and maintaining focus on project goals during challenging times.

Continuous Learning and Skill Development

Throughout the project, I have identified areas where I can enhance my skills and knowledge, particularly in technical aspects such as database management and algorithm development. Moving forward, I plan to invest time and effort into continuous learning and skill development, leveraging resources and seeking opportunities for growth within the project context.

Team Collaboration and Support

Building a supportive and collaborative team environment is essential for project success. While I have made efforts to support my team members, I believe there is room for improvement in fostering a culture of mutual support and encouragement. In the future, I aim to actively engage with team members, offer assistance when needed, and celebrate achievements collectively.

8.5.4 Learning Objective Review

Client Communication and Engagement

Throughout the project, I have honed my skills in client communication and engagement, particularly during Timebox 2 and Timebox 3. By actively participating in client meetings, gathering requirements, and seeking feedback, I have developed a deeper understanding of client needs and preferences.

Technical Proficiency and Problem Solving

As a Communication Officer and Project Manager, I have had opportunities to contribute to technical discussions and problem-solving efforts, especially during Timebox 3 and Timebox 5. From exploring mapping options to designing database structures and algorithms, I have expanded my technical proficiency and applied problem-solving skills to address project challenges. To continue building on this foundation, I intend to pursue further learning in relevant technical areas and actively participate in collaborative problem-solving initiatives within the team.

Project Management and Task Coordination

Throughout the project, I have taken on various project management responsibilities, such as organising meetings, managing tasks, and maintaining project documentation. While I have made progress in these areas, there is still room for improvement, particularly in task coordination and time management. Moving forward, I aim to refine my project management

skills, streamline task coordination processes, and optimise team productivity through effective planning and organisation.

Adaptability and Resilience

The project journey has presented numerous challenges and obstacles, testing my adaptability and resilience. From personal setbacks to team communication issues, I have learned to navigate adversity and maintain focus on project goals. Looking ahead, I recognise the importance of cultivating adaptability and resilience as essential traits for success in dynamic project environments. By embracing change, remaining flexible, and learning from setbacks, I am committed to enhancing my ability to thrive in challenging situations.

Collaboration and Team Dynamics

Collaboration and teamwork have been integral to our project's success, and I have valued the opportunity to work alongside talented team members. Through effective collaboration, we have leveraged our collective strengths, and shared knowledge, and supported each other to achieve our goals. As we continue our project journey, I am committed to fostering a positive team environment, promoting open communication, and celebrating our collective achievements. By nurturing strong team dynamics, I believe we can maximise our project's impact and deliver exceptional results for our client, TRESA.

8.4.5 Peer Review

Rayan fulfilled his leadership responsibilities well throughout as Project Manager and was a key contributor in the formative stages of the project with his research and documentation. Rayan also contributed as a Communication Officer to help with communication with the client, however as previously detailed communication issues with the clients were a problem with our project. Although this can be attributed more to a team failure, the onus is on a Communication Officer to take responsibility for it as well. During the development of the mapping application, Rayan was often hard to collaborate effectively with, however still delivered and contributed to the successful completion of this deliverable. To conclude Rayan’s active involvement and high levels of contributions in a Managerial capacity were vital to the success of the project and he was overall a key contributor to the project as a whole.

9.0 Conclusion

In conclusion, the realisation of this project for TRESA Nature Reserve has been a journey marked by dedication, collaboration, and innovation. From the initial stages of project planning to the final delivery of key deliverables, our team has demonstrated unwavering commitment to meeting and exceeding the expectations set forth by our client. Throughout the project lifecycle, we navigated various challenges and obstacles with resilience and adaptability. Whether it was overcoming communication barriers, managing conflicting stakeholder expectations, or balancing competing project priorities, our team remained steadfast in our pursuit of excellence. Key to our success was the effective utilisation of project management tools and methodologies, including Jira, Gantt charts, and agile development principles. These tools empowered us to streamline our workflows, track progress, and ensure timely delivery of project milestones. Additionally, our emphasis on clear and transparent communication fostered a collaborative working environment where ideas could flourish, and challenges could be addressed proactively. Regular meetings, status updates, and feedback sessions enabled us to stay aligned with our client's vision and respond to evolving project requirements effectively. Moreover, our contributions, guided by a shared commitment to excellence and innovation, have been instrumental in shaping the project's success. From technical development and database management to user interface design and social media strategy, each team member brought their unique skills and expertise to the table, enriching the project with diverse perspectives and insights. As we reflect on our accomplishments, we recognise that our journey does not end here. The completion of this project marks not only a milestone in our professional development but also a stepping stone towards future opportunities and endeavours. We take pride in our achievements and remain committed to continued growth, learning, and collaboration in our pursuit of excellence. In closing, we extend our sincere gratitude to TRESA Nature Reserve for entrusting us with this project and for their invaluable support and feedback throughout the process. We are proud of what we have achieved together and look forward to the continued partnership in shaping a sustainable and vibrant future for Totterdown.

Lastly, the Social Media Strategy Document created for TRESA is a thorough and vital roadmap that supports the organisation's efforts to effectively engage with the community via social media platforms. By systematically outlining strategies tailored to the unique dynamics of Facebook and Twitter, the document not only maximises these platforms' outreach potential but also ensures that all content is strategically aligned with TRESA's overall goals of raising environmental awareness and community participation. The failure to include Simon, a key client stakeholder, in the early stages of TRESA's Social Media Strategy formulation resulted in various issues, emphasising the importance of complete stakeholder engagement in project planning and execution.

This oversight resulted in a plan that was possibly mismatched with Simon's expectations and broader organisational goals, necessitating changes and rework that could have been avoided. To overcome and prevent such issues in the future, a few strategic changes are required. First, it is critical to identify all key stakeholders early in the project, ensuring that everyone who

impacts or is affected by the project's outcomes is involved from the start. Establishing a consistent communication plan is also critical; regular updates, meetings, and feedback sessions assist preserve consistency and allow for the absorption of multiple perspectives throughout the project's life cycle.

Finally, establishing clear roles and duties for all stakeholders early on helps to manage expectations and ensures that important contributions are made on time and effectively. By using these tactics, TRESA may improve its entire project management strategy, guaranteeing that social media strategies are more effectively connected with organisational goals, resulting in increased success and stakeholder satisfaction.

10.0 Appendices

10.1: Client Feedback

UWE 'CAKE' Consultancy Project

Client Feedback Form

Client organisation	TRESAcic
Contact name	Suzanne Audrey
Date	28 March 2024

Did the team deliver all the agreed deliverables to you properly by the signoff date?
The team delivered most of the deliverables that had been initially agreed. These were modified during the project following discussion over what was achievable in the timescale and the availability of relevant TRESA directors. The adjusted deliverables were delivered by the sign-off date.

Were the deliverables of high quality and did they meet the established requirements effectively and efficiently?
It became clear as the project progressed that we would not be able to ensure that the requested map was on the TRESA website, and usable, by the end of the project. However, the team gave an online demonstration of how the map would work and provided information and instructions for it be uploaded when TRESA has the capacity to do so. (Our voluntary web editor is extremely busy at the moment with his full time job, and was unable to engage as much as we had hoped during the period allocated to this project.) I was pleased with the map and sincerely hope we make good use of it.

How effectively did the team address sustainability considerations and take into account your long-term interests beyond their own engagement with you?
We had to push a little on this. As a voluntary group, working in our local community, we are not in a position to manage anything too complex. Some of the initial proposals seemed complex and more suited to a high-flying business.

Terms such as business, industry and brand, were included in draft proposals sent to us in relation to the social media aspect of the project. Although we recognise that we do have a 'brand', some of the text seemed to be 'cut and paste' rather than adapted to our specific community interest company.

Did the team adopt an approach to the project that was well suited to your situation, establish and maintain a critical but professional rapport with your organisation, and conduct themselves well?

See the previous comment. The initial 'agreement' sent to us seemed rather complicated for what we had initially requested. However, the team were friendly, made the effort to come to Totterdown for an initial visit, and did their best to try to meet with relevant directors of TRESA.

Did they plan, monitor and control the project and its key resources (people) effectively and efficiently?

It was unfortunate that two key directors were less available than we had hoped (one due to travelling, one due to pressure in their full-time employment). Through no fault of the students, they were never able to meet all three relevant directors at the same time. This is an aspect of working with volunteers that can be challenging. Nevertheless, I feel that the team were able to pull things together and deliver what was possible given the constraints they encountered.

Was their documentation well organised, appropriate, complete, well scoped and of high quality?

The initial agreement seemed complex. One of our directors said she couldn't really understand it! It is important to consider the use of 'plain English' when working with community groups. Having said that, I realise that English may not have been the first language of most of the student team - and their English is considerably better than my attempts to write in any language other than English. I am not sure how much advice or guidance the students are given about the use of plain English?

The initial draft relating to social media was, if I am honest, not of high quality. This may have been the result of cutting and pasting from different sources and then not reformatting. This can make documents seem unprofessional, even if the content is fine. I am not sure how much guidance is given to students about this.

The final documents were of better quality.

Did any particular team member(s) deliver added value or exceed expectations significantly through their individual contributions?
I am not sure it would be fair to single anyone out.

Do any other salient points come to mind?
Just to say thank you to the team. Dealing with volunteers, who tend not to be easily available during the working/college day, and do not have an office base, is not easy.

Are you happy for your feedback to be disclosed to students or do you prefer it to be kept confidential to UWE? *We ask you to be candid, for the sake of full and proper assessment, and we'd like to share your report with the students, if possible, but if candour means you'd prefer your remarks not to be passed on, we'll keep them confidential.*
Yes, I am happy for this to be shared. Please pass on my thanks to the team and wish them well in their studies and future work.

10.2 Gantt Chart

In conjunction with Jira, we implemented a Gantt chart to meticulously track the progression of our project's overarching goals and the distribution of tasks among team members. The Gantt chart served as a dynamic visual representation of our project timeline, allowing us to monitor key milestones, deadlines, and task dependencies in real-time.

Each member's responsibilities and deadlines were clearly outlined within the Gantt chart, enabling us to maintain a structured workflow and ensure that all team members were aware of their roles and timelines. By visualising the project's trajectory, we could identify potential bottlenecks or scheduling conflicts early on and proactively address them to maintain the project momentum. Team members could easily reference the chart to track their progress, identify upcoming deadlines, and prioritise tasks accordingly. This transparency and clarity promoted a sense of ownership and responsibility, motivating team members to actively contribute to the project's success. Overall, the integration of the Gantt chart alongside Jira proved indispensable in orchestrating our project's execution effectively. It provided us with a centralised platform to coordinate tasks, monitor progress, and ensure alignment with project objectives, ultimately contributing to the timely completion of deliverables and the overall success of the project.

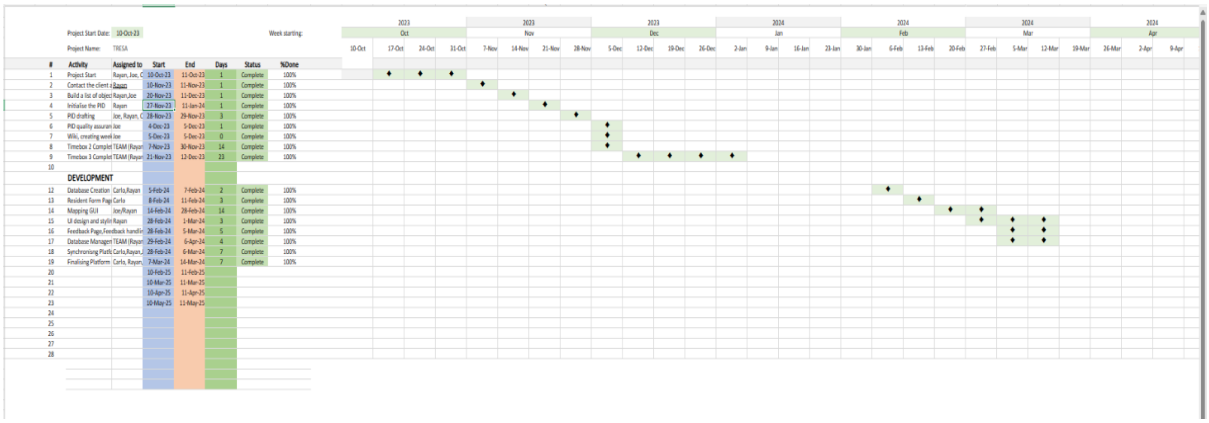


Figure 9, Gantt Chart

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