

CSC1118 Mid-Term Delivery



Michael Beirne-Ponomarev | 21493754 | michael.beirneponomarev24@mail.dcu.ie

Robert Maloney | 21357483 | robert.maloney26@mail.dcu.ie

Sahraoui Dhelim | Project Advisor | sahraoui.dhelim@dcu.ie

Table of Contents

1. Business Model Summary	2
1.1. Concept of PinPoint	2
1.2. Value Propositions of PinPoint	2
1.3. Target Market / Customer Segments of PinPoint	3
1.4. Potential Revenue Streams	4
1.5. Primary Research	4
2. Functional Specifications + Technical Description	5
2.1. Product / System Functions	5
2.1.1. Registration	5
2.1.2. Login/Out - Authentication	5
2.1.3. Map Navigation	5
2.1.4. Pin Drop	5
2.1.5. Event Create/Delete	5
2.1.6. Group Chat	6
2.1.7. Profile View	6

2.1.8. User Timeline	6
2.2. Function Requirements	6
2.2.1. Register	6
2.2.2. Login	7
2.2.3. Map Navigation	7
2.2.4. Event Creation	8
2.2.5. Group Chat	8
2.2.6. Profile View.	8
2.3. Architecture	9
2.3.1. System Architecture	9
2.3.2. High-Level System Design	10
2.4. Challenges Faced During Development / Constraints	10
2.4.1. Development Constraints	10
2.4.2. Deadline/Time Constraints	10
2.4.3. Primary Research Changes	11
2.5. PinPoint Prototype	11
2.5.1. User	11
2.5.2. Map	11
2.5.3. Page Layout	11
2.5.4. Database Schemas	11
2.5.5. Overall Functionality	11
3. Project Timeline	12
3.1. Gantt Chart	12
3.2. Timeline Explained	12
3.2.1. Idea Development	12
3.2.2. Finding Suitable Advisor	12
3.2.3. Creating Repo	12
3.2.4. Baseline for Project + Mockup	13
3.2.5. Ethics Application	13
3.2.6. Project Proposal	13
3.2.7. Initial Project Draft	13
3.2.8. Midterm Delivery	13
3.2.9. Logic Creation	13
3.2.10. Design Features	13
3.2.11. User Testing	14
3.2.12. Bugfixes	14
3.2.13. Final Delivery	14
3.2.14. Project Presentation Preparation	14
References	15

1. Business Model Summary

1.1. Concept of PinPoint

PinPoint will be a social-media application focused around a central map. Users can “pin” a location on this map and then invite other users to hang out. It will initially launch as a web application but aspires to be converted into a mobile application used by iOS and Android users.

They can set up a proposed time and description or links of what will be happening in the area, temporary group chats for these events can be created which will be deleted after the pin is removed. You can set public events that mutual friends can see or keep everything private. You will be able to “favourite” locations you frequently visit and groups of friends you normally hang out with.

While attending these events, you can upload photos to the dedicated pin that can be either shared publicly or kept private. Users who were at the event will receive these photos, which can be posted on a timeline. This timeline could also include advertisements and events listed by marketing managers to inform individuals about future events that may be held in their area.

We decided to go for a project like this because there were always discrepancies when we were organising events with our friends. Whether it was people talking on different platforms or they were unsure of location or time, it can cause a bit of a headache. We are making the app we would have found useful not only throughout our college tenure but in our future for making plans.

1.2. Value Propositions of PinPoint

PinPoint, offers a comprehensive solution for event planning. It combines everything we do when we want to make plans all in one place. It will act as a ‘One-Stop-Spot’ for both individuals and businesses.

As mentioned we are creating an application to make plans and share photos seamlessly. For events, group chats will be created so everybody is involved and can access the event's details or the photos shared, all in one place, making PinPoint an all-encompassing platform.

It allows users to manage their events and easily navigate through the app's intuitive interface. It will coordinate the group's events efficiently, as people can see who can or cannot attend. This feature will ensure that users will not fear missing out on events by suggesting different times or dates that would suit everyone.

With maps integration, users can discover nearby venues and events listed by marketing managers or local business owners. It will show a few images of the establishments even if they have certain events going on. PinPoint simplifies weekend planning by providing recommendations for activities and venues.

In terms of businesses, PinPoint will also simplify event management, they will have the opportunity to promote their events that potential customers will see, marketing managers currently struggle with

being able to promote these events efficiently but with PinPoint it is as simple as creating a public event adding the details of the event and waiting for people in the area to attend. It will be a direct benefit of creating brand awareness and bringing new customers to these establishments.

Businesses respond well to the idea of using certain “tags” that can attract a certain audience to these events such that if a company is attracting a different audience then they would prefer. PinPoint will recommend these events to people who attend other events of a similar nature. This way their business will gain better publicity and they will find the correct audience for these events.

1.3. Target Market / Customer Segments of PinPoint

Concerning our target market for PinPoint, we consulted the market research that we had carried out with our CSC1115 module.

The target market for our platform will be people who attend social events and are looking to plan their events more efficiently and smoothly. Users will be able to use one application to find, create, and manage events among friends. With the use of our location-based services from Google Maps and various social tools that will allow users to connect via group chats.

In today's society, social networking is vital across all generations when it comes to connecting and providing them the opportunity to be able to create memories for themselves. This in turn would allow us to have a large market to tap into. According to a study done by Irish Life, approximately 90% of Irish adults (anyone over the age of 18) own a smartphone device. [1.] This in turn would allow us to have a large market to tap into.

Since PinPoint is primarily based on creating various events. Another market we can get into is marketing management, these are the people who try to push their events to gain more sales/attraction to the venue that is being represented. As a result of this, we will be focusing on the demographic of leaders of the family along with marketing managers.

Leaders of the family typically include individuals who take on the responsibility of organising family outings and events. This could be parents, grandparents, or other relatives such as aunts, uncles, or older siblings who are motivated to bring everyone together. These individuals always seek ways to spend quality time with their families, whether through entertainment or educational outings. They value a convenient and reliable source for discovering family-oriented events. Additionally, families often look for variety to create new memories and experiences, making them an ideal audience for a platform offering diverse event options.

Marketing Managers are responsible for planning, organising, and optimising event promotion. They are often pressured to create traction and gain publicity for their events. Despite investing considerable time and effort into planning memorable events, underattendance remains a common challenge. They need a platform to effectively reach their audience and measure event success through customer feedback. Furthermore, we have broadened the definition of “marketing managers” to include individuals organising events for university clubs and societies, recognising their similar needs and challenges.

1.4. Potential Revenue Streams

With PinPoint we would introduce the ‘Business Owner Showcase’. It remains an advertising model that marketing managers pay for to allow businesses to promote their events effectively and have them stand out on the map so that they will draw a user's eye to their specific event.

PinPoint would have an additional advertising model, incorporating targeted ads aligned with users’ preferences and behaviours. We can leverage user analytics to provide advertisers with valuable insights into the demographics and interests of our audience, enabling more precise and impactful ad placements. When we brought this up in interviews and surveys, no one had any large gripes with the idea, so long as they could opt out of certain data collection practices, which we found understandable.

Our idea for an optional donation feature wouldn’t cause anyone any distress either as it would be optional and only allow users to contribute financially if they find value in our app. This non-mandatory donation option empowers users who wish to support the platform while enjoying its features, providing a flexible revenue stream aligned with user satisfaction.

1.5. Primary Research

Through primary research, we aim to gather feedback and opinions from our potential target market within our customer segments. We would like to be able to receive first-hand reviews on what we are creating and see if there will be an interest in an application like ours for the general public.

Finding out what kind of target audience is has since changed while doing research for the CSC1115 module which required us to go out and survey different types of potential customers.

As we gathered more responses, we broadened our outreach to include a variety of family structures, which revealed the app’s wider appeal beyond our original target audience. This shift allowed us to explore how families, especially those with young children and older members, engaged with the app. We have tailored our survey questions to assess how families interact with social events, their current planning methods, and their openness to adopting a digital solution. Some key notes to mention from this would be the following:

- **Families with Young Children:** Valued centralised communication through group chats and location-based event discovery, particularly for spontaneous outings.
- **Older Families:** Highlighted the practicality of an all-in-one platform for managing formal events, like family reunions.

2. Functional Specifications + Technical Description

2.1. Product / System Functions

The following is a general summary of the functionality and the descriptions that accompany it for our application PinPoint.

2.1.1. Registration

When creating an account on our application, you will be required to enter the following fields.

- Name
- Username
- Phone Number
- E-mail address
- Date of Birth
- Password + Repeat Password

2.1.2. Login/Out - Authentication

Allow users to log in or out of the application when they please, this will be a button visible to the user. It will be required for the user to log in to use the application.

To log in are required to enter their username and password, which must be correct if they want to be able to connect successfully.

2.1.3. Map Navigation

With our map, it will use the user's location to identify what is happening nearby. Users will be able to navigate through the map by scrolling to zoom in and out or drag the map to move it to a different location.

2.1.4. Pin Drop

When a user clicks on any location on the map, they can create an event where they can enter the details of their event.

2.1.5. Event Create/Delete

When the user creates an event they must fill in the following criteria

- Name of Event
- Time + Date
- Attendees

2.1.6. Group Chat

Once an event is created, a group chat will automatically be created alongside the event and all attendees will be able to access the chat. Here they can message each other or upload images that are taken from the event.

2.1.7. Profile View

Viewing the user's profile will showcase their favourite locations and who the person is giving their public details such as name and username.

2.1.8. User Timeline

Viewing the user's timeline is where you can see what that particular user has been up to if they choose to share the various events that they have recently attended.

2.2. Function Requirements

2.2.1. Register

Description:

This function is the first thing that the user takes to become a part of our application. On the main page, the user will be able to click on the 'Register' button which will lead them to the registration form. The user will then be prompted to enter their details such as name, username, phone number, email address and password twice. If this is curated correctly they will be able to register for PinPoint.

Criticality:

Without this function, the application would be deemed pointless. Users must be registered to the application so that they can be identified. The main purpose of this project is to connect individuals so that they can create plans and attend events together. It may also be helpful to find various statistics on our users, such as their age range, to help improve our application in the future.

Technical Issues:

This form will be created as HTML and the user inputs for the form will be handled by PHP functions from the Django library to access our SQLite database to store the user's information in the 'User' table.

Dependencies:

This function will not be dependent on other requirements.

2.2.2. Login

Description:

This function allows the registered users to access their accounts. Users will enter their username and password on the login form, which will authenticate their credentials against the database. We will add a “Forgot Password” option on the login page, to aid in account recovery. Successful logins will grant users access to the application, while failed attempts will return an error message.

Criticality:

Login is critical for user authentication and maintaining security. Without this function, users cannot interact with the app’s core features, making it non-functional.

Technical Issues:

The login form will be designed using HTML and styled to fit the app’s overall theme. Backend authentication will use Django’s built-in authentication framework to validate user credentials securely.

Dependencies:

This function depends on successful user registration.

2.2.3. Map Navigation

Description:

This function enables users to interact with PinPoint’s map interface. Users can explore the map to locate pins, view events, and navigate to desired locations.

Criticality:

Map navigation is central to the app’s purpose of connecting users to events and locations. Without it, users cannot explore or interact with pins or events effectively.

Technical Issues:

Map functionality will be implemented using the Google Maps or OpenStreetMap API. Ensuring smooth performance and responsiveness will be a priority.

Dependencies:

Requires access to the map API and stable internet connectivity.

2.2.4. Event Creation

Description:

This function allows users to add pins to the map. Users can add details such as event name, description, date, and time, and invitees.

Criticality:

Event creation is essential for the app's social aspect, as it facilitates user planning and coordination.

Technical Issues:

The event form will integrate with the map API to link events to pins. Data validation is necessary to ensure consistent event information.

Dependencies:

Requires user authentication.

2.2.5. Group Chat

Description:

This function allows users attending the same event to communicate via a chat interface. Users can exchange messages, share updates, and coordinate plans.

Criticality:

Group chat enhances user engagement and simplifies communication within events, making it a highly valuable feature.

Technical Issues:

Real-time messaging will be implemented using frameworks such as Django Channels, or Firebase.

Dependencies:

Depends on event creation and user authentication.

2.2.6. Profile View.

Description:

This function provides users with a personal profile page displaying their profile details such as name and username along with pins, events, and activity history. Users can update their information or privacy settings if they so wish.

Criticality:

The profile view personalises the app experience and gives users a sense of ownership and control over their data.

Technical Issues:

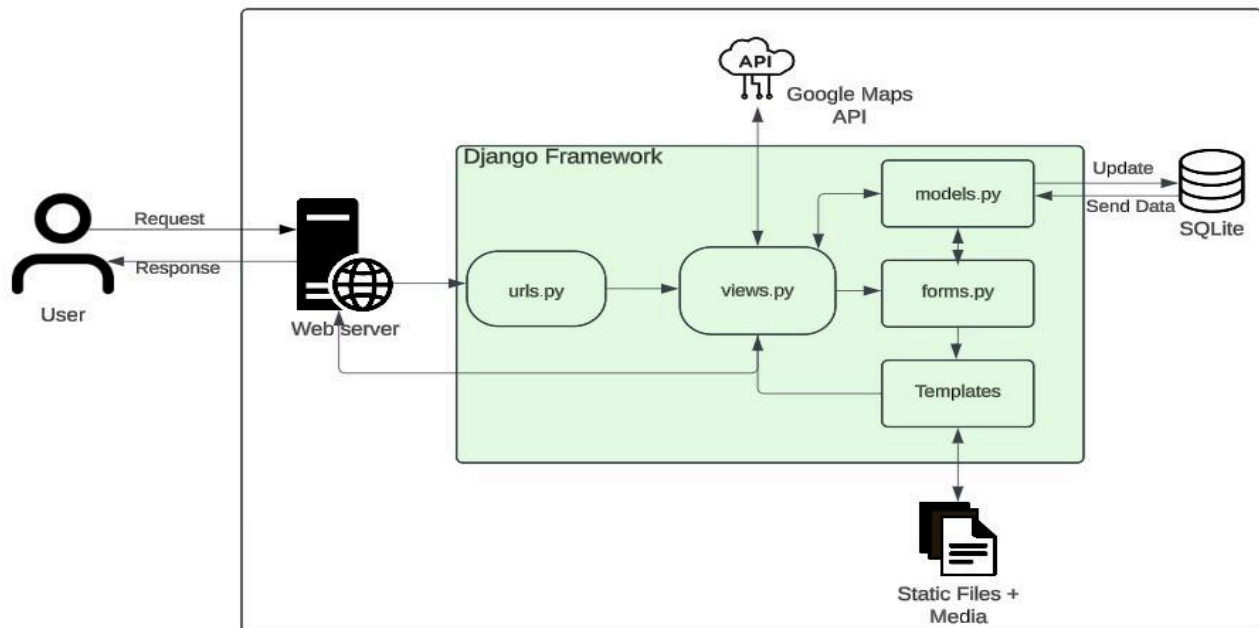
Profile data will be fetched and displayed dynamically using Django templates. Updates will require form validation and secure database transactions.

Dependencies:

Requires user registration.

2.3. Architecture

2.3.1. System Architecture

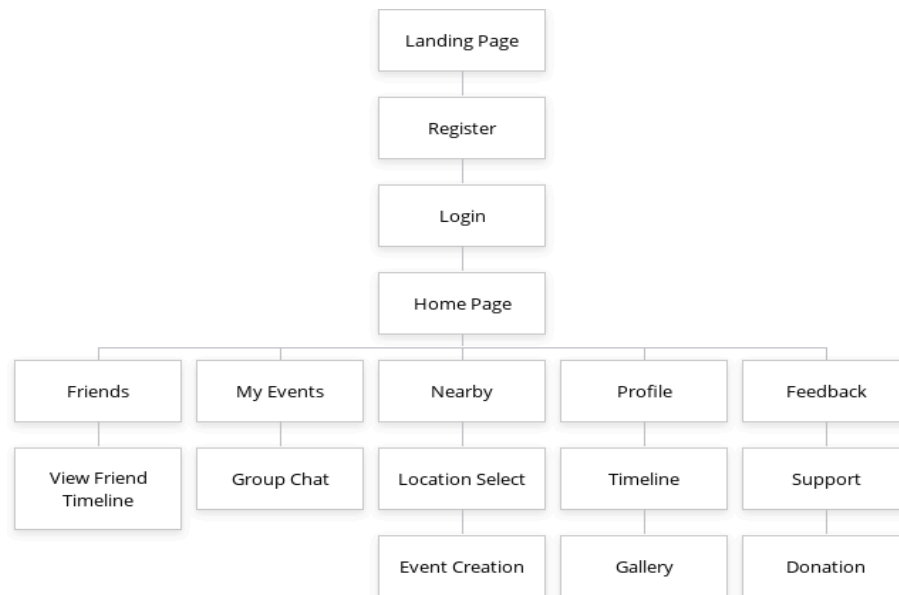


Our system architecture consists of the standard Django architecture, whereby the User, Web Server, and Database are key to application creation. We are looking to use Google Maps API in our final application and Django's built-in SQLite to hold the user's information. [2.]

Django is the main framework here, and it uses the 'Model View Template' (MVT) on its backend. [3.] We have implemented forms for this framework, where the view and data models can interact to present a smooth operating experience. The users primarily use the forms to store their data and perform functions such as registering.

The frontend used will be within the templates and will mainly consist of HTML, CSS, and JavaScript, with hints of Flutter throughout the application. Any static files or images will also be stored so that if one of the templates calls for them, they will be readily available for the user.

2.3.2. High-Level System Design



2.4. Challenges Faced During Development / Constraints

There are a few issues that we faced during the development of PinPoint that stand out.

2.4.1. Development Constraints

Firstly when we were designing how the product should look we were conflicted as many of our thought processes had conflicted with one another. We used this as the first stepping stone to gain a variety of ideas and combine these thoughts into something more fleshed out so that we were able to be on the same page when it came to designing and creating the application.

When beginning to delve into the coding aspect of the project. We initially had a great ordeal trying to connect the map to the web application although it was challenging for us, after much trial and error we successfully connected it through a JavaScript API for it to become functioning and ready to work.

There were also complications when it came to the creation of the logic for our application. Initially, we had planned for the prototype to have a database for all the various locations that a user could visit and make plans for. We were unfortunately met with strong difficulties trying to find a reliable source that was open source. This led us to brainstorm other ideas to make this application functional. We had decided that primarily for the prototyping session we would enter a few locations manually using the map API of choice such that it can show what the application is capable of achieving.

2.4.2. Deadline/Time Constraints

We found that meeting certain deadlines to be deemed a challenge at times, particularly the ethics approval form for this project. We are aware of our upcoming deadlines and attempting to create a

functional prototype before the next deadline is within our top priorities. We will need to source a way of balancing the workload with the other modules we are taking which may be challenging however, this being said we think that we are capable of achieving this. We have created a Gantt chart which can be seen below to track our progress in this project.

2.4.3. Primary Research Changes

From the primary research we will receive we may need to alter our application, we must be conscious of what others' opinions are when it comes to this project and adhere to any feedback that is given to us. Balancing the data that we receive could become an issue as we may have to prioritise certain information over other data

We will encounter during the primary research process such as finding the correct number of participants within the given timeframe. Also aiming to diversify the candidates will be challenging for us as our reach is limited to our local networks.

2.5. PinPoint Prototype

2.5.1. User

The prototype will include a user authentication system, enabling users to create accounts login and manage their profiles. The interface will prioritise user-friendliness, offering clear navigation and feedback to ensure a smooth experience.

2.5.2. Map

The map functionality will allow users to view interactive maps integrated with OpenStreetMaps or the Google Maps API. Core features such as panning, location markers and search functionality will be implemented.

2.5.3. Page Layout

The page layout will feature a clean and responsive design, ensuring that there is accessibility across various devices and screen sizes. The prototype will include key pages such as the homepage, user dashboard, map view, and settings page, all of which will maintain a consistent visual style and intuitive navigation.

2.5.4. Database Schemas

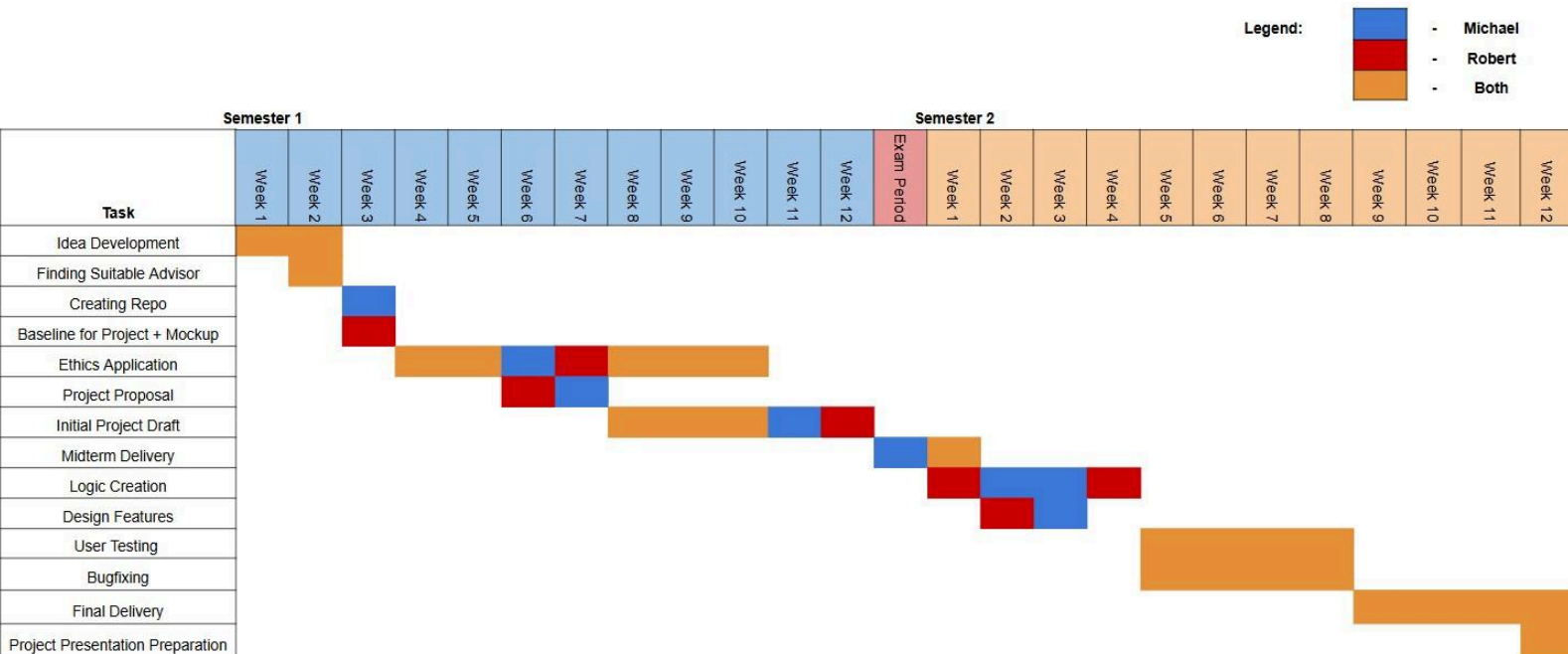
The prototype will include database schemas to support user authentication, map-related data and other app functionalities. This involves user data, saved locations and other relevant metadata. The database will be designed for scalability and efficiency.

2.5.5. Overall Functionality

The final prototype will integrate all our components into a cohesive system. Users will be able to log in and navigate through the application. They will be able to interact with the maps and create an event. The prototype will serve as a robust foundation for future development.

3. Project Timeline

3.1. Gantt Chart



3.2. Timeline Explained

3.2.1. Idea Development

Here we collectively had prepared an idea within the first two weeks of the semester. It was initially used to lay out what our goals were for the project and brainstorm what idea would be best tailored to our strengths and weaknesses.

3.2.2. Finding Suitable Advisor

This step involved identifying which advisor was best suited for our project. We had to decide carefully who would best fit this. We first contacted our current advisor and presented our idea to him in hopes of getting feedback and seeing if he would be interested in a project like ours. It was extremely valuable that we got the correct advisor for any challenges we may face.

3.2.3. Creating Repo

In week 3 of the first semester, Michael created the repo on GitLab. Which would serve its purpose of being the central spot for all of our code along with progress made to our project.

3.2.4. Baseline for Project + Mockup

Also in week 3, Robert began creating a mockup for our application for us and our advisor to visualise what we wanted to create. On top of this, he was responsible for drafting up the baseline in which we had a document which specified the various requirements.

3.2.5. Ethics Application

Between weeks 4-10, we had drafted, completed submitted and resubmitted the ethical approval form. This had taken a lot longer than anticipated. The reasoning for this was that the deadline had been pushed numerous times due to unclarities and having to resubmit the form when it got rejected.

3.2.6. Project Proposal

Within weeks 6-7, we collectively created and prepared a slide deck for our application proposal to the panel in hopes of the approval of the creation of our project.

3.2.7. Initial Project Draft

We began researching the best approaches to develop our application during the remainder of the first semester. This included identifying the most effective starting point, selecting the programming languages, and exploring external libraries that could enhance our project. For example, we considered using 'Leaflet' to integrate OpenStreetMaps [4.] or the Google Maps API, [5.] as we were already familiar with their functionality.

3.2.8. Midterm Delivery

Coming to the end of semester 1, Michael began developing the midterm delivery, starting with the structure of the report and reading the marking scheme carefully to construct a report that hit all the targets required. Responsible for creating the first draft of the report and aiming to have a stress-free return to college in the second semester.

During the first week of semester 2, Robert reviewed the report and made changes accordingly. We then reviewed it together before submitting it to the repo.

3.2.9. Logic Creation

In the first week of semester 2, Robert focused on creating the core logic and data structures for the application. Implementing the backend algorithms and ensuring the foundation functionality worked. This logic creation will carry on throughout weeks 2-4 on our chart by both parties and we are on the right track to creating it on time.

3.2.10. Design Features

In between the logic creation, we plan to switch alternatively between weeks to design the application on the front end. We will implement UI improvements based on user testing feedback to ensure accessibility and alignment with our mockup.

3.2.11. User Testing

Once the application is created by week 5, we can begin rolling out the user testing to evaluate its usability and functionality. Here, we will be conducting our notes in terms of design or function suggestions along with any bugs that are found throughout these weeks.

3.2.12. Bugfixes

Aligning with user testing, we will both be debugging the application to hope that there will be no issues and that it is in a stable state when it comes to our final delivery and demonstration of our project.

3.2.13. Final Delivery

From week 9, we will prepare our final delivery. Compiling and submitting the final version of our project. This will include a fully-functional application along with a final report which will be detailed outlining the entire process of our project along with the outcomes of our project.

3.2.14. Project Presentation Preparation

In the final weeks, we will prepare a slideshow presentation. Rehearsing the presentation to guarantee that our delivery will be flawless to the audience. Also during this time, we will be preparing sample questions that we can answer. This presentation will be designed to showcase our project's value and the effort and time that we have invested during its development

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