# **DESIGN DOCUMENT** Thoughts, Processes & Iterations

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### Introduction

In order to solve the problem of navigational troubles between official halls of residence and university buildings, a proposed mobile application with wayfinding features was created, in order to provide an accessible solution for a target audience. This design document will demonstrate the design processes including decisions made on the inclusions and exclusions of features in the application.

### **Target Audience**

The target audience for the finished artefact are first year undergraduate students in Portsmouth. As discussed in the initial literature review, this segment of people are more vulnerable to navigational issues due to a lack of knowledge of local areas. The decision to only target the application towards University of Portsmouth students provided the opportunity to give the user a more personalised experience, using themed features inspired by the university's colour and logo branding. The impact of this choice will be demonstrated later in this document.

To ensure a strong sense of direction in the design process, a more specific user persona was developed to demonstrate an example of the characteristics of a user who would benefit from this solution.



Above: A diagram displaying an end user persona

### **Initial Interface Design**

#### **Original Prototype Design**

The original prototype created was to be based on a standard digital map, such as Google Maps, but with the use of waypoints display on the map, highlighting landmarks and points of interest, leading to the highlighted university buildings and accommodation for the University of Portsmouth. The design used an instruction system alongside the map that gave detailed instructions.



Above: Initial sketches of our application and interface design, incorporating the use of a GPS map.



Above: Digital Prototype of our initial idea, still incorporating use of a GPS map.

#### **Issues With Initial Model**

It was decided upon that the above designs would not be viable in the current market of navigation systems, such as Google Maps, as it was heavily influenced by what these companies already do without any major development of their functionalities. This would leave no demand for a university specific map in this style as there are already solid names in this industry.

Also, due to technical restrictions, the experimentation of GPS could not be used with the development of this application, nor would it be available for use within the final prototype. This was due to the requirement of having to be permanently connected to a GPS network in order to function which wasn't practical for this task.

Therefore, it was decided that further research into different ways of displaying the navigational function was needed, which lead to another iteration of interface design.

#### **New Design**

For the next iteration of design, Behance was used to find some more inspiration in terms of styles, themes, layouts and iconography. The most impactful designs can be found in the links below:



Ronald Mcdonald's Illustrations, (Natsume, 2016)





Sirca Navigation App, (Boes, Beynon, HYFN Creative & Dimartile, 2016)



Restaurant Order - mobile application, (Kanetiya, 2019).

### **Flowcharts**

For this new iteration, instead of jumping straight into drawing designs and creating digital prototypes, flowcharts were used to create a more coherent idea of how the solution would flow and how a user might navigation the application. This helped to bring the focus back to this being a user-driven solution which helps to solve a problem for them.

#### **Uni Route User Flow Chart**



Above: Flowchart describing how our users navigate through the intended application.

### Storyboards

Next, the final flowchart was used as framework for creating storyboards for potential design ideas to be used in the final iterations of the design. These then aided how the digital designs were created in terms of their layout and which icons would lead to which new page. The process created different application maps which then made it easier to link pages together when the final prototype was made.



Above: Example of a storyboard created

### **Design Considerations**

During this planning phase, the design considerations that were outlined that were deemed to be important when designing an artefact of this calibre, below are the documented considerations that were taken into account during this phase.

**Navigation** - It was important to understand how the application created was going to communicate clear and simple instructions to our intended users. From the literature review, it was considered that landmark based instructions were beneficial to individuals who had little/no previous experience with navigating a new city. From this it is imperative that the

instructions employed are more descriptive in their nature to ensure that a low cognitive load is required when navigating an environment using the artefact.

**Waypoints** - Following on from the consideration of navigation, it was important to consider how instructions would be divided into clear and concise steps for the targeted demographic to follow. Ensuring that each instruction directs the user to a clearly defined waypoint allowing them to gain their bearings before moving onto the next instruction.

**Breadcrumb bar / Progression bar** - During this planning phase, it was decided that to ensure the user is aware of their position in terms of the progression through the instructions the incorporation of a breadcrumb /progress bar would help in ensure that users understand the amount of instructions housed within a given route and their place within them.

**Image previews** - Whilst the use of text based instructions is imperative in the construction of this artefact, the incorporation of images to created multi-modal instructions to ensure a users understanding of the intended waypoint and direction in which the application is directing them would be beneficial.

**Storing information** - It was felt that due to the omission of the incorporation of GPS within the core functionality of the application, it was deemed that the application should be able to work fully offline, meaning that users could navigate to their intended routes without the requirement of connecting to WiFi or a mobile network.

**Group Management** - To help ensure production was kept on an efficient pace, group management was taken into place within development, where roughly every week the group would hold a meeting discussing what areas need to be worked on before the next meeting and who should work on certain parts of the workload, each receiving an equal amount to work upon.

### Iterations

After revisiting research around the subject of Movement and Wayfinding, it was determined that visual instructions would be more efficient. After the concept of using GPS was removed due to limitations, a new home page was developed. The home page was split into three sections; Halls; University; and Landmarks, giving the user options to choose their nearest starting point and destination. However, this and previous designs were made using Adobe Photoshop, and the next stage was to learn Invision software and create the first working prototype.



Above: Screenshots of the first iteration in Photoshop

The next iteration was more inspired by the Behance design inspirations as previously stated. This design used drop down menus to utilise space rather than aesthetics; this was later removed as when testing seemed difficult to navigate as the buttons were too small. Furthermore, a solid colour scheme and logo was introduced, enhancing the Portsmouth University theme.



Above: The second iteration linked with Invision

Due to Invision's lack of support for videos and GIF files to be placed into the storyboards, the prototype unfortunately doesn't include motion images as originally planned. Instead, the artefact contains JPG images files as placeholders for where the GIFs or videos would be in a final version of this application.

#### **Primary Research**

Following the creation of the two iterations of prototypes, it was felt that primary research of our target audience was required, in order to determine the direction of the final design. This research was conducted in a questionnaire format where participants were shown screenshots of a number of different design choices, asking them which of the options they preferred, thus helping to inform which designs provided a better user experience for our intended end users.

Due to time constraints in getting this primary research through ethical approval, the sample size of the survey is relatively small and was obtained through convenience sampling. However, this process was still beneficial in understanding the design tastes and usability preferences of the targeted demographic.

User Experience Questionnaire: <u>https://forms.gle/H1b7BonbpYMM2G1G8</u>



Above: Screenshot of sample question housed within the questionnaire.

From the questionnaire 13 participants were obtained, with relatively clear preferences to the overall design direction of the artefact defined. Within the first question, over half of the participants expressed preference towards the first design as illustrated in the screenshot above.

#### Which design/theme do you find more visually appealing?



Above: Screenshot of the results from the first question.

In terms of interactive features which aid in the overall user journey of the artefact, out of the sample surveyed, over 80% held a preference towards organising building through iconised lists as opposed to text based drop down menus, with gestures such as swiping through the navigational instructions within the application. Due to this, it is imperative that the inclusion of lists which include both images of the university buildings as well as their name and building codes to ensure that users can find their intended building through multiple different methods. It is also imperative that gestures such as swiping through the instructions given as well as clicking them is enabled to ensure that a users can navigate through the application in a natural format, providing a satisfactory user experience when using the artefact.



Would you prefer a drop down menu or visual icons to choose your



Would you prefer to click or swipe to move in between screens? 13 responses

Above: Screenshots of the results from the second & third questions.

Within the questionnaire, it was posed to the participants whether the placement of instructional text below or above the image was preferred. The results from this question suggest that the placement of the text should be below the image, thus inferring that the image of the intended direction the user should take, to be the main focus on the application screen, creating a visual hierarchy to the artefact.



Would you prefer the text above or below the image?

Above: Screenshot of the results from the fourth question.

The final question within the data collection portion of the questionnaire, suggests that whether the user requirement to create an account would prevent an individual from using this application, to which responses were mixed. With 77% of participants saying a mixture of 'agree' and 'neither agree or disagree', suggesting that there is no solid conclusion to be made as to whether this would be a preventative factor. If a larger sample size had been collected more conclusive results could be obtained.



Above: Screenshot of the results from the fifth question.

This questionnaire was beneficial in helping to inform the overall design characteristics within the artefact posed. Through gaining an understanding of the preferences held by the intended demographic it can be ensure that useful and usable artefact is created.

#### **Final Design**

The final design sees improvement in the homepage, reverting back to image based navigation, with larger buttons. The colour scheme has also been adapted as the previous iteration had a large colour clash, which made it harder to navigate through the app. This final design also introduced the option to go full screen, which improves the visibility of the app when the user is on the move. Feedback from the questionnaire was also incorporated and and image-based list menu was used rather than a dropdown, as well as text instructions being placed below the images.



#### **Design Process**

The images below show the crucial parts of the designing process, which include producing the icons and editing images. The final image is the display of the InVision workspace, in which it shows all the separate screens and how they link together. All the imagery for the routes were taken using an iPhone, however background images on the homepage were sourced from Google. While editing the images for the routes, obvious facial features and car registration plates were also taken into consideration and were blurred out or removed where appropriate to protect the privacy of individuals shown.



Process of creating icons using Affinity Pro.



Process of adding perceptive arrows to the imagery.



Workstation on InVision with all screens and how they link.

### **Functional Testing**

To complete the project, final functionality testing was undertaken to ensure that the prototype ran as expected within the Invision application. The main testing was done in a Google Chrome browser on an Android device, however, the application was also tested on an iPhone to check for its device compatibility. The process included following the main pathways of the artefact and checking that each gesture acted according to how it was expected to.

Overall, the testing was a success and no major bugs were found within the prototype. However, an issue did arise when scrolling down on the instructions pages as the top bar was hidden by the image and the logo sat at the top.



Above: Issue with scrolling in the instructions screen

To fix this, the image arrangement was simply on each screen so that the picture placeholder would scroll underneath the top bar instead of on top. This then completed the testing and the results can be seen below.







#### References

Boes, N., Beynon, b., HYFN Creative & Dimartile, A. (2016). *Sirca Navigation App.* Retrieved from <u>https://www.behance.net/gallery/32140603/Sirca-Navigation-App</u>

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Sarker, P. (2019). *Mobile App Design*. Retrieved from <u>https://www.behance.net/gallery/74971167/Mobile-App-Design</u>