

Final Report

Interactive Multimedia Design
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Peer Support Group 7

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1. Introduction

According to ‘The World Tourism Organisation UNTWO’, the worldwide youth travel industry has surpassed the overall global travel industry and represents an estimated 190 million international trips each year, which is expected to increase to 300 million by 2020. With this said, the web focused youth market represents a major opportunity for the effective implementation of Backpack, a social travel application. (UNWTO, 2012.)

With the ever-increasing number of youth ‘backpackers’ travelling across the globe, it seemed both interesting and opportune to design and build a tool that would enable backpackers and tourists to connect with each other, share their experiences and discover information about places all over the world. Backpack will serve as a social networking platform for users to connect, document and share experiences with each other during their travels at home or abroad. The proposed solution will take the form of a web application and function as an action oriented platform.

1.1 Aims and Objectives

In essence, the overall aim of Backpack is to connect the global travel industry on a social level. More specifically, the platform will update and develop with emerging technologies in order to remain unique, current and technically on trend. In addition, the aim of branding Backpack is to create differentiation, promote recognition of the social platform, provide an effective competitive edge and convey a personal brand message, thus increasing the total number of new and returning users. A final aim is that the platform will be a leading travel application, recognised worldwide and enjoyed by users. A high level study of project objectives include:

- MVC architecture
- Front end UI/UX design
- Database and system design
- Paper prototyping, wireframes and comprehensive designs
- Feasibility testing – functional prototype
- Third party API integration
- User testing

Objectives surrounding the launch of the application include the successful breakout into the youth travel industry across the United Kingdom and Ireland, followed closely by Europe. In addition the number of new users will increase steadily throughout the remainder of the year and more rapidly thereafter.

1.2 Project Overview

Although both ‘top-down’ and ‘bottom-up’ approaches to task management are concerned with the ordering and processing of tasks, knowledge and information, in practice, they are often recognised as a style of thinking and methodology. Despite this, it has been decided that the ‘top-down’ approach is most suited to this manner of project as it is only by recognising tasks and ideas from an overarching point of view that a more realistic level of smaller, detailed subtasks can be identified. Dividing and categorising the project into high-level sections including, planning, design, development and launch; serves as a basis for an effective project schedule, which will be described in detail below.

1.2.1 Planning

The concept, discovery and planning elements of the project collectively form the planning stage, which is arguably the most significant in the entire application design process. This stage is where the project is defined and involves a solid understanding of the project objectives and examines how the web can be effectively utilised in order to achieve these goals. At this stage key elements to consider include requirements analysis, end user requirements and content strategy. In order to gain a thorough understanding of the specific user requirements of the project, detailed and concise research must be carried out into the nature of the project, the vision of the brand and moreover its capacity to grow. To obtain and analyse such information both primary and secondary research and analysis will be implemented. Of course, personal experience and project analogy has proven an effective source of information when considering the management of tasks. This is reflected within the design of the Gantt chart, which can be found in the appendix 1. This type of graphic represents visually, the web design schedule and will serve to assist in the planning and coordination of each of task within the overall project. In addition it will also ensure that the project schedule is maintained at a reasonable pace, and that the individual tasks logically

progress in a manner that moves the project closer to completion. The SWOT analysis table, also located in the appendix 1, will be used to describe opportunities and threats surrounding the design and development of the project.

1.2.2 Design

As the title suggests, the design section of the project involves the initial design of all predefined elements of Backpack, achieved by traversing the information outlined in the planning stage into a successful visual reality. Detailed requirements are transformed into comprehensive specifications to be used as a guide throughout this stage. Here initial sketches, concept designs, wireframes and comprehensive layouts based on requirements analysis and paper prototypes are developed and finalised. This stage will also see the development of the brand and its associated design elements. In addition, the web application system design and data structure will also be architected. In essence, high level design decisions will be made at this stage, in order to address how the completed web application will satisfy the defined functional, non-functional, interface, and data requirements.

1.2.3 Development

The development stage involves the initial building of the web application, complete with its configuration, testing and execution of the design solution. At this stage all functional prototypes and visual designs will be used as a basis to create the fully functional web application. Following this the designer is responsible for the building and development of the application framework using predefined technologies, tools and API's. The development and testing of application features, content authoring and management and key considerations surrounding accessibility and quality, both visually and functionally, must also be carried out.

1.2.4 Launch

The final stages of the project will include the launch of Backpack in preparation for public access. This stage will involve the transfer to the live server and final testing and cross browser and device performance checks. (Smashingmagazine, 2011.)

1.3 Report Overview

Similarly to the Project Overview, this report will provide a detailed analysis of the design and development of the web application throughout all stages of the web design process, focusing specifically on concept definition, design, implementation and testing. In addition an evaluation and conclusion of the web application and personal approach to the project will also be described.

2. Concept Definition and Testing

2.1 Idea generation

As a student with an interest in travelling and tourism amongst its various forms, the idea behind Backpack came about through personal interest and an identification of a gap in the already crowded social networking services market. In order to initiate and promote the generation of ideas and further define the scope of the project, mind mapping proved as an extremely effective tool. Here the main focus was on the theme of travel and social interaction. Social sharing was also a key idea that governed the initial thought processes surrounding the functionality of Backpack.

2.2 Requirements Specification

An integral part of an effective project design process is the gathering of end user requirements and the identification of common user tasks. Research suggests that requirements belong to a specific type, which serve as an aid to determine the requirement and group them according to their specialty. With this said, functional requirements describe how the product works and is often the fundamental or essential subject matter of the project. Alternatively, non-functional requirements are the properties that the functions must have, focusing on areas such as performance and usability. This user requirements capture is a process employed to understand what typical users require from Backpack and how the specific requirements lend weight to its suitability for implementation. The key considerations surrounding both functional and non-functional requirements will be discussed below.

Creating simple and effective web app navigation is arguably, the most significant task to consider for the end user requirements process. As web navigation is the pathway users take to navigate throughout the online or web application pages, it is therefore well constructed, intuitive and easy to use. Users must be able to locate requested information quickly and easily if the solution is to be deemed usable. With this, it was fundamental to keep in mind user expectations including primary navigation, secondary navigation, navigational arrangement and link construction and styling. Similarly, the importance of the visual experience cannot be underestimated, as this first impression is far strong and memorable. Requirements surrounding the initial appearance of both the branding and web application style often influence the user experience focusing on their underlying moods and feelings. The visual appearance of Backpack must be representative of the theme of the project, focusing on primary elements such as colour, typography, visual hierarchy and overarching architecture. Interestingly, it is often the appearance and style of application elements that determine whether the functional requirements are successful.

The web applications' usability will be derived from the abilities of the users of the application and the complexity of its functionality. From inception to conclusion, Jakob Nielsen's book on the subject of usability takes the reader through the world of web site design highlighting all the necessary steps to ensure a website can in fact be deemed, usable. From page content and site architecture design to geographic localisation and accessibility, 'Designing Web Usability' concludes that a successful website or web application is able to provide a 'HOME RUN'. That is, High-quality content, which is Often updated, with Minimal download time and ensures Ease of use, which is Relevant to users' needs and is Unique to the online medium within a Net-centric corporate culture. Throughout wider research into usability for the web it became clear that it is defined by five quality components that govern its successful strategy. These include learnability, which seeks to question the ease of use for users to accomplish basic tasks the first time they encounter the design. Efficiency follows which explores how quickly users can perform specific tasks once the design has been realised. Similarly, memorability is concerned with the return of users to the web applications and seeks to discover how easily they can re-establish proficiency of the product upon their return. With this, the designer must consider how many errors the user makes, levels of severity and ease of recovery. The final component for usability is that of satisfaction, which governs the complete user experience of the design. (Nielsen, 2000, NNgroup, 2012.)

Despite initial functionality, content is a crucial aim intended for all users. The primary content should fulfill the needs for the user and be communicated clearly. On this note, ‘understandability’ seeks to determine whether in fact users understand what the platform will do for them and how it fits into their view of the world. Similarly, it is crucial to make the web application easily accessible and highly convenient to a wide target audience, irrespective of disability. Backpack should be designed and developed in such a way that all users have equal access to information and functionality, while not impacting on the usability of the system for non-disabled users. Building a high quality web application that is handled consistently with no errors across platforms and user agents will promote an accessible user experience. Adhering to web standards, accessibility guidelines and validation requirements will ensure this is the case. In order for users to make full use of the application and the travel centred data it provides, they must be assured that the web app is secure and their information, including personal details and profile data, is safe. In developing the web application, vital steps to ensure optimal security and information privacy must be met.

This critical first step in the design process will ensure that the final design is user-friendly, flexible and adaptable, and will eliminate potentially expensive and unnecessarily frequent redesigns later in the project.

2.2.1 Exclusions

Backpack will take the form of a web application and function as an action oriented platform. With this, creating a native application for the solution has been excluded at this stage as risks include unstable mobile platform landscapes and limited app control. In addition, native apps require frequent updates and the most significant investment of both time and resources.

2.2.2 Assumptions

It is assumed that Backpack will be designed, built, tested and launched within a time frame of seven months. It is also expected that graphics software such as Adobe Photoshop and Illustrator will be required for design elements and planning of visual arrangements. Web development software, focusing specifically on HTML 5 and CSS 3 will also be used for the

initial build of the platform, implementing both client-side and server side technologies including, MySQL, PHP, jQuery. On this note however, it is interesting to indicate that we tend to build websites and applications for the least capable browsers first before improving the experience for modern browsers, thereafter. With this said it is assumed that the differences between modern browsers will be acknowledged before offering the best user experience, which is appropriately crafted and responsive to both the limitations and capabilities of the browser or mobile platform.

"The reality is that the web has changed, and our work and our clients' expectations must move beyond the one-size-fits-all approach we have laboured over for so long if we're to make the most of what it has to offer. No two browsers are the same, so to make the most from emerging technologies such as HTML5 and CSS3, we need to banish the notion that websites should look and be experienced exactly the same in every browser."

-Andy Clarke

This means that modern browsers demand the best user experience, with 'Webkit' browsers including Chrome and Safari promoting the optimal user experience, as they provide the most advanced CSS3 features. Following this, Internet Explorer 7 and 8 gain a more simple version whilst Internet Explorer 6 gets a custom version of the web application which is slightly different from the other two in order to accommodate its rendering capabilities. In brief each version describes the same content with a marginally different form. Alternatively, for mobile devices, it is assumed that modern mobile browsers including both iOS and Android will offer the same experience as modern desktop browsers. Of course these versions will be a tailored experience adapted for mobile use. On this note, less capable mobile browsers should be served a more specific version of the web application to cope with browser capabilities and to minimise loading time for the user. As a focal element of the platform is concerned with Geolocation, Google Places and maps API are proposed resources. Finally it is assumed that physical hardware including mobile devices, tablets and computers will also be required for testing purposes throughout the build of the interactive travel journal.

2.2.3 Considerations

Key considerations for the web application can once again be divided into two types, which include functional and non-functional. On projects such as this, designers are immediately

faced with questions and considerations when working on a specific brand in that their solution must satisfy specific design requirements. Here a major consideration is the design of a style guide, which details exactly how the different design elements should be applied in various situations across the web application and wider marketing literature. It serves to provide information on elements such as typography, graphics, colour, materials, templates, photography and other design motifs used in the visual manifestation of the brand, providing the designer with strict instructions on how to apply them in different contexts. Working through both the strategy and the implementation of the style guide would ensure that the web application theme is successful, consistent, adaptable and in keeping with original brand attributes.

High-level analysis of the web application is a primary consideration at this stage and is made possible through mobile and web analytic programs such as Google Analytics. Making use of Google Analytics will provide a greater insight into how users reach and interact with the web application. It will also identify the most popular and least popular elements of the solution, which is crucial for future enhancements. An additional feature it provides is its ability to effectively monitor the impact of optimisations or alterations made within specific areas of the platform. In addition to this service, Google also offers 'Google Website Optimiser' that is designed for experimentation with direct on-page changes, in order to discover which will produce the best conversion rates with users. Social media analytic tools, video analytics and mobile specific analytics must also be considered. Effectively utilising such tools is a powerful way to develop and improve the user experience of the web application. In brief, Search Engine Optimisation can be described as a technique employed to make a web page appear in a higher rank above others in a list of results provided from a search engine. SEO which is an additional consideration is accomplished by optimising specific areas, or 'elements' in the HTML coding of the website or application. Such elements are specifically read and interpreted by search engines depending on the degree of optimisation implemented by the web designer.

Although the web application is the central hub of the absolute online presence, it is crucial to consider that Backpack should be connected through all forms of social media to maximise public awareness and increase impact exponentially. As a social networking interface with millions of subscribers, creating a Facebook page for the web application will maximise

awareness and act as a focal point for users to discover each other, interact and arrange to be connections within the application. With email becoming a less-effective medium to reach membership, Facebook is currently the best way to create an online community. On this note adding a ‘Like’ button to the application design will enable users to subscribe to news and status updates if they are also members of Facebook. Of course, Twitter, Instagram and other popular social networking platforms must also be given absolute consideration at this stage in the project. At this stage, an initial user questionnaire was devised in order to collect information regarding users opinions and ideas of social applications travel centred utilities.

2.2.4 Use Case Diagrams

The Use Case diagram below, serves to model the interactions between both the tasks the Backpack will perform and the end user of the platform. Creating a Use Case diagram in this way provides a high-level understanding of the sequence of processes that the web application requires in order to perform all necessary functions.

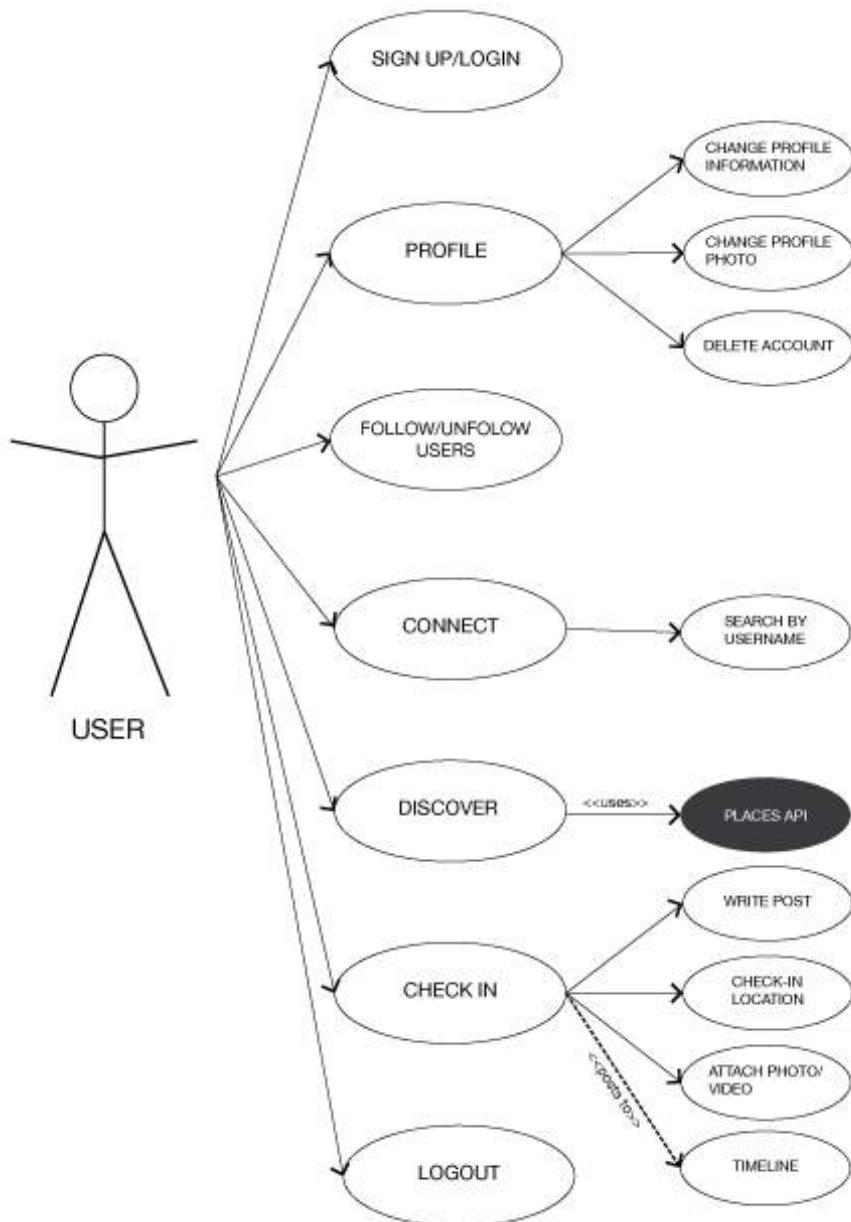


Figure 2.2.4- Use Case Diagram describing typical user interactions with Backpack.

2.2.5 Atomic Requirements

Using the Volere Requirements Shell as a template, one atomic requirement of the web application was examined against a number of attributes. This provided detailed information surrounding the requirement and encouraged the thinking behind its successful implementation. Note that for priority, 1 refers to the more important requirements whereas 3 indicates that the requirement is less important. The full atomic requirements table can be found in the appendix 1.

Number	1
Type	Functional
Description	Users will be able to create an account for the web application.
Rationale	To enable them to use the web application and store personal travel data.
Fit Criterion	Registered users will be able to login and make full use of the web application and the features implemented.
Dependencies	All web application requirements.
Priority	1
Number	2
Type	Functional
Description	Users who have forgotten their password will be able to retrieve it.
Rationale	So that they can successfully login and continue to use the web application.
Fit Criterion	An email containing the user password will be sent to the registered user email address.
Dependencies	All web application requirements.
Priority	1

Table 2.2.5- Example atomic requirements using Volere template.

2.3 Paper Prototyping

At such an early stage in the project it is crucial for any web designer to consider and successfully implement effective website organisation, acting as a fundamental concept in the development of a website, application or prototype solution. In order to easily execute, expand and govern the maintenance of content contained within the web application it is necessary to proceed in logical steps and organise the solution into manageable, individual sections. The three primary elements that make up the organisation of a web application include structure and navigation, content and website layout, all of which are interdependent. Although it may appear that one is a more significant focus than the other, it is crucial that each are given equal consideration and successful implementation, as without such impartiality, Backpack will subsequently be deemed ineffective and poorly designed by end users.

2.3.1 Website structure and navigation

Both the type of navigation and overarching structure of a website or application compliment each other on an underlying level as together they form the framework that will serve to

support the solution. Here it is important to recognise and appreciate that web structure also refers to functionality, user interaction and accessibility rather than initial layout. Research suggests that often all types of websites require their own individual structure, which is specific to their fundamental needs and end user requirements. Again this largely depends upon the content and focus of the web application. The best way for designers to identify the scope of navigational and structural possibilities is to analyse existing solutions and similar projects and note the methods used to structure the form and function of their online content presentations. The mesh structure is often the most popular framework for web navigation.

2.3.2 Website Content

Content can be defined in brief, as the body and substance of a website or application. It serves to embody what the solution is about and is utilised as a platform to present relevant information to the visitor. Focusing on the need for content, it must be used effectively to introduce and promote Backpack as a new, exciting social platform. On another level, everything from colour to wording and grammar is what visitors visually see and react to upon their visit to a website or application, so effective consideration of this is fundamental. Arguably the most significant element of any website is text and the governing mastery of effective communication techniques. Both the message presented to web visitors and the meta data utilised by search engines is completely dependent on how well websites communicate through their content. Here it is necessary to focus the web platform structure around predetermined preliminary content.

2.3.3 Website Layout

It can be seen that the method chosen for both the website message and theme presentation is determined in effect, by construction and web page layout. The layout chosen for Backpack must be carefully considered to echo the theme exhibited throughout the solution design whilst capturing and directing the users attention to the primary content and maintaining it throughout. It must serve to compliment both design and contextual elements of the website without over emphasising one or disregarding the other in effect.

2.3.4 Sketching

As discussed, designing a web application is a process. It all begins with an idea, which leads to concept sketching and production of wireframes for concept refinement. Next the visual graphics and content within visual mock-ups are created before the code is developed within the web browser. Sketching as a tool encourages the designer to think about both the visual requirements and user functions of the interface, in essence, the user experience. Sketching enables designers to physically visualise the screen flow of the user experience in 2D form, so that their idea isn't just a figment of imagination, but instead is much more visible and clear in user interface form.

Although sketching allowed for a multitude of ways to execute such a concept, it was only necessary at this stage to underpin those ideas that work best, whilst eliminating those thought processes that did not. Sketching effectively channels our thoughts, ideas and emotions on to paper form, with no rules or guidelines. Here it was essential to not underestimate the power and scope of design that sketching provides, as it served to set the tone for the rest of the design process and was a key component in crafting the user experience and communicating such ideals to others. Sketching enables designers to entertain all the possibilities of what their website or interface could become.

2.3.5 Wireframing

Wireframes are basic illustrations of the structure and components of a web page or application, containing more detail than a sketch, yet lacking detail which is displayed throughout visual mock-ups, style tiles or prototypes. When wireframing, designers are in the process of concept refinement, paying closer attention to how the website will look using pixelated and strict wireframe guidelines. The chosen medium for the designer to work with encourages them to think more about detail, sizing, layout, placement and order of elements, which is often neglected throughout the sketching stages. Working with pixels and grids provided a much more precise and accurate point of view of how the prototype design will work. Implementing this process helped to clarify exactly what needed to be on the different pages of the final solution, focusing on elements such as information, navigation and interface. Creating a wireframe for the web application ensured that the design has taken into account all the necessary page elements and their effective arrangement. Wireframes can be described as a tool that provides layouts with a great starting point and a solid foundation.

2.3.6 Information, Navigation and Interface Design

As mentioned above, wireframing focuses on three key elements, one of which is information design. Information design refers to the layout and hierarchy of the content, both of which have been carefully considered in order to satisfy the end user and content requirements of the solution. Another element of wireframing is navigation design. This refers to the navigational elements on the pages such as primary navigation links, breadcrumbs, submenus and responsive techniques, each of which have been described throughout the wireframing process. The navigation design effectively conveys to the user the relationship between the pages and how they are linked. Successful navigational design will ultimately ensure the user can easily traverse throughout the web application with little effort and complication. Finally, interface design is the third aspect of wireframing, and refers to the selection and implementation of appropriate interface elements, which in effect allow the user to interact with the site. Throughout personal experience with the web it is clear that common interface features often include form elements such as text input fields, check boxes, radio buttons, drop down menus and action buttons. The overall aim of interface design is to create a web solution that is both user friendly and efficient to use, irrespective of age or disability. Examining interface design through the use of sketches and wireframing helps achieve this. Below you can see initial sketches of Backpack. Additional sketches and wireframes will be described in appendix 2.

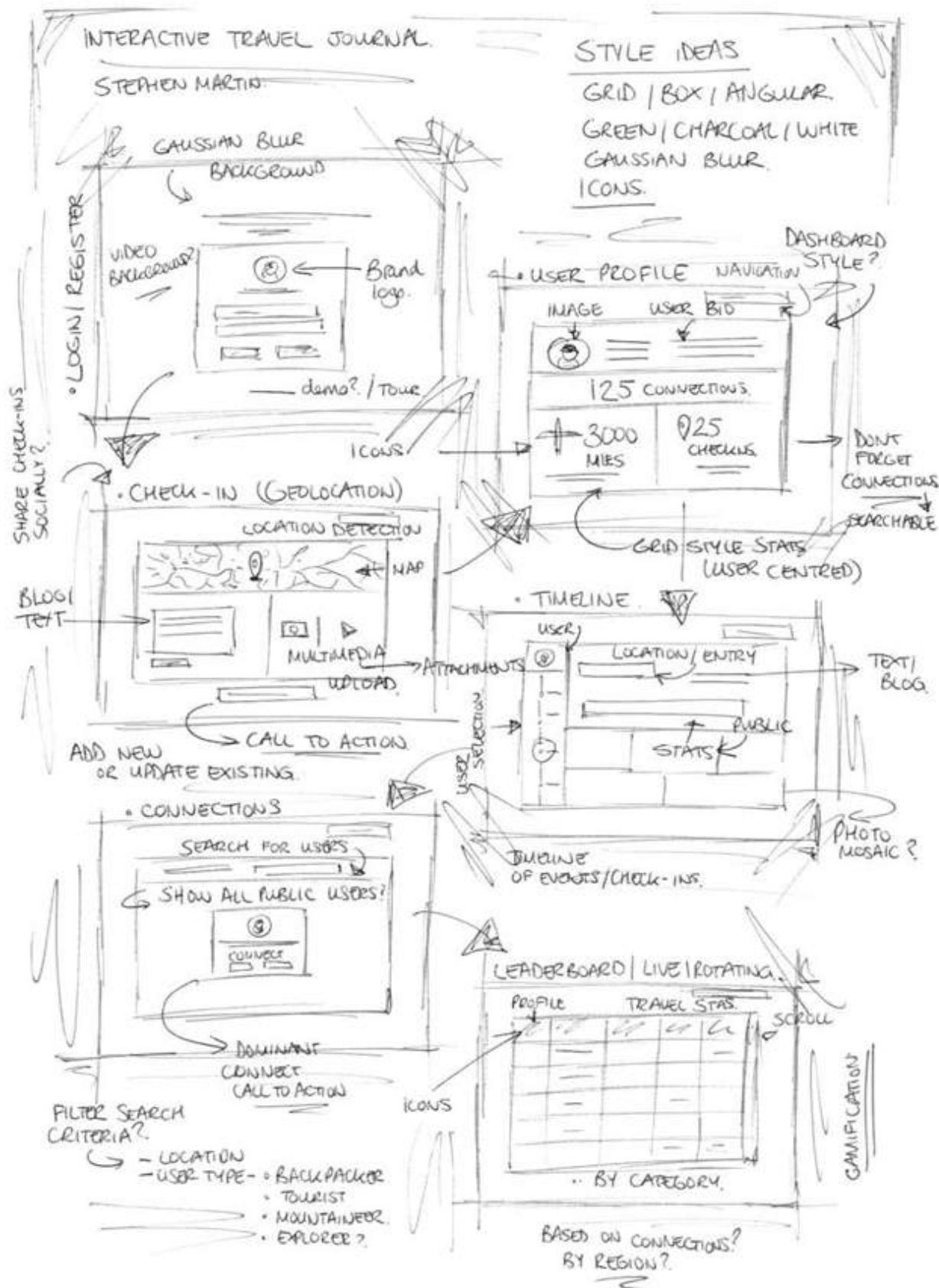


Figure 2.3- Initial sketches of Backpack.

2.3.7 Style Tile

Creating a style tile encourages the designer to consider the visual relationship between fonts; colour and design elements exhibited throughout a design solution in its entirety. This process enables designers to visualise clearly how they want their conclusive design solutions to appear when viewed in combination with wireframes, site-maps and other UI elements. In appendix 2, you can see the design ideas surrounding navigation, user interface, colour, type and feature styles. The style appears neat, modern and simple, denoting a professional user experience.

2.4 Feasibility Testing

In order to effectively examine and resolve potential risks associated with the design and implementation of the web application, a robust, functional prototype was built. This early iteration of Backpack made use of MySQL table creation and database access; CSS style sheets, file inclusion, session control, Ajax calls, event and error handling and file uploading. At this stage, considering a high level overview of the project provided an opportunity to test the feasibility of each feature before committing time and resources to an idea that failed to satisfy design or functional requirements. The functional prototype for Backpack will be described further in appendix 2.

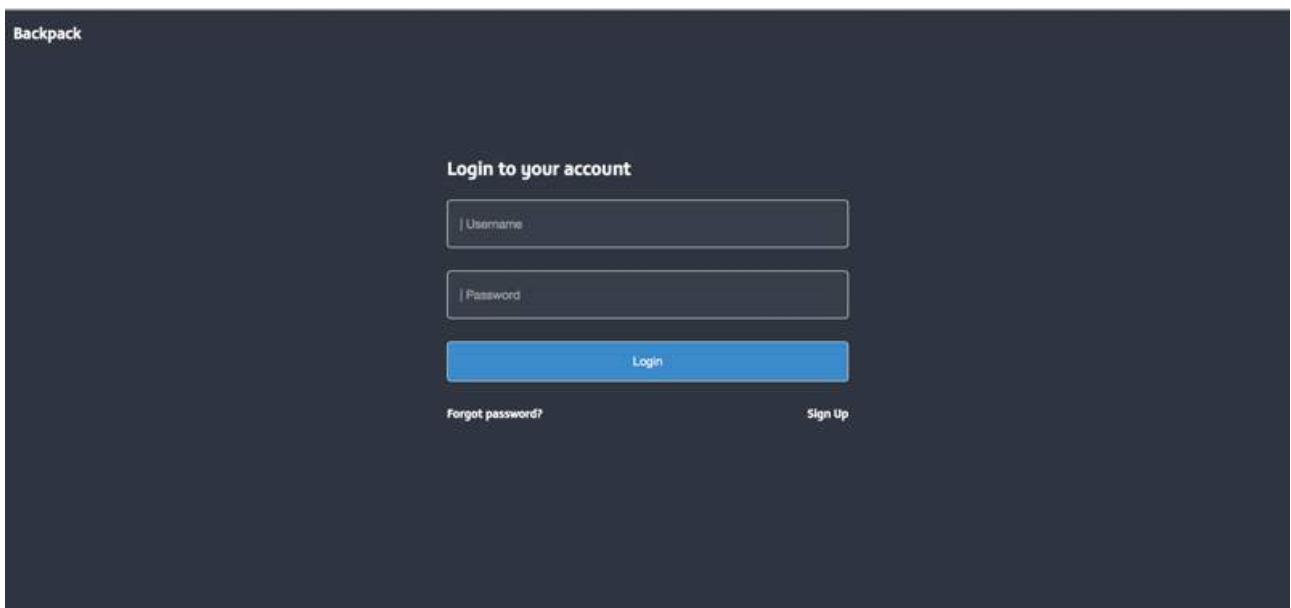


Figure 2.4- Login of functional prototype.

2.5 Methodology Selection

Selecting an appropriate methodology to be used as an approach to the design and build of Backpack is a fundamental consideration in order to ensure optimal project progression. The most common of which include the waterfall approach, prototyping, rapid application development and agile, each of which will be discussed in turn below in order to identify the most suitable choice. Firstly the waterfall methodology requires well-defined requirements in which the project progresses steadily through the development process and as a result, is much more easily managed and straightforward than the others, making it suitable for smaller projects. Research suggests that the prototyping methodology is more suitable for projects in which the requirements are more difficult to refine as it enables users to develop specific areas of the solution to demonstrate functionality before working towards the completed solution. Although it is a flexible approach, it is in fact quite complex and makes managing the scope of the project more challenging. Yet results indicate that it is an excellent way to confirm understanding of the requirements and ensure that the web application is consistent with pre-existing specifications and objectives. The Rapid Application Development methodology suggests that a project can be developed more quickly and of a higher quality by placing less emphasis on the planning of tasks and more emphasis on the initial development of the proposed solution. The time centred approach highlights the need of adjusting requirements in reaction to knowledge gained throughout the progression of the project. (Searchsoftwarequality, 2014.) Finally, the agile methodology provides opportunities to assess the direction and quality of the proposed solution throughout the progress of the project. It emphasises communication and collaboration, functioning software and most importantly, the ability to adapt. ‘Scrum’ is the most popular way of introducing the agile method due to its simplicity and flexibility. ‘Extreme programming’ and ‘story-driven’ methods are also widely used. Each method of agility exhibit subtle differences but the central focus and approach to project progression is identical. From this, it has been decided that the methodology to be used as the approach to the design and build of the web application is the agile method.

2.6 Risk Analysis

At its most basic level, risk analysis involves analysing the risks that are most likely to apply to

the project, and realising an effective plan if they become complications. Undertaking this process before the initial build of the social application aims to help and moderate risks that could compromise the project delivery. Research into effective risk analysis suggests that there are two fundamental reasons why projects tend to fail. Typically, failure is often the result of a project exceeding the timeline, overspending the budget or indeed underperforming on specific expectations. With this it can be seen that the two main reasons why a project plan is not met is because the plan is too optimistic or external events (risks) have had a negative impact on it. For the most part, overly optimistic plans are a common cause of project failure. They arise when actions or costs are encouraged to satisfy predetermined targets. In addition external events such as scope creep, insufficient resources, unanticipated work and unforeseen circumstances lend weight to project failure.

2.6.1 Scope Creep

As discussed before, the aim, objectives and scope of the project refers to a project's parameters. However, even when there is a clearly defined project scope, web developers must be aware of scope creep. According to bidsketch.com, 'Scope creep is the process by which a project grows beyond its originally anticipated size'. Scope creep often occurs when new features are added to project designs that have already been approved, without providing equivalent increases in budget, time and/or resources. Research suggests that fundamental causes of scope creep involve modest requirements analysis, underestimating the complexity of the project and a lack of change control. With this said however, research suggests that effective guidelines are in place to manage scope creep and ensure successful project management from the outset, each of which will be discussed below.

1. Ensure thorough understanding of the project vision and priorities. Making an ordered list for referral at strategic points within the project timeline will seek to identify the timescale, deadline, feature delivery, implementation, testing strategies and customer satisfaction. This list may also prove beneficial when justifying specific scheduling decisions once the project has commenced.

On this point, it is necessary to note that this guideline has already been considered and implemented throughout the design and referral to the Gantt chart, which seeks to provide a detailed overview of the project and its priorities. Yet it may also prove beneficial to reevaluate

the proposed time plan at this stage in order to successfully complete the project, including any planning adjustments necessary based on knowledge surrounding the work ahead.

2. Define project deliverables and outline key aspects of both functional and non-functional requirements. The gathering of end user requirements and the identification of common user tasks is also an integral element of minimising scope creep at this stage.
3. Divide the approved deliverables into actual work requirements. The requirements must be as detailed as necessary to consider and appreciate even subtle elements of the project, which may have otherwise remained unnoticed.

Similarly, both guidelines have been achieved throughout the consideration of the Requirements Specification and design of the initial user questionnaire. Using the Volere Requirements Shell as a template in this instance, one atomic requirement of the proposed solution was examined against a number of attributes. This provided detailed information surrounding the requirement and encouraged the thinking behind its successful implementation.

4. Once a schedule has been created, assign resources and determine a critical path using a project evaluation and review technique (PERT) chart or work breakdown structure.

Unlike the Gantt chart time plan discussed previously, Critical Path Analysis works to identify the minimum length of time needed to complete a project. It also helps to recognise which project steps should be accelerated in order to complete the project within the available time. An effective Critical Path Analysis can ultimately make the difference between success and failure on projects such as this web application. It can also be useful for assessing the importance of problems encountered during the implementation of the plan. A CPA diagram for the project will be only be considered if following the Gantt chart proves unfavourable. If all of the guidelines described above can be implemented, the project will undoubtedly be better positioned for immediate success. Yet, even considering any of the steps for implementation within the project will work to effectively control and indeed avoid, scope creep amongst its various forms.

2.6.2 Risk Identification and Analysis

Risks will undoubtedly change during the lifetime of a project so it is therefore crucial to explore and identify as many possible external events that are most relevant to and will have a negative impact on the project. Using the Volere Requirements Knowledge Model as a method for identifying relevant risks will serve to ensure all aspects will be considered correctly. Here a probability to each risk will be assigned, along with the risk of severity and overall risk score, which will be calculated by multiplying the probability by the severity. Also a plan to prevent and manage each risk will be discussed in turn. The probability will be ranked from 1-5, with 1 suggesting it is highly unlikely that the risk will occur and 5 indicating that it is highly likely that the risk will occur. Severity will also be ranked on this scale with 1 indicating it is not a severe risk and 5 suggesting that the risk is extremely severe to the project. Again, the completed Risk Analysis model will be described in appendix 3.

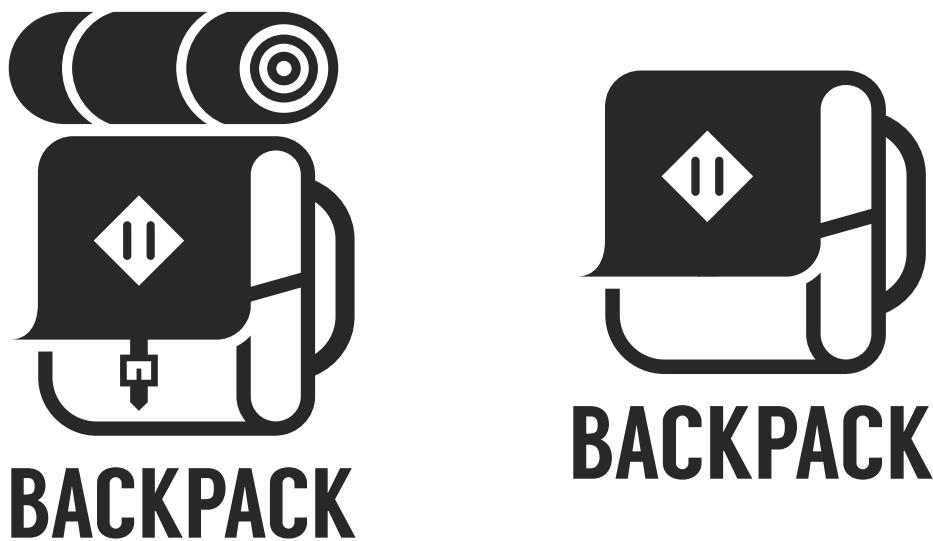
Number	1
Risk	Lack of security precautions
Description	Failing to ensure frequent backups of work will significantly reduce protection from file loss, corruption or viruses.
Probability	2
Severity	5
Score	10
Risk Resolution	Ensuring work is backed up on reliable storage drives and devices both online and off will help to ensure work recovery if it ever becomes lost or defected.
Number	2
Risk	Time constraints
Description	Working within a strict timescale in which to complete the project may prove unfavorable if specific aspects require more time to complete them than is available.
Probability	2
Severity	4
Score	8
Risk Resolution	Following the time management strategies discussed before will seek to ensure that all aspects of the project have been assigned appropriate timescales.

Table 2.6.2- Example risk analysis model.

3. Design

3.1 UX Design Evolution

The design of both the Backpack brand and application has evolved through numerous iterations following user feedback and refined requirements analysis. The design of the brand elements should be attractive, relevant, contemporary, recognisable and memorable. They must also be relatively simple, vibrant and easily transferrable into various media forms. With this in mind, the logo on the left describes the first iteration of the Backpack identity. Although the fundamental concept of travel is absolutely apparent, users felt the logo was more complex than it needed to be and would lose minor details at smaller sizes. Following this feedback, the logo to the right describes the new identity of the brand. Retaining the focal backpack icon, the design remains visually strong and representative of the travel theme. Across smaller sizes, it also maintains quality and clarity, thus improving the design experience.

*Figure 3.1- Evolution of Backpack logo.*

The initial design of the web application focused on the idea of using a strong brand colour theme for users to become familiar with and associate with Backpack. Although the dominant green works to achieve this, it was decided that it was visually overwhelming and

would restrict design elements elsewhere.

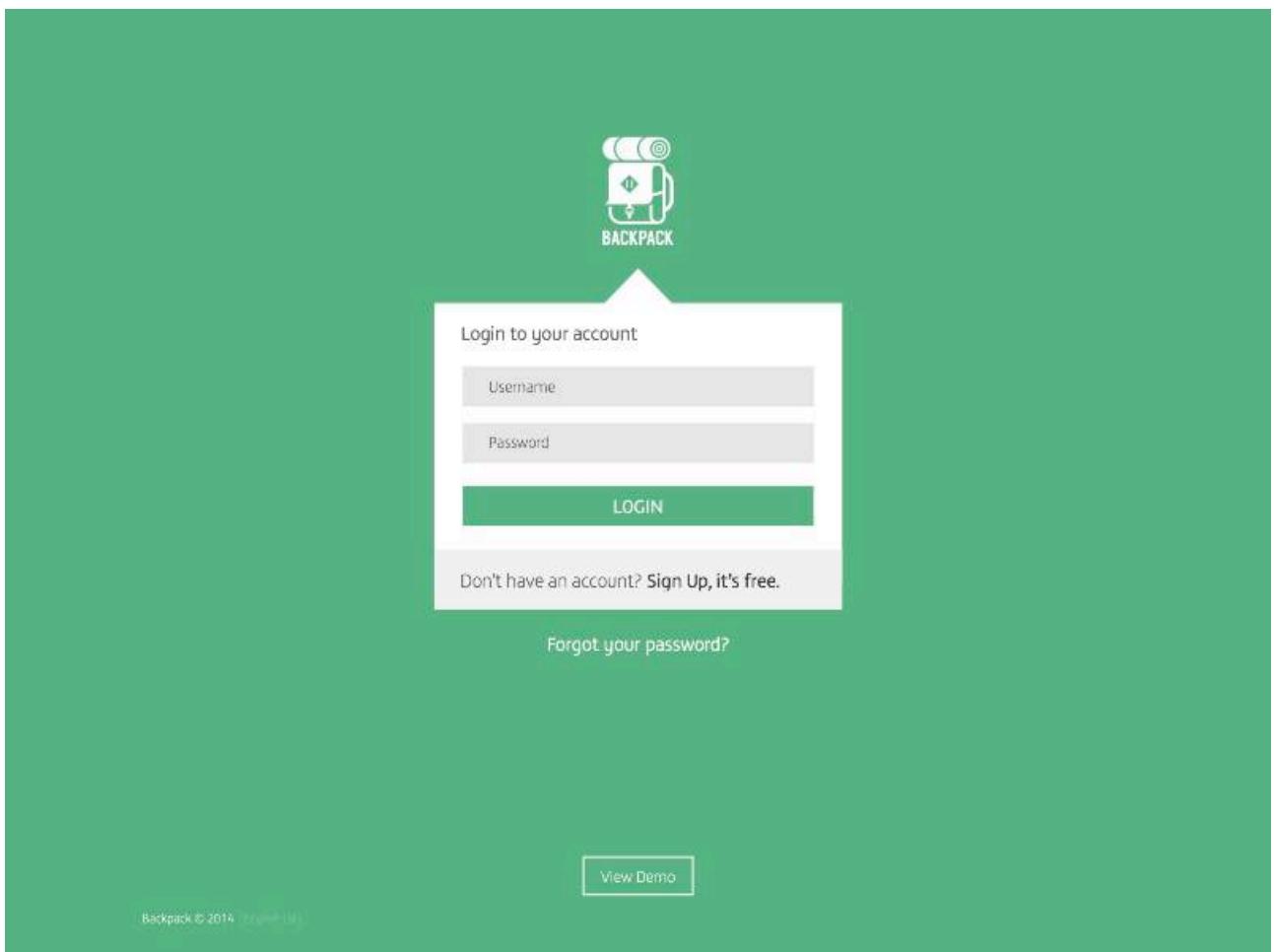


Figure 3.1.2- Initial design theme, login page.

Removing the dominant colour from the brand theme promoted the exploration and introduction of additional design possibilities focusing specifically on photography for the brand identity, which had previously remained unnoticed. As photography speaks to the best and most generous part of our human nature – the desire to share what we find beautiful and interesting with others, it was decided that carefully selected photographs could visually communicate the nature of the brand and engage users from the outset. The image below describes the next design iteration of the login screen of the application, which incorporates photography as a strong brand element.

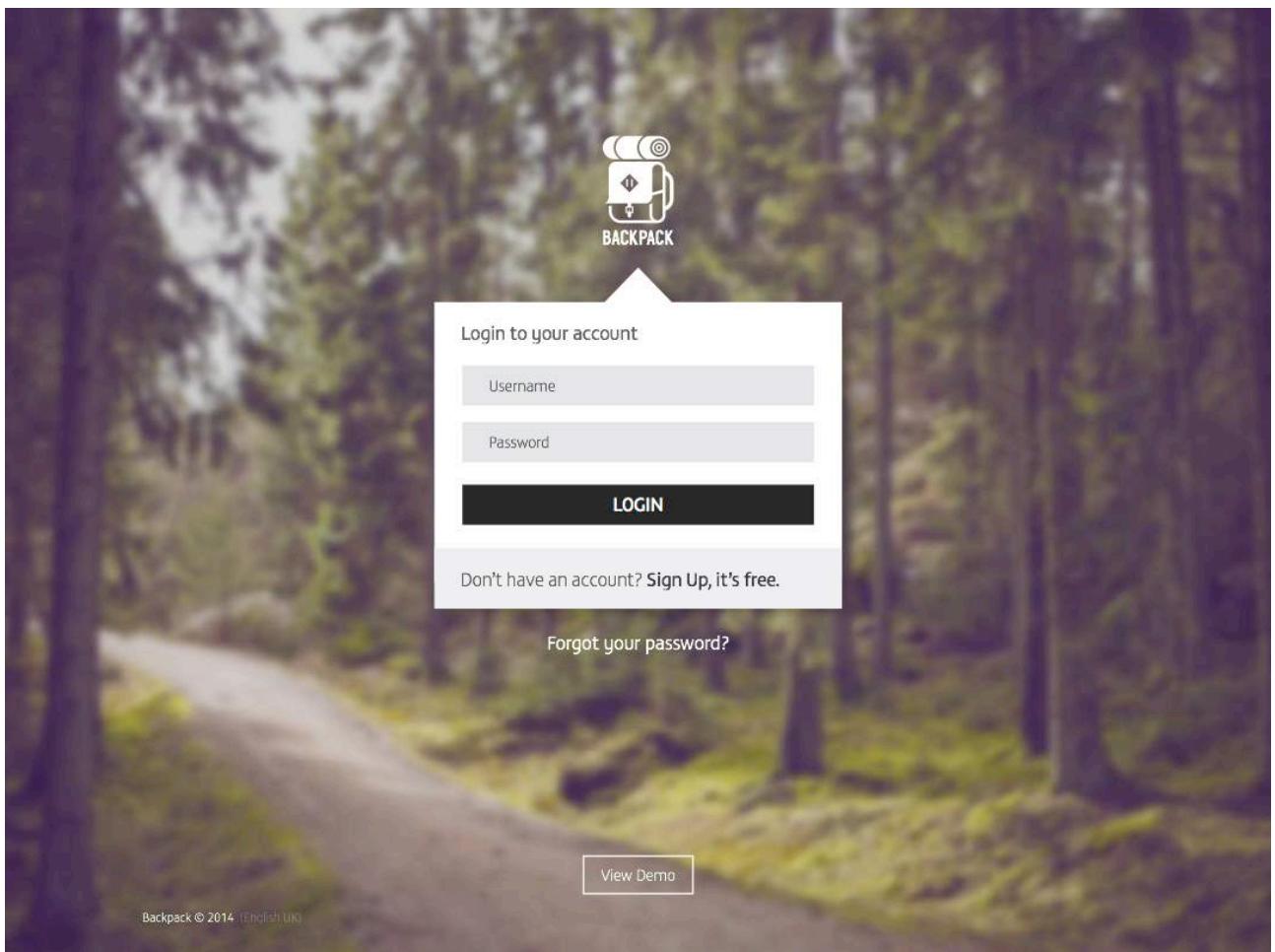


Figure 3.1.3- First design iteration, login page.

Almost instantly the user experience is enhanced as the background photograph, although slightly muted, appeals to our human nature and serves to remind users of the purpose of the application – to travel and explore the world. Here it can be seen that careful consideration of type, element arrangement and colour promote a professional, accessible user experience. Design trends such as flat design and ‘ghost’ buttons have also been implemented to promote a quality product. The call to action reminds users that it is a free product and is the first example of the tone of voice. The final iteration of the login page incorporates an active indicator, which suggests that the login forms only one third of the homepage in its entirety. Along with the dominant ‘What is Backpack?’ button, the indicator serves to scroll the page to the selected option. The final iteration of the login page also includes the implementation of the Facebook plugin, to like the page on Facebook. The full homepage including ‘Login’, ‘What is Backpack?’ and ‘How do I use it?’ across mobile and desktop browsers, can be found in appendix 2.

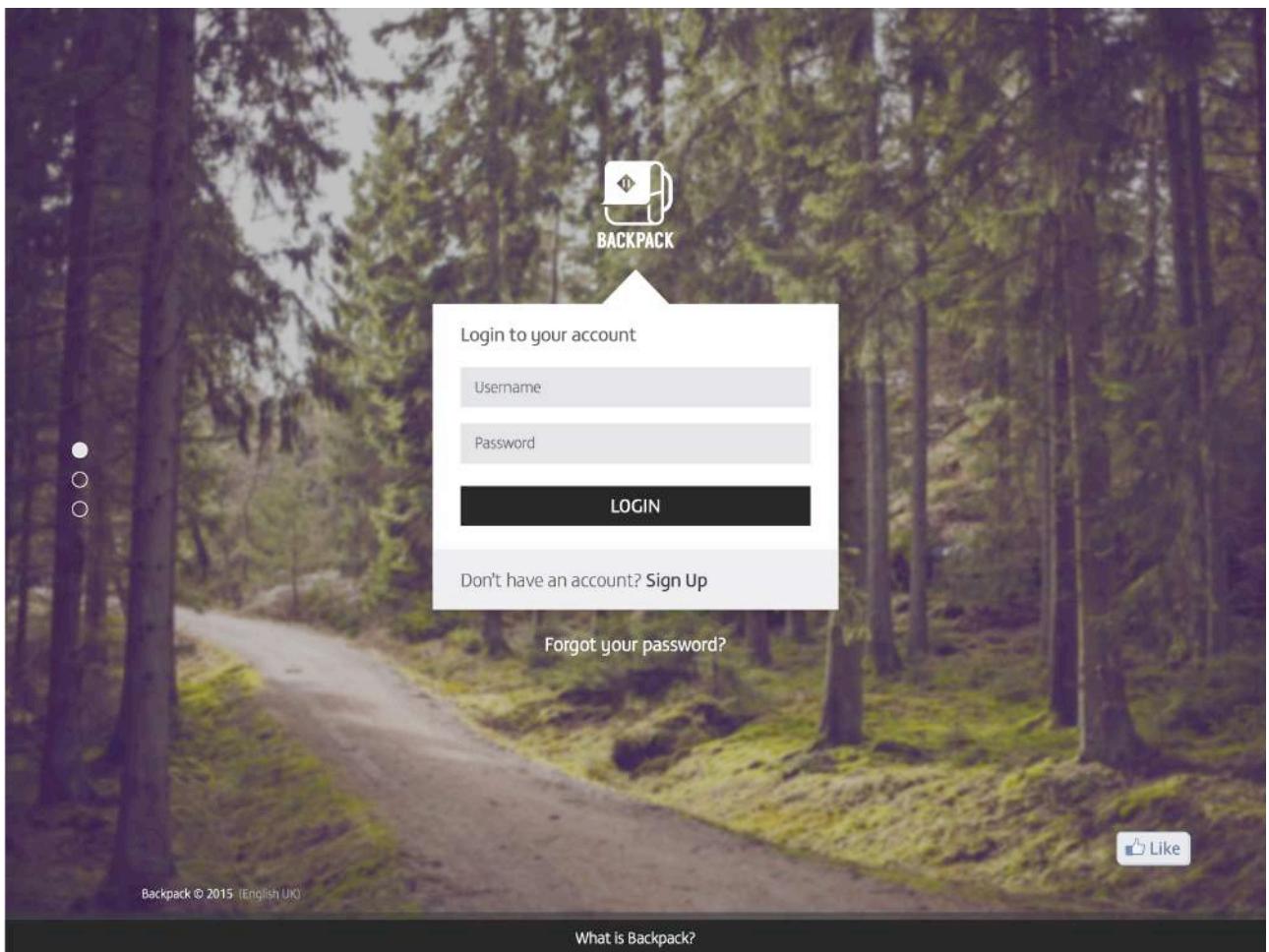


Figure 3.1.4- Final design iteration, login page.

The design of the ‘Profile’ page of the web application has seen the most evolution throughout the course of the project, again responding to user feedback and requirements analysis. Both the initial design and the first iteration design of the profile page display user connections, travel information and associated statistics. However it was decided that the design could be further simplified to place greater emphasis on the profile and travel information of the user, removing features deemed unnecessary for a profile page. Further refinement reworked the design to contain only essential profile information, such as a photo and personal description. The final iteration also introduces the option to view a users travel timeline as a separate page, again placing simplicity and accessibility at the forefront of the revision process. The ‘Timeline’ and ‘Connect’ pages of the application have also met design revisions, which will be described further in appendix 2, along with the changes surrounding the design of the ‘Profile’ page. User experience design evolution is an important aspect of any project. Both requirements analysis and feasibility testing played a significant role in emphasising the need for design revisions across the application.

3.2 System and Logic Design

3.2.1 MVC

The Model View Controller architecture enables web developers to create properly constructed code around the interconnection of three main component types, in a programming language such as PHP. In brief, the approach can be described as a structure for web applications to follow in order to ensure efficiency and consistency. Popular frameworks including ASP.NET, CodeIgniter and Ruby on Rails utilise the MVC pattern. The diagram below seeks to describe the MVC collaboration, focusing on the links and dependencies between components. (Php-html, 2014)

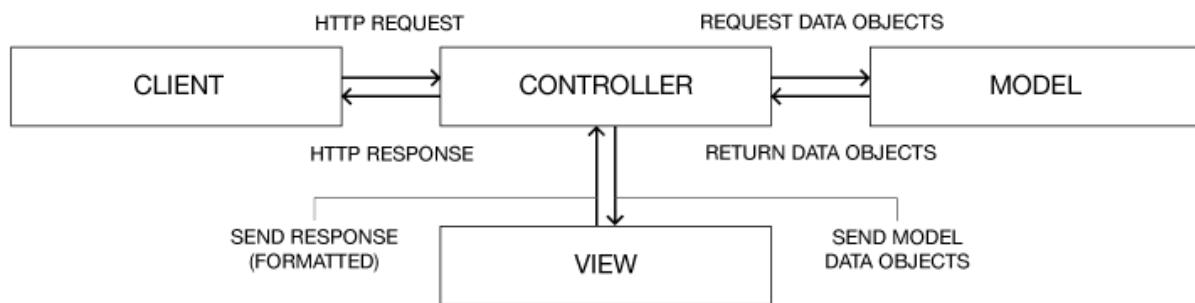


Figure 3.2.1- MVC architecture.

Firstly, the model layer is responsible for managing the data. With this role, it works to store and retrieve entities from a database used by the web application. The model can also be described as a group of related functions representing an element of the web application. To take the example of the ‘User’ model, it is clear that this would be a class that serves to represent the end user. The user model will hold variables that relate directly to the user’s required information. It will also contain functions that retrieve the user’s information and update it, including setting their profile picture, updating their details or any other function that requires database interaction. Secondly, the view layer has the task of displaying the data provided by the model and is also where the complete set of user interface elements of the web application will be contained. This will include HTML markup, CSS style sheets and front-end framework and jQuery files. Simply put, the view layer holds anything that the user sees or interacts with and in some instances, what the user sees is actually a combination of many different views in the same request. Finally, the controller layer enables both the model

and view layers to work together effectively. This typically consists of handling requests from the users, invoking the model to perform the requested operations and sending the data to the view. Here the view will then format the data to be presented to the user as an html output. Before developing the social platform, the user interface elements, data storage and how the user interface will react upon user input must be considered. The use of these components in relation to the proposed social travel journal will be illustrated below.

- Backpack will maintain user data within a database. The code for both these operations will be contained within the model layer as these operations directly relate to the predetermined requirements.
- The web application will be visually impressive and easy to use. As the application is being built for the web, standard web technologies will be implemented. Including HTML for markup, externally linked CSS style sheets, and externally linked front-end framework and jQuery files for display and user interaction. All of these elements will be present in the view layer.
- Finally, Backpack's models and views will be connected together without interfering with each other. Additionally, the application requires a method in which to respond to user interaction in the view layer and provide the relevant data to the model layer. As discussed, the controller layer will be used for this purpose.

Following the MVC architecture allows for each component type to be independently designed, implemented, and tested which helps to ensure code organisation and efficiency. (Onextrapixel, 2012.)

3.2.2 Activity Diagrams

The purpose of an activity diagram is to visually describe the procedural movement of actions that are part of an overarching activity. In projects in which use cases have been utilised, activity diagrams serve to model a specific function or feature at a more detailed level, which in this instance include web application registration, user check in or connection search. The diagram effectively details the multiple decision paths that exist in the sequence of events

contained in the activity between the start and finish points. The following activity diagram describes the rules and the process of registering and logging into the social web application.

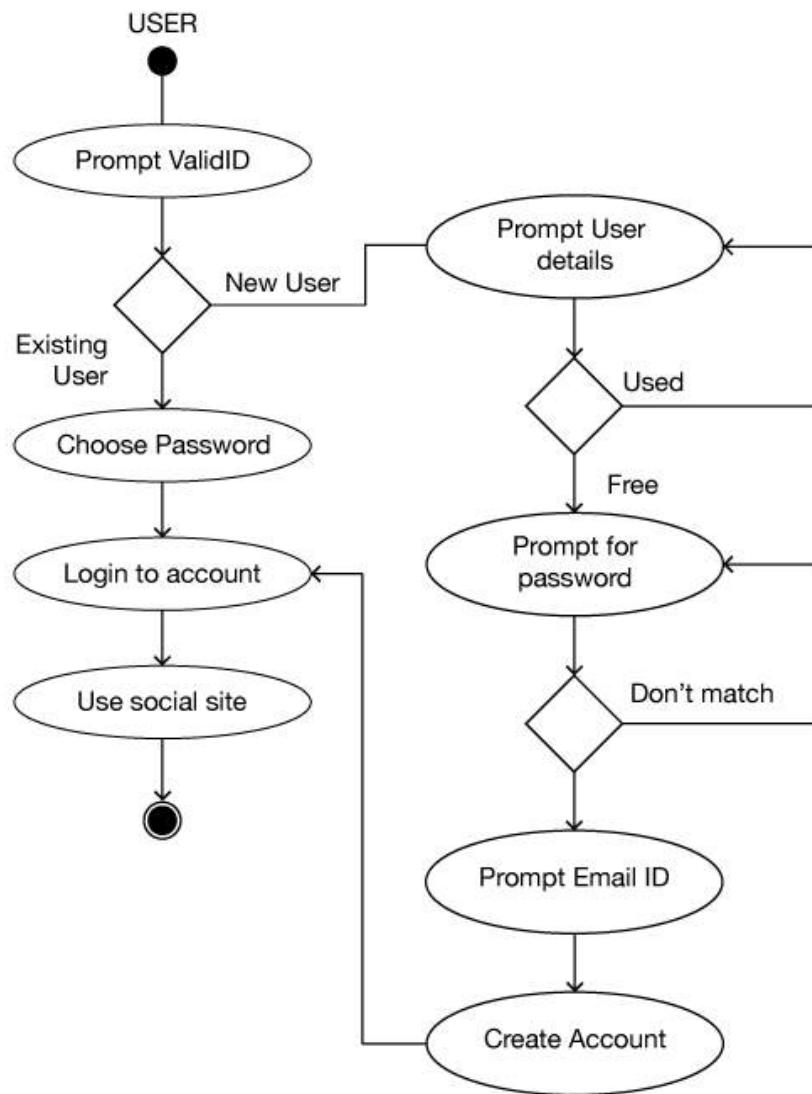


Figure 3.2.2- Activity diagram describing login and registration process.

3.2.3 Design Patterns

Social design patterns refer to the components and visual presentation of interactivity that are the fundamental building blocks of social experiences. They are the emergent interaction patterns that have recently become the standard way for users to interact with web content. Utilising popular design patterns seeks to save both design and development time as well as reduce the potential for errors. It promotes consistent design from the outset that users can immediately identify and understand and such patterns are also compatible with the MVC architecture, promoting absolute efficiency.

3.3 Data Design

Figure 3.3 represents the database for Backpack, on its most basic level. As you can see, users can search for multiple connections, which are essentially other users. Each user will manage a travel blog, which will then be shared with their connections through their timeline. The travel blog will contain check-in/location information as well as multimedia attachment information. Profile information will also be shared between connections. Using the places search feature, users will be able to locate specific places nearby and follow the quickest route to the desired location.

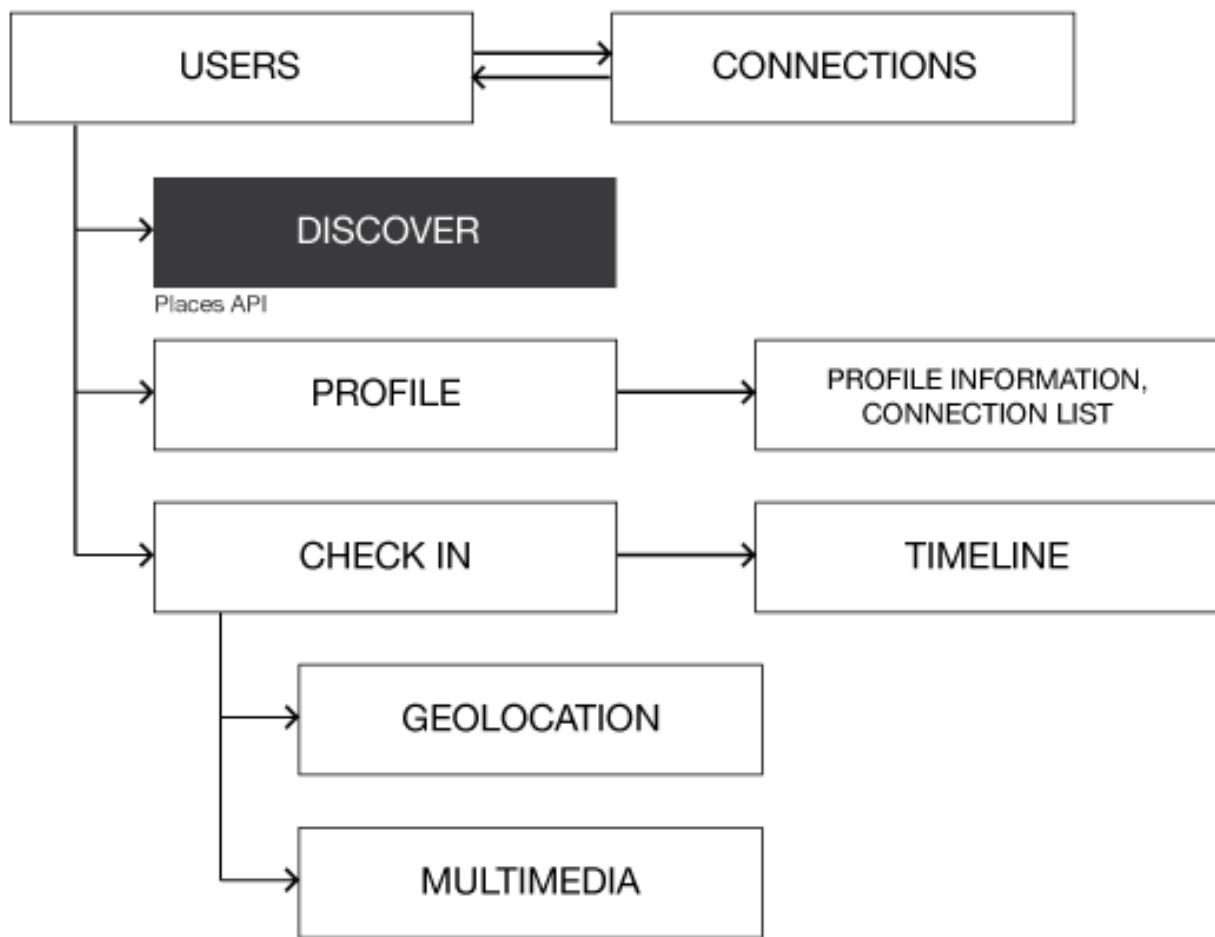


Figure 3.3- Backpack Data design.

3.3.1 Database Design

It was only once a basic prototype design of Backpack had been established, could the system design be revised effectively. Although quite similar in structure, the revised system design describes a more refined approach to the build of the database and focuses on data reduction.

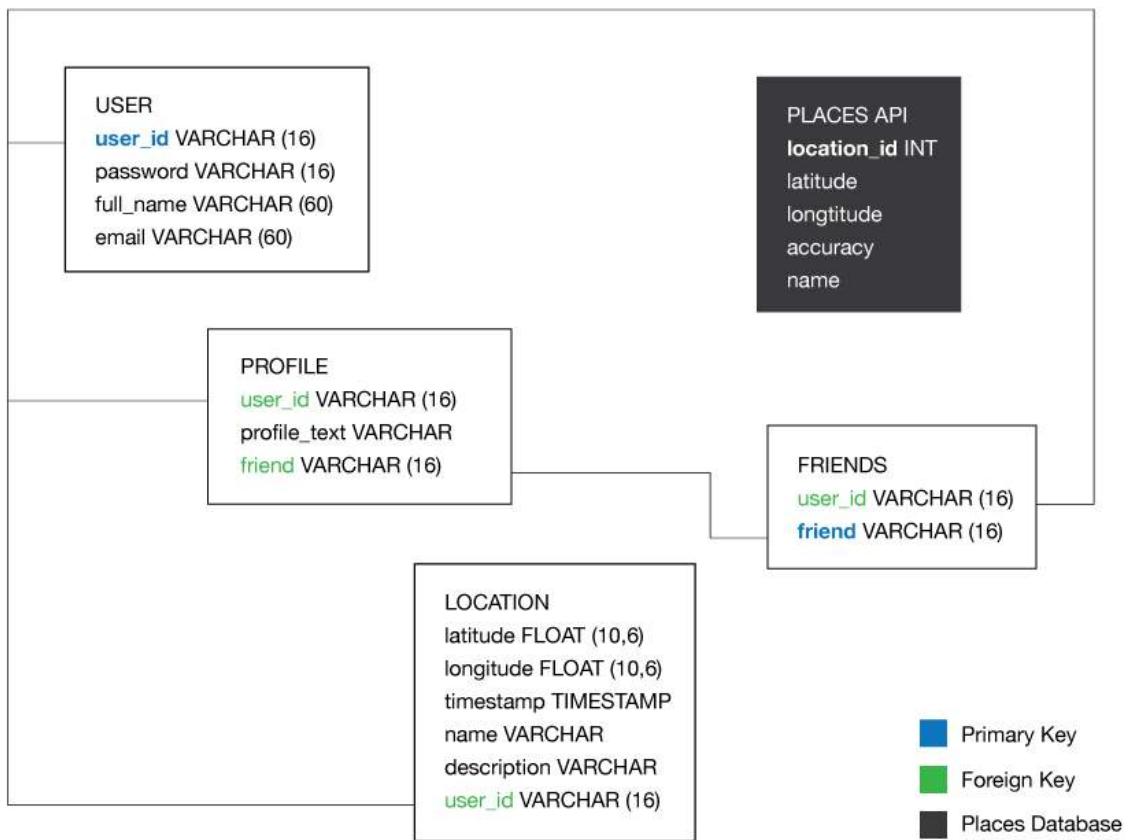


Figure 3.3.1- Web application database design.

In order for Backpack to display user travel data as a timeline of entries, the location and blog entry acquired from each user check in must be saved. In this instance, the web application will work to collect the geolocation of the check in device and send the information to the database. Supported by the same database used by Google maps, using Google Places API provides an opportunity to access detailed information about places around the world. In essence the API provides a simple, future-proof way of granting Backpack users access to over 1.5 million different areas.

3.3.2 Entity Relationship Modeling

Creating an entity relationship diagram serves to assist with the understanding of the web application's data needs and works to show the structure of the data in the database.

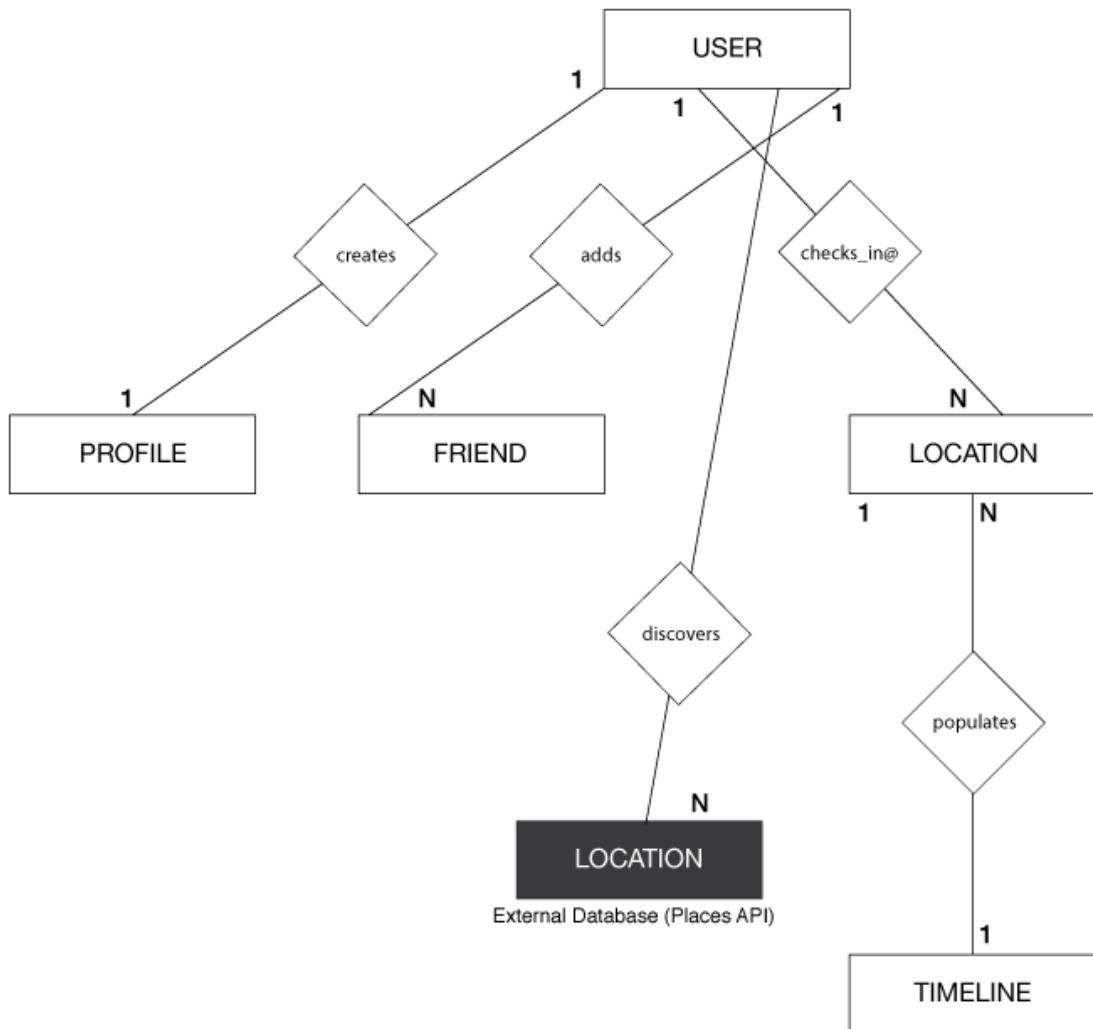


Figure 3.3.2- Entity Relationship Model.

4. Implementation

4.1 Client-Server Model

Utilising the Client-Server Model divides the web application structure into the two major components, client and server. Below you can see how the client requests specific resources and the server processes the request and provides the requested resources via the Internet.

The Client provides the interface to the user to interact with the application by receiving the server response and displaying the results to the user. The Server receives the client request and as mentioned, the results are sent back to the client as a response. In addition creating the Client-Server Model encourages the designer to consider technologies, which will be used within their web application.

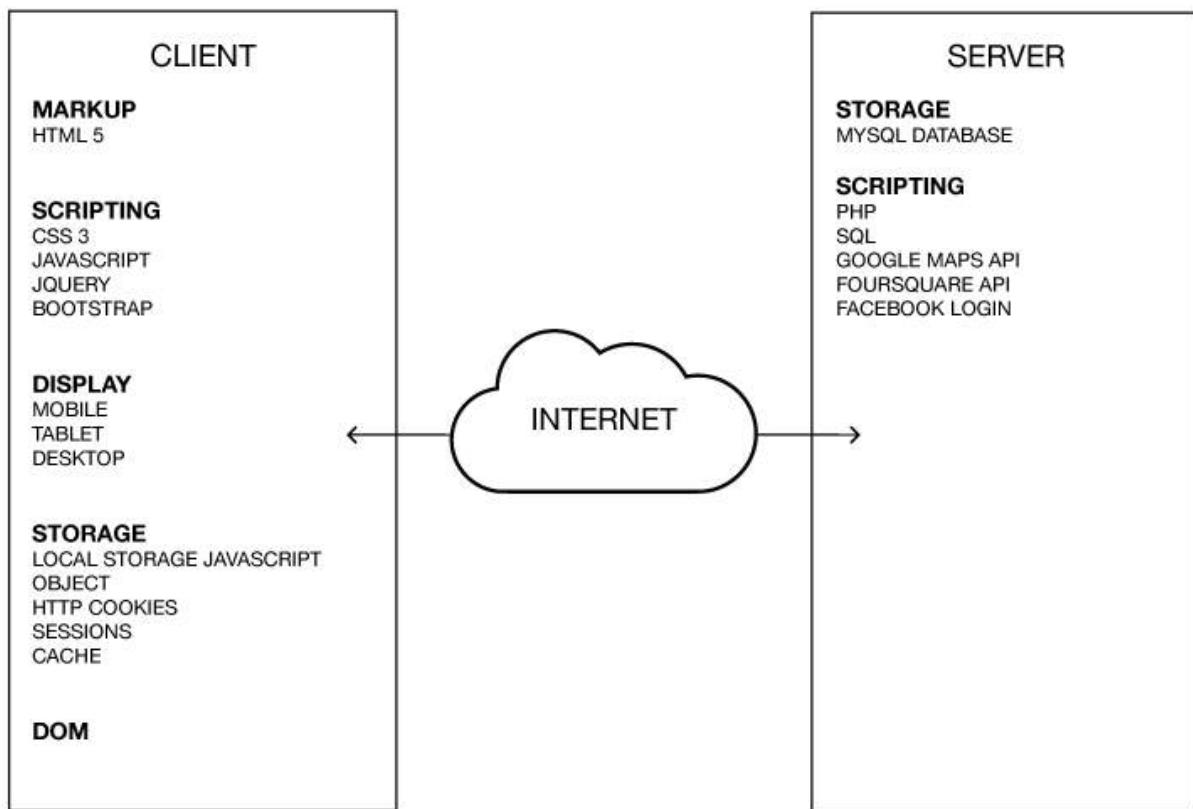


Figure 4.1-Backpack Client-Server Model

4.2 Technologies

In theory and application, a dynamic web application enables users to go beyond reading textual information and viewing static images. Instead, it allows for an interactive experience, with the user being in control of the information viewed and functionality provided. Over recent years, the web industry has placed a great deal of emphasis on front-end performance as this serves to cater for a quick and visually stimulating online user experience. With this it is vital that the most appropriate and powerful technologies available are utilised effectively for use within Backpack. Although multiple frameworks exist, Bootstrap and Foundation are arguably the most popular front-end frameworks for web design and

development, with both offering a suite of usable features and components that can be implemented easily and are supported on a wide range of browsers and devices. On this note however, research suggests that Foundation doesn't support anything less than IE9, which could prove problematic when ensuring wide-range support. In spite of this, the time spent writing code is seriously reduced, enabling the designer to focus on absolute customisation and factor in the design. Each framework comes equipped with JavaScript libraries that enable developers to go beyond the basic structure and styling of elements. Both Bootstrap and Foundation pride themselves on their responsive capabilities and grid system prominence, adapting to the change in browser and viewing platforms with speed and efficiency. Although the syntax for creating grids on each is different, it isn't difficult to create equivalent code snippets that do very nearly the same thing in both frameworks. Here it is a case of personal opinion as functionality is identical. When it comes to the calculation of widths, sizes and typography Bootstrap uses pixels whilst Foundation works with rems. Although both are capable of producing the same result, from personal experience, pixels are much more familiar to work with and their use enables developers to utilise their existing knowledge most effectively. In addition, Bootstrap offers impressive documentation, which seeks to provide a detailed overview of all features and components available.

(Blog.teamtreehouse, 2014.)

Overall it has been decided that Bootstrap will be used as the front-end framework for the web application, due to its wide range support, impressive suite of features and components and extensive documentation.

When combined, PHP and MySQL serve as a powerful way to create dynamic web pages that interact with web users efficiently. Although HTML 5 and CSS 3 will be used to construct useful, well-formatted and styled web pages, the addition of PHP and MySQL deals with functions that HTML alone fails to achieve including data collection and content specific creation. MySQL will be used primarily, to store both user and travel information outlined above. Although each can be used independently, the combination of the two will create multiple possibilities for the web application. Of course, popular PHP frameworks can be used to facilitate scalability and long-term maintenance. Frameworks such as Laravel, CodeIgniter, CakePHP and Symfony achieve this by complying with development standards and keeping code organised. They also serve to reduce the time and effort required to build

generic components, instead web developers are able to dedicate more time to specific tasks and functionality, focusing on high quality code. With this said, it is often the case that web developers learn more about the language when writing their own with results more specific than a ready made template. On this note it has been decided that PHP frameworks will not be used throughout the build of the interactive travel journal. Designed to simplify the client-side scripting of HTML, jQuery will be used to increase user interactivity. Although the Bootstrap framework is equipped with JavaScript libraries, jQuery will be used to simplify complicated functions of JavaScript, such as AJAX calls and DOM manipulation, supported by its cross browser proficiency.

In addition front-end dynamics will enable the web application to respond to the user requirements and provide relevant information as and when necessary. Research also suggests that accessibility is an important consideration throughout the front-end design and development as the web application must conform to W3C's accessibility guidelines. Ensuring the web application is search engine friendly is a further consideration, which will be achieved by performing effective search engine optimisation. Utilising website dynamics provides an invaluable way to better meet the needs of users of the web application. It effectively enables them to find what they need quickly and easily while keeping track of what information is being accessed.

4.2.1 API's and SDK's

After further research into the technological requirements of the Backpack travel application it has been decided that the Facebook SDK for JavaScript will be utilised in order to make use of the rich set of client-side functionality it provides. Focusing specifically on the addition of Social Plugins, this will seek to provide a feature rich platform and engaging user experience. More importantly however, the SDK, social plugins and dialogs work on both desktop and mobile web browsers, making it an ideal development tool for the build of Backpack. On this note it was crucial at this stage to register Backpack to Facebook in order to receive a unique application ID for use within the SDK call.



Figure 4.2.1- Facebook Developer dashboard.

The code below was provided when the application was successfully registered and works to load and initialise the SDK.

```
<script>
    window.fbAsyncInit = function() {
        FB.init({
            appId      : '915967978447773',
            xfbml     : true,
            version   : 'v2.1'
        });
    };

    (function(d, s, id){
        var js, fjs = d.getElementsByTagName(s)[0];
        if (d.getElementById(id)) {return;}
        js = d.createElement(s); js.id = id;
        js.src = "//connect.facebook.net/en_US/sdk.js";
        fjs.parentNode.insertBefore(js, fjs);
        }(document, 'script', 'facebook-jssdk'));
</script>
```

Once the SDK has completed loading, the function assigned to window.fbAsyncInit runs and handles any kind of javascript. A major advantage of utilising the SDK in this way is the ability to like and share the application, which enables users to post a link to their timeline, or create an Open Graph story. (Developers.facebook, 2015.)

```
FB.ui({
  method: 'share_open_graph',
  action_type: 'og.likes',
  action_properties: JSON.stringify({
    object:'https://developers.facebook.com/docs/',
  })
}, function(response){});
```

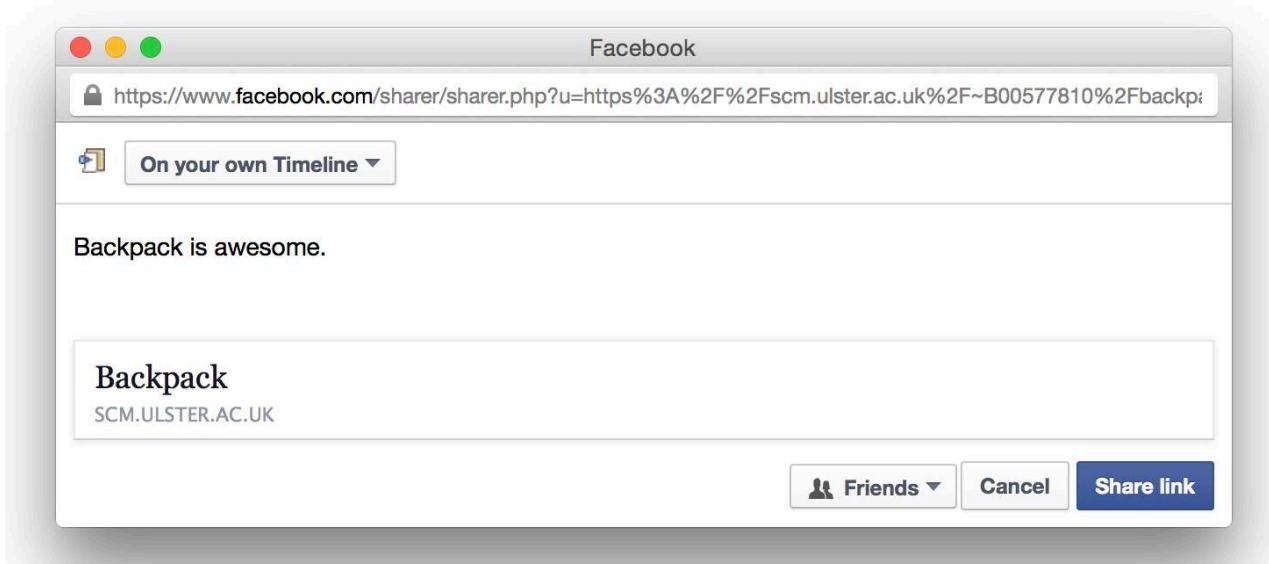


Figure 4.2.2- Facebook share functionality.

Google Places API

For the 'Discover' and 'Timeline' pages of the web application, Google Places API will be implemented to enable the creation of rich functionality and impressive visualisations of user travel data, leveraging the comprehensiveness and usability of Google Maps. Utilising the Places API in this way will enable users to discover individual locations in more than 200 countries, providing up-to-date information concerning millions of categorised and named places nearby a users current location. In addition, many of those places are complete with rich attribution including ratings, images and reviews, which will prove highly advantageous for Backpack users throughout their trip. This will prove extremely useful for users of the application, who, at a specific location throughout their travels may wish to locate a hotel or hostel, restaurant, internet café, museum or train station. Utilising the API in this way would undoubtedly improve the overall user experience, providing Backpack with the ability to become a personal travel tour guide, regardless of location or dialect. Multiple Google libraries and services are made available with the use of this API, which will serve to improve

functionality of the timeline display feature. Further research into the Google maps documentation revealed the Google Distance Matrix API, which works to provide travel distance and time for a matrix of origins and destinations. Although previously not recognised as a requirement for the application, this API may be implemented depending on time constraints. In order to activate the Places API, Backpack had to be registered to Google API's console, complete with app and server information, as seen below. (Developers.google, 2015.)



Figure 4.2.3- API Key used for Places API.

Below you can see a snippet of the Nearby Search Request call. (Google Places API)

```
function findPlaces (place) {
  placesService.search({
    location: place.geometry.location,
    radius: currentRadius,
    types: [currentType]
  }, function(results, status) {
    if (status == google.maps.places.PlacesServiceStatus.OK) {
      places = results;
      currentPlace = 0;
      showPlace(results[0]);
    }else{
      renderFallback();
    }
  });
}
```

4.3 Notable Challenges

Implementing Google's Distance Matrix service in addition to the Places API presented a notable challenge. The 'Discover' page of the application successfully works to acquire the location of the user and position their location on the map. Using the places autocomplete search feature, users can search for nearby places of interest and the search box will return a pick list containing a mix of places and predicted search terms. As the image below shows,

the selected result from the search box displays an icon type on screen. When the user hovers over the result item, the name of the result appears as a tooltip.

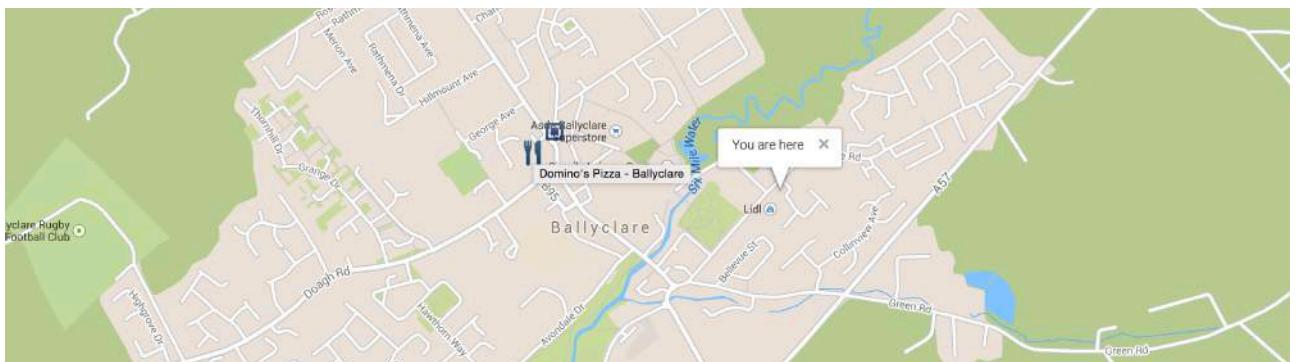


Figure 4.3- Search nearby results, based on users current location.

At this stage, the aim of incorporating Google's Distance Matrix service was to enable a user to click on the returned marker location and view a specified route to the result, as well as the travel distance from the user. Below you can see an example of the service in action. The user's location has been acquired and they have searched for a library nearby.

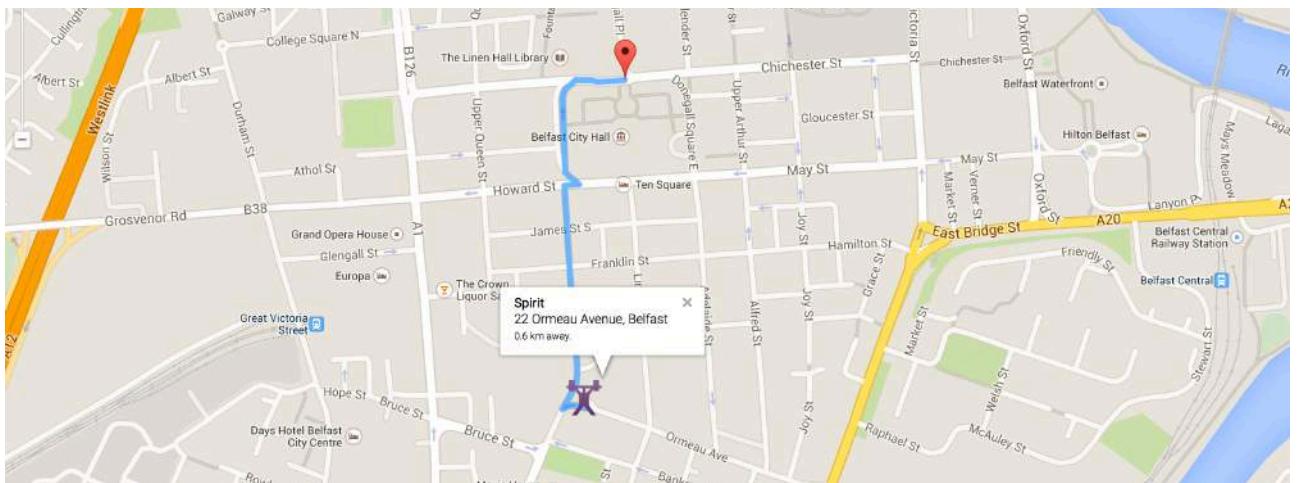


Figure 4.3.1- Google's Distance Matrix service in action.

Although not an initial requirement, this functionality was intended to improve the user experience and make the most of the Google Maps services available.

In addition, a further challenge met was that of the geolocation failing to acquire the user position when using Firefox. The screenshot below shows the error message, generated from the page geolocation function.

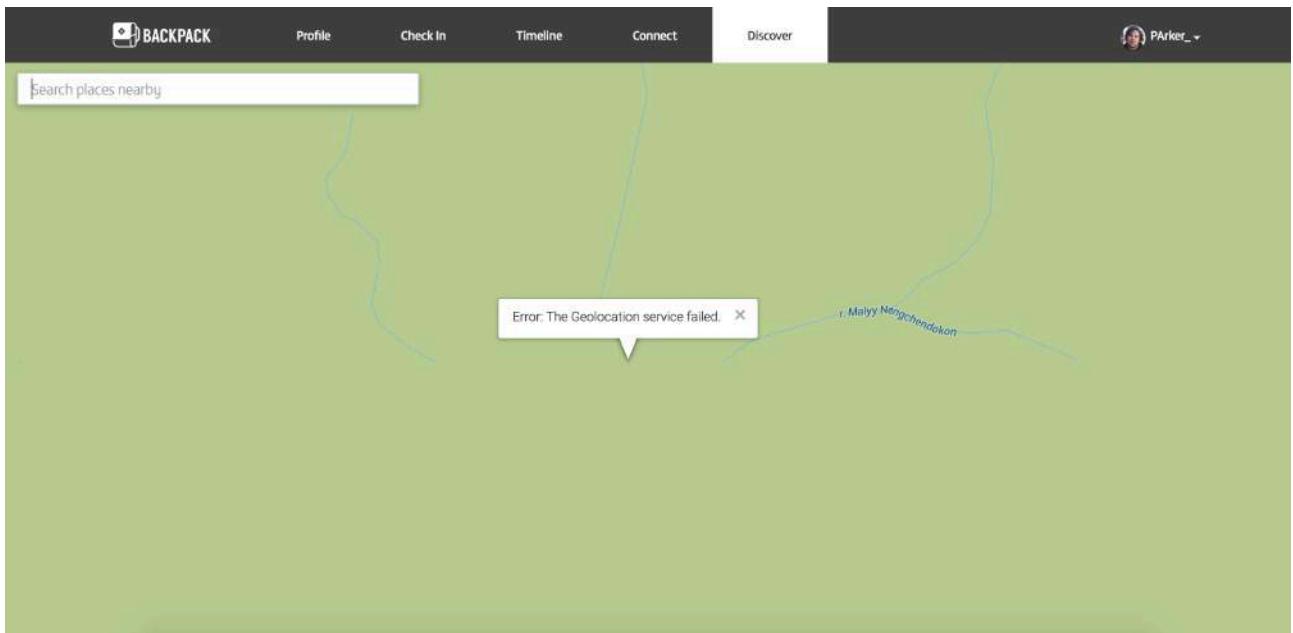


Figure 4.3.2- Geolocation error message.

When inspected, the Console revealed the following error, suggesting that the scm server makes use of a SHA-1 Certificate which is a weak signature algorithm and has become deprecated across the web.

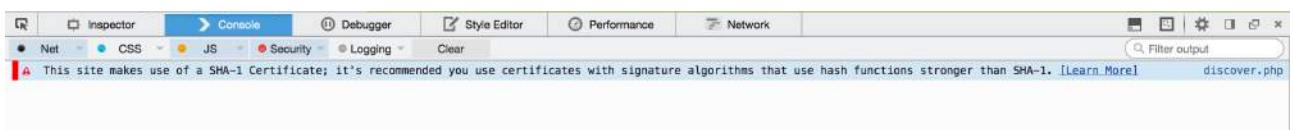


Figure 4.3.3- Console inspection error.

Although SHA-1 based signatures are common and present no errors with geolocation using Google Chrome, Safari or mobile devices, it seemed crucial to attempt a working solution for Firefox in order to ensure optimal user experiences irrespective of browser or device. As the issue was server-side, it was necessary at this stage, to email Paul Stewart regarding the error, to identify if the issue could be resolved and if so, how. Paul replied and confirmed that there was in fact no error within the geolocation function of the script and that he believed the issue was with the scm server configuration, stating "I am unable to change the scm.ulster.ac.uk server certificate until it expires in about a year's time." Following this a final option was to carry out a browser refresh, which often fixes browser issues by restoring Firefox to its default state. Surprisingly, this simple tool corrected the issue by erasing website permissions, security settings and modified preferences.

4.4 Notable Achievements

Recently mobile devices have introduced new features and capabilities such as touch-capability, motion sensing, device orientation and geolocation. The Geolocation API is supported across a suite of browsers and mobile devices and its use forms the basis of the application. Today, the next wave of social networking platforms are concerned with identifying where users are, and Backpack aims to use user smartphones and browsers to answer it. Figure 4.4.1 describes the ‘Check In’ page of the application. Here the user is prompted to grant geolocation permission in order for the function to acquire their permission. Once granted, the user completes the check in form and submits their entry.

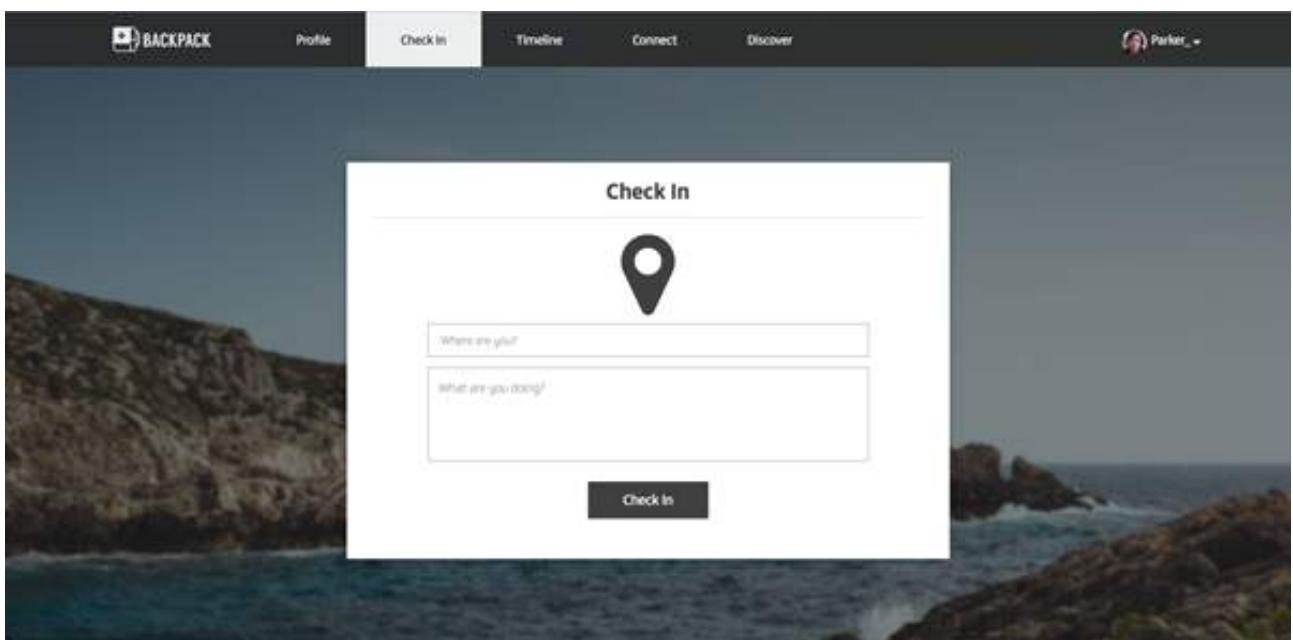


Figure 4.4.1- Check In page of the web application.

```
function success(pos){
    location.reload();

    var lat = pos.coords.latitude;
    var lng = pos.coords.longitude;
    var placename = $('#placecheck').val(),
        placechecktext = $('#placechecktext').val();

    var data = {
        Latitude: lat,
        Longitude: lng,
        name: placename,
        description: placechecktext
    }
}
```

The success parameter takes the users position object as its sole input parameter. Here the check in variables are also assigned which are derived from the user's geolocation position and form input fields. Using AJAX, the data is posted to the destination script where a simple sql query inserts the information into the locations table of the database. The 'Timeline' page of the application utilises Google Maps to display check in entries as live markers on screen. However in order to retrieve the locations from the database and ensure accurate results, the following code was implemented and tested to verify that it correctly returns our locations as a JSON string, which can be seen in Figure 4.4.2.

```
try{
$db = new PDO("mysql:host=$dbhost;dbname=$dbname", $dbuser, $dbpass);
$db->setAttribute(PDO::ATTR_ERRMODE, PDO::ERRMODE_EXCEPTION);

$sth = $db->query("SELECT * FROM location where user= '$user'");
$locations = $sth->fetchAll();
echo json_encode( $locations );

} catch (Exception $e) {
echo $e->getMessage();
}
```

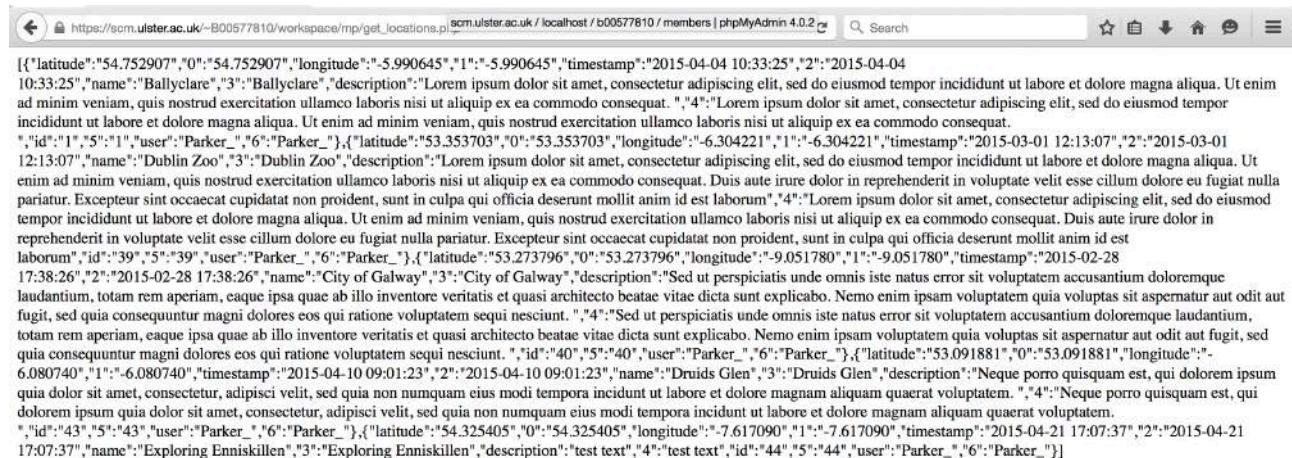


Figure 4.4.2- Locations returned as a JSON strong.

Following this, the next stage was to display the user locations on the Timeline map. Here a function to make an AJAX request was created with two parameters provided, including url and callback. The make request function was then added inside the maps init function. Both the 'Geocoder' and 'Infowindow' objects were also introduced at this stage, which will be described later. The callback function in the makeRequest call uses JSON.parse to convert the JSON string into array of objects. Essentially each object represents one location, or row

from the database. Inside a loop a displayLocation function is called with object as a parameter.

```
map = new google.maps.Map(document.getElementById("map_canvas"), mapOptions);

makeRequest('get_locations.php', function(data) {
    var data = JSON.parse(data.responseText);
    for (var i = 0; i < data.length; i++) {
        displayLocation(data[i]);
    }
}
```

The displayLocation function works to display each location on the user Timeline map.

```
function displayLocation(location) {
var backpack = new google.maps.MarkerImage("images/marker.svg");

var content = '<div class="infoWindow"><strong>' + location.name +
'</strong>'
+ '<br/><br/>' + location.timestamp
+ '<br/><br/>' + location.description+ '</div>';

if (parseInt(location.latitude) == 0) {
geocoder.geocode( { 'name': location.name }, function(results, status) {
    if (status == google.maps.GeocoderStatus.OK) {
        google.maps.event.addListener(marker, 'click', function() {
            infowindow.setContent(content);
            infowindow.open(map,marker);
        });
    }
});
} else {
    var position = new google.maps.LatLng(parseFloat(location.latitude),
parseFloat(location.longitude));
    var marker = new google.maps.Marker({
        icon: backpack,
        map: map,
        position: position,
        title: location.name
    });

    google.maps.event.addListener(marker, 'click', function() {
        infowindow.setContent(content);
        infowindow.open(map,marker);
    });
}
}
```

As the code above describes, marker content was created using HTML, which displays the user input data completed in the check in form. Next the function determines whether latitude and longitude values for the checked in location exist. If they don't, geocoding is used to

obtain the latitude and longitude from a location's place name. If the geocoding process succeeds, the location data creates a marker with an event listener attached. In this instance, when a user clicks the location marker, the matching InfoWindow containing check in information will display, as seen in Figure 4.4.3.

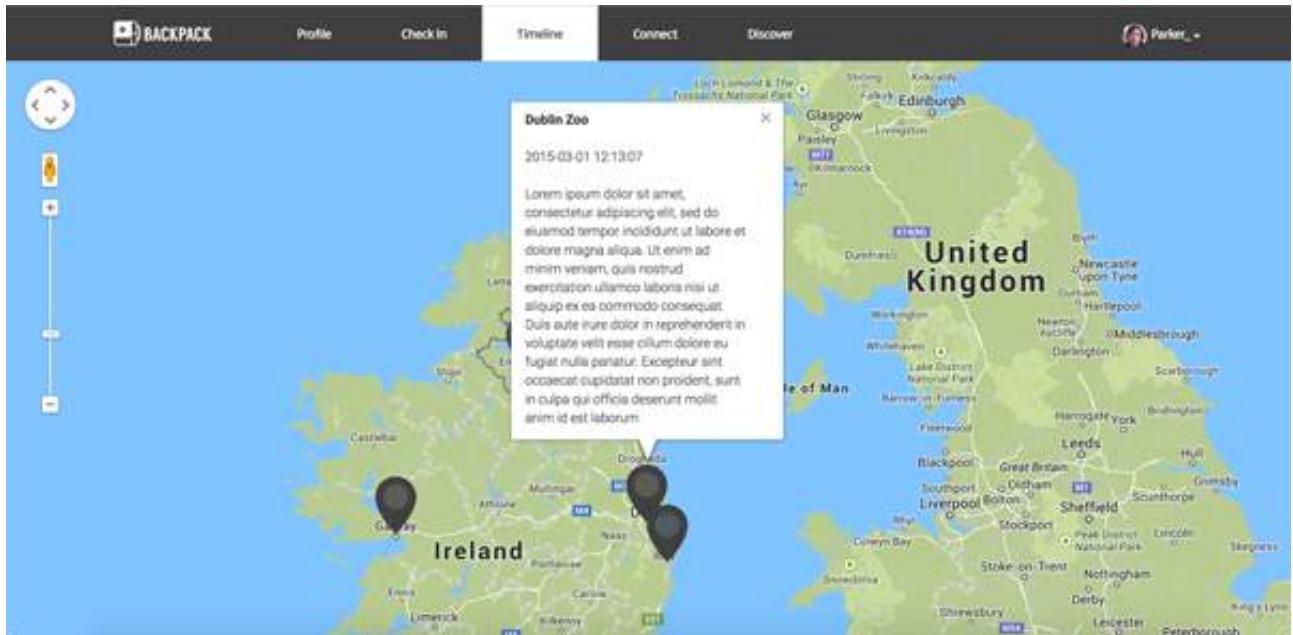


Figure 4.4.3- InfoWindow displaying to show check in information, as a live marker.

A similar approach was taken to enable users to view their connections travel timelines as an option provided on their profile page. Here however a 'friend' session was created which served to store the username of the connection accessed on the front end before it was passed to the back end for insertion into the sql query. The code below generates the user profile template.

```
if ($result->num_rows) {
    $row = $result->fetch_array(MYSQLI_ASSOC);
    $_SESSION['friend']=$user;
    echo "<span class='profiletext'>" . nl2br($row['text']) . "</span>";
    echo "<form method='post' action='user_locations.php'>
        <input type='hidden' name='name' value='$user' />
        <a class='view' id='$user' href='usertimeline.php'>My travel
journey</a></form><br/>";
}
```

The search box results in the 'Discover' page of the application are biased within the bounds of the current maps viewpoint. With this, search results are filtered to display only those nearby the users current location.

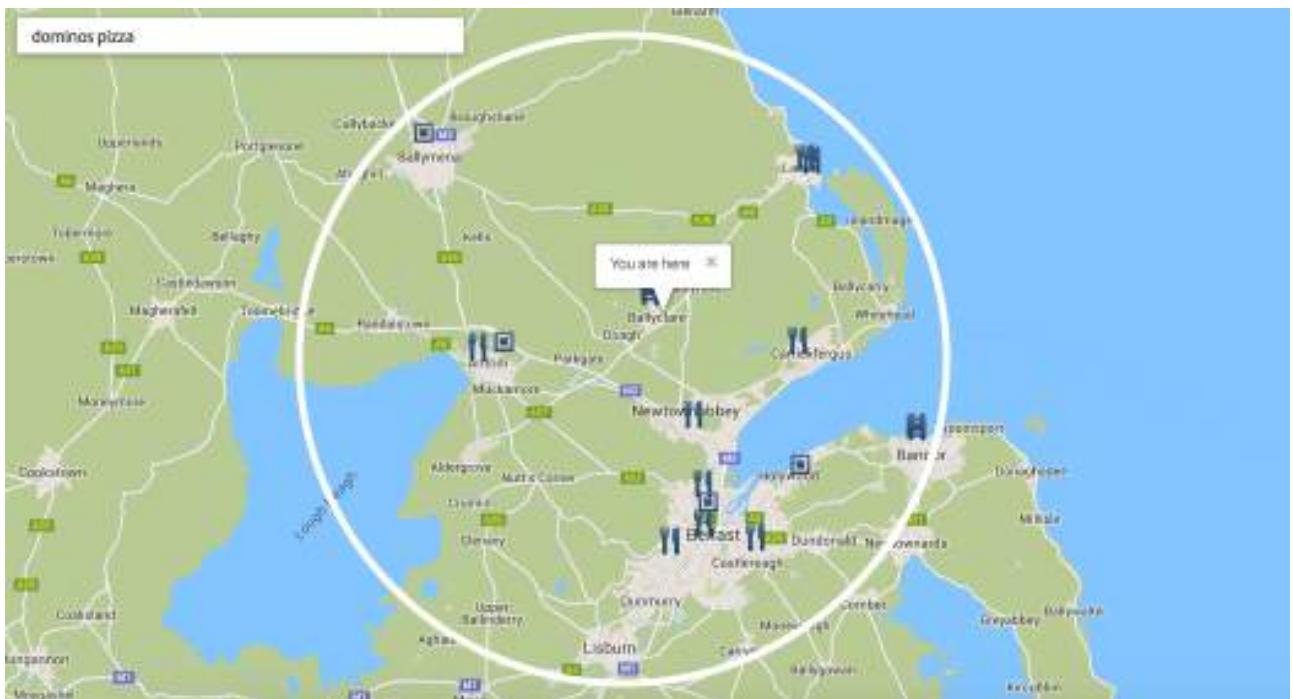


Figure 4.4.4- Results biased to users current location (bounds of maps viewpoint.)

5. Testing

5.1 Testing Approach Selection

In brief, testing can be described as a quality attribute that serves to evaluate the user experience. With this, it represents a fundamental component, which must be given absolute attention and consideration before, during and after the development of the web application. The testing approach and tools selected often depend on the characteristics of the application and parameters of the development. The testing approaches used throughout the development of the project included, functional, usability, interface and capability, each of which will be discussed in turn below.

5.1.1 Functional Testing

Functional testing of the application served to ensure that predetermined functions and features specified in the requirements analysis behaved as expected. This approach ranged from testing links, form validation, user input and database connection. Database consistency is a significant consideration of this testing approach. Here it was checked for integrity and errors, as was the execution of queries and retrieval of user information.

5.1.2 Usability Testing

Usability testing proved as an invaluable approach to gain user feedback of the application and identify frontend errors, which had previously remained unnoticed. The objective of user testing was to ensure Backpack satisfied the expectations of the user and confirm that the application was ready to be launched and used effectively. Throughout this approach, users tested the navigation, responsiveness, check-in functionality, form input, design and content authoring.

5.1.3 Interface Testing

The main interfaces of the project included the web server, application server interface and database server interface. Throughout this approach to testing it was vital to ensure all interactions between each server was executed correctly and any errors were handled effectively. Interface testing plays a vital role for applications that are developed to be used on multiple devices and its effective approach governs user interaction and application functionality. (Softwaretestinghelp, 2008). The Console was used to identify server issues, as seen in Figure 5.1.3 below.



Figure 5.1.3- Console inspection to test for interface errors.

5.1.4 Compatibility Testing

As Backpack is a web application, designed and built for use on desktops and mobile, compatibility testing was a fundamental testing approach. Tests throughout this approach included browser compatibility, operating system compatibility and mobile browsing. Backpack must be cross browser platform compatible, as different browsers have different configurations and settings. Despite the weak signature algorithm of the SCM server preventing the geolocation and Places API from running on Firefox, the application behaves

as intended across all other browsers and mobile devices. Figure 5.2 shows how Backpack displays on mobile.

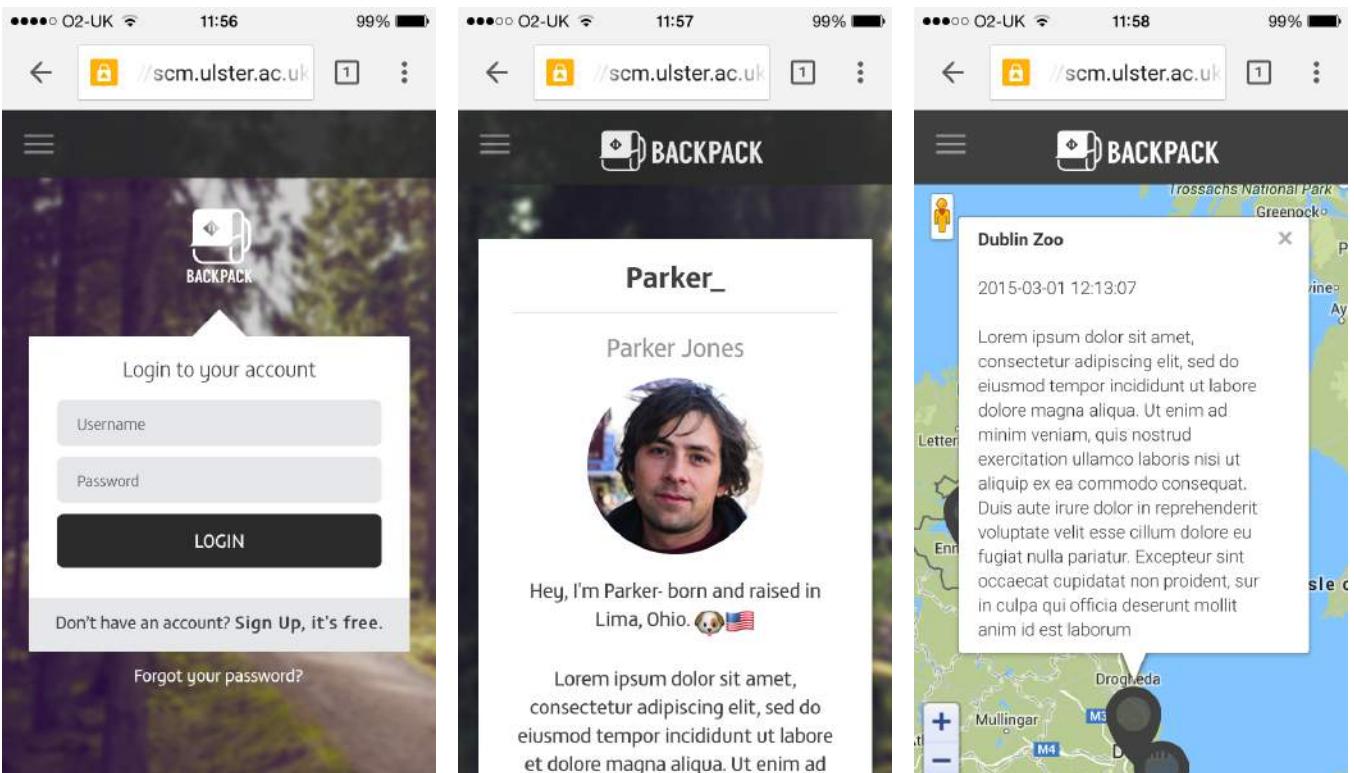


Figure 5.1.4- Backpack responding to mobile devices.

5.2 Testing Process

Functional, interface and compatibility testing approaches were used at strategic points throughout the project development. Testing the web application required a systematic approach in order to accelerate project progression using the limited time available to do so.

1. Sett test goals

Setting test goals was the first step of the process and involved prioritising which functions and features of Backpack, outlined in the requirements analysis, required thorough testing before launch. This involved prioritising them into one of three categories, critical-requiring immediate attention, address as soon as time permits and a future enhancement.

2. Define use cases

Defining typical user processes and use cases was the second stage of the test process and facilitated in recognising as many different scenarios users may encounter when using the web application. In doing this, features that may introduce errors or user experience issues were noted and tested accordingly.

3. Set up a test environment

Deploying a restricted access server environment that was identical to the live server, allowed for the identification of issues, which may have previously remained unnoticed when developing and testing on a local server.

4. Unit testing

Unit testing is when the actual testing of the predefined features and functionality takes place across a suite of browsers and mobile devices in order to ensure an optimal user experience. Results of the units will be described in section 5.3 of the report.

5. Code verification

Ensuring that the web application was validated correctly against common web standards enables it to be handled consistently with no errors across platforms or user agents. It also makes it viable, easy to update and uncomplicated to maintain.

As discussed, usability testing formed a significant aspect of the testing approach and enabled users to ‘Think Aloud’ when testing the web application. Users recorded their experiences when interacting with the web application and were asked to complete various tasks to determine the satisfaction, effectiveness, and overall usability of Backpack. Other forms of usability testing conducted throughout the project, included questionnaires and expert reviews. It was only once the results from the usability tests have been gathered, was it clear to identify the most common issues that different users experienced when using the web application. Once the initial errors had been corrected, a secondary usability test was conducted to ensure users failed to encounter any new issues. Of course when it comes to testing, striking a balance between perfection and realistic quality must also be realised.

5.3 Test Results

Unit testing involved exploring a single requirement of the web application, in order to assess its fit criterion and determine elements to be revised and corrected. Note that a priority of 1 refers to unit tests, which require immediate action, whereas a priority of 3 indicates that although the unit test has failed, it is not an essential requirement. The completed test results of the web application can be found in appendix 3.

Test Number	1
Description	Users will be able to create an account for the web application.
Expected Result	Pass
Actual Result	Pass
Priority	/
Action required	No further action is required.
Test Number	2
Description	The register platform will require the user to verify their password.
Expected Result	Pass
Actual Result	Pass
Priority	/
Action required	No further action is required.
Test Number	3
Description	The user must be able to logout of the web application.
Expected Result	Pass
Actual Result	Pass
Priority	/
Action required	No further action is required.
Test Number	4
Description	Geolocation will acquire the users current position for both 'Check In' and 'Discover' pages.
Expected Result	Pass
Actual Result	Pass
Priority	1
Action required	No further action is required.

Test Number	5
Description	A blog entry input form will enable users to add textual information to their check-in entry.
Expected Result	Pass
Actual Result	Pass
Priority	/
Action required	No further action is required.
Test Number	6
Description	Users will be permitted to change their profile photo/icon.
Expected Result	Pass
Actual Result	Fail- Once uploaded to the server, the upload image function failed to function as expected.
Priority	/
Action required	Contact Paul Stewart to set PHP write permissions on the image upload folder.
Test Number	7
Description	Users will have the option of updating their login/account password.
Expected Result	Pass
Actual Result	Pass
Priority	/
Action required	No further action is required.
Test Number	8
Description	The search tool will enable users to search for other users by username.
Expected Result	Pass
Actual Result	Pass
Priority	/
Action required	No further action is required.
Test Number	9
Description	The dropdown display will show a list of users with similar usernames (Search Suggestions).
Expected Result	Pass
Actual Result	Pass
Priority	/
Action required	No further action is required.

Table 5.3- Brief description of test results.

5.4 User Survey Responses

Surveying users at this stage in the project provided an efficient means of gathering feedback surrounding their experiences of using Backpack. All five users surveyed immediately recognised Backpack as a travel platform and found the theme apparent at first glance. Each described a positive user experience and enjoyed the travel centred nature of the web application. Similarly, each user felt the brand was appropriate, versatile and strong, with user two describing the logo as, “Perfect for the nature of the application. I love the simplicity of the icon design and how it’s consistent with the other design elements throughout the application.”

All users recognised the main features of the application and found the combined functionality practical, beneficial and unique. In addition the users surveyed found the navigation, “extremely intuitive” and felt the traditional navigation style used for mobile was appropriate and recognisable. Users one and three however failed to recognise the ‘Okay, got it’ call to action on the login as a quick link to the top of the page. User five however, knew immediately that the text acted as a navigational link, returning them to the login form at the top of the page. With this it is essential that the style of the navigation used here is revisited, possibly introducing an arrow and reiterating the icon theme used throughout. The primary content of the web application effectively fulfills the needs of the user and is communicated clearly. Users were able to locate requested information quickly and easily and four out five users commented on the usefulness of the help information on the login/register page. In addition users found the web application usable and accessible as user four stated, “It’s so clean and easy to use. There’s no clutter or unnecessary information, its straightforward and age friendly.”

Overall users failed to note any evidence of difficulties encountered when using the web application, and confirmed that all required features functioned correctly on mobile and desktop. Users one and two both suggested that the application should enable users to follow or unfollow other users, in attempt to view their profile page and travel timeline more quickly conveniently. User three suggested that the check in markers found on the ‘Timeline’ page of the web application, link together as a continuous route of travel. User three also suggested the ability to share travel timelines socially, for non-Backpack users to view travel

data and track the progress of friends or family. The usability survey created can be found in appendix 3, along with the user test questions described below.

6. Evaluation

6.1 User Test Evaluation

Once each user had completed the survey outlined in section 5.3, they were then recorded completing a number of predefined tasks designed to test the functionality and usability of the web application. This process was invaluable to identify first hand, how typical users interact with and make use of Backpack.

To begin, each user was presented with the index page of the application, and successfully recognised what Backpack is and how it works. They were also able to register an account with the application and benefitted from the registration form validation. Once logged in, users were then required to update their profile image and information and view the changes on their ‘Profile’ page. All users successfully completed this task. The following task required the user to complete the ‘Check In’ form and view their entry on the ‘Timeline’ page. Again, this task was completed with ease and failed to introduce any complications. Next, users were asked to search for other users of the web application and view their travel journeys, which recognised all completing the test effectively. Using the search tool of the ‘Discover’ page, each user successfully completed a nearby search request and recognised their search results on the map. Following this, users were required to reset their password.

Although four out of the five users tested correctly navigated to the admin panel of the application, user three first navigated to their ‘Profile’ page to complete the task. However, almost immediately after viewing the profile page, the user correctly navigated to the admin panel and updated their password. At this stage, user three noted, “It was my first thought to locate an admin area on my profile page, even though I can see the admin dropdown clearly in front of me.” Finally, all users were able to logout of the application with minimal effort and appreciated the ‘Return to login’ link for prompt reentry. From the user tests carried out, it is evident that Backpack has effectively satisfied the preexisting user requirements described in section 2.2. The overarching navigation, design, content and functional elements of the web application proved usable and behaved as expected.

6.2 Project Outcomes Evaluation

Throughout the course of the project both formative and outcome evaluation techniques have been employed. Developing a functional prototype of the web application served as a formative evaluation approach, which involved testing the feasibility of specific functions and features of Backpack, before it was developed and launched in full. Alternatively, outcome evaluation, which will be discussed here, focuses on whether a project has satisfied its requirements, aims and objectives. Although both formative and outcome evaluation approaches compliment each other, they seek to answer different types of questions regarding the project and its development.

The project satisfies its overall aim, as a means to connect the global travel industry on a social level. It has been developed using leading technologies and API's in order to remain unique, current and technically on trend. In addition, the aim of branding Backpack to create differentiation, promote recognition and convey a personal brand message has also been achieved. In keeping with this, requirements surrounding the initial appearance of both the branding and web application style often influence the user experience focusing on their underlying moods and feelings. The visual appearance of Backpack is therefore representative of the theme of the project, focusing on primary elements such as colour, typography, visual hierarchy and overarching architecture. The web application exhibits optimal functionality, which is appropriate, practical and select in its combination. Creating simple and effective web app navigation was also a significant task to consider for the end user requirements process. With this, it is clear that Backpack navigation is well constructed, intuitive and easy to use across desktop and mobile devices. The primary content of the web application effectively fulfills the needs of the user and is communicated clearly. Similarly, it was crucial to make the web application easily usable, accessible and convenient to a wide target audience, irrespective of disability. Building a high quality web application that is handled consistently with no errors across platforms and user agents promotes an accessible user experience. Adhering to web standards, accessibility guidelines and validation requirements also ensure this is the case. When developing the web application, vital steps to ensure optimal security and information privacy were met. Although not previously recognised as a requirement, password encryption was implemented to ensure optimal security of password storage, retrieval and updates. Although initially outlined as an

assumption, the design of the Backpack style guide proved as a substantial project outcome. In essence it served to detail exactly how the different design elements should be applied in various situations across the web application and wider marketing literature. Working through both the strategy and the implementation of the style guide helped to ensure that the web application theme was successful, consistent, adaptable and in keeping with original brand attributes.

Research suggests that projects that are well organised, often result in successful short-term impacts, which in time lead to the desired long-term objectives. Using the ‘top-down’ approach described in section 1.2, served as a basis for the effective schedule of the project and ensured this was the case. Obtaining information from user participants was vital to enable the outcome evaluation to be conducted. In essence, evaluating the project outcomes has provided evidence that the project has achieved what it was developed to do. In addition it will also serve as a means to identify potential limitations and future enhancements, which will be discussed in section 7.4.

6.3 Methodology Evaluation

Initially it was decided that the agile methodology was to be used as the approach to the design and build of the web application. Although agile provides opportunities to assess the direction and quality of the project, the actual approach taken followed a sequential design process as outlined in the project review section, 1.2. Using the waterfall methodology as an approach required well-defined requirements, which enabled the project to progress steadily through the development process and as a result, was easily managed and straightforward. Here, the emphasis on requirements analysis, UX design and system design before initial web application development, served to minimise risks of the schedule falling behind or user expectations not being realised. It was clear that firstly establishing requirements and design, improved application quality as identifying potential errors in the design stage, enabled them to be corrected before all the components had been integrated and identifying specific errors was more complex. With the waterfall methodology, output was generated at each stage of the project, following planning, design, development, testing and launch, therefore visibility was high and beneficial to monitor project progression. The waterfall methodology was a suitable choice for the nature of the project.

6.4 Plan Evaluation

Backpack was designed, built, tested and launched within a time frame of seven months. Designing and referring to the Gantt chart, effectively provided a detailed overview of the project and its priorities. In addition, making an ordered list for referral at strategic points within the project timeline served to identify the timescale, deadline, feature delivery, implementation and testing strategies for requirements and web application features. Defining project deliverables and outlining key aspects of both functional and non-functional requirements was also a significant aspect of the planning stage. Gathering end user requirements and identifying common user tasks was an integral element of minimising scope creep throughout the project. Furthermore, dividing the approved deliverables into actual work requirements assisting in considering and appreciating even subtle elements of the project, which may have otherwise remained unnoticed. As seen in section 2.2, the Volere Requirements Shell was used as a template to examine requirements and details behind their successful implementation. Following the project plan ensured that the project was better positioned for immediate success.

7. Conclusion

7.1 Report Summary

This report served to provide a detailed analysis of the design and development of the web application throughout all stages of the web design process, following the waterfall methodology. The introduction served to introduce the challenge, stated the aims and objectives and provided an overview of the work undertaken throughout the project. Concept definition described how the idea behind the application was generated and also described the requirements specification. Paper prototyping, feasibility testing, methodology selection and risk analysis were also discussed throughout this chapter. Next, the design section of the report provided a detailed overview of the UX evolution apparent throughout the design of the web application. Here the system, logic and data design of Backpack were also explored and evaluated. Throughout implementation, technologies and tools used to develop the web application were described, focusing in particular on API's and Facebook's' SDK. Notable challenges and achievements surrounding the design, build and launch of Backpack were also discussed at this stage. Following implementation, the testing section focused on the

testing of application requirements, features, content authoring and management and key considerations surrounding accessibility and quality, both visually and functionally. The testing approaches used, process followed and survey responses were evaluated here. Finally, the evaluation section effectively evaluates the project outcomes, methodology and plan used throughout the process in its entirety.

7.2 Project Reflection

On reflection of the project it is clear that the primary functionality concerning geolocation, user check-ins and travel journeys, behaves as expected and functions correctly. In essence, the overarching purpose of Backpack has been realised. Once registered to the web application, users were effectively able to update their profile information and view their changes on their personal profile page. In keeping with this, users were also permitted to update their user password. Despite not a predetermined requirement, the 'Discover' page of the application, which enables users to search for and locate nearby places of interest, was also a success. At this stage however, perhaps too much time was spent on the attempted implementation of Google's Distance Matrix service to enable users to select a returned marker location and view a specified route to the result, as well as the travel distance from the user. The 'Connect' page of the web application proved successful and enables users to locate other users of Backpack and view their travel journeys. In all, Backpack has been deemed a success and future work would see further developments in relation to enhanced social interaction and gamification.

7.3 Reflection On Role

In completing the major project I have given absolute attention to both my artistic and creative impulses, when combining creative ability with digital technology to create a robust web application that satisfies the needs of the user. Throughout the design and development of Backpack I successfully applied my academic knowledge and practical skills gained during my experiences at university. However, the process also encouraged the development and acquisition of new design skills and technical abilities when using unfamiliar tools, frameworks and API's. Although my passion lies in design, I found the development side of the project to be extremely rewarding. With my ability to be adaptable, logical and innovative, I was precise

and thorough in my work, working well to task deadlines and demonstrating sound understanding of web design and development. I believe that I approached the project with confidence and enthusiasm and enjoyed undertaking the entire process from inception to completion.

7.4 Future Enhancements

Although I am immensely proud with the final outcome of the web application, if I was to redesign Backpack in the future, I would consider the implementation of the following features to further enhance the user experience and functionality of the travel platform. Firstly, the ability for users to follow and unfollow connections would enable them to view their profile and travel timeline more easily. Interacting in this way would further heighten the social aspect of the web application and create a unique community of users. In keeping with this, a further modification to enable multiple user ‘check ins’ to form a mapped route on their timeline would also be considered. An idea explored in the mind mapping stage of the project initiation was that back end analytics would seek to provide a detailed overview or comprehensive breakdown of users travel journey, focusing on statistics surrounding distances travelled, duration of journeys, number of check ins etc. This feature would serve as an ideal addition to the web application functionality. If implemented, such analytics could be displayed within their user profile as well as a live leader board between connected friends. Introducing gamification in this way would serve to elicit the desire to make regular use of the application as the simple goal of climbing the rankings often serves as compelling motivation in competition. As seen in figure 7.4, if the user forgets their password, they are prompted to input their username which when submitted, locates their email address from the database and a password reminder is sent to them.

The screenshot shows a password recovery interface on the left and an email preview on the right.

Left Side (Password Recovery):

- A modal window titled "Forgotten your password?" is open.
- It contains a message: "No problem! Submit your username and we'll send you your password."
- A text input field contains the value "stephen_martin".
- A "Retrieve" button is visible.
- Below the modal is a link: "Login to your account".

Right Side (Email Preview):

- The subject line is "We've recovered your password!"
- The sender is "Support@backpack.com (Support@backpack.com)"
- The recipient is "To: stephen_m_05@hotmail.com" with a dropdown arrow icon.
- The timestamp is "Add to contacts 13:51".
- There are three small icons at the top right: up arrow, down arrow, and a square with a plus sign.
- The email body starts with "Hi there," followed by "We've recovered your password!" and the password value "It's: a0c5978f8d9740c3c248f2cea9b2b165".
- A link "Login here, <https://scm.ulster.ac.uk/~B00577810/workspace/mp/>" is provided.
- The signature at the bottom reads "Sincerely,
The Backpack team".

Figure 7.4- User prompt to input username and email recovery preview.

As you can see, although the password retrieval script successfully identifies the user password and emails it to them, it passes the encryption value instead of the plain text alternative original set by the user. Of course, password encryption cannot be decrypted, so this script would only work if password encryption was revoked. Instead, here I would revise the script to provide the user with a temporary password, which would enable them to login to the web application where they would be required to update their password once logged

in. A final modification I would make to Backpack involves the provision of additional user privacy settings, including the option to deactivate their account and modify their username.

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Appendix 1

Gantt Chart

Tasks	October		November		December		January		February		March		April	
Research														
Requirements Analysis														
Sketching														
Brand Development														
Wireframes														
Comprehensive Layouts														
Initial HTML & CSS														
Validation														
Build of framework														
Geolocation implementation														
Code Development														
Content Audit														
Functionality testing														
Testing & refinement														
Transfer to server														
Final Test														
Sign off														

SWOT Analysis

Strengths	Weaknesses
Unique proposed solution Sound research studies Resources are available	Timescales Deadlines Technical challenges Testing anomalies
Opportunities	Threats
Gap in the market Increasing global travel industry	Competition New technologies and ideas



User Questionnaire

The following questions are designed to determine user perceptions of social platforms and travelling abroad.

1. How often do you travel abroad?

2. Would a travel application prove useful throughout your trip?

3. Do you use check in services on any other social networking site?

Yes

No

4. Why are check in services important to you?

5. Why do you think check in functionality is becoming increasingly popular?

6. What features would you expect from a social travel application such as Backpack?

7. How important would a friends system be?

8. What would make you want to use Backpack as a travel centred platform?

Thank you for your time and feedback.

Atomic Requirements

Number	1
Type	Functional
Description	Users will be able to create an account for the web application.
Rationale	To enable them to use the web application and store personal travel data.
Fit Criterion	Registered users will be able to login and make full use of the web application and the features implemented.
Dependencies	All web application requirements.
Priority	1
Number	2
Type	Functional
Description	Users who have forgotten their password will be able to retrieve it.
Rationale	So that they can successfully login and continue to use the web application.
Fit Criterion	An email containing the user password will be sent to the registered user email address.
Dependencies	All web application requirements.
Priority	1
Number	3
Type	Functional
Description	The register platform will require the user to verify their password.
Rationale	To ensure that it successfully corresponds to their original character string.
Fit Criterion	A verification message will display, informing the user that both passwords are identical.
Dependencies	User registration, requirement number 1.
Priority	2
Number	4
Type	Functional
Description	The user must be able to login to the web application.
Rationale	So that they can continue to make full use of the web application.
Fit Criterion	The application fulfils this requirement when the login details are passed as true and the user is welcomed by the app menu and homepage.
Dependencies	All web application requirements.

Priority	1
Number	5
Type	Functional
Description	The user must be able to logout of the web application.
Rationale	So that they can exit the platform, close the application window and login at a later stage.
Fit Criterion	The user will be presented with a warning message, such as 'Are you sure you want to exit?' before the application is terminated.
Dependencies	Login requirement, requirement number 4.
Priority	1
Number	6
Type	Functional
Description	Automatic location detection will pin point the users location on the check-in map.
Rationale	To enable users to share their location accurately and embed within their blog entry.
Fit Criterion	The check-in location will display as a pin-pointed map on the current blog and entry and overall user travel timeline.
Dependencies	Timeline requirements.
Priority	2
Number	7
Type	Functional
Description	A blog entry input form will enable users to add textual information to their check-in entry.
Rationale	So that they can share their experiences, thoughts or ideas from their trip, textually.
Fit Criterion	The textual information will display on the blog entry and user travel timeline.
Dependencies	Timeline requirements.
Priority	1
Number	8
Type	Functional
Description	Users will be able to attach a multimedia file to their blog post.
Rationale	So that they have the option of sharing photos or videos captured throughout their trip.

Fit Criterion	A file upload progress bar will suggest the upload status of the multimedia content and a confirmation message will display once the file(s) has/have been successfully uploaded.
Dependencies	Timeline requirements.
Priority	1
Number	9
Type	Functional
Description	Users will be permitted to change their profile photo/icon.
Rationale	This will enable them to remove or reupload a new profile photo when they wish to do so.
Fit Criterion	The new profile photo will replace the users existing one and will appear alongside their profile details within their profile page and elsewhere throughout the web application.
Dependencies	Profile information, timeline, and connection requirements.
Priority	1
Number	10
Type	Functional
Description	Users will have the option of updating their login/account password.
Rationale	To improve security related issues and increase password protection.
Fit Criterion	A confirmation email containing the new user password will be issued and the user will use the new password when logging in to the web application.
Dependencies	No dependencies.
Priority	1
Number	11
Type	Functional
Description	The profile section will enable users to alter their display name.
Rationale	So that they can create a nickname or simply modify their display name when they wish to do so.
Fit Criterion	The updated user display name will replace the users existing name and will appear alongside their profile details within their profile page and elsewhere throughout the web application.
Dependencies	Profile information, timeline and connection requirements.
Priority	3

Number	12
Type	Functional
Description	The search tool will enable users to search for other users by username.
Rationale	So that they can connect with like-minded tourists/backpackers/users and increase their connection base.
Fit Criterion	A brief summary will display the user information with a dominant, 'Connect' call to action.
Dependencies	User connection.
Priority	1
Number	13
Type	Functional
Description	The dropdown display will show a list of users with similar usernames (Search Suggestions).
Rationale	This improves accessibility and helps users find and connect with friends more easily.
Fit Criterion	Search suggestions uses text that the users types into the search field to generate a list of suggested usernames. If one matches their intended search criteria it will become active.
Dependencies	Profile connection.
Priority	2
Number	14
Type	Non-functional
Description	Strong app branding will be at the forefront of the web application.
Rationale	This will promote a professional brand identity that will become associated with the web application.
Fit Criterion	The application will fulfil this requirement if the style guide is used as a set of guidelines to ensure accuracy and governance.
Dependencies	All web application requirements.
Priority	1
Number	15
Type	Functional
Description	Timeline events will be pulled from the backend users travel date and display in order.
Rationale	This will enable users to monitor or view their progress based on their travel check ins.
Fit Criterion	The populated timeline entries will form the basis of the entry and show the

	associated data on selection.
Dependencies	Timeline display.
Priority	1
Number	16
Type	Functional
Description	Checked in locations will join as a single route across a map.
Rationale	This will serve to represent the users check in history throughout their travels in visual form.
Fit Criterion	The application fulfils this requirement if the user has checked in at various locations, multiple times.
Dependencies	Travel information.
Priority	1
Number	17
Type	Functional
Description	Navigational design architecture will respond to mobile viewing platforms.
Rationale	This promotes ease of use for the user and maximises space for application content.
Fit Criterion	The application fulfils this requirement when media queries are introduced to recognise browser and viewing platform specifications.
Dependencies	User Interface and general application navigation.
Priority	1
Number	18
Type	Functional
Description	Web application navigation will be based on the mesh structure.
Rationale	This will provide users with full control over their page options and navigational pathways.
Fit Criterion	The application fulfils this requirement if all pages of the app are interlinked.
Dependencies	Navigational style, general web application use.
Priority	1
Number	19
Type	Functional
Description	The web application will utilise responsive web design.

Rationale	So that the application will function correctly on mobile devices, tablets and desktop screens.
Fit Criterion	The application fulfils this requirement if a responsive front-end framework is implemented effectively.
Dependencies	All web application requirements.
Priority	1
Number	20
Type	Non-functional
Description	The application user interface will appear visually impressive, professional and appropriate to the theme of travel and tourism.
Rationale	This will provide a strong user experience, denoting a sense of professionalism from the outset.
Fit Criterion	The application will fulfil this requirement if styling is made consistent throughout and follows predetermined style and brand guidelines.
Dependencies	All web application requirements.
Priority	1
Number	21
Type	Non-functional
Description	The colour scheme will be representative of the brand and theme of the project.
Rationale	So that it is immediately appropriate and seeks to provide an extension of the brand and bring all visual elements together.
Fit Criterion	The application fulfils this requirement if careful consideration is given when selecting colour styles and if it follows predetermined style guidelines.
Dependencies	All web application requirements.
Priority	2
Number	22
Type	Functional
Description	The profile section will enable users to deactivate/delete their account.
Rationale	This will enable users to permanently remove their account, profile information, travel information, connections and statistics.
Fit Criterion	The application fulfils this requirement if the users login details are now void, indicating account termination.
Dependencies	No dependencies.
Priority	1

Number	23
Type	Non-Functional
Description	The web application will adopt a conversational tone of voice throughout.
Rationale	With a conversational tone, the receptive state of mind permits the reader to enter into a dialogue with the application and reinforces a more personal experience.
Fit Criterion	The application fulfils this requirement if careful consideration is given to the language style used throughout the textual elements of the web application.
Dependencies	Textual information throughout the application.
Priority	3

Appendix 2

INTERACTIVE TRAVEL JOURNAL

STEPHEN MARTIN

GAUSSIAN BLUR
BACKGROUND

VIDEO
BACKGROUND?

Brand
logo.

demo? / tour.

ICONS

• CHECK-IN (GEOLOCATION)

LOCATION DETECTION



MAP

MULTIMEDIA

UPLOAD

ADD NEW
OR UPDATE EXISTING.

• CONNECTIONS

SEARCH FOR USERS

SHOW ALL PUBLIC USERS?



DOMINANT
CONNECT
CALL TO ACTION

ICONS

FILTER SEARCH
CRITERIA?

- LOCATION
- USER TYPE -
- BACKPACKER
- TOURIST
- MOUNTAINEER
- EXPLORER?

STYLE IDEAS

GRID / BOX / ANGULAR

GREEN / CHARCOAL / WHITE

GAUSSIAN BLUR,
ICONS.

DASHBOARD
STYLE?

• USER PROFILE NAVIGATION

IMAGE USER BIO

125 CONNECTIONS

3000
MILES

025
CHECKINS

DONT
FORGET
CONNECTIONS
SEARCHABLE

GRID STYLE STATS
(USER CENTRED)

• TIMELINE

USR

LOCATION / ENTRY

TEXT /
BLOG

PUBLIC

STATS

PHOTO
MOSAIC?

TIMELINE
OF EVENTS / CHECK-INS.

LEADERBOARD / LIVE / ROTATING.

PROFILE

TRAVEL STAS.

SCROLL

GAMIFICATION

.. BY CATEGORY.

BASED ON CONNECTIONS?
BY REGION?

~~TIMELINE STYLES.~~

(USER-BASED)

STEPHEN MARTIN

FULL-WIDM / CONTAINED? CHECK-IN ENTRY

STYLE ONE:
VERTICAL
NAVIGATION

DARK THEME / CONSIDER BUTTON STYLES

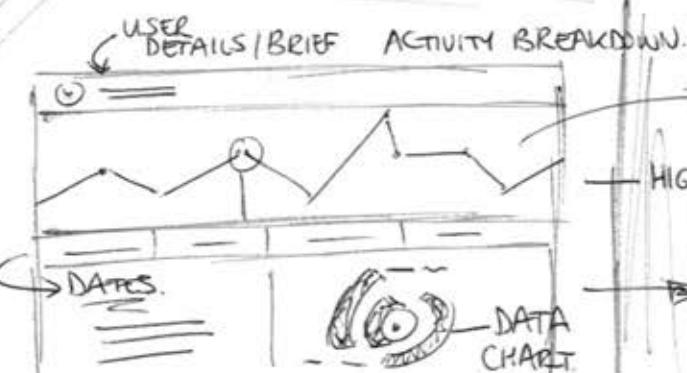


CHECK-IN
MAP (LOCATOR)

MOSAIC ARRANGEMENT?

POP-UP
WINDOW
BASED
ON
MAP
LOCATION.

STYLE TWO:



LINE
GRAPH
BASED?

HIGHLIGHTED
ENTRY.

VARIOUS
REPRESENTATIONS

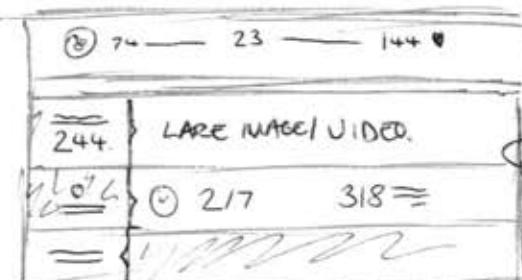
PLOTTED
LOCATIONS
- JOINED AS
ROUTE.

CLICKABLE
REGIONS
TO PROVIDE
MORE
DATA.



SUG-ANIMATED?

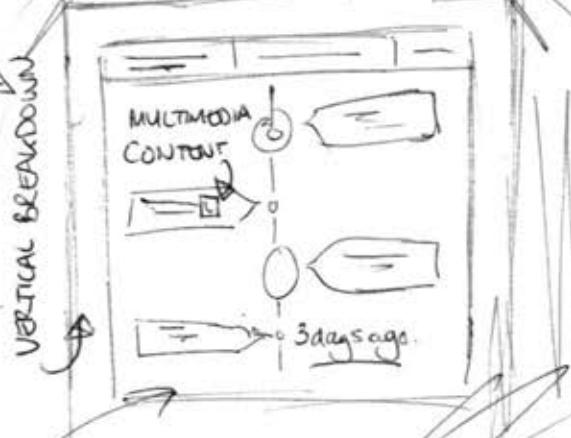
STYLE THREE:



SCROLL

BACKGROUND
IMAGERY
ASSOCIATED
WITH
CHECK-IN.

UNIQUE
DISPLAY
(OF DATA)



CLICK THROUGH
TO POP-UP
WINDOW.

STANDARD
TIMELINE
DISPLAY?

LIVE LEADERBOARD STYLES- GAMIFICATION ASPECT / PUBLIC PACING

USER VIEW:

Dominant Personal Info / Position

POINTS TO NEXT LEVEL.

UPGRADE! REAL TIME.

ASSOCIATED WITH FAMOUS EXPLORERS?

RANKING POSITIONS?

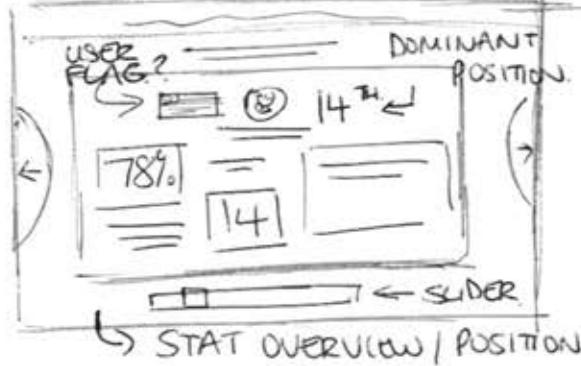
PROCESS BAR STYLES

STYLE ONE

USER PROFILE IMAGE + NAME.

HORIZONTAL OR VERTICAL SWIPE?

WORK WELL ON MOBILE.



STYLE TWO

LEADERBOARD

- FILTERED BY CATEGORY.

SEARCH BOX FACILE SEARCH USER RANKINGS

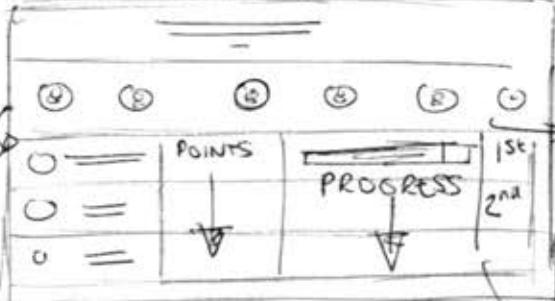
CONSIDER RESPONSIVE DESIGN

14th
78%

CENTRAL NAVIGATION OR HAMBURGER STYLE?

SWIPE FUNCTIONALITY

STYLE THREE

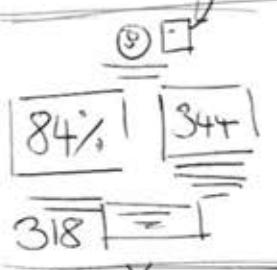


USER PROFILE

LINEAR FASHION.

PROFILE BIO.

CLICK THROUGH FOR STATS BREAKDOWN



POP-UP WINDOW

SEARCH FOR USER / CONNECTION

User 8745

placeholder TEXT

AGAIN NOTE USE OF ICON

INTRODUCING MOBILE.

2 CONSIDER
VIDEO
BACKGROUND
ON MOBILE



BRAND
ELEMENTS

FORM
ELEMENTS

DEMO/VIDEO
TOUR

LOGIN/CREATE
ACCOUNT

CHECK-IN.

LOG IN / REGISTER

LOCATION DETECTION.

RESPONSIVE
NAVIGATION
(HAMBURGER)
- DROPODOWN STYLE

BLOG/TEXT FIELD
(MOBILE KEYBOARD.)

ON SCREEN
NAVIGATION?

ICON STYLE.

MULTIMEDIA
ATTACHMENTS.

PROFILE
IMAGE

USER
BIO.

HORIZONTAL/
VERTICAL
SWIPE

CORRESPONDING
DATES/
EVENTS

TIMELINE

GENERAL
INFO

125 CONNECTIONS

3000
MILES

25 CHECKIN

GRID
STYLE
STATISTICS

USER
PROFILE

ICONS

INFOGRAPHIC
STYLE STAT
BREAKDOWN.

SEARCH
TOOL FOR
USERS

PROGRESS
BAR TO
NEXT
LEVEL

USER
RANKING

DOMINANT
CONNECT
CALL TO
ACTION

CONNECT

TABLE
POPULATED
ON SUCCESSFUL
SEARCH

RANKING,
PROFILE
+ STATS

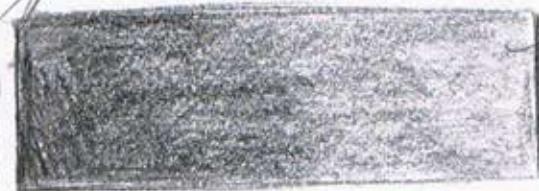
LEADERBOARD.

COLOUR THEORY (STYLE TILE)

TONAL BASES

CHARCOAL + GREEN / BLUE

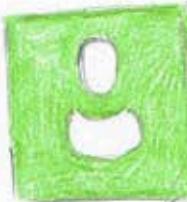
#222222



#00a79d
#0c9654

#0c6296
#0f6faa

#cccccc

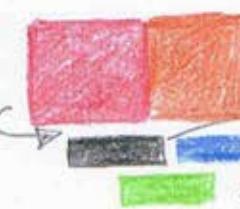


CONSIDER THE ARRANGEMENT
+ WEIGHT / STYLE OF COLOUR
ELEMENTS

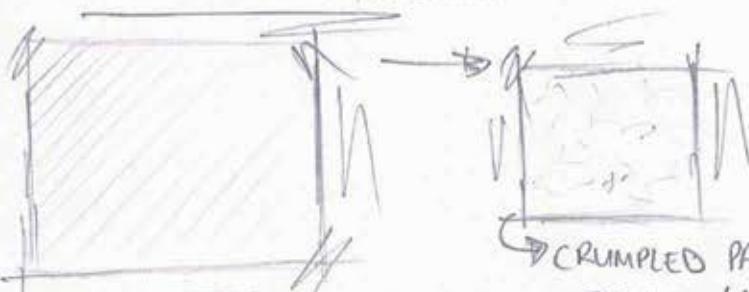


BLUE
ACCENT COLOUR?

COMPLEMENTARY
COLOURS - ACCENT?
KULER



PATTERNS / TEXTURES



NEAT / DIAGONAL STYLE

FLAT-DESIGN ✓

CRUMPLED PAPER
(MAP-LIKE)

FLAT-DESIGN

FOCUS ON DARKER,
MORE RURAL STYLE
COLOURS

REPRESENTING EXPLORER/
OUTDOOR / ADVENTURE

THEME

CONSIDER COLOUR
SYMBOLISM

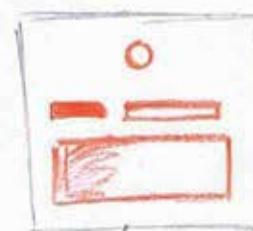
FURTHER STYLING
GHOST BUTTONS

CONNECT

CONNECT

TYPOGRAPHIC
TREATMENT
- WHITE / TRANSPARENT?

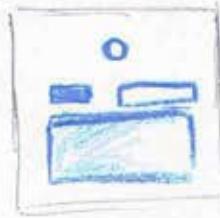
DARK ON LIGHT
LIGHT ON DARK



COLOUR
OPTION

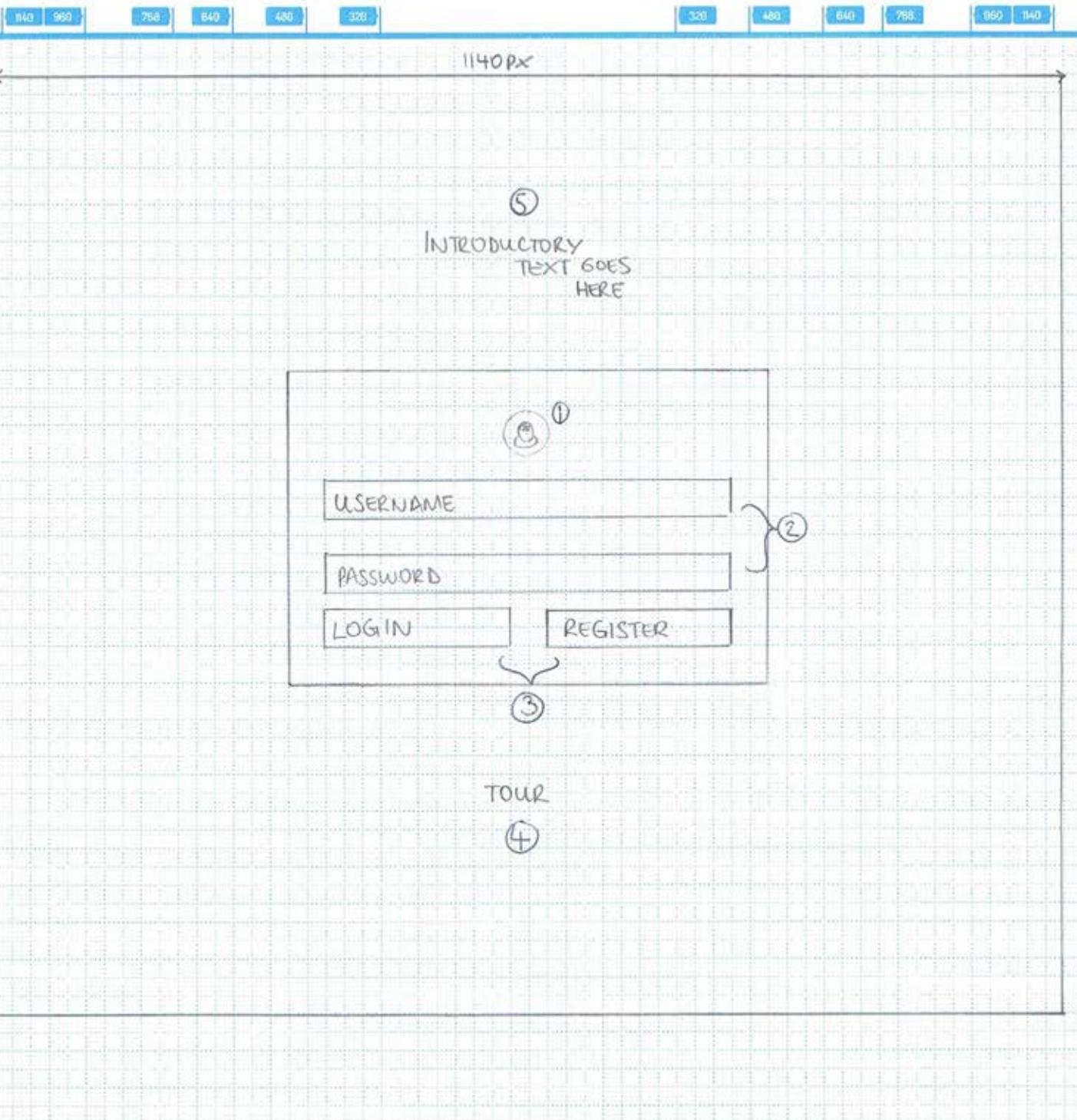
PROFILE
STYLE?

PERSONALISATION



1. LOGIN/REGISTER.

sketchbook
BY STEPHEN MARTIN



PROJECT: INTERACTIVE TRAVEL JOURNAL

DATE: 28/10/14

PAGE: LOGIN/REGISTER

AUTHOR: STEPHEN MARTIN

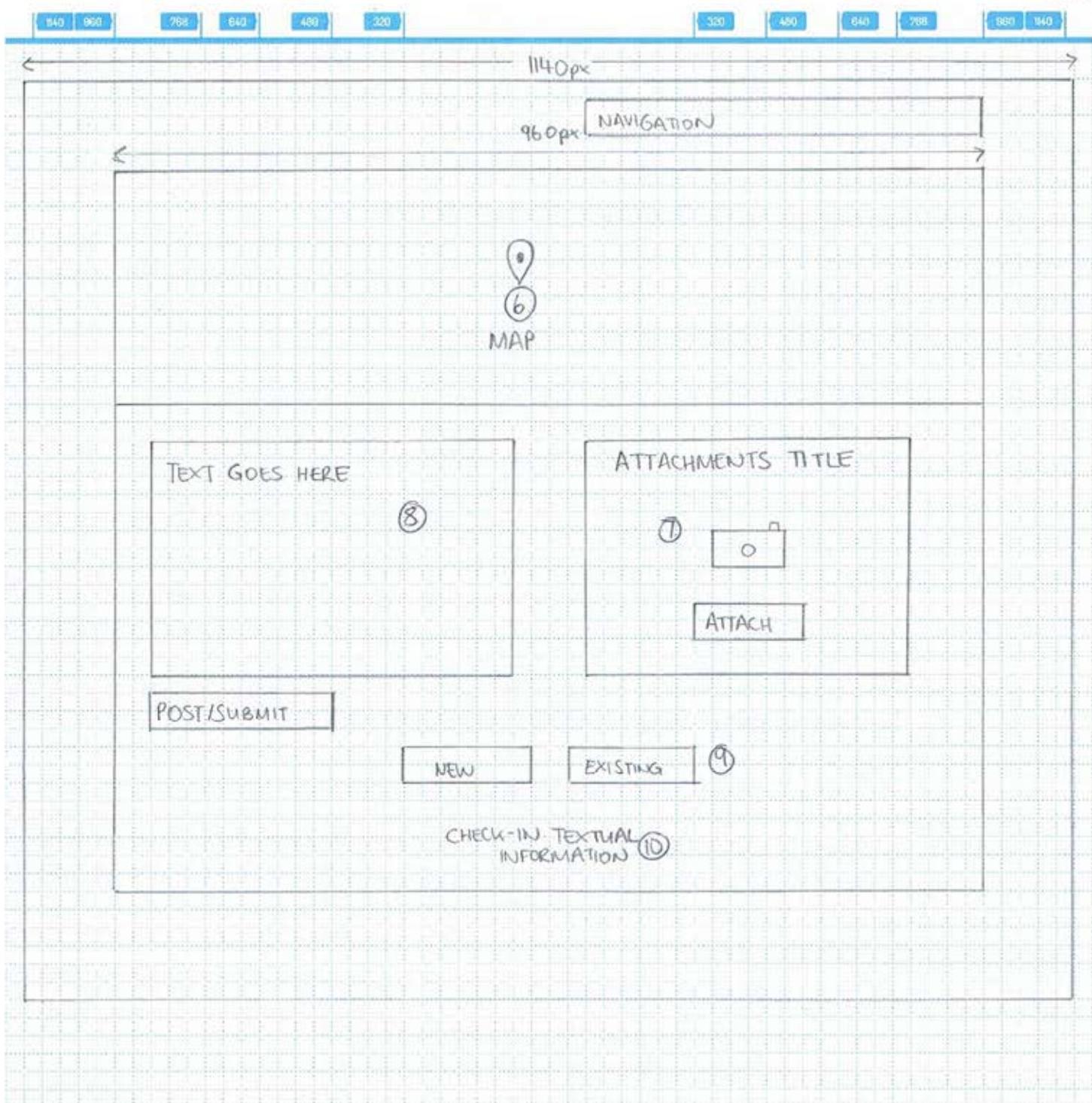
- ✓ NOTES:
 - ① STRONG BRANDING.
 - ② LOGIN USER FIELDS
 - ③ LOGIN/REGISTER BUTTONS

- ④ TOUR/DEMO - PROVIDES WEB APP OVERVIEW
- ⑤ WELCOME TEXT/PERSONAL STYLE.

• • • 960x640
• • • 20 PIXEL GRID

2. CHECK-IN.

sketchbook
with notes



*** 1728x960
*** 20 PIXEL GRID

PROJECT: INTERACTIVE TRAVEL JOURNAL

DATE: 23/10/14

PAGE: CHECK-IN

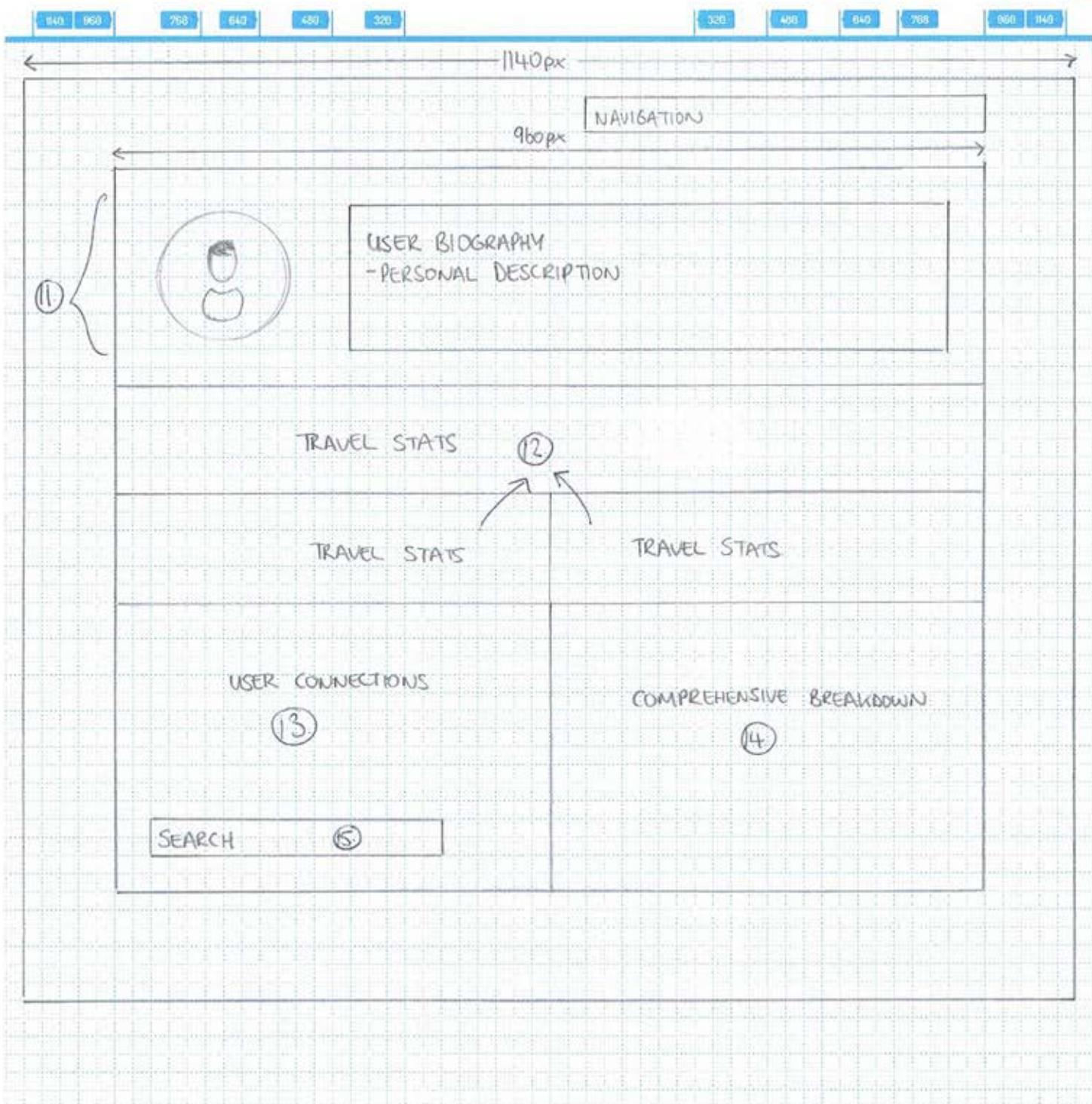
AUTHOR: STEPHEN MARTIN

- ✓ NOTES:
- ⑥ - FULL SCALE GEOLOCATION MAP
 - ⑦ - ATTACHMENTS TOOL (MULTIMEDIA)
 - ⑧ BLOG/ENTRY POST

- ⑨ ADD NEW OR UPDATE EXISTING MAP.
- ⑩ CHECK-IN INSTRUCTIONS / TEXT.

3. USER PROFILE.

sketch.com
100% 100%



*** GRID GRID
*** 20 PIXEL GRID

PROJECT: INTERACTIVE TRAVEL JOURNAL

DATE: 28/10/14

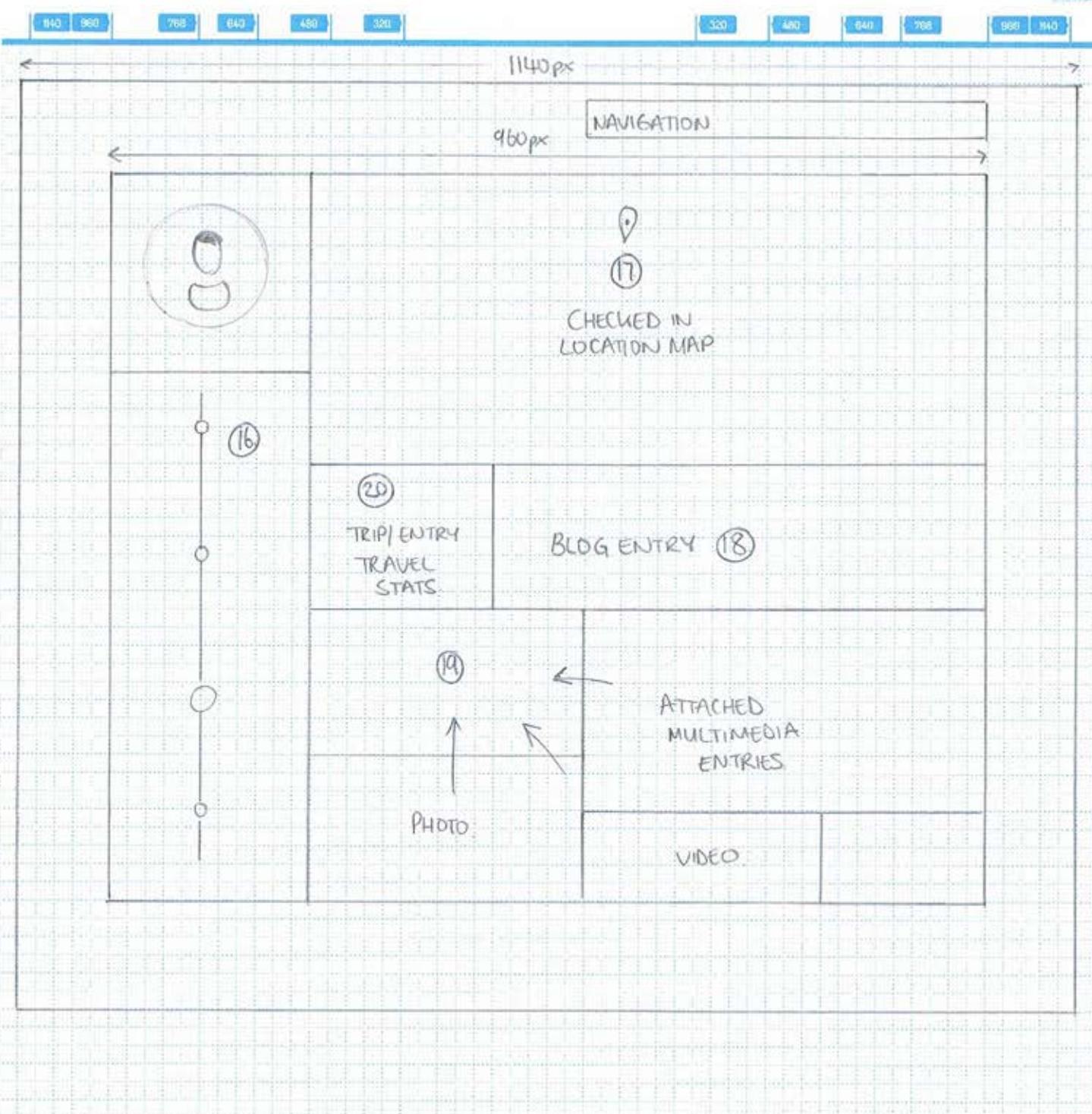
PAGE: USER PROFILE

AUTHOR: STEPHEN MARTIN.

- ✓ NOTES: ① - PERSONAL PROFILE SECTION
② TRAVEL STATS OVERVIEW
(DOMINANT FIGURE)
- USE OF ICONS

- ③ USER CONNECTIONS LIST.
④ BREAKDOWN OF STATISTICAL INFO.
⑤ CONNECTION SEARCH TOOL

4. TIMELINE



*** 8 PIXEL GRID
*** 20 PIXEL GRID

PROJECT: INTERACTIVE TRAVEL JOURNAL

DATE: 28/10/14

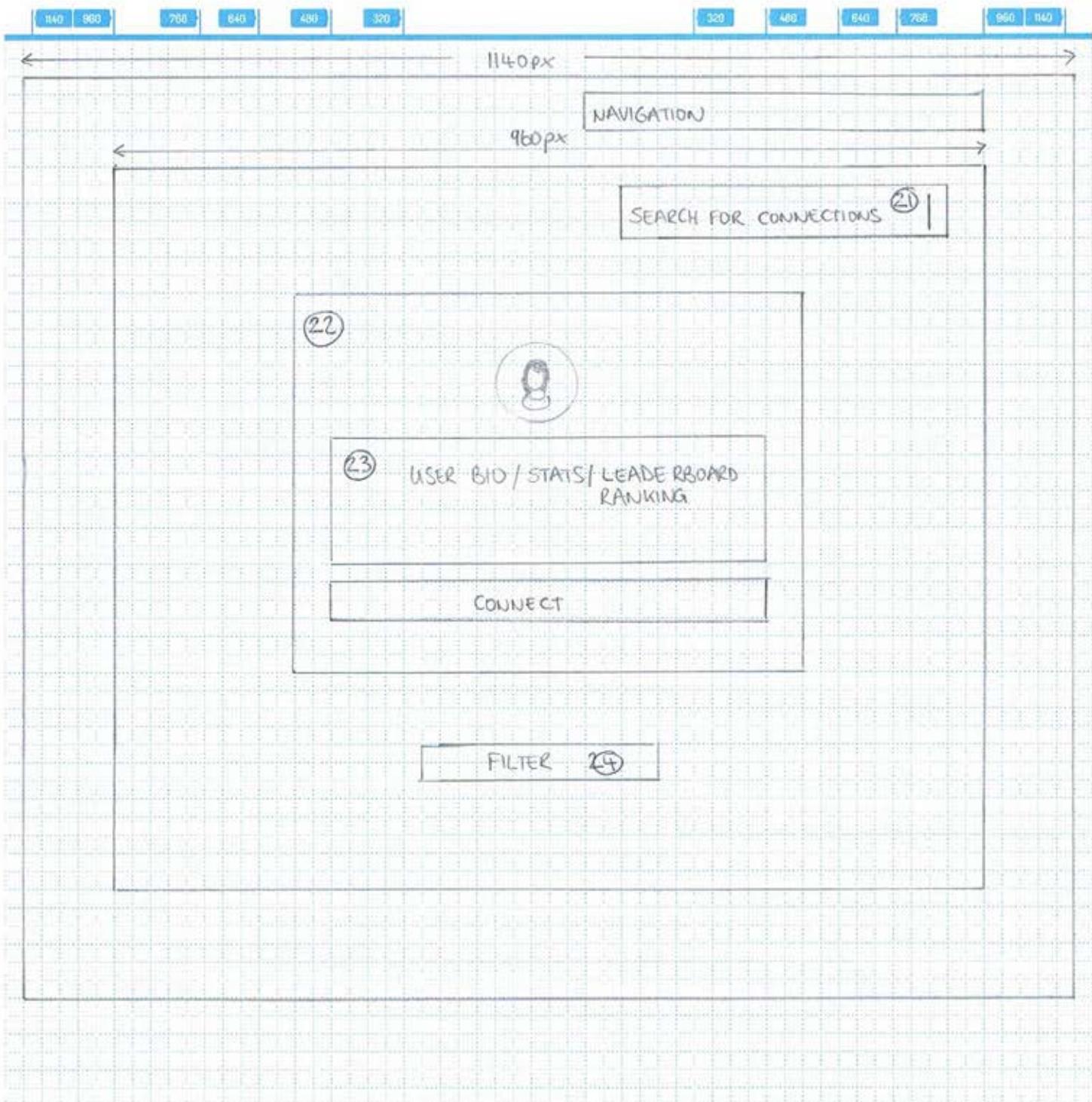
PAGE: TIMELINE

AUTHOR: STEPHEN MARTIN

- ✓ NOTES
 - ⑯ INTERACTIVE TIMELINE FEATURE
-DATES | LOCATIONS | ENTRIES.
 - ⑰ CHECK-IN LOCATION DISPLAY
 - ⑱ BLOG ENTRY.
 - ⑲ ATTACHED MULTIMEDIA ENTRIES
(PHOTOS/ VIDEO) MOSAIC ARRANGEMENT
 - ⑳ BRIEF OVERVIEW OF TRAVEL
STATS
(SPECIFIC TO TRIP SELECTED)

5. CONNECTIONS.

SEARCH REFRESH



*** 8 PIXEL GRID
*** 20 PIXEL GRID

PROJECT: INTERACTIVE TRAVEL JOURNAL

DATE: 28/10/14

PAGE: CONNECTIONS

AUTHOR: STEPHEN MARTIN

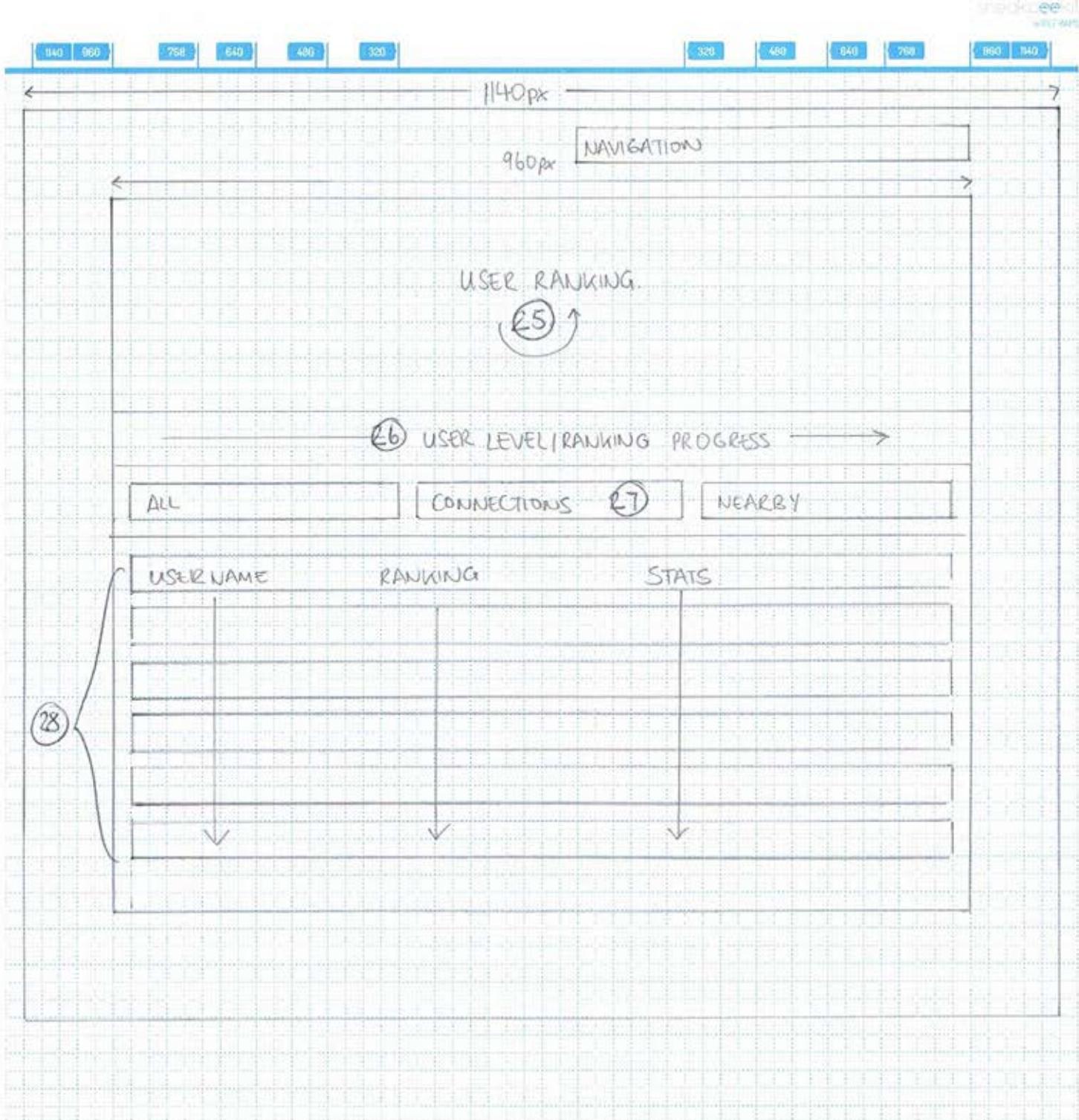
✓ NOTES: ① - SEARCH TOOL TO FIND USERS BY USERNAME/ EMAIL.

② - USER POP-UP WINDOW BASED ON SEARCH.

③ - USER BIO IN BRIEF - COMPLETE WITH RANKING/ POSITION

④ - FILTER SEARCH OPTION - BY CATEGORY.

6. LEADERBOARD.



*** 3 PIXEL GRID
*** 20 PIXEL GRID

PROJECT: INTERACTIVE TRAVEL JOURNAL

DATE: 28/10/14

PAGE: LEADERBOARD

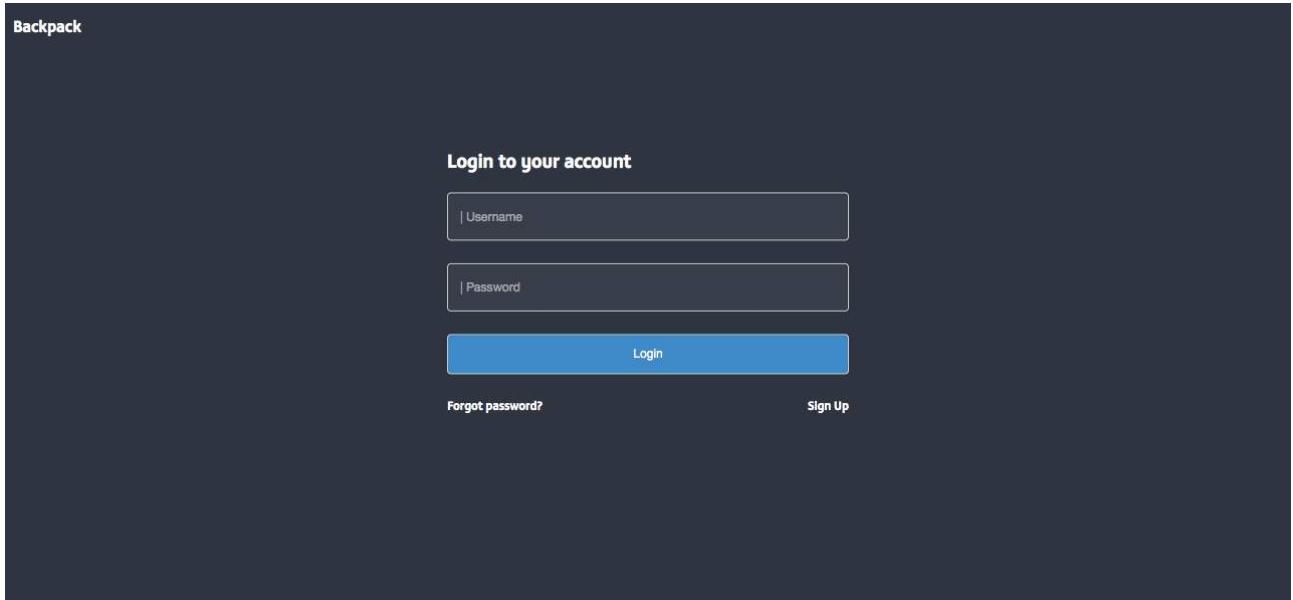
AUTHOR: STEPHEN MARTIN

- ✓ NOTES (25) - USER RANKING PROFILE (CURRENT POSITION + STATS)
- (26) PROGRESS METER/BAR TO NEXT RANKING/LEVEL.
- (27) FILTER LEADERBOARD OPTIONS TO ALL USERS, CONNECTIONS OR NEARBY USERS
- (28) LEADERBOARD RESULT TABLE (LIVE) WITH PROFILE + STATS OVERVIEW.

Functional Prototype

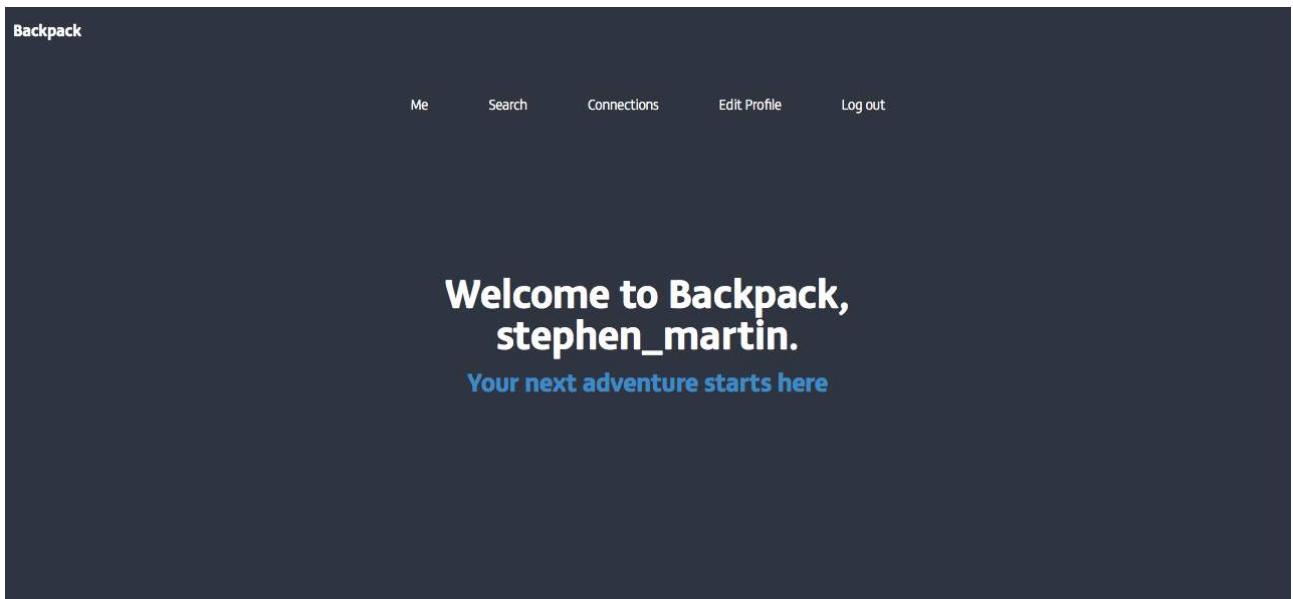
Below you can see how Backpack emerged throughout the development of a functional prototype. Here however, the primary focus was on functionality and feasibility testing, rather than UX/UI design.

Login



The login screen features a dark blue header with the word "Backpack" in white. Below the header is a large, light gray rectangular area containing the login form. At the top of this area, the text "Login to your account" is centered in a small, bold, white font. Below this, there are two input fields: one for "Username" and one for "Password", both with placeholder text ("| Username" and "| Password") and thin black outlines. A large, solid blue rectangular button labeled "Login" in white is positioned below the password field. At the bottom of the form, there are two small, faint links: "Forgot password?" on the left and "Sign Up" on the right, both in white.

Welcome



Update profile information

The screenshot shows the 'Edit Profile' screen of the Backpack app. At the top, there is a navigation bar with links for 'Me', 'Search', 'Connections', 'Edit Profile', and 'Log out'. Below the navigation bar is a large central box titled 'Your Profile'. Inside this box, there is a sub-section titled 'Enter or edit your details and/or upload a profile photo'. This section contains a text input field labeled 'Enter your personal details' and a file upload field labeled 'Profile photo:' with a 'Browse...' button and the message 'No file selected.'. At the bottom of the central box is a blue 'Save Profile' button.

Connect

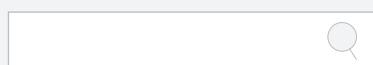
The screenshot shows the 'Connections' screen of the Backpack app. At the top, there is a navigation bar with links for 'Me', 'Search', 'Connections', 'Edit Profile', and 'Log out'. Below the navigation bar is a large central box titled 'Connections'. Inside this box, there is a search bar labeled 'Search' and a message 'You don't have any friends yet :('. At the bottom of the central box is a blue 'View Your travel journey' button.

Louis Vargas

 Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua..

[CONNECT](#)

PROFILE TIMELINE CONNECT LEADERBOARD CHECK IN



Lato Bold

Lato Medium

Sit amet, consectetur adipiscing

Lato Light

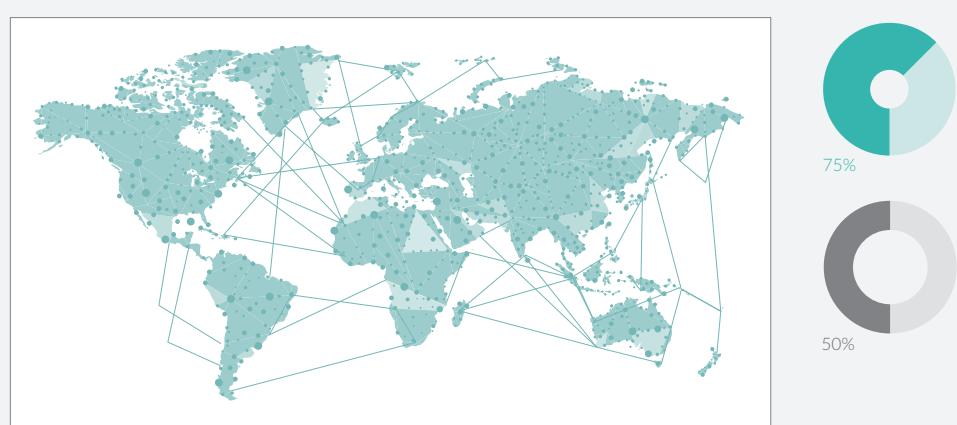
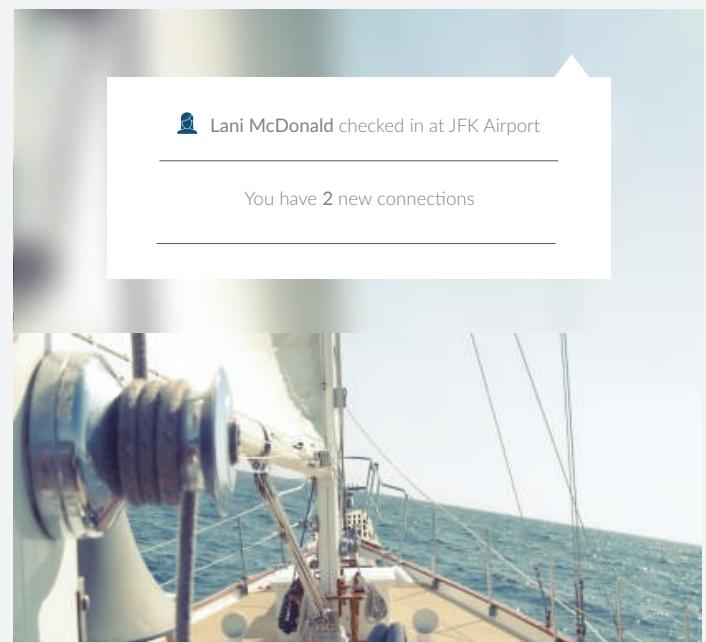
Elit sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam.



#44b4ae



#0b507c



write something...

[POST](#)

The style tile seeks to provide an overview of how the design elements considered throughout the sketching stage of the process, may appear and interact in the prototype solution. Here I have adopted an 'out of the box' style approach opting for a more unique arrangement rather than the template provided.



BACKPACK

Refined User Experience Design Report
Stephen Martin (B00577810)



Login to your account

Username

Password

LOGIN

Don't have an account? [Sign Up](#)

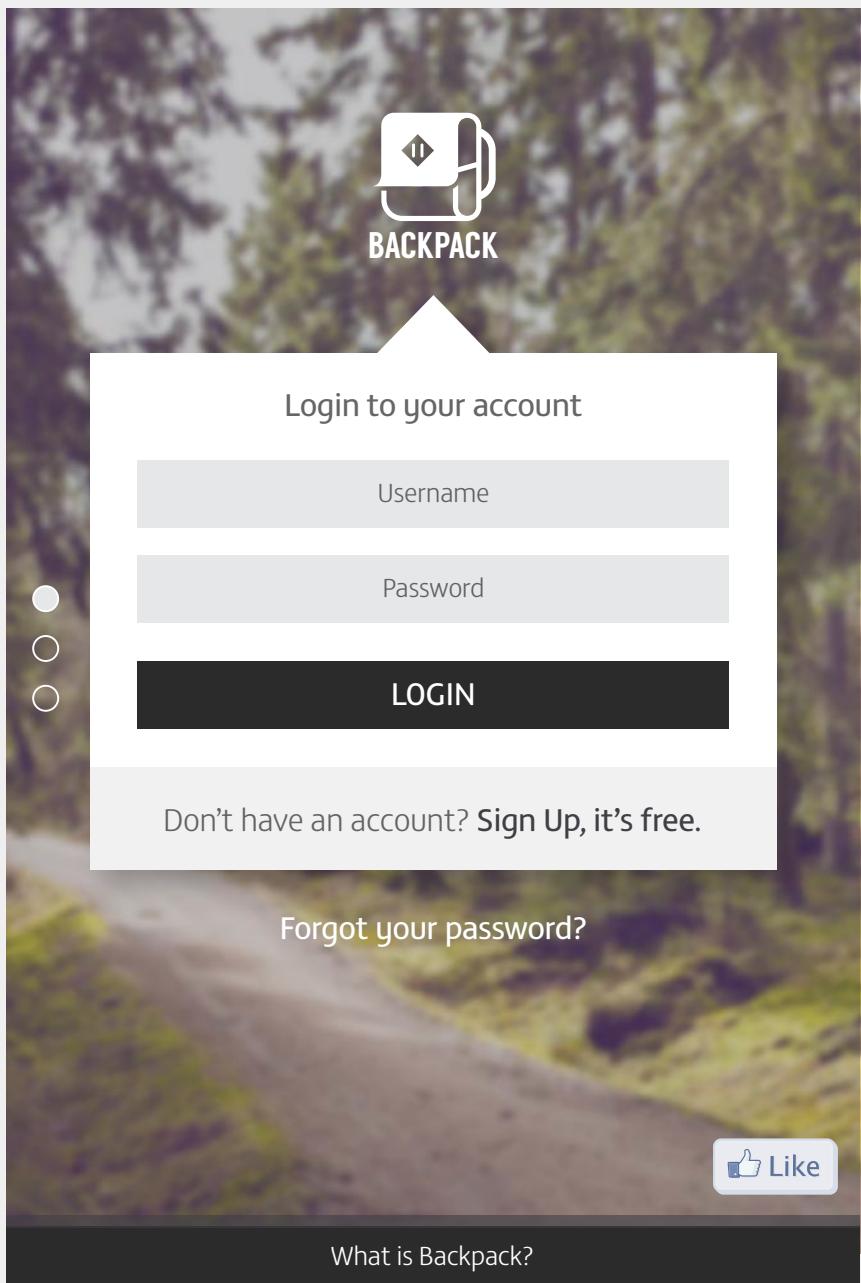
[Forgot your password?](#)



Backpack © 2015 (English UK)

[What is Backpack?](#)

Backpack Login Desktop



Backpack Login | Slide One

At the forefront of the web application the login page must be identity focused, representative of the brand theme and exhibit a visually interesting design experience. Here it can be seen that careful consideration of type, element arrangement and colour promote a professional, usable user experience. Design trends such as flat design and 'ghost' buttons have also been implemented to promote a quality product. The call to action reminds users that it is a free product and is the first example of the tone of voice. The background image will alter periodically across a suite of carefully selected photographs associated with the theme, serving to suggest the scope of travel with the app. The active indicator suggests that the login forms only one third of the homepage in its entirety. Along with the dominant 'What is Backpack?' button, the indicator serves to scroll the page to the selected option.

Login Sign Up

What is Backpack?

Puieter enim ad minim veniam, quis nos-
trud exercitation ullamco laboris nisi ut
aliquip ex ea commodo consequat. Duis
● aute irure dolor in reprehenderit in
○ voluptate velit esse cillum dolore eu fugiat
 nulla pariatur.

Okay, got it.

Like

How do I use Backpack?

What is Backpack? | Slide Two

The primary purpose of the ‘What is Backpack’ section, is to educate users who may wish to find out more about the application before registering. The nature of the web application must be communicated effectively, engaging users and developing rapport from the outset. Here the personality of Backpack must also be apparent and the tone of voice complimentary. Both the ‘Login’ and ‘Sign Up’ buttons are fixed to the top of each section to ensure optimal usability and ease of navigation. The Facebook like button is the quickest way for users to share content with their friends. When a user likes the application, a link to Backpack gets added to their activity stream which ultimately increases user traffic and application awareness.

[Login](#)[Sign Up](#)

How do I use Backpack?



O
O
●

[Check In](#)[Create blog](#)[Discover Places](#)[Connect](#)

Puieter enim ad minim veniam, quis nostrud exercitation ullamco
laboris nisi ut aliquip ex ea commodo consequat.

Okay, got it.



Backpack © 2015 (English UK)

Login **Sign Up**

How do I use Backpack?

Check In Create blog

Discover Places Connect

Puenter enim ad minim veniam, quis nos-
trud exercitation ullamco laboris nisi ut
aliquip ex ea commodo consequat.

Okay, got it.

Like

Backpack © 2015 (English UK)

Backpack ‘How to’ | Slide Three

It is essential to make the application so easy-to-use that users feel pride in their own self-reliance. Similarly to the previous section, the ‘How do I use Backpack’ area serves to instruct users on Backpack functionality and on how to make the most of the travel application. Again educating prospective users in this way enables them to provide a more informed decision on whether they wish to register to the application. Icons have been used here to support the instruction and help summarise Backpack functionality in a more visually stimulating way.

[Login](#)[Sign Up](#)

What is Backpack?

Puieter enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.

-
-
-

Okay, got it.





BACKPACK

PROFILE

CHECK IN

TIMELINE

CONNECT

SEARCH NEARBY

LEADERBOARD



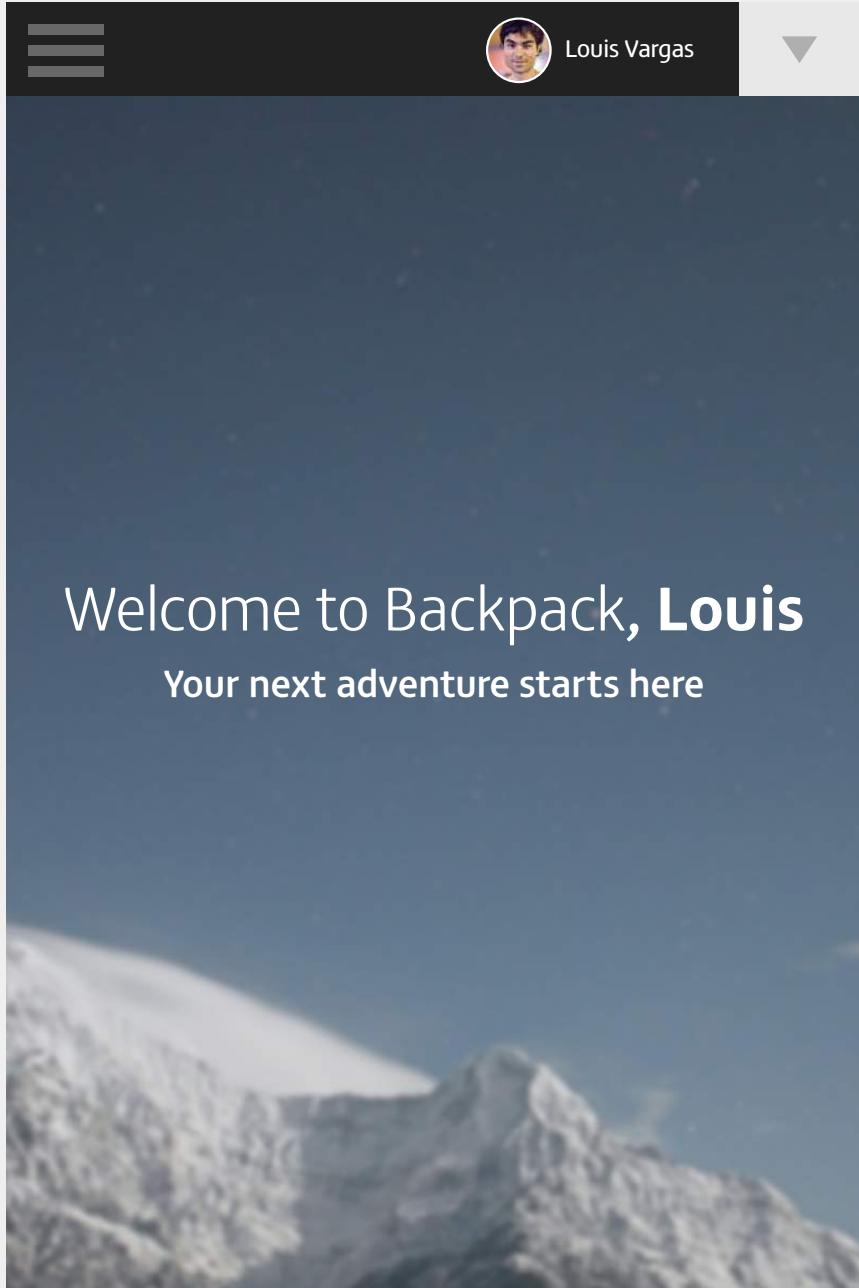
Louis Vargas



Welcome to Backpack, **Louis**
Your next adventure starts here

Backpack © 2015 (English UK)

Welcome to Backpack Desktop



Welcome

Once the user successfully logs into the Backpack application, they are introduced to a personal welcome message, complete with brand slogan. Designing a welcoming yet powerful first experience is an essential stage in the onboarding process. The user must be able to easily move off the welcome area and into the full features of the web application without feeling overwhelmed with intrusive interface elements.

A mobile application mockup for a user profile. At the top, there's a header bar with a menu icon (three horizontal lines), a circular profile picture of a man, the name "Louis Vargas", and a blue dropdown arrow. Below the header is a large profile picture of the same man. To the right of the photo are three stats: a crown icon followed by "Ranked 235", a location pin icon followed by "280 Check ins", and a star icon followed by "Score 18". The main title "Louis Vargas" is in a large, bold, dark font. Below it is a subtitle "Paris, France" with a location pin icon. A horizontal line separates this from the content below. The first section contains placeholder text "Lorem ipsum dolor sit amet" and a gear icon for settings. Below this is another paragraph of placeholder text. At the bottom, a black bar contains the text "Louis' Travel Journey" and two small blue buttons with a plus sign and a minus sign.

User Profile

The User profile page contains information about the user, surrounding their travel journey, connections and travel analytics. As explored within the paper prototype report, icons have been used to draw attention and summarise content effectively. Once logged in, the user's profile photo and name appear in the header section of the page to reinforce a personal experience and remind the user that they are in control. Again each icon has been carefully selected to ensure brand consistency and provide a more personal tone of voice. The dropdown menu will enable the user to modify their settings or log out of the application.



Louis Vargas

PROFILE

CHECK IN

TIMELINE

CONNECT

SEARCH NEARBY

LEADERBOARD



Trek across USA

Status: ongoing

5 states, 12 cities

- New York City, New York
15/06/14
- Buffalo, New York
22/06/14
- Houston, Texas
29/06/14
- Milwaukee, Wisconsin
06/07/14
- Boston, Massachusetts
14/07/14

Stream Check ins

⌚ 15:06pm

📍 Times Square

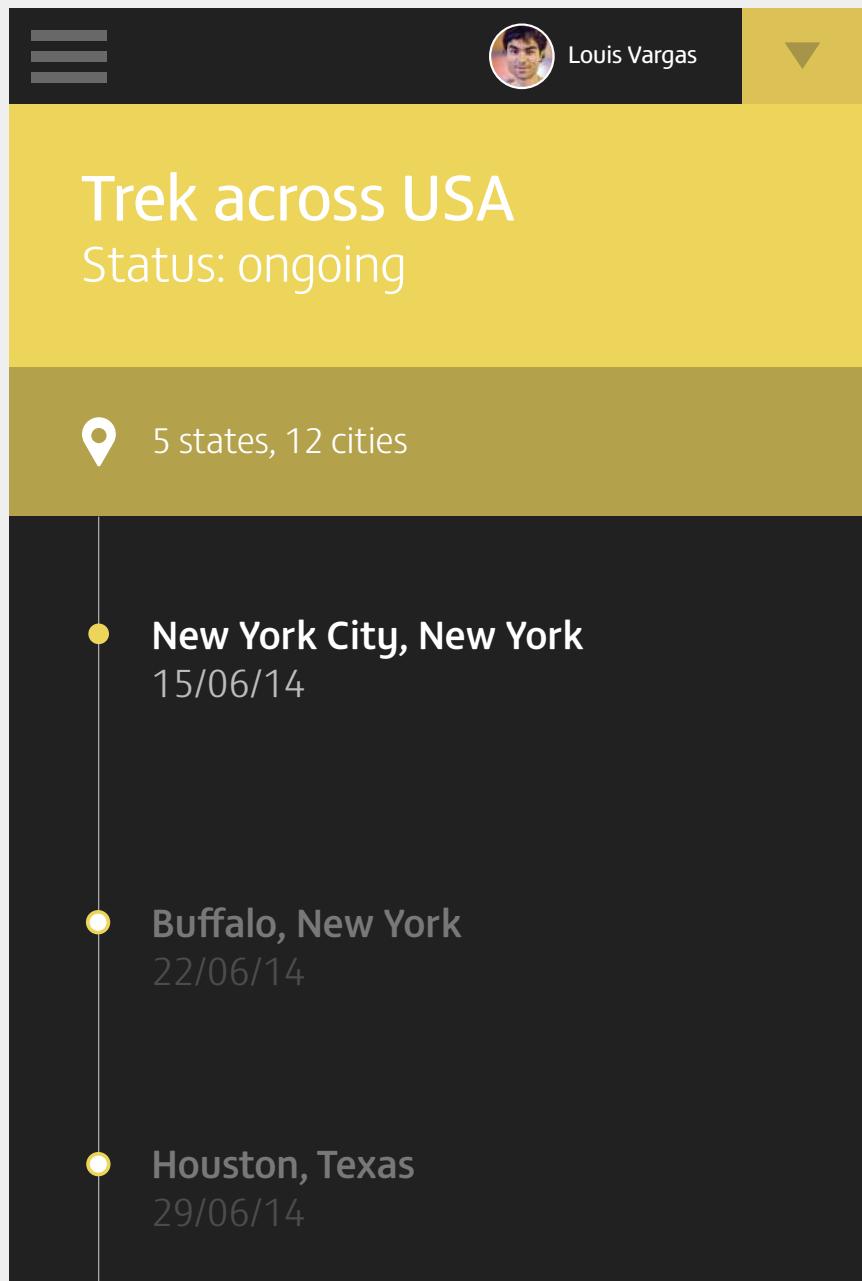
Day 5

Aliquam nec ullamcorper

Consectetur adipiscing elit. Quisque sit amet nisi est. Nunc laoreet magna ut ipsum imperdiet interdum sit amet et tortor. Suspendisse a consectetur mi. Pellentesque vestibulum leo lorem. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae.

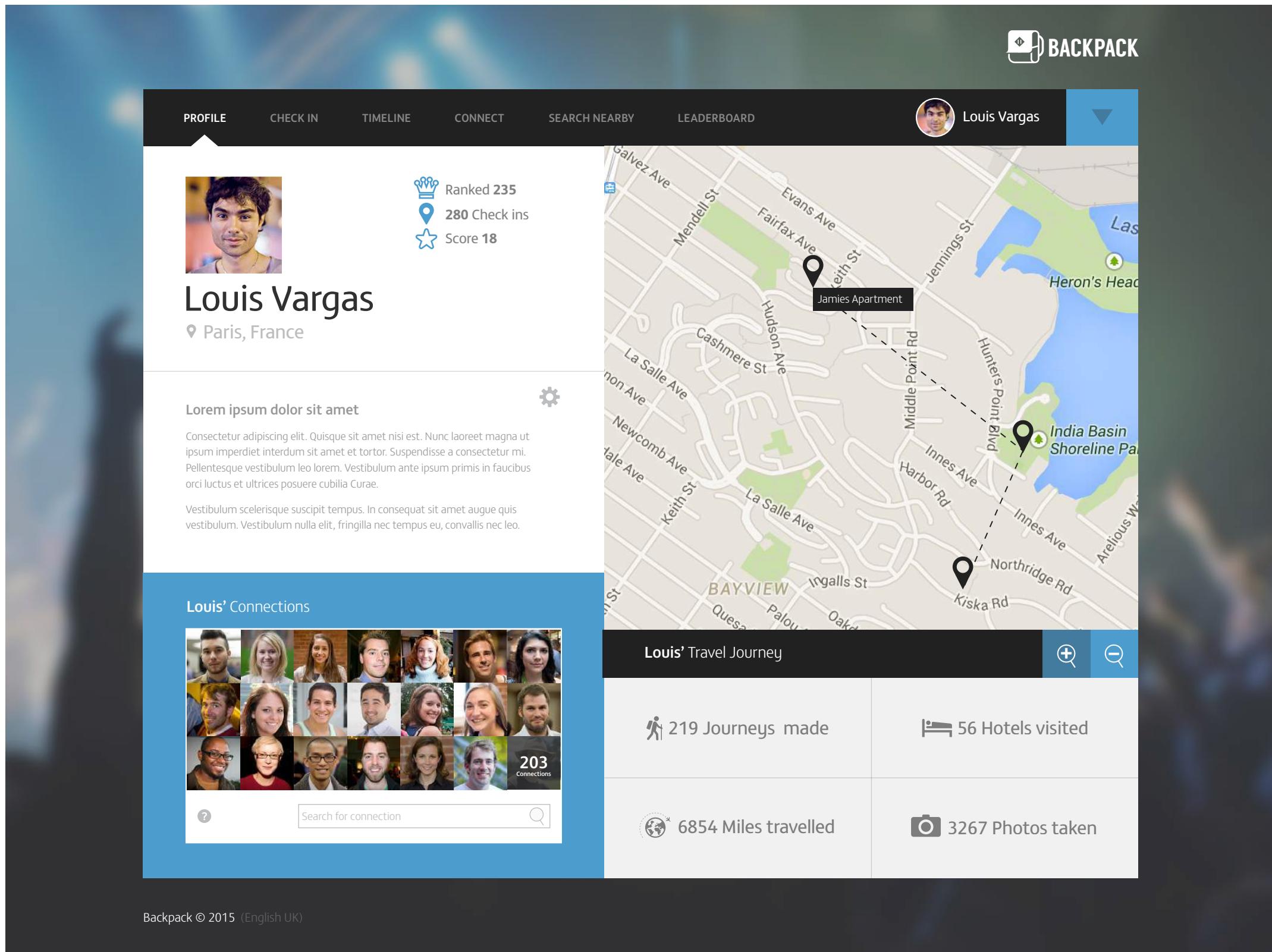
Vestibulum scelerisque suscipit tempus. In consequat sit amet augue quis vestibulum. Vestibulum nulla elit, fringilla nec tempus eu, convallis nec leo.





Travel Timeline

The travel timeline of user entries forms the primary component of this page. Here you can see that the colour theme has changed based on the user's application settings. Again this option improves accessibility and provides a unique personal experience. The timeline will display the first check in entry as default until the user alters the active selection from the timeline. As you can see each entry is based on a diary style template including information surrounding location, time, day, textual and multimedia data. Additional 'check ins' and entries will form the basis of a users mapped route, which will display as a live timeline of entries. When viewed on a mobile device, the page responds accordingly, displaying the entry as a new page, rather than a modal style window evident on a desktop view.



User Profile Desktop



Louis Vargas



PROFILE

CHECK IN

TIMELINE

CONNECT

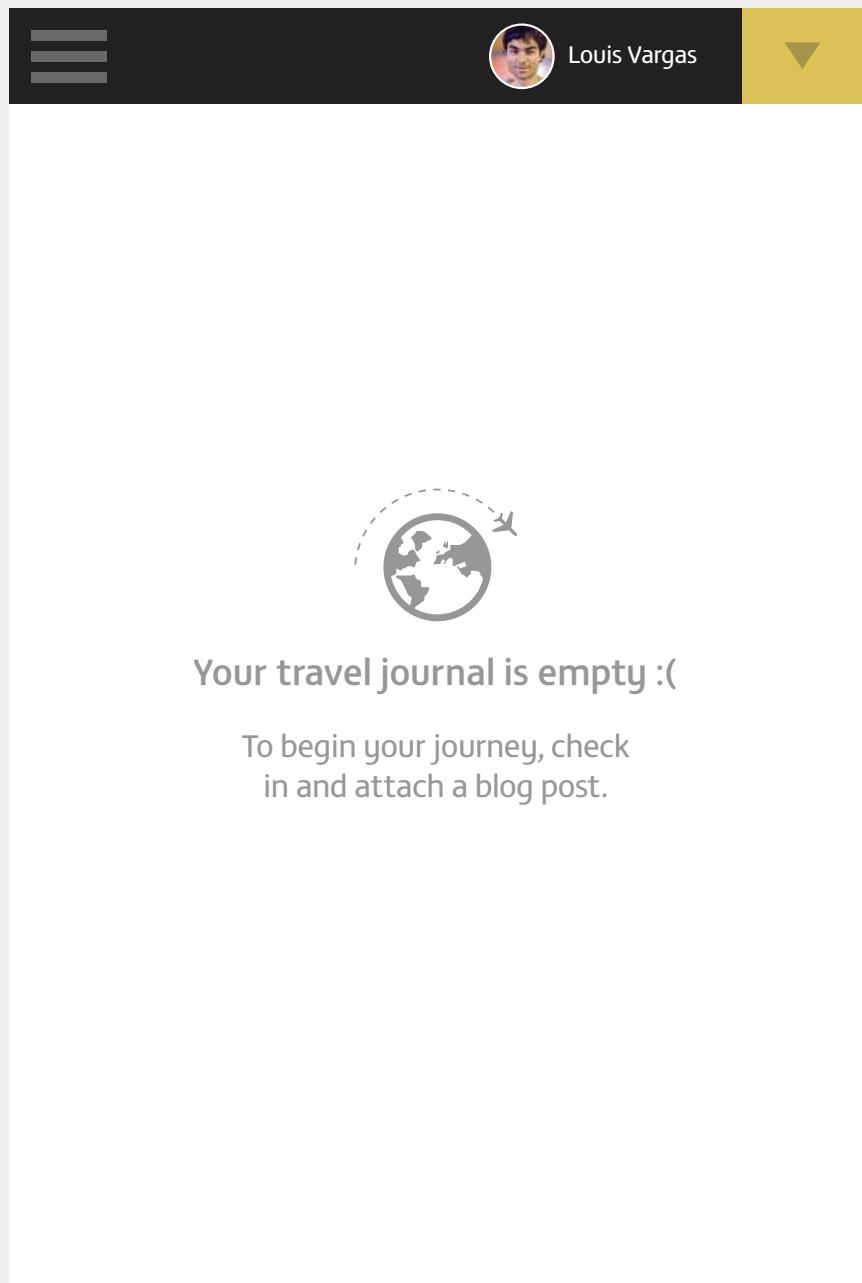
SEARCH NEARBY

LEADERBOARD



Your travel journal is empty :(

To begin your journey, check in and attach a blog post.



Travel Timeline - Empty State

As first impressions are vital, designing an effective empty state is a must. Traditionally empty states are overlooked as most designers focus on how best to display large amounts of information or data. The first time a user loads their travel timeline without previously checking in, there is no information to display. Here you can see that the empty state intuitively guides users on how to add data when their travel journal is empty. Again the icon used in this way is consistent throughout the design of the application and representative of the theme of the timeline page of the application.



Louis Vargas

PROFILE

CHECK IN

TIMELINE

CONNECT

SEARCH NEARBY

LEADERBOARD

All

Connections

Nearby



Helen Filbey

Carmarthen, Wales



Ranked 119



185 Check ins



Score 11

Lorem ipsum dolor sit amet



Consectetur adipiscing elit. Quisque sit amet nisi est. Nunc laoreet magna ut ipsum imperdier interdum sit amet et tortor. Suspendisse a consectetur mi. Pellentesque vestibulum leo lorem. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae.

Vestibulum scelerisque suscipit tempus. In consequat sit amet augue quis vestibulum. Vestibulum nulla elit, fringilla nec tempus eu, convallis nec leo.

207 Journeys made

22 Hotels visited

4742 Miles travelled

267 Photos taken

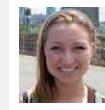
[CONNECT](#)

Helen Filbey



Helen Filbey

Dublin, Ireland

[VIEW PROFILE](#)[CONNECT](#)

Helen Filbey

Sydney, Australia

[VIEW PROFILE](#)[CONNECT](#)

Helen Filbey

Riva Del Garda, Italy

[VIEW PROFILE](#)[CONNECT](#)

Helen Filbey

Durham, England

[VIEW PROFILE](#)[CONNECT](#)

Helen Filbey

Chicago, Illinois

[VIEW PROFILE](#)[CONNECT](#)

Helen Filbey

Alcudia, Spain

[VIEW PROFILE](#)[CONNECT](#)[VIEW MORE RESULTS](#)

The screenshot shows a mobile application interface for searching users. At the top, there is a dark header bar with a profile picture of 'Louis Vargas' on the right. Below the header, a navigation bar has three tabs: 'All' (selected), 'Connections', and 'Nearby'. A search bar contains the name 'Helen Filbey' and a magnifying glass icon. The main content area displays five search results for 'Helen Filbey' from different locations:

- Helen Filbey** (Dublin, Ireland) - Profile pic, 'VIEW PROFILE' button, 'CONNECT' button.
- Helen Filbey** (Sydney, Australia) - Profile pic, 'VIEW PROFILE' button, 'CONNECT' button.
- Helen Filbey** (Riva Del Garda, Italy) - Profile pic, 'VIEW PROFILE' button, 'CONNECT' button.
- Helen Filbey** (Durham, England) - Profile pic, 'VIEW PROFILE' button, 'CONNECT' button.
- Helen Filbey** (Chicago, Illinois) - Profile pic, 'VIEW PROFILE' button, 'CONNECT' button.

At the bottom of the results, there is a blue 'VIEW MORE RESULTS' button.

Add Connections

As the search feature is the focal element of the Connect page, it is appropriately positioned at the top of the page to demand user attention. Tabs have been included in order for users to filter their search by all users, connections or nearby users. In addition, users have the option of searching for another user by name. The 'ghost' button style is consistent with the design theme and hover style serves to accentuate this effectively. On this note however, the sizing and arrangement of the button has been altered to satisfy mobile view accordingly. When the 'View Profile' option is selected the user profile displays alongside the search results in a complimentary manner. This is to enable users to interact with the search tool while viewing the selected user profile.



Louis Vargas

PROFILE

CHECK IN

TIMELINE

CONNECT

SEARCH NEARBY

LEADERBOARD

Your Ranking

Position

1235



Score

18

28 points to next level

All

Connections

Nearby

Mark James Hanson



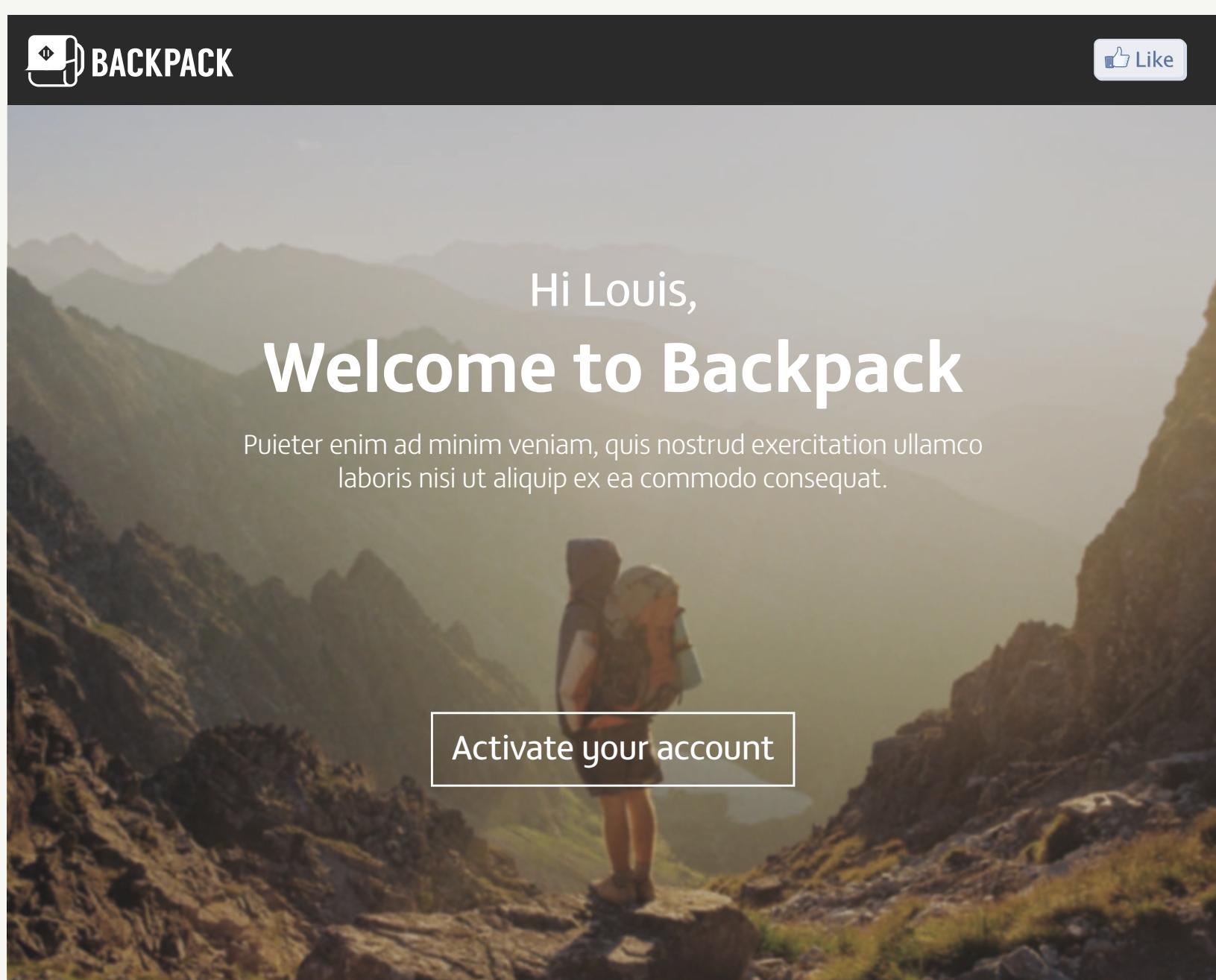
28.		👑 3206	Mark James Hanson	☆ 2087	128	Sheffield, England, UK
29.		👑 3197	Alice Wallace	☆ 2080	203	London, England, UK
30.		👑 3180	Brent Newman	☆ 2064	40	Berlin, Germany
31.		👑 3097	Ross Brian Olsen	☆ 2025	192	Brooklyn, NYC, USA
32.		👑 3002	Daryl Frazier	☆ 2011	24	Washington DC, USA
33.		👑 2996	Stephanie Curtis	☆ 1882	87	Oslo, Norway
34.		👑 2854	Timothy Hodge	☆ 1790	116	Belfast, NI, UK

The screenshot shows a mobile application interface for a leaderboard. At the top, there is a dark header bar with a profile picture of a man named "Louis Vargas" and a downward arrow icon. Below the header, the title "Your Ranking" is displayed in large white text. To the left of the title is the text "Position" and the number "1235". To the right is the text "Score" and the number "18". In the center is a circular icon containing a crown and the number "235", with the text "28 points to next level" underneath it. Below this section are three tabs: "All" (selected), "Connections", and "Nearby".

Rank	User Picture	Score	User Name	Progress
28.		👑 3206	Mark James Hanson	☆ 2087
29.		👑 3197	Alice Wallace	☆ 2080
30.		👑 3180	Brent Newman	☆ 2064
31.		👑 3097	Ross Brian Olsen	☆ 2025
32.		👑 3002	Daryl Frazier	☆ 2011
33.		👑 2996	Stephanie Curtis	☆ 1882
34.		👑 2854	Timothy Hodge	☆ 1790

Leaderboard

The leaderboard between connected friends will be sorted by position, ranking and score. The icons used here are consistent with the brand theme and neatly tie all visual elements together. Here you can also see that tabs have been included in order for users to filter their leaderboard by all users, connections or nearby users. In addition, users have the option of searching for another user by name in order to determine their leaderboard ranking. Introducing gamification in this way can elicit the desire to make regular use of the application as the simple goal of climbing the rankings often serves as compelling motivation in competition. The style applied to the leaderboard table improves content readability as research suggests, “when it comes to tables too much width is definitely better than too little width.” - R. Christie.



Onboarding Email

Creating an onboarding welcome email aids in the process of getting users from 'first touch' to 'first value' as quickly as possible. It also serves to build on the momentum of the signup and set the tone for their experience. Here the welcome email is representative of the Backpack theme and is highly focused with a single call to action. In addition to this, getting users engaged early creates a habit of conversion as further emails may encourage users to further engage with Backpack.

Start your travel journey

Puieter enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.



Check In



Create blog



Discover Places



Connect

Puieter enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.



This email was sent to louisvargas@gmail.com

Don't want to receive this type of email? [Unsubscribe](#)



BACKPACK

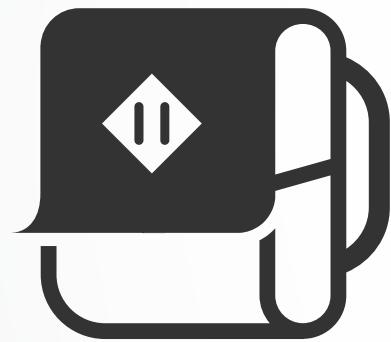
Style Guide

Implementing the Backpack brand across communications

The brand identity

The Backpack logotype is the most important element of our visual identity. It is the visual embodiment of the brand that users will instantly come to recognise and associate with the social travel application.

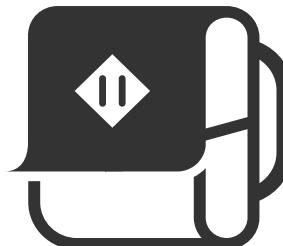
Primary Logotype



BACKPACK

There are two overarching versions of the logo, the primary logo and the secondary logo. The primary logo should be used where possible. If space is restricted, the secondary version of the logo can be used.

Secondary Logotype



BACKPACK

Logo treatments

The logotype should be used as a one colour reversal when placed on top of a solid colour, or background image. This is also advised when printing restrictions apply. Utilising negative space is also acceptable, of course the underlying image must also be representative of the Backpack theme.

Primary Logotype - reverse colour treatment



Secondary Logotype - negative treatment



Logo treatments

The logotype should be used as a one colour reversal when placed on top of a solid colour, or background image. This is also advised when printing restrictions apply. Utilising negative space is also acceptable, of course the underlying image must also be representative of the Backpack theme.

Primary Logotype - negative treatment



Secondary Logotype - negative treatment



Clearzones and Sizes

The Backpack logo should always appear within its own space. A clear zone has been designed for each logo version to ensure no other graphic elements intrude upon the brand mark.

To ensure legibility, minimum sizes have been set for both versions of the logo.



38px



74px

Typography

The style of type we use to bring our communication to life sets the tone of our brand; dynamic, innovative and unique. Our primary brand type family is ‘FS Joey’ and is employed in two weights which should be used for headlines over all communications.

Primary Typeface: Fs Joey

Designed by Fernando Mello, ‘FS Joey’ has semi-rounded details and a sleek structure, giving it a strong personality while still keeping readability at the forefront of its design.

Hello, I'm
FS Joey Bold and
I'm FS Joey Light.

Colour

Colour is an essential part of the brand and can help set the tone for a particular audience.

Colours are shown in CMYK, RGB, Pantone and hex values for a range of use across print and digital communications. It is also acceptable to use tints of these colours if required.

PRINT
PANTONE 663 C
C:0 M:0 Y:0 K:0

SCREEN
R:255 G:255 B:255
#FFFFFF

PRINT
PANTONE BLACK 7C
C:69 M:63 Y:62 K:58

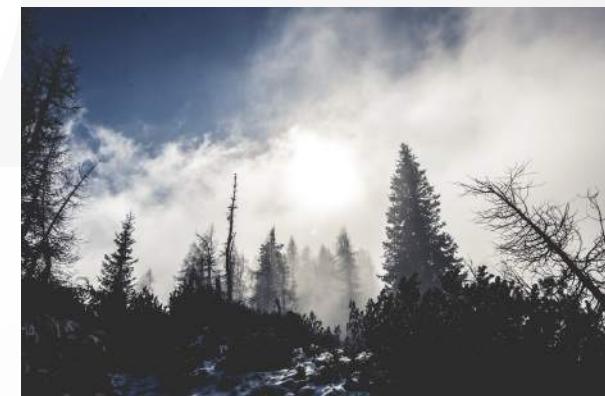
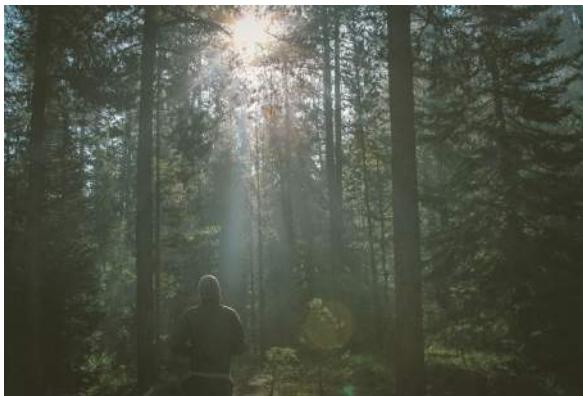
SCREEN
R:51 G:51 B:51
#333333

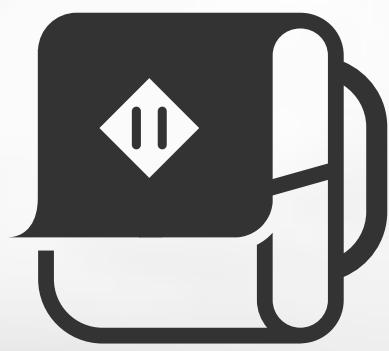
Photography

Keywords: **Dynamic, adventurous, awe-inspiring, real.**

Photography speaks to the best and most generous part of our human nature – the desire to share what we find beautiful and interesting with others.

Here are some examples of photography associated with Backpack.





BACKPACK

Appendix 3

Risk Analysis

Number	1
Risk	Lack of security precautions
Description	Failing to ensure frequent backups of work will significantly reduce protection from file loss, corruption or viruses.
Probability	2
Severity	5
Score	10
Risk Resolution	Ensuring work is backed up on reliable storage drives and devices both online and off will help to ensure work recovery if it ever becomes lost or defected.
Number	2
Risk	Time constraints
Description	Working within a strict timescale in which to complete the project may prove unfavorable if specific aspects require more time to complete them than is available.
Probability	2
Severity	4
Score	8
Risk Resolution	Following the time management strategies discussed before will seek to ensure that all aspects of the project have been assigned appropriate timescales.
Number	3
Risk	Unfamiliar API's
Description	Working with unfamiliar API's may cause complications throughout the implementation of specific functions of the project. Inexperience may demand valuable time and resources on improving knowledge of the API.
Probability	4s
Severity	3
Score	12
Risk Resolution	Allocating time to develop knowledge of unfamiliar API's will help to ensure proficiency at a suitable level from the outset.
Number	4
Risk	Technological knowledge limitations

Description	Lack of knowledge of specific technologies may present challenges when attempting to undertake complex tasks, which have never been encountered.
Probability	4
Severity	3
Score	12
Risk Resolution	Allocating time to expand knowledge of technologies to be used will help to ensure proficiency at a suitable level.
Number	5
Risk	Intermediate experience of PHP and MySQL may prove limiting.
Description	Current knowledge of PHP and MySQL may need improved in order to satisfy initial user requirements/complex tasks.
Probability	3
Severity	5
Score	15
Risk Resolution	Focusing on this language throughout the build of the functional prototype will help improve knowledge without impacting on the build of the solution.
Number	6
Risk	Fixating on Low Priority Details
Description	Spending too much time on the implementation of lower priority requirements will result in inadequate time for the design and build of more significant requirements.
Probability	2
Severity	4
Score	8
Risk Resolution	Developing strategies for the implementation of complex aspects of the interactive travel journal first, will limit the probability of this risk occurring.
Number	7
Risk	Huge Change Requests Late in the Project
Description	Changes as a result of technological advances or user requirements may prompt design or build revisions.
Probability	1
Severity	4
Score	4
Risk Resolution	Ensuring the requirements outlined in the previous report have been implemented effectively will limit the probability of late change requests.

Number	8
Risk	No working prototype
Description	As a prototype serves to provide insight into the functionality of designs and scope for change, having no prototype will eliminate these benefits.
Probability	1
Severity	5
Score	5
Risk Resolution	Developing a working prototype which focuses on the more difficult aspects of the project will ensure this is not the case.
Number	9
Risk	Requirements aren't clearly defined
Description	Unclear requirements will only restrict the solution in terms of functionality and design.
Probability	1
Severity	4
Score	4
Risk Resolution	Ensuring that the gathering of end user requirements and the identification of goals and common user tasks is an effective process, with well-defined requirements will alleviate this risk.
Number	10
Risk	Requirements prevent changing to a more suitable solution
Description	Aiming to satisfy specific user requirements, which may be an unsuitable method for implementation, will undoubtedly cause difficulties in terms of resources.
Probability	2
Severity	3
Score	6
Risk Resolution	Instead of having hard and fast requirements, goals and objectives have been identified with room for scope and negotiation.
Number	11
Risk	Failure to ensure accessibility
Description	Failure to focus on usability and accessibility for both disabled and non-disabled users will provide a poor user experience and ultimately limit the intended audience of the web application.

Probability	1
Severity	4
Score	4
Risk Resolution	Designing a single version of the web application that is equally understandable across the full spectrum of disabilities while not impacting on the usability of the platform for non-disabled users.
Number	12
Risk	Insufficient validation
Description	Failing to ensure that the web application is validated correctly will prevent the solution from being handled consistently with no errors across platforms and browsers.
Probability	1
Severity	3
Score	3
Risk Resolution	Validating the solution will ensure that the application complies with common web standards and will be accessible to more people, across more web browsers and operating systems.
Number	13
Risk	Risk reducing technique producing new risk
Description	The method implemented to resolve or reduce the probability of a risk arising may in fact produce a new risk, which will threaten the pace of the project.
Probability	2
Severity	3
Score	6
Risk Resolution	Careful consideration to the effects of risk resolution strategies must be given from the outset.
Number	14
Risk	Unforeseen personal shortfall
Description	Personal or family circumstances will undoubtedly jeopardise project progression.
Probability	2
Severity	5
Score	10
Risk Resolution	Depending on the nature of the circumstance there is little method to resolve the risk and its effect on the project if it occurs.

Number	15
Risk	New technologies
Description	If new technologies or web services are released which offer similar or improved functionality or features the success of the solution will be compromised.
Probability	1
Severity	4
Score	4
Risk Resolution	Utilising leading technologies and ensuring careful research into technological advances surrounding the implementation of the solution will seek to ensure the design is ahead of the trend and absolutely unique.
Number	16
Risk	Physical hardware difficulties
Description	If the physical hardware being used to build the solution becomes defected or inoperative the project will cease to progress effectively.
Probability	3
Severity	5
Score	15
Risk Resolution	Ensuring work is backed up on reliable storage drives and devices both online and off will help to ensure work recovery if it physical hardware becomes inoperative.
Number	17
Risk	University server failings
Description	If the University server encounters difficulty, the solution will not be transferable to it, which will effect the initial project schedule.
Probability	1
Severity	3
Score	3
Risk Resolution	Backing up the solution on the University server at various stages throughout its build will ensure that some form of platform exists on the server if the server does fail upon the transfer of the completed system.
Number	18
Risk	Market fluctuations
Description	Depending on existing market trends, the need for this style of application could be compromised if audiences suddenly disregard social connection or mobile applications as a means of communicating socially.

Probability	1
Severity	4
Score	8
Risk Resolution	Ensuring the social platform offers optimal functionality, impressive branding and a top, personal user experience will lend weight to its suitability within the market.
Number	19
Risk	Part time work management
Description	Attempting to balance the successive demands of two part time jobs and final year at University may prove difficult and effect the pace and quality of the project.
Probability	3
Severity	4
Score	12
Risk Resolution	Reducing hours in part time work and capitalising on free time will help to ensure this is not the case.
Number	20
Risk	Catastrophe/disaster
Description	In the unlikely event of a natural catastrophe, the progress of the project will be threatened indefinitely.
Probability	1
Severity	5
Score	5
Risk Resolution	Ensuring work is backed up on reliable storage drives and devices both online and off will help to ensure work recovery in the event of a natural catastrophe or disaster.



User Testing Survey

The following questions are designed to test the usability of Backpack.

1. Describe your experience of using Backpack.

Yes No

3. Does the homepage contain enough helpful information?

Yes No

4. What are the main features of the application?

5. How would you describe the navigation architecture?

6. What is your impression of the user experience design?

7. How would you describe the content of the application?

8. Did all features behave as expected?

Yes No

9. Did you experience any difficulties?

Yes No

12. Do you have any suggestions for improvement?

Thank you for your time and feedback.



User Testing Tasks

The following tasks are designed to test the usability of Backpack. Think aloud and share your thoughts, queries or ideas when completing each task.

*Remember if you cannot complete a task, the application is at fault, not you.

1. What is Backpack?
2. Register an account with Backpack.
3. View your profile information.
4. Update your profile image and personal information.
5. Complete the 'Check In' form.
6. View the check in entry on the 'Timeline' page.
7. Search for other Backpack users.
8. View users travel journeys.
9. Search for cafe's nearby.
10. Reset your password.
11. Logout of the application.

Thank you for your time and feedback.

Test Results

Number	1
Description	Users will be able to create an account for the web application.
Expected Result	Pass
Actual Result	Pass
Priority	/
Action required	No further action is required.
Number	2
Description	The register platform will require the user to verify their password.
Expected Result	Pass
Actual Result	Pass
Priority	/
Action required	No further action is required.
Number	3
Description	The user must be able to logout of the web application.
Expected Result	Pass
Actual Result	Pass
Priority	/
Action required	No further action is required.
Number	4
Description	Geolocation will acquire the users current position for both 'Check In' and 'Discover' pages.
Expected Result	Pass
Actual Result	Pass
Priority	1
Action required	No further action is required.
Number	5
Description	A blog entry input form will enable users to add textual information to their check-in entry.

Expected Result	Pass
Actual Result	Pass
Priority	/
Action required	No further action is required.
Number	6
Description	Users will be permitted to change their profile photo/icon.
Expected Result	Pass
Actual Result	Fail- Once uploaded to the server, the upload image function failed to function as expected.
Priority	1
Action required	Contact Paul Stewart to set PHP write permissions on the image upload folder.
Number	7
Description	Users will have the option of updating their login/account password.
Expected Result	Pass
Actual Result	Pass
Priority	/
Action required	No further action is required.
Number	8
Description	The search tool will enable users to search for other users by username.
Expected Result	Pass
Actual Result	Pass
Priority	/
Action required	No further action is required.
Number	9
Description	The dropdown display will show a list of users with similar usernames (Search Suggestions).
Expected Result	Pass
Actual Result	Pass
Priority	/

Action required	No further action is required.
Number	10
Description	Strong app branding will be at the forefront of the web application.
Expected Result	Pass
Actual Result	Pass
Priority	/
Action required	No further action is required.
Number	11
Description	Timeline events will be pulled from the backend users travel data and display in order.
Expected Result	Pass
Actual Result	Pass
Priority	/
Action required	No further action is required.
Number	12
Description	Checked in locations will join as a single route across a map.
Expected Result	Fail
Actual Result	Fail
Priority	3
Action required	Modification to discuss in future work, 7.4.
Number	13
Description	Navigational design architecture will respond to mobile viewing platforms.
Expected Result	Pass
Actual Result	Pass
Priority	/
Action required	No further action is required.
Number	14
Description	Web application navigation will be based on the mesh structure.

Expected Result	Pass
Actual Result	Pass
Priority	/
Action required	No further action is required.
Number	15
Description	The web application will utilise responsive web design.
Expected Result	Pass
Actual Result	Pass
Priority	/
Action required	No further action is required.
Number	16
Description	The application user interface will appear visually impressive, professional and appropriate to the theme of travel and tourism.
Expected Result	Pass
Actual Result	Pass
Priority	/
Action required	No further action is required.
Number	17
Description	The profile section will enable users to deactivate/delete their account.
Expected Result	Fail
Actual Result	Fail
Priority	3
Action required	Modification to discuss in future work, 7.4.
Number	18
Description	Users will be able to search for nearby places of interest
Expected Result	Pass
Actual Result	Pass
Priority	/
Action	No further action required.

required	
Number	19
Description	Users will be able to retrieve their password if forgotten.
Expected Result	Pass
Actual Result	Fail- Although it retrieves the user password, using their username, it emails only the encrypted version.
Priority	3
Action required	Modification to discuss in future work, 7.4.