

GrapeVine

## CAREERS PATHFINDER

Stage 3: Final Documentation

### Software Engineering Group 12

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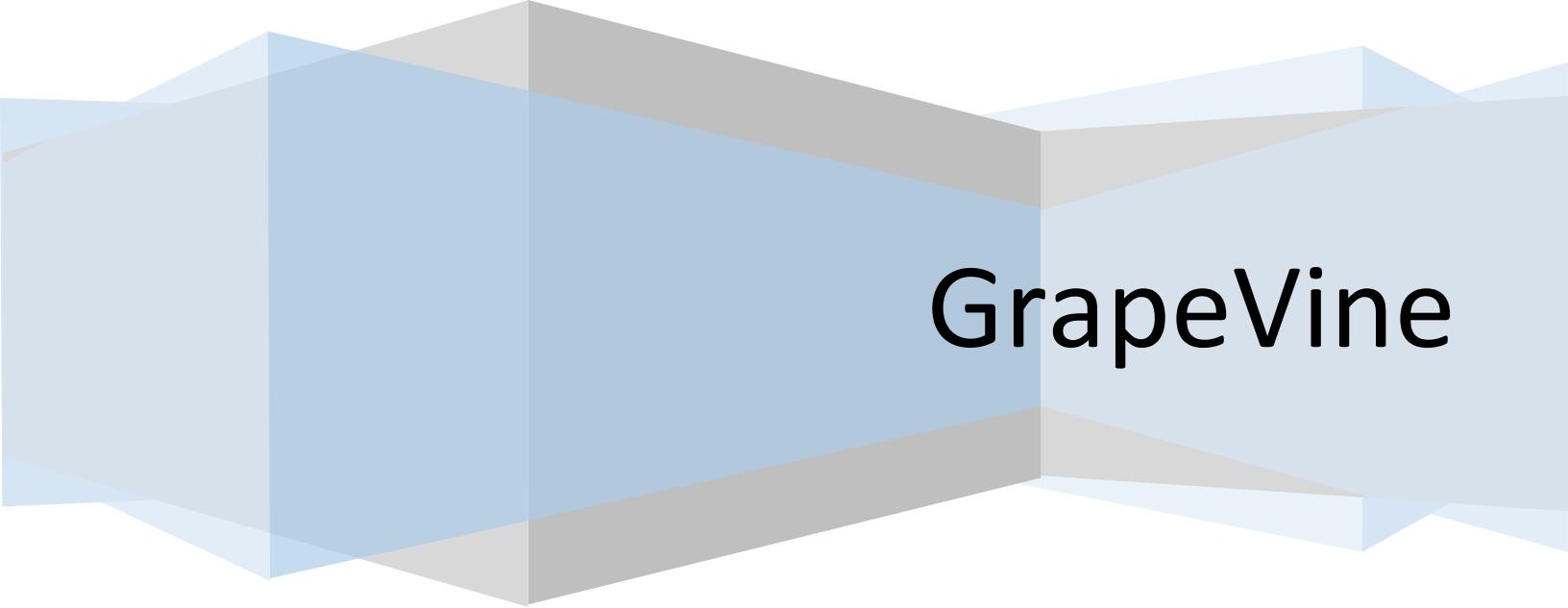
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# A. Introduction

SE Group 12

Heriot-Watt University



GrapeVine

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## 1.0 Document History and Revisions

Document Title	Confidentiality Level/Status	Date Updated
<b>Introduction</b>	Initial draft	24 March 2016
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Version	Author(s)	Date	Overview
<b>v1.0</b>	Daniel Gains	24 March 2016	First draft of the introduction.
<b>FINAL</b>	Daniel Gains	29 March 2016	Final draft of the introduction.

## 2.0 Introduction

### 2.1 Overview

The following document is the report with regards to the final implementation of the system, along with an evaluation and a marketing strategy.

The document starts off introducing the purpose and objectives that we initially set out to meet in order to complete the project. It also gives an overview of the scope of our product.

The next section (section B) goes into detail about the targeted market having been analysed, followed by a marketing strategy for our product.

Section C is the usability evaluation in which we will talk about how we went about testing our application, along with an explanation of the protocol we used on the participants. We will then evaluate the use of this protocol. Consent forms and questionnaires for this section are attached to the appendix.

Our description of the final application design and implementation is contained within section D of this document. This will include a high level overview of the system, along with a description of the intended scope. Moreover, this section is comprised of detailed diagrams showing the system architecture, the database design and other such things in order to give a clearer understanding of how the system actually works. This section will also explain our choice of software development process along with what was achieved using said process. Finally, there will be a description about how we tested the system for technical correctness.

The section following on from this (section E) is the overall evaluation of the project and is split into 3 main sections. The first section evaluates the organisation and collaboration of the group as whole, along with the actual organisation of the project itself. The second section describes the successfulness of our original implementation schedule (found in section H), supported by an updated version of the plan with new dates of when certain tasks were actually completed. Not only this, but it will also talk about our method of version control, the tools we used for the implementation and any problems we had during development. The final section of this part contains a table of our original functional requirements with a status for each, describing whether or not that requirement had been completed. This then leads on to an explanation of the robustness of our system with descriptions of any bugs that are still left outstanding on the system.

Sections F and G include the system guides and our overall conclusion, respectively. And finally, section H is the appendix which will contain any supporting documentation that was created in the earlier stages. The appropriate supporting documents in this section will be referred to throughout the project evaluation in order for the reader to gain a better understanding of the respective points being described.

## 2.2 Purpose

The purpose of this document is to prove that we managed to meet our starting objectives within the allotted time. We had a lot of discussion over what these objectives would be due to the fact that this system can be life-changing for the primary user. We know this as the problem domain for this system is that a lot of people, no matter their age or any other demographic, don't have an idea of what they want to do with their lives or where they ultimately want to end up. GrapeVine provides the perfect tool for these people.

The objectives we agreed on are as follows:

- Provide a tool that aids the user in realising their ambitions.
- Provide a tool that enables the user to understand themselves more as a person.
- Provide a tool in which the customer can feel comfortable due to the security.

At the end of this document there will be a conclusion to summarise how the final implementation of our system met the aforementioned objectives.

## 2.3 Product Scope

The main aim of this project is to produce a system that will help primarily, school leavers to make informed decisions and choices in order to reach a career goal. This includes required qualifications, work experience and other applicable skills.

The scope of this project is to provide a tool to the public that allows users to easily gain an outline of how they could go about obtaining a particular career or career related goal, i.e. a certain qualification.

The intended primary users of the website are:

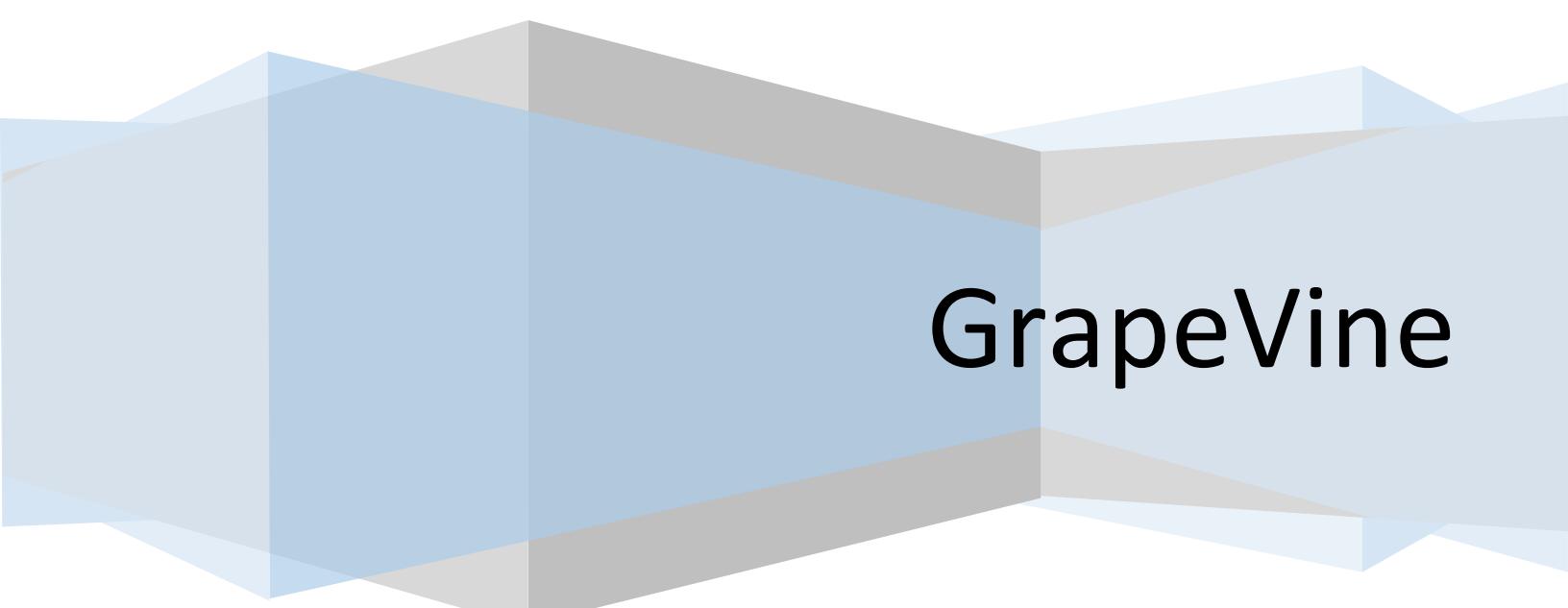
- School leavers (aged 16 – 18)

However, it is intended to be usable by all persons above the age of 13 years old. Additionally, visitors to the site will be allowed to use a limited amount of site functionality.

## B. Marketing Analysis & Strategy

SE Group 12

Heriot-Watt University



GrapeVine

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## 1.0 Document History and Revisions

Document Title	Confidentiality Level/Status	Date Updated
<b>Marketing Strategy &amp; Analysis</b>	Initial draft	26 March 2016
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<b>Marketing Analysis &amp; Strategy</b>	Final Draft	01 April 2016

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<b>v1.0</b>	Kevin Brown	26 March 2016	First draft of the Marketing.
<b>v1.1</b>	Harry Skehin	26 March 2016	Added SWOT and PESTLE Analysis.
<b>v2.0</b>	Kevin Brown & Harry Skehin	29 March 2016	Re-draft of the initial.
<b>FINAL</b>	Kevin Brown & Harry Skehin	01 April 2016	Final Draft and inclusion of supporting documents and references.

## 2.0 Executive Summary

GrapeVine has been established with the aim of meeting the needs of the user through the use of web based technologies. The web technologies market has shot through the roof and as a result it is more feasible for a Small to Medium Enterprise (SME) to create web based applications for financial gain.

GrapeVine aspire to be the best and as a result have created themselves a few goals that they believe will allow the organisation to thrive:

- i. Establishing a market niche.
- ii. Boosting the companies brand awareness and customer base.
- iii. Promoting an ethical image of the business to boost company reputation.
- iv. Increase the likelihood of new talent joining the workforce.

In order to keep on track of things when attempting to achieve these goals, GrapeVine have developed multiple marketing strategies as well as company policies and procedures that are to be deployed throughout the organisation and its workforce. When taking the current target markets into consideration, it has been concluded that the best approach to take would be to target young students and school leavers. This is due to the fact that most young people are very familiar with web applications and would maybe prefer an intuitive web based application to help them decide on their future.

In order to try and gain a competitive advantage, GrapeVine will look closely at the theory behind marketing a new product to establish a niche with the aim of adding useful features and functions that are otherwise overlooked by competitors.

GrapeVine's main plan is to use a strategy that will catch the competitors off guard making improvements throughout before the competitors get the chance to make such improvements a reality. GrapeVine have a very high standard when it comes to the operations of the organisation. As a result, GrapeVine will set new customer expectations through the use of creative ideas and high skill sets to ensure the elimination of their competitors whilst attracting new customers in the process.

GrapeVine aspire to gain a competitive advantage over opposing organisations in the same market through the utilisation of a focus strategy. A focus strategy will allow GrapeVine to offer a fully functional product to the customer whilst keeping company expenditure as low as possible without affecting the product or level of service in any way.

As a product is only worth what the consumer is willing to pay, GrapeVine will aim to use a value orientated price approach. This will allow for the pricing of products to be based on what the customer believes is good value. Further research will be required on GrapeVine's part in order to achieve this aim in as ethical a manner as possible. This will give GrapeVine a better idea if the area of the market they are targeting is even worthwhile addressing in the first place and is financially viable. As a result,

promotional pricing will be used at first to give GrapeVine a better indication of what customers are happy to pay for a product.

The Marketing Mix section (section 8.1) of this document will go into further detail.

## 3.0 Overall Objectives

### i. Customer Satisfaction:

- Providing a product that is fit for purpose, reliable and robust as well as maintaining user friendliness to the young users that will be making use of the product.
- The product will be aesthetically pleasing
- Increasing the number of promotional strategies GrapeVine utilise in order to boost the company image and reputation.
- Providing after sale customer support which would help any users that are having issues with the product or need help using it.
- Dealing to customer queries, problems and complaints in the appropriate and professional manner and dealing with them within at least 3 working days.
- Setting up a team of individuals who can receive feedback and suggestions on a customer level.
- Maintaining the customer loyalty by providing surveys and questionnaires to help make improvements to the organisation

### ii. Health & safety and Employee Harmony

- Ensuring that staff have a safe working environment whilst performing everyday activities in the workplace
- Ensuring that staff member have equal opportunities.
- Allowing for the process of Continuing Professional Development (CPD) to allow the workforce to pick up new skill sets and achieve their ambitions
- Measures put in place to allow for the turnover of staff to be reduced so that all tacit knowledge and information is retained.
- Provide all of the workforce with basic health and safety training at a minimum

### iii. Company Image of the Business

- Remain ethical at all times when it comes to the discarding of old equipment
- Remaining ethical at all times when it comes to the storage of information held about customers
- Ensuring that all legislation in place is being abided by

#### iv. Utilisation and Maximising Efficiency

- Utilising the resources available to the company in the best manner possible
- Motivating the workforce with praise and rewards
- Ensuring the customers remain happy
- Easy to understand procedures when performing tasks
- Cost cutting wherever possible

## 4.0 Product and Market Background

### 4.1 Background

An up and coming organisation, GrapeVine have created a Careers Pathway tool to meet the requirements of Lockheed-Martin. The Careers Pathway tool is fully functional and compatible with all types of computer systems such as desktops, laptops, tablets and mobile phones as well as many different types of web browsing applications such as IE, Firefox, Google Chrome and Opera. As well as being user friendly, the web application requires low system specifications to run the web application with optimum performance. The Careers Pathway tool is constantly being worked on to try and highlight any improvements that could be implemented as well as any bug fixes if required. GrapeVine's main objective is an increasing and steady client base and an excellent reputation as an organisation in order to expand and provide a better level of service to their customers in the future. It is also hoped that GrapeVine will be able to attract new talent to be part of the workforce and due to their increasing employer branding, reduce staff turnover in the process.

### 4.2 Product

GrapeVine are great believers in promoting the need for education from the young and that they should have equal opportunities to learn and make the best decision that is right for them and their future.

Due to the current financial market, there are record numbers of students currently in education but the required support they need for their future isn't meeting the demands. As a result, GrapeVine wish to create a Careers Pathway tool that will allow for the clear indication of user goals, steps to take to achieve their goals and requirements to gain access to that goal. As this can be a very difficult decision for a young individual to make so soon, based on the qualifications that individual currently possess or are planning to achieve, The Careers Pathway tool can come up with suggestions on paths to take in life along with all the steps it takes to obtain your dream job and start your career or continue with your studies, should you desire to do so.

### 4.3 Market

When it comes to education, Scotland has always been highly regarded as the best in the UK thanks to their education system. According to the Organisation for Economic Co-operation Development's (OECD) and their Programme for International Student Assessment (PISA), Scotland isn't ranked as an individual country and instead are ranked under the UK. These rankings come into place every three years. The UK are ranked 26<sup>th</sup> for Mathematics, 23<sup>rd</sup> for Reading and 21<sup>st</sup> for Science on a worldwide basis. This is the first time that the UK has fallen out of the top 20 ranked countries for education (McIver).

GrapeVine as a result have seen a gap in the market and wish to seize on this opportunity to meet the UK's demand to be ranked in the top 20 countries again. There aren't really any web applications out there that can really hold the attention of young users and boost their chances of getting the career they want in the process. GrapeVine are aware that time is of the essence when it comes to creating a new product and just because there are no real competitors at the moment, there may be in the near future. This is why GrapeVine are taking every precaution possible when adding new features without forgetting what we set out to achieve in the first place.

### 4.4 Market Trends

The World Wide Web is already a widely used form of information sharing and is continuously improving and adapting to changes in everyday life. There are so many websites to choose from and as a result, difficult to achieve a web application that is popular and regularly used. With trends changing on a more regular basis, it can be hard to keep up with changes and to adapt in the correct manner. Small to medium enterprises (SME's) don't regularly make use of web applications, in fact, according to Quora who are an institution in charge of tracking SME's statistics, 55% of SME's don't use them and on average, are losing out on up to as much as £55,000 per year (Dawes).

As the country still hasn't fully recovered from economic and financial issues of the past, people are constantly looking for more and more methodologies to make themselves some money. As a result, SME's are on the increase. As SME's who don't make use of web applications lose out on money, GrapeVine believe it would be a great idea to design, implement and maintain web applications that would be of great use to us practically as well as increasing our company awareness in the process. As employee turnover is always higher amongst SME's, the extra money will allow GrapeVine to deal with this problem and retain the current level of staff and the tacit knowledge that comes with that as well as potentially making way for the expansion of the organisation.

### 4.5 Main Competitors

GrapeVine's primary main competitors are organisations such as UCAS who have a similar web application service in place and as they are supported by the government, they have greater financial capabilities as well as a larger and more experienced workforce and legal team.

GrapeVine's secondary main competitors would be other SME's who are currently establishing an organisation in the same or similar field or developing a similar product as GrapeVine's current project.

As a result, GrapeVine will have to make the best use of all the resources available to them to come up with a marketing strategy and enhance operations in order to gain a competitive advantage.

## 5.0 Marketing Analysis

### 5.1 SWOT Analysis

#### 5.1.1 Strengths

GrapeVine have many strengths that stand out from the rest.

- All of the individuals involved in this company have been through the University process. As a company many of the individuals have experienced first-hand how difficult it can be to find employment or find what their next step is going to be after graduating from school, College or University. This gives us a real advantage as we know exactly what the customer would want and need during this process.
- Education is a massive opportunity for many people. There are always going to be individuals graduating from schools, Colleges and Universities. There is always going to be a constant stream of graduates at many different educational levels which means there will always been a market for individuals to use this company to find what the best next step is for them or how to get to the next stage they want to be at.
- This company uses highly trained staff with a diverse skill set and wealth of knowledge and experience to ensure the best solutions and programs are used. This enables the company to accurately find career paths or educational paths for all their users.

#### 5.1.2 Weaknesses

- GrapeVine are a new start-up company that are new to the market. The main weakness is our lack of reputation. This may have an impact on our start-up user base, as it may be hard for users to trust a newly formed solution and company. However, every newly formed start-up company has to overcome this problem. This company will strongly advertise on many platforms to overcome this and build a creditable reputation.
- Additionally, with the nature of our company, there will never be a direct meeting between our staff and any users of the webpage. This could lead to users feeling that the service provided is not very personal, which could damage the trust each user has when picking our solution. Traditional Job finder offices will always meet the user in a face-to-face meeting giving them a sense of support. However, many users will expect this when using an online company and as long as the best solution is given to the user based on their needs there is no need for an extremely personal component.

- As a start-up company it will prove difficult in the beginning to be able to support a dramatic increase in customer usage, due to the number of IT resources required to support a dramatic increase. Over time this will change and as the company grows, so too will the IT resources and in turn the client base.

### **5.1.3 Opportunities**

- Graduates today rely heavily on technology not only for their studies but also to help them network (LinkedIn) to increase career opportunities. There is therefore a massive market which would be open to using technology to help them organize their future plans which allows the company the opportunity to convert any user who would use a more 'traditional' method for example, 'job shops' to this unique website.
- This large market has many traditional job office and job shops where individuals can go to find career options. However, this market does not have a company that can provide optimal solutions in a quick and efficient time frame, something that would take job offices huge manpower and time. Based on the unique optimal solutions this company can provide there is a massive gap for this company to grow.
- The large consistent target market of graduates at many different educational levels allows this company to build a reputation over time and ensure growth of the company in future.
- In the future this type of company could receive affiliation with many large organizations including government funding. The benefits of this type of company to graduates of any educational level for career paths and further education options could be used and recommended by the Government, so further use of this company could be used in schools, colleges and Universities across the UK.

### **5.1.4 Threats**

- This market could get very competitive; companies could develop similar solutions to target same market, which could impact on the number of service users.
- With a lack of a company reputation at the beginning of starting the company this could damage the overall user base and prevent many people from hearing and knowing about this company.
- Job finder offices are the main threat in this field at present. These companies provide the same service and are already well established in today's market.

## **5.2 PESTLE Analysis**

### **5.2.1 Political**

The rate of corporation tax, applied by UK government, has been decreased steadily in the past few years. With rates sitting as low as 20% this is a great time to start a company venture like GrapeVine. However, the rate of VAT is on the increase which may impact on profits we intend to make through marketing or funding.

### ***5.2.2 Economical***

Consumer spending overall has dropped in comparison to previous decades meaning a noticeable reduction in sales. Although this may seem like a bad time to start a company, the nature in which we intend to bring in profit should not be affected by this trend.

Given the nature of our solution, target advertising and potential funding will be our primary source of income and profit. With banks being disinclined to lend money and our government still recovering we may face challenges in securing such loans and funding.

### ***5.2.3 Socio-Cultural***

Technology and specifically web technologies have become more inexpensive therefore more accessible with the vast majority of people in the UK having some form of access to the internet. The advancements in technology allow us to provide great products to our users but also mean there are more users able to take advantage of our services.

### ***5.2.4 Technological***

Technology and specifically web technologies have become more inexpensive therefore more accessible with the vast majority of people in the UK having some form of access to the internet. The advancements in technology allow us to provide great products to our users but also mean there are more users able to take advantage of our services.

### ***5.2.5 Legal***

Like any company there will be certain legislation to obey by such as health and safety etc., however in a market such as there is an underlying emphasis on data protection. The company must be handle any user data in a sensitive way and ensure any information is safely protected.

If the company expands trade unions will also be a crucial aspect however this is still currently a small operation.

### ***5.2.6 Ecological***

With our product being web based the carbon footprint of our company is minimal. In this modern day age there is a strong emphasis from our government and society to focus on the consumption of energy. Another emphasis is recycling and after the lifespan of any company machine is complete, it can certainly be sent for recycling. As a result, the Waste Electrical and Electronic recycling piece of legislation that is in place to deal with this issue will be abided by (Cuthbert).

## 5.3 Michael E. Porter's Five Force Analysis

### 5.3.1 Threat of New Entrants

The threat of new entrants emerging in this particular market is high as the level of capital investment needed to enter the market, compared to others, is moderately small. Due to the internet based nature of our solution, potential competitors can cross geographical barriers but they require a level of expertise in the technology field. A profitable industry will attract more competitors looking to achieve profits, web development is most definitely a profitable industry.

### 5.3.2 Power of Buyer

The power of buyers is fairly low as this is a one off registration product. There are no additional solutions however, with an increase in user base, the overall marketing value will increase drastically therefore the more customers the higher company profit. There are no large companies that dominate the sector instead there are a lot of small and freelance organizations.

### 5.3.3 Threat of Substitute Products

There is no degree of high level threat of substitute products at present however, this could potentially change. With the nature of our product, the recognised demand of this service has increased. Additionally, as a web solution prototype can be created relatively inexpensively, it is not out of the question for a company, even from a different market environment, could potentially develop a similar product.

As there are so many changes happening in the world on a day to day basis, our competitors will be offering a service that is slightly different from ours. The issue is that no two people are the same so whilst our products and services may be suitable for one client, the other may feel more suited towards a competitor. GrapeVine can only try its best to re-assure its clients that we are the best people for the job they require to be completed for them.

### 5.3.4 Power of Suppliers

Power of suppliers is very low in this particular project as the main supply the company requires to gather is information. The information associated courses available at university or college level is freely displayed and easily accessible.

As the organisation is still relatively small, it will be difficult to barter with the suppliers to try and cut down costs as we will not require resources in bulk. There are very few suppliers of hardware and software and typically the industry uses the same equipment in order to minimise compatibility issues. The cost of switching to other suppliers is fairly high and can have a detrimental effect on the organisation if you commit too early or commit to too much.

### 5.3.5 Industry Competitors

As the current market GrapeVine are in has relatively low competition, it is considered to be a disciplined industry (Fowler). As a result, in order to gain a competitive advantage, we will need to have a selling point that stands out from the rest. Other competitors may be more financially stable and as a result, have more resources at their disposal. This can prove problematic for SME's and other small businesses.

## 6.0 Marketing Strategies

### 6.1 Target Markets

As GrapeVine are trying to aid those in education, the target market as a result will be young students and school leavers of all abilities. The UK's word rankings when it comes to education have plummeted so any improvements we can provide seems like a good area to get sink our teeth into although we will only be focusing on students from Scotland.

Edinburgh have a rather high number of secondary school students in comparison to other areas of the country so GrapeVine will initially focus mainly their attention towards Edinburgh first, although the aim is to help all areas of Scotland in the future. Also, as Edinburgh is so central to Scotland, there are already many logistic networks out there that link Edinburgh to the rest of the country so this appears to be the best solution.

With GrapeVine's current project, teachers of schools will need to be familiar with the web application. GrapeVine will create a strategy that will lead to more teachers using the website so as a result, seminars will be hosted in order to increase the familiarity of functional aspects of the web application. This in turn should hopefully allow teachers to become accustomed to the website as well as possibly recommending that the class they teach makes use of it, thus promoting user growth.

### 6.2 Product Positioning

Although GrapeVine would love to be able to stand up to the leading competitors, this is not financially viable as GrapeVine are a fairly new organisation. As a result, GrapeVine will position themselves as a market follower. This however does not mean that GrapeVine won't be able to compete with the leading competitors as they have a few unique selling points that make their products stand out from the rest.

### 6.3 Strategic Intent

GrapeVine are constantly looking to improve the usability and features of their products. A strategy will be put in place that will allow GrapeVine to defend itself against any competitors that try to muscle their

way in and measures will be put in place so that the opposite can occur if they feel that they are in a position to take such action.

## 6.4 Competitive Advantages

The organisation desire to obtain a competitive advantage over any other organisations in the same market. In order for this to be achievable, GrapeVine will do background research into the theory behind different “generic strategies” as well as gathering as much awareness as possible to reach out to the consumers about our unique selling points using various marketing techniques.

## 6.5 Stakeholders

Throughout the project, Heriot-Watt and Lockheed-Martin have been our main stakeholders, providing additional support where possible and keeping us up to date with requirements, any changes and deadlines.

## 6.6 Revenue Model

GrapeVine will generate revenue for the organisation using a number of different methodologies. Firstly, if granted permission to do so, GrapeVine will utilise data mining tools in order to produce targeted advertisement to the correct audience. There will also be a small number of adverts placed on our company website that will generate revenue depending on how many users visit the website. We will also pay Google to prioritise our website when users search for “GrapeVine” on their search engine so that the website appears as far at the top of the list that is financially realistic.

# 7.0 Marketing Goals

## i. Building a Reputation

GrapeVine are a new organisation and as a result, lie very low under the radar. Things can change rapidly in the world of business though and reputation is key in ensuring that the changes occurring are positive towards the company. As a result, research will be required and a high level of study performed to ensure that GrapeVine go about this in the manner that best suits their interests as well as any stakeholders.

## ii. Increasing Website Membership & User Growth

GrapeVine’s aspiration is to have a regular and increasing number of users whilst increasing company reputation in the process. With the great level of support provided and constant updates and improvements implemented on a regular basis, user growth should follow. None of these aspirations are

financially viable unless precautions are taken to ensure that the most economical measures are identified and deployed in the correct manner. It is being heavily relied on that the customer has the courtesy to pass on a recommendation to a friend or family member through word of mouth if they are happy with the product and service they are receiving.

### **iii. Increasing the Awareness of the Organisation**

GrapeVine have created a company website with the aim of gaining added exposure and awareness as well as a taste of what they have to offer to any potential clients.

At the current moment, there are other websites that offer a similar service, but none of them are as unique as GrapeVine's as they illustrate a progression chart to help monitor the path they have chosen. This should hopefully give GrapeVine a good reputation for vastly improving and creating new products that meet more of the user's needs compared to the competitors.

## **8.0 Marketing Programmes**

### **8.1 Marketing Mix**

Whilst creating the documentation for the Marketing Mix, it has been taken into consideration that it is aimed at young students & school leavers

#### **8.1.1 Product**

The customer will be looking for a high quality web service and access to quality features and functions which are regularly updated and fully supported. The customer will also expect the service to be fit for purpose whilst maintaining a high level of user friendliness.

#### **8.1.2 Price**

The organisation will go with a pricing strategy that will allow the company to maintain its workforce and provide a high level of customer service at an optimum level, whilst remaining competitive in the market. This will allow for the protection of any stakeholders and shareholders. In order to increase the company image in a positive manner, great lengths will be made to ensure the awareness of our organisation is boosted to help the company financially as well as aiding in employer branding.

#### **8.1.3 Promotion**

A new web based application has been established which is easy to locate and navigate throughout. As a result, GrapeVine have decided to go with a meaningful domain name that reflects what the product is all about. It also has to be taken into consideration that most users of the World Wide Web prefer to use

search engines as opposed to directly typing in a URL and as a result, will need to be setup correctly so that there are no issues on the search engine side of things.

The organisation will make use of a promotional pricing strategy in order to help boost the customer interest of their products as well as increasing the customer base in the process. Online advertising, posters and flyers will also be utilised once the correct permission is granted to allow GrapeVine to attract young students and potential school leaver whilst they are still studying academically. GrapeVine will also be relying on word of mouth to try and promote a surge in the market and it is widely promoted that the workforce will help play their part to achieve this goal.

#### **8.1.4 Place**

As the product being produced is a web based application, uses will need direct access of the product. This is the standard protocol with web based applications. As file sharing and communication options are plentiful thanks to the World Wide Web, anyone wishing to share their portfolio with GrapeVine will be able to do so with ease.

#### **8.1.5 People**

Regular meetings will be held to ensure that the workforce is up to date with any changes in procedures, policies and legislation and constant training programmes will be provided for those who wish to pick up new skills that will help both on an individual basis and the workforce performance levels.

There will be high levels of person-to-person contact to allow for the aid of any queries or information required. A quality control step will be implemented in order to differentiate between the employer and customer during any contact.

#### **8.1.6 Process**

There will be an abundance of information provided to aid the customer when gaining access to the web application. Error messages will appear as soon as possible so the user is always familiar with what they are doing wrong and aid in the ease of use of the website. This whole process will be full of highly-functional features as well as being high quality and easy to use.

#### **8.1.7 Physical Evidence**

The website will be well designed and aesthetically pleasing to meet the requirements of all types of users such as the deaf or visually impaired. Objects used on the web application will have meaningful placement so that users can navigate throughout easily and help give the user a better first impression of the website.

## 9.0 Unique Selling Point

The unique selling point of our product is that no other competitor visualises the pathway in the same manner that GrapeVine illustrate them. Progress is incredibly simple to analyse, track, alter and delete. Stages can also be added at any time without having to start you path from scratch.

## 10.0 Implementation

### i. Company Website

The organisation currently has a simple company website which does the job but could be more appealing to the target audience with a few simple adjustments such as object positioning and alteration of the colour scheme. These additional changes will be made whilst still maintaining overall functionality of the website to ensure that it is still fit for purpose.

### ii. Distribution of Posters and Leaflets

To gain the additional exposure that GrapeVine wish to receive, posters will be displayed throughout Edinburgh as well as leaflets being posted directly to residents of the city. These will mostly be targeted at residents that have young children in their family but will be written to the parents to see if they believe that our product and service could benefit their child.

### iii. Optimising for Search Engines

In order for us to gather the number of visitors to the website that we desire to have, users must be able to locate our website with ease in order to be able to visit in the first place. For this reason, Facebook, Twitter and LinkedIn pages have been created to try and gather awareness of the company. There are appropriate links on each of these pages to re-direct the user to our website which in turns will accumulate website hits but will also provide us with a little additional company awareness. There will also be meaningful buzzwords that can be queried on a search engine that would show our website to users who used them.

### iv. Utilising Promotional Strategies

In order for us to gather a larger volume of clients, GrapeVine will offer a discount to new clients who are maybe interested in a product we already have to offer or a new project altogether. New projects

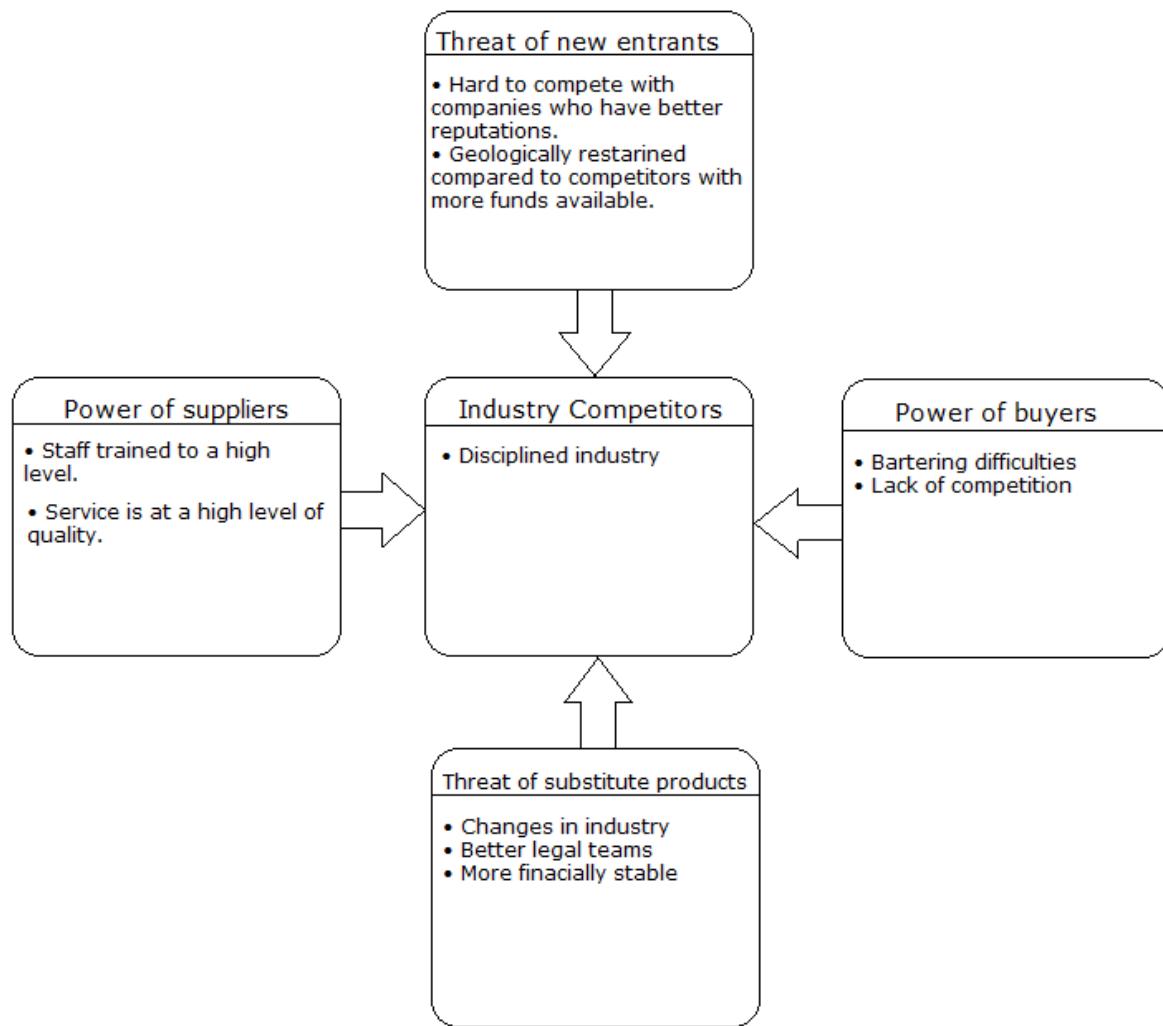
are costly so any discounts will be appreciated by the consumer and hopefully will give us the added exposure we so badly desire.

## 11.0 Supporting Documents

### 11.1 SWOT Analysis

Strengths <ul style="list-style-type: none"><li>• Large target market</li><li>• Highly trained staff</li><li>• Ideal location</li><li>• Unique selling point</li></ul>	Weaknesses <ul style="list-style-type: none"><li>• Time constraints</li><li>• Neutral reputation</li><li>• Small workforce</li><li>• Inexperience</li></ul>
Opportunities <ul style="list-style-type: none"><li>• Technology changes</li><li>• Affiliation with universities</li><li>• Company expansion</li><li>• Increased levels of training</li><li>• Increased reputation</li></ul>	Threats <ul style="list-style-type: none"><li>• Inflation</li><li>• Changes in law and legislation</li><li>• Changes in the market</li><li>• Unforeseen events</li><li>• Financially stronger competitors</li></ul>

## 11.2 Michael E. Porter's Five Force Analysis



### 11.3 PESTLE Analysis

<p><b>Political:</b></p> <ul style="list-style-type: none"> <li>• Corporation tax very low</li> <li>• Great time to start a company</li> <li>• VAT tax high</li> <li>• May affect marketing profits</li> </ul>	<p><b>Economical:</b></p> <ul style="list-style-type: none"> <li>• Decrease in consumer spend</li> <li>• Rate of inflation high</li> <li>• Hard to win government funding</li> </ul>
<p><b>Socio-Cultural:</b></p> <ul style="list-style-type: none"> <li>• Raise in university tuition fees</li> <li>• May lower user base</li> <li>• Improvement in A-Level results</li> </ul>	<p><b>Technological:</b></p> <ul style="list-style-type: none"> <li>• General public access to internet has increased</li> <li>• Better technology (HTML) allows for more bespoke solutions</li> </ul>
<p><b>Legal:</b></p> <ul style="list-style-type: none"> <li>• Data protection act</li> <li>• Health and safety</li> </ul>	<p><b>Ecological:</b></p> <ul style="list-style-type: none"> <li>• Small carbon footprint</li> <li>• Encouraged recycling of old hardware</li> </ul>

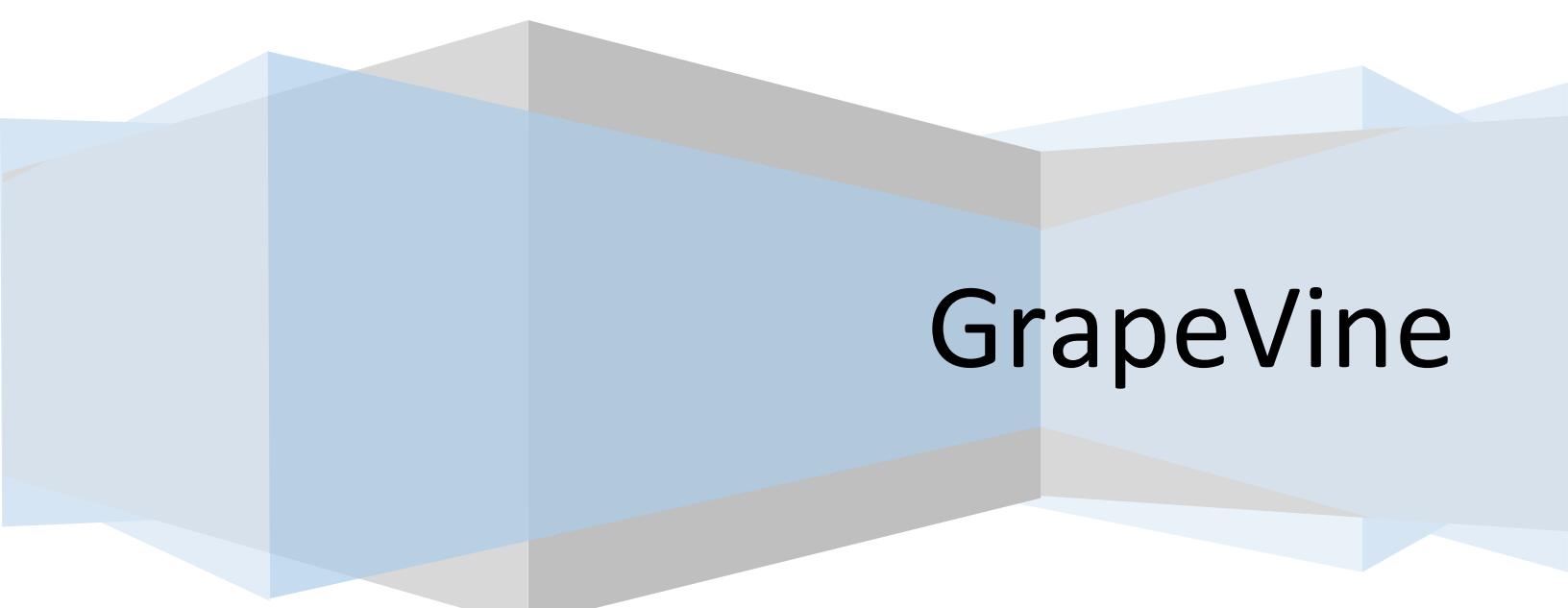
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## C. Final Usability Evaluation

SE Group 12

Heriot-Watt University



GrapeVine

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## 1.0 Document History and Revisions

Document Title	Confidentiality Level/Status	Date Updated
<b>Final Usability Evaluation</b>	Initial draft	31 March 2016
<b>Final Usability Evaluation</b>	Final Draft	01 April 2016

Version	Author(s)	Date	Overview
<b>v1.0</b>	Craig Dodds & Haris Cannas	31 March 2016	First draft of usability evaluation.
<b>FINAL</b>	Sam McNaughton	01 April 2016	Final tweaks.

## 2.0 Introduction

### 2.1 Purpose

The following document evaluates the usability of the final layout design for the GrapeVine career mapping website, as well as provides a comprehensive testing plan in order to identify both flaws and bugs that are present in the design layout. User testing opinion will be held a benchmark for future builds.

The document is intended for:

- Dr Jessica Chen Burger  
**Group Manager**
- Helen Hastie  
**Liaison**
- Lockheed Martin  
**Client**

### 2.2 Scope

The system is intended to display various job related information that it contains within its database, and allow the users to search it by the means of a simplistic and user-friendly interface. The software should include support for all the latest browsers, such as Microsoft Internet Explorer, Mozilla Firefox, Google, Chrome, Apple, Safari and Opera. Operating system wise, it should function on MS Windows, Linux systems, Apple iOS and Android.

The majority of the system functionality is allowing a user to log-in and view a complete list of their currently stored qualifications. Initially the user will be welcomed with a home screen of the system, from which they may proceed onto either the login screen or the register a new account screen, these steps should be straight forward and not require the user to put any thought to. The logged in user interface shall provide the user with 3 main categories of the system: personal profile view/editing of qualifications, pathway visualisation, and a help facility.

To expand on the pathway visualisation, rather than plainly providing a list of jobs within a sector a graph should instead be generated providing the user with a map that shows multiple routes to gain employment in that sector. It is key that the visualisation should not be overcomplicated nor hard to use but rather simple and informative.

Information about all users and jobs will be stored on the associated MySQL database. The information stored about the user and used in the system will be their name, their user-name, their date of birth, and their hashed password.

## 2.3 Document Abbreviations

Below is a list of all abbreviations used throughout this document.

Abbreviation	Definition
FR	Functional Requirement
NR	Non-functional Requirement

## 2.4 Overview

The evaluation of the user interface is split into the following sections:

- Test Plan
- Test Protocol
- Test & Questionnaire Findings
- Conclusions with suggested changes
- Appendix
- References

Below is a brief explanation of each section:

Test plan will establish how the testing will be carried out. It will consist of various methods that will be used for testing and how they will be incorporated.

Test Protocol section contains the testing layout that will be used by the individual testers to collect data required in order to evaluate the effectiveness of the design.

Test & Questionnaire findings will evaluate the user experience of the proposed system as well as contain specific data on the clarity, difficulty and usability of the system. The feedback received will be logged and used to further enhance the system.

Conclusions will summarize the proposed design and stress on the most vital changes to be made to the system

The appendix section consists of all forms submitted by the individuals carrying out the testing, the ethics form, and an acknowledgement from each individual stating they agreed to take part in the testing process.

Other information in this section include the mock-up used for testing and a questionnaire that testers have completed.

The references section credits various articles and/or authors mentioned within this evaluation.

## 3.0 Test Plan

This document goes into depth describing the Testing Plan that's used for Grape Vine. The testing aims at:

- Test runs of the system to collect the data which will be used to assess whether the requirements, either functional or non-functional have been met with the provided design
- To determine the usability of the system throughout the collected user data and outline any problems with the design
- To gather feedback from the users testing the system to be used for any future amendments to the software
- To determine user experience from using the proposed system

Grape Vine testing will take place within the development team and generally on the public. There is no specific pre-conditions that will have to be met prior to the testing, but rather simply running and evaluating the system at conditions most suitable for the user. Differing platforms, hardware and software configurations will provide testing at a scope large enough to catch-out most of the problems with the interface, or the actual system itself, making it a reliable method to test the system.

### 3.1 Methodology

A usability testing expert, the founding principal of Measuring, Jeff Sauro has provided a detailed description to identifying usability problems within a system and stated, most of the issues come from poor interface design.

"A usability problem is anything in a product or website that leads a user to an undesirable outcome. It's relatively easy to spot when users have problems in an interface. It's a lot harder to know what, if anything, to do about them. Making usable interfaces starts with understanding what in an interface is causing problems and helping to fix them. „

Briefly, there are six steps that help to identify and solve these problems more efficiently throughout evaluating and reporting them:

1. Record the undesirable outcome
2. Identify what in the interface is causing the problem
3. Determine if the issue is global or local
4. Assign a severity rating
5. Recommend possible solutions if appropriate
6. Present usability problems

Additionally, the Neo Insight newsletter has suggested another way of finding possible problems related to usability of user interfaces. A first-click testing can also be introduced to gain an insight into which parts of the interface cause user the most problems, or to identify areas in which the user does not have a clue what they're doing. The data gathered from a heat-map of the first-clicks is a useful tool for that type of evaluation of the user interface.

## 3.2 Training

The test participant will have the purpose of the website explained to them briefly, there will be no formal instructions issued or help of any kind but rather the testers will be given the task to use the system for the thing it is meant to be used. This type of testing will establish any problems that the users have with the design and interface of the software system as well as help to evaluate the effectiveness of each part of the system, as well as help to identify any overcomplicated or redundant parts of the system.

## 3.3 Procedure

As stated initially, the testing will not be rigorous by any means but rather each test participant will conduct the testing at a place and time most convenient for them.

Each tester will be provided with a consent form they will be required to complete as they will be supervised by a member of the team. The consent form will contain a declaration that not the tester is being assessed, but the website, and that they are free to halt the test at any time should that wish to do so.

Initially the member of the team will purely inspect the tester as they're familiarize themselves with the system, given its purpose. After a short period of time each tester will be provided with a set of tasks to complete with no specific instructions whatsoever. The team member will assess the website in various categories, such as user-friendliness, usability and effectiveness. The data collected by members of the team will be used to improve the design.

Whilst the design can be comprehensively tested, the current mock-up provided does not allow for any back-end testing due to lack of any implementation taking place.

To follow, are the functional requirements to be assessed by the testers:

Task #	Task description
1	User can register and create an account - User clicks the "create account" button to proceed
2	User can access and edit their profile -User enters their qualifications -User deletes their qualifications
3	Users can login to their account through the login screen -User enters details and clicks login
4	User can visualise path to various available jobs -User can understand and explain what the page does
5	User can view the case studies page -User navigates the case study page correctly
6	User can navigate and comprehend the help menu -User accesses the help menu, assesses usefulness -User submits and admin support ticket correctly
7	User understands the purpose of the site

### 3.3.1 Usability Testing

Each task issued will be carried out by individual testers and at the same time assessed by a team member. To keep the test data simple and easy to understand, each of the issued tasks will be graded. The grading form will present the following possible grades:

- Completed  
User has completed the task swiftly
- Struggling  
User has struggled to complete the task and/or required assistance
- Failed  
User did not manage to complete the task

After the testing is concluded, the statistics of the usability testing will be brought together and split into following categories:

#### *Completion rate*

The completion rate statistics will take the data gathered from the team members and demonstrate how many testers have finished using the software, the data will be split into three categories, Completed, Struggling and Failed

#### *Error rate*

The statistics will provide a graph regarding the error-rate experienced by the users, where possible the error occurrence location will be lined out

#### *Problem weighting*

The problems encountered must be prioritised in order to resolve the most severe issues first of all and ensure the project does not fail due to these flaws. The weighting of the issue is measured by its occurrence and the overall impact on the functionality of the system.

The frequency measurement:

- High (3)  
More than half of the testers experienced the issue
- Medium (2)  
One in four testers experienced the issue
- Low (1)  
Less than one in four experienced the issue / unique problem occurrence

The Impact measurement

- High (3)  
System is unable to function after error occurrence

- Medium (2)  
Serious fault caused, but system still functions after some measures taken to tackle the issue
- Low (1)  
Does not stop the system from doing its job, such as a cosmetic or button issue  
In order to maintain a high end-user satisfaction and have the system functioning as swiftly as possible, the problems must be dealt with accordingly. The weighting system assumes taking the multiple of the Frequency and Impact to categorize the issues, again: into three categories.

Weight	Action required
9-7	Immediate attention required, fault is causing the system to malfunction either seriously or completely
6-4	Second-order bug, appears either constantly or frequently and will have an impact in end-user satisfaction on the system
3-1	Unique/individual bugs, does not require any instant action

The above weighting system effectively categories the issues providing a good prioritisation of the bugs requiring action from the developers.

### 3.4 Feasibility testing

The feasibility will be a qualitative response collected regarding each tested module, it will concern both: the tester and the team member.

The response collected aims at finding out whether the module tested does its job, and whether the job is done as optimally as it can be done. Another aspect is finding areas which would benefit in simplification or identify any redundant areas of the system.

Furthermore, the testers and team members will be provided with a feedback forms to provide any details about the system which they found either good or bad, or any comment they would like to make about the system.

## 4.0 Testing Protocol

### 4.1 GrapeVine Testing Protocol

Tester: \_\_\_\_\_

Unique ID: \_\_\_\_\_

Platform: \_\_\_\_\_

OS: \_\_\_\_\_

Date: \_\_\_\_\_

Location: \_\_\_\_\_

#### *Aim*

This test aims at learning how users interpret the website. The GrapeVine website allows you to conduct a research, and undertake various available jobs, to do so you must first complete your personal profile which contains your data such as name, address, personal statement and obtained qualifications.

#### *Introduction*

You're now asked to carry out the following tasks and provide feedback regarding the ease of usability. Additionally, you can provide feedback regarding each of the tasks or note anything about the tasks that may be of any use. All data collected will be related to user interpretation and use of the website, no tester will be evaluated in this study, nor any data will be used outside the context of testing the website.

## Tasks

### **Grapevine Website Testing Protocol**

**Tester:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Participant #:** \_\_\_\_\_

#### **Aim**

The aim of this test is to learn how users interpret and use the website. This website application is called Grapevine, and allows users to view pathways to any potential career of their choice . This information can be used to help guide users in meeting the requirements of their chosen career.

#### **Introduction**

I'll ask you to access different pages, to describe features on the screen and complete some simple tasks. I will take notes to record the actions taken and any feedback on the website you provide. Your responses are anonymous and will not be used to identify you. After the test, we would like you to complete a short anonymous questionnaire. The website is nearing its final stages of development and any feedback that you can provide will be used to improve the website presentation and the overall user experience. You may stop the test at any time.

## Questions

### 1) Register page

a) Please create an account.

Pass/Struggle/ Fail

How easy was this?

1	2	3	4	5

### 2) Profile page

a) Please add a qualification.

Pass/Struggle/ Fail

1	2	3	4	5

b) Please delete a qualification.

Pass/ Struggle/Fail

1	2	3	4	5

c) Use path visualisation for a career of your choice (4).

Pass/ Struggle/Fail

d) Logout of your account.

Pass/Struggle/ Fail

e) How would you describe this page?

f) How navigable did you find the page?

1	2	3	4	5

--	--	--	--	--

**3) Login page**

a) Please login to your created account.

Pass/ Struggle/Fail

How easy was this?

1	2	3	4	5

**4) Visualisation page**

a) Describe what you think this page does.

b) Please rate your understanding of this page

1	2	3	4	5

**5) Case Studies Page**

a) Use one of the case study links to navigate to one of your choice.

How easy was this?

1	2	3	4	5

b) How would you describe this page.

**6) Help Page**

a) Submit a ticket to the administration.

Pass/ Struggle/Fail

b) Rate how helpful the page is in relation to understanding the website

1	2	3	4	5

**7) General**

- a) What is your understanding of the site's purpose?
- b) How would you rate the quality of this site, given an understanding of its functionalities?

1	2	3	4	5

**End of Tasks**

## 5.0 Testing & Questionnaire Findings

### 5.1 The Testers & Testing Platforms

The conducted research was carried out by people using the following software and of given characteristics:

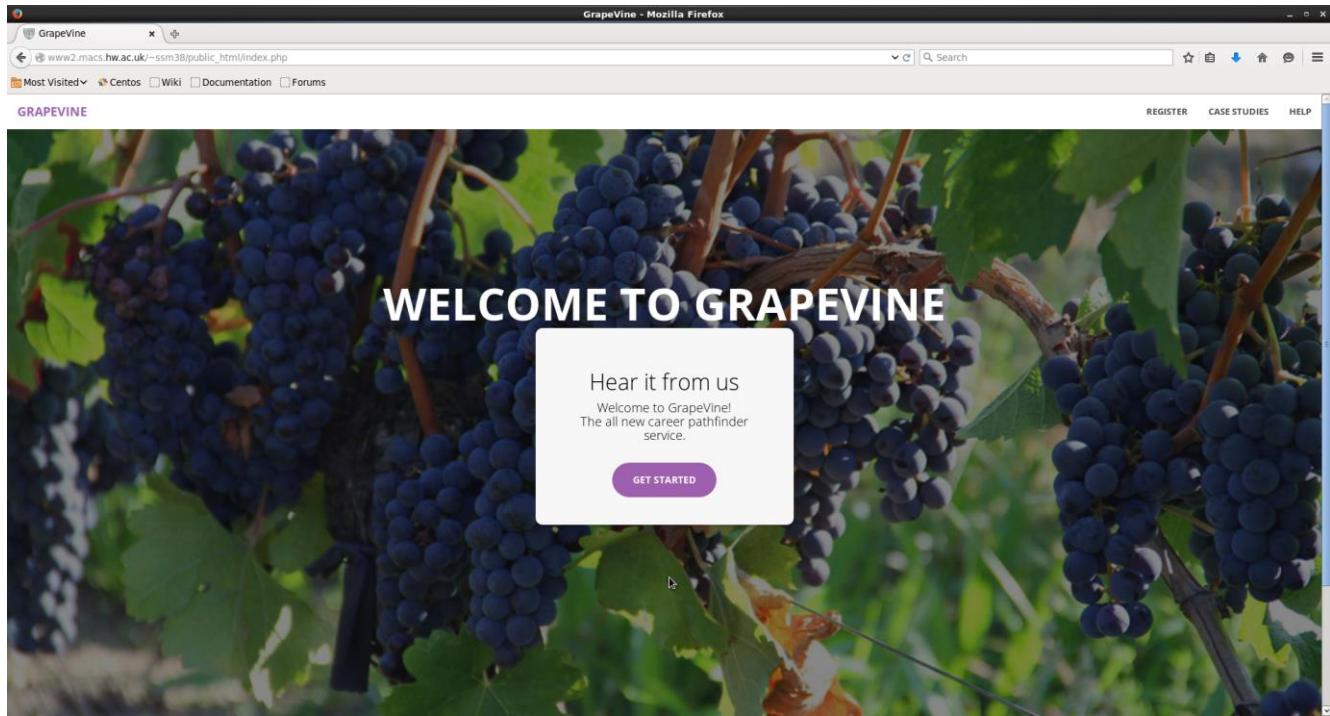
Operating System	
Microsoft Windows	0
Apple Macintosh	0
Apple iOS	0
Google Chrome OS	0
Android	0
Linux	6
None of the above	0

Web Browser	
Internet Explorer	0
Firefox	0
Chrome	6
Opera	0
Safari	0
None of the above	0

Age	
18-25	6
26-35	0
36-45	0
47-55	0
55+	0

Gender	
Male	6
Female	0

## 5.2 Research



### 1. Welcome page

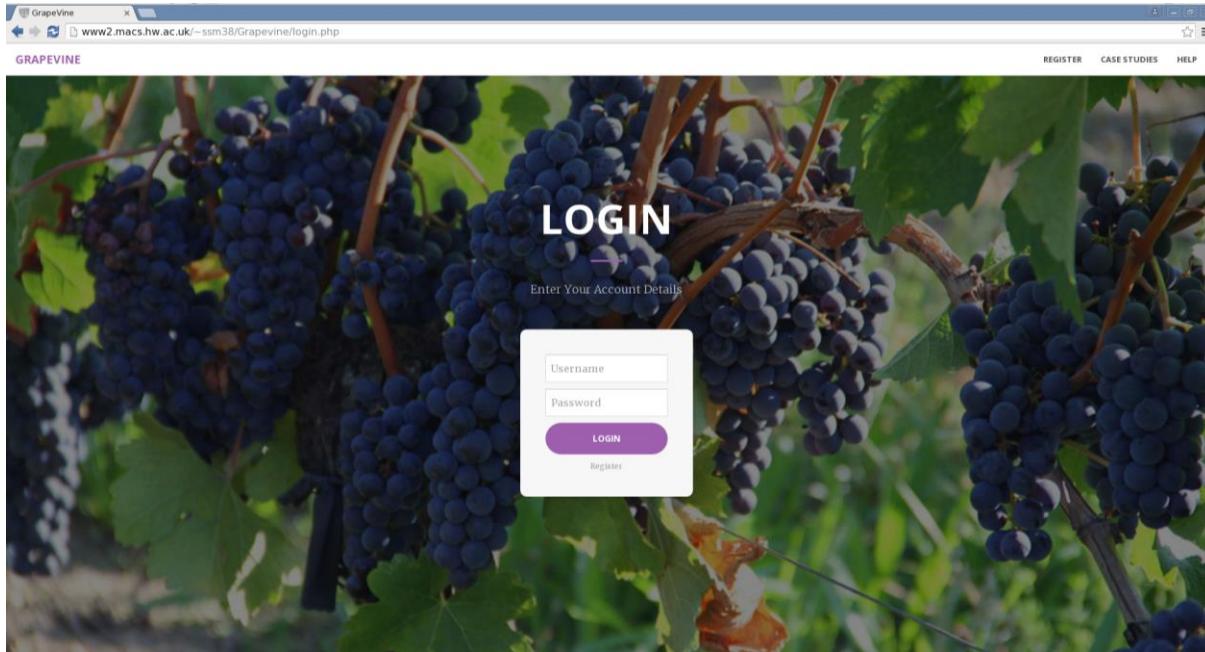
The testers were generally pleased with the visual aspects of the welcome page.

They felt that it was easy to understand how to reach the login, register or help page from this page.

Possible design improvements:

- Add more content to page, currently too much white-space.
- Minor spacing issues: text is too cluttered
- Add icon to tab bars (global)

## 2.Login/Register page

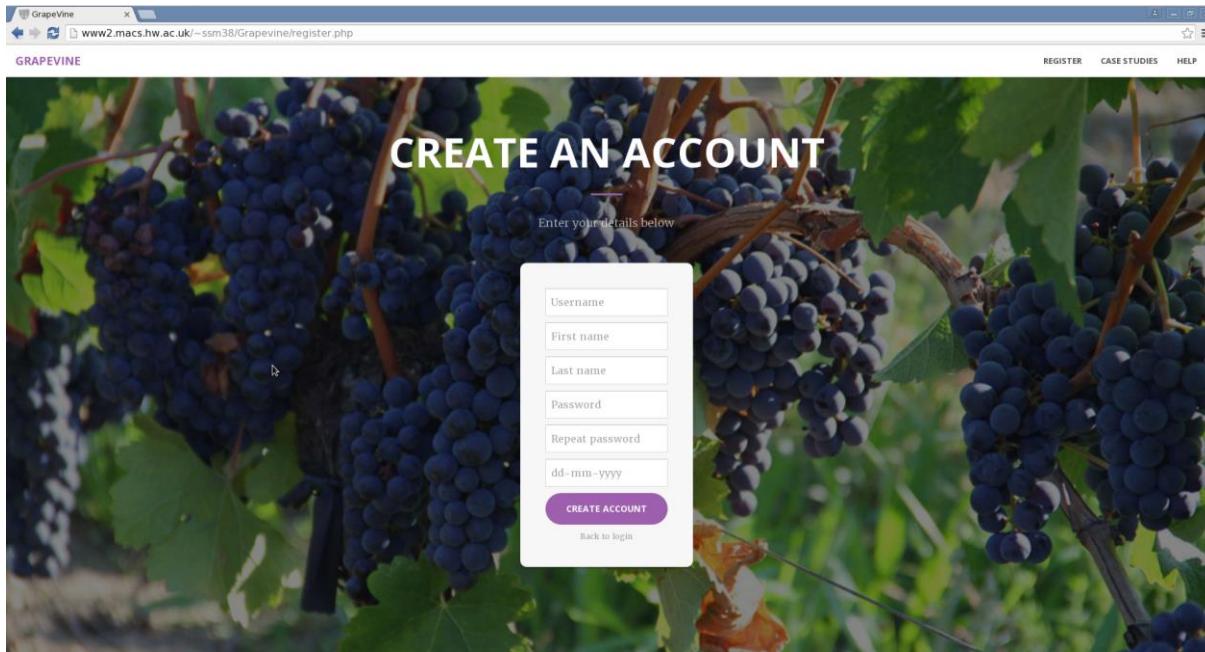


The login page is straight-forward and to the point, users were pleased with both the visual appeal and the simplicity of the page. Users universally felt that the [page was very easy to use.

Possible design improvements:

- Some users felt that the register link below the login button was redundant as there is a register link in the navigation bar.

### 3. Register page



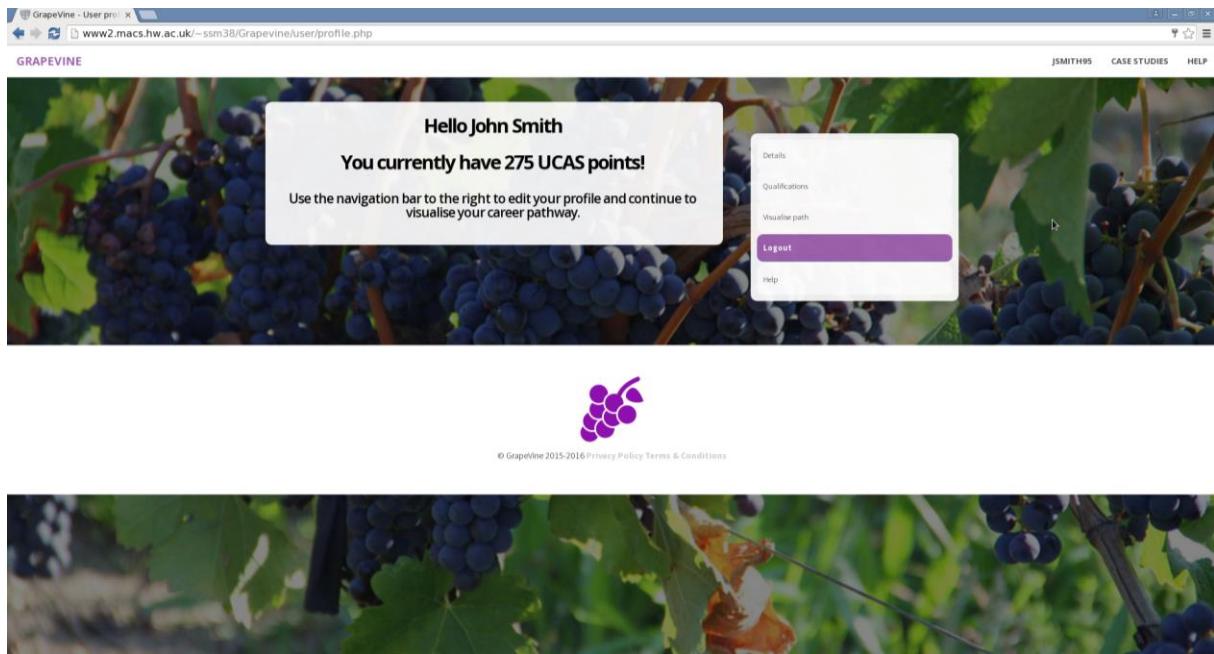
Users have managed to successfully complete the registration page and create an account without any difficulty, the design has proven simple although some users mentioned that there are perhaps too many input fields and this can cause some confusion.

One user also suggested changing the Username field to a UserCode field instead. One user also noted that the data field at the bottom of the form should read date of birth as the current value is a little confusing.

Possible design improvements:

- Have a date of birth label either above or alongside the 'dd-mm-yyyy' field content.
- Possibly provide some textual information about web-page, good otherwise.

#### 4.1 Profile summary page/Profile editor page



Users have found the page to be very informative but rather confusing after logging on. They have managed to complete and edit their profile qualifications with ease however some users have found the bar on the right hand side to be confusing.

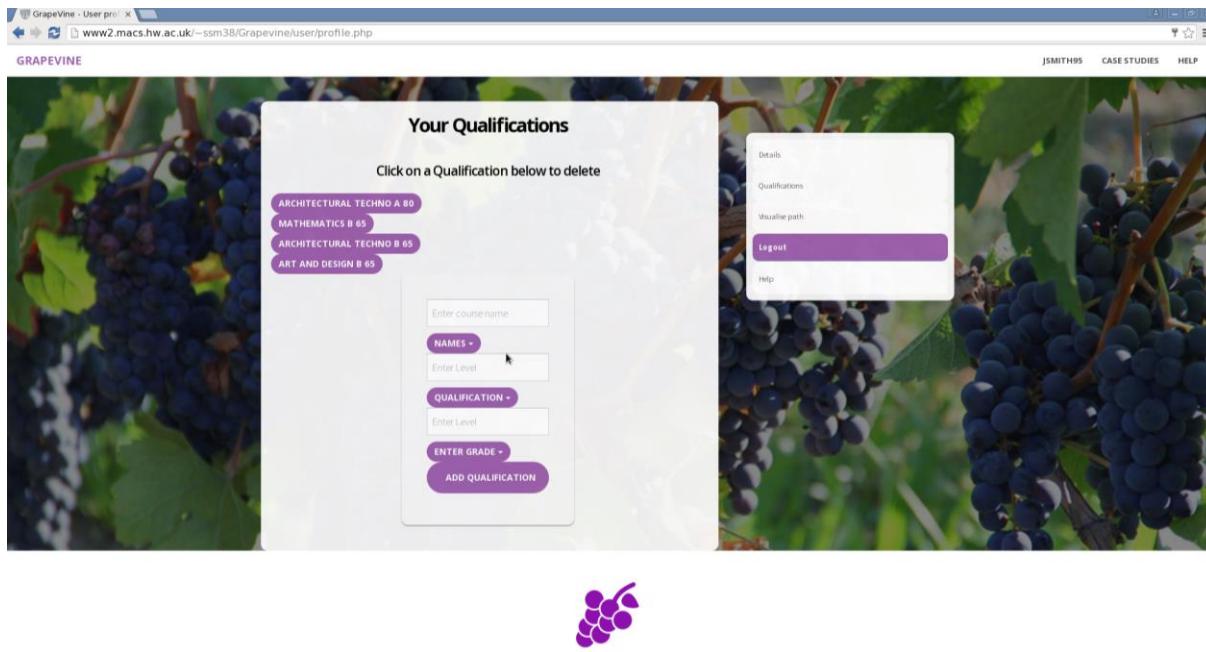
Users also commented on useful information that is contained on the various tabs of the profile page.

Users liked how everything is separated into various sections and clearly labelled.

Possible design improvements:

- Highlight the current tab that the user is on in the right hand side navigation bar.
- Neaten the CSS of the web page as the footer does not currently stay at the bottom of the page. This will be a simple fix that shall take a very short space of time.
- Remove the help tab from the right hand side column as there is a help link in the navigation bar of the page.

## 4.2 Profile summary page / Profile editor page



Users found the qualification tab to be easy to access however they didn't understand that you could remove a qualification from your profile by clicking on it.

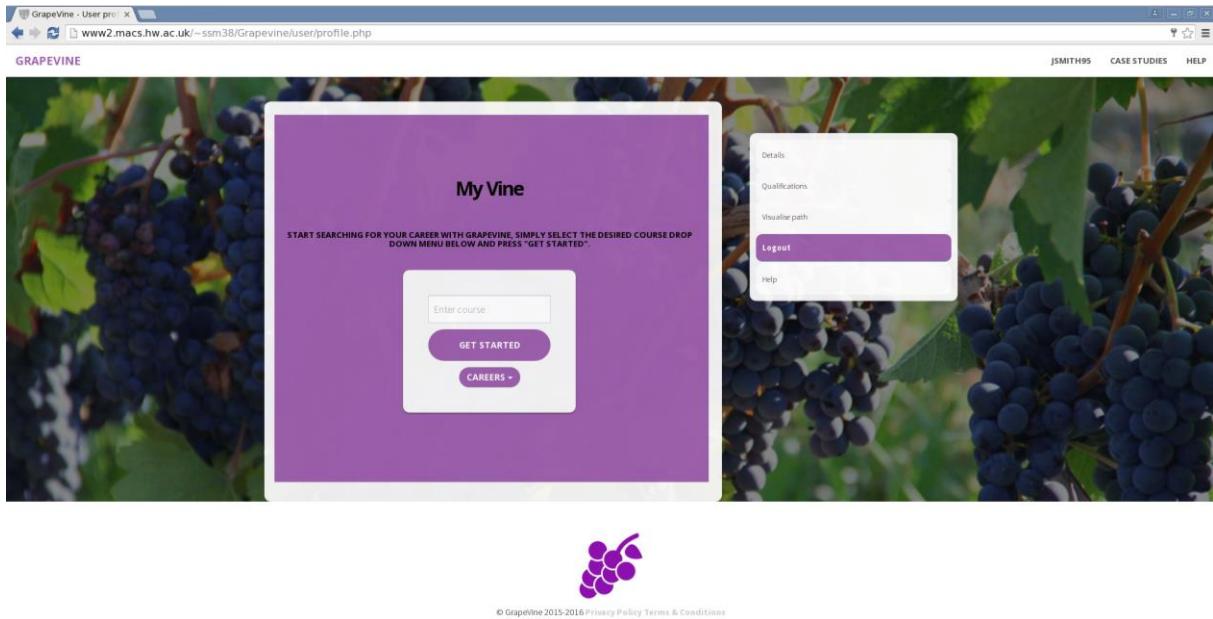
To this end we have included the 'Click on a Qualification below to delete' message at the top of the page.

Other users have expressed a wish that the input form be drop down menu only in order to avoid wasting time by entering invalid details.

Possible design improvements:

- Centre the qualifications within their container.
- Add further instruction on how to use the insert / delete functionality.

#### 4.3 Profile summary page / Profile editor page

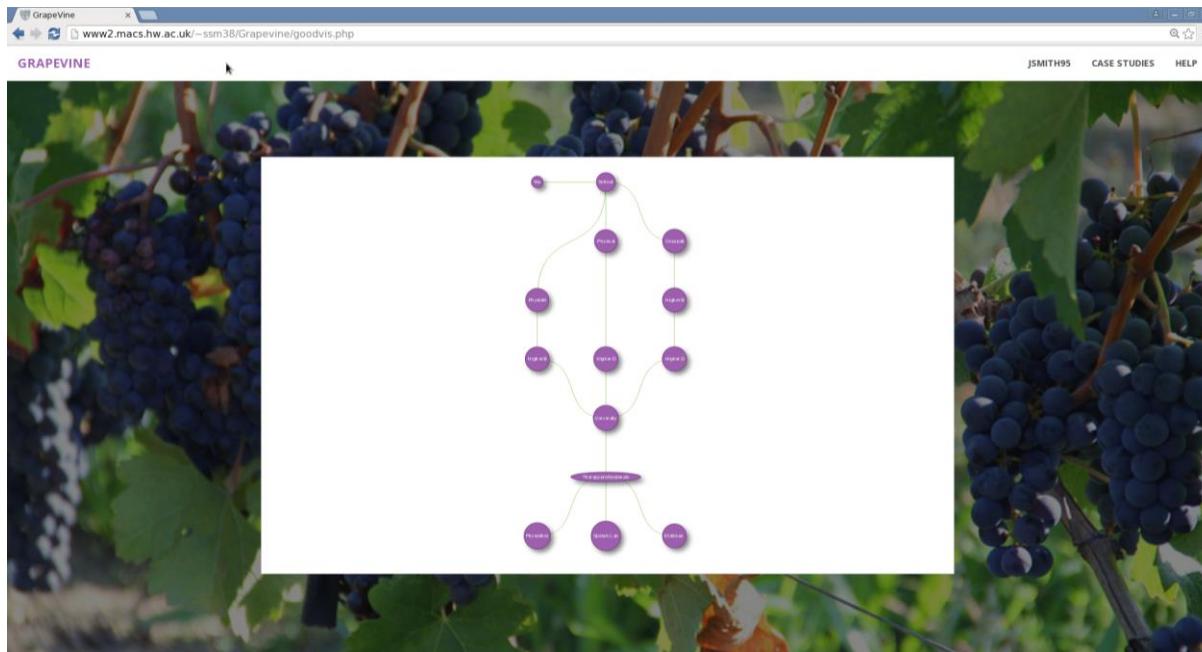


Users found the visualisation tab easy to both understand and use. They liked the design of the page and thought that the aesthetic of the page fitted well with the rest of the site.

Possible design improvements:

- Make the career sector choice a drop-down selection only.
- Add further information on the purpose of the page and what will happen when the form is filled in.

## 5. Visualise pathway page



Users rating of this page vary in their assessment of their understanding of the page.

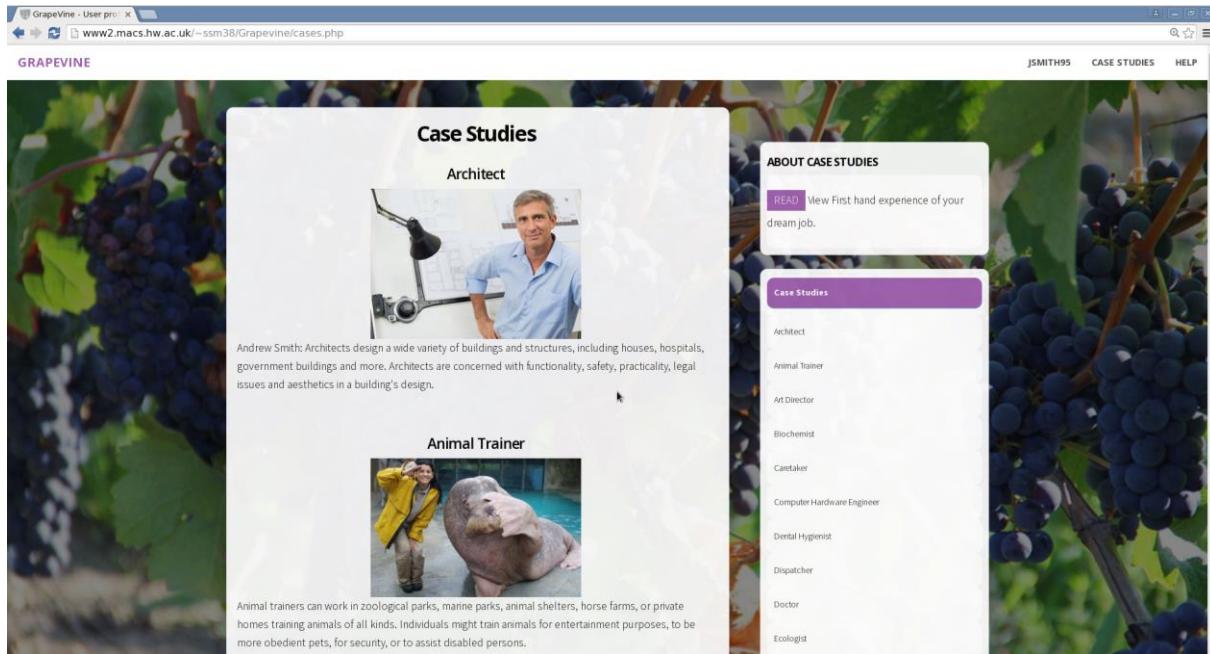
Some have easily understood the tree produced while others have had difficulty in this regard. Users noted that the lack of text explaining the layout of the tree can lead to confusion.

All users have however been able to accurately describe its purpose when prompted to do so by the test.

Possible design improvements:

- Add text that summarises the findings of the pathway.  
For example, it may list the university degree that the user will get and the qualifications that they need to study said degree.
- In future releases the pathway shall be expanded to encompass further regions. Currently only Scottish education facilities are represented, while Both Scottish and British qualifications are supported. First we shall spread our coverage to the entirety of the UK then our focus will spread to a larger region, possibly Europe or the US depending on market forces.

## 6. Job search: Case study page



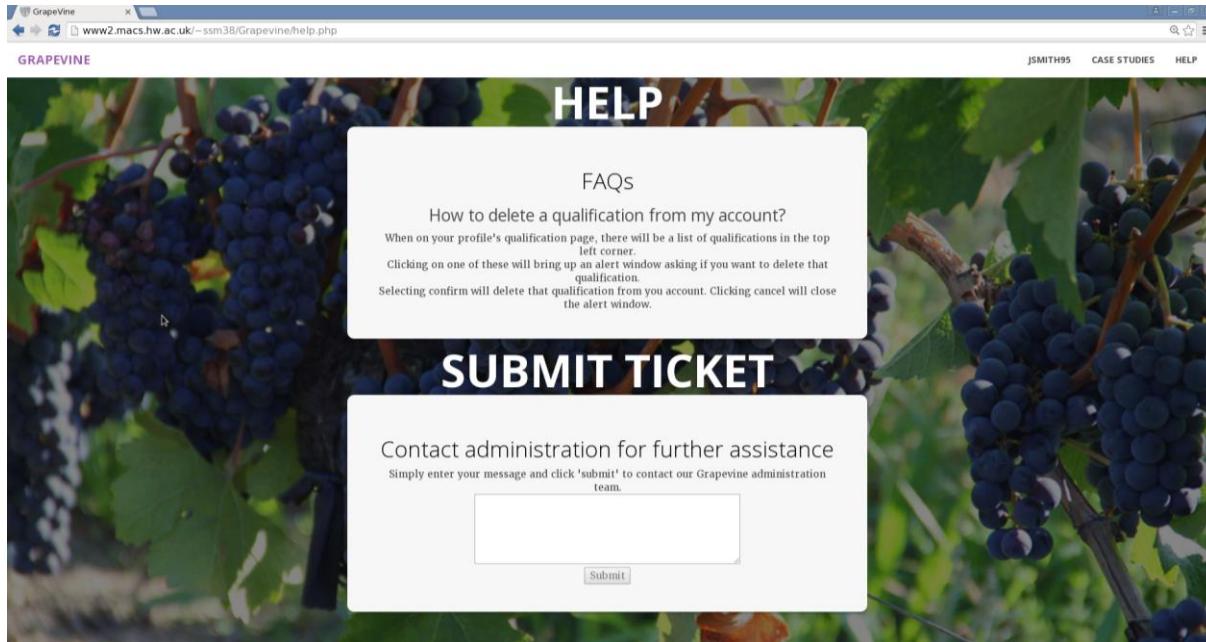
Users were pleased with this page on the whole, however some users did suggest some design changes that they felt would improve the web-page.

Users felt that the page was useful when attempting to understand different careers.

Possible design improvements:

- If the user clicks on a case study, then more information about that career should be presented to the user.
- The case studies should be links to individual pages that each contain more information about the careers.
- Careers should be grouped by job sector type.

## 7. Help page



Help section turned out to be very informative to the users and easy to use.

Possible design improvements:

- There should be more information in the FAQs.
- There should be a confirmation when the Admin ticket is sent.
- 1 user said there should be a list of currently open tickets.

## 10. Other commentary / Recommended Global changes or improvements

Below is the list of possible things to be added or amended within the presented design:

- **Profile page was described a simple to use but messy. Have the front end developers amend this.**
- **The read button on the case studies page should either be an actual button or not look like a button, to avoid confusing users.**

## 6.0 Conclusions

A summary can be find in the product evaluation of this document (section E. 4.4).

## 7.0 Appendix

### 7.1 Questionnaire

#### **Grapevine Website Testing Protocol**

**Tester:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Participant #:** \_\_\_\_\_

#### **Aim**

The aim of this test is to learn how users interpret and use the website. This website application is called Grapevine, and allows users to view pathways to any potential career of their choice . This information can be used to help guide users in meeting the requirements of their chosen career.

#### **Introduction**

I'll ask you to access different pages, to describe features on the screen and complete some simple tasks. I will take notes to record the actions taken and any feedback on the website you provide. Your responses are anonymous and will not be used to identify you. After the test, we would like you to complete a short anonymous questionnaire. The website is nearing its final stages of development and any feedback that you can provide will be used to improve the website presentation and the overall user experience. You may stop the test at any time.

## Questions

\* **1. What is your gender?**

Female

Male

\* **2. What is your age?**

18 to 24

25 to 34

35 to 44

45 to 54

55 to 64

65 to 74

75 or older

\* **3. How often do you access the Internet?**

Never

Once a month or less

Once a week

Several times a week

Every day

Several times a day

**1) Register page**

a) Please create an account.

Pass/Struggle/ Fail

How easy was this?

1	2	3	4	5

**2) Profile page**

a)Please add a qualification.

Pass/Struggle/ Fail

1	2	3	4	5

b)Please delete a qualification.

Pass/ Struggle/Fail

1	2	3	4	5

c)Use path visualisation for a career of your choice( 4 ).

Pass/ Struggle/Fail

d) Logout of your account.

Pass/Struggle/ Fail

e) How would you describe this page?

f)How navigable did you find the page?

1	2	3	4	5

**3) Login page**

a) Please login to your created account.

Pass/ Struggle/Fail

How easy was this?

1	2	3	4	5

**4) Visualisation page**

a) Describe what you think this page does.

b) Please rate your understanding of this page

1	2	3	4	5

**5) Case Studies Page**

a) Use one of the case study links to navigate to one of your choice.

How easy was this?

1	2	3	4	5

b) How would you describe this page.

**6) Help Page**

- a) Submit a ticket to the administration.

Pass/ Struggle/Fail

- b) Rate how helpful the page is in relation to understanding the website

1	2	3	4	5

**7) General**

- a) What is your understanding of the site's purpose?

- b) How would you rate the quality of this site, given an understanding of its functionalities?

1	2	3	4	5

	Strongly Agree	Agree	Neither agree or disagree	Disagree	Strongly Disagree
The Website is easy to use					
The design and layout were clear understandable					
The website is user-friendly					
The buttons are well-organised, easy to find					
I immediately understood the function of each button					
All of the links I expected to find in the navigation bar were there					
The website layout is logical					
The website is visually appealing					
It is difficult to navigate around the website					
Some parts of the					

website are unclear					
---------------------	--	--	--	--	--

## 7.2 Consent Form for Usability Experiments

To follow, is the Grape Vine Software Engineering consent form for the experimental study/test questionnaire.

The consent form is an acknowledgement from the tester that he/she participates in a research to evaluate the usability of the proposed software, and acknowledges that not the tester is evaluated, but the software.

## Consent to Act as a Subject in an Experimental Study

**GrapeVine**

Heriot-Watt University

### Consent to Act as a Subject in an Experimental Study

**Principal Investigator:** Craig Dodds, Sam McNaughton, Kevin Brown, Haris Cannas, Daniel Gains, Maciek Mierzwa, Harry Skehin

**Description:** The purpose of this study is to observe how easy the application is to use by our testers. This will enable us to ensure that the application is easy to use and understand. The application that is being tested is a system that allows users to create and view visual pathways from their current level of education to a chosen career.

There are minimal risks for you to participate in this study. All personal information will be kept confidential in a secure filing cabinet or in password-protected computer directories. Your participation will not affect how well you do in your courses (if you are a student) or affect your relationship with the university in any way.

You are free to decline to participate in this study. Should you decide to participate, you are free to end your participation at any time. Such a decision by you will not adversely affect or alter your status with the university in any way.

**Voluntary consent:** I certify that I have read the preceding and that I understand its contents. Any questions I have pertaining to the research have been and will be answered by the team. My signature below means that I have freely agreed to participate in this study, and that I agree to the publication of the results for scientific purposes and to the distribution of the recordings and transcripts of the sessions for research purposes so long as my identity is not revealed.

---

Date

---

Subject Signature

---

Inv. Initials

**Investigator's certification:** I certify that I have explained to the above individual the nature and purpose, the potential benefits, and possible risks associated with participation in this research study, have answered any questions that have been raised, and have witnessed the above signature.

---

Date

---

Investigator Signature

## 8.0 Usability Study Results

\* **1. What is your gender?**

- Female ( 0 )
- Male ( 6 )

\* **2. What is your age?**

- 18 to 24 ( 6 )
- 25 to 34 ( 0 )
- 35 to 44( 0 )
- 45 to 54 ( 0 )
- 55 to 64 ( 0 )
- 65 to 74 ( 0 )
- 75 or older ( 0 )

\* **3. How often do you access the Internet?**

- Never ( 0 )
- Once a month or less ( 0 )
- Once a week ( 0 )
- Several times a week ( 0 )
- Every day ( 0 )
- Several times a day ( 6 )

**1) Register page**

a) Please create an account.

Pass ( 6 )/Struggle ( 0 )/ Fail( 0 )

How easy was this?

1	2	3	4	5
0	0	2	2	2

**2) Profile page**

a) Please add a qualification.

Pass ( 6 ) /Struggle ( 0 ) / Fail ( 0 )

1	2	3	4	5
0	0	1	2	3

b) Please delete a qualification.

Pass ( 6 ) / Struggle ( 0 ) /Fail ( 0 )

1	2	3	4	5
0	0	3	3	0

c)Use path visualisation for a career of your choice( 4 ).

Pass ( 6 ) / Struggle ( 0 ) / Fail ( 0 )

d) Logout of your account.

Pass ( 6 ) /Struggle ( 0 ) / Fail ( 0 )

e) How would you describe this page?

f) How navigable did you find the page?

1	2	3	4	5
---	---	---	---	---

0	0	2	1	3
---	---	---	---	---

**3) Login page**

a) Please login to your created account.

Pass ( 6 ) / Struggle ( 0 )/Fail ( 0 )

How easy was this?

1	2	3	4	5
0	0	0	0	6

**4) Visualisation page**

a) Describe what you think this page does.

B )Please rate your understanding of this page

1	2	3	4	5
0	0	1	3	2

**5) Case Studies Page**

a)Use one of the case study links to navigate to one of your choice.

How easy was this?

1	2	3	4	5
0	0	3	1	2

b) How would you describe this page.

## 6) Help Page

a) Submit a ticket to the administration.

Pass ( 6 ) / Struggle ( 0 ) /Fail ( 0 )

b) Rate how helpful the page is in relation to understanding the website

1	2	3	4	5
0	0	3	3	0

## 7) General

a) What is your understanding of the site's purpose?

b) How would you rate the quality of this site, given an understanding of its functionalities?

1	2	3	4	5
0	0	1	3	2

	Strongly Agree	Agree	Neither agree or disagree	Disagree	Strongly Disagree
The Website is easy to use	1	3	2	0	0
The design and layout were clear understandable	2	3	0	1	0
The website is user-friendly	2	3	1	0	0
The buttons are well-organised, easy to find	2	2	1	1	0
I immediately understood the function of each button	1	2	2	1	0
All of the links I expected to find in the navigation bar were there	2	3	1		0
The website layout is logical	3	1	2	0	0
The website is visually appealing	2	4	0	0	0
It is difficult to navigate around the website	0	0	0	6	0
Some parts of the	0	3	2	1	0

website are unclear					
---------------------	--	--	--	--	--

**USER REQUIREMENTS****Legend**

	Fully implemented
	Partially Implemented
	Under consideration
	Not implemented

This is a list of all the user requirements for our project. Any that are under consideration are being reviewed as to their inclusion in the system. The requirements that are not implemented are ones that could be implemented very quickly in Grape Vine 1.1 as the frame work has been put in place to fulfil them however we do not currently have enough time to fully implement them.

**FUNCTIONAL USER REQUIREMENTS****USER INTERFACE****F-UR 1**

Provide a web interface that provides users with a visualisation of their career tree.

F-UR	Priority	Description
1-1	Essential	The system shall provide a web based interface for the user.
1-2	Essential	The system shall allow users, site visitors, Administrator and Mentor teachers to login.

**ADMINISTRATOR****F-UR 2**

The system shall allow Administrators to view, alter and delete user profiles.

F-UR	Priority	Description
2-1	High	The system shall allow Administrator to alter user profiles.
2-2	High	The system shall allow Administrator to delete user profiles, this would occur after a long period of inactivity.

## VISITOR

### F-UR 3

**Visitors can view case studies and career requirements in addition to being able to create an account in order to become a user.**

F-UR	Priority	Description
3-1	Essential	<p>The system shall allow visitors to the site to create a user level account.</p> <p>Required information to create an account.</p> <ul style="list-style-type: none"> <li>• Their name, their first and surnames.</li> <li>• Their current email address.</li> <li>• Their current place of education; high school, college, etc.</li> <li>• Their age</li> <li>• Their address</li> </ul>
3-2	Low	The system shall allow visitors to the site to view case studies for particular careers.
3-3	Low	The system shall allow visitors to the site to browse career requirements.

## USER

### F-UR 4

**Users of the career pathway system can use their personal information to generate a personalised future career pathway.**

F-UR	Priority	Description
4-1	Essential	<p>The system shall allow users to input their 'pathway' to date.</p> <p>The users career pathway can contain</p> <ul style="list-style-type: none"> <li>• Their qualifications, as recognised by the SCQF.</li> <li>• Any apprenticeships that they have completed.</li> <li>• Any skills that the individual has.</li> <li>• The users interests.</li> </ul>
4-2	Essential	<p>The system shall allow users to explore potential career pathways.</p> <p>This is categorized by three parts:</p> <ul style="list-style-type: none"> <li>• User profiles,</li> <li>• Visualising a users career pathway to date.</li> <li>• Provide information for potential career pathways.</li> </ul>
4-2-1	Essential	<p>The system shall contain a variety of editable information in the user profiles.</p> <p>The user shall be able to enter, and edit, the following details.</p> <ul style="list-style-type: none"> <li>• Interests</li> <li>• Preferred working location</li> <li>• Personal demographics, i.e. gender, beliefs.</li> </ul>

		<ul style="list-style-type: none"> <li>• Personal statements</li> </ul>
4-2-2	Essential	The system shall provide a visualisation of the users 'career pathway' to date.
4-2-3	Essential	<p>The System shall provide the user with possible routes to a desired career destination.</p> <p>Example destinations could be.</p> <ul style="list-style-type: none"> <li>• Qualifications</li> <li>• Apprenticeships</li> <li>• Job Opportunities/Careers</li> </ul>
4-2-4	Very High	<p>The system shall provide information on possible future pathways that the user may pursue.</p> <p>Possible information that could be given.</p> <ul style="list-style-type: none"> <li>• Total cost of a particular future path.</li> <li>• Duration of a particular future path.</li> </ul>
4-2-5	Very High	The system shall show what jobs are available to the user with certain qualifications.
4-2-6	Very High	The system shall show the user the earning potential for jobs.
4-2-7	Very High	The system shall show possible future career progression for jobs
4-2-8	Very High	The system shall calculate and show the cost of a particular route in terms of fees to the user.
4-2-9	High	The system shall provide case studies of people that have taken part in a selected route.
4-3	Medium to High	The system shall allow users to specify location constraints for future jobs, education placements.

**MENTOR**

F-UR 5

**The Guidance teacher will be able to login to their account, view the current and possible future career pathways of users under them.**

F-UR	Priority	Description
5-1	Essential	The system shall allow the Mentor to login to their account.
5-2	Essential	The system shall allow the Mentor to view the current and possible future pathways for users under them.

**PERSONAL DATA**

F-UR 6

**The system shall retain a variety of personal data about users. Administrators are responsible for maintenance of security of this data.**

F-UR	Priority	Description
6-1	Essential	The system shall be able to save personal data submitted by users.

6-2	High	The system shall provide login/ account creation with a secure login.
-----	------	---

**FURTHER USE****F-UR 7**

The system is intended to be used by a variety of ages in order to make informed decisions on pathways to; qualifications, college and university places, careers, etc.

F-UR	Priority	Description
7-1	Essential	The system shall support decision making across a span of school, primary or secondary, until retirement.
7-2	High	The system shall be able to respond to key questions and provide informative answers.
7-3	High	The system shall support further information/ discussion on possible learning/career options.

**NON-FUNCTIONAL USER REQUIREMENTS****SOFTWARE****NF-UR 8**

NF-UR	Priority	Description
8-1	N/A	The users of the site will require the minimum software specifications in order to run the site well
8-2	N/A	The system shall, initially, make use of HTML5, CSS, JavaScript and PHP.

**HARDWARE****NF-UR 9**

NF-UR	Priority	Description
9-1	N/A	The system shall be hosted on the servers of the Heriot Watt MACS service.
9-2	N/A	The users of the site will require the minimum hardware specifications in order to run the site well

**LEGISLATION****NF-UR 10**

NF-UR	Priority	Description
10-1	Essential	Customer details shall be held in accordance with the Data Protection Act.
10-2	N/A	Ownership of the systems code will be allocated as per the contracted agreement.

**SECURITY****NF-UR 11**

NF-UR	Priority	Description
11-1	Essential	The system shall ensure that, with the exception of Administrator, user profiles can only be accessed and altered by their owning user.
11-2	Very High	The system shall securely store user details through the use of encryption.
11-3	Very High	The system shall sanitize user inputs to the system in order to prevent malicious SQL injections.
11-4	High	The system shall remain functional with the minimum of maintenance. This includes security.
11-5	Medium	The system shall have its security updated in accordance with changes in malicious software.

**DATA****NF-UR 12**

NF-UR	Priority	Description
12-1	High	The system shall be able to hold unlimited amounts of data in regards to user profiles, job requirements, etc.
12-2	N/A	The system shall not verify that details given for users are true.

**AVAILABILITY****NF-UR 13**

NF-UR	Priority	Description
13-1	Essential	The system shall be fully responsive, i.e. shall work on phones, tablets and desktop monitors.
13-2	Essential	The system shall be supported by all common web browsers, i.e. internet explorer, Firefox, chrome.
13-3	Very High	The system shall respond within 3 seconds of being prompted.
13-4	High	The system shall, barring maintenance or unexpected circumstances, be available to use constantly.

**ROBUSTNESS****NF-UR 14**

NF-UR	Priority	Description
14-1	Very High	The system shall be able to handle 10'000 concurrent users.
14-2	High	The system shall be sufficiently decoupled so that changes may be made at a later date, this may range from a new UI to changing the back-end DB.
14-3	Medium	The system shall be updated in order to remain relevant.

**USABILITY****NF-UR 15**

NF-UR	Priority	Description
15-1	Essential	The system shall break down the pathway visualisation into small, understandable, chunks.
15-2	Essential	The system shall have a low level reading age and be understandable by younger users.
15-3	Very High	The system shall take into account common accessibility issues.
15-4	High	The System shall allow users to flexibly interrogate data to gain an understanding of the given results.
15-5	Medium	The system shall support searching across a number of fields, in order to ease navigation.
15-6	Low	The system shall provide help to users through a help page

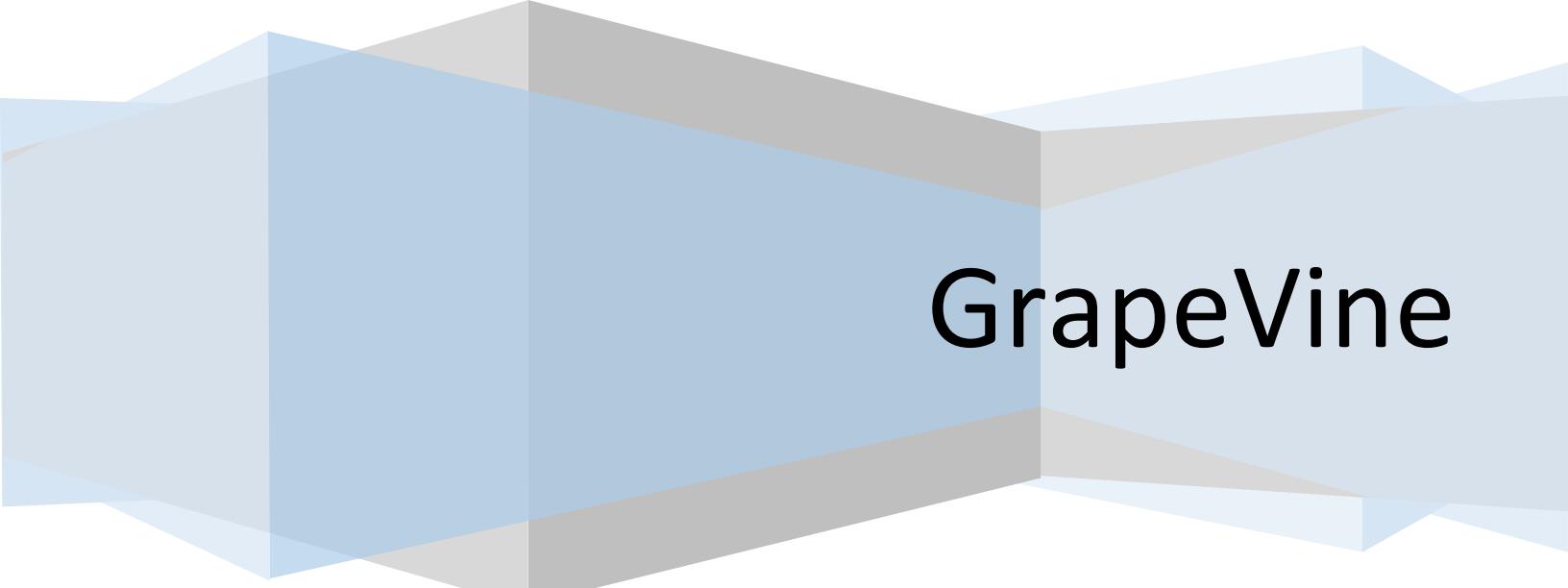
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# D. Final Application Design & Implementation

SE Group 12

Heriot-Watt University



GrapeVine

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## 1.0 Document History and Revisions

Document Title	Confidentiality Level/Status	Date Updated
<b>Final Application Design &amp; Implementation</b>	Initial draft	26 March 2016
<b>Final Application Design &amp; Implementation</b>	Final Draft	29 March 2016

Version	Author(s)	Date	Overview
<b>v1.0</b>	Maciej Mierzwa	26 March 2016	First draft of the design.
<b>v1.1</b>	Haris Cannas	26 March 2016	Added SCRUM implementation.
<b>v1.2</b>	Sam McNaughton & Craig Dodds	26 March 2016	Added extra GUI pages & diagrams.

## 2.0 Scope and High Level Overview

The group presented product: *GrapeVine* is aimed at people that have either graduated or completed secondary education that wish to develop their careers and start working. The system is a web-based application that communicates with a MySQL database that aids the user at making future career choices. As well as suggesting to the user possible career paths based upon their qualifications and experience, the system suggests any possible qualification developments to take their careers further.

Main parts of the system consist of:

- A registration system which enrols the user with the GrapeVine web based application.
- A public website that allows any visitors to see what GrapeVine is all about.
- Legal information, for any users that wish to get familiar with GrapeVine policies.
- A database that contains users' registration information and any experience/qualification experience that they enter upon completing the registration process.
- User friendly and simplistic interface which does not contain any excessive information.

The following technologies were used in implementing Grapevine:

- Website consists primarily of HTML with CSS styling elements that were used throughout the entire application.
- PHP was used in order to program the core functionality, such as dynamically displaying the experience and qualification information of each registered user, as well as being used for graph generation.
- MySQL relational database was used to store any user-generated content.
- 'Bootstrap' technologies were used to speed-up the front-end development process. Version 3.3.6 was used throughout the application.

The technologies mentioned above were chosen purely to match the previous experience of our development team, other technologies and development paths were considered; such as using languages like Ruby to develop the bulk of the main functionality associated with Grapevine. Another proposed development path included developing the entire application from scratch, instead of using ready-made bootstrap applications to boost the speed of the development, however due to the risk associated with such diverse plans, the group has decided to use bootstrap applications in order to have the application up and running as fast as possible.

We decided to not use a framework for the project due to a number of task related reasons. Firstly the initial learning period would have set back development of the project. When we considered this we weighed the benefits of using a framework against not using one. We decided that the functionality the framework would provide would not only not be worth the time we would lose but also would not help in any particular way with the application development.

In order to organise the functionality and split the workload accordingly, the workload has been first of all divided between areas of development such as one group dealing with the interface front end

application; and another with the database related problems, the following section will discuss the split of functionality developed.

## 3.0 Design Methodology

As mentioned above, the GrapeVine project was split into various sections for development purposes, rather than having the entire group concentrate on implementing single point from the initial project requirement before moving on. This modularity in the split of the workload has allowed for far more effectiveness when developing the finalized product.

The following details the split of the workload carried out simultaneously by the entire group:

### 3.1 Front-End Application Development

The front end application development consisted of implementing what the user actually sees and interacts with, the entire front end was required to provide a fully functioning framework around the ongoing database application developments.

### 3.2 Product Promotional Website

The product promotional website uses identically the same technology as the front-end application, except it is far more simplified; it contains various information about what Grapevine is.

### 3.3 GrapeVine Developers & Legal Information

As a spin-off from the front-end application again, this part details the Grapevine developers team and concerns any legal information that visitors or anyone of interest would like to get familiar with.

### 3.4 Database Development & Graph Generation

Bulk of the website functionality has been within the database development which was responsible for containing all user information and any data the user has entered into the system following their registration with the Grapevine service. As well as pathway generation which played a majority in developing the Grapevine. Other tasks include possible data theft or any hacking prevention; such as preventing an SQL injection.

## 4.0 Database Design

### 4.1 High Level

Our database holds little repeat / redundant data. In addition data shall be amended correctly based on changes to the database content.

### 4.2 Querying

We use PHP queries to retrieve information from our database. These PHP files are held in the 'Functions' folder of the system.

### 4.3 Design

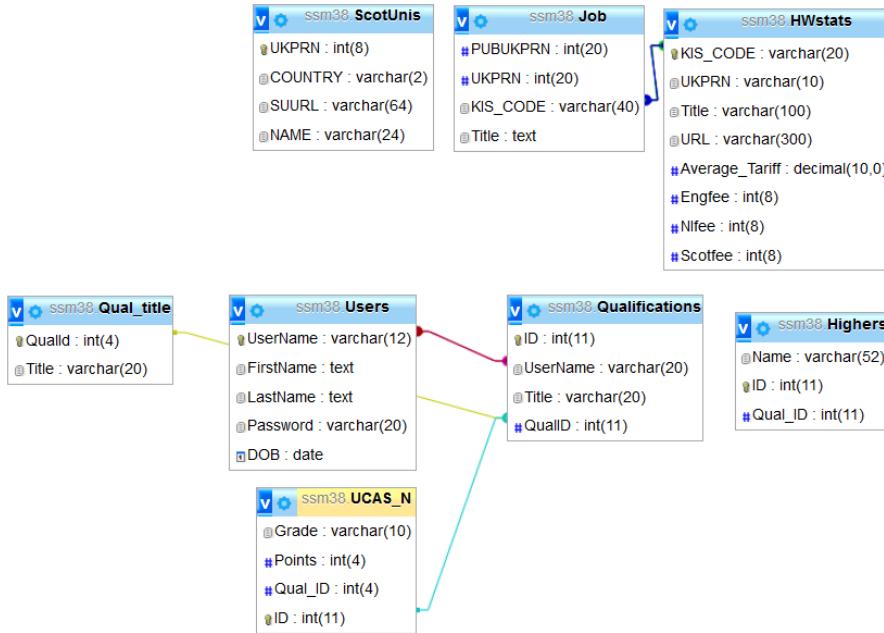
Our database divides our data into subject based tables. These result in reduced amounts of redundant data that needs to be stored. This is beneficial for the end user as less storage shall be required which will result in less money being spent on storage devices.

Our database aims to uphold the accuracy and integrity of the data held within it. As changes are made to the contents of a particular sub table, depending on the relations between tables, corresponding table entries shall be updated or removed as appropriate.

We have aimed to create an easily maintainable database of tables. With the changing qualifications in Scotland, and Britain as a whole, the database must be easily alterable or risk becoming inaccurate.

The upcoming UCAS tariff change in 2017 would mean that there would be a need to alter the tariff point values of all British Qualifications. Our database makes this change relatively painless. Also the replacement of standard grades with national 5's shows that qualification types must be able to be both added and removed from the database.

## 4.4 Database Diagram



## 5.0 System Architecture

Our system can, at a high level, be described by 3 main components:

### 5.1 The Client Side

This is the User Interface that takes the input that is then passed to the application layer

This component also passes the output to the end user.

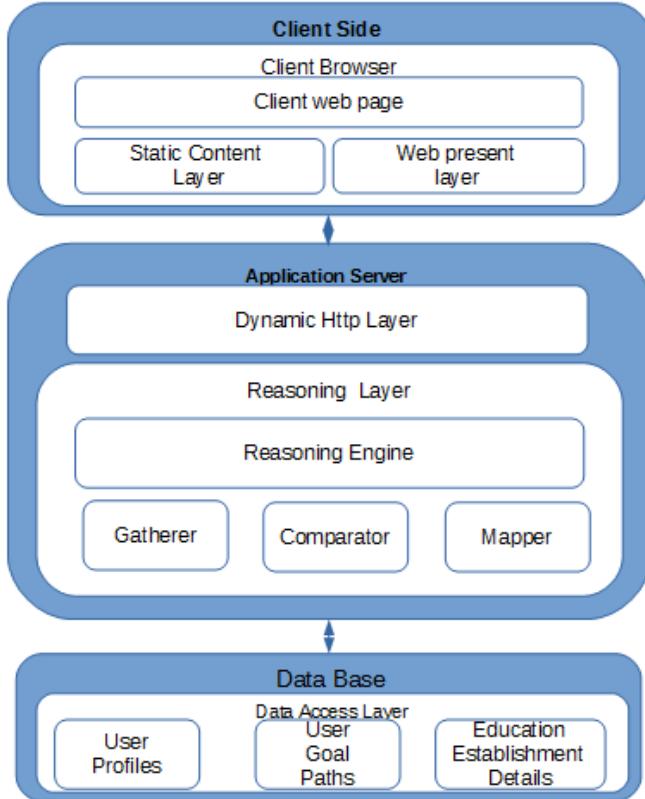
### 5.2 The Application Layer

This layer processes the data passed to it by both the Client side and the Database components.

This is where algorithms are executed and output passed to the client side to then be given to the end user.

### 5.3 The Database (Server Side)

This component holds the data that represents all entities that use, or are used in, the system.

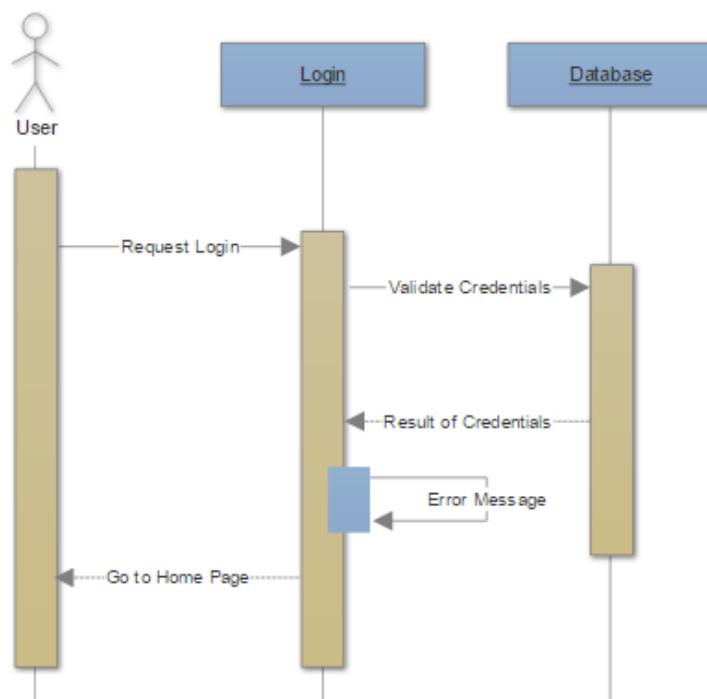
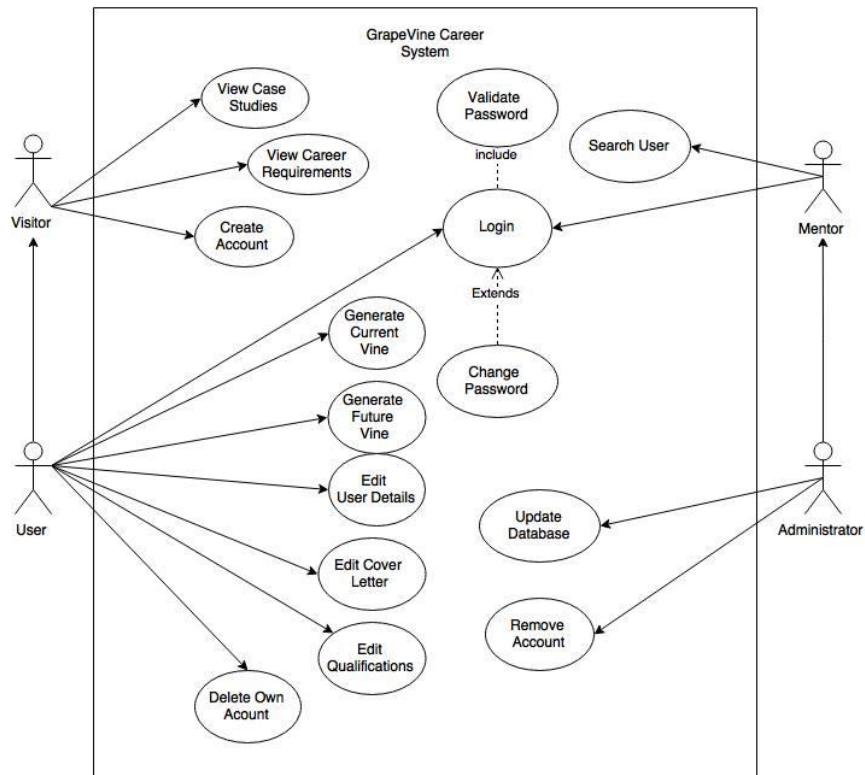


## 6.0 UML Diagrams

Our UML diagrams visualises the design of our system.

The use case diagram shows what each actor within the system is able to do and the sequence diagram shows how the user logs in to the system.

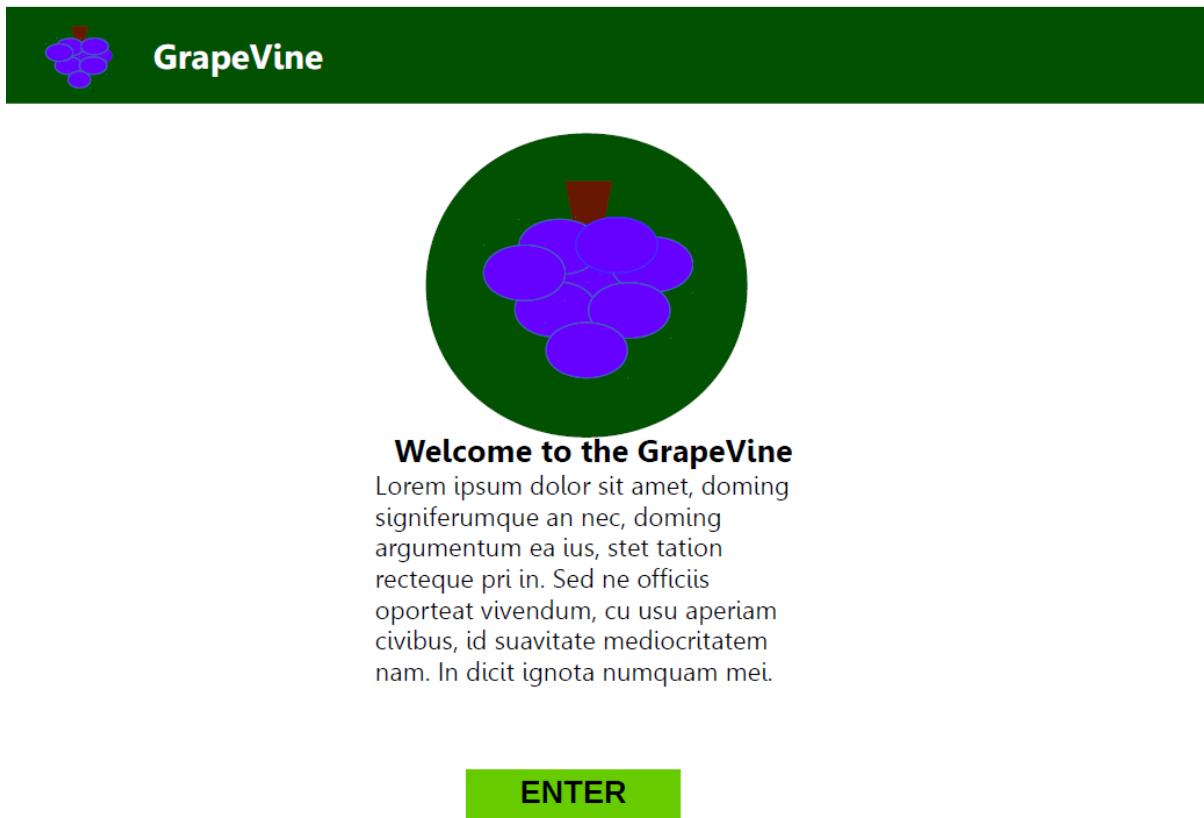
For a thorough textual explanation of our use cases see the user requirements document from the stage one documentation.



## 7.0 Initial GUI Design

The initial stage in designing the user interface and the functionality surrounding it were the mock-up designs which have been completed during the first stage of the development; below are the initial GrapeVine designs. A comparison of the initial design and finalized design can be found in section 8.0 of this document.

### 7.1 Welcome



## 7.2 Register



**GrapeVine**

Please fill in the forms below

First Name:

Last Name:

Date of Birth:

Email Address:

Home Address:

Education level:  
Enter qualification(s):

Enter password:  
Confirm Password:

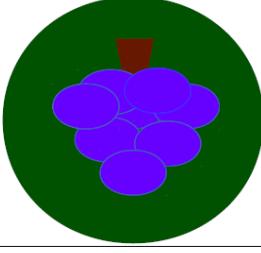
Enter Personal Statement  
Maximum 500 characters.

**Create Account**

## 7.3 Login



**GrapeVine**



User-name

Password

**LOGIN**

**LOGIN AS GUEST**

**REGISTER**

## 7.4 User Profile


**GrapeVine**
[Profile](#) | [Search](#) | [Help](#)

### Your Details

[Edit](#)

John Doe  
24  
123 Fake Street  
New-York High School

### Personal Statement

*Lorem ipsum dolor sit amet, doming signiferumque an nec, doming argumentum ea ius, stet tation recteque pri in. Sed ne officiis oporteat vivendum, cu usu aperiam civibus, id suavitate mediocritatem nam. In dicit ignota numquam mei. Nam vide viris eu, vedit reque denique sea no. Nec persius appareat invenire eu. Copiosae consecutetuer vituperatoribus his ea. Laudem veritus ei his, pri tritani incorrupte et.*

Computing

A

[Edit](#)

Physics

A-

[Edit](#)

Mathematics

B

[Edit](#)

**GrapeVine**
[Profile](#) | [Search](#) | [Help](#)

Computing

A

[Edit](#)

Physics

A-

[Edit](#)

Mathematics

B

[Edit](#)

## My Vines

**To Date**



Enter Goal

[Visualise pathway](#)

[Logout](#)

## 7.5 Pathway Visualisation

John Doe's Possible Future

Total Cost of Option 1:  
Total Cost of Option 2:  
Duration of Option 1:  
Duration of Option 2:  
Earnings of "End":

[View Case Studies](#)

[View Career requirements](#)

[Return to Profile](#)

```

graph TD
    Start([Start]) --> Option1[Option 1]
    Start --> Option2[Option 2]
    Option1 --> End([End])
    Option1 --> Option1_1[Option 1.1]
    Option1_1 --> Option1_2[Option 1.2]
    Option1_2 --> End
  
```

## 7.6 Administrative Panel

Users	Update Database
John Doe	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
John Doe	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
John Doe	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
John Doe	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>

[Return to profile](#)

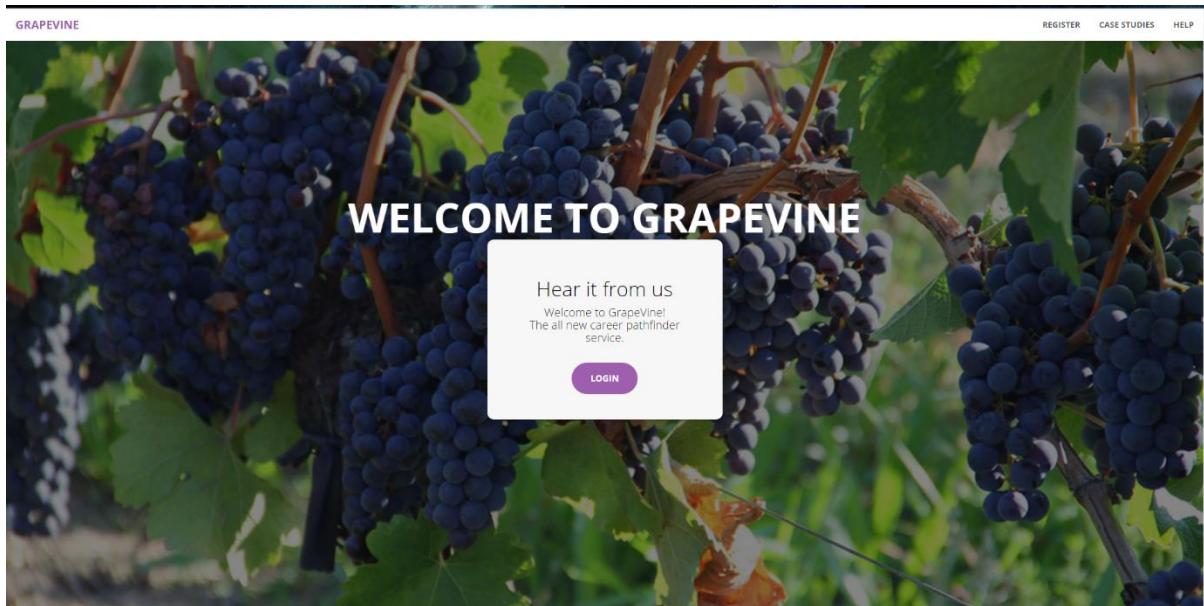
Throughout extensive surveys and user opinions, the initial design has undergone major alterations thanks to the insight and data gained from our testers.

The finalized interface is finally modern, pleasing to look at and really simple in terms of its usage, in other words it is far more fit for purpose.

## 8.0 Finalized GUI Design

The following section compares the initial designs to the finalized ones and will elaborate on the major changes.

### 8.1 Welcome

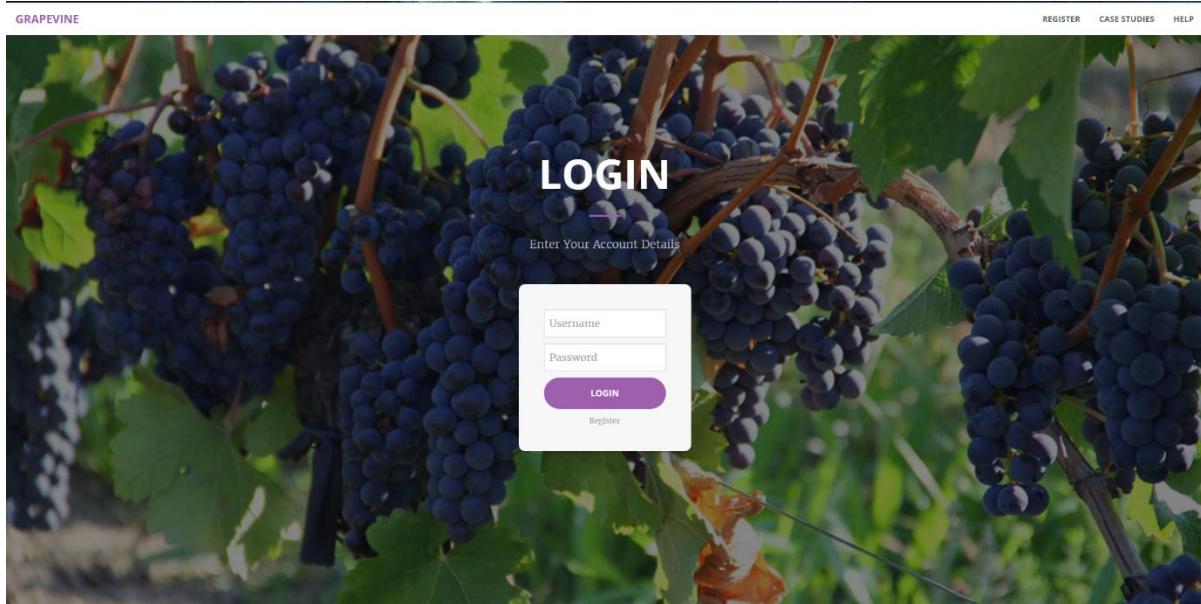


The website has undergone a massive overhaul to its entire styling compared to the initial designs, however the positioning of elements has been maintained as per the initial designs, the main alterations include:

- Completely new colour scheme, green styling has been dropped out; far more neutral colour range has been chosen.
- Website now consists of a background since it does not contain much information on majority of the screens.

- Login has been simplified to a single button style.
- Top navigation bar has had a reduction in available options to further simplify the system.
- Navigation bar is constantly white rather than partially transparent to avoid compatibility issues.

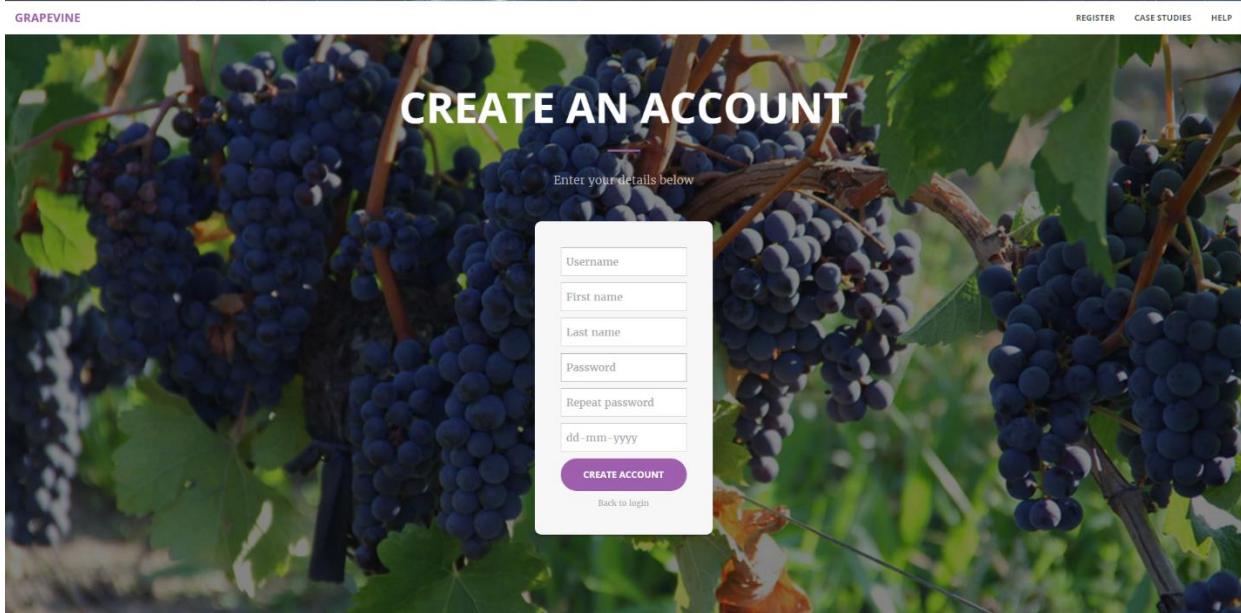
## 8.2 Login



As before, the styling is maintained throughout the application, main changes compared to the initial design include:

- 'Pop up' style boxes that stand out on the website in order to enhance their importance to the user (stand out far more).
- Coloured action buttons to signify they can be pressed
- Far less clutter with buttons compared to the initial design; now only the login button stands out
- Navigation bar has been restored for this page that has been previously removed; the user can register using options in it or simply browse the available content.

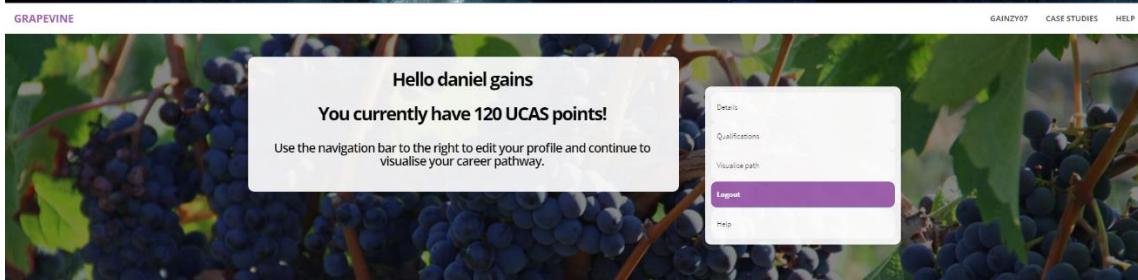
## 8.3 Register



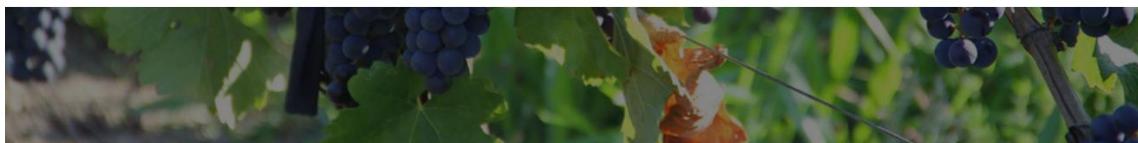
The register page has also vastly changed and improved:

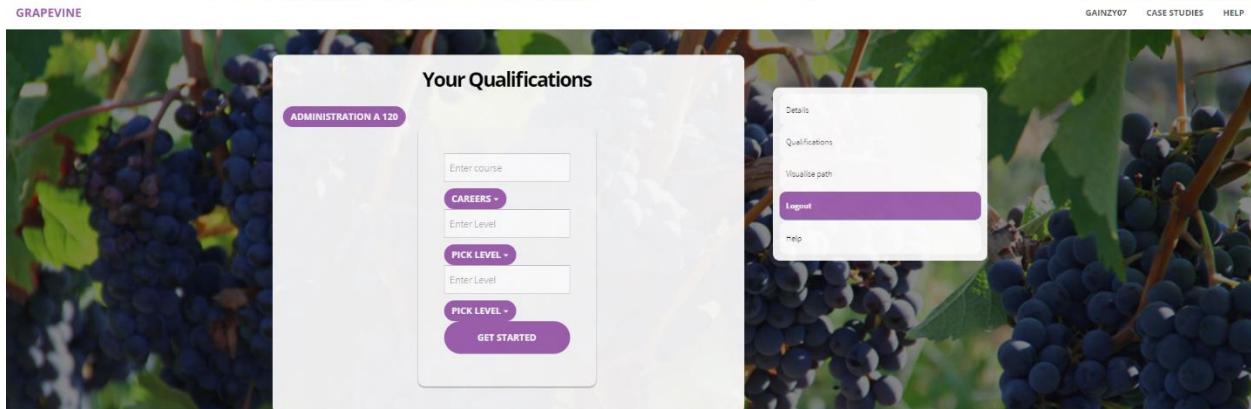
- The form is now in the middle of the page in the form of pop-up box.
- It's style; including the button also matches with the rest of the design of the website.
- We also decided to remove certain fields from the form such as 'Email' and 'Address' as we deemed them unnecessary for the functionality that we have for the website.

## 8.4 User Profile

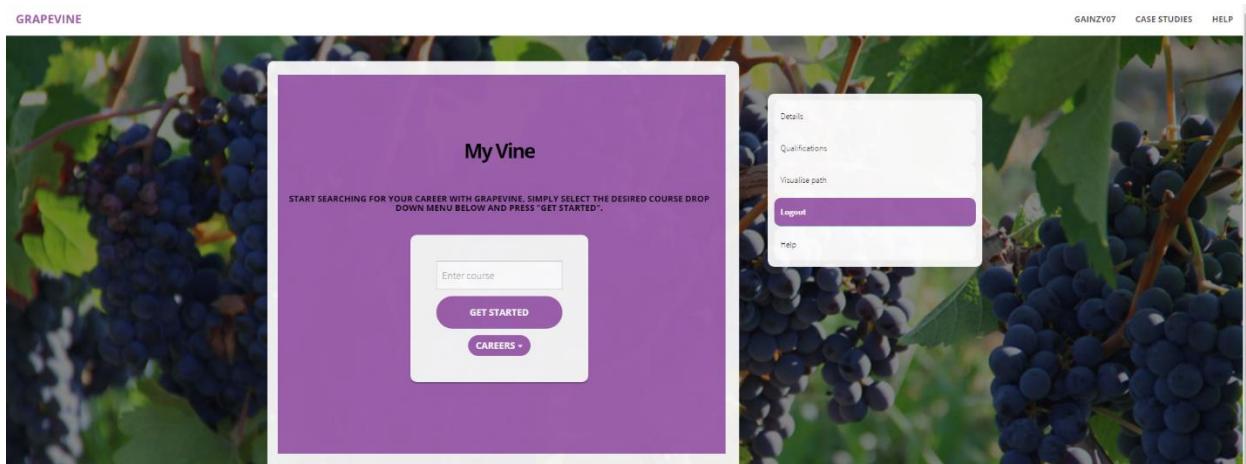


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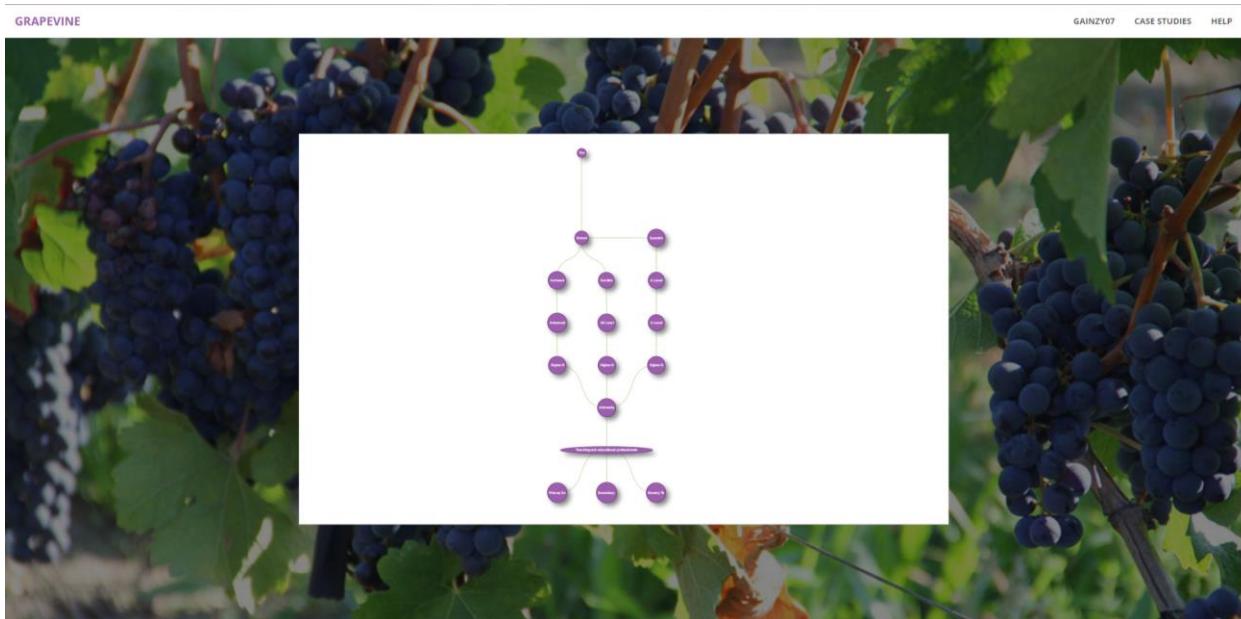
© Grapevine 2015-2016 Privacy Policy Terms & Conditions

As you can see from the three previous screenshots the user profile page has undergone a major overhaul having followed the new design theme of the website. Here is a summary of the main changes:

- No personal statement due to the fact it would be redundant in the current functionality of the website.

- A navigation bar on the right hand side of the page that allows the user to manage their qualifications, view their main profile and choose a career path.
- The users' current qualifications now show on the left hand side of the qualifications page instead of everything being on one page.
- Dropdown boxes are used for user input as opposed to manually entering them.
- This is also the case for when a user wants to create a new pathway; where they have to choose a broader job type in order to get this future pathway.
- The "register" button on the navigation bar is replaced by the users' username when they are logged in.

## 8.5 Pathway Visualisation



The pathway visualisation hasn't changed too much compared to the initial design. Here is how they compare:

- The sidebar from the original design has been removed, with the new design showing all of the necessary information on the page instead of having the visualisation and the sidebar.
- The visualisation itself has been designed to match what a grapevine actually looks like, with purple nodes and green edges.

## 8.6 Administrative Panel

The screenshot shows the GrapeVine Admin interface. At the top left is a sidebar with 'Messages' (2), 'Options', and 'Logout'. The main area has tabs for 'Profile', 'Messages', 'Users', and 'Qual Title'. It displays 'Inbox Messages' with items like '+ ORANGE', 'WATERMELON', 'BANANA', and 'APPLE'. A 'Reports' section shows 'Fix Problems' with the message 'Oh, don't let Daniel Login either'. On the right, there's a 'New Requests' list with items like 'Problems with people', 'More problems', and 'sefrutsey', along with a note 'Help. I need to learn!'. Below that is a 'Messaging' section with a 'Submit' button. At the bottom, a table shows 'Table' (45), 'of' (2.45%), and 'Testing' (Direct). The footer includes a copyright notice '© GrapeVine 2015-2016 Privacy Policy Terms & Conditions'.

The new administrator panel also follows the design of the final system; however, it doesn't include the image in the background. Also:

- At the top left of the page there is a sidebar which shows the admin any requests that may have been submitted by users of the website.
- A list of users is shown at the bottom of the page; all of which are manageable.
- There is functionality in which different administrators can send messages to each other.

## 8.7 Help Page

The screenshot shows the GrapeVine Help page. The background is a photograph of bunches of dark grapes hanging from vines. Overlaid on the image are several interactive elements. In the center, a white box contains the word 'HELP' in large, bold, black capital letters. Below it is a section titled 'FAQs' with the sub-section 'How to delete a qualification from my account?'. It explains that on the profile's qualification page, a list of qualifications will appear in the top left corner, and clicking on one will bring up an alert window for deletion. At the bottom of this box is a large, bold 'SUBMIT TICKET' button. Below that is another white box containing the text 'Contact administration for further assistance' and 'Simply enter your message and click "submit" to contact our Grapevine administration team.' It features a text input field and a 'Submit' button.

In our original design we didn't include a help page, however here is a description of our design from the final system:

- A pop-up style box containing FAQ's in which the user can refer to if they are having any problems.
- Another pop-up style box that allows the user to submit a query to any administrator of the website.
- Again this page matches in with the overall design of the website.

## 9.0 SCRUM Implementation

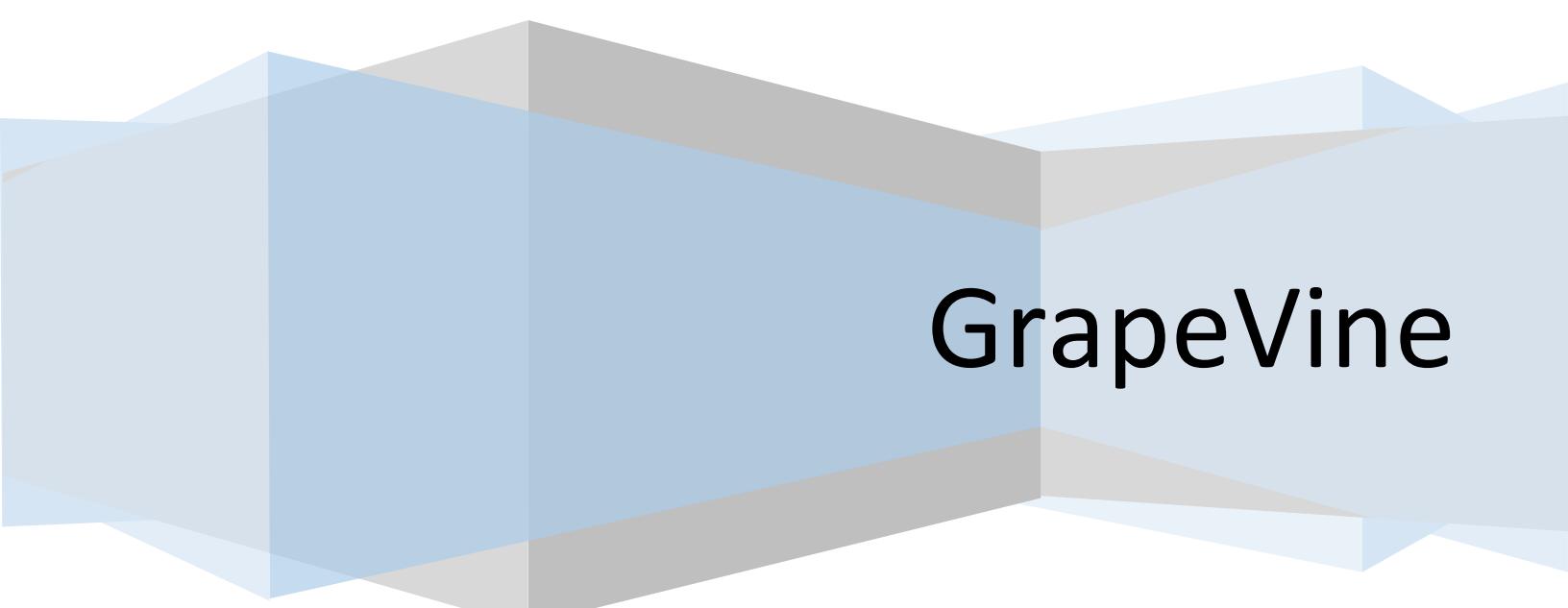
In our approach to designing the application we used SCRUM, an agile process. This allowed us to develop and update our system in small and manageable increments. This also enabled us to do unit testing at the end of each sprint, thus allowing us to move immediately onto the next iteration once we were happy with implementation of that previous sprint. Moreover, if there were any problems in that sprint we were able to work on that specific problem in the next sprint without a huge cost.

Usage of this proved beneficial as we were able to consistently meet the requirements specified, though some tasks were pushed further to later sprints, to allow members of the group time to concentrate on other coursework assignments. Section 3.0 of the 'Project Evaluation' document goes into more detail about this.

# E. Project Evaluation

SE Group 12

Heriot-Watt University



GrapeVine

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## 1.0 Document History and Revisions

Document Title	Confidentiality Level/Status	Date Updated
<b>Project Evaluation</b>	Initial draft	25 March 2016
<b>Project Evaluation</b>	Second Draft	29 March 2016
<b>Project Evaluation</b>	Final Draft	01 April 2016

Version	Author(s)	Date	Overview
<b>v1.0</b>	Daniel Gains	25 March 2016	First draft the project evaluation.
<b>V2.0</b>	Daniel Gains	29 March 2016	Second draft of the project evaluation.
<b>FINAL</b>	Daniel Gains	01 April 2016	Final draft of the project evaluation.

## 2.0 Organisation

### 2.1 Group Organisation

There are 7 members in our group (excluding the manager; Jessica-Chen Burger) and the following describes the jobs that were assigned to each member:

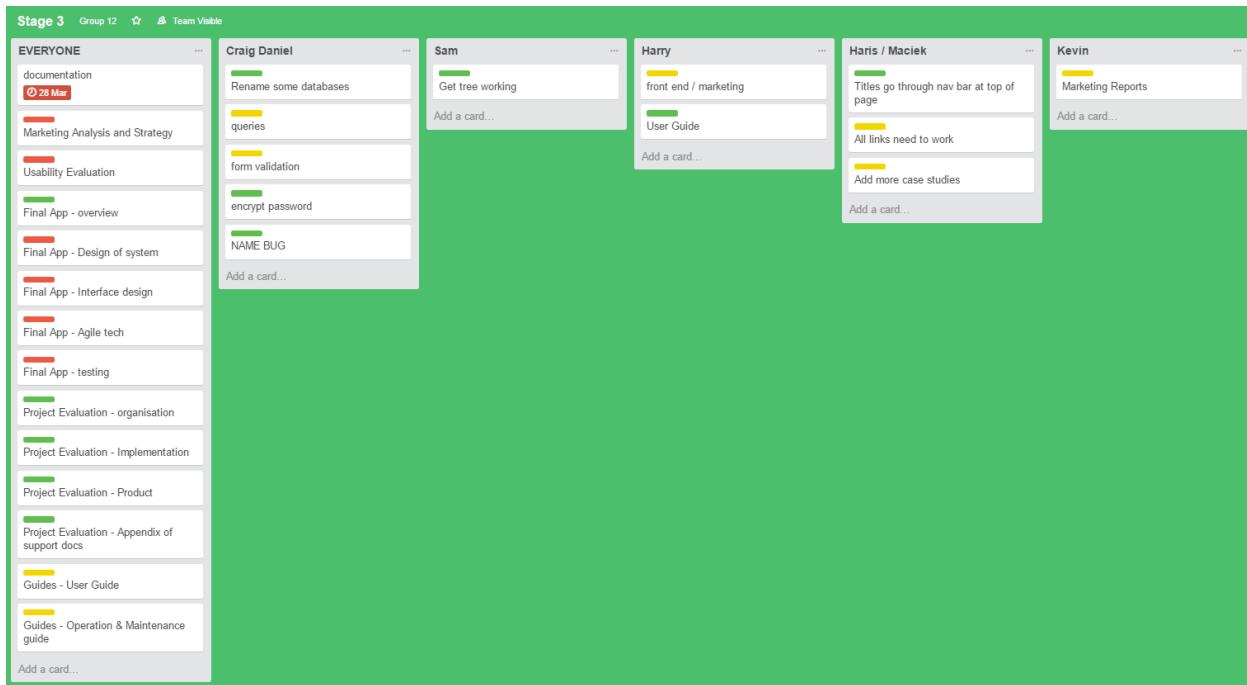
Harris Cannas:	<i>Client-side Developer</i>
Maciej Mierzwa:	<i>Client-side Developer</i>
Sam McNaughton:	<i>Technical Manager</i>
Craig Dodds:	<i>Server-side Developer</i>
Daniel Gains:	<i>Reporter/Server-side Developer</i>
Kevin Brown:	<i>Organisational Manager</i>
Harry Skehin:	<i>Liaison/System Analyst</i>

This breakdown in jobs turned out to be very successful due to the fact we had members from 4 different courses, hence each of us could play to our strengths. For example, being Computer Science students, Daniel and Craig were perfect for the role of 'Server-Side Developers' due to our experience in PHP and database management. Also with Kevin being an Information Systems student it made sense for him to be our 'Organisational Manager' due to the business management aspect of his course.

### 2.2 Group Collaboration

Throughout the course of the project we had group meetings every other week, with Jessica joining us when she was available. Each meeting included discussion of what each of us had done since the previous meeting and then another discussion of what needed to be done in the following weeks. Being the 'Reporter' as well as a 'Server-Side' developer, Daniel took the minutes of each meeting before typing them up and uploading them to the Dropbox in order for everyone to be able to see and refer to them. The minutes of the majority of each meeting can be found in the 'Project Diary' section of the appendix of this document.

We also all registered to Trello in which we had shared boards for each stage. Each stage was assigned to a board within the application and then each board displayed the necessary tasks that needed to be completed in order to meet the deadline. Each of these tasks were assigned to a person(s) and then it was that person(s) job to update to the colouring of the labels depending on the level of completion of that task. Red meant the task hadn't be started, yellow/orange meant the task was in the process of being completed, and finally green meant the task had been fully completed. We found that Trello was a brilliant tool as it minimized confusion within the group with regards to tasks that needed to be done. It also gave us a constant, clear picture of where we stood at that moment in time without the need for any extra communication. An example of our board for stage 3 is shown on the following page.



When it came to the actual implementation of the system, Craig and Daniel met up on many occasions to work on the server-side, Haris and Maciej also did the same for the front-end, with Sam floating between both being the 'Technical Manager'. This naturally worked very well as it allowed us to solely concentrate on our own tasks without any confusion, thus allowing us to then bring it all together at each meeting in order for everyone to catch up and gain a better understanding of where the overall project was at, at that moment in time.

With regards to problems that arose within the group, we did have one major problem the day before the Stage One deadline. One of our original members decided to leave the group without telling anybody and without doing his assigned task for the first part. Naturally, once we realised the situation that we were in the pressure increased exponentially with the deadline being the next day. To overcome this, we first sought out our manager Jessica for advice and then spoke to Helen, along with the head of department. Having taken their advice, we all decided to get together that evening and do the work (the overall project costing) and managed to complete it in time for the deadline. Obviously, with Kevin being the only Information Systems student in the group, he was the only other member that had experience doing costing. Therefore, it was mainly with his guidance, and the overall collaboration of the group that we managed to finish it to a good standard in only a short amount of time.

### 2.3 Successfulness of Original Plan

Overall, we did manage to stick to the original plan more or less, however there were some special cases where we had to re-shuffle the schedule in order to take into account other coursework deadlines throughout the year, especially during Semester 2.

The original plan is attached to the appendix, as well as an updated one (found in the next section) to show what/when we actually did the specified task is attached to the appendix of this document. The 'Implementation' section of this document will go into more detail with regards to how we followed the plan, and how it changed as time went on over the course of the project.

## 3.0 Implementation

### 3.1 Implementation Schedule

Below is a table of the tasks from the original plan (section 6.2) that were not completed by their original, allocated dates. As aforementioned this was due to other coursework assignments, and the majority of these tasks were during semester 2 as this was when we were implementing the vast majority of the functionality.

We managed to complete all of our Stage One documentation on time (section 6.2.1) so nothing from that part of the plan changed, however in the run up to Christmas we did have to push back the implementation of the register and login pages in the second sprint (section 6.2.2) until after the Christmas holidays. In order for this to work we pushed these tasks into sprint 3, and the members of the group that weren't working on security at that time; apart from Sam, all pulled together to complete them.

Also the unit testing for the database design was done over the Christmas period by Daniel so that we were fully ready to start the next sprint by the time everyone returned.

All of the documentation for Stage 2 was completed on time also, this can be seen in section 6.2.3.

Section 6.2.4 shows sprints 4-6. Sprint 5 was when we had to start changing times. This was again due to other deadlines, and also because we didn't give ourselves enough time to complete those tasks, especially with them being the main and toughest functionalities of the website. All of the dates in the sprint were pushed back, thus forcing everything from there on in to be pushed back. This is all visible in the table below. Mainly, this extra time needed ate into the plan for Stage 3's final documentation (section 6.2.5) so it didn't cost too much as we did originally allow ourselves 2 weeks to complete it all which was more than enough time.

Therefore, instead of having a few days to complete each section of the final documentation, we gave ourselves a whole week to do all of it, giving each person a certain section to do. This made more sense due to the fact we each had more time to draft and re-draft our respective sections, thus increasing the quality of the documentation.

Finally, due to the amount tasks we had in the original plan and certain time constraints, we were not able to implement all of the functionality, thus not strictly abiding by the original schedule. This is described in more detail in section 5.1 of this document.

NAME OF TASK	PLANNED DATE(S)	ACTUAL DATE(S) OF COMPLETION
DATABASE UNIT TESTING	Start: 19/11/15	Start: 28/12/15
	End: 21/11/15	End: 30/12/15
REGISTER	Start: 22/11/15	Start: 17/01/16
	End: 24/11/15	End: 18/01/16

USER LOGIN	Start: 25/11/15 End: 26/11/15	Start: 19/01/16 End: 20/01/16
POTENTIAL FUTURE PATHWAYS	Start: 18/02/16 End: 19/02/16	Start: 18/02/16 End: 20/02/16
PATHWAY VISUALISTION	Start: 20/02/16 End: 21/02/16	Start: 20/02/16 End: 23/02/16
FUTURE PATH COST/DURATION	Start: 22/02/16 End: 23/02/16	Start: 23/02/16 End: 24/02/16
FUTURE CAREER PROGRESSION & POTENTIAL EARNINGS	Start: 26/02/16 End: 27/02/16	Start: 27/02/16 End: 29/02/16
SPRINT 5 UNIT TESTING	Start: 28/02/16 End: 29/02/16	Start: 01/03/16 End: 02/03/16
USER LOCATION CONSTRAINTS	Start: 01/03/16 End: 02/03/16	Start: 03/03/16 End: 04/03/16
DECISION MAKING SUPPORT	Start: 03/03/16 End: 05/03/16	Start: 05/03/16 End: 07/03/16
USER QUESTIONS SUPPORT	Start: 09/03/16 End: 11/03/16	Start: 11/03/16 End: 13/03/16
SPRINT 6 UNIT TESTING	Start: 12/03/16 End: 14/03/16	Start: 14/03/16 End: 16/03/16
MARKETING STRATEGY	Start: 15/03/16 End: 17/03/16	Start: 23/03/16 End: 29/03/16
PRODUCT EVALUATION	Start: 18/03/16 End: 19/03/16	Start: 23/03/16 End: 29/03/16
FINAL USABILITY STUDY	Start: 20/03/16 End: 22/03/16	Start: 23/03/16 End: 29/03/16
IMPLEMENTATION REPORT	Start: 23/03/16	Start: 23/03/16

	End: 25/03/16	End: 29/03/16
APPLICATION DESIGN	Start: 26/03/16	Start: 23/03/16
	End: 28/03/16	End: 29/03/16
PROOF READING	Start: 29/03/16	Start: 30/03/16
	End: 30/03/16	End: 30/03/16
DOCUMENT ADJUSTMENTS	Start: 31/03/16	Start: 31/03/16
	End: 01/04/16	End: 01/04/16

### 3.2 Software Process & Version Control

As mentioned in the ‘Project Plan’ section of the Stage One documentation we used SCRUM; an agile process. This allowed us to develop in our features in small and manageable increments. This also enabled us to do unit testing at the end of each sprint, thus allowing us to move immediately onto the next iteration once we were happy with implementation of that previous sprint. Moreover, if there were any problems in that sprint we were able to work on that specific problem in the next sprint without a huge cost.

Overall, we found that the use of this agile technique was very successful as we managed to complete all of our sprints on time, even though there were certain tasks that did have to move around within those sprints to give members of the group time to concentrate on other coursework assignments. Due to this, any problems that we did encounter were then dealt with in the subsequent sprint at barely any cost, thus not having a huge effect on the overall schedule. The aforementioned problems will be discussed in section 3.4 of this document.

Our method of version control was Dropbox. We created a shared Dropbox folder containing all of the source code, along with all of the documentation. The folder was split up into four different folders. Three of the folders contained the necessary materials for each of the three stages, with the other folder containing the source code of the system itself.

We found Dropbox to be highly useful tool for many a reason.

Above all, it allowed us to work on the same file at the same time. This was made possible by the Dropbox badge functionality. This is where the Dropbox badge will appear within the file that is being edited. For example, if two members of the group were editing the same file at the same, the other person’s initials will appear in the badge, along with an exclamation mark. This is to notify the user that the other person is also editing the file. Moreover, if one of the users makes a change and saves it, an arrow will appear in the badge for the other user, allowing them to download that version whilst still editing the file. The final advantage of using Dropbox was its ability to keep snapshots of all the changes made to any files. This meant we could revive any older versions of the files if we found any errors the current version.

Due to all the reasons mentioned above we found Dropbox was fantastic as it not only allowed us to store all of our documentation and source code, but it also allowed us to restore any previous versions

of files if there were any errors and allowed members of the group to edit files at the same time. Furthermore, we found we didn't have one single problem arise while using it.

### 3.3 Tools

For the physical implementation of the system we naturally used various different tools, software and languages. Here is a breakdown:

- **MySQL** – this was a natural choice for the implementation of the database as the vast majority of the group already had prior knowledge of how to build databases using this language. This also allowed us to use the phpMyAdmin software to make it easier for us to create the appropriate tables, instead of having to manually build them through the terminal. Furthermore, this subsequently means we are using the university Apache servers to host the final website on. This made sense to us as it was something we could all easily access it whilst in the university and it meant no further effort in having to rent servers and buy domains.
- **HTML5/CSS3** – these 2 languages were unmistakably paramount in our efforts to create the system; otherwise there just wouldn't be a website. For our use of these 2 languages we used bootstrap v3.3.6 to get a template and then tailored the template and the elements within the source code to get our final design. Bootstrap worked brilliantly also as it allowed us to create an original, and fantastic-looking website without the need to start from scratch.
- **PHP7** – this is the language that we used for all of our server-side development; there were a few reasons we chose this. First of all, the majority of us already had a lot of experience in PHP so it meant being able to start the development without having to learn any new languages. Secondly, it works seamlessly with HTML, meaning that any changes made in the PHP code would not affect the HTML surrounding it. Lastly, even for someone without prior programming knowledge, it is a very simple language to work, yet still very powerful at the same time.
- **JavaScript** - we used this for small scripts that added functionality. This was an obvious choice due to the fact all members of the group project have vast amounts of experience with Java, with JavaScript being a weakly typed version of it. One example of its use was the for the validation of the register form on the client-side. This ensured the new user wasn't using any illegal characters and that their information was inputted correctly, before being posted to the database.
- **vis.js Library** – this is the tool we used to display the users' future career pathway. We have used Vis.js to produce accurate and visually appealing graphs which are then used in the final GrapeVine application. These graphs are used to produce the visualisations that show users their career past and possible future. We chose Vis.js as it works well with both small and large datasets to produce dynamic and interactive browser based visualisations of data. This means that the software will support users that have a very small amount to add to their tree but also users that have a long education and career history. Another reason for the use of this library was its relative ease of use. Not only did this mean that the final visualisation solution was

created without many difficulties but also that any future maintenance or alterations to the graphing would be much easier than using other visualisation solutions. Additionally, vis.js allows our admin user to easily view statistics from graphs based on details of our database. Vis.js has proven to be an easy to use library while also providing essential functionality to our project.

- **Ajax** - we utilised this for functionalities on the website that only updated certain parts of the web page instead of reloading the whole page. Ajax is primarily used on the user profile page to switch between the tabs on the sidebar. Naturally, this was a huge advantage for us as it increases the overall speed of the website as the page doesn't have to be reloaded.

For the development of the system using these languages, we opted to use the 'Geany' programming environment as it allowed us to develop in all of the aforementioned languages without having to use different programs. Also due to its nature, it made the debugging very easy so any problems or weird behaviours that were apparent were pretty straightforward to solve.

### 3.4 Problems

- We realised our original database design was incorrect as one foreign key was linked to the wrong attribute within another table.
- A bug that when a user logged out it still displayed their username on the navigation bar.
- A bug where the user pathway visualisation page would not display the users' pathway.
- A bug where the jobs dropdown menu used to create a pathway did not work.
- Form validation still allows illegal characters in certain fields.

## 4.0 Product

### 4.1 Functionality Achieved

Below is a table showing how many of our original functional requirements that were met in time, along with any that weren't done and any that weren't fully implemented. Following the table is a summary of it.

FUNCTIONAL REQUIREMENT	STATUS
F-UR 1: WEB INTERFACE PROVIDING USERS WITH A VISUALISATION OF THEIR CAREER TREE.	Complete.
F-UR 2: ALLOW ADMINISTRATORS TO VIEW, ALTER AND DELETE USER PROFILES.	Complete.

<b>F-UR 3:</b> VISITORS CAN VIEW CASE STUDIES AND CAREER REQUIREMENTS, AND CREATE AN ACCOUNT.	Complete.
<b>F-UR 4:</b> USERS CAN USE THEIR PERSONAL INFO TO GENERATE A PERSONALISED FUTURE CAREER PATHWAY.	Complete.
<b>F-UR 5:</b> MENTOR CAN LOGIN TO THEIR ACCOUNT, VIEW CURRENT AND POSSIBLE FUTURE CAREER PATHWAYS OF USERS UNDER THEM.	Incomplete.
<b>F-UR 6:</b> THE SYSTEM KEEPS VARIETY OF PERSONAL USER DATA. ADMINISTRATORS ARE RESPONSIBLE FOR MAINTENANCE OF SECURITY OF THIS DATA.	Complete.
<b>F-UR 7:</b> THE SYSTEM IS INTENDED TO MAKE INFORMED DECISIONS OF PATHWAYS TO; QUALIFICATIONS, COLLEGE AND UNIVERSITY PLACES, ETC.	Complete.

In summary, we managed to get the vast majority of functionality implemented without many problems; apart from what was mentioned in section 3.4 above. However, there are still some requirements that we were not able to meet.

We planned on having a mentor view for the website in which guidance teachers would be able to create and login into their account and then view the potential pathways and details of users (e.g. students) underneath them. However, due to time constraints and because of our priorities we decided to leave this unimplemented.

As a consequence, we were enabled to spend a little bit of time polishing the websites look by editing the CSS files provided with the bootstrap template and also improve the functionality of the graph visualisation by including location constraints for the user depending on the location they supplied whilst registering.

## 4.2 Outstanding Bugs & Robustness

Overall our system is very robust. There are currently no bugs that cause the system to crash, however there can be a problem in the navigation bar, where when a user logs out of their respective account, their username still appears on the bar. Due to time constraints and the fact that when this bug does occur it doesn't have any effect on security or the functionality of the website we decided to not act upon this.

In order to increase the robustness and the overall reliability of the system we did implement some security to ensure the users account had a good level of security. To do this, when a new user registers

and submits the form, the 2 password fields are checked client-side to make sure that they match each other, and only then the form is submitted and entered into the database. Upon submission the password is then encrypted using a hashing function making it harder for attackers to get into their account.

Also on the admin panel there is requests bar which are displayed to the admin. These requests can be sent by the user to the admin panel, thus meaning any admin that is logged into the website at the time is able to view it. This in turn means the admin can act appropriately to solve the problem and then remove the request once the request has been acted upon. Not only does this mean any problems users are having can be mended quickly and efficiently, but it also reduces the confusion between administrators; i.e. if one administrator solves a problem, they remove it, thus ensuring another administrator won't try and do the same thing.

The admin panel also allows the administrators to communicate with each other via a messaging system in order and also have the option to view and manage all the user accounts that have registered to the system.

### 4.3 Testing

We felt our approach to this was very appropriate. This was because first of all, due to the nature of the SCRUM approach, we were enabled to do unit testing at the end of each sprint. For each of these tests we allowed ourselves a day, which we found was more than enough time, hence meaning we were fully ready to get underway with the subsequent sprint the next day. Moreover, each member of the group played the same part in testing. This was to ensure we didn't miss any unusual behaviour or bugs by enabling other members to find something that another member may have missed while they were performing these tests.

To test the final implementation of the website we decided to use test data for the input fields on the website. This only included registering a new account and logging in with that account. We also used data that we knew wouldn't work due to the client-side validation. However, this does not include when a user is managing qualifications or choosing a career path as the input is in the form of dropdown boxes, hence allowing no room for error. The table below shows all of our test data along with the expected and actual results of inputting that data:

FIELD OF INPUT	TEST DATA	EXPECTED RESULT	ACTUAL RESULT
USERNAME	""	Error	Error
	Jsmith_94	Valid	Valid
	^,>	Error	Valid
FIRST NAME	""	Error	Error
	John	Valid	Valid
	John1	Error	Valid

LAST NAME	""	Error	Error
	Smith	Valid	Valid
	Smith1	Error	Valid
PASSWORD	""	Error	Error
	test123	Valid	Valid
	^.>	Error	Valid
REPEAT PASSWORD	""	Error	Error
	test123	Valid	Valid
	^.>	Error	Valid
DATA OF BIRTH	""	Error	Error
	01-01-2000	Valid	Valid
	01012000	Error	Error
LOCATION	""	Error	Error
	Scotland	Valid	Valid
	Scotland1	Error	Valid

Note: "" means field was left blank.

As you can see the register functionality works fine, however the client-side form validation isn't robust enough (highlighted in red). This is because, in certain fields illegal characters are still allowed and get entered into the database. For example, if a new user accidentally entered a number into the 'First Name' or 'Last Name' field the form is still valid. With extra time we would like to improve the form validation to include regular expressions in order to not allow illegal characters.

More information on testing can be found in the usability study documentation, as well as a summary in section 4.4 in this document.

## 4.4 Usability Summary

Our testing of the final prototype version has produced an array of useful feedback.

The users were very positive when it came to the design of the site. They felt that the layout was strongly unified between the different pages and that navigation between pages was intuitive.

We have improved our website from the original mock-ups from stage 1. Our colour scheme has changed to a cleaner and more refined palette. The colour scheme has changed from an abrasive bright green to a much more aesthetically pleasing white and purple alternative.

On a positive note all of the users passed every test, with no users particularly struggling with or failing at their assigned tasks.

The feedback has also provided us with bugs to fix and improvements to add to future versions of the site. We

We did not present the website tester with the administration panel as they are not the intended users of the admin features.

It is worth noting that some site maintenance has been done since these tests were carried out and may have fixed several of these complaints that were made.

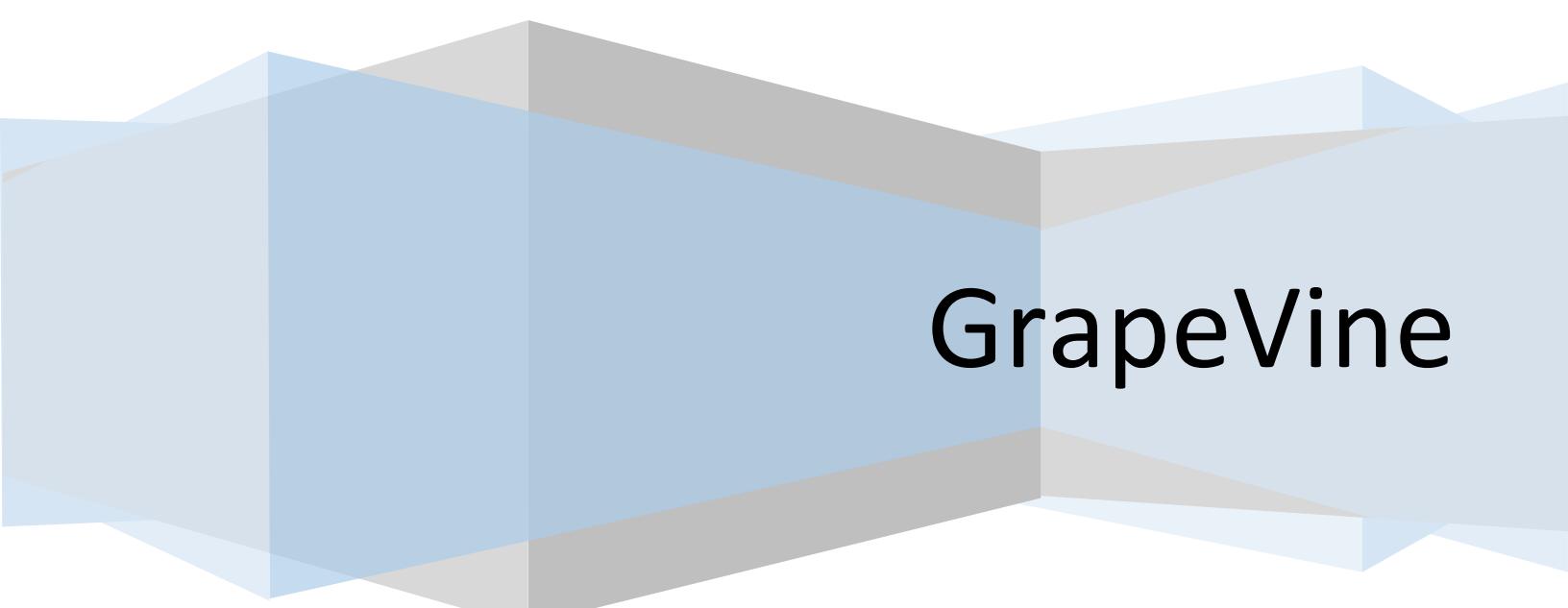
Grapevine will however continue to support its career mapping system and make sure that all of the suggestions made during testing are taken on board and considered for future releases.

As a result of these findings we can say that we have succeeded in achieving the vast majority of functional and non-functional requirements for the 1.0 version of our application, see appendix for the list of completed requirements.

## F. User Guides

SE Group 12

Heriot-Watt University



GrapeVine

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## 1.0 Document History and Revisions

Document Title	Confidentiality Level/Status	Date Updated
User Guides	Initial draft	25 March 2016
User Guides	Final Draft	01 April 2016

Version	Author(s)	Date	Overview
v1.0	Sam McNaughton	25 March 2016	First draft of both guides.
FINAL	Haris Cannas	01 April 2016	Added updated descriptions and screenshots of the website.

## 2.0 User Guide

### 2.1 Purpose

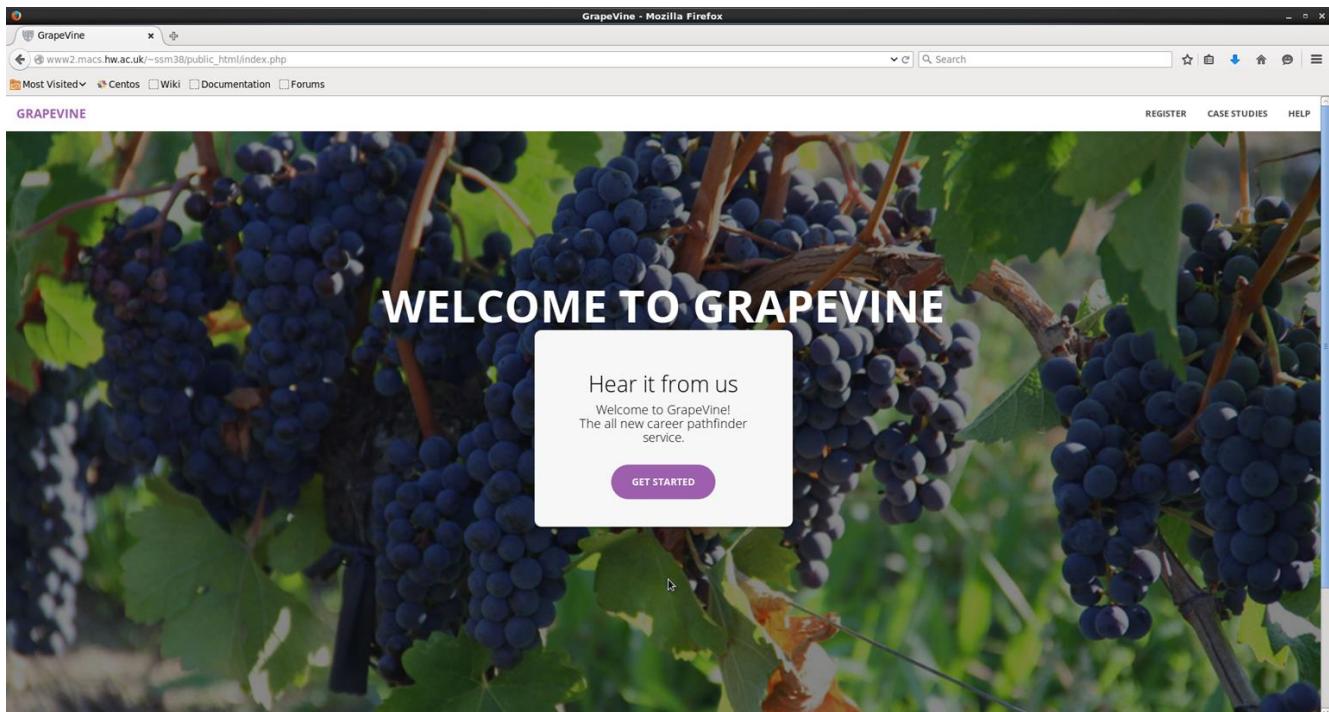
This document aims to help users of the GrapeVine system by providing helpful descriptions of how to do the functionality of the system, making accounts, altering details making visualisations etc.

### 2.2 Scope

This document shall demonstrate several keys aspects of the functionality.

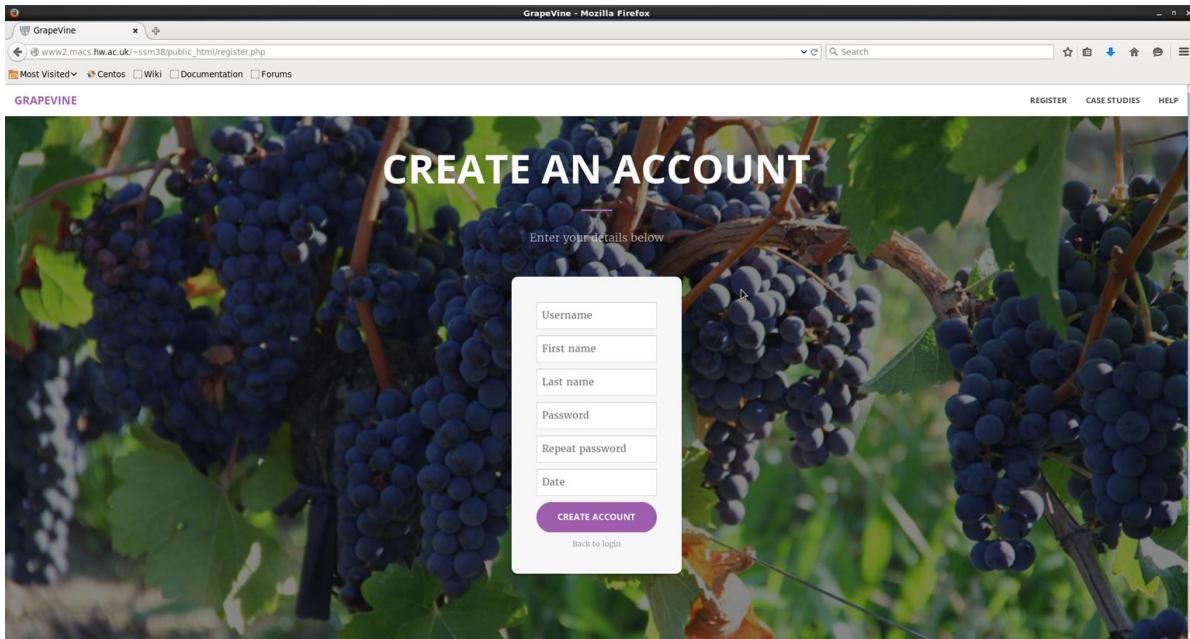
- Creating an account
- Logging in to a user account.
- Editing the qualifications of a user account.
- Visualising a future pathway.
- Contacting administration.

### 2.3 Getting Started



To access the site, click “Get Started” to redirect to the login page. New users can click the “Register” tab on the top right corner of the navigation bar to redirect to the register page and create an account.

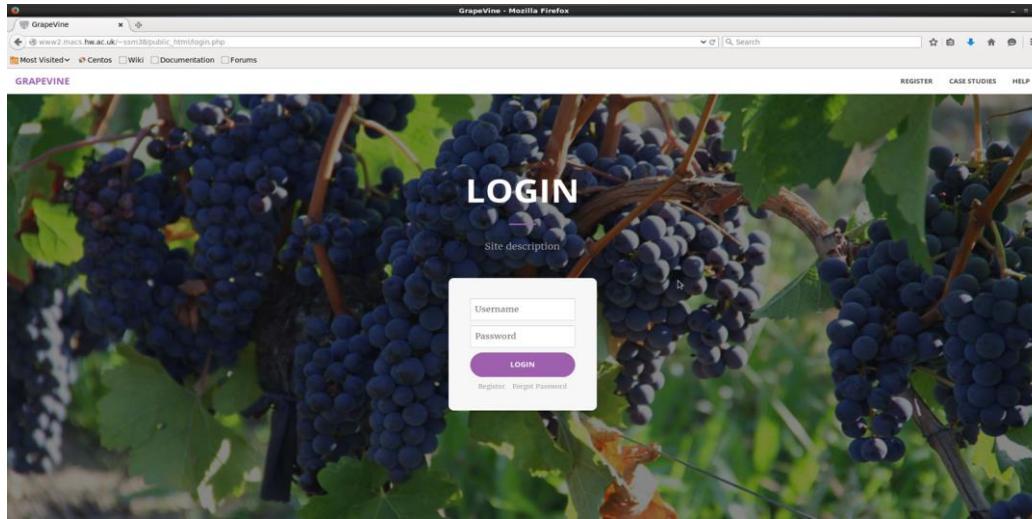
## 2.4 Creating an Account



- Enter your preferred user-name into the user-name input field
- Enter a value into the password input field - *Recommended at least 8 characters long*
- Re-enter into the repeat password input field.
- Enter your date of birth in the Date input field.
- Fill in the fields on the page and click create account.

If an error occurs, then a message shall be displayed. Otherwise your account shall be created and you shall be logged in.

## 2.5 Logging In



Once a user has created an account they are then able to login to their account by entering their unique user-name and password.

If the details are valid and correct this page will redirect the user to their profile page.

## 2.6 Profile Page

Once the user logs in to their account they arrive at their Profile page.

Once a user is on their profile page they can perform several actions.

- Edit qualifications.
- Visualise pathways to goals.
- Logout.
- Get help.

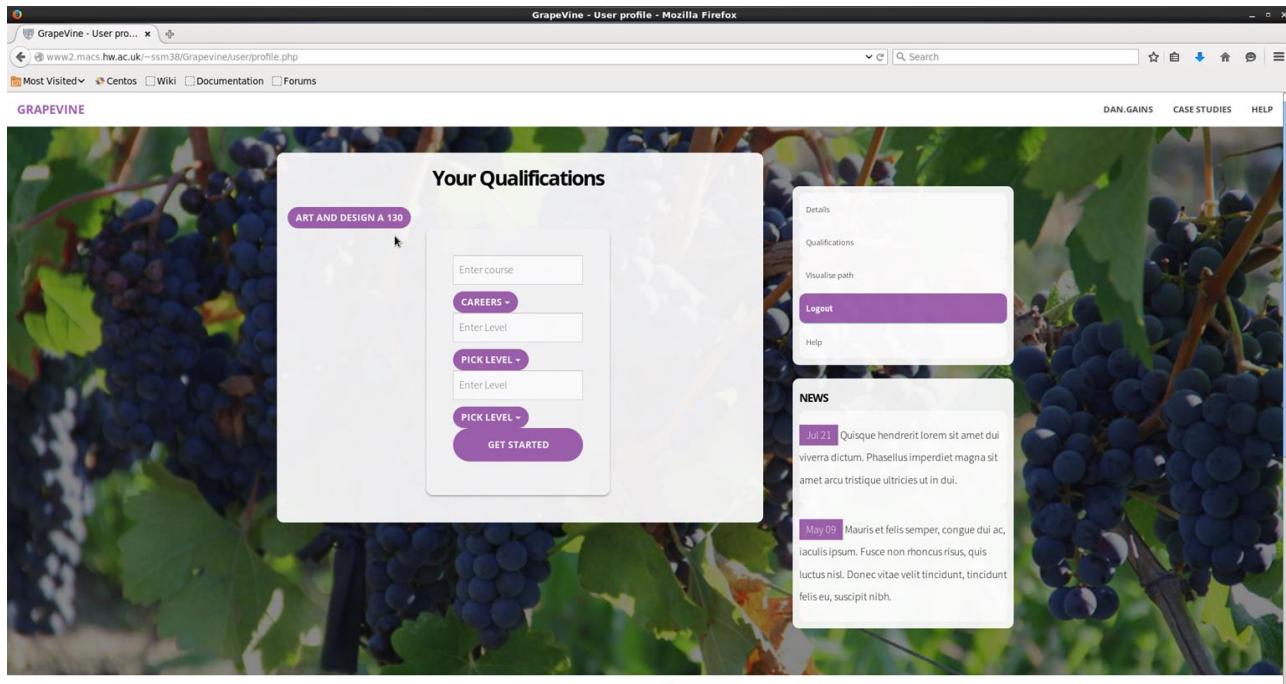
### **2.6.1 Edit Qualifications**

Grape Vine allows users to keep track of their qualifications that they have gained to date. These are saved to your profile and used to find your suitability for jobs and degrees.

Grape Vine currently supports 29 job fields that cover many different disciplines.

Currently users are able to either add or delete qualifications from their account. To do so they must click the “Qualifications” tab on the right hand side.

### **2.6.2 Add Qualification**



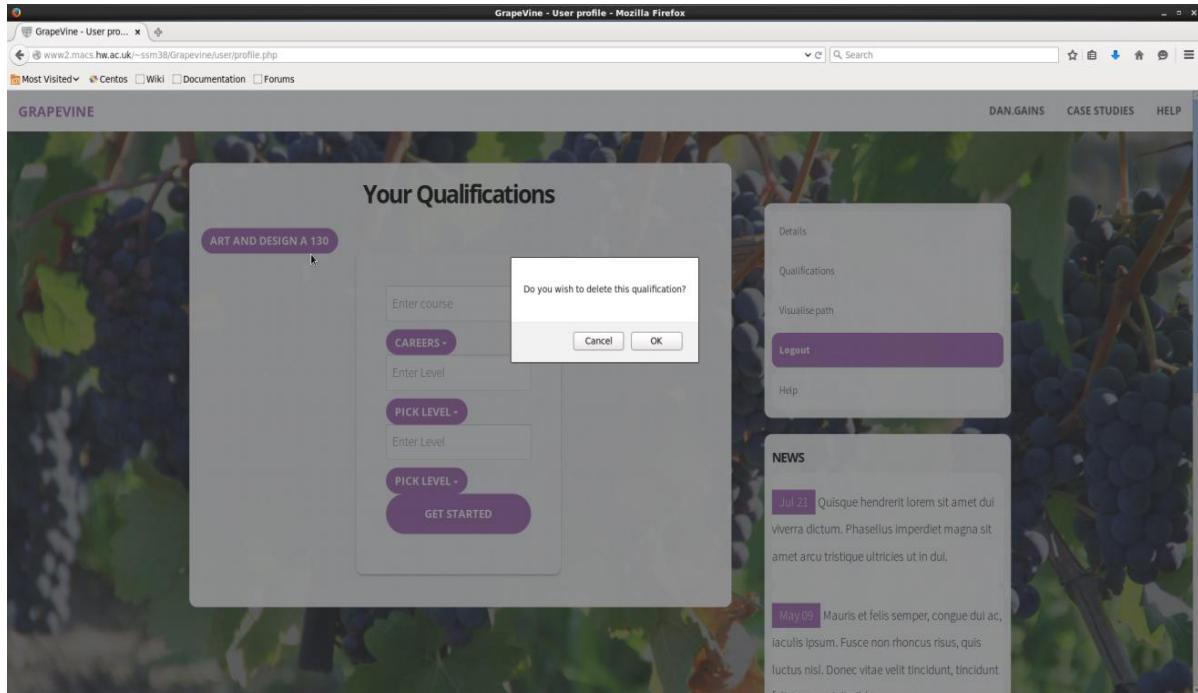
Simply fill in the input fields using the drop-down menus on the form and the press “Get Started.”

*NOTE: any entry not currently in the drop-down menu is not currently supported.*

### 2.6.3 Delete Qualification

If a user has an incorrect qualification, or a no longer relevant qualification, then they may simply delete the value from their account.

To do this simply click on the qualification to be deleted in the “Your Qualifications section of the profile page.”

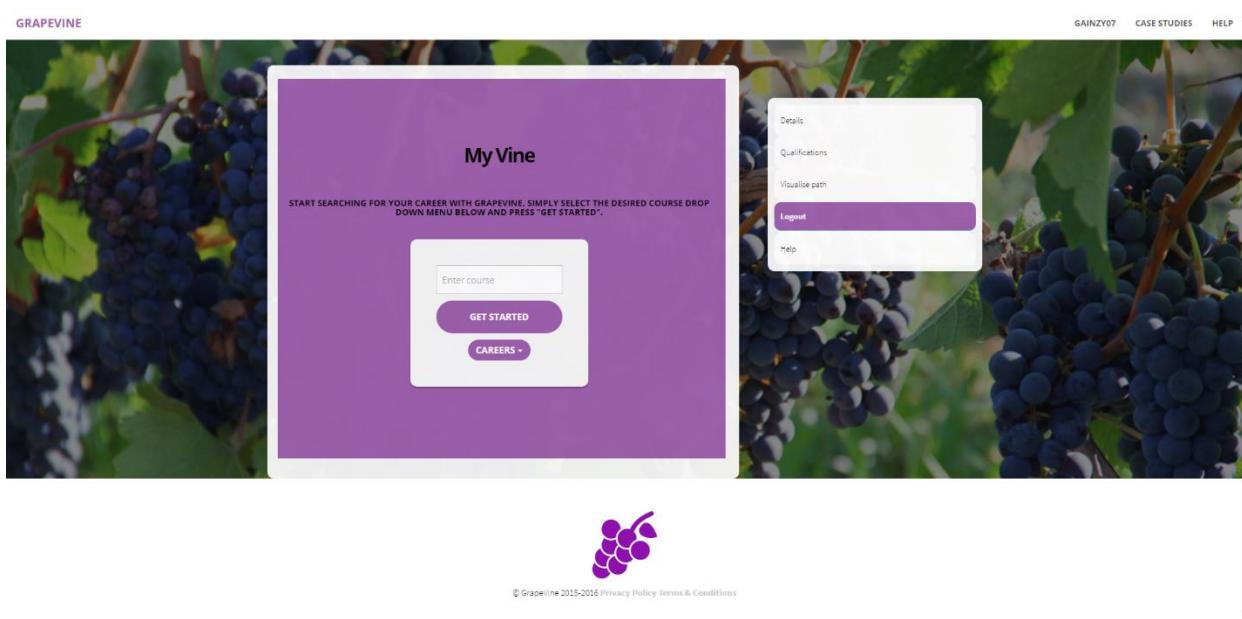


The user will then be presented with the prompt to confirm or reject the deletion of the qualification.

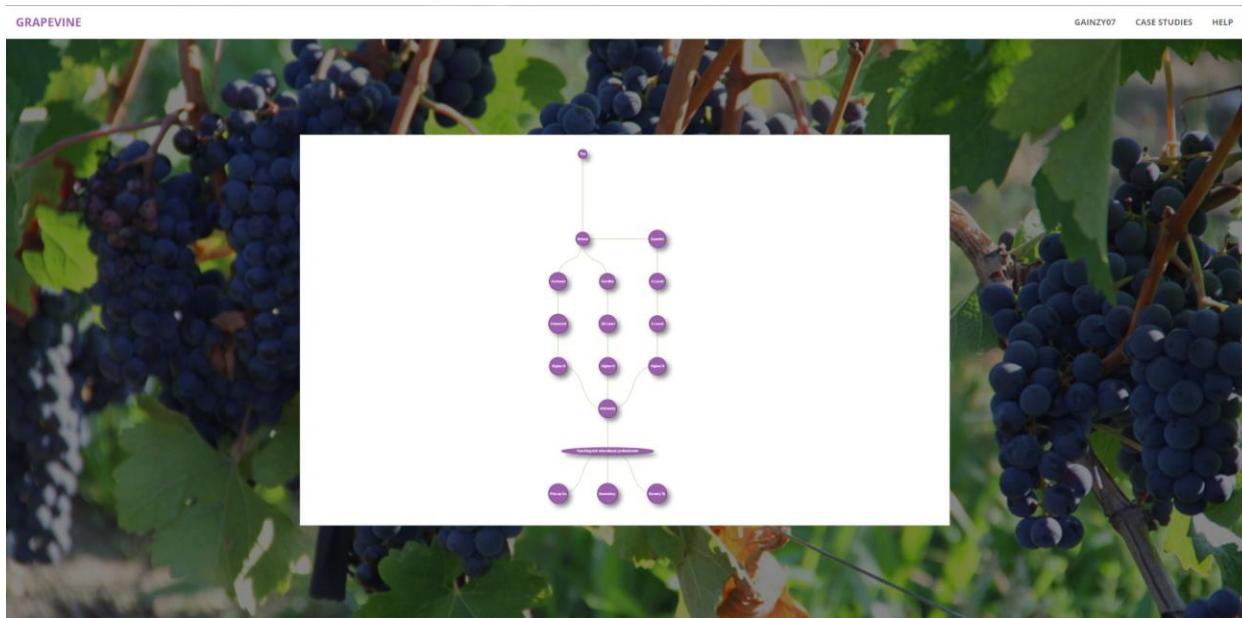
### 2.6.4 Visualising A Future Pathway

Grape Vine allows users to see a suggested path to a goal of their choice. Accessed via the “Visualise path” tab on the right hand side.

First of all, select a career from the careers drop-down menu and click “Get Started”.



The user is then shown a page that visualises their possible routes to their end goal.



## 2.6.5 Navigation

This section contains tips on how to navigate the Grapevine website.

The bar at the top of the page is there to help with navigation. Clicking the 'Grape Vine' icon in the top left will redirect users back to the homepage if they get lost.

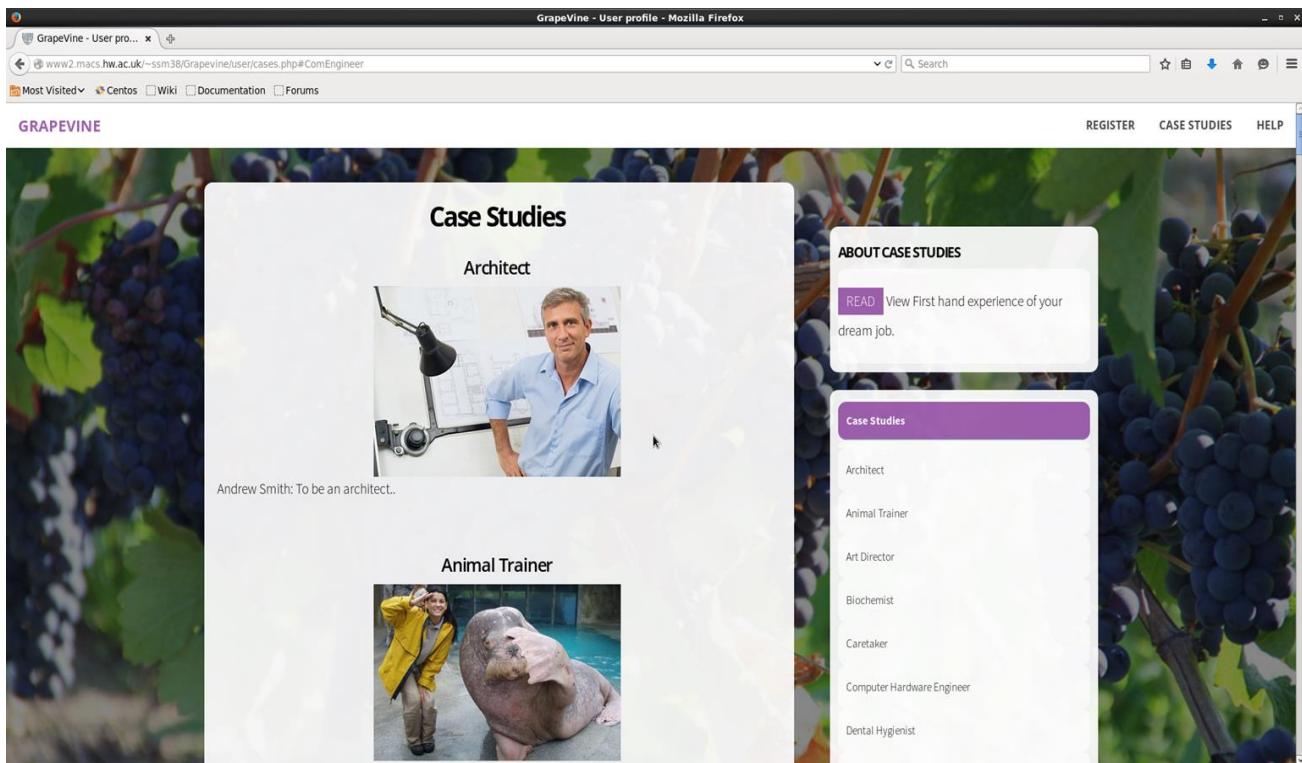
The register icon will take users to the register page that allows them to create an account.

*NOTE: if you are logged in the register icon is replaced by your user-name and will instead take you to your profile page.*

The case study icon will take users to the case studies page where you can view stories of people that work in industry.

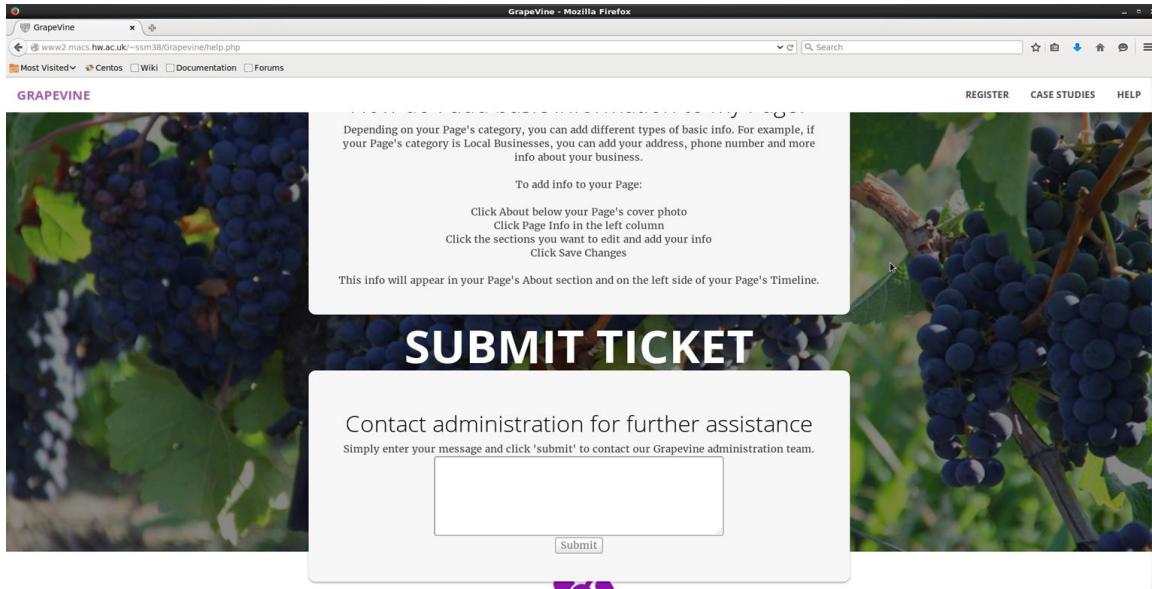
The help icon redirects to the help page, where users can request assistance from the administrative team, if needed.

## 2.7 Case Studies



Accessing the Case Studies page allows users to view occupation examples of their preferred career choice. Clicking the job links on the right hand side will redirect the user to the page location of the chosen occupation. Each occupation example contains a brief description of the job and skills required/acquired for the job.

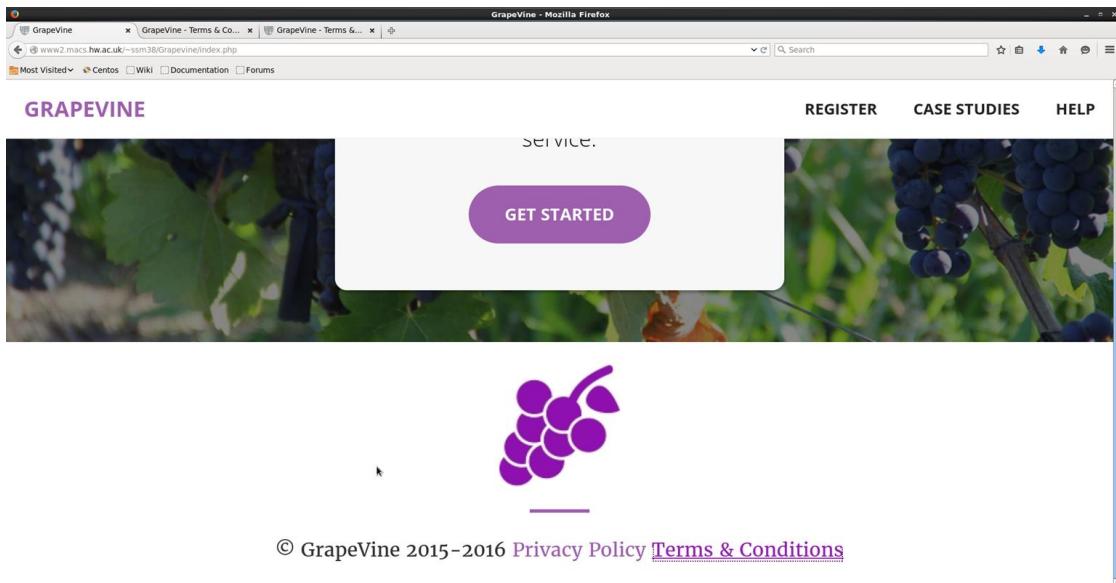
## 2.8 Help Page



Accessing the help page provides users with some basic FAQ. Users can also fill in a form to contact the administrative team if in need of assistance. The message is received, and can be viewed in the administrator dashboard.

## 2.9 Privacy Policy/Terms & Conditions

The privacy policy, as well as the terms and conditions can be found at the footer of each page. Clicking each link redirects to its respective page.



## 2.9.1 Privacy Policy

The screenshot shows a Mozilla Firefox browser window with three tabs open: "GrapeVine - Terms & Conditions - Mozilla Firefox", "GrapeVine - Terms & Co... - Mozilla Firefox", and "GrapeVine - Terms & Co... - Mozilla Firefox". The active tab displays the privacy policy content.

**GrapeVine!**  
**Devoted. Exquisite. Professional.**

### Privacy Policy

This privacy policy has been compiled to better serve those who are concerned with how their 'Personally identifiable information' (PII) is being used online. PII, as used in US privacy law and information security, is information that can be used on its own or with other information to identify, contact, or locate a single person, or to identify an individual in context. Please read our privacy policy carefully to get a clear understanding of how we collect, use, protect or otherwise handle your Personally Identifiable Information in accordance with our website.

**What personal information do we collect from the people that visit our blog, website or app?**  
We do not collect information from visitors of our site.

**When do we collect information?**  
We collect information from you when you or enter information on our site.

**How do we use your information?**  
We may use the information we collect from you when you register, make a purchase, sign up for our newsletter, respond to a survey or marketing communication, surf the website, or use certain other site features in the following ways:

**How do we protect visitor information?**  
Our website is scanned on a regular basis for security holes and known vulnerabilities in order to make your visit to our site as safe as possible.  
We use regular Malware Scanning.

Your personal information is contained behind secured networks and is only accessible by a limited number of persons who have special access rights to such systems, and are required to keep the information confidential. In addition, all sensitive/credit information you supply is encrypted via Secure Socket Layer (SSL) technology.

We implement a variety of security measures when a user enters, submits, or accesses their information to maintain the safety of your personal information.

For your convenience we may store your credit card information longer than 30 days in order to expedite future orders, and to automate the billing process.

**Do we use 'cookies'?**  
Yes. Cookies are small files that a site or its service provider transfers to your computer's hard drive through your Web browser (if you allow) that enables the site's or service provider's systems to recognize your browser and capture and remember certain information. For instance, we use cookies to help us remember and process the items in your shopping cart. They are also used to help us understand your preferences based on previous or current site activity, which enables us to provide you with improved services. We also use cookies to help us compile aggregate data about site traffic and site interaction so that we can offer better site experiences and tools in the future.

## 2.9.2 Terms and Conditions

The screenshot shows a Mozilla Firefox browser window with three tabs open: "GrapeVine - Terms & Conditions - Mozilla Firefox", "GrapeVine - Terms & Co... - Mozilla Firefox", and "GrapeVine - Terms & Co... - Mozilla Firefox". The active tab displays the terms and conditions content.

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### Terms and Conditions ("Terms")

Last updated: January 26, 2016

Please read these Terms and Conditions ("Terms", "Terms and Conditions") carefully before using the <http://www2.macs.hw.ac.uk/~kdb1/GrapeVine/> website (the "Service") operated by GrapeVine ("us", "we", or "our"). Your access to and use of the Service is conditioned on your acceptance of and compliance with these Terms. These Terms apply to all visitors, users and others who access or use the Service. By accessing or using the Service you agree to be bound by these Terms. If you disagree with any part of the terms then you may not access the Service.

**Links To Other Web Sites**  
Our Service may contain links to third-party web sites or services that are not owned or controlled by GrapeVine.

GrapeVine has no control over, and assumes no responsibility for, the content, privacy policies, or practices of any third party web sites or services. You further acknowledge and agree that GrapeVine shall not be responsible or liable, directly or indirectly, for any damage or loss caused or alleged to be caused by or in connection with use of or reliance on any such content, goods or services available on or through any such web sites or services.

We strongly advise you to read the terms and conditions and privacy policies of any third-party web sites or services that you visit.

**Termination**  
We may terminate or suspend access to our Service immediately, without prior notice or liability, for any reason whatsoever, including without limitation if you breach the Terms.

All provisions of the Terms which by their nature should survive termination shall survive termination, including, without limitation, ownership provisions, warranty disclaimers, indemnity and limitations of liability.

**Governing Law**  
These Terms shall be governed and construed in accordance with the laws of United Kingdom, without regard to its conflict of law provisions.

Our failure to enforce any right or provision of these Terms will not be considered a waiver of those rights. If any provision of these Terms is held to be invalid or unenforceable by a court, the remaining provisions of these Terms will remain in effect. These Terms constitute the entire agreement between us regarding our Service, and supersede and replace any prior agreements we might have between us regarding the Service.

**Changes**  
We reserve the right, at our sole discretion, to modify or replace these Terms at any time. If a revision is material we will try to provide at least 30 days notice prior to any new terms taking effect. What constitutes a material change will be determined at our sole discretion.

## 3.0 Maintenance Guide & Installation Guide

### 3.1 Purpose

The purpose of this document is to provide easy to understand instructions that relay how to set up and maintain the GrapeVine career mapping application.

### 3.2 Scope

The instructions contained within this document will relate to setting up and maintaining the database that is used to hold the information that is used by the web application.

### 3.3 Requirements

- 1 24 Hour a Day high speed internet connection.
- 2 A Server

### 3.4 Instructions

Install MySQL as a MySQL database is required in order to run the application. Therefore MySQL must be installed and a database established before the required tables can be created.

Information on how to install MySQL onto you server( 2 ).

<http://dev.mysql.com/doc/refman/5.7/en/installing.html>

Once you have installed the required version of MySQL run the file:

GrapeVineInit()

This shall initialise the tables and relations of the database as well as initialising the admin account that allows you to view and alter the database.

*To learn more about the admin account see Admin Account.*

#### Web Server

To allow external users to see the website you must host the application on a web server.

The GrapeVine application has been developed on the Apache web server and as such it is recommended that you also use the Apache web server.

However while the system should run on other web servers it should be noted that this is not the recommended installation procedure.

To install the apache web server visit:

<http://httpd.apache.org/docs/current/install.html>

Once you have correctly installed and configured the Apache web server you need to copy the front end UI to where apache retrieves web pages from.

To do this select the folder Front End from the installation disk and copy it to where apache shall retrieve

web pages from for your platform.

You have now successfully installed the GrapeVine career mapping application.

### 3.5 Maintenance

Maintenance is essential in order to provide continued accuracy of the system. The UniStats dataset that the system is based on is updated every Wednesday. We recommend updating as frequently as possible, with a minimum update rate being once per year.

### 3.6 Backup

To back up the entire database:

`> mysqldump --all-databases > BackUp.sql`

**Back up recommendations:**

*Rate of Back up:*

We at Grape Vine recommend backing up the database frequently, once per day. This should be done at a time when traffic is usually low to avoid as much disruption as possible.

*Storage:*

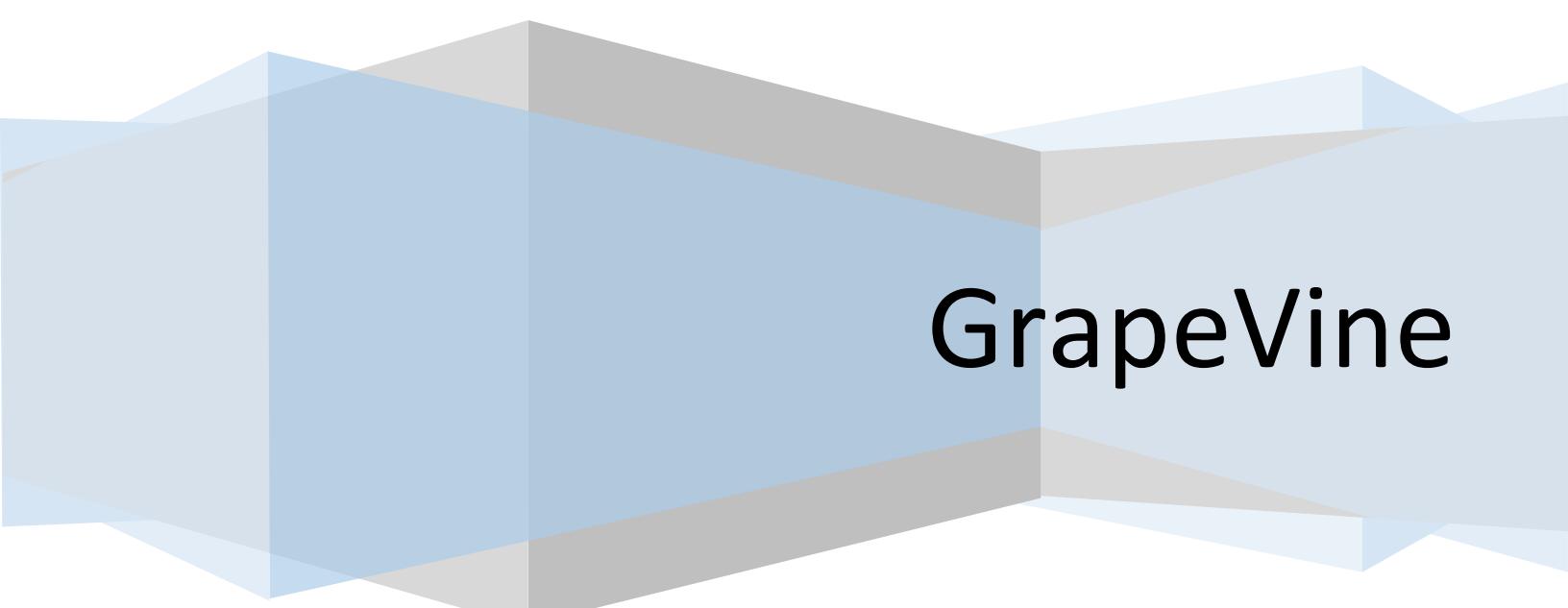
The backup file should be stored on a **separate** machine to the one that is running the Grape Vine system.

Failure to adhere to this advice may result in total loss of the database.

# G. Future Work & Conclusion

SE Group 12

Heriot-Watt University



GrapeVine

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## 1.0 Future Work

As stated earlier on in this report, there were certain functionalities that we were not able to implement, and certain bugs that still remain dormant within the system.

In the future we aim to first fix the bug in which, with certain cases (which we are yet to figure out) when the user logs out of their account, their username still appears in the navigation bar.

We would also like to expand the scope of the system to the rest of the UK as a consequence of the fact that the system only works using all types of Scottish and AS & A2 qualifications. This would be greatly beneficial as it increases our reach to people who have not been able realise their ambition in life yet.

Furthermore, we would like to implement the mentor view for the website. Our vision for this is to create a view in which guidance teachers are able to view and manage the path visualisations of the users underneath them i.e. their students. Naturally, this would be a fantastic tool, especially for use in classrooms. Not only would it provide teachers with a means of helping students to decide what they want to do with their future, thus making their job easier, but it would also allow said teacher to cater to their students needs by whatever means necessary with the use of this knowledge.

Another thing we would like to update is the use case studies page. Currently it doesn't link to the pathway visualisation of that use cases career. With this additional functionality, the user would be able to gain more of an idea of what they have to do if they want to pursue that particular career.

Finally, we would like to be able to make our system available as open source software to the open source community. There are various reasons as to why we want to do this:

- **Security** - any bugs that may have remained unnoticed during development can be found, and fixed immediately. This is due to the fact we had a limited number of developers and a limited amount of time, whereas with the help of a worldwide community these factors don't have to be taken into consideration.
- **Support** - with the various communities surrounding each bit of open source software, there is no shortage of support. Whether it be in the form of in-depth documentation, forums, mailing-groups, social media groups or FAQs, it is never hard for the user to find an answer to the problem they are stuck on.
- **Flexibility & Customisability** - this would allow other companies or users to take the software and tailor it to their needs, thus making the system even more beneficial to other users and creating a larger reach.
- **Quality** - above all else, making the system open source would exponentially increase the quality of our product. The reason for this is that a whole community is a lot better than a limited handful of developers under time constraints.

## 2.0 Conclusion

Overall, we believe that we implemented a system that meets the objectives we initially set for ourselves, and meets the requirements originally specified by Lockheed Martin.

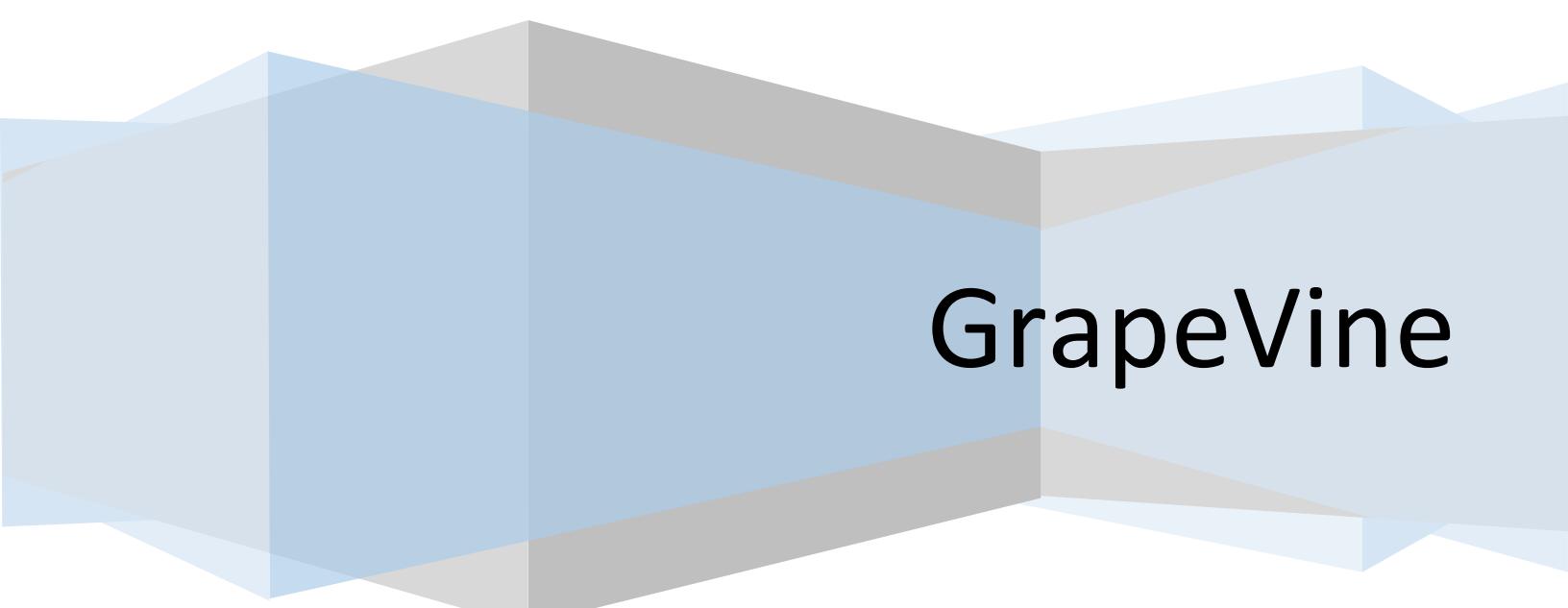
We believe this because the system allows the user to not only realise their ambitions in life if they haven't already, but also, as a consequence it helps these people to find out more about themselves as a

person. Also, due to the robustness and security of the system the user can use the system to certain level of comfort.

# H. Appendix

SE Group 12

Heriot-Watt University



GrapeVine

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## 1.0 Project Diary

**Meeting 1 – 29<sup>th</sup> September 2015, 13:00, EM G38**

**Members Present:**

Jessica Chen-Burger	<i>Manager</i>
Sam McNaughton	<i>Technical Manager</i>
Kevin Brown	<i>Organisational Manager</i>
Harry Skehin	<i>Liaison</i>
Daniel Gains	<i>Reporter</i>
Craig Dodds	
Harris Cannas	
Maciek Mierzwa	

**Members not present:**

Jason Cobain

**Notes:**

- Need to scope the project.
- Start thinking about/elicit requirements.
- Decide on what database to use.
- Meeting with Manager every Tuesday 10:15-11:15.
- Tools:
  - Dropbox for files and documentation.
  - Github for code?
  - Google Calendar for meetings?
  - Balsamiq for mock-up?

**Meeting adjourned at 13:10.**

## Meeting 2 - 6<sup>th</sup> October 2015, 10:15, EM 158

### Members Present:

Jessica Chen-Burger	<i>Manager</i>
Sam McNaughton	<i>Technical Manager</i>
Kevin Brown	<i>Organisational Manager</i>
Harry Skehin	<i>Liaison</i>
Daniel Gains	<i>Reporter</i>
Craig Dodds	
Harris Cannas	
Jason Cobain	

### Members not present:

Maciek Mierzwa

### Reading of Agenda:

*Motion:* To approve the agenda for 06/10/15.

*Vote:* Motion carried.

*Resolved:* Agenda approved without modification.

### Approval of Previous Meetings Minutes:

*Motion:* To approve the minutes for 29/09/15.

*Vote:* Motion carried.

*Resolved:* Minutes approved without modification.

### Notes:

- Everyone needs to check the group chat every day in case of any missed updates.
- If you are going to be absent from a meeting, notify everyone with a reason why in the group chat.
- Harry needs to e-mail Jessica updates about meeting times/locations with enough warning.
- Sam has done a rough layout of our database with regards to primary/foreign keys etc. Also a rough mock-up of the website has been too.
- A quick draft of the requirements needs to be done and Harry needs to e-mail them to Jessica and Helen for feedback.
- Need to start thinking about our methodologies for modelling the requirements e.g. class diagrams, process models etc.
- Need to discuss what databases we are going to use from the list in the specification.
- Use existing tools, software and libraries to a certain extent; however be careful with existing packages.
- Craig has set up Google Calendars.
- Everyone has set up a Trello account to help with the organisation of the project.

**Meeting adjourned at 10:35.**

**Meeting 3 – 20<sup>th</sup> October 2015, 10:15, EM 1.58****Members Present:**

Jessica Chen-Burger	<i>Manager</i>
Sam McNaughton	<i>Technical Manager</i>
Daniel Gains	<i>Reporter</i>
Jason Cobain	
Craig Dodds	

**Members not present:**

Kevin Brown	<i>Organisational Manager</i>
Harry Skehin	<i>Liaison</i>
Maciek Mierzwa	
Haris Cannas	

**Reading of Agenda:**

*Motion:* To approve the agenda for 20/10/15

*Vote:* Motion carried.

*Resolved:* Agenda approved without modification.

**Approval of Previous Meetings Minutes:**

*Motion:* To approve the minutes for 06/10/15

*Vote:* Motion carried.

*Resolved:* Minutes approved without modification.

**Notes:**

- Decided on the group name to be GrapeVine.
- Sam will upload his mock-up onto Dropbox, whilst Maciek & Harris will make their own. These ideas will then be brought together. Also make sure there are plenty of print screens for the mock-up; similar to a storyboard.
- Started to discuss the technical side of the project:
  - How will the path be drawn? Trees, tabular? How will time be implemented into the path?
  - Different colour for different nodes/paths depending on the users past and future accomplishments.
  - Use existing packages but modify them so that we're not having to start from scratch.
  - Possible CV generator and file uploader functionalities.
- We have decided to use MySQL for the Database.
- Need to concretely decide between PHP, Python and JavaScript.
- We need at least one member of the group to be dedicated to **testing**.
- Next group meet up will be on Thursday 14:15 during what would normally the lecture.
- Next meeting with Jessica will be next Tuesday 27/10/15 at 10:15 again. **EVERYONE MUST HAVE ROUGH DRAFTS OF THEIR ASSIGNED TASKS READY FOR THIS MEETING.** This is in order to give us a solid 2 weeks to round off Stage 1 of the project.

**Meeting adjourned at 11:05.**

**Meeting 4 – 27<sup>th</sup> October 2015, 10:15, EM 1.58****Members Present**

Jessica Chen-Burger	<i>Manager</i>
Kevin Brown	<i>Organisational Manager</i>
Sam McNaughton	<i>Technical Manager</i>
Daniel Gains	<i>Reporter</i>
Harry Skehin	<i>Liaison</i>
Jason Cobain	
Craig Dodds	
Maciek Mierzwa	
Harris Cannas	

**Members not present:**

N/A

**Reading of Agenda:***Motion:* To approve the agenda for 27/10/15.*Vote:* Motion carried.*Resolved:* Agenda approved without modification.**Approval of Previous Meetings Minutes:***Motion:* To approve the minutes for 20/10/15.*Vote:* Motion carried.*Resolved:* Minutes approved without modification.**Notes:**

- Need to look at data resources and make a decision on which ones to use.
- Possibility of starting the Marketing Plan now?
- Mock-ups need to be refined by a process of each member of the group putting their thoughts forward on the current mock-up and subsequently being modified by Harris.
- Need to decide on the system architecture.
- We have decided to use PHP, HTML, CSS and YII for software.
- Everyone needs to have their documents uploaded onto Dropbox by this Sunday 01/11/15. This is so that Harry can email Jessica all the documents on Monday morning in order to get feedback by the meeting on Tuesday morning.
- There will be a meeting on Thursday during the lecture slot at 14:15 for the group to get together and work.
- The next manager meeting with Jessica will be next Tuesday 03/11/15 at 12:15 again.  
**EVERYONE MUST MAKE SURE THEIR DOCUMENTS ARE ON DROPBOX BY SUNDAY SO THAT WE CAN GET THE FEEDBACK FROM JESSICA BY TUESDAY.**

**Meeting adjourned at 10:55.**

**Meeting 5 – 3rd December 2015, 11:15, EM G.45****Members Present**

Jessica Chen-Burger	<i>Manager</i>
Sam McNaughton	<i>Technical Manager</i>
Daniel Gains	<i>Reporter</i>
Harry Skehin	<i>Liaison</i>
Craig Dodds	
Maciek Mierzwa	
Harris Cannas	

**Members not present:**

Kevin Brown	<i>Organisational Manager</i>
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**Reading of Agenda:**

*Motion:* To approve the agenda for 03/12/15.

*Vote:* Motion carried.

*Resolved:* Agenda approved without modification.

**Approval of Previous Meetings Minutes:**

*Motion:* To approve the minutes for 27/10/15.

*Vote:* Motion carried.

*Resolved:* Minutes approved without modification.

**Notes:**

- General discussion of plans over the holidays and what needs to be done once we all return.
- Daniel will carry out the database unit testing over the holidays due to no time over the exam period.
- Register and login page implementation pushed back until straight after the holidays and will be a part of sprint 2 instead.
- Make a start on progress report for stage 2 - everyone.

**Meeting adjourned at 11:30.**

**Meeting 6 – 20<sup>th</sup> January 2016, 10:15, EM G.45****Members Present**

Jessica Chen-Burger	<i>Manager</i>
Sam McNaughton	<i>Technical Manager</i>
Daniel Gains	<i>Reporter</i>
Harry Skehin	<i>Liaison</i>
Craig Dodds	
Maciek Mierzwa	
Harris Cannas	

**Members not present:**

Kevin Brown	<i>Organisational Manager</i>
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**Reading of Agenda:**

*Motion:* To approve the agenda for 20/01/16.

*Vote:* Motion carried.

*Resolved:* Agenda approved without modification.

**Approval of Previous Meetings Minutes:**

*Motion:* To approve the minutes for 03/12/15.

*Vote:* Motion carried.

*Resolved:* Minutes approved without modification.

**Notes:**

- General discussion of what needs to be done for the demo and documentation next week.
- Register page implemented last week as part of sprint 2.
- Sprint 2 to be completed:
  - login page: Sam, Craig, and Dan.
  - admin page: Maciek and Haris.
- Progress report: Daniel will assign sections to everyone in order to get first drafts completed for feedback from Jessica. This is due to the fact there wasn't a start made on the report over the holidays.
- Once feedback is received final drafts to be put together for the deadline.

**Meeting adjourned at 10:55.**

**Meeting 7 – 29<sup>th</sup> March 2016, 12:15, EM G.44****Members Present**

Jessica Chen-Burger	<i>Manager</i>
Sam McNaughton	<i>Technical Manager</i>
Daniel Gains	<i>Reporter</i>
Harry Skehin	<i>Liaison</i>
Craig Dodds	
Maciek Mierzwa	
Harris Cannas	

**Members not present:**

Kevin Brown	<i>Organisational Manager</i>
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**Reading of Agenda:**

*Motion:* To approve the agenda for 29/03/16.

*Vote:* Motion carried.

*Resolved:* Agenda approved without modification.

**Approval of Previous Meetings Minutes:**

*Motion:* To approve the minutes for 20/01/16.

*Vote:* Motion carried.

*Resolved:* Minutes approved without modification.

**Notes:**

- All the following is with regards to the first draft of the final documentation:
- Strong introduction explaining our objectives for the system.
- Include the 'grander picture' i.e. how it can change people's lives.
- Problem domain: people not knowing what they want in life... this is the system for them.
- Strong conclusion explaining how we met our objectives; comfort in the security of the system.
- Paper walkthrough with screenshots of the system.
- Re-use components from previous documentation and edit where necessary instead of doing it all from scratch.

**Meeting adjourned at 12:50.**

## 2.0 Original Plan

### 2.1 Stage 1 – The Bid

NAME	BEGIN DATE	END DATE	TEAM MEMBER	OUTLINE NUMBER
GROUP ASSIGNMENT	18/09/15	18/09/15	ALL	1
COMMUNICATIONS SET UP	21/09/15	22/09/15	ALL	2
ROLE ALLOCATION	24/09/15	24/09/15	ALL	3
GROUP FAMILIARIZING	24/09/15	24/09/15	ALL	4
MENTOR MEETING (1)	29/09/15	29/09/15	HS/JC/DG/SMCN/CD/HC/KB	5
MEETING NOTES	29/09/15	29/09/15	DG	6
DECISIONS IDENTIFICATION	01/10/15	02/10/15	ALL	7
REQUIREMENT OVERVIEW	05/10/15	07/10/15	ALL	8
GENERAL REQUIREMENTS	08/10/15	09/10/15	ALL	9
MENTOR MEETING (2)	06/10/15	06/10/15	HS/JC/DG/SMCN/CD/HC/KB	10
MEETING NOTES	07/10/15	07/10/15	DG	11

NAME	BEGIN DATE	END DATE	TEAM MEMEBER	OUTLINE NUMBER
REQUIREMENTS	6/10/15	27/10/15	ALL	12
NON-FUNCTIONAL	6/10/15	13/10/15	ALL	12.1

Requirements				
Functional Requirements	6/10/15	13/10/15	All	12.2

Name	Begin Date	End Date	Team Member	Outline Number
Project Plan	13/10/15	24/10/15	HS/DG	13
Work Breakdown Structure	13/10/15	20/10/15	HS/DG	13.1
Task Allocation	13/10/15	14/10/15	KB	13.2
Gantt Chart	22/10/15	24/10/15	HS/DG	13.3

Name	Begin Date	End Date	Team Members	Outline Number
Draft Introduction	13/10/15	20/10/15	SMCN /CD	14
Draft Constraints	13/10/15	20/10/15	HS/DG	15
Draft Risk Analysis	13/10/15	20/10/15	KB	16
Draft Mock-up Evaluation	13/10/15	20/10/15	HC/MM	17
Draft Costing	13/10/15	20/10/15	JC	18
Draft UML	13/10/15	20/10/15	SMCN	19
Decisions Identification	18/10/15	29/10/15	All	20
Decision Making	19/10/15	20/10/15	All	21

<b>NAME</b>	<b>BEGIN DATE</b>	<b>END DATE</b>	<b>TEAM MEMBERS</b>	<b>OUTLINE NUMBER</b>
MENTOR MEETING (3)	20/10/15	20/10/15	DG/JC/CD/SMCN	22
MEETING NOTES	20/10/15	20/10/15	DG	23

<b>NAME</b>	<b>BEGIN DATE</b>	<b>END DATE</b>	<b>TEAM MEMBERS</b>	<b>OUTLINE NUMBER</b>
<b>DOCUMENTS REVISION</b>	20/10/15	27/10/15	ALL	24
REVISED FUNCTIONAL REQUIREMENTS	20/10/15	24/10/15	CD	24.1
REVISED NON-FUNCTIONAL REQUIREMENTS	20/10/15	24/10/15	SMCN	24.2
REVISED UML AND USE CASES	20/10/15	24/10/15	CD	24.3
REVISED EVALUATION MOCK UP	20/10/15	27/10/15	MM/HC	24.4
REVISED PROJECT PLAN	20/10/15	27/10/15	HS/DG	24.5
REVISED RISK	20/10/15	24/10/15	JC	24.6
REVISED COSTING	20/10/15	24/10/15	KB	24.7

<b>NAME</b>	<b>BEGIN DATE</b>	<b>END DATE</b>	<b>TEAM MEMBERS</b>	<b>OUTLINE NUMBER</b>
MENTOR MEETING (4)	27/10/15	27/10/15	ALL	25

MEETING NOTES	27/10/15	27/10/15	DG	26
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FINALISATION	1/11/15	5/11/15	ALL	27
PROOF READING	1/11/15	2/11/15	ALL	27.1
REVISED GANTT CHART	1/11/15	4/10/15	HS/DG	17.2
DOCUMENT ADJUSTMENTS	3/11/15	5/11/15	ALL	27.3

NAME	BEGIN DATE	END DATE	TEAM MEMBER	OUTLINE NUMBER
PART 1 SUBMISSION	6/11/15	6/11/15	ALL	28

## 2.2 Stage 2 - Sprints 1-3

NAME	BEGIN DATE	END DATE	TEAM MEMBER	OUTLINE NUMBER
SPRINT 1	07/11/15	21/11/15	ALL	27
DATABASE INTIALISATION	07/11/15	09/11/15	CD/DG	27.1
INITIALISED DATABASE	10/11/15	10/11/15	CD/DG	27.2
SERVER SET-UP	11/11/15	13/11/15	ALL	27.3
SERVER-	14/11/15	14/11/15	ALL	27.4

WORKING				
UNIT TESTING	19/11/15	21/11/15	ALL	27.5

NAME	BEGIN DATE	END DATE	TEAM MEMBER	OUTLINE NUMBER
SPRINT 2	22/11/15	05/12/15	ALL	28
REGISTER	22/11/15	24/11/15	HC/MM	28.1
USER LOGIN	25/11/15	26/11/15	CD/DG	28.2
ADMIN LOGIN	27/11/15	28/11/15	CD/DG	28.3
GUIDANCE TEACHER LOGIN	29/11/15	30/11/15	CD/DG	28.4
VISITOR LOGIN	01/12/15	02/12/15	CD/DG	28.5
UNIT TESTING	03/12/15	05/12/15	ALL	28.6

NAME	BEGIN DATE	END DATE	TEAM MEMBER	OUTLINE NUMBER
SPRINT 3	11/01/16	21/01/16	ALL	29
VIEW PROFILE	11/01/16	12/01/16	MM/HC/SMCN	29.1
EDIT PROFILE	13/01/16	14/01/16	MM/HC/SMCN	29.2
DELETE PROFILE	15/01/16	16/01/16	MM/HC/SMCN	29.3
SECURITY	17/01/16	19/01/15	DG/CD/HS/SMCN	29.4
UNIT TESTING	20/01/16	21/01/16	ALL	29.5

### 2.3 Stage 2 – Documentation

NAME	BEGIN DATE	END DATE	TEAM MEMBER	OUTLINE NUMBER
DOCUMENTATION	22/01/16	29/01/16	ALL	30
WEBSITE	22/01/16	27/01/16	KB/JC	30.1
PROGRESS REPORT	22/01/16	27/01/16	ALL	30.2
DEMO	28/01/16	29/01/16	ALL	30.3

### 2.4 Stage 3 – Sprints 4-6

NAME	BEGIN DATE	END DATE	TEAM MEMBER	OUTLINE NUMBER
SPRINT 4	01/02/16	15/02/16	ALL	31
ALL USER VIEWS	01/02/16	08/02/16	CD/DG/HS	31.1
VIEW CASE STUDIES	09/02/16	10/02/16	MM	31.2
VIEW CAREER REQUIREMENTS	11/02/16	12/02/16	HC	31.3
UNIT TESTING	13/02/16	15/02/16	ALL	31.4

NAME	BEGIN DATE	END DATE	TEAM MEMBER	OUTLINE NUMBER
SPRINT 5	16/02/16	29/02/16	ALL	32
USER "TO DATE" INPUT	16/02/16	17/02/16	HC/JC	32.1
POTENTIAL	18/02/16	19/02/16	MM/HS	32.2

Future Pathways				
Pathway Visualisation	20/02/16	21/02/16	MM/HC/KB/SMCN	32.3
Future Path Cost/Duration	22/02/16	23/02/16	CD	32.4
Available Jobs	24/02/16	25/02/16	DG	32.5
Future Career Progression & Potential Earnings	26/02/16	27/02/16	MM/HS	32.6
Unit Testing	28/02/16	29/02/16	All	32.7

NAME	BEGIN DATE	END DATE	TEAM MEMBER	OUTLINE NUMBER
Sprint 6	01/03/16	14/03/16	All	33
User Location Constraints	01/03/16	02/03/16	DG/CD	33.1
Decision Making Support	03/03/16	05/03/16	SMCN/HC	33.2
Further Info/Discussion	06/03/16	08/03/16	HC/MM	33.3
User Questions Support	09/03/16	11/03/16	DG/HS	33.4
Unit Testing	12/03/16	14/03/16	All	33.5

## 2.5 Stage 3 - Final Documentation

NAME	BEGIN DATE	END DATE	TEAM MEMBER	OUTLINE NUMBER
Final Documentation	15/03/16	01/04/16	All	34

MARKETING STRATEGY	15/03/16	17/03/16	KB/JC	34.1
PRODUCT EVALUATION	18/03/16	19/03/16	HS/CD/SMCN	34.2
FINAL USABILITY STUDY	20/03/16	22/03/16	DG/HC/JC	34.3
IMPLEMENTATION REPORT	23/03/16	25/03/16	SMCN/DG/HS	34.4
APPLICATION DESIGN	26/03/16	28/03/16	ALL	34.5
PROOF READING	29/03/16	30/03/16	ALL	34.6
DOCUMENT ADJUSTMENTS	31/03/16	01/04/16	ALL	34.7