

BRUNEL BUDDY UP

E-Business Systems | EE3079

An exclusive car sharing service for Brunel students and staff

0910329 | 0913529 | 0924749 | 0909719 | 0919688

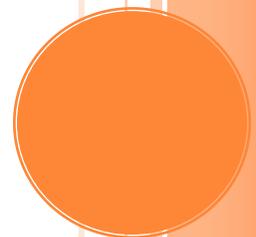


TABLE OF CONTENTS

PAGE

1. INTRODUCTION <i>(0919688, 0910329, 0909719, 0924744, 0913529)</i>	<i>1</i>
2. BACKGROUND <i>(0913529)</i>	<i>1 - 2</i>
3. MARKET ANALYSIS <i>(0924749, 0913529)</i>	<i>3 - 4</i>
4. CASE STUDY 1: GOCARSHARE.COM	<i>4 - 5</i>
4.1. Background <i>(0924749)</i>	
4.2. Business Model <i>(0924749)</i>	
4.3. E-processes & Value Chain <i>(0919688)</i>	
5. CASE STUDY 2: LIFTSHARE.COM	<i>6 - 7</i>
5.1. Background <i>(0913529)</i>	
5.2. Business Model <i>(0913529)</i>	
5.3. E-processes & Value Chain <i>(0909719)</i>	
6. BRUNEL BUDDY UP	<i>7 - 17</i>
6.1. Business Model <i>(0913529, 0924749)</i>	
6.2. Value added e-processes <i>(0913529, 0924749)</i>	
6.3. Technical Analysis <i>(0910329)</i>	
6.4. Commercial Processes <i>(0913529)</i>	
6.5. Value Chain Integration <i>(0913529, 0924749)</i>	
7. CONCLUSION <i>(0910329, 0913529, 0924749)</i>	<i>17 - 18</i>
8. BIBLIOGRAPHY	<i>19</i>
9. APPENDICES	<i>20 - 36</i>
9.1. Appendix 1: Ride with Hitler	
9.2. Appendix 2: Research Survey <i>(0924749, 0913529)</i>	
9.3. Appendix 3: Survey Response Pie charts <i>(0919688, 0909719)</i>	
9.4. Appendix 4: Visual Analysis of e-processes <i>(0910329)</i>	
9.5. Appendix 5: Web files <i>(0910329)</i>	

1. INTRODUCTION

As fuel and travel expenses are constantly on the rise annually, more and more people, especially students are financially being struck hard. Taking the current situation of student fees almost tripling from £3000 to £9000, students are struggling to maintain themselves whilst they obtain their qualifications.

Also, London council statistics show that 1.1 million people enter London each day during the morning peak hours between 7am – 10am and the average journey time for commuters in London is 43 minutes. Taking all of this information into consideration inspired the conception of Brunel Buddy Up.

Brunel Buddy Up is an initiative, as well as an online business that utilizes the concept of car sharing by bringing students studying at the same University who use a car as a method of transport, and asking them to in hire out their spare seats. This will not only benefit the car driver who will get a fee for each person whom they share their car with, but also the passenger by cutting down congestion and enabling a more comfortable journey. It will also benefit the environment by reducing the number of cars and hence reducing the carbon footprint.

2. BACKGROUND

Car sharing is the sharing of car journeys so that more than one person travels in a car. Drivers and passengers offer and search for journeys through a number of different mediums, such as; public websites, car sharing agencies and pickup points. After finding a match, individuals will contact each other to arrange any details for the journey, and then meet and carry out their shared car journey as planned.

There are many benefits of car sharing. For example, by having more people using one vehicle, car sharing reduces each person's travel costs as well as the stress of driving. Car sharing is also seen as a more environmentally friendly and sustainable way to travel as sharing journeys reduces carbon emissions by utilising fewer vehicles.

The history of car sharing can be traced back to World War 2 where it was initially used as a rationing tactic. The poster in **Appendix 1** was used as a tool to promote car sharing in order to ration gasoline in the United States.

Car sharing has occurred informally for many years, but the possibility of it being a possible business venture first rose to prominence in the 1970s. The car sharing industry emerged

predominantly in Europe and America and was considered as a viable industry. Since research into car emissions and the effects of cars on the environment began, authorities around the world have been implementing policies and employing new measures to cut car use. In more recent years, with the inception of the internet and mobile phones facilitating its expansion and the rising costs of fuel, the number of car sharing companies has grown due to the implementation of much more easier and user friendly methods of finding people who share a similar car journeys.

3. MARKET ANALYSIS

We conducted a survey to establish students' views on their current travel means as well as their thoughts on car sharing. This was to find out how relevant the industry of our car sharing business would be to students and their level of satisfaction with their current mode of travel.

We surveyed 81 Brunel students and found:

33% of students travel to university every day and 57% come in between 3-5 days. This shows the high number of students who come into university on a regular basis who could benefit from a car sharing service.

Out of 27% of respondents who use private transport, i.e. their own car, 45% spend between £10-20 on petrol and 41% spend £20+. Also, 39% of respondents who use public transport pay between £20-30 for travel and 35% pay between £10-20. This shows the high level of costs students spend on travel on a weekly basis, which can be reduced by using a car sharing service.

100% of all private transport using respondents thought parking permits at the University are too expensive. This will be used to build our value chain by providing reduced/free parking incentives through using a car sharing service.

43% of public transport users said they "rarely" get seats and 10% said "never". Also, 53% said trains are "always" delayed and 39% stated they were "often" delayed. This shows the high level of discontent amongst public transport users, which allows us to evaluate the low level of customer satisfaction, which can increase using a car sharing scheme.

Out of the car sharing schemes listed, 18% had heard of Liftshare.com and 13% had heard of Gocarshare.com, whilst 65% had not heard of car sharing at all. This allows us to identify Liftshare and Gocarshare as the most popular and well known car sharing schemes, enabling us to identify our biggest competitors to further aid in our market research.

70% of all respondents felt a car sharing service for the University would be a good idea whereas 30% disagreed. This shows there is a high level of interest in the service which shows that our business idea is very much relevant and applicable to Brunel students. Also, although 30% thought it

would not be a good idea, 65% of respondents had not even heard of car sharing which could possibly correlate to the per cent of people who were not interested.

Please see **Appendix 2** for the Research survey and **Appendix 3** for a chart analysis of all survey question responses.

4. CASE STUDY 1: GOCARSHARE.COM

4.1. *Background*

GoCarshare.com is “an online market place for the empty car seats” and was shortlisted for the European Best Environmental Start-up Award in 2010. The website has already partnered with Hay festival of Literature (May 26 – June 5 2011) and several other musical festival to reduce the number of cars on site.

4.2. *Business Model*

Go carshare.com is as a service provider which allows users to find drivers who will be travelling in the same direction and willing to share the car journey.

Gocarshare.com operates on an online collaborative platform business model. This is when companies form permanent or temporary alliance to plan, control and reduce procurement cost. Gocarshare.com brings different consumers with similar interests; going to the same destination together, reducing the travelling cost of both the driver and the passenger.

Gocarshare.com is built around the social networking site Facebook and so users are able to interact with a network of people, such as friends of friends which allows people to feel more comfortable in choosing to chare share as they often having mutual friends with the driver of the car they are to share with. This allows users to check other GoCarShare members’ profiles before making a decision and also helps promote the site through facebook advertising and referrals.

GoCarshare is easy to use and free to join which allows more users to penetrate the market. It currently does not have a source of income as it is a relatively new company which is building a high volume of users to be able to match passengers and drivers. However, it intends to use targeted advertising to reach its customer base through those who have signed up. Targeted marketing is when a product or service is specifically directed at a particular audience based on various features such as demographics and observed behaviour, in this case, its users. Another plan for the business is to get payment from the passenger to the driver through the website, thus allowing the company to take a small transaction fee.

4.3. *E-processes and Value Chain*

The e-processes utilised by GoCarShare include a vast array of integrated support, such as:

- Live Support Online which provides instant support to customers and thus adds value by building a positive rapport between the business to consumer.
- FAQ allow customers to easily find answers to commonly asked questions which also saves the company time and effort in responding to each individual queries.
- Blogs allow the company to retrieve feedback from members, thus aiding on the monitoring of customer satisfaction.
- Contact via the GoCarShare mail address and community-powered support web server, which is a customer community software platform for technical support allows the increasing improvement of the customer relationship.
- Building a large database system of universities, festivals and other associations helps build a connection with the aspired customers and set locations.
- The implementation of an RSS feed to look for journeys and requesting passengers allows a real time insight into the opportunities available for car sharing.
- The embedment of tools such as the AA route planner allows users to estimate the journey length and work out the desired cost contributions before making a commitment which demonstrates a high level of customer service by providing such applications readily at hand, increasing its value chain, which is defined as the 'cooperations, interrelationships added value activities, and joint ventures involving other companies.'

Liaising with customers via social networking and mail servers:

- GoCarShare encourages users to login via Facebook as "It's quicker, easier, and you are more likely to find someone to share with". This is an added value as it allows GoCarshare to collect more information on users' identity to reassure other passengers/drivers who they are dealing with on a social networking level. It also allows GoCarshare to reach a wider audience as Facebook can easily be used as a large scale viral marketing site.
- Users also have the option of using Twitter through their account. This adds value as it allows GoCarShare to further broadcast themselves through their users, which is also used as a viral marketing campaign to develop a more established presence amongst people.
- The use of GoCarShare Article Links, referencing notable media outlets such as The Telegraph, MSN News and The Guardian adds value by demonstrating its accomplishments thus far so that users are aware and can be reassured of its credibility.

5. CASE STUDY 2: LIFTSHARE.COM

5.1. Background

Liftshare is a social enterprise, which is why it is free to join. Their aim is to “help people to travel more sustainably by sharing their journey. Our online network matches people with similar journeys so they can travel better together – saving money, cutting their carbon footprint, having fun and making the world a better place.” To achieve this vision Liftshare provides information through their website about the possible alternatives to single occupancy cars, they educate people on the real cost of car use and ownership and they market the matching services offered to try to promote habit change.

Liftshare claims to be the number one online car sharing scheme, with clients such as BBC, Tesco, Virgin and the Environment Agency. It has won several awards, including:

- An environmental award from the EDP Business Awards 2003 for Liftshare’s nation-wide efforts to encourage and enable more efficient use of the car.
- Liftshare was the UK winner of the eWell-Being Award in 2002 for innovatively showing how technology can make a positive impact on the environment.
- The TfL Best New Initiative award in 2004

Liftshare currently runs 1,265 car-share schemes with different organisations and has a membership rate of 483,558 people, of which about 315,993 currently use the system to find a partner.

Liftshare was founded in 1997, following extensive research on the need for alternative ways of travelling, in order to encourage and enable more efficient use of the car. It was formulated by Ali Claburn in his final year at Bristol University, after having used a lift-sharing scheme in Germany. The company now designs and delivers new transport solutions for a wide range of clients, including local authorities, businesses, Industrial estates and housing developments, universities and schools amongst others.

Liftshare funds itself by helping businesses and communities set up their own online journey-matching tools to encourage local car-sharing and more sustainable mobility. “Our dedicated team then provides ongoing support services to help them market and monitor their scheme effectively.”

One of its clients includes University of Warwick. The university chose Liftshare to provide and manage its own branded scheme “WarwickShare”, which was launched in May 2008. Their publicity, on a minimal budget, included lamp-post and car park banners, ID cards and messages in all staff pay slips. Although it was launched with no financial incentives, one of its greatest selling points has been that car-sharers have clearly marked priority parking spaces in all of the campus’s car parks. As a result, in just over six months of its launch, WarwickShare had nearly

350 members registered, with more than 150 of them actively car-sharing. Also, in May 2009, the university's Travel Plan was also ranked among the best in the UK, coming 2nd out of 64 institutions.

5.2. Business Model

The business model utilised by Liftshare is an “online collaborative platform”, whereby “companies form permanent (strategic alliance) or temporary (alliance of convenience) to plan, control and reduce procurement costs”. By this token, Liftshare provides a podium which allows a vast number of people to collaborate with one another in order to reduce their high travel costs. As Liftshare has expanded to become an umbrella organisation that provides service to many different institutions, it also employs a business to business model, which is where its source of revenue is obtained.

5.3. E-processes and Value Chain

It is often difficult to differentiate between a successful and non-successful business by observing it merely through its website as they both incorporate many of the same basic outer structure utilities, such as; design, price, ease of navigation, and information resources. However, the vital differences between a successful and unsuccessful business lies within its e-processes which plays an important role within the e-business’ infrastructure, as it not only acts merely as an online transaction but also transforms the company’s operations and economics.

The value chain of a business is used to establish a sustainable competitive advantage. Liftshare’s value chain is enhanced in a number of ways through its e-processes, in particularly by its customer relation management system (CRM), which includes many aspects such as, FAQs, user and company statistics, successful case studies and testimonials, a savings calculator, as well as an interactive “fun stuff” section with games and free material. The use of social networking sites such as Facebook and Twitter enhance Liftshare’s relationship with its members as not only is it a way of communicating informally and thus being able to build strong, human rapports, it also acts as a gateway to invite new potential members into their community. Value is further added with incentives such as reduced travel costs, free and dedicated parking spots, aswell as the opportunity to form new friendships.

6. BRUNEL BUDDY UP

6.1. Business Model

The business model behind the Brunel Buddy Up service is the same as that of its competitors, an “online collaborative platform”. This is because of the nature of its service which is to allow a whole network of people to connect through likeminded interests, in this case – car sharing.

However, unlike its competitors, i.e. Liftshare and GoCarShare, which operates a free service to its users, Brunel Buddy Up take it one step further and charges each journey cost £2.

Brunel Buddy-up allows users to be share their vehicles with other students attending Brunel University. The aims of Brunel Buddy Up are to encourage car sharing amongst students who are attending Brunel University via car and to promote environmental awareness, and reduce carbon footprint. In order for Brunel Buddy up to be successful, users of Brunel Buddy Up will have various different benefits, including reduced journey fares for passengers, and reduced costs for drivers as a result of passengers who will effectively be contributing towards the cost of travel.

In addition, Brunel Buddy up will also have a business to business relationship with Brunel University and will propose special discounts on annual parking permits for students who opt to use the Brunel Buddy Up scheme. By proving various different offers and incentives, Brunel Buddy-up will ensure that there is beneficial value within the service that it provides, not only for students, but also to the university itself.

Although membership for Brunel Buddy up is free for all users, there is of course a fee to use the service as a means of travel and thus, the main revenue source for Brunel buddy up will be acquired through the commission received from passengers' payments to the drivers.

6.2. Value Added E-processes

Brunel Buddy Up will incorporate many electronic processes, aiding in the Web 2.0 nature of its website, in order to facilitate an easy to use, inviting service. Many of these e-processes assist in the building of Brunel Buddy Up's value chain; this is highlighted in the following section.

Registration

Becoming a Brunel Buddy Up member is free and costs only apply to journeys one makes. As Brunel Buddy Up is a service provided solely for students and academics of Brunel University, account registration and sign in will only be validated through the use of an active Brunel email account. This enhances the value chain as it enforces much stricter security, unlike its competitors, as members can be sure that they are liaising only with verified members of Brunel University in a closed network. This will attract the more reluctant individuals who may not be inclined to share journeys with total strangers.

For additional security, the sign up form consists of name, contact details and an image upload so that passengers can be familiar with whom they are to be travelling with before starting the journey.

Passengers who use the service may also sign up as a driver and vice versa, in this case, the same sign up information will be recorded with the addition of vehicle license and registration details.

Drivers will input their availability and timetable going to and from Brunel before the week commences (Sunday) using a form, and state up to four tube stations which they will pass along

the way. This must be done before the upcoming week to maximise the chances of successful matches as, if availability is not stated, the system will assume that the driver intends to be a passenger this week and such, will not be listed in the driver search engine.

In the event that a driver is unable to commit to the availability that they have stated due to unfortunate circumstances, Brunel Buddy Up will ensure passengers affected are notified as soon as possible and will search the database to find matches to accommodate for alternative arrangements. This facilitates the value chain as Brunel Buddy Up will deliver first class, cooperative customer service.

Search

Passenger users of Brunel Buddy Up search for drivers using a “to” and “from” form entry. This form is available to use by non-members on the homepage to search for available matches but only registered members will be allowed to proceed and use the service. Non- members will purely be shown the number of matches available to them in numerical form and members’ details will not be exposed. This adds to our value chain as it allows non-members to acknowledge the scope in which their travel route correlates with registered drivers, which will encourage more members to sign up.

Members have added filters to customise their search accordingly, with features such as “female only” options. This increases the value chain as it accommodates the needs of all customers, suiting to their own requirements which are integral to Brunel Buddy Up’s customer service standard.

Registered users also have the opportunity to “rate” drivers with a star rating, which will be shown in search results. This will be used as an incentive for drivers to perform their duty well in order for them to receive more passengers and thus receive more payment.

Booking drivers

Brunel Buddy Up will incorporate a highly effective system for booking drivers. The passenger will choose a driver based on the time slots and pick up points that the driver has shown available and thus will make a selection. When this liaison is confirmed, the number of passengers which the driver is able to pick up will decrease until the driver is fully booked and hence, will no longer appear in the search engine.

During the selection process, the system will assess whether the passenger has enough credit in their account to proceed. If credit is too low, the passenger will be given a notice to “top up” before continuing as only with enough credit, can passengers book drivers.

Once the requested driver is confirmed for the passenger, an authentication code will be generated and sent to the passenger’s inbox, along with necessary driver details for security interests, such as name and car registration plate number. This code is to be presented to the driver at the stated pick up point which will be used as a “pick up” confirmation by the driver in order to get paid by Brunel Buddy Up. Only once the code has been entered and verified by the Brunel Buddy Up code verification system, accessed via an SMS gateway, should the journey commence. This enhances the value chain as it increases security precautions for not only the

passenger, which is the focus for most car sharing companies such as Liftshare and GoCarShare, but also the driver as Brunel Buddy Up is ardent about security measures for all involved in our service. This also acts as a payment confirmation for the driver, which can be used as a “pick up receipt” if, for any reason, payment from Brunel Buddy Up doesn’t go through to the driver.

Pick up point

Pick up points will be classified by tube stations. For example, if the driver will only pass through one tube station, only this station will be made available as a pick up point, with the number of passengers the driver is able to accommodate for. If the driver passes through two or more stations, these pick up points are stated with a specified pick up time.

Payment

Passengers will credit their Brunel Buddy Up account through PayPal. This adds to our value chain as PayPal is a highly recognised payment gateway which will not only be used to aid in the reassurance of Brunel Buddy Up users but also for its extremely high security measures, as “PayPal automatically encrypts your confidential information in transit from your computer to ours using the Secure Sockets Layer protocol (SSL) with an encryption key length of 128-bits (the highest level commercially available).”

PayPal will also be used to credit drivers’ personal bank accounts. When a driver verifies a passenger’s “pick up code”, credit will be added to the driver’s Brunel Buddy Up account, which can then be reassigned into their personal bank account through PayPal at any time. This adds value as it allows credit to build up before transferring to one’s own personal bank account, minimising PayPal costs after each transaction.

Brunel Buddy Up Community

Brunel Buddy Up will integrate a user forum where only registered members can post and share experiences, information or problems relating to the Brunel Buddy Up scheme. This will allow members to ask questions or find answers to similar questions which have already been addressed, both by Brunel Buddy Up administrators and fellow members. Brunel Buddy Up is also keen to hear about user’s suggestions for improvement in order to excel in its service which increment s its level of dedicated customer service. This will also permit great networking space and also allow members to build rapport with one another so as to feel more comfortable in sharing car journeys together.

Please see **Appendix 4** for a visual analysis of the e-processes.

6.3. Technical Analysis

Web Server

A web server is a computer system that consists of both hardware and software that is used to deliver web pages and serve them as HTML documents upon a HTTP request from a client computer. The hardware is used to store documents and files, and serve them to client computer upon request. In order for the web server to operate effectively and with full functionality, web servers require server software that will interface with hardware and other software applications such as MySQL and PHP. The most common and widely used server software is WAMP which is an acronym for Windows, Apache, MySQL and PHP.

In order for Brunel Buddy-up website to be available to Brunel University students online, a web server is essential. The web server will have its own IP address and a domain name assigned to it which in this case will be ***www.brunelbuddyup.com***. The web server will be used to store all passenger and driver data and feed HTML documents to client computers upon request.

Online Security and Customer Confidentiality

Since Brunel Buddy-Up will be an online business dealing with many different payments and transaction that will include the transmission of personal and financial details such as names and bank card payment details, it is vital to introduce effective and up to date security measures that will ensure customer details and information is kept safe and confidential. The proposed security measures that will be used within Brunel Buddy Up website are discussed below.

SSL

SSL, abbreviated from Secure Socket Layer, is widespread and commonly used protocol that creates uniquely encrypted communication channels for private communications over the internet.

SSL certificates operate using the public key and private key infrastructure. The public key is initially used to encrypt data before it is transmitted via the internet. The private key is then used to decipher the encrypted data by the intended user.

Based on the type of SSL certificate used by the domain that is to be visited, the web browser installed on the client's computer, the operating system and host server capabilities, when a clients computer attempts to access a secured domain, a level of encryption is established based. The SSL certificates can be implemented with different levels of encryption up to a maximum of 256-bit encryption. The diagram below illustrates how SSL certificates work.

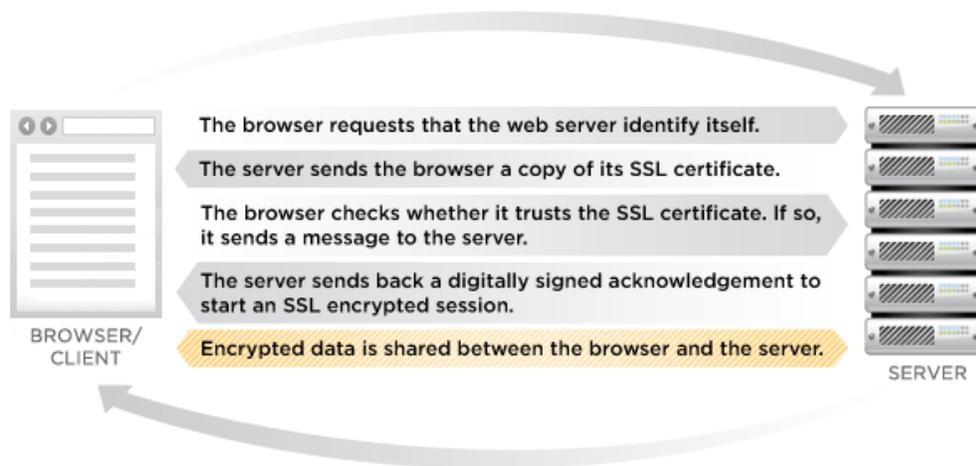


Image Source: <https://www.verisign.co.uk/ssl/ssl-information-center/how-ssl-security-works/index.html>

With regards to Brunel Buddy Up, SSL certificates will be beneficial because:

- 1) Brunel Buddy Up accepts online payments from passengers for each journey travelled.
- 2) Brunel Buddy Up offers sign-in and sign-up for new customers using the website to ensure privacy and confidentiality of private and personal data and information such as date of birth, addresses and card payment details.
- 3) Brunel Buddy-Up respects customer privacy and confidentiality and expects customer loyalty and trust, as well as complying with legal privacy and security requirements.

PayPal

PayPal is a constantly growing, and widely used and trusted payment network that enables customers and organisations who have an email account to send and receive payments online conveniently, cost-effectively and securely. PayPal is now commonly used at e-commerce websites to send and receive payments, a large example being EBay. Within, Brunel Buddy Up website, PayPal plug-in will be installed to handle payments and transactions. The reason for this is that, PayPal uses SSL (Secure Socket Layer) certificates for payments and transactions, which will ensure the security and confidentiality of personal and financial data of Brunel Buddy Up users. The business affiliate that PayPal uses for its SSL certificates is VeriSign, which is a business providing authentication services for online payments and transactions.

Username and passwords

One of the most common and conventional ways of ensuring only authorised persons access specific data and information stored on a database is via the use of usernames and passwords.

Each new user who will be using Brunel Buddy Up Website will create their own log-in details, using their existing Brunel University email address as the user name and creating their own personal password in order to sign-up or login to view their personal profile. The created username and password will be stored on a server database, the next time the user inputs their username and password, it will be compared against that stored on the server database, and if they their profile page will.

HTTPS

HTTPS (Hyper Text Transfer Protocol Secured) is the technology protocol that is used over the internet to ensure secure transactions, usually payments to take place securely with privacy and confidentiality of personal and sensitive data. HTTPS is simply, HTTP (Hyper Text Transfer Protocol), which uses SSL (Secure Socket Layer), for online transactions.

SERVER SIDE FACTORS AFFECTING WEBSITE PERFORMANCE

In order for Brunel Buddy-up website to be successful, and attract as many Brunel University students as possible, it is necessary that the server side technology is also considered. The server side technology and features that need to be considered include those listed below.

Visible search functionality

Brunel Buddy-up website performance can be boosted by providing a visible search functionality, a convenient tool, which promptly obtains data and information upon the user's request. Visible search functionality enables customers of Brunel Buddy-up to search for a drivers going to and coming from Brunel University at specific times within the website without having to struggle through different sections of the website to arrive at the required information.

Robust server

The reliability and performance of Brunel Buddy-up website is also greatly determined by a robust and secure sever that is able to handle large volumes of data and is not prone to crashing. This will help minimise server downtime and ensure that Brunel Buddy-up is constantly online for business.

Usability and complexity

The structure and layout of Brunel Buddy-up website should be implemented, with the consumers and users in mind. The navigation controls within the website should be consistent in terms of position on the web page; the search engine should be positioned where it can easily be seen. In order to encourage customers to revisit the website, the interface should be kept simple. A well designed graphical user interface is also necessary which will display the purpose of the website, and the services it provides. The graphical user interface should use images to exhibit a visual representation of the service offered, with a clear description of how the service works, as well as a well-structured colour scheme for the website.

Flexibility

In terms of flexibility, Brunel Buddy-up should be available for e-commerce day and night 24/7 in order to process passenger bookings. This means that if a passenger decides to place a booking with a driver, it should be processed automatically. Similarly, passengers should be able to place bookings many days in advance with drivers without and limitations.

Network delay and server load

The response time for serving a set of web objects from the server to the client, can be highly influenced by network delay and server load between a client and server. In order to minimise the network delay times, it is essential for Brunel Buddy-up to operate using a strong and robust server that is capable of handling large volumes of data and customer requests within the minimal amount of time.

Number of objects and total bytes

The total number of objects and their relevant sizes determines the time to retrieve a web page. This essentially means that the more objects such as images there are on a web page, the slower the rate at which the web pages will load. In order to avoid slow web page download times, it is necessary to use the appropriate web format images, with smaller size.

MySQL

My SQL is a relational database management system that runs as a server and provides access to various different databases in order to store, retrieve, edit or delete data and information. There are various different features and functionalities embedded within MySQL, some of the main and commonly used features of My SQL include:

Scalability and Flexibility

My SQL supports many different types of applications ranging from small in-built applications to large warehouses that hold terabytes of data and information. This feature will enable Brunel Buddy-up to initially start as a medium sized online business, and if necessary, scale and expand as required.

High Availability

My SQL enables high speed data replication from master to slave drives, using Row-Bases and Hybrid configuration techniques to duplicate the data. The purpose of this is to enable specialised cluster servers to offer instant failover. Brunel Buddy-up will benefit from this feature because, it will enable the website to be constantly running and keep the website downtime to a minimum.

Web and Data Warehouse Strengths

My SQL provides a powerful search engine that can be used to retrieve data within seconds. In addition it is also able to insert data almost instantaneously. MySQL also supports specialised web functions such as quick full text search capabilities. For example, Information about drivers with the best reviews can be retrieved using this feature of MySQL.

Strong Data Protection

MySQL is equipped with excellent security features to ensure only authorised users to have access to specific type of data and information. The data protection feature of MySQL uses SSH (Secure Shell) and SSL (Secure Socket Layer) to enable safe and secure connections. In addition to such security, powerful data encryption and decryption methods are also available to ensure data is kept secure. The SSH and SSL feature of MySQL can be used to secure private and confidential data of passengers and drivers such as names and addresses.

Management Ease

Event schedulers within MySQL can be used to automatically schedule recurring tasks on the database server. The advantage of such feature for Brunel Buddy-up is that it can be used to schedule automatic removal of passenger and driver profiles from the database, if they are no longer student of Brunel University.

PHP

PHP (abbreviated from Hypertext Pre-processor), is a server side scripting language that is commonly used for the development of dynamic web pages. PHP can be embedded within HTML pages, instead of calling the PHP file from an external source. Most web servers have a PHP processor module that is enabled to interpret PHP code and generate the resulting page.

Brunel Buddy-up will require the usage of PHP scripts because the website is dynamic. Essentially, this means that the content displayed will change for each user that uses the website. For example, if a passenger named “Emma” logs into her account, she will see a welcome message saying “Hello Emma” and all her profile details. If another passenger named “James” logs into his account, the welcome message will change and say “Welcome James” and all his profile details will be displayed.

Since, there will be different users of the Brunel Buddy-up, such as drivers and passengers and each of these users will have their own personal usernames, passwords and profile details, it is necessary to use PHP scripts because the content will no doubt change for each user.

PHP can be used to interact with a My SQL server to retrieve data from a relational database management system. Such interaction with a database management system can also include addition, deletion, modification and updates of data. For instance, PHP code can be used to identify all passengers and drivers who are no longer students of Brunel University and delete their records.

SMS Gateway

An SMS gateway is a network functionality that is commonly used in telecommunication for the purpose of sending and receiving SMS messages. SMS messages can be routed via mobile phone networks in order to be sent and received on mobile devices. The type and nature of Brunel Buddy-up online business is as such that an SMS gateway proves to be essential for the business to operate.

An SMS gateway will be used within Brunel Buddy-up website to provide an automated service, whereby a confirmation text is automatically sent back to driver on the day of travel, to confirm that the booking code provided to the driver(by the passenger) is genuine and that the passenger should be picked up.

Clickatell.com is a large business organisation who specialise in providing various different telecommunications services and are able to tailor services and create bespoke systems based on user requirements. Clickatell provide an SMS gateway, although at a cost, that will deliver SMS messages to any application, website or system. They are able to provide immediate capability to deliver and receive text messages to and from any application, with local delivery to all operators. They have wide and extensive network coverage and provide 24/7 customer support.

Please see **Appendix 5** for a complete reference of web files.

6.4. Commercial Processes

Brunel Buddy Up will run a number of commercial processes to get it up and running and embedded within the Brunel network. To do this, we will work closely with Brunel University as it is most crucial for people to be aware of the car sharing scheme available for it to be successful. Brunel Buddy Up will be an exclusive scheme tailored to Brunel University at no cost and so will rely on the university to engage with and accommodate the promoting of its service, which will benefit the university by increasing its green rating as well as publicity in press releases.

There a number of ways in which advertising on campus will be achieved:

The first instance of advertising for a new scheme comes before the launch and so therefore local media will be invited along with ideally a celebrity or a public figure to endorse the Brunel Buddy Up scheme, to help in promoting the service.

Brunel Buddy will use Fresher's Week to promote the scheme by holding a stall, providing information and promotional stationary such as tax disc holders, coasters, pens, note books etc which will all carry the Brunel Buddy Up logo.

Liftshare regular organises a National Liftshare Day which aims to promote car-sharing as a cost effective and environmentally friendly form of transport. The day coincides with Green Transport Week, and encourages everybody to try car sharing for one day. Similarly to this, Brunel Buddy Up will take advantage of the university's Green Week to promote the service by running campaigns, holding competitions and getting student excited about the new scheme whilst also relaying the great environmental impacts it will achieve.

Brunel Buddy Up will gain further publicity through liaising with the Union of Brunel Students with advertisements in the university's only student newspaper - Le Nurb. It will also create an advert which will be played on Radio Brunel to further reach out to students in all forms possible as well as through advertising banners on the Union of Brunel Students website.

Internal emails will also be regularly sent to all students and staff as emails from a senior person are often a good way to spread the word of car sharing among employees and members of an organisation.

6.5. Value Chain Integration

Further to the value added processes already mentioned, the value chain is additionally integrated through Brunel Buddy Up's B2B business model as special incentives will be arranged for users in accordance with the University, such as discounted/free parking facilities.

Another key value chain integrator is Brunel Buddy Up's utilisation of its customer relation management system (CRM), which will include many resources such as FAQs, successful case studies and testimonials, a savings calculator and a forum.

Value is further enhanced with incentives such as reduced travel costs as well as the opportunity to form new friendships.

7. CONCLUSION

The major factors which set Brunel Buddy Up apart from its competitors, first and foremost, include security. As Brunel Buddy Up works in a closed network, users can only register using their Brunel student/staff ID. This authenticates that every user is already part of this network and leaves no gap for false identities, which can often be the case with sign-ups through social networking sites such as Facebook. Also, unlike Liftshare and GoCarShare, Brunel Buddy Up in fact pays the drivers for each passenger that they pick up, which is an added incentive for more drivers to join the scheme.

Brunel Buddy-up observes the current bus and tube fare prices and significantly reduce the cost of travel for passenger students in order to encourage students to register and use Brunel Buddy-up. For instance, based on the figures shown on the tfl.gov.uk website, the current price for a full student weekly travel card is £35.20. If Brunel Buddy up charges each passenger £2.00 per journey regardless of the duration of journey, and assuming that the passenger will be going to and from Brunel University on the same day, they will in essence, be paying £20 per week. That is effectively a saving of £15.20 per week. The table below shows the current travel card prices for both 18+ students and adults.

18+ Student			Adult				
	7 Day	Monthly	Annual		7 Day	Monthly	Annual
Zones 1-2	£19.30	£74.20	£772	Zones 1-2	£27.60	£106.00	£1,104
Zones 1-4	£27.50	£105.60	£1,100	Zones 1-4	£39.40	£151.30	£1,576
Zones 1-6	£35.20	£135.20	£1,408	Zones 1-6	£50.40	£193.60	£2,016

Image taken from: <http://www.tfl.gov.uk/tickets/14312.aspx#tk-tab-panel-3>

Similarly, drivers who are driving to Brunel University will also have reduced travel costs as a result of each passenger they pick-up whilst going to and coming back from Brunel University. Since the cost of each journey will be £2.00, which will be debited from the passengers account, £1.50 of that money will be paid to the driver. This therefore means that if a driver has 4 empty seats in their car, and picks up 4 passengers every day for a week; they will be paid £30.00 per week. The remaining £0.50p will go to Brunel Buddy up for providing the service.

Since there is a limitation of parking space at Brunel University, and Brunel University is in favour of promoting a greener environment and reducing its carbon footprint, it may well be possible to obtain a special discount from the university for student divers who share their vehicle with other students. For instance, the current annual fee for student parking is £92.00, which can be discounted to £70.00 if they decide to sign-up and register with Brunel Buddy-up.

Risks identified within the Brunel Buddy Up system include the use of tube stations to identify pick up points as parking is not always available to use outside stations. This may be difficult to locate the passenger or driver if they have to find parking elsewhere and so communication between the two parties would be vital. However, there are a number of ways to tackle this problem.

The most effective method would be to get government backing on designated car sharing pick up points. Our current government states that they believe in making “the transport sector greener and more sustainable... and support sustainable travel initiatives”. They are also encouraging car sharing amongst workplace and school travel plans although are concerned by the overall impact of car sharing being difficult to measure as many people car share informally and so there is a lack of monitoring. This shows that the government would be keen to support car sharing initiatives, enabling us to minimise this problem.

Other challenges include reliability issues as there can often be events when drivers are unable to pick up passengers due to unforeseeable circumstances. To tackle this, Brunel Buddy Up will form further business to business relationships by employing a 'guaranteed ride' arrangement with a taxi company.

Ultimately, Brunel Buddy Up intends to branch out and offer its service to all universities in London as well as any organisation keen to reduce their carbon footprint and daily travel costs.

8. BIBLIOGRAPHY

Ali Mousavi (2005). *Electronic Business Systems Modern Enterprise: Design, Manage and Lead*. 3rd Edition. Brunel: Mousavi. 0-50

Carshare Champion. (2012). *The Carshare Champion*. Available: <http://www.telegraph.co.uk/earth/greenertransport/8488197/The-car-share-champion.html> (Nov 2011). Last accessed 01/03/2012

Carpool. (2001). *Carpool*. Available: <http://en.wikipedia.org/wiki/Carpool>. Last accessed 01/03/2012

Digital Media Startups. (2012). *digital-media-startups*. Available: <http://www.guardian.co.uk/media/pda/2010/aug/23/digital-media-startups> (Nov 2011). Last accessed 01/02012.

Go Carshare. (01/03/2012). *gocarshare FAQs*. Available: <http://gocarshare.com/page/faq>. Last accessed 01/03/2012

Liftshare. (2008). *Liftshare*. Available: https://www.liftshare.com/content/network_stats.asp. Last accessed 01/03/2012.

London Council. (2012). *Transport Facts*. Available: <http://www.londoncouncils.gov.uk/londonfacts/keyfacts/transportfacts.htm>. Last accessed 20th Feb 2012.

Michael P. Papazoglou and Pieter M.A. Ribbers (2006). *E-business Organizational Technical Foundations*. London: John Wiley & Sons. Chapter.2.

Paypal. (2012). *Paypal*. Available: <https://www.paypal.co.uk/uk>. Last accessed 29th Feb 2012.

PHP.NET. (2012). *PHP*. Available: <http://www.php.net/manual/en/language.functions.php>. Last accessed 29th Feb 2012.

Transport. (2012). *Transport*. Available: http://www.conservatives.com/Policy/Where_we_stand/Transport.aspx. Last accessed 12th Feb 2012

Verisign. (2012). *Verisign*. Available: <http://www.verisign.co.uk/ssl/ssl-information-center/index.html>. Last accessed 29th Feb 2012

Transport For London. (2012). *TFL*. Available: <http://www.tfl.gov.uk/tickets/14416.aspx>. Last accessed 29th Feb 2012

9. APPENDICES

9.1 Appendix 1: Ride with Hitler



Image source: http://www.archives.gov/exhibits/powers_of_persuasion/use_it_up/images_html/ride_with_hitler.html

Appendix 2: Research Survey

The following survey aims to assess students' satisfaction with current modes of travel and their inclinations towards car sharing services. All answers will be treated in strict confidence and you may withdraw at any time. Thank you for your cooperation.

1. How do you travel to University?

Private Transport Public Transport Other

2. How often do you come to University (per week)?

Everyday 3-5 days per week 1-2 days per week

3. What is your average journey time to get to University?

<30 min 30min - 1hr 1hour – 1.5hr >1.5 hour

(If you use Public Transport, ignore Q4-5. If you use private transport, ignore Q6-8)

4. How much do you pay for Petrol (per week)?

< £10 £10-£20 £20-£30 £30-£40 > £40 0

5. Do you think parking permits at the University are expensive?

Yes No

6. How much do you pay for transport tickets (per week)?

< £10 £10-£20 £20-£30 £30-£40 > £40

7. How often do you get seats on public transport?

Never Often Rarely Always

8. How often does your train get delayed?

Never Often Rarely Always

9. Which of the following car sharing services have you heard of?

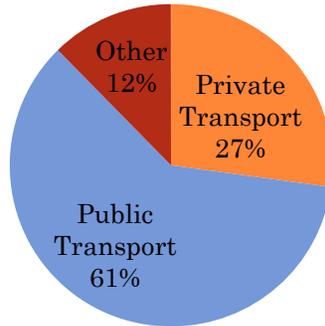
Liftshare.com Gocarshare.com Nationalcarshare.co.uk
Shareacar.com Other (Please specify) None

10. Do you think a car sharing service for University is a good idea?

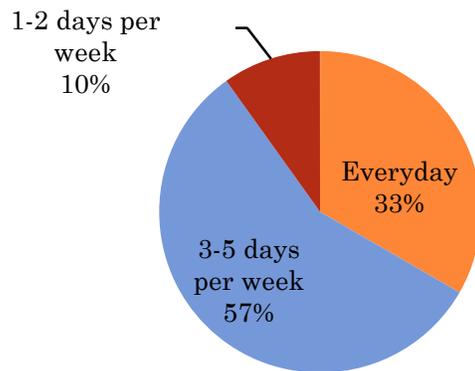
Yes No

Appendix 3: Survey Response Analysis

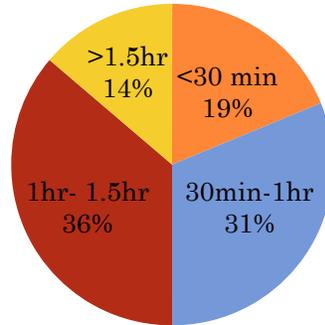
1. How do you travel to University



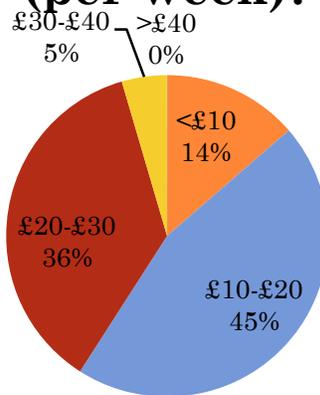
2. How often do you come to University



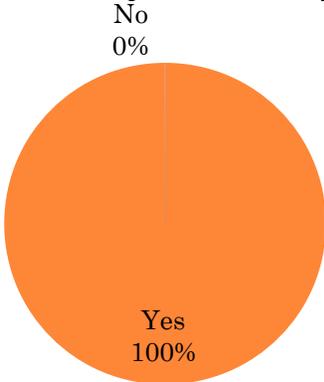
3. What is your average journey time to get to University?



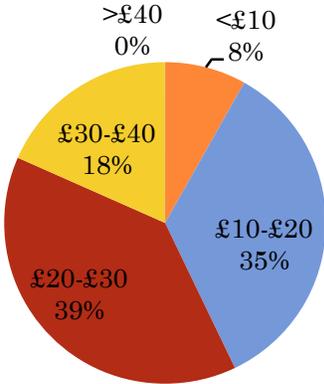
4. How much do you pay for Petrol (per week)?



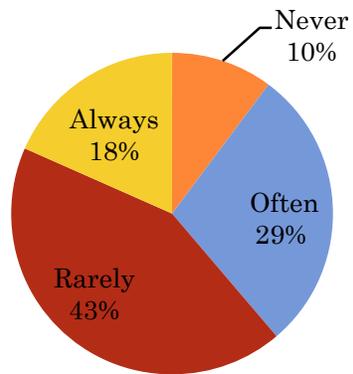
5. Do you think parking permits at the University are expensive?



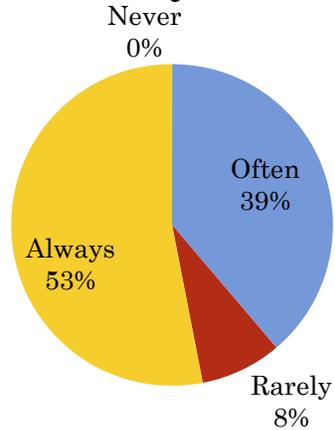
6. How much do you pay for transport tickets (per week)?



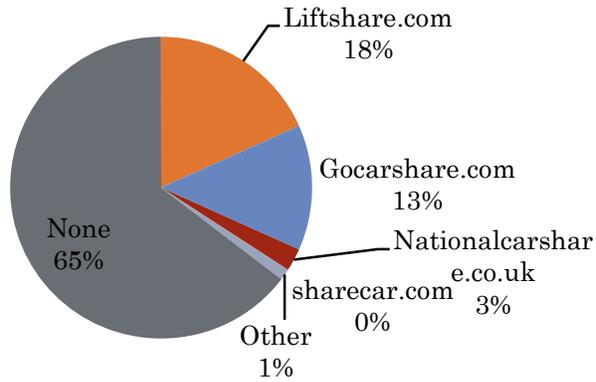
7. How often do you get seats on public transport?



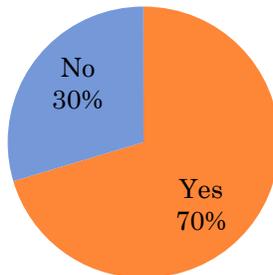
8. How often does your train get delayed?



9. Which of the following car sharing services have you heard of?



10. Do you think a car sharing service for University is a good idea?



Appendix 4: Visual analysis of e-processes

Brunel Buddy Up Homepage & Driver Search

The screenshot shows the Brunel BuddyUp homepage. At the top left is the logo "Brunel BuddyUp" with the tagline "15,000 Students, 1 Destination... Brunel". To the right are navigation links for "Home", "About us", and "Contact us". The main content area is titled "Welcome to Brunel BuddyUp!" and includes a brief description of the service and a "Sign Up" link. Below this is a "Search for a driver:" section with the following fields: "From:" (radio buttons for "Brunel University" and "Station:" with a dropdown menu showing "Abbey Road"), "To:" (radio buttons for "Brunel University" and "Station:" with a dropdown menu showing "Abbey Road"), "At:" (two dropdown menus for "01" and "00"), "On:" (a date input field showing "01/03/2012"), and "Preference:" (a dropdown menu showing "Male"). A green "Search" button is located below the "On:" field. To the right of the search form is a login section with "Username:" and "Password:" input fields, a green "Log in" button, and a "Keep me logged in" checkbox. Below the login section are links for "Forgotten your password", "Passenger Sign Up", and "Driver Sign Up". At the bottom right of the main content area is a green "Price calculator" button with a calculator icon. At the bottom of the page is a copyright notice: "© 2011 Brunel Buddy Up | [Terms & Conditions](#) | [Privacy Policy](#)".

Passengers can select the pickup point and drop-off points of their journey from a possible drop-down list of stations, and the date and time which they wish to travel.

Passengers booking a driver can select male or female preference, e.g. if a female would like to search female only drivers.

Price calculator can be used by Brunel Buddy Up users to calculate cost of journeys.

Finding a driver search results

Brunel BuddyUp
15,000 Students, 1 Destination...Brunel

Home | About us | Contact us

Results

 James Khan

 Shaun Clive

[View Driver's Profile](#)
Please [login](#) or [sign up](#) to proceed with this driver.

[View Driver's Profile](#)
Please [login](#) or [sign up](#) to proceed with this driver.

Username:

Password:

Keep me logged in

[Forgotten your password](#)
[Passenger Sign Up](#)
[Driver Sign Up](#)



© 2011 Brunel Buddy Up | [Terms & Conditions](#) | [Privacy Policy](#)

Search results will display the pictures and names of all the drivers going through the specified pickup and drop off points.

Their profiles can be viewed only if the current user is a member of Brunel Buddy Up, and a booking can be made.

Users who have forgotten their login details can be sent reminders via email by clicking on "forgotten your password" link.

Viewing and Updating Profile Details

Brunel BuddyUp
15,000 Students, 1 Destination...Brunel

Home | About us | Contact us

My Account

Welcome James Carnn
[Log out](#) | [My Account](#)

Name: James Carnn
Telephone: 07933874758
Address: 34 Ascot Close, Harrow

Balance:
£141.28

Total Income:
£2

[Edit my Details](#) | [Top up](#)

Your Passengers

Passenger	Date	Pick up Time	Pick up Point
James	18 February 2012	8:00pm	Abbey Road

Your Trips

Driver	Date	Pick up Time	Pick up Point
Melissa	19 January 2012	7:30pm	greenford station
Melissa	19 January 2012	7:30pm	greenford station
Melissa	19 January 2012	7:30pm	greenford station
Melissa	18 February 2012	12:00am	brunel
James	18 February 2012	8:00pm	Abbey Road
Melissa	19 January 2012	7:30pm	greenford station

© 2011 Brunel Buddy Up | [Terms & Conditions](#) | [Privacy Policy](#)

Drivers can view all the journey details such as, the passenger name, date and time of journey and pick-up and drop-off points. Drivers can also see a list of all the trips they have made and the number of passengers they have escorted, which will be used to receive payments.

The total income will show how much each driver has made based on number of passengers taken, and trips made.

Drivers can view and edit their profile. Their current Brunel Buddy-Up balance, is displayed that will be used to make bookings as a passenger. In addition, drivers can also top-up their account balance to add funds prior to placing a booking.

Passenger Sign-Up Page

Brunel BuddyUp
15,000 Students. 1 Destination. Brunel

Home | About us | Contact us

Sign Up

Account Type: Driver

Username:

First Name: Last Name:

Address:

City: Postcode:

Mobile Number: Registration Number:

Brunel Email: Confirm Brunel Email:

Password: Confirm Password:

Upload Photo:

I agree to the terms and conditions

* = Required

Username:

Password:

Keep me logged in

[Forgotten your password](#)
[Passenger Sign Up](#)
[Driver Sign Up](#)

New users can sign-up as passengers by completing a passenger sign-up page and uploading their photo and personal details such as name.

Passengers can then add funds to their current balance and place bookings with potential drivers going to the same location as passengers.

Signing Up as a Driver

Brunel BuddyUp
15,000 Students, 1 Destination... Brunel

[Home](#) | [About us](#) | [Contact us](#)

Sign Up

Account Type: Driver

Username:

First Name: Last Name:

Address:

City: Postcode:

Mobile Number: Registration Number:

Brunel Email: Confirm Brunel Email:

Password: Confirm Password:

Upload Photo:

Five stations you will pass:

Brunel University at 01 : 00

Abbey Road at 01 : 00

I agree to the terms and conditions

* = Required

Username:

Password:

Keep me logged in

[Forgotten your password](#)
[Passenger Sign Up](#)
[Driver Sign Up](#)

Price calculator 

New users can sign-up as drivers by completing a driver sign-up page and uploading their photo that will enable their details to be searchable.

Drivers have to select the stations they will be passing through from a possible list of stations and the times they will arrive at those stations.

Adding Funds to Accounts

Brunel BuddyUp
15,000 Students, 1 Destination...Brunel

Home | About us | Contact us

Top Up

Current credit: **£5**

Add more:

Top Up Now

Username:

Password: **Log in**

Keep me logged in

[Forgotten your password](#)
[Passenger Sign Up](#)
[Driver Sign Up](#)

Price calculator 

© 2011 Brunel Buddy Up | [Terms & Conditions](#) | [Privacy Policy](#)

Drivers and Passengers can top-up their Brunel Buddy-Up accounts (via Pay pal), in order to be able to place journey bookings with drivers. Their current balance will be displayed, and the quantity (number of whole pounds) will be added to the current balance. Clicking on “Top-Up Now” will update the current balance.

Journey Confirmation random ID generation

The screenshot shows the Brunel BuddyUp website interface. At the top left, the logo reads "Brunel BuddyUp" with the tagline "15,000 Students, 1 Destination...Brunel". To the right, there are navigation links for "Home", "About us", and "Contact us". The main content area features a "Journey Confirmed" notification: "Your journey has been confirmed. You journey ID is: **A481P6WN**". Below this is a green button labeled "Go to my Account". To the right of the notification, a user is logged in as "Henna Henna" with links for "Log out" and "My Account". Further right is a "Price calculator" button with a calculator icon. At the bottom left, there is a copyright notice: "© 2011 Brunel Buddy Up | [Terms & Conditions](#) | [Privacy Policy](#)".

Once a booking has been placed, passengers will be provided with a booking confirmation code that will be used and provided to the driver who will use it to ensure the booking is genuine.

Booking Confirmation

Brunel BuddyUp
15,000 Students, 1 Destination...Brunel

[Home](#) | [About us](#) | [Contact us](#)

Confirm

Please confirm the following information:

Pick up Point:
Abbey Road

Drop off Point:
Abbey Road

Driver:
Melissa

Date:
02/21/2012

Time:
1:00am

Price
£2

If the information above is correct, please click **Pay Now** below:

You have insufficient credits. Please [top up here](#). Once you have topped up, click the button below:

[Click here](#)

Welcome Henna Henna
[Log out](#) | [My Account](#)

Price calculator 

© 2011 Brunel Buddy Up | [Terms & Conditions](#) | [Privacy Policy](#)

Passengers can see a detailed journey plan, once they have confirmed and paid for a booking a journey. The pick-up and drop-off points will be displayed as well as the date, time, price and name of the driver.

About us Page

Brunel BuddyUp
15,000 Students, 1 Destination...Brunel

[Home](#) | [About us](#) | [Contact us](#)

About us

What is Brunel BuddyUp?
Brunel Buddy-up is a collaborative, online car-sharing platform allowing users to be able to share their vehicles with other students attending Brunel University.

Aims of Brunel BuddyUp
The aims of Brunel Buddy Up are to encourage car sharing amongst students who are attending Brunel University via car and to promote environmental awareness, and reduce carbon footprint.

Brunel BuddyUp Objectives
In order for Brunel Buddy up to be successful, users of Brunel Buddy Up will have various different benefits, including reduced journey fares for passengers, and reduced costs for drivers as a result of passengers who will effectively be contributing towards the cost of travel.

In addition, Brunel Buddy-up will also propose to the university, for special discounts on annual parking permits for students who opt to share their vehicles with other students within the university. By proving various different offers and incentives, Brunel Buddy-up will ensure that there is beneficial value within the service that it provides, not only for students, but also the university itself.

Username:

Password: [Log in](#)

Keep me logged in

[Forgotten your password](#)
[Passenger Sign Up](#)
[Driver Sign Up](#)

[Price calculator](#) 

© 2011 Brunel Buddy Up | [Terms & Conditions](#) | [Privacy Policy](#)

About-Us page of Brunel Buddy-Up contains what Brunel Buddy-Up is, as well as its aims and objectives.

Contact –Us Page

Brunel BuddyUp
15,000 Students, 1 Destination...Brunel

Home | About us | Contact us

Contact us

Name:

Email:

Department:

Message:

Username:

Password:

Keep me logged in

[Forgotten your password](#)
[Passenger Sign Up](#)
[Driver Sign Up](#)



© 2011 Brunel Buddy Up | [Terms & Conditions](#) | [Privacy Policy](#)

Contact-Us page of Brunel Buddy-Up will allow users to contact Brunel Buddy-UP service team, for comments, complaints, suggestions and any other related issues.

Appendix 5: Web files

Please access folder titled Appendix 5 Web Files.