Application to aid in customer identification for an electronics repair company using social media

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DECLARATION

I hereby declare that this project is entirely my own work and that it has not been submitted as an exercise for a degree at this or any other university.

__________________________________________  __________
Name                                      Date
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Chapter 1

Introduction

1.1 Overview

In Ireland smartphone ownership is as high as seventy one per cent (Clayton, 2012). Twenty eight per cent of smart phones are apple products (puka, 2012) and fourteen per cent of those without a smartphone intend on choosing apple as their handset. This culture of apple dominated devices has spawned a number of major industries, third party apple accessories, apple device customisation and apple product repairs.

With the onset of the newer apple handheld devices there has been a decrease in structural integrity of the physical phone. IPhone owners have reported eighty two per cent more damaged screens in the first 4 months of ownership compared to previous models. Over all the incident rate of the IPhone 4 is sixty eight per cent higher than that of previous models. (Robinson, 2012)

This increase in breakages has led to a surge in the electronics repair industry especially in Dublin. A quick search for business that offers this service in Dublin yields 16 results. There is currently an over saturated market with as many as ten of these businesses within walking distance from Trinity College (Figure 1).

Numerous tools are employed by companies in Dublin to identify and reach out to customers with potentially broken devices. The use of review websites such as yelp, Google reviews and yahoo local are prevalent and widely referenced in the context of trying to find the most appropriate service. There is a considerable amount of room for the improvement for customer identification and selection using mainly social media.
Ultimately this paper is concerned with analysing the culture surrounding the damaging and repair of electronic devices, the culture of twitter and how a business can take advantage of this to provide increased value to its own business objectives and to its customers. As well as this the paper will analyse the feasibility of contacting people through twitter for the purposes of getting a device repaired.

1.2 Research Motivation

Electronic devices are traditionally quite fragile. They are by design not meant to last. As a society we have bought into having the latest and greatest technology and this has allowed the propagation of a culture of devices that don't last. If a person breaks their device and it is out of the standard one year warranty they consider to themselves should they repair it or replace it.

During a time of weak economic conditions repair industries of all forms the business of repairing consumer goods thrives. High unemployment and sluggish economic recovery (ibis, 2014) present great opportunities for repair industries. In 2012 America spent 5.9 billion dollars on repairing iPhones alone. 30% of iPhone owners experience accidental damage in a 12 month timeframe and 17% are repeat offenders Figure 2).

The process of repairing an electronic device is an unfamiliar process to a lot of people. The costs are often vague and the perceived attitude is that as a customer they should be as little involved in the process as possible. The motivation for this study and application is to investigate the culture of tweeting and see if information can be gathered with hopes of creating a streamlined service that benefits both customers and repair businesses.
1.3 Research Objectives

The research is focused on the culture of twitter and the psychology behind why someone would tweet a message about a broken device. The research was directed towards the goal of finding sufficient grounding to create an application that would give a company the ability to contact people who have damaged their electronic devices. The application would be designed with a specific company in mind so that the application could integrate with their systems.

1.4 Structure

Chapter 2 will detail the approach for the project and the planning that was undertaken. Chapter 3 will discuss all the Background information. There will be a brief description of the company Right-Click. It will include explanations of twitter and the culture that surrounds it as well as how it relates to the final application. Chapter 4 will entail information regarding to the issues and potential issues that are apparent when developing the application.

Chapter 5 details the design of the application as well as the steps to be taken for its implementation. Chapter 6 explains the functionality of the entire application. It provides a complete system overview and goes into detail about the means to which the application performs its use. Finally Chapter 7 provides the conclusion and analysis about the performance of the application as well as future expectations and improvements that can be made.
Chapter 2
Project approach

2.1 Technical approach/methodology

The methodology that was applied to the project was based overall of the waterfall method and more specifically structured programming. The waterfall method is a framework that can be applied to software development. It is a linear sequential life cycle model that is simplistic and fit the needs of the development well. It is an easy to manage model and each phase has a specific list of deliverables and includes a review process.

The phases are completed one at a time and the decision to implement this system stemmed from that fact that this is a medium sized project where there is only one developer who does not have to report to others, making the process more complicated. See figure 3

Structured programming is a logical programming method that differs from object orientated programming. The structured programming method employs a top-down design model that integrates well with the waterfall method. Major Functions are defined early on and the application is built around these functions. While the application development contains elements of object orientated the majority of the process was completed under the guise of the structured programming method. Hallmarks of structured programming employs large looping statements as seen in the system overview on page 32.
2.2 Initial Schedule

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
<th>Start</th>
<th>Finish</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>Design, research and analysis</td>
<td>11.10.2013</td>
<td>09.12.2013</td>
<td>59 days</td>
</tr>
<tr>
<td>Development</td>
<td>Application development</td>
<td>10.12.2013</td>
<td>28.02.2014</td>
<td>80 days</td>
</tr>
<tr>
<td>Testing</td>
<td>Testing and debugging</td>
<td>01.03.2014</td>
<td>03.03.2014</td>
<td>2 days</td>
</tr>
<tr>
<td>Report</td>
<td>Documentation</td>
<td>04.03.2014</td>
<td>06.04.2014</td>
<td>33 days</td>
</tr>
</tbody>
</table>

2.3 Requirements & Milestones

The aim of the application will be to produce a web application to identify and contact potential customers with the ability to integrate with the company’s current system. The application will identify tweets originating from Dublin and its surrounding areas that contain key words such as phone broken and laptop.

The user of the application should be able to identify which tweets are applicable to our repair services, select these tweets and engage with the customer in the hopes of booking in the device to be repaired. For the application to be deemed a success it would have to help the
company identify new customers and be able to provide them with the same quality of service that they have been providing for a number of years.

A number of milestones were set as significant events in the course of the project that are used to give a clear outline in the visibility of the progress. Failures to adhere to these milestones are indicators that the application is not proceeding as planned. The following are key milestones in the application development process:

- **Tweet identification**: Being able to locate and identify tweets from the greater Dublin area that are related to our search.

- **Tweet separation**: Tweets to be filtered so the results for more accurate information.

- **Tweet storage**: Storing the information uniquely for reference.

- **Contact with user**: Being able to contact the user and agree to the terms of the repair.

- **Integration with system**: The application should be integratable with the current system in place in Right-Click
Chapter 3

Background

3.1 State of the art

Currently a series of tools exist that allows people and businesses to manage social media presence online. From a strictly business perspective Sprout Social and MarketMeSuite provide the most complete packages in terms of managing social media interactions.

They offer a very functional graphically based system (Figure 4) that allows businesses to “Create an exceptional brand experience across networks. Sprout’s collaborative environment ensures smarter, faster and more efficient social communications” (reference). While these platforms seek to identify customers they achieve this through global brand building. They offer tools to broadcast tweets to wider audiences, en-mass add friends and a wide array of analytics to support business decisions.

These systems are to cater for medium to large businesses who wish to grow a brand through online social activity. A number of other platforms exist that perform the same task but these two are the most prevalent.

No system exists that allows for a small service based company to identify and contact potential customers based on their social media activity. A search of all terms relating to customer identification using social media websites yields no results on the United States patents and trademarks. A search using the same terms yields nothing specifically relating to the identification of customers on social media and the ability to integrate them into a current system yields no results on the World Intellectual Property Organisation.
3.2 Right-Click.

The grounding for the project stemmed from a conversation with the owner of Right-Click, A company that repairs electronic devices as well as retail of the electronics. As a company Right Click has maintained an image of adaptability. The company is over ten years old and as electronics retailer has outlasted the majority of its competition while it has moved from internet cafe, to retail and eventually repairs.

The owner of right-click expressed an interest to advance and streamline its interaction with customers over the web. The company has a very limited web presence. Their desire to expand their interaction online was conveyed at the staff agm as well as the need to identify new customers and streamline the process of booking in jobs for repair.

The standard process for a repair is that someone will come in to the shop with a broken device after hearing about the service online or through friends. They will book in the device and we will take a small deposit. When the machine is being booked in the employee will fill in an online form with data that the customer has supplied. They will create a ticket for the customer and the ticket will be updated in accordance with the repair of the machine. Once the machine is fixed we will return it and take the remaining cost. The company is constantly looking to widen its market.

3.3 Twitter

Twitter is an online social networking and micro blogging website that provides users with means to send and read 140-character “tweets”. A user can register with twitter to avail of the service. Once a user is registered he/she has access to the function to post tweets as well as read them. The user now can follow other twitter users and vice a versa.
The purpose of this action is that instead of searching for tweets a user will receive automated updates from the people they have chosen to follow. Twitter is accessed through multiple interfaces; the website interface, sms and the mobile device application.

Tweets are made publically visible by default but the option to change this setting exists.

3.3.1 Structure of a tweet

A tweet, as an object, exists with standard features and an optional feature of a hash tag. A hash tag is any text that is preceded with a # symbol. Users place these in their text so they can post together by topic by using the same hash tag.

The standard features as shown in the above tweet are:

- The username of the person who created the tweet.
- The desired recipient of the tweet.
- The profile image of the creator.
• The 140 character maximum message that the user has tweeted

• The time and date of the tweet

Twitter gives the user the option to retweet others tweets. In this case the user re broadcasts the message of the other

3.3.2 The Culture of Social Media and Micro Blogging

For this application an examination into the culture of social media would be crucial. Initial insights into the idea that this application would be feasible came from a slew of facebook messages seen after a Trinity Ent's organised night. A large portion of these pertained to people losing/ breaking their phones and asking their friends to contact them over Facebook. Facebook did not become the target of this application as the medium to gather information and contact potential customers as the information shared on Facebook is not as available as the information on twitter.

Examining the entire culture of social media provides answers as to why someone would consider tweeting about their broken devices. The act of tweeting comes from the desire to fulfil a need. By incorporating mallows hierarchy of needs (Figure 5) it is possible to identify the fulfilment of a number of needs through the use of twitter alone.

Twitter can be used to address the needs of love/belonging, esteem and self-actualisation. The need for belonging is addressed by meeting new people in an online setting and building relationships based on online interaction. The building of relationships online facilitates the amount of information a person is willing to share online.
The building of esteem through twitter is realised by earning respect from your online peers by providing them with useful information and interactions in exchange for acknowledgement in the form of retweets. During a two week period (Kelly, 2009), the content of twitter was analysed into the following categories:

- meaningless words – 40%
- Conversational – 38%
- Pass-along value – 9%
- Self-promotion – 6%
- Spam – 4%
- News – 4%

3.3.3 Tweets about broken devices

From monitoring tweets that originated in Dublin over the course of a couple of months there were 3 types of tweets identified that contain information about broken devices and were relevant to the application.

- Tweets that originate from a place of frustration. When a user tweets about their technological problems they often don't send the tweet to a specific person and just vent their frustrations to the public.

  Studies have shown (Carey, 2013) that a large reason behind people venting frustrations over twitter stems from the need to do something about it and that
expressing their feelings to the world will ease the stress and potentially provide a solution

- Tweets that originate from people informing their peers that they are no longer contactable through their phone and that contacting them over twitter will be the best way to get their attention.

  This shows the penetration of twitter in an individual’s life as well as the need to be connected. The use of the words “message me here for now” shows a willingness to have the phone repaired/replaced at some stage, a theme common in many tweets of this nature.
This is the most common tweet type found to include information about a broken device with clear intent to get it fixed. From an ethical point of view this type of tweet would be ideal for right click to reply to.

- Tweets about broken electronic devices show up in twitter conversations between friends that exist in the public. These conversations are further proof that twitter has become an everyday part of people’s lives.

### 3.3.4 Using twitter to identify customers

By default everything that a person tweets is accessible publicly. This data can be used in a multitude of ways by a business. The most common uses for twitter from a business perspective are:

- Connecting with customers
- Branding
Customer feedback
Marketing
News & Updates

The most prevalent to the use of publicly available twitter data is customer feedback. Businesses directly engage with twitter followers based on them mentioning the company or asking a question of the company through twitter.

Twitter has wide usage from a business point of view in terms of identifying customers. A company can create a twitter profile for the purpose of showcasing their brand on the web. This is the style of online presence shown by most large companies on twitter.

One of the most prevalent ways that companies will use public data on twitter is to filter all data by geographical location and then release tailored advertisements to certain locations.
Chapter 4

Problem Overview

4.1 Ethical considerations

When designing this application it became apparent that there would be a breach in twitters laws. Twitter deemed what the application was intended to do to be in breach of their laws. They do not allow an application to automatically contact a user based on their twitter updates.

The original application design would have parsed information based on the search criteria and automatically contacted a person to offer them a repair service. Twitter define this as spam and would ban the account of any application seen to do this. The design of the application had to be altered to conform to the laws of twitter.

A stringent study of the laws both ethical and legal of twitter’s services was undertaken. After a number invasive applications that took advantage of a user’s twitter feed twitter banned all applications that do not comply to the following:

- **respect user content** — Tweets may be used in advertisements, not as advertisements.

- **respect user experience** — build your service around the timeline, not in the timeline.

This is made clear in their terms of use for developers.
This raised a number of ethical issues that affected the project. Is it ethical to contact someone based on something they serve to the public domain? Could this be considering pestering?

Research was carried out on the ethics of online advertising and the following conclusions were drawn.

- By signing up to Twitter, a series of terms and conditions are agreed to as detailed in the Twitter privacy policy. Upon viewing this privacy policy, Twitter makes it clear that tweets may be viewed around the world instantly.
• The opportunity to have a device fixed in a speedy and manageable way far outweighs the problems with receiving an unsolicited tweet from a small business.

• If intent to have the device repaired is shown in the tweet, Right-Click has the same right as anyone to contact the tweet’s author and offer a solution.

4.2 Limitations

During the planning of the design on the application after sufficient research into the twitter libraries it became apparent that the twitter api was not as broad as I had expected. During their first iteration of their api there was considerably more powerful and allowed a greater access to twitter’s resources. An example of this would be in the original api there existed a method to return all related tweets to a status, allowing an application developer to trace the history of a conversations between users. This functionality was removed from version 1.1

During the initial planning stages of the application it was not apparent that the api would be limited to the degree it now is in version 1.1. This stymied the development of the application. Initially it was planned for the entire conversation between business and twitter user to take place using a custom twitter feed.

The move to REST 1.1 removed the functionality that allowed developers access to conversational data over twitter. The function was get_related_statuses and without this the only data that could be pulled from twitter was twitter user data. On-going conversations between twitter users can now only be accessed through twitter’s user interface.
## 4.3 Risk Analysis & Mitigations

<table>
<thead>
<tr>
<th>Risk</th>
<th>Measures to Reduce Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakdown of motivation and work ethic</td>
<td>Create smaller milestones and focus on measurable goals that date close together to improve sense of achievement and progress</td>
</tr>
<tr>
<td>Skill barrier</td>
<td>Proper planning and preparation to include time to become acquainted with new languages and frameworks</td>
</tr>
<tr>
<td>Competing academic interests</td>
<td>Structured prioritizing and adhering to a strict schedule</td>
</tr>
<tr>
<td>Illness</td>
<td>Allocating a certain amount of time to cover unforeseen events.</td>
</tr>
</tbody>
</table>
Chapter 5
Design & Implementation

5.1 Use Cases

The following use cases were used as a set of interactions that needed to take place within the confines of the system. These interactions were used to identify and organise the system from a requirements standpoint. The interactions were a design blueprint when thinking of the overall functionality of the system.

5.1.1 Emek the employee.

Emek is an employee at right click. During some expected downtime throughout the working day, Emek logs onto the right-click server and navigates to the OS tickets application that manages all booked in electronic devices. He then clicks on the link for the application to identify new customers through social media. He is brought to a login page where he enters his details and they are accepted. Emek is shown a feed of tweets relating broken electronic devices. He analyses the information and selects the tweets that are relatable to getting a broken device repaired. He then opens the filtered tweets page where he sees a list of the filtered tweets. He selects the most recent tweet by alix123 and by clicking on the reply button he is able to send her a message with a link to a form to fill in regarding their broken device. Emek then navigates back to OS tickets where he can see the information that alix123 has entered. He then creates a ticket on the system where he can handle the rest of the process of managing the repair.
5.1.2 Alix the twitter user

Alix dropped her phone on the way to work. When she got to work she tweeted out in frustration about her phone. Within an hour she had received a reply from right-click about getting her phone fixed. She clicked the link and filled out her application. She was called within a few minutes of submitting the form and a time was arranged to drop the phone in.

5.2 Issues affecting design

No application exists to help a small repair company identify new customers over twitter, the whole system will be designed from scratch while taking into account other applications that interact with twitter. The application will be designed taking into consideration that many different technologies will be utilised.

Right-Click had no preference as long as it would work with their current system which runs on a content management system that is based on php. The application had to be web based due to the nature of twitter as well as the fact that the companies current systems are all web based.
5.3 Choice of Architecture & Description

The following technologies were used to create the application:

- MYSQL
- HTML
- CSS
- PHP
- JavaScript
- JQUERY

After evaluating the current system that is in place in Right-Click it became obvious that PHP would be fundamental. The application would be a mix between client side JavaScript that would direct Server Side php as well as some standalone php to retrieve the information. A series of PHP scripts would be used to retrieve data from twitter and store it on a server in a json format. This data would then be requested by Jquery and displayed using css and very little html. The information chosen by the user to be relevant would then be sent using AJAX to a php script that would pass it to a MYSQL database. When viewing the filtered tweets they would be requested from the database and added to a json object that would be parsed by Jquery.
5.4 Data Storage

The database that was chosen to be used would be a MYSQL database.

MySQL is an open source database management system. The database was hosted on a local host initially and was managed using PHPMyAdmin which allowed for the creation and management of the database.

The database would contain a table to store the tweet information that the user had selected. The table ‘tweet’ contains a tweets creator name, creator twitter handle, the physical text of the tweet, the profile picture and the twitter id. This database will be populated based on the selection of tweets by the user. The database will be queried by the application to retrieve the user-filtered tweets.
Chapter 6
Complete System Overview

6.1 The twitter API

The twitter API manifests itself in two forms the streaming API and the REST API. The streaming API allows users a simple access to samples of public data that exist on twitter. It allows users to authenticate and gain access to streams of information. The REST API on the other hand allows a more comprehensive access to the information available on twitter as well as the ability to manipulate the data.

6.2 REST API

REST (Representational state transfer) is an architecture style that runs over HTTP. Architecture styles are coordinated sets of constraints that define roles and features of elements that exist within the architecture. The style denotes the allowed relationships between different elements. It relies on a stateless communication protocol to transfer data from a request. REST access the url and receives the data relating to the resource. The diagram describes how the twitter REST API works bar the fact that twitter only gives responses in the json format.
6.3 REST vs. Streaming API

For the application I made the decision to work the REST API as it better suited my needs. Connecting to the streaming API requires a persistent HTTP connection open. For me to use this method it would involve changing my application structure. For my application I would be making a serious of user requests that would establish a connection to twitter to gather information. Use of the REST API is best described using twitters example:
Using this method I would be able to access the data and manipulate it in a way that it would suit the needs of my program. The streaming api would not allow me to do this. The streaming process gets the input Tweets and performs all its parsing and Manipulation before storing the result. Use of the streaming API would force me to access the data that was needed in the following way, unable to manipulate the data before it was displayed:
The process queries the data for results in response to a user request. The main benefit of this is that it allows a real time stream of twitter data and that makes integrating into websites easier, a feature that the application was concerned with but the ability to manipulate the incoming data from the REST API made it the only choice.

### 6.4 Manipulating the REST API v1.1

The REST API is currently version 1.1, version 1.0 was depreciated during 2013. Version 1.0 was very broad and allowed anyone access data from twitter using simple requests such as

http://api.twitter.com/1/statuses/user_timeline/JoeBloggs.json

This would return a list of statuses from the user JoeBloggs. Access to this api is now shut off and the method to acquire access to twitter's new api is significantly more complex. To cater
for people who simply want to embed twitter timelines into websites twitter has granted access to a timeline widget. This widget is of no use to my application. To gain access to the api an authenticated request must be made to twitter.

The steps to gaining access to the new REST v1.1 API are as follows:

- Create a twitter account and sign into https://dev.twitter.com/apps/

- Select the create a new application and detail the specifics of your application.

- Request from twitter a series of access tokens(Consumer key, Consumer secret, Access token and Access token secret)

- Authenticate your requests using twitter’s Auoth library

From this stage a request is sent to request data from twitter. To authenticate the request to the REST API a php library created by Abraham Williams was used. His library implements twitters authentication protocol(OAuth) to allow a php application to access data from twitter.

6.5 Parsing data from twitter

The application must pull data from twitter, It does this with a php script where an authenticated connection is made and my credentials are checked against the ones twitter allocated for the application. Once the check comes back positive the php application is allowed to make requests on the behalf of the user:
The function getConnectionWithAccessToken creates a new TwitterOAuth object with the copy of the keys that twitter have access to and the function connection that is called later compares these to the ones stored in php variables.

The response is incremented and manipulated to suit the needs of the application. The script will add an extra attribute to each object in the array. A string value ‘selected’. This value will be used by the application to determine if the tweets in the json object are customers who are being targeted.

The ‘selected’ attribute is referenced every time the json file is accessed. The selected attribute will be set by user interaction. This attribute will also provide user feedback in terms of letting them know the specific tweet they have selected has been sent to the database.

6.6 Displaying the initial Tweets

The tweets that are pulled using the REST API are displayed using a html page that incorporates a series of JavaScript functions to display the twitter data. CSS is used to style the data as its being displayed on the html page. This page calls the JavaScript function twitterfeed.js and the associated style sheet to format it. Twitterfeed.js’s main function is to access the json created from the twitter request and to dynamically display the content in way that's easy to read for the user. It also allows the user to interact with the content by determining which tweets
should be filtered to the database.

gettwitterjson() is the main function. It will read in the json file and return an array of the statuses. Incrementing through this array the function will map the necessary information to javascript variables. The script will then add the data, wrapped in divs, in the form of a string to a variable (feedHTML).

A function is called that applies css from to feedHTML that displays it as shown below. The other function that is executed by this script displays the relevant time of the tweet using a standard date and time algorithm.

### 6.7 User Interface

All of the data is loaded into a JavaScript variable where css is used to identify and display the information. The CSS uses div tags that are defined in the JavaScript and added to a string that is then read upon opening up the html page. The result is a feed of tweets with the twitter users information, their profile picture, the time of the tweet and physical content of the tweet as seen in figure 6.
One of the attributes added to the string is a button that the user will press to send a tweet to the filtered database. The id given to the button is incremented along with the for loop that exists at the start of the javascript. The id was incremented so the script could use the id of the button pressed to alter the “selected” value in the json array at the index that is equal to the id of the button, sending the correct tweet to the filtered database.

### 6.8 Selecting Appropriate Tweets

When viewing the tweets the user can select them by pressing a button located on the right side of the feed as seen in figure 6. Pressing this button will, using Jquery send the id of incremented button to a php script that will in turn update the original json file to have the attribute “selected” set to 1 at the location in json file that equals the id of the button.

```javascript
$(
'\.btn').click(function() {
    var clickedID = this.id;
    alert("Sent to filter");
    location.reload();
    $.post('http://localhost/4th/twitter2/update.php', { postid: this.id }, function(data) {
        
        $(
'\.btn').click( function() {
            
            $(this).css("background", "green");
            
        });
    });
});
```

The php script that the id is posted to will open up the json file and make the appropriate changes on the click of the button.

Once the tweet is sent they will be sent an alert message and the button will turn green, as shown in the image above.
6.9 Sending selected tweets to the database

Any tweet that the user of the application selects is sent to a database along with their meta data. After a user has selected a tweet as described earlier the page will refresh itself. Upon doing so the javascript will reread the json file and parse through all of the elements of the array inside. An if statement in the script will check to see if the attribute “selected” is set to one and if so it will send the selected tweet and its data to a database.

```javascript
tweetid = feeds[1].id_str;
selected = feeds[1].selected;
  if (feeds[1].selected == 1) {
  }
```

The javascript will use ajax to ‘post’ the information about the tweet to the database via `send.php`. The parameters passed to the php script are as seen in the below image.

```php
$name = $_POST['postname'];
$user = $_POST['postuser'];
$status = $_POST['poststatus'];
$id = $_POST['postid'];
$img = $_POST['posting'];
mysql_connect($host, $username, $password) or die("cannot connect");
mysql_select_db($dbname) or die("cannot select DB");
$db_insert = mysql_query("INSERT INTO tweet(name, user, status, img, tweetid) VALUES ('$name', '$user', '$status', '$img', '$id')");
```

6.10 Displaying the filtered tweets

The filtered tweets are displayed in the same way the initial tweets are. The html page makes a call to a separate script. The differences in the script that parses filtered tweets and the script
that gets tweets straight from twitter is that the filtered tweets come from a database.

The javascript that deals with the filtered tweets calls a script to produce a json object for it to gather data from. The php script takes all the tweets from the database and encodes them into a json object.

They are then dealt with and displayed in the same way as the initial tweet data. The difference is that instead of a button to submit a tweet to the database there is a button that allows the application to send a reply message to someone on twitter.

6.11 Interaction with the Potential Customer

Once the user of the application has identified a potential customer they send them a link to a form that has to be filled in. The form has information that is vital for the repair process to begin. Once the user has submitted the form the information is sent to a database and they receive a message informing them they were successful. When the user of the application logs on the ticket creating system already in place in right click they can navigate to the tickets page where the most recent form data will be displayed. A ticket can then be created similar to the one below.
<table>
<thead>
<tr>
<th>Status:</th>
<th>open</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority:</td>
<td>Low</td>
</tr>
<tr>
<td>Department:</td>
<td>Dawson Street</td>
</tr>
<tr>
<td>Create Date:</td>
<td>02/26/2014 9:13 am</td>
</tr>
<tr>
<td>Make:</td>
<td>DS - Apple</td>
</tr>
<tr>
<td>Model:</td>
<td>DS - iPhone 4S</td>
</tr>
<tr>
<td>CD’s:</td>
<td>0</td>
</tr>
<tr>
<td>Cost Quoted:</td>
<td>€49</td>
</tr>
<tr>
<td>Name:</td>
<td>Adrian Reynolds</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:info@lemontco.com">info@lemontco.com</a></td>
</tr>
<tr>
<td>Phone:</td>
<td>(087) 266-2828</td>
</tr>
<tr>
<td>Source:</td>
<td>Phone 84.203.115.18</td>
</tr>
<tr>
<td>Bag:</td>
<td>No</td>
</tr>
<tr>
<td>PSU:</td>
<td>No</td>
</tr>
<tr>
<td>Serial Number:</td>
<td>DNIHKZNKDTC0</td>
</tr>
<tr>
<td>Diagnostic Paid:</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Subject:** DS - Diagnostic after liquid damage  
**Assigned Staff:** - unassigned -  
**Related Tickets:** 1  
**Last Response:** 02/26/2014 9:03 pm  
**Last Message:** 02/26/2014 9:13 am
Chapter 7

Analysis and Evaluation

7.1 Findings

A number of key findings were made during the undertaking of this project. After delving into the culture that surrounds twitter and the people who use it day to day a number of things became clear. People use twitter to meet their needs. It is a natural progression that people will use a service to fulfil as many needs as possible.

For example when a person vents their frustration publically it is a cry for help for someone to reach out and offer a solution or sympathy. Twitter has become such a part of everyday life that people are willing to meet their needs by venting such frustrations over twitter to find a solution or sympathy.

From the research conducted during the course of this project it clear that twitter has a lot to offer businesses. A service based industry can benefit greatly from engaging in online social media activities.

During the development of the application after numerous tests and research it was apparent that there is a sustainable future in identifying customers through social media with the intention of having them avail of a service.

Aside from ethical limitations that are associated with using twitter as a business and marketing tool social media space is wide open to be taken advantage of. Massive amounts of analytical data are being taken, marketing trends are being analysed, and geographical locations are being tracked. Direct contact and proposition of a service is a more honest approach to using social media, in the guise of this paper.
7.2 Future applications

Within right-click there is a ticketing system that is based on OStickets, an open source ticketing system that allows a user to create a ticket, attach a multitude of information and then attach an owner.

The hope for the application was to have it integrate with the current ticketing system in right-click to a larger degree. As of now the application can interact with right clicks current ticketing system to a certain degree. The interaction is very much in its beta stages. With full integration it would be possible for the application to provide the opportunity for steady stream customers to avail of Right-Click’s services.

On a larger scale, this application has implications for any small business that operates in a service dominated industry. Online market places exist for goods. Amazon and eBay offer a vast quantity of goods but very few services. There is potential for a small business to be able to identify customers without the consumer having to actively search for a service.

7.3 Conclusion

As far as completing an application for the identification of potential customers for an electronic repair company, it was a success. The application could become a viable option for right click to identify new customers. However, it is of the upmost importance to note that this project is very much still in beta stages, and a complete application that is fully integrated with an existing system in a repair company is a milestone that has to be reached. As proof of concept, an academic exercise and a potential aid to an existing business this project fulfilled its requirements.
References:


https://business.twitter.com/

https://dev.twitter.com/docs/streaming-apis/streams/public
Appendixes

Figure 1
Figure 2
General Overview of "Waterfall Model"

- Requirement gathering and analysis
- System Design
- Implementation
- Testing
- Deployment of System
- Maintenance

Figure 3

Figure 4