Investigation

Customer Relationship Management System (CRM)

Kieran Williams

Background Information

Many large organisations will have their own bespoke software that they would use as a customer relationship management system (CRM). However, my intentions are to create a generic CRM that is web based and will allow for many businesses that are unable to afford the bespoke software, such as, local plumbers, electricians, marketers, freelancers, etc… to have access to the services provided by them. The problem with many of these online CRM's are that they offer too many services and overcomplicate things for many end users so my aim is to create a system that incorporates only what they will actually need and not overwhelm users with features a typical small business does not. They also often cost a monthly subscription to use. I aim to identify these needs through observation of a couple of end user's current systems, questionnaires, interviews and consultation of any documentation they have. I will then identify the similarities and generalise the needs of the users, putting together the specification and objectives for my project.

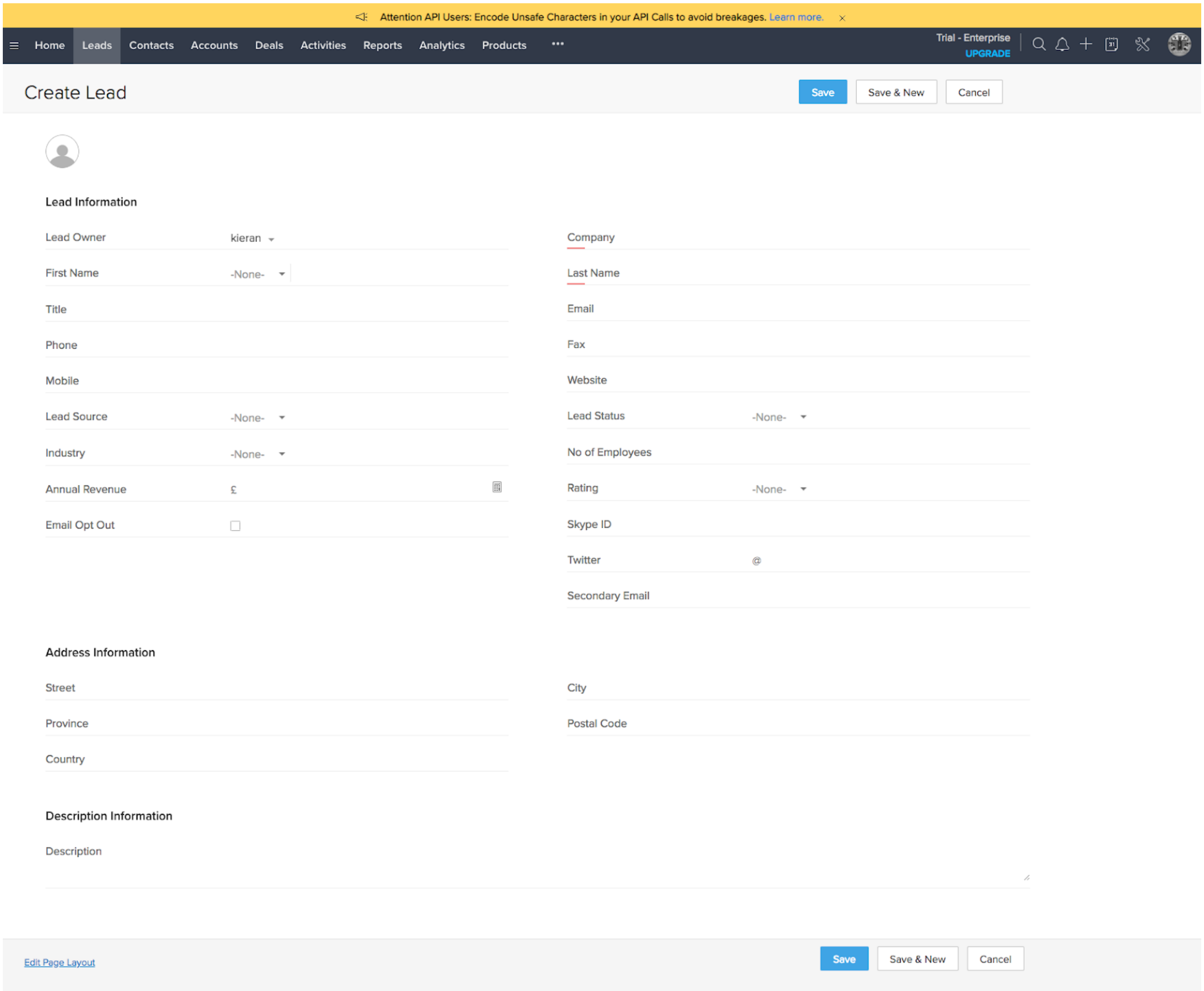
Many businesses that could be making use of a CRM are often put off from using one due to the complexity many CRM's go into. And instead, end up managing the clients either by memory or by bits of paper that eventually gets lost. I will find 3 business owners that would be potential end users that could all use the services a CRM would provide, to conduct my investigation through. These end users will include a Graphic Designer, A plumber and a Digital Marketer.

Research On Current Systems

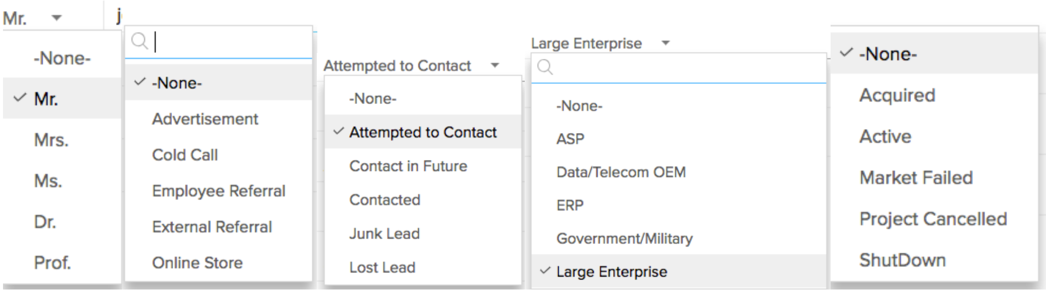
Some current Systems that offer this include: HubSpot, SalesForce, ZOHO CRM. I intend to investigate ZOHO as it is a commonly used currently existing online solution. Although it is aimed towards an enterprise organisation not towards one man type businesses/ freelancers.

ZOHO

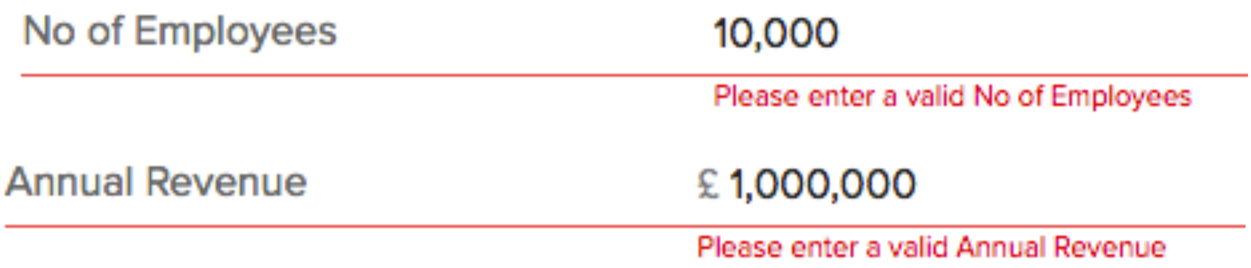
Creating A Lead/ Contact



This form takes basic information on the contact such as: the lead owner (a way of having different users/employees on the same account - there are no different levels of access), the contact's name, position in the company, email, phone numbers, website, no. of employees, annual revenue, social media accounts and address details. Some of these fields are specific to a business to business model. All of the fields are optional. The drop down fields include: name title, lead source, lead status, industry & rating.

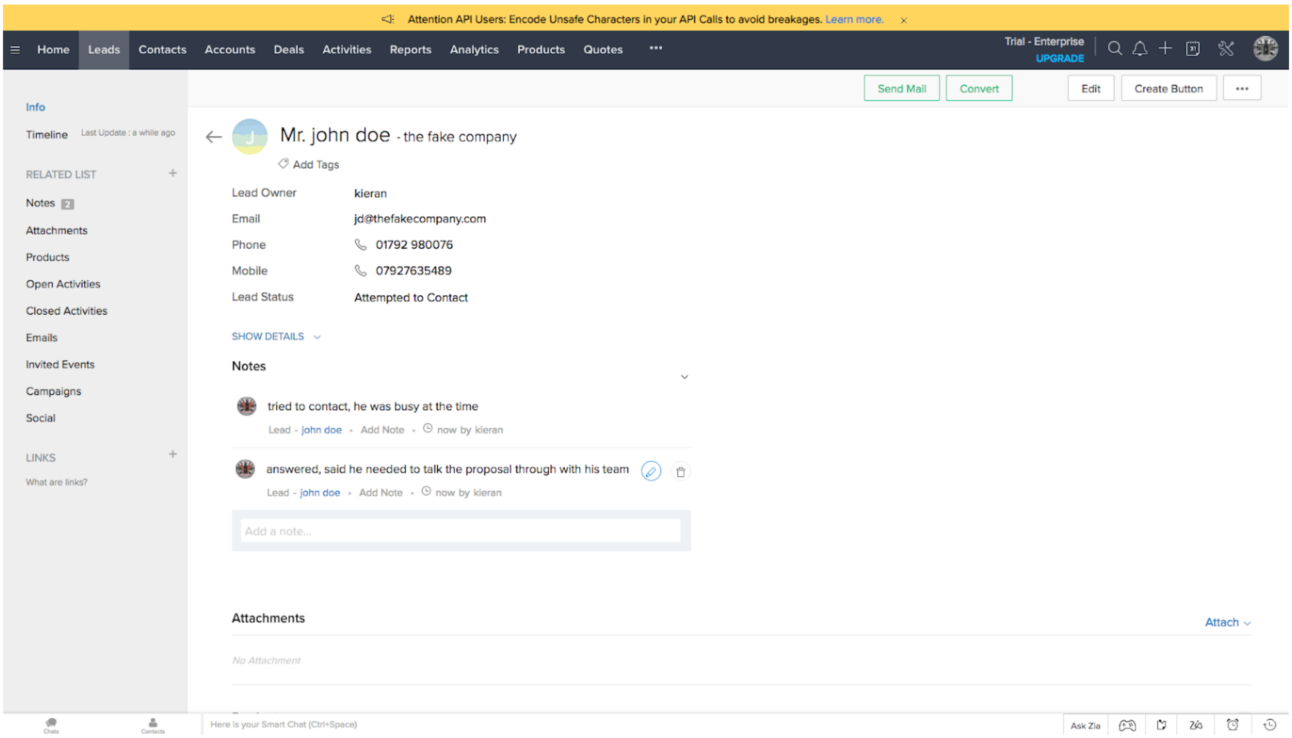


It also includes an email opt out checkbox if the contact had opted out or requested not to receive emails.



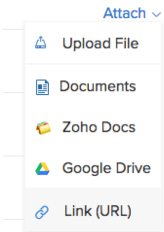
There is validation within these fields to ensure data entered is a number value

Viewing A Lead/ Contact



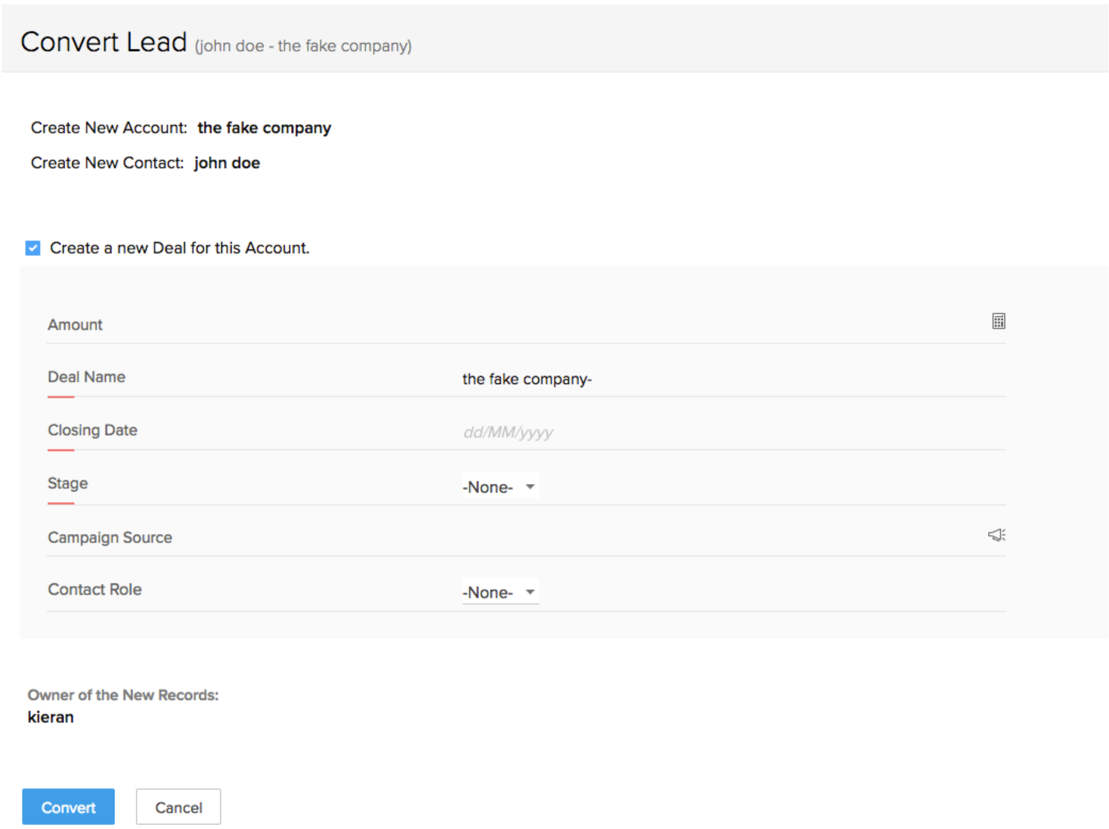
The front page of a contact, is an overview of the essential details, along with notes in chronological order with a time-stamp. There is also a left side nav bar to locate the various other inputs on the user, many of which are very generic to different types of contacts.

The options of file attachments include:

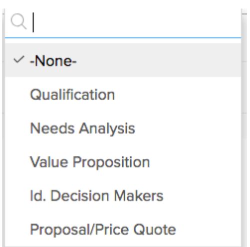


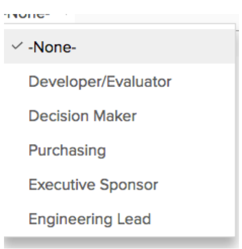
At the top of the page there are two buttons. One to send mail (email) and another for convert (set the conversion from a lead to a client)

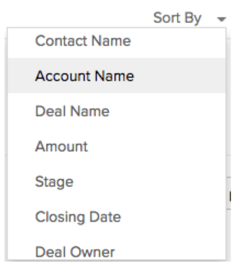
Converting A Lead Form



The dropdown's, "stage" and "contact role" include:



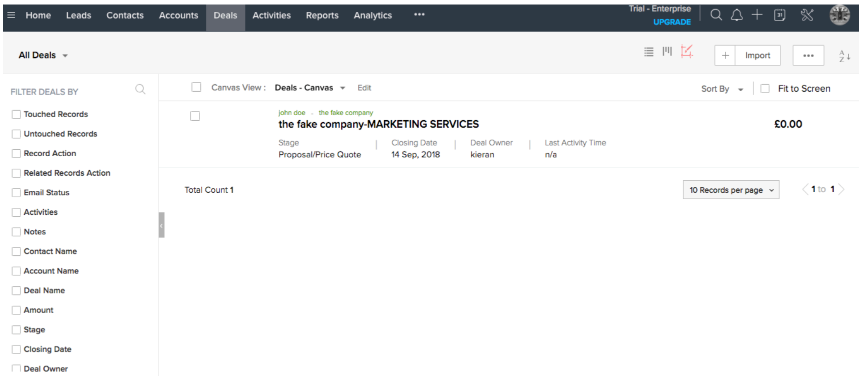




The closing date field takes a date which brings up a calendar upon having focus to select a date.

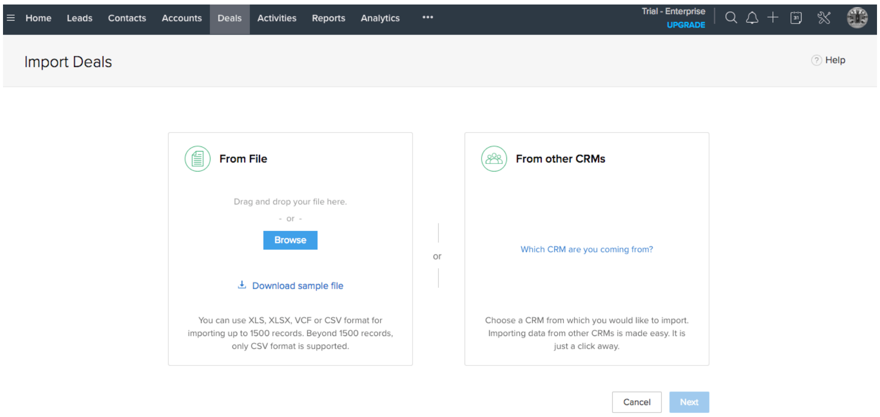
Viewing A Deal

Once a deal is put through, the contact will transfer from the lead page to the deals page



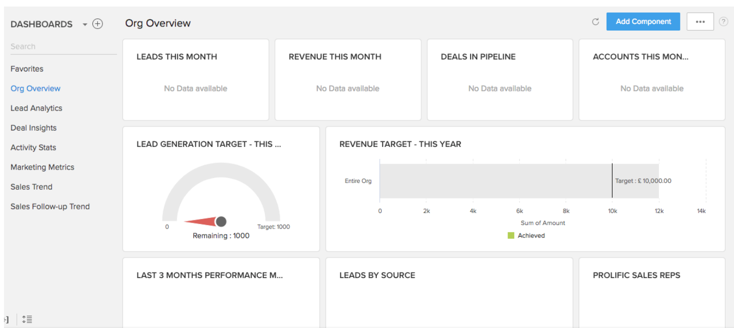
The deals view page is the same as the leads and contacts view page. The page allows for filtering, sorting by:

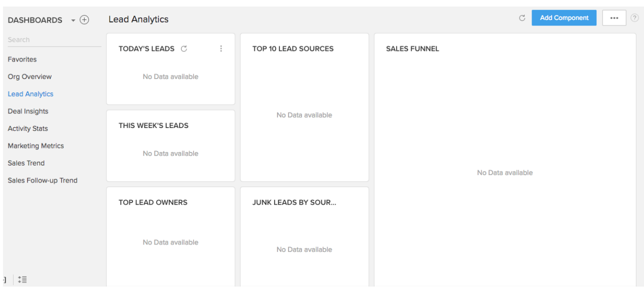
It is also possible to import contacts, leads and deals via csv files or by another CRM as seen by the import button in the top right corner. Clicking that leads to this page.

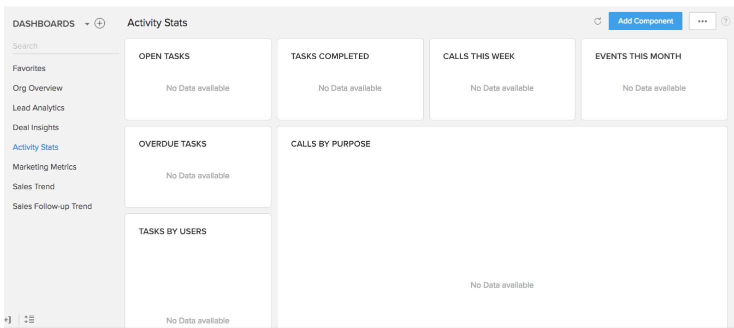


The csv upload form also allows for a download of a sample file so that the necessary format of the csv can be observed and followed

There is also an Analytics page that visually represents different aspects of the business. For example:

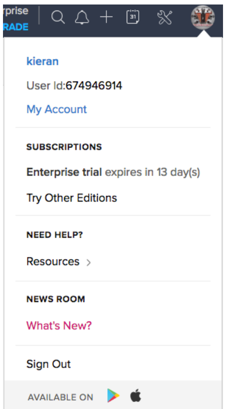




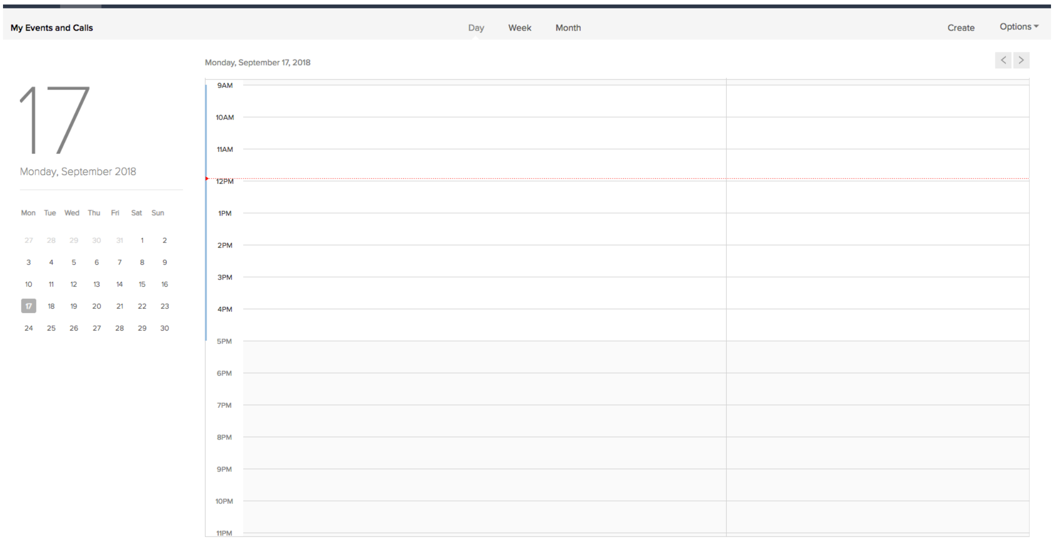


The analytics page breaks down the different things that could be analysed such as a basic overview, analytics for the leads showing where the best leads came from, places where junk leads have come from, the weeks leads to go through etc…, Activity stats such as, overdue tasks, tasks to completed, current open tasks, events for the month, the calls made and the calls purposes etc…
There are more analytics but require more usage of the system to draw data from.

The user menu drop down includes the user's name,
The user id, a button for "my account" to manage account details,
The subscription lan details, resources to help learn how to use the system. And a button to sign out of the account

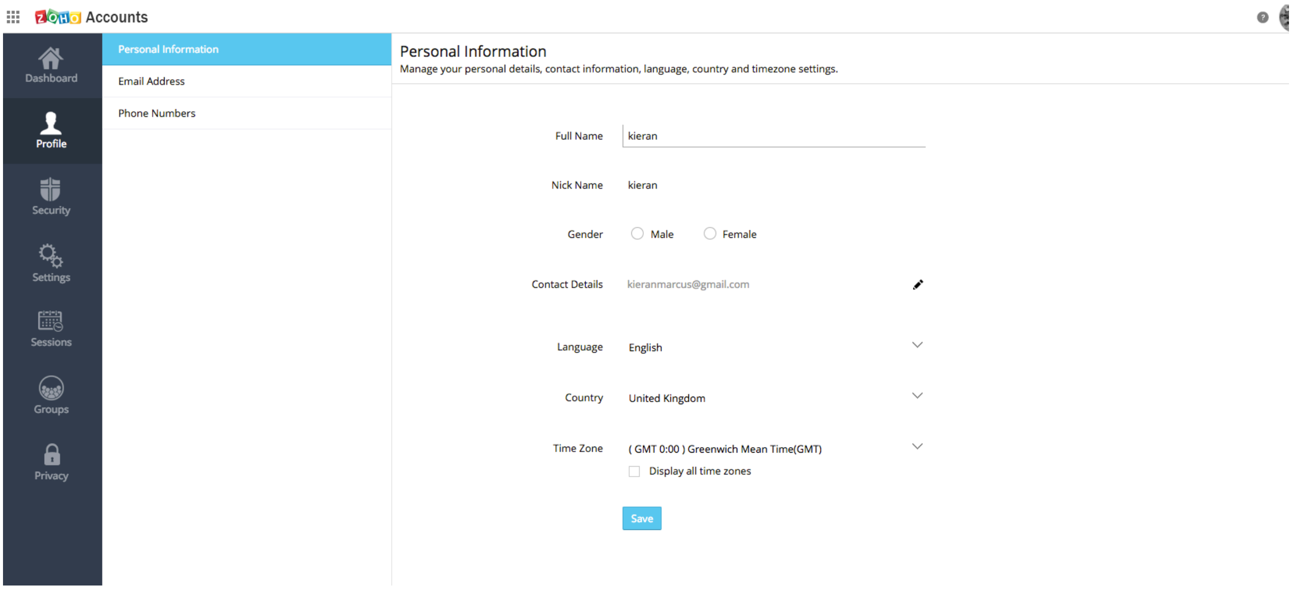


Calendar



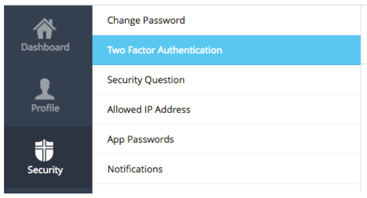
The calendar breaks down anything scheduled, into a visual context. It also allows for the display of data to change based on a day's, week's or month's timeline.

My Account

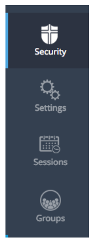


In the profile details it gives you the option to edit your name, nickname, gender, email, language of the system, country, and time zone.

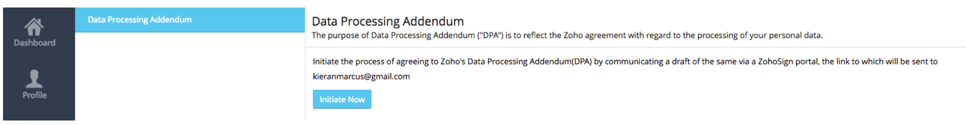
The security section allows you to take advantage of security measures they have put in place such as, two factor authentication, Security questions, set ip addresses that are only allowed access to the system, app passwords to use different parts of the system, this is one way of managing authorisation/ levels of access. Lastly they also offer notifications to be sent when the account has been logged into.



The settings, sessions and groups options are locked for the paid version only of the system so I am unable to analyse their purposes



The privacy section opens a page that allows you to accept their data processing agreement.



Current Systems Used By Intended End Users

As my system is intended to be used by different users (one man/ small team businesses) with different yet similar needs, I felt it'd be appropriate to investigate some different types of end users. I'm investigating different types of business owners in hopes of obtaining information regarding what they require in a CRM system. I will then find the similarities of their needs and generalise them, before going back and ensuring I have not generalised anything to an extent not suitable. This part of the investigation is to require an understanding on everything they do/ don't require, how they currently operate, identify their Inputs Processes and outputs, and have understanding on the data required to be stored. I will do this through a processes of interviewing the potential end users multiple times as I progress through my investigation, observing their current systems in operation where possible, consulting any documentation if possible as observation and consultation of documentation will provide me with insight on the current system I may not have asked for/ they forgot to mention. Finally I will make questionnaires so that I can gain further information after an interview without wasting too much of the business owner's time as well as mine. Questionnaires will also allow me to ask broad questions to have a larger reach of end users requirements, outside of my limited group of stakeholders my research will be primarily focused on.

The Stakeholders

For my stakeholders, I have decided to diversify the selection, to gain a broad understanding of how different businesses may use a CRM. I will be carrying my investigation out on a professional Graphic Designer - James and a Digital Marketer - Imran.

Digital Marketer - Imran

Interview 1 Transcript

Me -
Could you please describe what your business is about and what your clients pay you for?

Imran -
Our Digital Marketing Agency has a business to business model, so our clients are business owners themselves. Our job is to create and manage adverts/ marketing campaigns for the different businesses. We do this by conducting research into that business on that business type of language/ lingo they use, as well as the best converting converting adverts/ marketing campaigns for that niche. We then run facebook and instagram adverts to capture leads for their business or advertise their product/ services. We also manage our clients social media accounts for them keeping them active with an online presence.

Me -
So how many employees do you currently have and for what roles?

Imran -
Currently we have 2 people other than myself working within the business. However none of these workers are pay-rolled employees, they are paid based on their work done. I have a graphic designer and a content poster/ copywriter who comes up with the posts for the different social media accounts and posts them. My current roles in the business are selling

our services, reporting back to clients on how adverts are doing, coming up with marketing strategies for the clients, as well as posting adverts and analysing their performance.

Me -
So how exactly do you get leads and approach them?

Imran -
I do a google search of an area followed by the business niche I'm going after. Following that, will call the businesses in an attempt to speak to the decision maker.

Me -
Are you often successful in speaking to the decision maker first time and closing the deal straight away?

Imran -
Unfortunately it very rarely goes that way, most of the time I will with get hung up on, or get told to call back some other time for various reasons. When on the phone to the decision maker, usually the business owner, I will be able to pitch my services and how I can help them but they are often reluctant to making a decision there and then. I will usually have to schedule another call with them or arrange a meeting where I will close them.

Me -
Have you ever made use of a Customer Relationship Management System before, if so, what was the experience?

Imran -
Indeed. We currently use HubSpot as our CRM System. For the most part it is a very good system for a small business such as mine. Although it is very feature rich and can sometimes get quite confusing due to the complexity of it. However it does the job for now.

Me -
What are the features of the CRM you actually find yourself using?

Imran -
I create contacts when they have showed a sign of interest in the services I provide, use the status of that contact to know weather they are a lead that needs to be recontacted, a dead lead that previously showed interest, a current client, or a past client. I used to use the visual representation of data on conversion rates that helped me visualise my sales performance but found it tedious as it required me to create a contact, that would instantly become a dead lead. I schedule any tasks and appointments relating to a contact as well as any extra information on that contact in the notes. Things done with the contact (leaving a note, setting a meeting, etc..) appear in chronological order on the contact's page. Anything scheduled will also appear on the dashboard to serve as reminders.

Me -
what data do you input for setting up an account, creating a contact? Are there any other data entry forms?

Imran -
I can't remember what data is needed for input on a new contact or for the creation of an account off the top of my head sorry.

Me -
Have you ever encountered any problems through your current approach you take to managing your clients?

Imran -
I actually have. It was a pretty severe problem and could have escalated to something disastrous if I hadn't handled it in time. I used to store usernames and passwords for clients accounts in the notes section of hubSpot. My account got hacked and resulted in my client's accounts getting hacked. Luckily I caught wind of what had happened very soon after it must have happened, due to me seeing junk being posted to multiple client's accounts. I quickly removed the posts and changed all necessary passwords without my clients realising. If it were to have escalated, it could have resulted in law suits being filed against me.

Me -
How do you now manage your client's account details?

Imran -
Now I keep a physical file of documentation of my clients account details, only shared with my content poster.

Me -
Would an encrypted notes section in a CRM system be useful for an instance such as storing account details? Also are there any other features you would like in a CRM System?

Imran -
Yes, that would be perfect for storing extremely confidential details on a client. And I'm actually trying to increase my conversion rates still but as stated previously, in hubSpot the graph that showed conversion rates required me to create a contact just to straight after set them as a dead lead. If I could after a sales call set whether I got a conversion or not without having to create a contact to do so, then that data generates a graph of sales made in a set period of time that would be great. Also to see my conversion rates in a ratio. And a better CRM system would definitely be one with less features that has the barebones of what I actually need.

Me -
Would you ever use a new CRM System if it were to have everything you have stated you would want in one?

Imran -
I would. However it would need to be able to import my contacts from a CSV file as it would be awfully tedious to create a new contact for all of them that I have created in HubSpot.

Interview 1 Extractions

* No need for levels of access as he is the only one using the software
* Could make use of scheduling that is not related to a client for things such as setting a reminder to call back a lead that has not yet showed proper signs of interest but has asked to call back another time.
* Only wants features that they require not an overload of features that overcomplicates the system.
* Requires the ability to create contacts, the ability to set a status of whether they are a lead that needs to be recontacted, a dead lead that previously showed interest, a current client, or a past client. Wants to be able to see sales data, the conversion rate, and the percentage of different types of contacts in a visual context. Wants to be able to track sales without having to create a contact. Needs to be able to schedule tasks/ appointments, and notes relating to clients, of which to appear in chronological order in an activity page for that client.
* Needs to be able to see anything scheduled in the dashboard.
* Would make use of an encrypted notes section only accessible via a separate password to decrypt it.
* Needs to be able to import contact details from a CSV file in a certain format.
* Need to look up what data inputs HubSpot takes.

Observation Of Current System

Currently uses HubSpot as a CRM and holds account details in a physical folder that has a piece of paper per client with all their account details. While observing the usage of HubSpot, I observed him creating a contact which took the following details as input: first and last name, email, phone number, contact owner, city, postcode lifecycle stage & lead status. I then created an account to see what details would be necessary which were: first name & last name, business name, email address and password. There looked like a lot of links to different features of the system that looked quite confusing.

I noticed him making use of adding attachments to contacts which was not mentioned in the interview. He attached things such as image files for things such as logos. I also noticed how he would filter his contacts by city, postcode & lead status.

He sorts the contacts by ‘recently added’, ‘alphabetical for name’ & ‘city’. He would also search for certain contacts.

There was the option to set “deals” to contacts when a service had been bought but he was using the notes to keep track of that instead of the deals section of the system as it was too complex for him to get his head around.

On any particular contact page it showed the details of that contact. Had the ability to add a note, Send an email (not made use of), call from within the system (not made use of), create a task (with a set date) and create a scheduled appointment. All of this data would be considered an output of the system. As all activities would be put on display in the activity log.

The processing of data would be done in the analytics page primarily. The visualisation of data showing deals closed in a period of time. Another process is the activities being put in chronological order. Processes on the filtering of contacts and searching for them, where the contacts that don’t fit the criteria get removed from the list. Sorting the list of contacts is also a process where the order of the contacts are being changed around to fit the sort.

Consultation Of Documentation

The only pieces of physical documentation were the documents containing the account's details. These documents were laid out as follows:

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BUSINESS NAME

Facebook Account:
username: *******
password: *********

Instagram Account:
username: *******
password: ************

Twitter Account:
username: *******
password: ***********

Snapchat Account:
username: *******
password: ******

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This is just some basic text, it could easily go into a text area within a contact page with an encryption on the data. If a hacker were to get access of the account they still wouldn't be able to get into this sensitive data without a key.

IPO's Of Current System That Get Used

(HubSpot)

Inputs:

* Account details: first name & last name, business name, email address and password.
* Contact details: first and last name, email, phone number, contact owner, city, postcode lifecycle stage & lead status, as well as the time stamp that a contact was created, closed or lost.
* Contact Management: notes, schedules & tasks as well as a time stamp of when they get submitted.

Processes:

* Login, search database for username and use the hashes on the password to see if it matches what is in the database before allowing access
* Being able to change passwords
* Filter contacts by city, postcode & lead status.
* Sorting of contacts by recently added, alphabetical for name & city

* Calculations on conversions such as conversion rates as well as lost clients over a given time
* Checking things that are scheduled against the date
* Appending notes, tasks and schedules into chronological order

Outputs:

* View contacts in a range of different ways (through filtering or sorting)
* View a contacts details including any notes, tasks or schedules relating to them in chronological order
* Be notified if something scheduled is happening on the current day
* Represent conversion rates and loss of clients over time in graphs

Limitations Of Current System

* Inability to schedule anything that isn't related to a contact
* System is confusing to navigate through
* Inability to see sales performance without having to create a contact every time
* Unable to create notes separate to those saved to a contact
* No way of scheduling tasks unrelated to a contact
* There isn't a visual way of seeing the percentage of different contacts stored

Objectives For Imran

* Scheduling not related to a contact

* Easy to navigate through system

* Ability to create contacts

* Ability to set a status of whether contact is a lead that needs to be recontacted, a dead lead, a current client, or a past client.

* A Graphical representation of sales within a period of time

* To be able to see the current conversion rate for the month for example

* To be able to see what the percentage of different types of contacts are in a visual context

* The ability to have data representation on sales without having to create a contact each time

* Needs to be able to schedule tasks/ appointments relating to a contact

* Needs to be able to create notes relating to a contact

* The ability to view all activity on a contact in chronological order.

* The ability to view any scheduled tasks/ appointments from the dashboard.

* Have a notes section on a contact that can be encrypted and only viewable through a password separate to that of the account's.

* The ability to import contacts from a formatted CSV file.

Graphic Designer - James

Interview 1 Transcript

Me -
Could you please describe what your business is about and what your clients pay you for?

James -
We offer many graphic design services such as logo design, print designs, leaflets, etc… We don't offer production of any products though, just the designs.

Me -
What are your average clients in terms of business owners, influencers, etc…?

James -
Generally the average client is a business owner but we have had kids wanting a custom t-shirt with their name on it for example. Businesses will usually come back for repeat work whereas other sorts of clients rarely do.

Me -
So how many employees do you currently have and for what roles?

James -
It's just me. I have to deal with clients as well as do all the graphic design work.

Me -
So how exactly do you get leads and approach them?

James -
At the start of my business I would approach prospects but now due to my reputation, my services get around through word of mouth. When an interested individual enquires about what I can offer them, I will try to sell them my services.

Me -
What is the process with a client from the sale to the end of your services with them?

James -
Once I have have work, I will start by getting a thorough understanding on exactly what they want before letting ideas flow back and forth through sketches. This is often done over Skype as many of my clients are from other parts of the world. This is organised by scheduling appointments with them. I will usually repeat this process a few times until I have enough information on what they want to create a couple of polished designs for them to choose from.

Me -

Do you deal with multiple clients at once?

James -
I do.

Me -
Have you ever made use of a Customer Relationship Management System before, if so, what was the experience?

James -
I have not.

Me -

* Explanation of what a CRM is (see start of investigation) * What do you currently do to manage your clients, from appointments, tasks and notes to keep track of what you are doing with that client?

James -
To set appointments, or any tasks I have to do by a date, I will write on my calendar and note the time if applicable. When dealing with a client I will do a little write up on them and what I did for future reference if I need to contact them or if they come back again for my services. The write up gets stored in a physical folder sorted alphabetically but over the years I have built up multiple folders

Me -
what information do you write up on a client?

James -
I will often write down different details depending on the client, but usually: their name, address, phone numbers, Skype username & email address. I will then also write up the spec for the project and create notes on it as the project progresses.

Me -
Have you ever encountered any problems through your current approach you take to managing your clients?

James -
I have. There was an old client who asked if I had the svg file of their logo and were willing to pay if I could find it. I have many hard drives filled with past work but I will write down the hard drive and folder name that work is stored on in the client's document I write up. Unfortunately, due to my messy file structure of both my client documents and on my hard drive, I was unable to locate the logo. This resulted in me losing some very easy money.

Me -
In an online system managing your clients, would you find a notes on the client useful to keep track of details such as those you have just outlined, and a an appointment system to help you schedule your work related Skype calls or meetings that have been arranged?

James -

Yes that would be very useful but I would be a bit scared putting all my trust in an online system just incase it was to stop running or my data got corrupted.

Me -
If there was a way to get all your data into a CSV format in the instance that the site was to be shut down, and backups to be done on your data just incase the data got corrupted, would that put your mind at ease?

James -
Yeah it would. I'd have a lot more confidence in using the system.

<u>Interview 1 Extractions</u>

* No need for levels of access as he is the only one using the software
* Could make use of scheduling meetings.
* Needs the ability to create contacts
* Would make use of a notes section.
* Needs to be able to export contact details to a CSV file.
* Requires backups to be done on data
* Ability to sort through contacts/ filter through contacts based on certain criteria

<u>Consultation Of Documentation</u>

The only pieces of physical documentation were the documents containing the client details with their project notes and spec. These documents were laid out as follows:

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<u>CLIENT DETAILS</u>

Name: ******

Address: ** ******, ******, *******

Tel: *********

Mobile: ********

Skype Username: *******

Project Spec:

1) ***** ***** ** *** ***** ****
2) * ***** ** ***** ***** ***** ** *** *****
3) ***** ***** ** *** ***** ***** ***** ** ***** ***** ***** ** *** *****
4) ***** ***** ** *** ***** ***** ****
5) * ** ***** ***** ***** ** *** *****
6) ***** ***** ** ***
7) ***** ***** ***** ** ***** ***** ***** ** *** *****

Project Notes:

***** ***** ** *** ***** ***** ***** ** *** ***** ******
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The project specs does not seem as though it would be suitable to the notes section that gets stored in chronological order. A solution to this would be a text area that saves and displays the text as it gets saved in that area.

Limitations Of Current System

* Unorganised way of keeping contact details and notes
* Paper based and could get lost or damaged
* No way of sorting through contacts, finding anything related to a contact could be costly on time
* Takes up physical space

Objectives For James

* Scheduling related to contacts to book meetings

* Contact Creation

* A text area that can be saved to the contact that gets saved and stays there for saving additional details about the contact.

* Exportation of contact details to a CSV file.

* Backups to be done on data stored about contacts

* Ability to sort through contacts/ filter through contacts based on certain criteria

Questionnaires

To gain a further insight into what other end users might want based upon the knowledge I have gained through my investigation so far, I will give out questionnaires to relevant individuals and businesses. The questionnaires will allow me to gain a large set of data from different potential end users to see what the majority of them would want in an efficient manner, as I will get a lot of data in a short period of time.

The questionnaires will be put online, I will then post a link in relevant facebook groups to get responses.

Customer Relationship Management System

Have you used an online CRM before?

Yes No

is there a need in your business for a barebones CRM System

Yes No

How many people are in your business?

1-3 4-10 Over 10

please rate the following features out of 10 (1 = bad 10 = excellent)

Scheduling not related to a contact

1 2 3 4 5 6 7 8 9 10

Easy to navigate through system

1 2 3 4 5 6 7 8 9 10

Ability to set a status of weather contact is a lead that needs to be recontacted, a dead lead, a current client, or a past client.

1 2 3 4 5 6 7 8 9 10

A Graphical representation of sales within a period of time

1 2 3 4 5 6 7 8 9 10

To be able to see the current conversion rate over a month

1 2 3 4 5 6 7 8 9 10

To be able to see what the percentage of different types of contacts are in a visual context

1 2 3 4 5 6 7 8 9 10

The ability to have data representation on sales without having to create a contact each time

1 2 3 4 5 6 7 8 9 10

ability to schedule tasks/ appointments relating to a contact

1 2 3 4 5 6 7 8 9 10

ability to create notes relating to a contact

1 2 3 4 5 6 7 8 9 10

The ability to view all activity on a contact in chronological order.

1 2 3 4 5 6 7 8 9 10

The ability to view any scheduled tasks/ appointments from the dashboard.

1 2 3 4 5 6 7 8 9 10

Have a notes section on a contact that can be encrypted and only viewable through a password separate to that of the account's.

1 2 3 4 5 6 7 8 9 10

The ability to import & export contacts from a formatted CSV file.

1 2 3 4 5 6 7 8 9 10

Ability to sort through contacts/ filter through contacts based on certain criteria

1 2 3 4 5 6 7 8 9 10

Backups to be done on data stored about contacts

1 2 3 4 5 6 7 8 9 10

A text area that can be saved to the contact that gets saved and stays there for saving additional details about the contact.

1 2 3 4 5 6 7 8 9 10

do you have multiple employees that would be using the CRM

Yes No

Would You suggest any other features you would want to see in a web based CRM

Questionnaire Results

The first 3 questions are there to separate the different types of participants (a non target user and a user I'm targeting the system towards.)

I got 100 submissions of the questionnaire and these results are based on them submissions.

* Results for the 1st question "have you used a CRM before" came back with 63% "yes", 37% "no"

* The 2nd question came back as 76% "yes", 24% "no"

* Results for the 3rd question showed 74% of the users had "1-3" people in their business, 18% had "4-10", 8% had "over 10"

Not Target Users

(subjects that said "no" for the second question and "over 10" for the third question)
I decided not to account for their inputs as they are not the users I am aiming my project towards and there is a larger sample of participants, who qualify as my target users.

Target Users

(subjects that said "yes" for the second question and "1-3" / "4-10" for the third question)

20) most popular answer was "no" for both
- Makes sense to not bother with adding in authorisation roles.

21) some good suggestions included:

"help text when hovering over certain things"

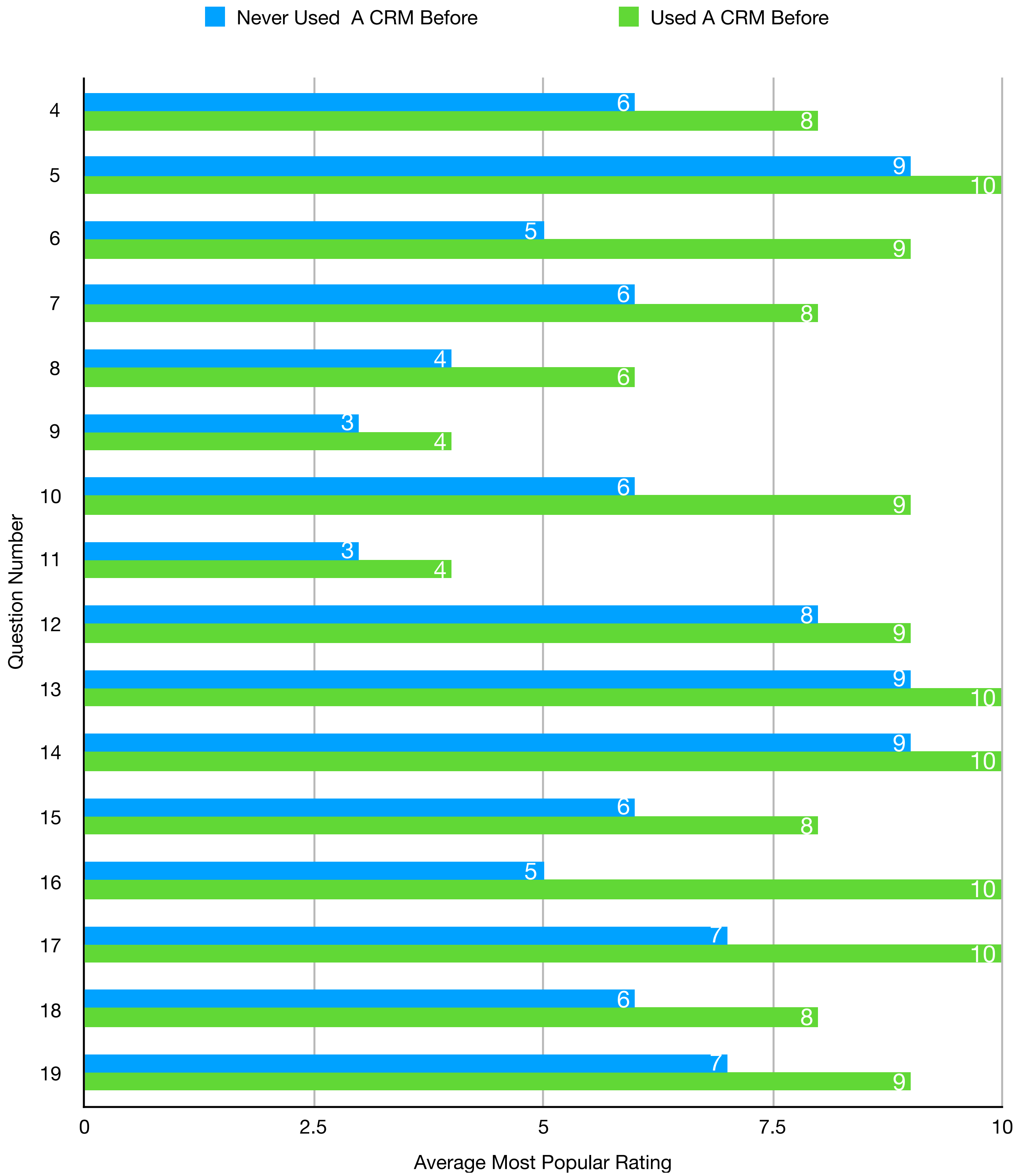
"the ability to tailor the CRM details that are stored on a contact"

"to be able to store an image for a contact"

"there could be a text area that can be encrypted if chosen instead of 2 separate ones (Q15 & Q19)"

"the nav bar should be kept simple with only a few buttons"

"account security must not be neglected"



Never Used A CRM Before
Used A CRM Before
Question Number
4
5
6
7
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17
18
19
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7
10
6
8
7
9
0
2.5
5
7.5
10
Average Most Popular Rating

Questionnaire Analysis

Question No.	Accepted	Mixed Opinions	Rejected	Ideas on how it could be done
4	////			A dashboard that shows anything scheduled with the ability to add to it there rather than on a contact page.
5	////			will mean that it will have to be kept quite basic with not too many overcomplicating features.
6		////		could allow the user to ignore the field by making it optional.
7	////			Will require a way of inputing the data and an algorithm that returns data that can be plotted on a graph.
8		////		It could be a feature that can be made hidden or kept small seems as it would only need to be a bit of text showing the ratio.
9			////	
10	////			There could be a page where there’s two buttons, one to be pressed upon a deal being closed, one for when a lead is lost. Then that data along with a timestamp could be used to produce a conversion rate as well as graphs.
11			////	
12	////			
13	////			Could save a timestamp along with the data so it can ordered according to that
14	////			Could have a message along with the date and time that the schedule is set for on the dashboard
15	////			A text area that uses a password and XOR encryption to scramble up the data, that scrambled up data gets saved in the database and requires the password to unscramble data
16		////		Would require going through all contacts separated by a new row and separating their details by a coma in a txt file then changes the file extension to csv. As well as a program that goes through all the data and adds it to the program
17	////			Will need sorting functions that can be applied to different fields and filtering functions that search different fields for criteria

18	////			The ability for the user to export and import the contact data should constitute as a backup which is up to the user to do.
19	////			The text area that could be used for storing encrypted text could double up as one storing unencrypted data too if the user doesn't encrypt it.

Specification

The System Must:

* The site must be accessible via a web browser
* Allow for account creation
* Allow for users to log in
* Allow for users to be able to change their passwords
* Allow for scheduling not related to a contact
* Be easy to navigate through system
* Have the ability to create contacts
* Have the ability to delete and modify contacts
* Have a page that lists all contacts stored.
* Have a page per contact to view all details on them.
* Store: first and last name, email, phone number, city, postcode & lead status for each contact
* Be able to set a status of whether contact is a lead that needs to be recontacted, a dead lead, a current client, or a past client.
* Have a graphical representation of sales within a period of time
* Be able to see the current conversion rate over a month
* Show data representation on sales without having to create a contact each time
* Allow note creation relating to a contact
* Show all activity on a contact in chronological order.
* Show any scheduled tasks/ appointments from the dashboard.
* Have a notes section on a contact that can be encrypted optionally and only viewable through a password separate to that of the account's
* Have a text area that can be saved to the contact that gets saved and stays there for saving additional details about the contact.
* Be able to import & export contacts from a formatted CSV file.
* Be able to sort through contacts/ filter through contacts based on certain criteria
* Be able to search for a contact
* There must be good account security and privacy.

Technical Justification

As this is a web based project, I will be using html to markup the webpage, css with bootstrap to style the page and javascript for both client side and server side with the use of Node Js.
I will be using bootstrap as it will save time in making the site look nice and presentable. The javascript will allow me to make the site responsive and have programatic features such as sorting through a list, searching etc… I will be using Node Js along with some node modules so that the site can have server side functionality. I will also use some NPM modules to add functionality that would be unrealistic for me code in the time available.

I will be using the WebStorm IDE by JetBrains to code the project. WebStorm is an industry standard IDE for web development. It has features such as opening a terminal within the IDE which is useful for repeatedly restarting a local server, testing modules of code, as well as database manipulation. It has up to date code completion, syntax colouring and error highlighting for javascript, html, css, and many popular node modules. It has an inspection tooltip that shows the description of an error or warning, as well as the fixes for it. The IDE identifies unused code as well as deprecated syntax.

Due to javascript being a multi-paradigm language, I will be using it in various ways for different purposes. Through using the prototype property of objects, I will imitate an object oriented approach to making classes with methods and properties attached to them, as well as making use of other OOP techniques such as inheritance, encapsulation and polymorphism. The OOP paradigm of coding will be useful for reducing code that'll be repeatedly used both on the client and server side. As javascript makes use of functions, I will use them in callbacks and in other places where there isn't a need for a class to hold it. As it is a dynamic language it could turn out to be advantageous eg.) I could return an error message in an error case but for all other cases be returning numbers. Although I will have to make sure that I do validation to ensure that variables get saved appropriately and comparisons made are returning correct values as '==' comparison will not check for the type to be equal however '===' will ensure the type of the variables are the same for true to be returned.

To store data I will be using text files while prototyping the project; the site will be local and the only user of the system will be me testing features. By using text files I will also be able to effectively test various methods such as searching, sorting and other data manipulation methods that could be used in other parts of the system later on. However, when all the features are implemented I will use the MySQL database to store and query data. I will use MySQL as it is an industry standard relational web database platform that will be able to handle multiple users accessing data.

The system will be networked as the site will be stored on a server and accessed via a web browser over the internet. The database will be stored on a separate server. The web application framework Express will be made use of in the project; it will allow me to write handlers for requests with the different HTTP verbs (GET, POST, PUT, DELETE and PATCH) at different URL paths (routes). Another good feature of Express is that I will be able to add custom request processing (middleware), at any point in the request handling process. I could make use of the templating language that comes with express known as EJS so that I can use javascript to generate html markup.

In order to make the project GDPR compliant, I will have to consider a few things within the project.

* Users will need to be informed on any information that is collected on them with specification on how long their data will be stored.
* The use of SSL to establish an encrypted link between the web server and the client machine to ensure the transit of data is secure.
* All consent forms are to be set to unchecked.
* There must be an easy point of access for users to query what data is being stored on them
* Give the user the right "to be forgotten", meaning they are able to have all data stored on them removed.

Used as reference but modified from: (https://www.clearvertical.co.uk/is-your-website-gdpr-compliant/)

Objectives and Success Criteria

Objective 1: The site must be accessible with a domain name typed into a web browser.

Success Criteria: Upon entering the site's domain name, the website's home page should appear.

Objective 2: Account creation must be possible but only one account can be created per person

Success Criteria: An account will not be created if there is already an account using the same email in the database. This must work every time unless the server is having technical temporary difficulties or the user isn't connected to the internet.

Objective 3: Users with an account should be able to log in to their account.

Success Criteria: Provided the site isn't under traffic that the web server can't handle and the username & password are correct credentials for the account the user must be able to log in.

Objective 4: Users must be able to change their passwords at any time

Success Criteria: The changed password must not be the same as the current password and all of the password look up validation must be applied to a changed password too. Changing a password must always be possible unless the site is down.

Objective 5: No passwords should be directly saved into the database

Success Criteria: All passwords used for account logins must be saved in the form of a salt and a hash so that the password entered to log in will have the functions preformed on them and compared to that in the database. Passwords used in XOR encryption won't be saved just used to encrypt and decrypt.

Objective 6: The ability to import and export the contacts in a CSV format.

Success Criteria: The exported file should be able to be imported with no errors occurring and any other CSV file in the format of an exported file should therefore also be able to be imported

Objective 7: An accurate graphical representation of clients gained and lost over a period of time

Success Criteria: The calculations that determine the data points on the graph must be within 90% accuracy, provided the user inputs data as is specified on the appropriate page.

Objective 8: There should be an accurate display of the current conversion rate for the month

Success Criteria: The accuracy is based upon that of the users input entry. Provided the user inputs data as is specified on the appropriate page, the conversion rate displayed will be at least 90% accurate, this will allow for any rounding.

Objective 9: Have an easy to navigate through system

Success Criteria: at least 30% whitespace on each page, links only available upon clicking a different link should only go one layer deep.

Objective 10: A relational database that is in third normal form with tables: Users, Contacts, Scheduling's, Notes, Conversions, Clients Lost.

Success Criteria: the ability to add, edit and delete data in all the tables.

Objective 11: There must be a page that allows the user to input that a conversion has been made, a lead was lost or a client has been lost, which gets recorded into the database.

Success Criteria: all inputs must get put into a database provided there is an Internet connection and the client is connected to the web server at the time of the operation.

Objective 12: There must be good website security

Success Criteria: no account's can be made with a password that isn't at least 10 characters, with at least one uppercase letter, one number and one special character. No cross site scripting attacks or sql injection attacks should be possible.

Objective 13: There must be a way of scheduling tasks/ appointments from the dashboard.

Success Criteria: providing there's an internet connection, all tasks and appointments will be added into a database

Objective 14: Things scheduled for the day should be made clear on the dashboard

Success Criteria: Anything scheduled for the day must be displayed every time without fail.

Objective 15: A notes section will be on the contact's page where the notes will get saved into the database.

Success Criteria: All notes that are saved while there is an internet connection must get saved into the database

Objective 16: Notes relating to a contact should get displayed in chronological order

Success Criteria: All notes must be displayed to the user in the order of them being saved provided they are saved at least a minute apart.

Objective 17: A text area on the contact page that can store data encrypted through the use of a password.

Success Criteria: The text in the text area must only be readable through decryption using the correct password. And the text stored in the database must be the encrypted text if the text gets encrypted with a password.

Objective 18: The password for the encrypted text area must be different to that of the account's login password.

Success Criteria: The password that is in current use as the login password will never be useable in the encrypted notes section.

Objective 19: The encrypted notes section must also double up as a standard text area if a password isn't used to encrypt the data.

Success Criteria: The text should be saveable to the database if a password is never used to encrypt the data.

Objective 20: There should be adequate validation for any data input.

Success Criteria: At least 80% of invalid data input should be caught by the validation methods

Objective 21: There should be adequate verification.

Success Criteria: At least 60% of inputs that add, modify or delete data should include verification before the function is carried through.

Objective 22: The contacts in the contact view page must be sortable

Success Criteria: There must be at least 2 different ways the contacts can get sorted with accuracy down to a minute time stamp (if sorted by date and time) and 100% alphabetically correct.

Objective 23: There must be a way to sort the contacts in both ascending and descending order

Success Criteria: The contacts sorted in ascending order of any field must be in the complete reverse order when put in descending order.

Objective 24: The contacts in the contact view page must be searchable

Success Criteria: There must be at least 2 fields which get searched through. All contacts that contain the data in the search bar in either of the fields that get search through, will remain in the list. All contacts not meeting the specified criteria must be removed from the display list.

Objective 25: The project must be GDPR compliant.

Success Criteria: Users will need to be informed on any information that is collected on them with specification on how long their data will be stored. The use of SSL. All consent forms are to be set to unchecked. There must be an easy way for users to ask what data is being stored on them.
Give the user the right “to be forgotten”, meaning they are able to have all data stored on them removed.

Objective 26: There must be a way of adding, modifying and deleting contacts

Success Criteria: The data on any contacts stored in the database must also get affected 100% correctly to the operations preformed in the system. This is provided that the database isn’t full and there is a connection to the internet at the time of doing so.

Objective 27: There must be a way of viewing all contacts that are stored in a list on a page

Success Criteria: The page must not crash and must show all contacts that user has created.

Objective 28: There must be a way of viewing all details of each individual contact on a page

Success Criteria: The page must show all up to date data that has been stored or modified on a contact (whatever the database has stored for the contact's details, the page should output).