CM4110 HUMAN COMPUTER INTERACTION

SEAN SMART (1602648)

CHOSEN AREA:

Interaction and User Interface Design to allow drivers to use text messaging while driving without being distracted.

PROPOSED SYSTEM:

A system which is used while driving the goal is to create an app with a connected headset with a microphone built in to speak your text message into your mobile device which will give you options to send or cancel and you reply by saying the options on your phone.

TABLE OF CONTENTS

CHAPTER ONE -REQUIREMENTS CAPTURE AND SPECIFICATION

1.1 BACKGROUND AND INTRODUCTION

The plan of design idea for a user interface is an ideal solution which is for interaction and user interface design to allow drivers to use text messaging while driving without being distracted. Now this is an interesting idea to come up with as these days we use mobile devices frequently and sometimes they can be very distracting. People tend to get into the habit of texting while driving which can lead to bad consequences which can hurt the driver majorly.

According to statistics on the virtual drive website text messaging makes a crush up to 23 times more likely to happen, 34 percent of drivers have admitted to texting while driving, experts say texting while driving is a leading factor to accidents and one in five drivers text while driving. Texting while driving is dangerous. Because of the facts listed, many states have outlawed the action, while others are trying to accomplish the same feat. Most people have their phones on silent or off and may miss important messages or calls since they are too focused on the road.

Usually people would have an ear piece and can talk through while communicating to someone using a phone and also paying attention to the road while driving, but texting can be quite difficult. So I am going to investigate and create a design idea for an interface where people can text and drive without the risk of dangerous distractions. I have considered something as a microphone based software where you can connect your phone to your car and speak clearly into your phone with what you want to say and then the phone will ask send and the user will say yes.

Technology used while driving is used most often by parents of teen drivers and employers. All of these devices can be effective tools for employers to use in enforcing mobile phone policies or in everyday situations to reduce river temptation. In a poll conducted 82% of the users said they felt the most pressure from their families to use phones while driving. Even teen drivers report feeling pressure from families, as well as friends.

So why do they do it? Many drivers continue to use hones even when they are aware of the crash risk. 67% users have felt they were at risk because another driver was distracted by technology. Yet only 25%

said their own distraction from technology was putting others at risk. IN part, this “not me” attitude remains prevalent because people believe they are better drivers than those around them.

Now how does it work? Mobile phone blocking apps and devices can be activated by adding a service to a wireless plan. Downloading an app onto your phone (many apps are free) or installing a device in your vehicle to put a “geoforce” – also referred to as a virtual barrier – around the driver. All products have online dashboards that allow customers to set up accounts and choose settings.

People fear they won’t be able to use their mobile phones in an emergency, but emergency overrides come standard on all blocking devices, Also many providers allow a short list – sometimes called a white list – of phone numbers that still can reach the driver (not recommended for safety, but may raise a user’s comfort level)

It has been referred in many articles that text messaging and driving is worse as the devices as drivers now face a dual task that often requires them to take their eyes off the road for four times as long. Leading to problems such as incorrect lane changes (Hosking et al., 2007). It decreases braking speed (Drews et al., 2009) increases speed variability, lateral speed, and lane position variability, all of which suggest a decrease in the ability to control the vehicle (Crisler et al., 2008). The dangers are especially evident for younger drivers who are unlikely suspend a text messaging task when faced with a difficult driving situation (Lee et al. 2008). It has been estimated that texting while driving contributes to 1.6 million crashes manually (National Traffic Safety Administration, 2008) and is over 20 times as dangerous as driving while not texting (Virginia Tech Transportation Institute, 2009).

1.1 USER SAMPLE

To collect information on what will need to be required for the final design of my proposed system, a user sample has been constructed based on 5 recruits. The following questions were asked when receiving the user sample in order to get feedback from my recruits and what will be needed in the system design

1. Do you guys drive?
2. Have you ever used your phone while driving?
3. How high is the risk would someone take to use your phone on the main road?
4. If there was a suitable solution to be able to use your phone while driving what would you recommend and what kind of technology is out there to address the problem?

1.2 DISCUSSION OF REQUESTED FEATURES

While interviewing a couple of my classmates I have asked questions regarding text and driving, the first question was do you drive (most of my recruits don't and only a small portion does) the second question to the people that do drive was do you ever user your phone while driving only one person said yes though the time he would use a phone is at a red light or in heavy traffic, I carried on and asked how high a risk would someone be if someone text and drive on a main road he replies very high and that most accidents happen to younger people on main roads for example passing your driving test the first time thinking you are superior on the roads and crashing the second week after passing due to texting, then finally the next question if there was a solution to text and drive without getting distracted what would it be and how can it be implemented? One solution was to connect your phone to the car via Bluetooth and call instead of text, another solution was voice recognition then the voice is sent automatically, according to one of my participants he came up with an interesting idea regarding iPhones will see a notice warning them that do not disturb is on and that they will note receive notifications until they stop the car. Passengers can opt out by hitting a button marked "I'm not driving" – an option that drivers determined to distract themselves could also use to manually override the system and that the IPhone guesses when it is in a moving vehicle, either when its Bluetooth connects to a car stereo or using a combination of wireless sensors that can automatically detect motion.

Two of my participants has addressed the technologies out there to prevent distractions from text and drive such as hands-free devices and a phone dock for navigation and using your phone, another distraction would be scrolling through maps, a phone dock is placed in an easy-to-view place to prevent distractions.

1.3 PROBLEM SCENARIOS AND CLAIMS ANALYSIS

This section will provide a series of problem scenarios which include information the audience in the computing industry and their background. A claims analysis will also be completed for each scenario which highlights the situation features of each scenario, and the advantages and disadvantages of the situation. Once complete, these scenarios and claims will be shown to users for feedback and evaluation.

In event of creating this new device and user interface onto a phone which will allow the user to use their phone while driving without getting distracted there are a series of scenarios to go through and how can they be overcome, there are a series of experts in the field that have had a series of scenarios and their claim analysis was used to overcome the problem that they are having while creating an interface.

1.3.1 SCENARIO 1

Scenario 1: An undergraduate computer programmer at Robert Gordon University

Ross is a direct entry student who is currently on his 3rd year at university who has an interest in programming for web applications. He is familiar with the software and technology out there that makes a good web app and wants to advance his skills in his selected university course. He hopes at the end of his year he will learned a whole new programming techniques and use it for new app ideas

Background: HND in Interactive Media, comfortable around computers good with Microsoft office software, Adobe Software (DreamWeaver, Photoshop, Illustrator)

Ross was required to create a design for an application where a user can use their phone while driving without getting distracted, he has been looking online of the reasons why this kind of application would be effective and his responses are weak and wouldn't work when implementing the proposed application.

Situation Features	Pros and Cons
Gathering information on the website for idea solutions	Pro: website is a good resource for research Pro: Large selection for research Con: hard to select the most appropriate resource Pro: finding the right information is time consuming
Professional/lecturer feedback	Pro: familiar and expert in the field Con: feedback is limited Con: take a while to get in contact
Library resources	Pro: good for browsing for similar books that would benefit your design Con: takes time and effort to gather the relevant information

1.3.2 SCENARIO 2

Scenario 2: Graduate of RGU currently working at a development company

Benedict is an experienced web developer working in the top software firm and has made up tutorials online for any future or inspiring developers to follow along, he has also worked with software in an educational setting for 6 years

Background: self-taught in Web design, and ActionScript, qualifications of Computers, Animation and Graphics

Benedict has to look over and study a new project brief of an outdated interface. He has developed websites in the past. A member of the design team is off so he is in charge he has designed a similar interface before, occasionally he will have a meeting with his team to talk over how this will get updated and an expected deliverable deadline is in 8 weeks. He has given himself an hour to do research.

Situation Features	Pros and Cons
Gathering information on the website for idea solutions	Pro: website is a good resource for research Pro: Large selection for research Con: hard to select the most appropriate resource Pro: finding the right information is time consuming
Library resources	Pro: good for browsing for similar books that would benefit your design Con: takes time and effort to gather the relevant information

1.3.3 SCENARIO 3

Scenario 3: Professor

Professor Charles who is a professor of cognitive engineering and user experience and interfaces who's current experiment is to find a solution to use technology while you are driving without any distractions and interview students to gather up some data.

Background: having been in the field of cognitive engineering and an expert in user experience and user interface design he has developed a knowledge for education

Time is limited for the professor, what he likes is a detailed structure and a design model to give him a plan to perform his experiment and required data on the solution of a methodology which has been designed.

Situation Features	Pros and Cons
Include influences	Pro: insight into the similar work for the experiment Con: Time consuming to gather data
Aid of Academic designers	Pro: fit more readily into predefined theories and are more theoretical than practical Con: time consuming to find the right participants
Images	Pro: image of idea model/design Con: could change while going through experiment

1.3.4 SCENARIO 4

Scenario 4: Interviewees

Jeff is a software engineer which has been known for creating applications that are both static and dynamic, he has been given a task to interview and recruit more software engineers that have potential there have been many applicants with a far knowledge and have had experience in the industry so what Jeff and his new recruits are being placed in a group to work together in creating a new application and depending on who has worked the hardest will get the job.

Background: Bsc in Digital Media (Design, Develop and Production), comfortable around computers good with Microsoft office software and use of appropriate repositories (GitHub)

For research purposes Jeff needs to analyse and research a design approach to make an app where you can use your phone without getting distracted while driving, he will be working in small groups of 4 concentrating on various design methods for the proposed application and carry out interviews weekly.

Situation Features	Pros and Cons
Interviews	Pros: Survey and understand various different methods and techniques employed by the professionals Pros: Learn from experience Pro: Good practice of interview skills Pro: explore new approaches and design methods Cons: lack of interviewing skills Cons: difficult to gather the appropriate information in an interview
Small group project	Pro: understand different forms of design knowledge and design methods from the abstract Pro: Understand the design method by applying it to designing the application

1.3.5 SCENARIO 5

Scenario 5: Storyboarding the application

Walter is a freelance designer who has been working in the design industry (both web and graphic for 10 years) He is determined and likes a challenge and will get in further information with his client on whether his design are suitable or not before the design pages are sent to the implementers/developers. He has been incredibly successful in his work

Background: HND in both Interactive Media and Visual and Communication, familiar with Adobe Software, a quick learner, good people sills

Use of storyboards would aid the designer when it comes to planning a design approach for an application, if the designer belongs in a business or education or had a particularly well known design, these may be used in proximity to the name.

Situation Features	Pros and Cons
pictures	Pro: easy to follow along Cons: download time is time consuming
Link to designers influences	Pro: insight into their work without having to read the whole document Con: meaning not appreciated
Search engine for key words in design	Pro: help them model training projects around these Con: little interest in teaching educational design.

Using these scenarios for my design are effective and acts as stepping stones and to overcome any similar situations that these scenarios have. Since all of these people have experience in Digital Media industry and the knowledge and understanding. Getting the responses needed will benefit the design project in this module. Interviewing the participants to gather up some data helped me in this project and these scenarios because I got an understanding of the pros and cons that are included when it comes to Human Computer Interaction and benefits the research that has been put on before beginning the design process now that the analysis has been covered.

1.4 SCENARIOS AND CLAIMS USER RESPONSES

After showing the different users the above scenarios and claims, the following feedback was received. This will be beneficial in developing the conceptual diagram.

1.4.1 SCENARIO 1

Scenarios

- Actor: Good background and determination in enhancing his programming skills.
- Problem: so many choices to choose from.
- Problem: difficult to research specific resources from the internet.

Claims

- Recommendation from peers= (+0 knowledge of the users background experience, (+) helpful advice
- Websites = (+) multiple choices (-) tough to navigate if it is a new website.

1.4.2 SCENARIO 2

Scenarios

- Actor: Good background, experience in the field is beneficial.
- Problem: short amount of time to do so.
- Problem: Member off sick.

Claims

- Experience in the field= (+) professional and experience, (+) ability to solve problems.
- Extension of deadline = (+) more time to work, (-) loss of money from the budget.

1.4.3 SCENARIO 3

Scenarios

- Problem: limited resources.
- Problem: finding suitable recruits.

Claims

- Surveys through email = (+) perfect for gathering data for from recruits (-) may take a while to hear back from.
- Interviews = (+) perfect for finding potential recruits, (-) time consuming if the recruit is not interested.

1.4.4 SCENARIO 4

Scenarios

- Problem: Looking over applications for recruits.
- Problem: small groups of 4 may be insufficient.

Claims

- Focus Groups of 10 recruits: (+) more data gathering, (-) can be difficult to control.
- Choosing the right candidates: (+) has the skill set, (-) hard to choose.

1.4.5 SCENARIO 5

Scenarios

- Problem: messy drawings that are hard to understand what is going on
- Problem: no annotations present in storyboards, the user will not know what exactly a feature can do

Claims

- Use of paper and pen for storyboards: (+) good for first drafts, (-) messy and paper can be easily lost
- Images: (+) Good for attracting audiences, (-) Images can be copyright claimed.

CHAPTER TWO – CONCEPTUAL DESIGN

2.1 INITIAL CONCEPTUAL DESIGN

This section will provide two initial conceptual diagrams based on the system requires captured in Chapter 1. This will then be evaluated and walked through by several users before being updated to an improved version.

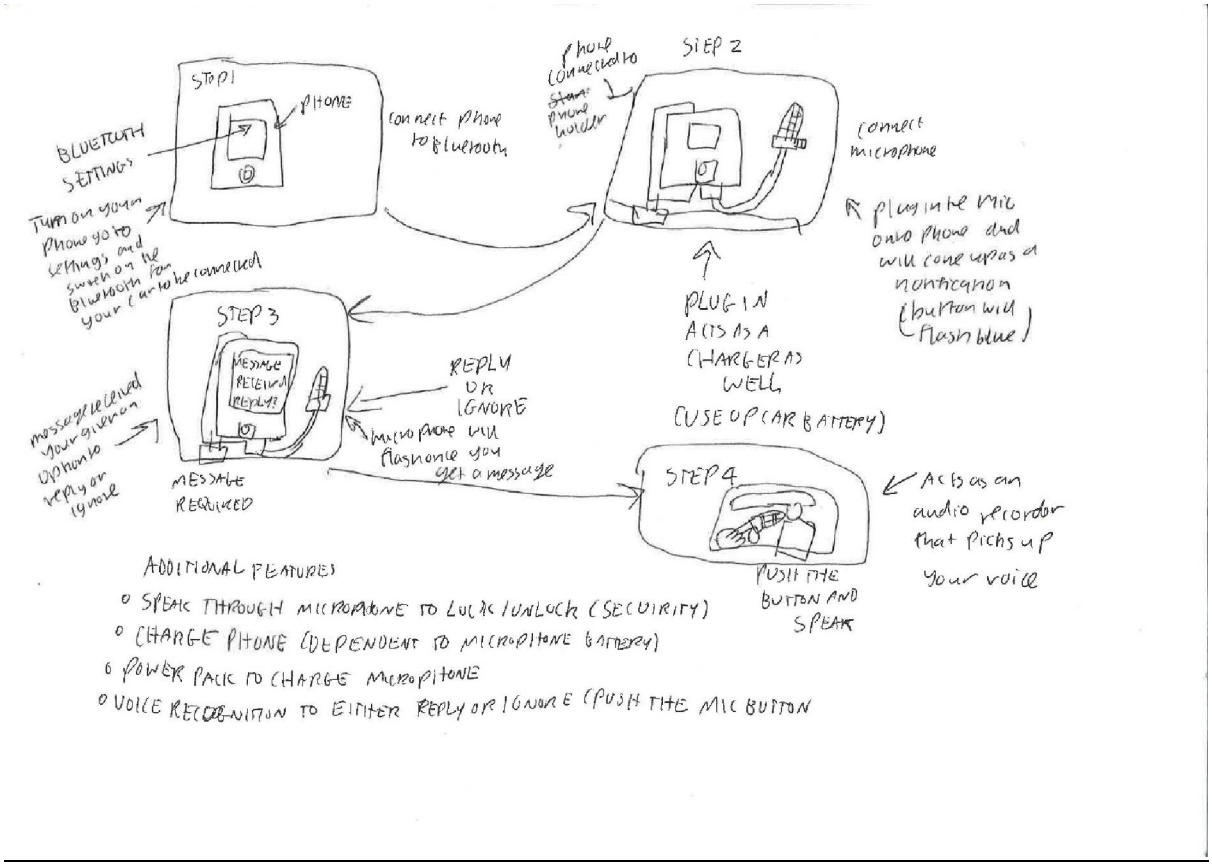

Figure 1 - First Draft of Conceptual Design

2.2 CONCEPTUAL DESIGN EVALUATION

To receive critical feedback on the initial conceptual diagram of the proposed system, four users were asked to perform a walkthrough on the system and provide feedback on the whole conceptual diagram. The walkthroughs are shown below and the feedback from all users is presented at the end of this section.

I explained to my user participants about my design about a Bluetooth connected device I walked them through the process about what is the device and how does it work, once you start the car engine you activate the phone Bluetooth to your car and then you insert the device into your phone (this device will also charge your phone too) once your car and phone are connected together a message notification will appear on your phone. You are given the choice to either reply or ignore the message (your better to have your phone on a holder on a dashboard so you can not looking down as that will take your eyes off

the road) you pick up the mini microphone push the button and speak through it saying either reply or ignore, if you press reply it will come up on your message app on your phone continue holding down the microphone button and continue to speak through it and say what you want, once you have finished the sentence you have said it will come up with a message saying send reply simply yes or no and it will continue to perform the task.

2.2.1 DIAGRAM FEEDBACK

My volunteers have observed my conceptual design and have given their input. Participant 1 have felt it was just a voice recognition piece of hardware and felt that a device should be wireless instead of it being connect through a wire, participant 2 has felt that this device should be an ear piece and the use of an automated voice would be easier like the device saying “Do you wish to send this message?” feeling that it would be a good feature when it comes to accessibility. Participant 3 felt that using a microphone would not be such a good idea as the driver would need to look down and pick up the phone or the wire connection would get tangled up which could lead to distraction. Participant 4 was curious on whether or not that the application will run on Wi-Fi, 4G etc. I have felt that this would be useful in the re-design and to connect with the Wi-Fi so your message can be sent immediately with a strong connection and finally my fifth participant asked if the app can work in sending messages in the likes of WhatsApp or Messenger on Facebook, I have took in consideration in merging this application with other social media so that the application can work on other platforms and similar based applications. So after the results given it was time to make a final design for my final conceptual design.

2.3 FINAL CONCEPTUAL DESIGN

After receiving the above feedback, the original conceptual diagram was amended and improved to a new design which is shown below.

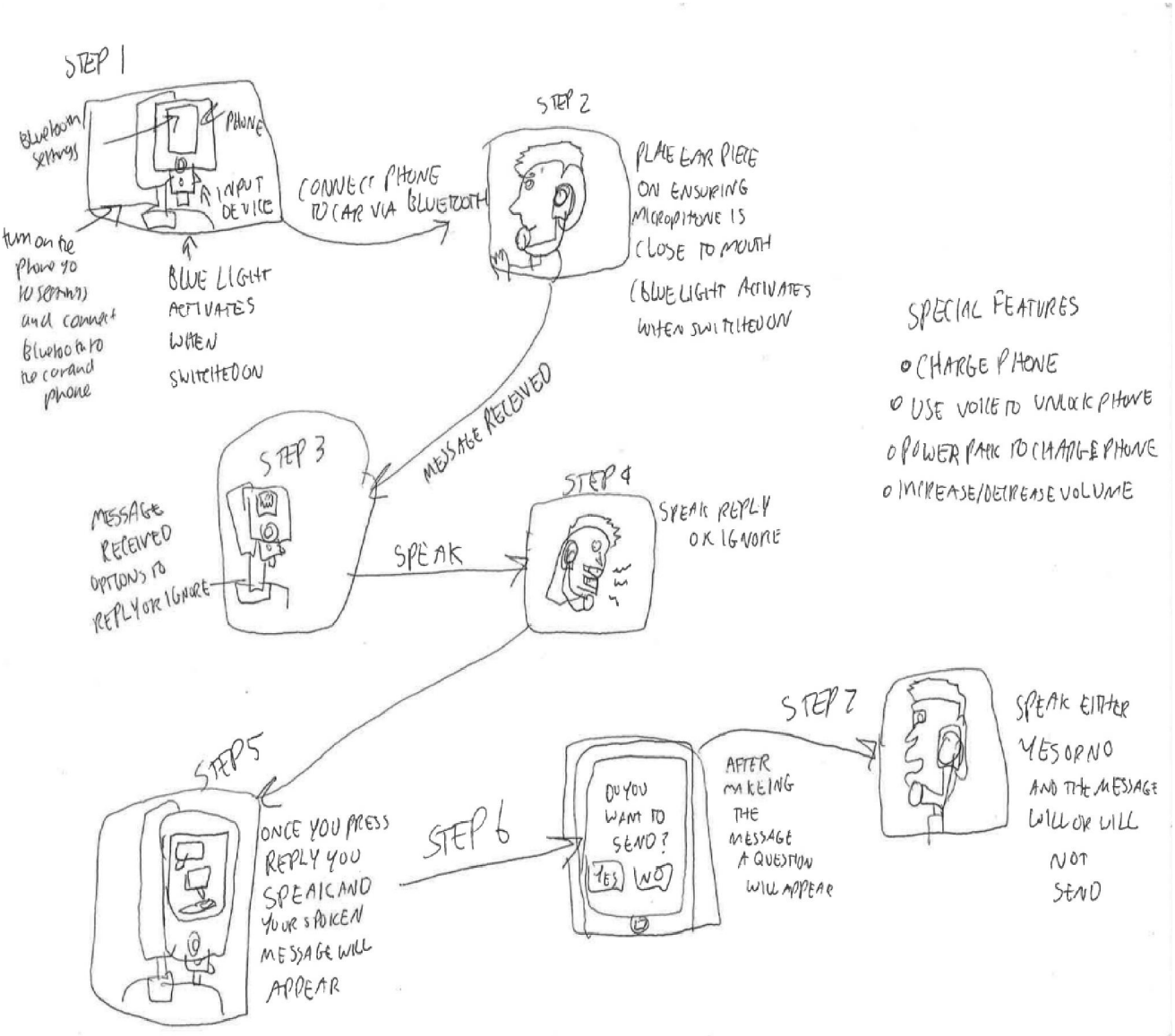

Figure 2 - Final Conceptual Design

After feedback from my first conceptual design, it was time to redraft a new design in account of the information that I have gotten from the participants, now for the updated version of the design, so the phone will be connected with the car and the small device will be inserted into the phone once switched on the small device will have a blue light, there will be an earpiece you place when switched on and a little microphone to speak through, while driving a message notification will appear saying “You have a new message” you say either reply or ignore through the microphone once you have said reply it will appear on the message and you can speak though what you want to say and the text will appear on your phone screen once you have made your message a notification will appear “do you wish to send ?” you

can speak with either yes or no and the message will either send or delete once you give the command. The device is wireless which makes the use of device safer.

Side note: if it is a phone call you can reply with either answer or decline and you can communicate through the devices microphone.

2.3.1 FINAL CONCEPTUAL DESIGN FEEDBACK

After making up the final Conceptual Design the similar process for showing the users how to navigate through the proposed design (the final design has taken in account of the first feedback from the original conceptual design) the use of a headset is very effective as both my users have said because you are still speaking to whosever on the phone while your eyes are still on the road and that a use of alert messages are very useful especially keeping safe on the roads, the phone menu stills operates the same as the first draft of the conceptual design, and that the use of your voice is handing instead of looking down at your phone frequently which you are endangering yourself while driving. Overall the final conceptual design is an improvement over the first draft and is going to be used for prototyping storyboards in a later section of this report.

CHAPTER THREE – SBD STAGES

This chapter will discuss activity, information and interaction design of the proposed system in the form of scenario based design. At the end of the section, the scenarios and claims will be evaluated by users and feedback will be received.

3.1 ACTIVITY, INFORMATION AND INTERACTION DESIGN

This section will provide scenarios with activity, information and interaction design. A claims analysis will also be provided for each scenario.

SCENARIO 1

Task: User wants to add a new wearable device for the interface

Activity Design:

- User needs to open application.
- User must connect device to their car.
- User must have a stable connection between devices.
- User can connect with device easily.
- Wearable device (headset must be turned on.)
- Microphone is close to the user's mouth.
- User must confirm that spoken message is correct.

Information and Interaction Design:

Rick is on the home page of the application. On the Home Page he sees the menu and sees the start button where he assumes that is the start of the application for the interface for the car communication application unfortunately it will not start and will come up as a message with please connect your mobile device to the vehicle and Rick already away from home does not have his phone on him but has picked up a fiend from work and decides to use his phone to communicate with his boss while driving and having his eyes on the road at the same time.

Claims Analysis

Situation Features	Pros (+) and Cons (-)
Home Page	(+) Common Metaphor (+) Provides the user with a “base” to navigate device
Menu for other pages	(+) Allows Simple Navigation (+)Clearly noticed (-) May provide clutter
Instruction Manual	(+) Useful for the inexperience or first time users. (-) May irritate experienced users
Using other people’s phones	(+) Starts the application (-) Phone may operate differently for the owners car
Alert message	(+) prevents the user for going ahead until they are certain (+) alerts the user for final confirmation (-) patronising and continuously irritating when it appears
Connect Button	(+) Clear to the user what the button does

SCENARIO 2

Task: User has a short battery on phone and unsure whether to use the application.

Activity Design:

- User has to open the application.
- User has to look up the settings menu.
- Navigate to the settings menu from the main menu.
- User must click on power saving mode in the settings menu.
- User can confirm activation of power saving mode.

Information and Interaction Design:

Clarke has just opened the application and is presented with its home screen. There has an emergency message on the phone that says battery at 15% this may affect the interface's performance, the option for this is to navigate to the settings from the applications main menu and select the appropriate option, Clarke reckons that going onto power saving mode while make the battery life last slightly longer as his journey home is around 30 minutes and he is speaking to anyone on the application that are important to him, he goes onto settings and select power saving mode once selected a notification will say activate power saving mode yes or no , after pressing yes the battery will appear on power saving mode on the application and Clarke is able to get home while still communicating with anyone that he is calling.

Claim Analysis:

Situation Features	Pros (+) and Cons (-)
Home Page	(+) Common Metaphor (+)Provides the user with a “base” to navigate form
Menu for other pages	(+) Allows easy navigation (+) Clearly noticed. (-) May provide clutter
Settings button	(+) Lets the user know what the button has been pressed.
Instruction manual	(+) Useful for inexperienced or first time users (-) Irritating to experienced users
Series of application settings	(+) allows user to change the settings to suit his/her needs (-) May be too cluttered and messy
Finger scrolling on the screen	(+) easy to move up and down the page (-) over sensitive to scroll too far down

SCENARIO 3

Task: User wants to share how the application works and it's progress on social media.

Activity Design:

- User needs to open up the application
- User needs to connect phone and car together
- User needs to make a call
- Users makes the call
- Once call has ended you can pull over
- Send the time of how long your call was with a star rating of how effective it is
- Choose which social media site where you would like to send your review to
- User must click on share button
- User must confirm the final choice.

Information and Interaction:

Henry is a hardware and software critic who is known for reviewing and evaluating technology about whether it can be recommended to someone if they really do need it or not, after he opened up the application and becomes driving to his work he used the application and start phoning his girlfriend and spoke throughout the journey and he acknowledges the application quality and takes account of accessibility features if someone who disabilities (visual impairments) can use it. After the call he is given a choice to write feedback on a notification pop up which appears after the journey, he writes a review, then sends it to a social media icon wither Facebook or twitter he chooses Facebook and leads to an are you sure button and you choose yes or no if selected yes a message will appear saying your review has been sent.

Claims Analysis:

Situations Features	Pros(+) an Cons (-)
Home Page	(+) Common Metaphor (+) Provides the user with a “base” to navigate from.
Menu for other pages	(+) Allows easy navigation (+)Clearly noticed. (-) May provide clutter
Scrolling the screen by swiping finger	(+) Easy to move down the page (-) over sensitive and scrolling too far down
Social media icons	(+)Easily recognisable (-) Cause of clutter
Share button	(+) clear to the user what the button does
Confirmation message	(+) Prevents the user making mistakes (+) Shows the user that their action is being received. (-) May become patronising to the users.

SCENARIO 4

Task: User would like the system to alert when driver is not paying attention to the road while looking at their phone.

Activity Design:

- User opens the application
- User starts the journey
- User might get a phone call
- User uses headset which detects movement
- User looks away from road
- A message appears that they are not looking at the road
- Replying with Ok
- Messages disappears
- Concentration is regained on the road

Information and Interaction:

Jeffrey is on the home page and is using the application for the first time and has does not know how to work the device. He has turned on the application and has managed to connect his phone to his car, He is easily distracted on the road and will usually look down on his phone whether he has received a text message on his phone. With the application switched on an alarm message has appeared saying You're attention is not on the road please concentrate on driving which acts as a safety feature on the application. After the message has appear Jeffrey nearly crashed but managed to get his car quickly back on his side of the road after saying OK the message has disappears.

Analysis Claims:

Situation Features	Pros (+) and Cons (-)
Home Page	(+) Common Metaphor (+) Provides the user with a "base" to navigate from
Menu for other pages	(+) Allows easy navigation (+) Clearly noticed (-) May provide clutter
Series of application settings	(+) Allows the user to change the settings to suit his/her needs

	(-) May be too cluttered
Detailed monitor page	(+) can find all information of the application (-) users may be overwhelmed with the amount of information
Alert message	(+) Good to keep the user up to date with information that is recorded on the device. (-) may startle the user (-) May not be heard by the elderly

3.1 EXAMPLE SYSTEMS

This section will provide some of the brief examples of systems that are similar to the proposed design that contains the similar features that have drawn inspiration for creating the final design and the information justifies the inclusion of the proposed system features. Further research has been given on where to begin and to look at what kind of similar technology is out there.

3.2.1 SIRI

Siri is an intelligent personal assistant that uses voice queries and a natural language user interface to attempt to answer questions, make recommendations, and perform actions by delegating requests to a set of internet services. Siri has mostly been used in iPhones and acts as a guide to tell you where to go, command Siri to make a call, read takes messages, set an alarm or to turn on the music this is all done by pushing a button and speaking clearly into your phone.

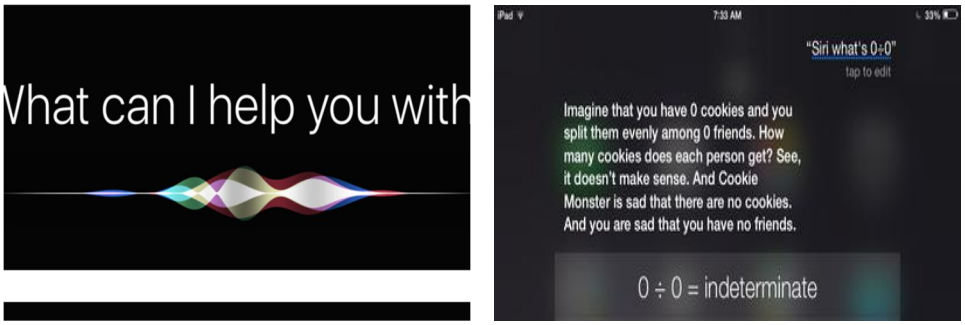

Figure 3 - Siri and how it works

Image Sources: https://www.fonepaw.com/tricks/siri-not-working.html
https://www.wattpad.com/235843327-things-to-ask-siri-0-divided-by-0

3.2.2 CORTANA

Cortana is your personal digital assistant in Windows 10. She gets to know you and helps you get things done, letting you interact with her in a way that is easy and natural. She can search the web, find things on your PC, show you the local news and weather, and provide reminders based on time or location. You basically tell Cortana what it is you want and she will display the answer that she feels is correct for you so it will help you out.

Figure 4 - Cortana and how it works

Image Sources: https://techcrunch.com/2018/01/12/cortana-had-a-crappy-ces/

https://www.microsoft.com/en-gb/windows/cortana

3.2.3 ALEXA

Alexa is a virtual assistant developed by Amazon. First used in the Amazon Echo and the Amazon Echo Dot smart speakers developed by Amazon Lab126, it is capable of voice interaction, music playback, making to-do lists, setting alarms, streaming podcasts, playing audiobooks, and providing weather, traffic, and other real-time information. Such as news, Alexa is also a home automated system and will recognise your voice then analyse what you have said.

Figure 5 – Alexa

Images Sources: https://www.thesun.co.uk/news/1785568/amazon-robot-alexa-can-run-your-life-for-150-from-making-coffee-to-running-baths-and-ordering-taxis/

https://www.pymnts.com/amazon/2018/amazon-alexa-voice-assistant-avs-wearables/

3.3 USERS EVALUATION

This contains the following information which is the feedback provided form the users of the scenarios and claims from the previous section.

3.3.1 SCENARIO 1

- Unsure if Apple devices can be connected into the car
- The device may startle some users

Claims

- Home Page (-) bothersome when cluttered
- Customisable sections (-) different settings from another phone
- Reactive button (+) a menu to switch devices may be ordeal

3.3.2 SCENARIO 2

- Ideal to have a power saving feature
- Feels ideal to have the device charge your phone as well

Claims

- Instruction manual (+) handy to read and contains information
- Charger on device (-) won't work unless engine is turned on in the car
- Charge icon (+) Effective knowing that the device is connected and is currently charging your phone.

3.3.3 SCENARIO 3

- Gives feedback on your device
- Let's users know how to use the device and are recommended to buy it if it's a good review

Claims

- Icons (+) recognisable
- Confirmation message (+) reassuring
- Confirmation message (-) may irritate users with its repeating message
- Reviews (-) can be critical and effective device if badly reviewed

3.3.4 SCENARIO 4

- Feels a good idea to set an alarm if you are not paying attention
- Assures that you are safe on the road

Claims

- Alert message (+) keeps you safe
- Alert message (-) may annoy repeat users of devices

CHAPTER FOUR – STORYBOARD PROTOTYPES

The following section will provide two heavily annotated storyboards. These storyboards will showcase user interactions and responses. Once complete, the storyboards will be showing to a couple of users for a walkthrough and overall feedback on the design.

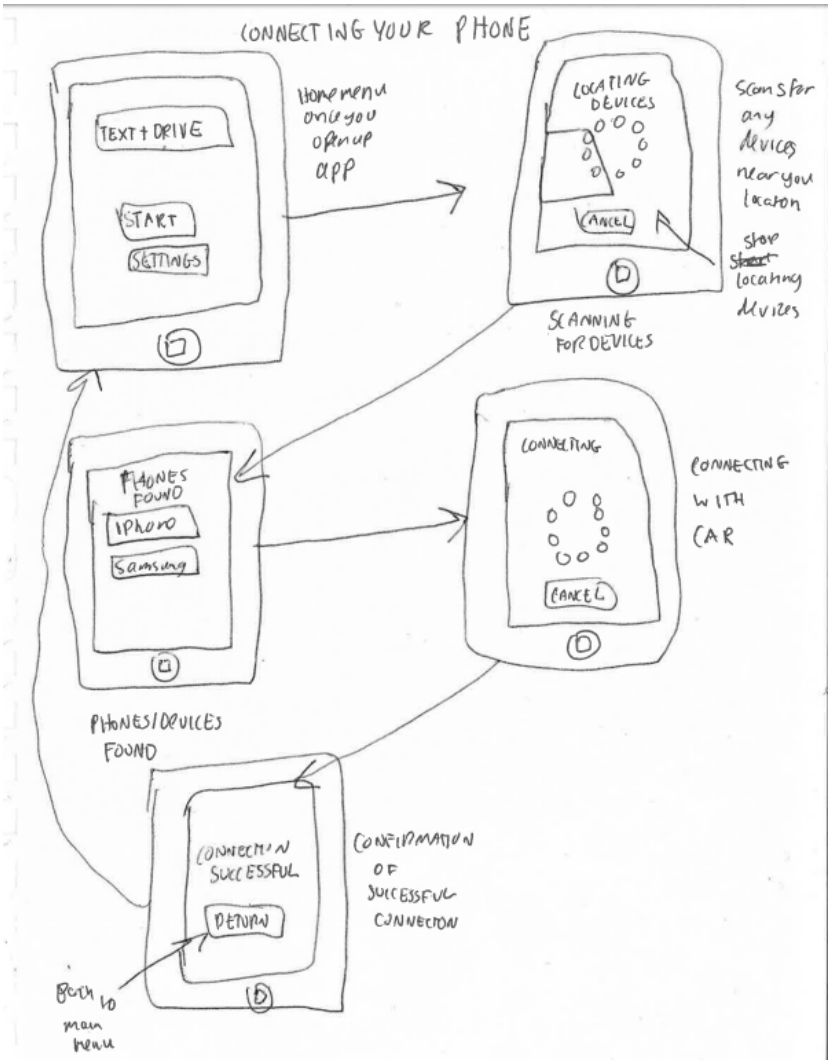

Figure 6 - storyboard of how to connect your phone

The first storyboard is a how do you connect your phone to your car so you can use your app the process is similar the Bluetooth settings of connecting your phone, so you start up the app and the it will locate various devices that are close to your location, once finding devices there will be a list of what devices you want to connect with, you choose a device and it will connect which might take a while and then a confirmation that the phone has successfully connected will appear and now you can use the app.

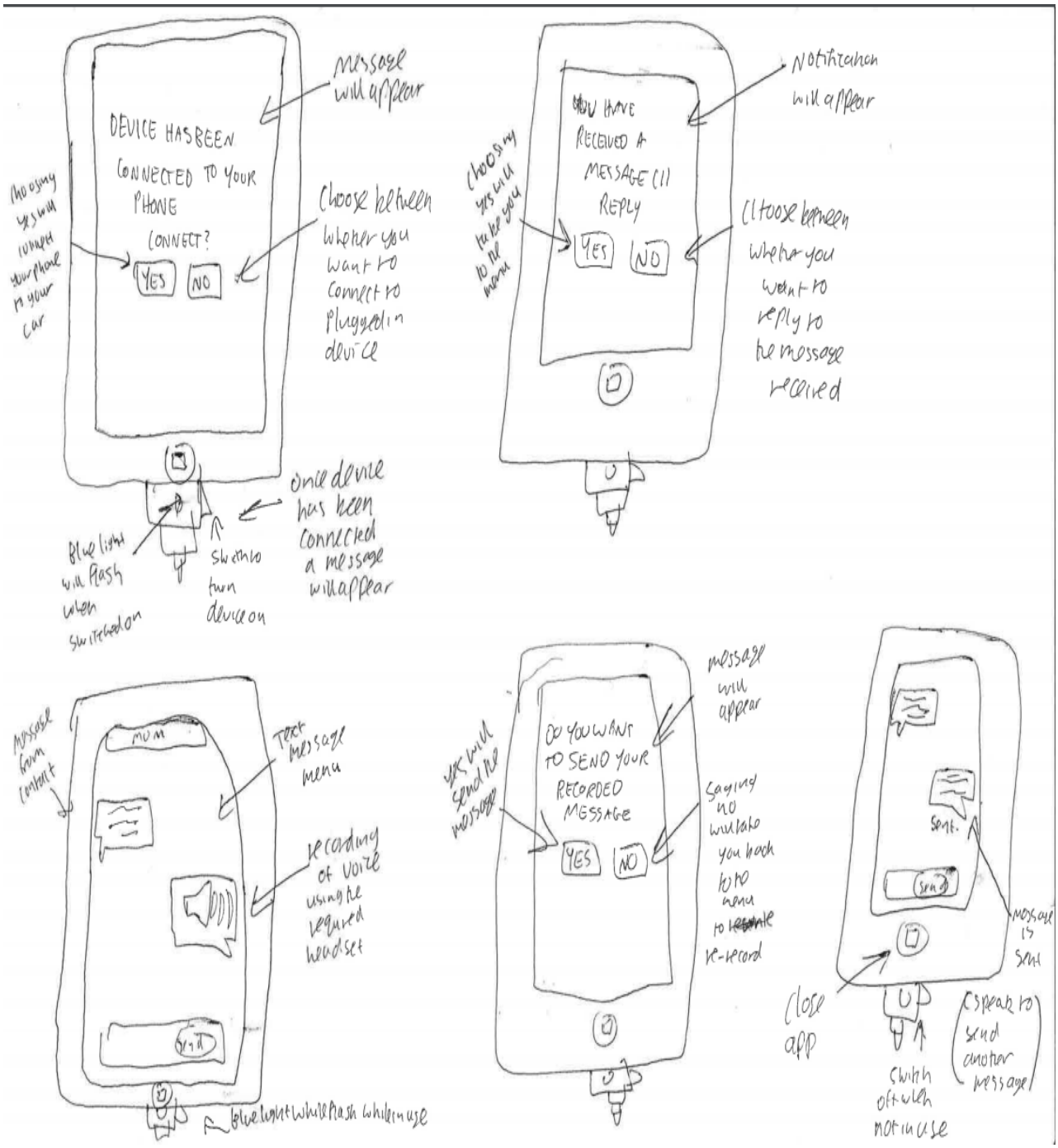

Figure 7- Prototype Storyboard of Design

4.3.1 Walkthroughs

For the following walkthroughs the users were asked to follow the actions made in the storyboard and comment on anything they feel could be improved or changed.

4.3.1.1 WALKTHROUGH

While going through the storyboards with my users, I talked them through the process, so once the car's car and phone is connected via Bluetooth open up the app and a message will appear
That both devices are connected now that they are switched on once connected you are able to drive normally with the headpiece in your ear and your phone close by preferable using a phone stand by your dashboard of your car, while you are driving a message will appear on your phone will give a load notification sound if your phone is not on silent, a message will appear on the opened app requesting if you want to reply to the received message using your microphone you can say either yes or no saying no will ignore the message while saying yes on the other hand will take you to the text message, after saying yes you will be taken to the message menu, you start by saying what you wish to reply with and you can do this over and over again until you get what you have asked for after a long pause the app asks you if you wish to continue and the yes and no option will appear again, saying yes will keep you on the menu, saying no will close the app, once you have said your message another notification will appear to confirm your message to either send or not. Saying yes will send your spoken message and a littler sent title will appear at the bottom of your message that you have sent.

4.3.1.2 USER FEEDBACK ON STORYBOARD:

My users seem to understand the process once I have interviewed them one by one, my first participant has one concern about the phone automatically locked by itself, I have stated that simply saying unlock through the microphone and the app will reopen to where you have left off on the application (you can also say lock to lock your phone as well), while participant 2 added what if your phone had a security lock well you can either speak through the microphone saying your digit number or pull up on a suitable parking place and do it manually, Participant 3 has stated whether the application will rely on signal I have confirmed that the app will work more efficiently while connected to the Wi-Fi or anything such as 3G or 4G that will do the trick, Participant 4 asked if you can use video call in this application I have stated that it will not be a good idea as it will distract the user while driving looking at the phone which was not a safe feature, Participant 5 has said will this app work on other social media communication apps such as WhatsApp or Messenger on Facebook I have replied that there is an option part of the App to send your message via other social media applications which beats having to go copy and paste the message that you have sent.

CONCLUSION

In Conclusion, the application has potential and to be a good use for using our phones while driving without getting distracted as sometimes there are important calls that we have to take especially during business, so we are able to communicate with the caller while our eyes are also focused on the road while driving, why was this idea developed was that many people tend to use their phones regularly and quite dangerously even while driving and that there are a number of deaths of crashes have been caused over the years and can increase unless an idea that is clever enough to be developed for a device that you can use your phone while driving can be produced and can be used safely for as well and hopefully a solution will be implanted in the future to prevent death by text and drive incidents.

Overall, user feedback and evaluation in the proposed designed system was very important especially in Human Computer Interaction or in designing an user interface, if you were planning to design an interface without the use of user feedback or evaluation, your design may not as successful as you have anticipated.

APPENDICES

Appendix A: User Evaluation Form

This evaluation form was used to receive feedback on the prototype storyboards, my recruits have placed their answers in this form below.

TECHNICAL	COMMENTS
Did you feel that the prototype design is well designed and well put together • In terms of structure • Design • Was the drawing clear to understand?	
Did the design have a good flow to it? • Were you able to follow what was happening on the sketch? • Was the sketch rough and unclear to follow	
Was the design clear to understand • Such as the annotations • Descriptions • Does it meet the main objective to the proposed system	
Any other thoughts? (additional comments)	

PERSONAL	COMMENTS
Do you think it will work in a real life scenario?	
Was the design clear to understand?	
Anything that can be improved on?	
On a scale of 1-10 (1 being bad 10 being excellent) how would you rate this design?	
Any other thoughts? (additional comments)	

Appendix B: Specification List

This following specification list entails the final features, pages and undesirable attributes included within the proposed system:

System Features	System Tabs	Undesirable Features
• Phone call receiving • Text message receiving • Minutes active • Record of car journey • Ability to ignore or reply to a text • Ability to answer or decline a phone call • Bluetooth microphone • Headset • Charging device for your phone	• Home Page • Connect device • Begin Journey • Settings • Close application • Contact • Social Media Icons • List of car journeys	• Advertisements • Third Party sharing • Excessive notifications

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