

Designing and Prototyping Glanceable Wearable

CS 349 – Mobile Interaction Design
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Observation Study Results

Observation ID	Time and Date	Location	Type of Device	Information Received	Duration (seconds)
1	03.03.15 9.35am	Walking to Lecture	iPhone	Web Page – Social Networking	5
2	03.03.15 9.43am	Walking to Lecture	Android Phone	SMS Messaging	3
3	03.03.15 9.56am	Walking to Lecture	iPhone	Web Page – Social Networking	5
4	03.03.15 10.04am	Lecture Room	iPhone	Facebook Messaging App	3
5	03.03.15 11.23am	Lecture Room	Laptop	Web Page - Swansea Blackboard	3
6	03.03.15 10.34am	Lecture Room	Laptop	Web Page – Misc.	7
7	03.03.15 12.49pm	Walking to Lecture	Watch	Looked at time on watch	2
8	03.03.15 13.17pm	Lecture Room	Macbook	Playing a Game	8
9	03.03.15 13.36pm	Lecture Room	Tablet	Web Page – Misc.	7
10	03.03.15 13.55pm	Walking to Project Lab	iPhone	SMS Messaging	3
11	03.03.15 14.12pm	Project Lab	iPhone	SMS Messaging	3
12	03.03.15 15.43pm	Project Lab	Macbook	Project Work	6
13	03.03.15 16.04pm	Project Lab	Laptop	Playing a game	8
14	03.03.15 16.35pm	Walking Home	Android Phone	Facebook Messaging App	3
15	03.03.15 16.38pm	Walking Home	Android Phone	Listening to music	5
16	03.03.15 17.45pm	Town Center	iPhone	Facebook Messaging App	3

17	03.03.15 17.57pm	Town Center	iPhone	SMS Messaging	3
18	03.03.15 18.08pm	Town Center	Watch	Looked at time on watch	3
19	03.03.15 18.24pm	Town Center	Android Phone	Web Page – Social Networking	7
20	04.03.15 11.46am	Walking to Lecture	Android Phone	Listening to Music	5
21	04.03.15 11.54am	Walking to Lecture	iPhone	Email app	3
22	04.03.15 12.14pm	Lecture Room	Macbook	Web Page - Swansea Blackboard	3
23	04.03.15 12.42pm	Lecture Room	iPhone	Email app	3
24	04.03.15 12.48pm	Lecture Room	Macbook	Web Page - Swansea Blackboard	3
25	04.03.15 13.05pm	Walking to Project Lab	iPhone	SMS Messaging	3
26	04.03.15 13.08pm	Walking to Project Lab	iPhone	SMS Messaging	3
27	04.03.15 13.20pm	Project Lab	Laptop	Listening to Music	5
28	04.03.15 13.58pm	Project Lab	Laptop	Project Work	7
29	04.03.15 14.24pm	Project Lab	Android Phone	Looked at time	2
30	04.03.15 15.10pm	Walking Home	iPhone	Listening to Music	5

How I captured the data

Over the course of two days I have performed a self-observation study where I would glance at other people's devices to see what information I could get. For example, this could mean glancing over at someone's phone to see what he or she were looking at. Along with what information I received I would also make note of the time and date, location, duration of the look, type of device and context.

To record this data, I wrote down what I observed using a notebook and pen. I then created a spreadsheet using Microsoft Excel on my laptop and transferred all the data I had written up to the spreadsheet creating a digital copy of the data.

Using a notebook has both advantages and disadvantages:

Advantages:

- Easy to quickly write down any necessary information
- Cheaper alternative to technological device
- Information can not be accidentally deleted
- Not reliant on technological dependencies like internet

Disadvantages:

- Can be lost easily
- Notes made on paper can be damaged easily
- No visual or audio component
- Can't backup data unless a new set of notes are written on new piece of paper

Using Microsoft Excel also has both advantages and disadvantages:

Advantages:

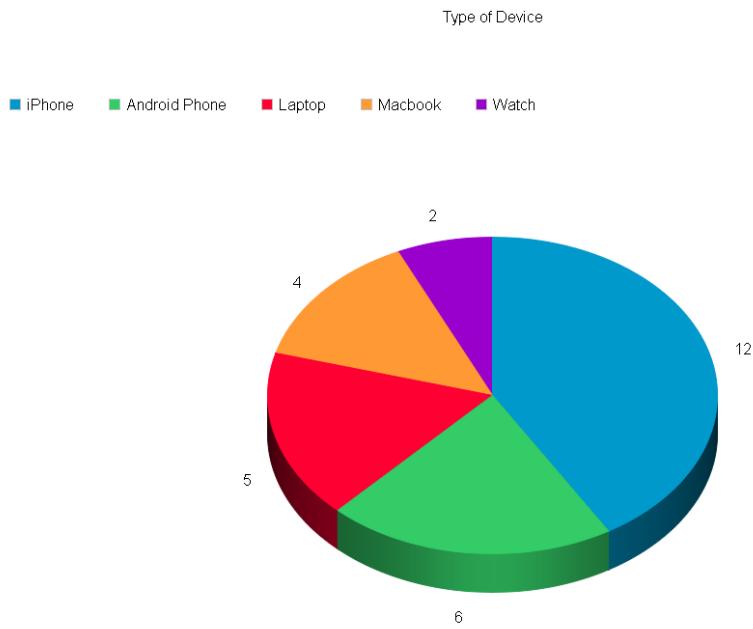
- Can be backed up easily on multiple storage devices
- Efficient and quick
- Easy to format and present in a professional way
- Help documentation is provided if help is needed

Disadvantages:

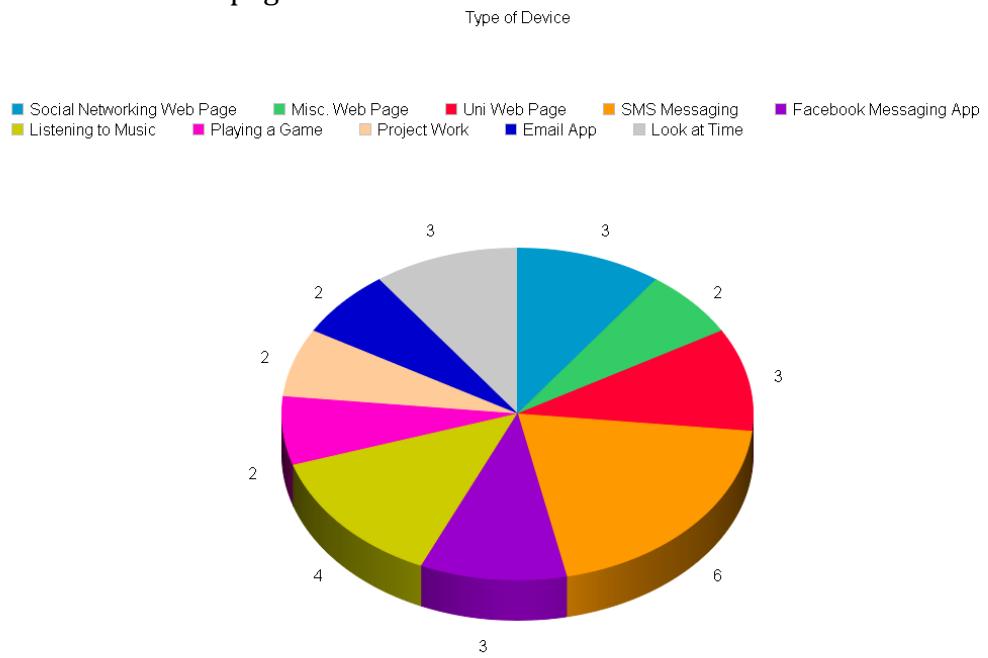
- Need to have laptop present
- Have to pay for the software

Assessing my results

This pie chart shows the occurrence of different devices I observed people using throughout the two-day observation study. iPhone devices are clearly the most common devices being used with over a third of the total devices being iPhone. Android phones were second most popular but still only half as common as iPhones. Watches are least common with only 2 people wearing watches out of a total 30 observed.



This pie chart shows how often people use their phones for various different activities. As you can see, there isn't really a vast difference amongst the different activities. Using a phone for SMS Messaging is the most popular activity but not by a great margin. There is not just one activity which is least common but four. These four are playing a game, project work, emails application and miscellaneous web page.



However, as my observation study was conducted at all times during the day, I was observing as I was walking to and from places. Laptops and MacBook's are very rarely used whilst walking so the chances of seeing someone use these devices whilst walking were almost zero. Also, as my observation was mostly conducted whilst in university, it would be rare to see someone playing a game or listening to music in a lecture.

If I were to do the two-day observational study again I would chose to carry it out on a Friday and Saturday. This would allow me to observe people in University for a whole day and observe people during casual activities (e.g. at the cinema or at the park). This will help me to get a wider perspective on what people glancing at other people's devices would usually see. I will apply these improvements to my data method for capturing the situations in which watches are visible in day-to-day life.

Queries and contexts which wearable computer is useful

There are numerous ways in which a wearable computer could provide the sort of information users were interested in during my observation study.

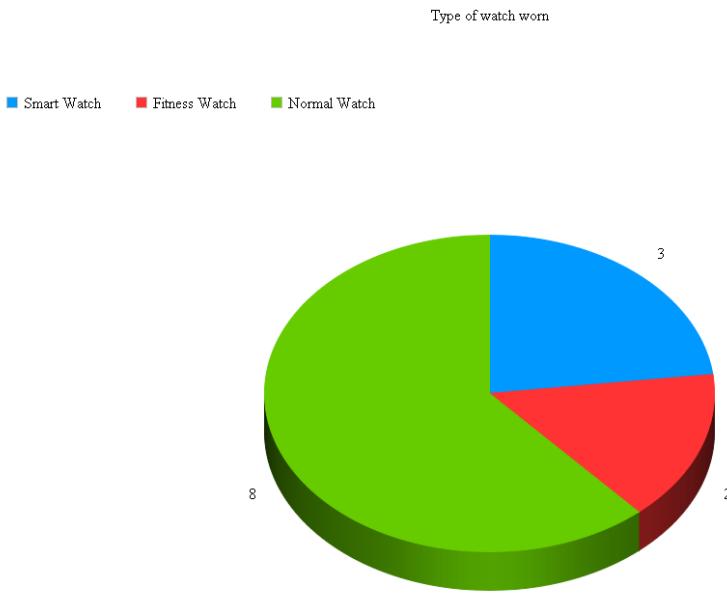
- Email – If the wearer and the glancer have the same email (e.g. computer science course related) the email could be displayed to show the glancer the email as well.
- Listening to music – The wearers watch would display the name of the song and the artist as a screensaver. This gives the glancer an easy way of seeing what the wearer is listening to.
- Looking at the time – The watch would permanently display the time in the form of digital and analogue. However, this would drain the watch's battery life by quite a lot.
- Facebook Messenger Application and SMS – Whenever the wearer is on the watch and either receives or sends a Facebook/SMS message, it will appear on the wearers watch with the recipients name and the message sent providing the glancer with the relevant information.

Data Capture Results

Observation ID	Time and Date	Location	Type of Device	Information Received	Gender
1	05.03.15 10.14 am	Lecture	Smart Watch	Email	Male
2	05.03.15 11.56 am	Walking to Lecture	Watch	Time	Male
3	05.03.15 13.34 pm	University Dining Hall	Watch	Time	Male
4	05.03.15 15.45 pm	Walking Home	Watch	Time	Male
5	05.03.15 18.21 pm	Football Practice	Fitness Watch	Heart Rate of User	Male
6	06.03.15 12.38 pm	Walking to Town	Watch	Time	Female
7	06.03.15 13.54 pm	Supermarket	Smart Watch	Email	Male
8	06.03.15 15.32 pm	Music Shop	Watch	Time	Female
9	06.03.15 15.47 pm	Walking Home	Watch	Time	Female
10	06.03.15 17.03 pm	Student House	Watch	Time	Male
11	06.03.15 18.51 pm	Gym	Fitness Watch	Calories Burned	Male
12	06.03.15 21.36 pm	Restaurant	Smart Watch	Time	Male
13	06.03.15 21.42 pm	Restaurant	Watch	Time	Female

Common Trends Found From Data Capture Results

From the thirteen observations I made, I found that the most common device people wore were normal watches with 62%. It is clear that smart watches haven't become popular yet but with more and more smart watches being developed I strongly believe they will gain popularity in the next few years, especially with the release of the Apple Smart Watch.



As the only function a normal watch can do is display the time, then this was obviously going to be the most common type of information I received. I also found that the majority of people wearing watches were male.

Data Capture Method

I needed to design a way to capture the situations in which watches are visible in day-to-day life. I thought my data capture method for the observational study was a success, however, there could be some improvements made. I decided to use this method but alter some aspects by using spreadsheet application on my phone to record all the relevant details. When all the details were stored on the spreadsheet I would then save it as an Excel spread sheet and send it to my email, which I could later open on my laptop.

I decided to use a mobile application as it eliminates the need for me to make a paper copy of the results before transferring them to a digital copy. This will save me time and resources. Using my mobile phone will provide me with a more accessible way of recording data, as using a notepad and pen whilst walking around the city centre on a busy and crowded weekend wouldn't be ideal.

Prototype Sketches

On the next few pages are two sketches I have made for two different activities. I have chosen to sketch these activities, as they are some of the most popular ones I had observed and feel they will fit well within my glance-able smart watch perfectly.



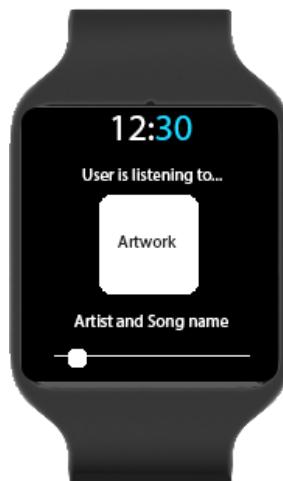
Double tap to bring screensaver on. Slide to the left to access the home screen.



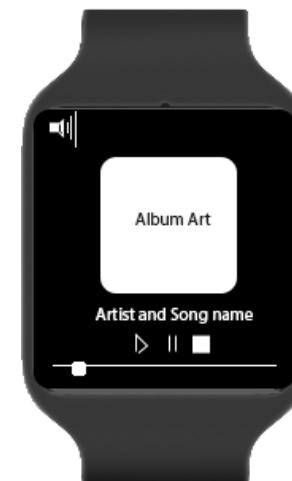
Tap the icon of the application you want to run. Vibration feedback when icon is pressed.

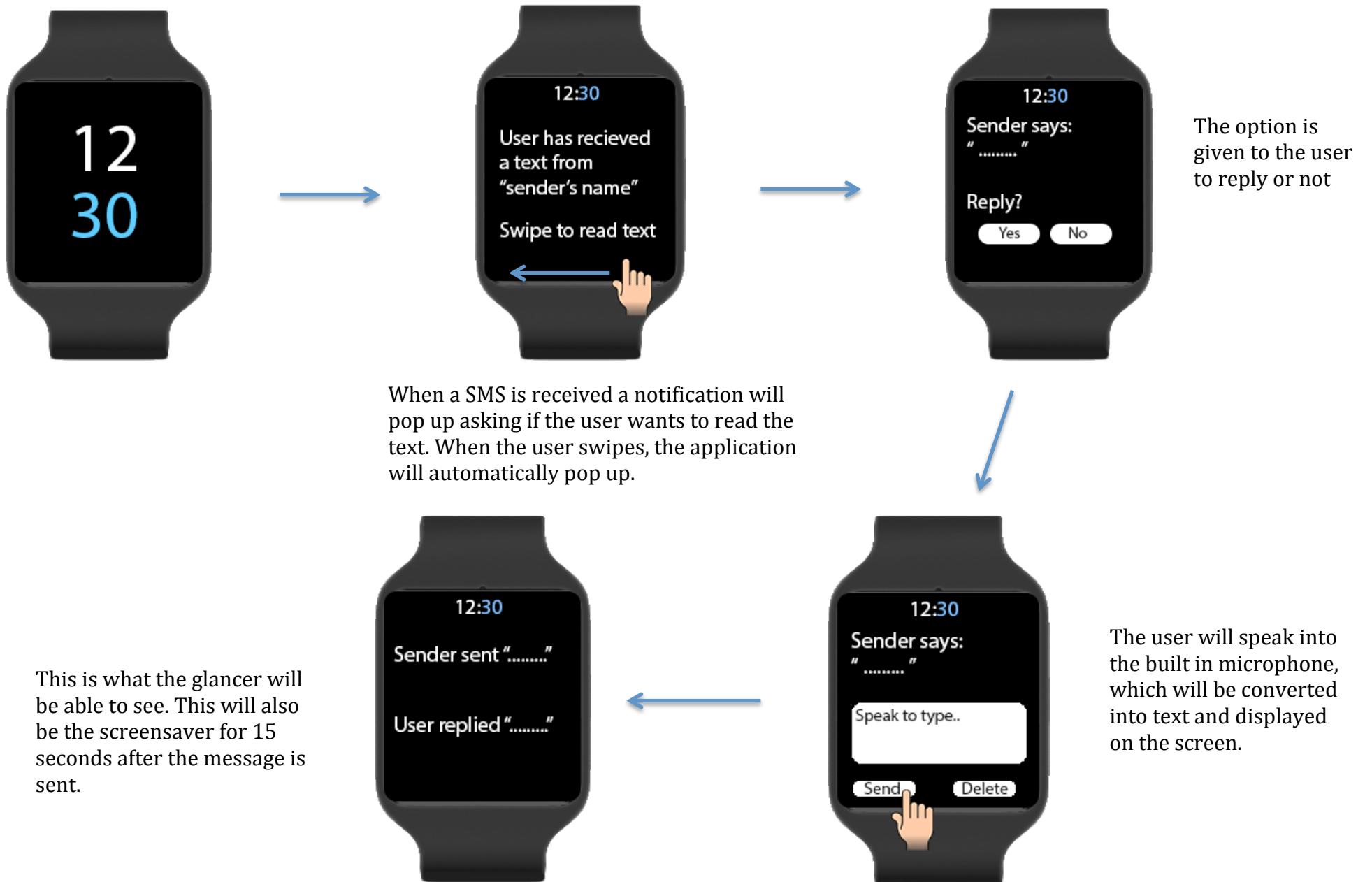


The icon in the top left shows that music is playing out loud.



This is what the glancer will be able to see. This will also be the new screensaver.





Photos of Prototype – Listening to Music



This will be the first thing the user see's when they want to unlock or access there phone. To unlock or access the phone, all the user needs to do is double tap anywhere on the screen and then swipe their finger in any direction.



This is the home screen, which contains all the applications that the user has downloaded or ones that have come pre-loaded with the watch (e.g. Settings). To load an application the user has to tap on the icon. There will be a vibration giving the user physical feedback that the icon has been pressed successfully. There will also be audio feedback if the watch is not on silent.

Lets say for instance that the user loads up the Music Player application.



The user will then be presented with the different songs and artists that they have downloaded on the watch. When the user selects a song they wish to listen to, the song will start playing through the integrated speakers. As the watch will be very small compared to a phone or mp3 player, there will be no room to include a headphone socket.



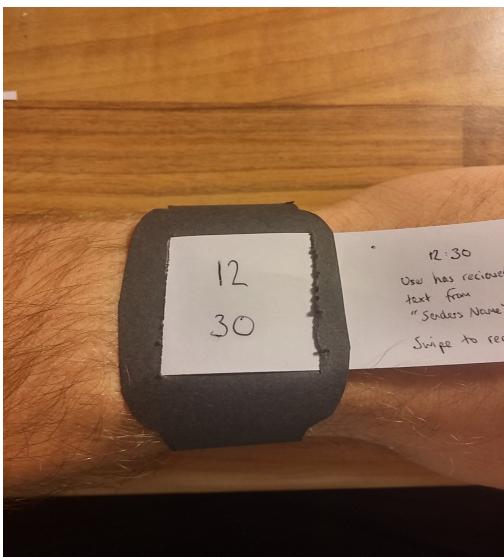
Once, the song is selected this screen will then be displayed automatically with animation. The album artwork, artist's name and the song name will all be present to confirm to the user which song will be playing. The user will also have a number of features including: play, stop, pause and changing the volume.

There will be both audio and vibration feedback when the play, stop or pause buttons are pressed.

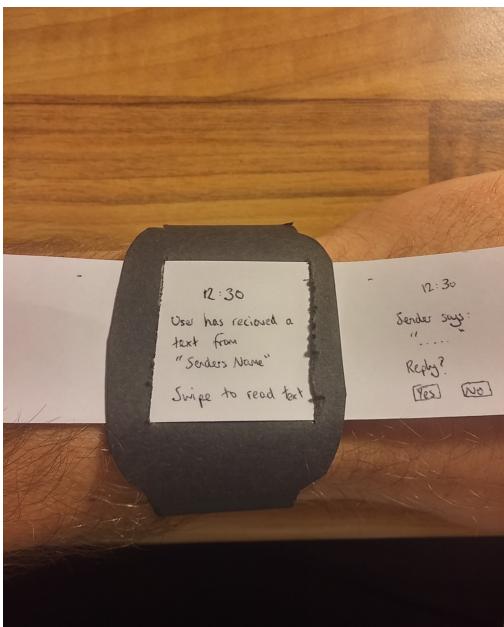


If the user is finished using the watch and wants to keep listening to music then the screen will time out and go into screensaver mode. This is what the screensaver will look like. This gives both the user and the glancer information about what is currently being played.

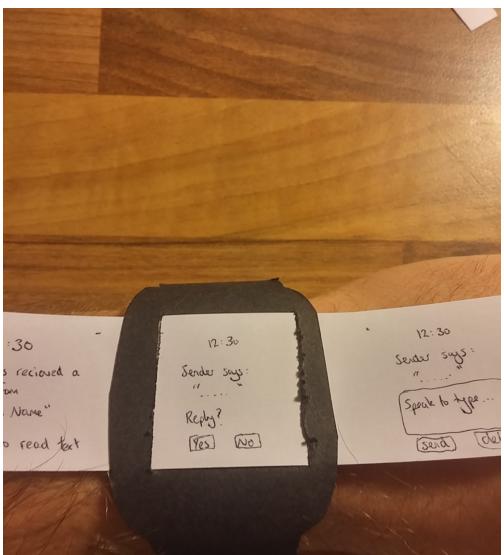
Photos of Prototype – SMS Messaging



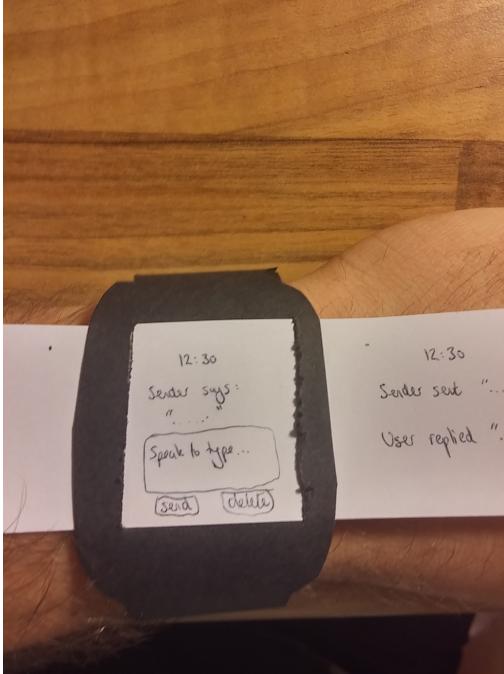
This will be the first thing the user see's when they want to unlock or access there phone. To unlock or access the phone, all the user needs to do is double tap anywhere on the screen and then swipe their finger in any direction.



When the user receives a text message, a notification will appear with the senders name and the watch will display this screen. There will be audio and vibration feedback to notify the user incase the watch's screen is not visible. If the user wants to read the text message they can swipe in any direction just as they would to unlock/access the watch.

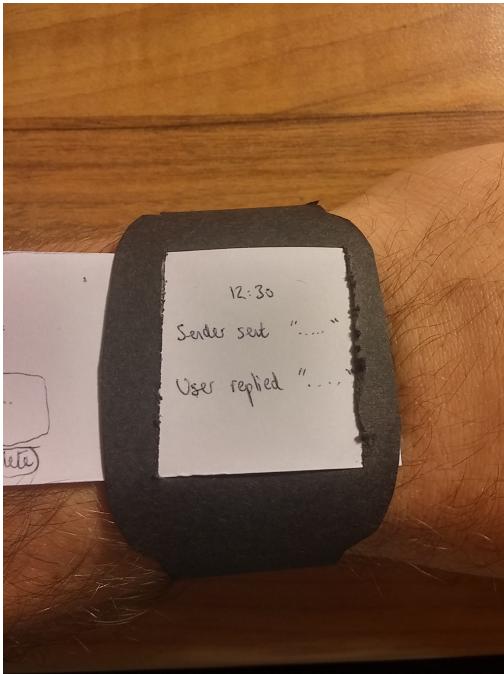


Once the user has swiped, the message will be displayed and the user will have the option to reply or ignore it. If the user presses the button "Yes" they will be taken to the next screen. Vibration and audio feedback will be given to the user once a button is pressed.



The user will need to speak into the integrated microphone to type out the reply. This is because the screen will be too small to include a full keyboard. The text will appear in the text box so the user can confirm that the text is correct. The user will then have the option to proceed and send or if they want to delete the current reply and reply later.

Again, once a button is pressed there will be audio and vibration feedback.



When the user has sent a reply, they will be sent back to the lock screen. The lock screen will look like this for 15 seconds after the user has sent the reply. This gives the glancer information on what was said and what the user replied. It also gives the user confirmation the reply was sent and reminds the user of the conversation.