**MPD Documentation**

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**S1508111**

**Computer Games (Software Development)**

Link to video in github: <https://github.com/MCADDE200/MPD_Cadden_Matthew_S1508111/blob/master/MPDAssignment.iml>

Link to Project: https://github.com/MCADDE200/MPD\_Cadden\_Matthew\_S1508111.git

Link to APK: <https://github.com/MCADDE200/MPD_Cadden_Matthew_S1508111/tree/master/apk/debug>

# Testing

This section of the documentation shall focus on the different methods that were used to test the app. The app was tested to ensure that it was accessible for anyone to use and followed Schneiderman’s golden rules on designing for usability. User testing was done in three distinct groups with no overlap between members of each group. These groups were people who used the app in portrait, people who used the app exclusively in landscape and the third group are the people who used the app in both portrait and landscape mode. This was done so that there was no bias in the test groups. Also, by testing them in this fashion it means that if someone has already discovered something in portrait mode it may be easier for them to find it again in landscape mode. By limiting what screen the users see it limits the overlap of knowledge. However, we are also testing to make sure that when you flip the screen the user still feels at home in the app which is why there is the third group who are using both portrait and landscape modes.

As they are how we are organising these tests lets take a closer look at Schneiderman’s eight golden rules for interface design.

1. Strive for consistency

* All actions that take place in an app should be consistent. (e.g. no matter what screen you are on an app it should always be a familiar combination of button presses to take you out of it or back to the menu)

2. Enable frequent users to use shortcuts

* As a user grows more familiar with the software they will likely be coming to the app and knowing exactly where they want to go and what they want to do. There should be shortcuts that allow them to get there faster so they don’t need to go through the menu handholding a less experienced user with the software may need. A good example of this is the keyboard shortcuts that have become so well known by users it is almost unbearably slow when someone right clicks and presses copy instead of using the shortcut “Ctrl + C”

3. Offer informative feedback

* Anytime the user does anything in the app they should be receiving feedback so that they know the action is confirmed. This could be a loading message or on mobile devices a slight vibrate is often used. This is so the user is not left there waiting for an action to happen that never will. This feedback should also scale with much more feedback given over important tasks and minor feedback given to the everyday tasks.

4. Design dialogue to yield closure

* Sequences of actions should be designed into groups so that when one group of actions is complete the user will no longer need to spare any thought on it and can move onto the next actions that they want to do.

5. Offer simple error handling

* Must try to design the system so that there are as few errors as possible that the user can stumble into. However, when they happen upon these errors the response to the user on how to fix the issue should be simple and concise so that it will be more easily understood and making the app more accessible

6. Permit easy reversal of actions

* If a user knows that any actions they take can be easily undone then they are less anxious about exploring what everything in the app does as they know that even if they do mess up it won’t be too troublesome to get back to where they were.

7. Support internal locus of control

* The system should be designed so that the users feel like the system is responding to them and not the other way around giving the users control over the system

8. Reduce short-term memory load

* As humans do not have the greatest short-term memory the app should design around this keeping the display nice simple and clear for users to understand. Nothing in the app should take a sequence of 20 button clicks to get to. All actions should be able to be remembered by the users.

After looking at Schneiderman’s eight golden rules we can see how a good app should be designed, always putting the user experience first and making everything nice neat and easy for them to understand while also rewarding the more advanced users.

Tasks were created for users to try and complete in the app that was developed that related specifically to these rules so that the usability of the app could be judged. These tasks were

1. Find more information on any given earthquake.
2. Find the sort menu.
3. Sort the list of earthquakes by the largest magnitude of earthquake

These three tasks were chosen so that the users would have to look around the app and see if anything stood out to them. They actions are all consistent and give total control to the users. The way to complete these tasks is also very straight forward but may be harder for a novice user of the program leading a more skilled user to easily know exactly what they are doing. The sorting of the list proved to be quite difficult for users as the menu slightly blends into the background instead of popping out more to catch the user’s eye. These tests were performed under supervision, but no hints were given to the user about what to press.

After testing was completed the users were asked to fill out a questionnaire about the app directly relating to the tasks that they had just underwent and Schneiderman’s golden rules.

These questions were based on a grade of zero to five to allow for a range of answers. The questions were,

1. How noticeable was everything on the app?
2. Could you see what you needed to press in order to complete the task?
3. Were you given enough feedback, so you knew you had completed an action?
4. Did you feel in control of the app?
5. Was the app enjoyable?

Each of these questions was chosen to relate back to Schneiderman’s golden rules that were previously discussed to see just how well this app faired.

# Testing Results

As mentioned in the previous section testing took place in three separate groups, the portrait group, the landscape group, and the portrait/landscape group. All three groups had four people each and there results will be shown next to each other so that each one can be discussed and compared.

## How noticeable was everything on the app?

From this graph it is evident that the app had some mixed results with how easy it was to navigate around and know what you should click on. Some people found it quite easy to see what they should be doing however two people also found it rather difficult. This was because there is a list you need to change in the app the press the sort button whereas these people thought the sort button would open a list for them showing that it may not be the friendliest app to use if you are not already accustomed to it.

## Could you see what you needed to do in order to complete the task?

From this graph it is clear that to complete the task seems easier if you have used the app on landscape mode. This could be because of the larger space meaning that the interactable icons will stand out more. We can also see that even although it was not the easiest to navigate most users had some idea of what they were meant to be doing in order to complete the task.

## Where you given enough feedback, so you knew when you had completed an action?

From this graph it is obvious that there just is not enough feedback in the app letting the players know when they have completed an action. This means that it can be confusing for some users and they may try to complete the same action over and over again waiting to see some feedback that the task had been successful. This was expected as the feedback given in the app is sparse and some ways to improve this could have been increased font size on message boxes or maybe vibration.

## Did you feel in control of the app?

This graph show that the users do very much feel in control when they are using the app. They feel like the app is responding to their actions and not the other way around. By doing this the user is more likely to continue using the system for longer.

## Was the app enjoyable?

Unfortunately, from this graph there is a bit of mixed results on if the app was enjoyable or not and that comes done to how easy it is to pick up and use.

## Conclusions

The app did not perform brilliantly in all areas of the testing and there are certainly a few key areas which will need to be improved on if the app was to continue. One of the major things to note is that generally throughout all of these graphs it has been the ones who were able to play landscape that had the most praise to offer. This could mean that perhaps the design of the app in portrait mode lets it down in someway which makes it harder for users to understand and pick up as easily as it seems to be for those that are able to play in landscape.

# Design Report

## Introduction

When this project was first starting one of the main responsibilities was to try and create a project that was highly accessible and usable. Many different ways were looked at so that this could be done such as Nielsen’s heuristics but the one that was followed most closely was Schneiderman’s eight golden rules. This is because these rules are considered by many to be the gold standard of what HCI can be and while people have made revisions on them to bring them more up to date they still stand on their own.

The aim of the project was to create an app that would read data in from an xml file on a website that was updated about any earthquakes in the United Kingdom. The challenge after this was to find a suitable way to display all this information to the user. This did prove to be quite the challenge considering the vast amounts of data that is stored in the file so finding a way of showing users the minimum of what interests them and then allowing them to delve deeper into seemed to be the best option.

## App Layout

When the app was first conceived it seemed like it would be rather simple to take on this challenge.

### Colour

One of the key things that had to be thought about straight from the start was the colours. The colour scheme of the app would play a huge part in how usable and accessible the app would be as an app where all the lettering has a high contrast with the background can greatly improve the user experience. This is especially true in an app such as this where it is very text heavy. In the end it was decided that there would be some lighter shades in the background of the app with the dark lettering at the front to provide this contrast. Text is not the only contrast need in the app though as there is also a sort button and a drop down sort menu both of which must be easily noticeable by first time users so they know exactly what they are doing without the need for a tutorial. One of the issues that testers had with the text was that the popup text that shows when a user taps on an earthquake for more information could be a little small. This shows that for accessibility it would have been a good idea to have a font size slider or be able to customise the font in many different ways to personalise it for the users experience

### Positioning

Where everything on the app is positioned is crucial as well. There is a scroll menu in the very centre of the app showing you a brief summary of the data from the earthquakes. If you wish to learn more about any one of these earthquakes it is a simple case to tap on one of them and then you will see a message box pop up showing you all you wish to know. This goes back to Schneiderman’s golden rule about always having adequate feedback, as as soon as a user taps on one of these earthquakes they are immediately presented with the information they were looking for. This also coincides with another of Schneiderman’s rules about making sure that the user always feels as if they are the one controlling the app and it is simply responding to them.

As the sort menu is a drop down menu it was placed at the top of the app as this makes the most logical sense for the app and for the users when they go to uses the menu. This menu is where the user will select what type of sort that they want done on the data. After this they must push the sort button at the bottom of the screen to begin the sort. This links in with Schneiderman’s rule about how everything should be done in just a few processes so that the short term memory does not forget. When the list is sorted the data on the screen changes immediately so that the users can continue to explore the app.

With positioning another important thing to take into account was the fact that it would all change as soon as the phone went into landscape mode so two views were created so that each mode was customised to work well with the app and its features. As consistency is key according to Schneiderman the colours remained unchanged and the positions only changed slightly so that the user would still be able to recognise them. To this end the sort menu was kept up at the top of the screen, with the data between it and the sort button down at the bottom of the screen. The sort button was moved to the middle of the screen as it suited it better in this layout so that any users could be able to scroll down the screen with either their left or right thumbs.

As the app was being developed it was constantly being checked to make sure that everything still felt right and ran smoothly.

From the testing of the app it is clear that it has failed at some of Schneiderman’s rules as it seems to take a bit to get used to. It is also apparent that the portrait users had a more difficult time completing tasks than the landscape users so there could have been more to help the app while it was in portrait mode with most people complaints being about the sort bar.

### Errors

As with any application the user may come across some errors however with the use of try catch methods this means it will be easier to see the exact problem. This is another of Schneiderman’s rules where if an error occurs the user should be given simple clear instructions on what to do so that they can fix the issue and continue on with the app.

### Conclusion

When designing an accessible easy to use app there are clearly a great many things to consider not just Schneiderman’s eight golden rules. While this app did meet some of the criteria laid out by Schneiderman it also missed a few key components as well. The colour was done well in most areas of the app apart from the hard to see drop down box. The positioning of everything made sense and it was easy to follow where everything was moving to when it was flipped horizontally. Everything on the screen had a purpose. This meant there was no useless waste of space but also that the app screen wasn’t too cluttered as this would leave the user to fee overwhelmed by the app and would probably put off many first time users. The app also included shortcuts in a way with its sort function. This means experienced users who knew about the function and how to make use of it would be able to find the information they were looking for much quicker than new users who were just aimlessly scrolling through the data. Overall, the project was a challenging one to create and while not achieving all the aims perfectly did a good job of providing a usable interface for the users.