

Configuration Manual

MSc Internship
MSc. Cybersecurity (Evening)

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MSc Project Submission Sheet
School of Computing



Student Name: Raymond O'Brien
Student ID: 17110971
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Signature: *Raymond O'Brien*

Date: 14 August 2020

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Configuration Manual

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Student ID: 17110971

1 Introduction

This configuration manual outlines the steps performed outlined in the methodology and implementation sections of the research report. It will briefly introduce each activity, the application or method utilised and the basic steps to follow. Appendix A holds a directory listing of the research files including the prototype, data collected and the models used to analyse the information.

2 Configuration

2.1 Setting up the form

The initial survey was built using Microsoft Forms¹, an application available in Office 365 from Microsoft.

1. Login to portal.office.com
2. Select "Forms" as shown in figure 1

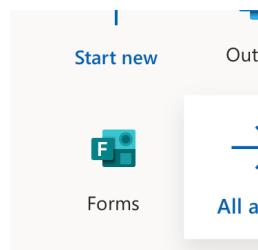


Figure 1: Forms App icon

3. Create "New Form" as shown in figure 2

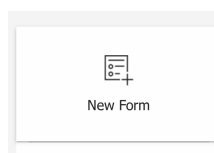
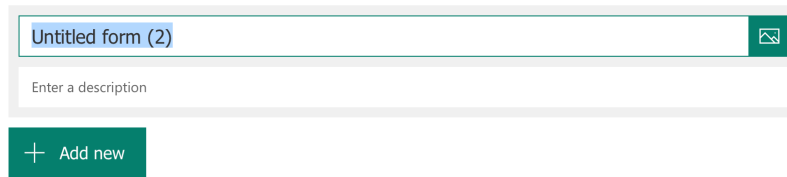


Figure 2: Create "New Form"

¹ <https://forms.office.com>

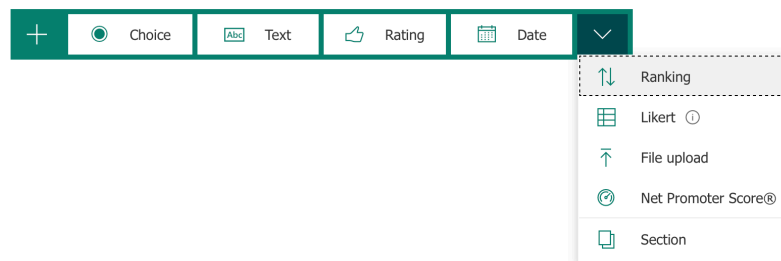
4. Give the form a logical Name as shown in figure 3, e.g. Public User Survey; and a description² of the survey's research goal(s)



The screenshot shows a form creation interface. At the top, there is a text input field containing "Untitled form (2)". Below it is a larger text input field with the placeholder text "Enter a description". At the bottom left, there is a green button with a plus icon and the text "Add new".

Figure 3: Form name

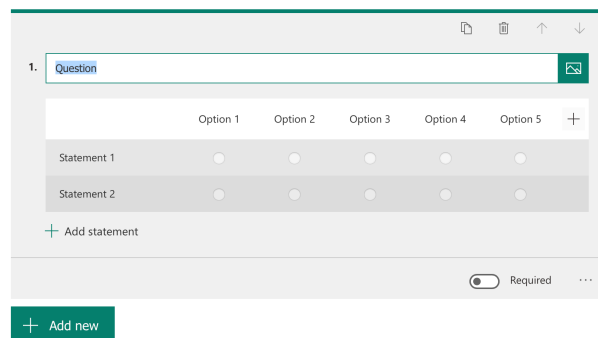
5. Click “Add new” to add questions for participants to answer
6. Choose the type of question you want to ask as shown in figure 4



The screenshot shows a horizontal menu with five options: "Choice", "Text", "Rating", "Date", and a dropdown arrow. The "Choice" option is selected. Below the menu, a dropdown list is open, showing the following options: "Ranking", "Likert", "File upload", "Net Promoter Score®", and "Section".

Figure 4: Questions formats available

7. Configure question appropriately as shown in figure 5



The screenshot shows the configuration interface for a Likert question. At the top, there is a text input field labeled "1. Question" containing the word "Question". Below it, there is a table with five columns labeled "Option 1", "Option 2", "Option 3", "Option 4", and "Option 5". There are two rows labeled "Statement 1" and "Statement 2". Each row has a radio button in each of the five option columns. Below the table, there is a green button with a plus icon and the text "Add statement". At the bottom right, there is a toggle switch labeled "Required" which is currently turned on.

Figure 5: Likert question format

² Use the description field to provide a disclaimer to the participant explaining the ethical approach and address any privacy issues if required

8. Configure settings as required – As shown in figure 6, to make the survey publicly accessible ensure you enable the option “Anyone with the link can respond”

Settings

Who can fill in this form

☒ Anyone with the link can respond

☐ Only people in my organisation can respond

☐ Record name

☐ One response per person

Options for responses

☒ Accept responses

☐ Start date

☐ End date

☐ Shuffle questions

☐ Customise thank you message

Notification

☐ Send email receipt to respondents

☐ Get email notification of each response

Figure 6: Form setup and security options

9. To download the responses, choose the “Responses” Tab as shown in figure 7

Questions Responses 103

Research Questionnaire

Figure 7: Responses tab

10. Choose “Open in Excel” using the button in figure 8

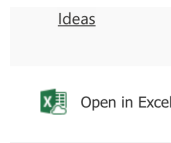


Figure 8: Open in Excel

11. Share the form using a Link/URL shown in figure 9.

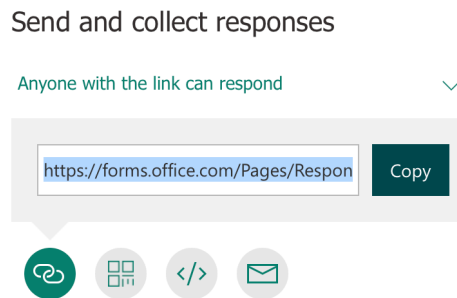


Figure 9: Form/ survey URL

2.2 Configuring AmazonMTurk³

1. Go got <https://requester.mturk.com/>
2. Create a Requester account as shown in figure 10

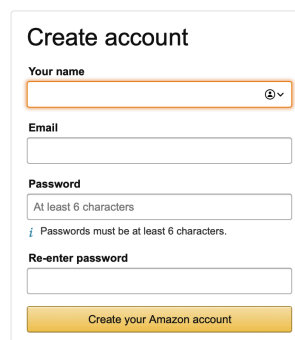
A screenshot of the 'Create account' form on the AmazonMTurk requester page. The form has the following fields: 'Your name' with a dropdown arrow, 'Email', 'Password' with a note 'At least 6 characters', and 'Re-enter password'. Below the fields is a yellow button that says 'Create your Amazon account'.

Figure 10: AmazonMTurk requester signup

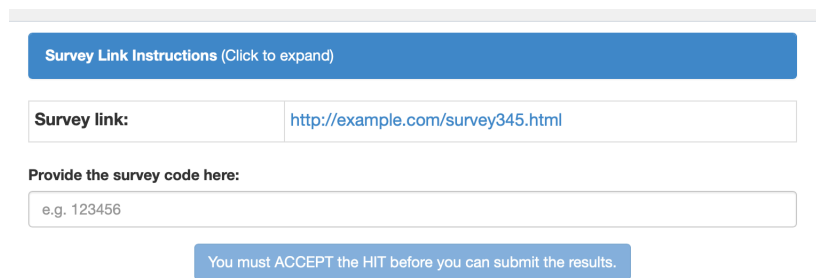
3. Login
4. Create a new project shown in figure 11



Figure 11: New Project

³ <https://requester.mturk.com/>

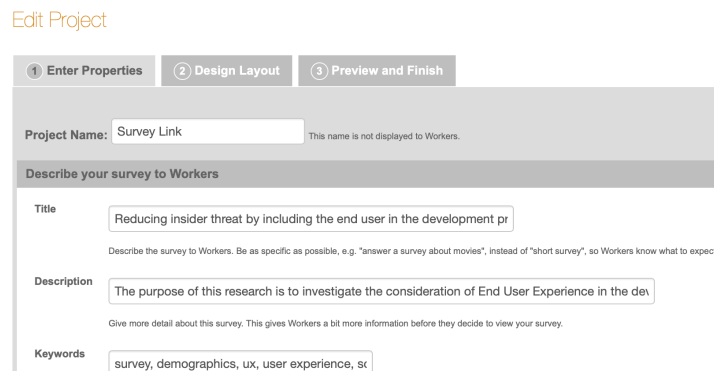
5. Choose “Survey Link” and input the URL you generated in Microsoft Forms as shown in figure 12.



The screenshot shows the 'Survey Link Instructions' section of a Microsoft Forms setup. It features a blue header with the text 'Survey Link Instructions (Click to expand)'. Below this, there is a 'Survey link:' label followed by a text box containing the URL 'http://example.com/survey345.html'. Underneath, a 'Provide the survey code here:' label is followed by a text box containing 'e.g. 123456'. At the bottom, a blue button contains the text 'You must ACCEPT the HIT before you can submit the results.'

Figure 12: Form Setup - instructions

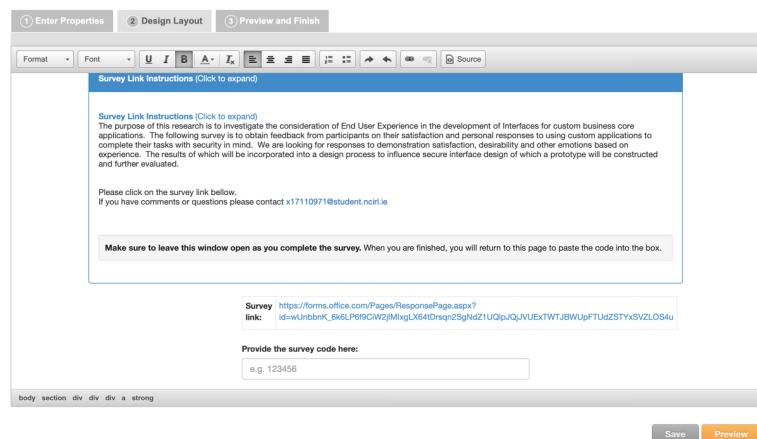
6. Configure the Project settings as shown in figure 13



The screenshot shows the 'Edit Project' section of a Microsoft Forms setup. It has three tabs: '1 Enter Properties', '2 Design Layout', and '3 Preview and Finish'. The 'Enter Properties' tab is active. It contains a 'Project Name:' label with a text box containing 'Survey Link' and a small note 'This name is not displayed to Workers.' Below this is a 'Describe your survey to Workers' section with three fields: 'Title' (containing 'Reducing insider threat by including the end user in the development pr'), 'Description' (containing 'The purpose of this research is to investigate the consideration of End User Experience in the dev'), and 'Keywords' (containing 'survey, demographics, ux, user experience, sr').

Figure 13: Project properties

7. Design the layout using the layout tab in figure 14



The screenshot shows the 'Design Layout' tab of a Microsoft Forms setup. It features a rich text editor with a toolbar at the top. The main content area contains a blue header with the text 'Survey Link Instructions (Click to expand)'. Below this, there is a 'Survey link:' label followed by a text box containing the URL 'https://forms.office.com/Pages/ResponsePage.aspx?id=wUnbnK_6x6LP6BCW2jMxgX64IDrsq2SgNz1UQpJQVUeXTWTJBWUjFTUzZSTYxSVZLOS4u'. Underneath, a 'Provide the survey code here:' label is followed by a text box containing 'e.g. 123456'. At the bottom, there are 'Save' and 'Preview' buttons.

Figure 14: Design tab

8. Press Preview
9. Press Finish to save and publish to the market place

4 Configuring Adobe XD

4.1 Creating the Prototype

Adobe XD⁵ is a vector-based user experience prototype design tool for web apps and mobile applications available for both Mac OS X and Windows. The files can be found in the directory /ICT Solution_Evaluation/XD-Prototype/ and are arranged in folders for each iteration.

1. Create a new project document⁶ based on your application design as shown in figure 16

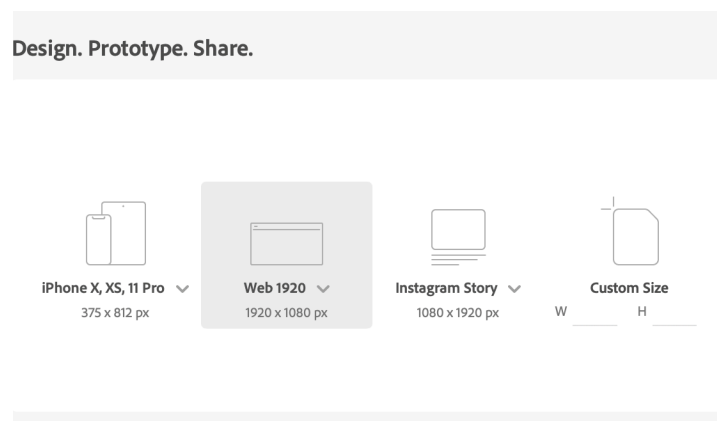


Figure 16: XD new document

2. Use the available tools to build your design as shown in the example in figure 17

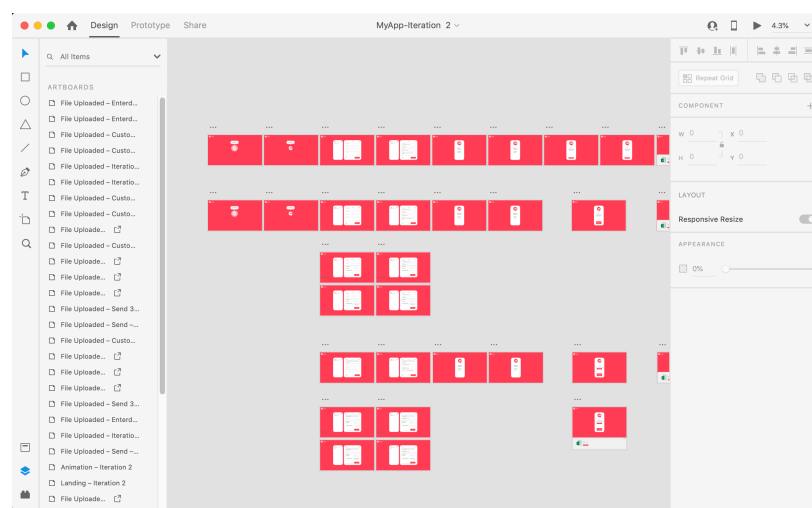


Figure 17: Document layout

3. Using the Prototype tools design the interactions as shown in figure 18

⁵ <https://www.adobe.com/ie/products/xd.html>

⁶ For this project Web1920 was chosen.

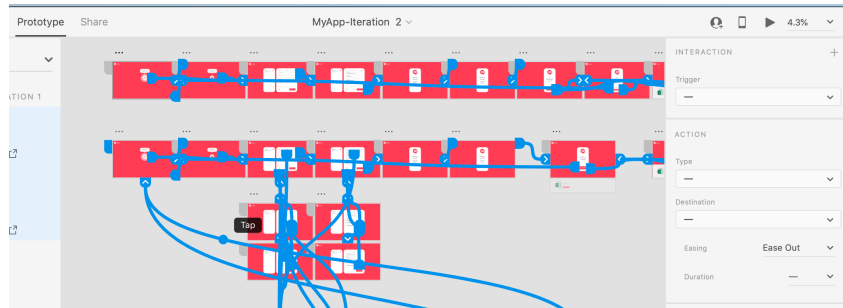


Figure 18: Example prototype interactions and journey

4. Use the “Play” transport button to launch the interactive preview/walkthrough of the prototype as shown in figure 19

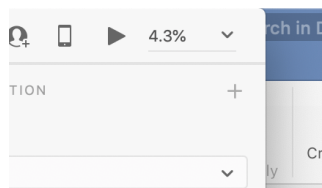


Figure 19: Preview the prototype

5. The interactive preview/walkthrough of the prototype will launch in a new window similar to figure 20.

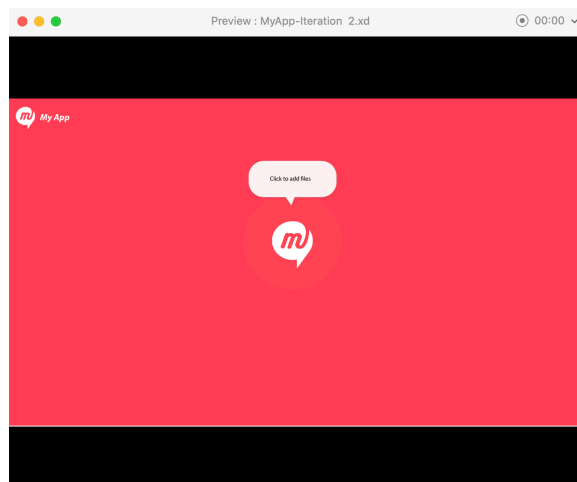


Figure 20: Prototype interaction screen

6. Use the Share tab to publish the prototype and share to the user testing participants as shown in figure 21.

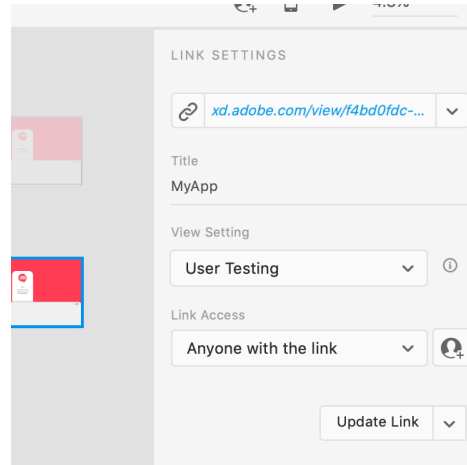


Figure 21:Share the project with others

7. Figure 22 shows 5 modes to choose from

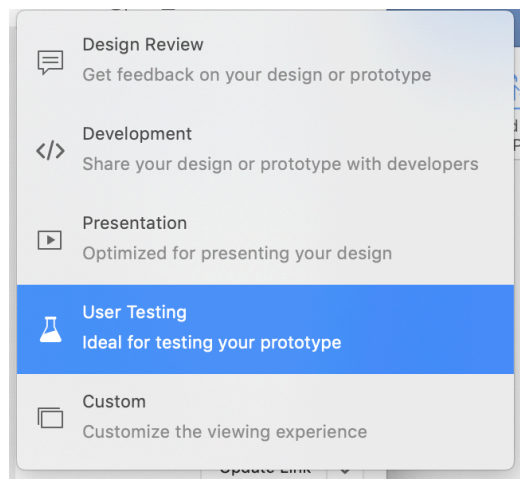


Figure 22: sharing options

8. For User Testing choose “User Testing as shown in figure 22
9. Launch the URL by clicking on it. It will open in your default web browser similar to that in figure 23

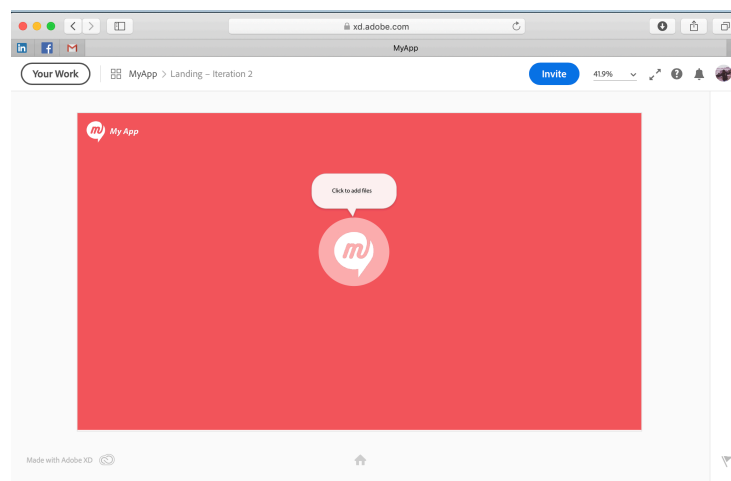


Figure 23: project web view

10. For handover to development choose “Development” and you will be presented with the following web view and tools as shown in figure 24

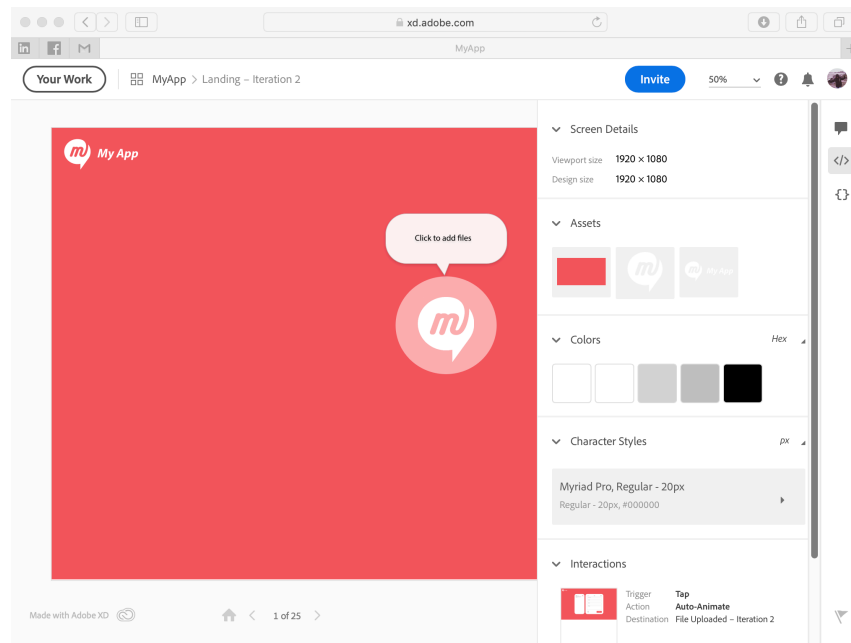


Figure 24: Developer web view

11. Developer mode allows for sharing of design of style information. It also allows for communication of notes and memo's between stakeholders as shown in figure 25

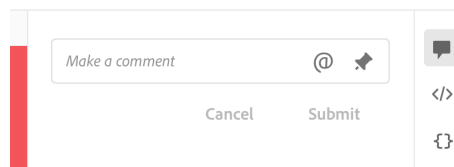


Figure 25: Add comments for developers

4.2 Exporting for development

1. A plugin was installed to export the prototypes HTML and CSS. This plugin is called Anima. This can be seen in figure 26

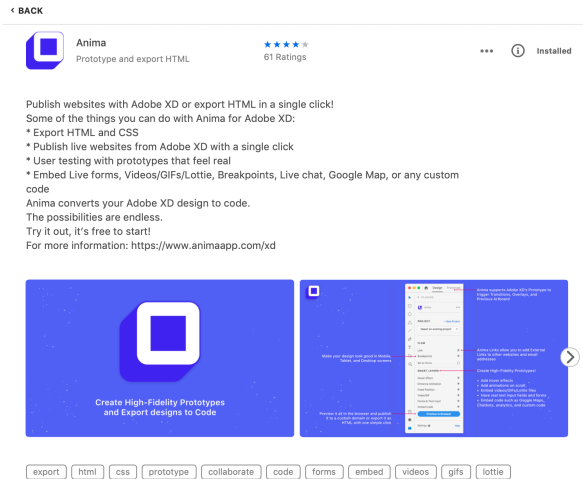


Figure 26: Anima web export plugin

2. Install by searching using the Browser plugins feature as shown in figure 27

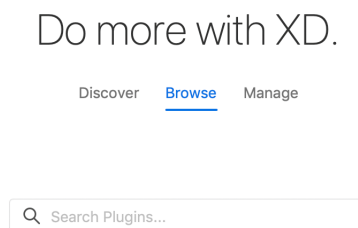


Figure 27: Browser for XD plugins

3. Create a new plugin project – shown in figure 28

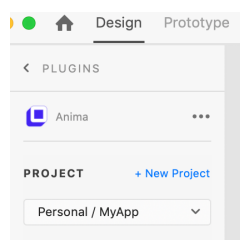


Figure 28: Create Anima project

4. Export Code to share with developers⁷

⁷ Adobe XD is only for prototype design. Its purpose is not to build production ready systems. This is also true for the code exported using the Anima plugin. The code exported is for demonstration and review purposes only.

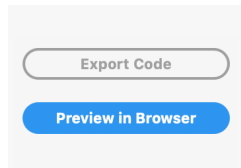


Figure 29: Export Code (HTML/CSS)

5. This will export a zip file as shown in figure 30 below

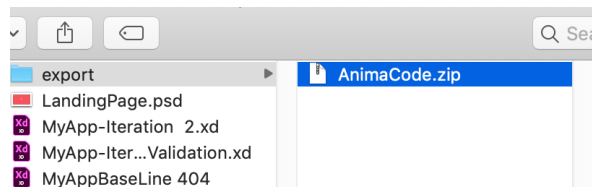


Figure 30: Anima code export (zip)

6. This can now be shared with developers for implementation.⁸

5 Tools to collect and analyse the data

5.1 Public Survey

The public survey data was quickly summarised and analysed using R-Studio using a comma separated value format version of the dataset.

1. Create a new script
2. Import your dataset⁹
3. Script configured
 - a. Establish the working directory using `wd <- getwd()`
 - b. Setup the working directory using `setwd(wd)`
 - c. Load the dataset using `read.csv("name of csv file")` as shown in figure 31

 A screenshot of the R-Studio script editor showing a script named 'r_SurveySummaries.R'. The script contains the following code:


```
1 # Getting working Directory
2 wd <- getwd()
3 setwd(wd)
4 getwd()
5
6 # load dataset
7 data2 <- read.csv("Book2.csv", header = T)
8 data2
9
10 summary(Book2$Do.you.feel.your.organisation.takes.security.serio
11
```

Figure 31: R-studio script view

4. Basic functions were used to summarise and plot the data for quick visual analysis as shown in figure 32

⁸ Files are located in the directory /ICT Solution_Evaluation/XD-Prototype/export/

⁹ Files are located in the directory /ICT Solution_Evaluation/Data Evaluation/Survey/

```
summary(Book2$Do.you.use.other.applications.or.service
bridge.gap <- table(data2$Do.you.use.other.applicatio
barplot(bridge.gap)
```

Figure 32: Sample commands in R-Studio

5. Summary() create a basic “summary of the column’s data as shown in figure 33

```
> summary(Book2$Do.you.use.other.applications.or.services.to.
tem....1..Strongly.Disagree.2..Disagree.3..Maybe.4..Agree.5..
Min. 1st Qu. Median Mean 3rd Qu. Max. NA's
1.000 2.250 3.500 3.255 4.000 5.000 1
```

Figure 33: Summary output of Likert question

6. The next step is to create table of the data in the column e.g. bridge.gap <- table(data\$...)
7. Using the command barplot(bridge.gap) we plot the data in a bar graph as shown in figure 34. This allows for quick analysis.

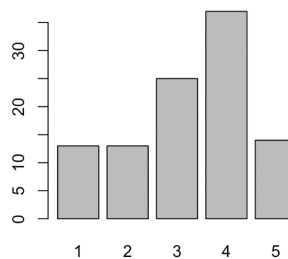


Figure 34: Bar plot output

The data was also viewed in excel¹⁰ which was used to create a more visually appealing graph as shown in figure 35.

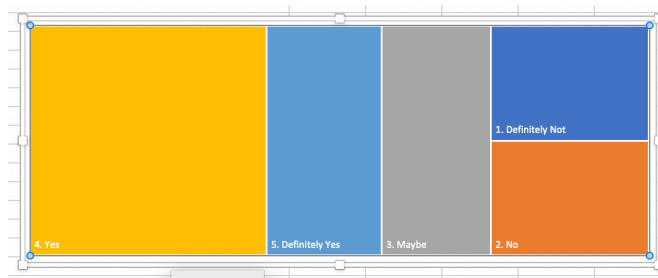


Figure 35: Graph output in Excel

5.2 Heuristic Evaluation

Microsoft Excel¹¹ is used to analyse and manipulate the data collected¹² from the heuristic evaluation. Excel is a spread sheet application supplied as part of Microsoft Office 365. Figure 36 shows the data collected from the heuristic evaluation.

¹⁰ Files are located in the directory /ICT Solution_Evaluation/Data Evaluation/Survey/

Interface Usability Heuristic Evaluation Form(1-17)Test1 3									
Start time	Completion time	Participant user number	Task	Issue	Coded Issue	Severity Rate	Heuristic	Description	
8/5/20 14:43:50	8/5/20 14:47:12	User 1	1	Home page does not state purpose of application	Uncertainty about purpose	3	Visibility of System Status	The home page is very minimalistic. It does not explain the purpose of the application. Only a logo, small mobile menu and a drop zone for files. No explanation of the service. Feel unsure of how safe it is to use and I might do something wrong. If there was a short description available on the screen to inform my decision to use or not.	
8/5/20 14:49:24	8/5/20 14:57:29	User 1	2	Unclear language used	Language	2	Visibility of System Status	It is not clear if the file has been sent as an attachment or if the file is stored on the application server. It is only after you send the file that you are told "your transfer is created and has just been sent to your recipients". Does this mean the file was sent safely?	
8/5/20 15:01:30	8/5/20 15:05:18	User 1	3	No button to return to home screen after completing task	Poor Repeatability	2	User control and freedom	After completing the task of sending a file to a recipient there is no clear option to repeat the process. I have to click on an arrow to get a menu which offers me to "start a new transfer". Not very obvious.	
8/5/20 16:17:28	8/5/20 16:19:23	User 1	9	Error when creating custom link with special characters	No Error Handling when using Special characters	3	Help users recognize, diagnose, and recover from errors	The application appeared to be having trouble finishing the task but has not produced any error. My only option is to cancel.	
8/5/20 16:20:21	8/5/20 16:21:11	User 1	9	Error when creating custom link with special characters	No Error Handling when using Special characters	3	Visibility of System Status	The application appeared to be processing however stops at "Creating your transfer..." + "about a few seconds". The application appears to be having trouble finishing the task but has not produced any error. My only option is to cancel.	

Figure 36: The dataset layout in excel - heuristic evaluation feedback

The document is setup with 10 "sheets"

1. Raw data
2. Scenarios – these are the document scenarios evaluated
3. Code - this is the coded and cleaned dataset
4. Heuristic Risk- This is where graphs are built for reporting heuristic relationship with security risk as shown in figure 37

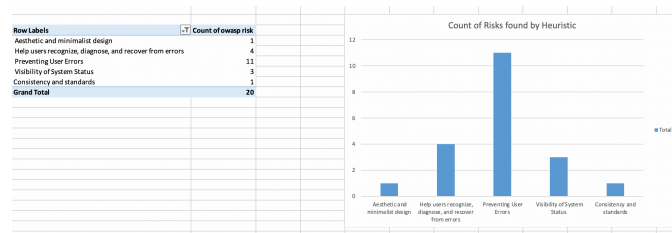


Figure 37: Count of risks found by heuristic

5. User FeedBack Comparison – This hosts graphs depicting trends and compared between users for reporting as shown in figure 38



Figure 38: Sample user feedback

6. Residual Risk after Iterations – this hosts the graphs depicting a global picture of risk over time during the evaluation as shown in figure 39

¹¹ <https://www.microsoft.com/en-ie/microsoft-365/excel>

¹² Files are located in the directory /ICT Solution_Evaluation/Data Evaluation/Heuristic Evaluation/

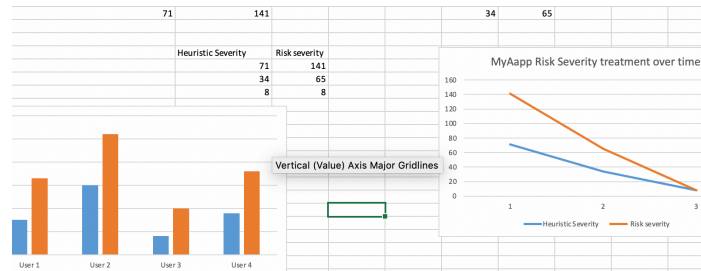


Figure 39: Sample residual risk after iterations

7. User 1: This is the breakdown of data for participant 1 requiring analysis/reporting
8. User 2: This is the breakdown of data for participant 2 requiring analysis/reporting
9. User 3: This is the breakdown of data for participant 3 requiring analysis/reporting
10. User 4: This is the breakdown of data for participant 4 requiring analysis/reporting

Appendix A

Directory Listing

```
-----  
/  
//Ethics/NCI Ethics Application Raymond O'Brien x17110971.docx  
//Ethics/Questionnaire.txt  
//Configuration Manual/  
//Configuration Manual/MSc CyberSecurity Raymond OBrien Internship Config Man.doc  
//ICT Solution_Evaluation/  
//ICT Solution_Evaluation/Heuristic Mapping/  
//ICT Solution_Evaluation/Heuristic Mapping/HeuristicMapping.xlsx  
//ICT Solution_Evaluation/Heuristic Mapping/UX7KowaspMappingChart.psd  
//ICT Solution_Evaluation/Data Evaluation  
//ICT Solution_Evaluation/Data Evaluation/.Rhistory  
//ICT Solution_Evaluation/Data Evaluation/Heuristic Evaluation/  
//ICT Solution_Evaluation/Data Evaluation/Heuristic Evaluation/Interface Usability Heuristic Evaluation  
Form(1-17)Test1 3.xlsx  
//ICT Solution_Evaluation/Data Evaluation/.RData  
//ICT Solution_Evaluation/Data Evaluation/Survey  
//ICT Solution_Evaluation/Data Evaluation/Survey/.Rhistory  
//ICT Solution_Evaluation/Data Evaluation/Survey/Book2.csv  
//ICT Solution_Evaluation/Data Evaluation/Survey/.RData  
//ICT Solution_Evaluation/Data Evaluation/Survey/graphing for report.xlsx  
//ICT Solution_Evaluation/Data Evaluation/Survey/r_SurveySummaries 2.R  
//ICT Solution_Evaluation/Personas/  
//ICT Solution_Evaluation/Personas/Ray_Personsaa_Page_1.jpg  
//ICT Solution_Evaluation/Personas/Ray_Personsaa_Page_2.jpg  
//Ethics/  
//ICT Solution_Evaluation/XD-Prototype/  
//ICT Solution_Evaluation/XD-Prototype/Final Design - iteration 3  
//ICT Solution_Evaluation/XD-Prototype/Final Design - iteration 3/MyAppBaseLine Protect Data  
Everywhere.xd  
//ICT Solution_Evaluation/XD-Prototype/Iteration 1 baseline/  
//ICT Solution_Evaluation/XD-Prototype/Iteration 1 baseline/MyAppBaseLine InformationDisclosure - link  
alraedy in use - password cleartext.xd  
//ICT Solution_Evaluation/XD-Prototype/Iteration 1 baseline/MyAppBaseLine 404.xd  
//ICT Solution_Evaluation/XD-Prototype/Iteration 2 Input Validation Example/  
//ICT Solution_Evaluation/XD-Prototype/Iteration 2 Input Validation Example/MyAppBaseLine XSS.xd  
//ICT Solution_Evaluation/XD-Prototype/Iteration 2 Input Validation Example/MyApp-Iteration  
InputValidation.xd  
//ICT Solution_Evaluation/XD-Prototype/zz/  
//ICT Solution_Evaluation/XD-Prototype/zz/MyApp-Iteration.xd  
//ICT Solution_Evaluation/XD-Prototype/zz/EarlyPrototypes/  
//ICT Solution_Evaluation/XD-Prototype/zz/EarlyPrototypes/End of Day Application/  
//ICT Solution_Evaluation/XD-Prototype/zz/EarlyPrototypes/End of Day Application/EndofDaySample.psd  
//ICT Solution_Evaluation/XD-Prototype/zz/EarlyPrototypes/End of Day Application/XD  
//ICT Solution_Evaluation/XD-Prototype/zz/EarlyPrototypes/End of Day Application/XD/EndofDaySample.xd  
//ICT Solution_Evaluation/XD-Prototype/zz/EarlyPrototypes/MobileApp/  
//ICT Solution_Evaluation/XD-Prototype/zz/EarlyPrototypes/MobileApp/A:B  
//ICT Solution_Evaluation/XD-Prototype/zz/EarlyPrototypes/MobileApp/A:B/SecBankUI-1.psd  
//ICT Solution_Evaluation/XD-Prototype/zz/EarlyPrototypes/MobileApp/A:B/SecBankUI-2TouchID.psd  
//ICT Solution_Evaluation/XD-Prototype/zz/EarlyPrototypes/MobileApp/ArtBoard.psd  
//ICT Solution_Evaluation/XD-Prototype/zz/EarlyPrototypes/MobileApp/ArtBoard.jpg  
//ICT Solution_Evaluation/XD-Prototype/zz/EarlyPrototypes/MobileApp/XD/  
//ICT Solution_Evaluation/XD-Prototype/zz/EarlyPrototypes/MobileApp/XD/PhoneApp_Prototype.xd  
//ICT Solution_Evaluation/XD-Prototype/aseets/  
//ICT Solution_Evaluation/XD-Prototype/aseets/LandingPage.psd  
//ICT Solution_Evaluation/XD-Prototype/export/  
//ICT Solution_Evaluation/XD-Prototype/export/HandoverToDev.zip  
//Report/
```

//Report/MSc MSc CyberSecurity Raymond OBrien Internship Report.docx
//Report/ MSc MSc CyberSecurity Raymond OBrien Internship Report.pdf
//viva /
//viva /Viva_RaymondOBrien.pptx
//viva /Viva_RaymondOBrien.mov