9/17/2021

Brock Winter [bww0048]

213 Brock Winter A1

Contents

[Introduction 3](#_Toc82784900)

[Implications of Standards, Industry Practices, Ethics, Social implications, etc 3](#_Toc82784901)

[Dark Patterns 3](#_Toc82784902)

[Health Related Issues 3](#_Toc82784903)

[ITP Ethics 3](#_Toc82784904)

[ITP Industry Practices 4](#_Toc82784905)

[Design Thinking and User Experience 4](#_Toc82784906)

[Empathise 4](#_Toc82784907)

[Define 5](#_Toc82784908)

[Personas 5](#_Toc82784909)

[Ideation 6](#_Toc82784910)

[Prototype 6](#_Toc82784911)

[Testing 6](#_Toc82784912)

[Design Planning Techniques 7](#_Toc82784913)

[Usability and Functional Testing 7](#_Toc82784914)

[Usability testing 7](#_Toc82784915)

[Functional Testing 7](#_Toc82784916)

[Audio 8](#_Toc82784917)

[How does sound work? 8](#_Toc82784918)

[Sound quality 9](#_Toc82784919)

[File compression 9](#_Toc82784920)

[Digital Audio 9](#_Toc82784921)

[Text 10](#_Toc82784922)

[Text Terms and Rules 10](#_Toc82784923)

[Typography Tips 11](#_Toc82784924)

[Good Practices 12](#_Toc82784925)

[Animation & Video 13](#_Toc82784926)

[The qualities of a video file. 13](#_Toc82784927)

[Raw Videos 13](#_Toc82784928)

[Video compression 13](#_Toc82784929)

[Video Format 13](#_Toc82784930)

[Video Container 14](#_Toc82784931)

[Animation 14](#_Toc82784932)

[Graphics & Images 14](#_Toc82784933)

[The Differences 14](#_Toc82784934)

[Image Types 14](#_Toc82784935)

[Conclusion 15](#_Toc82784936)

# Introduction

This report will go over a variety of industry standards and practices such as Design Thinking and User Experience, Design Planning Techniques, Usability and Functional Testing, Audio, Text, Animation & Video, Implications of Standards, Industry Practices, Ethics, Social implications, etc. These topics will be heavily researched in preparation for the second assignment. To prepare for the second assignment a large number of different elements will need to be compared to see what is most suitable and what is not. This research has been done to ensure that all previously mentioned topics are fully understood so that assessment 2 can be completed too the best of my ability.

# Implications of Standards, Industry Practices, Ethics, Social implications, etc

## Dark Patterns

This is when a website or app misleads you in a way that is beneficial to them. For example, misdirecting a customer to click an add or share their friends contact details without the user realising what is happening.

(Brignull, Dark Patterns)

## Health Related Issues

Research on children who have consistent amount of screen time have show to have suffered minor brain damage. Having a large amount of screen time has a high impact on decision-making, emotional managing, a persons judgement, and cognitive control. Research has also shown that extended screen time has a damaging effect on the brains gray matter.

(Victoria L. Dunckley M.D, 2014, Gray Matters: Too Much Screen Time Damages the Brain)

## ITP Ethics

A code that binds all IT Professional.

Principles of ITP Code of Ethics:

* Everyone will be treated equally and not discriminated against.
* Everyone will not deceive, act inappropriately, or mislead another.
* Everyone will not put one’s own interests in front of the interest of the whole.
* One’s abilities should be used to aid the customer’s without breaking the other principles.
* One’s abilities should be expanded upon to further their understanding.
* Possible consequences must be reported to your customer ahead of time.
* Any issues that arise to do with conflicting project topics must be discussed thoroughly.
* One should be aware of one’s abilities and not do anything rash.

Any breaches will be investigated, and appropriate punishments will be delivered by the ITP Discipline and Professional Conduct Board.

(ITP Members, The ITP Code of Ethics)

## ITP Industry Practices

ITP Practices are a list of optional practices that an IT person is recommended to follow.

Common Practices:

Don’t allow anything to conflict with your work.

Allways look to better hone your IT skills.

Abide by industrial standards.

Conduct yourself and your work with a professional manner.

Have an understanding of what what needs to be done and whats the best way to do it.

Manage your time to the best of your abilities.

Treat your clients in a professional manner.

Share best practices with others.

(IT Professionals New Zealand, Practice Guidelines)

# Design Thinking and User Experience

Design Thinking is a process taken step by step to help develop a greater understanding of what the users want and how to better your product. It does this by looking at different scenarios from different perspectives.

Design thinking allows you to take a step back and look at the bigger picture to try and better understand the user’s needs.

There are five stage in design thinking.

The first stage to design thinking is Empathise, second is Define, Third Ideate, fourth Prototype, and fifth Test.

( Rikke Friis Dam and Teo Yu Siang , 2020, What is Design Thinking and Why Is It So Popular?)

## Empathise

This stage is about gaining a deeper understanding of the people your are designing for. Talking face to face with your client can lead to a better understanding of what drives them. This stage is when you put yourself in the client’s shoes to truly understand their needs. To do this your need to either watch what your client does or directly question them about their environment.

It is also important to have a beginner’s mindset when observing your client this is to not let your personal practices and beliefs cloud your judgements. When trying to understand your clients actions it is important to not assume everything they do. If you are unsure of something it is best to ask first.

Interviewing your client allows you to ask them the most important questions. The information gathered should then be recorded and looked into to help gain a deeper understanding of the client. The questions that get asked should be well thought out.

If there are any outliers when interviewing a larger group, they should be thoroughly analysed. These sets of data can sometimes yield the most information. What has been said should be further investigated to determine what those users have experienced and what their needs are. All the issues that these outliers experience shouldn’t be fixed, only those that also effect the majority of people.

## Define

In the define stage we look at the information gathered from the first step and try to better comprehend what the customer is after. Being able to properly define the customers issues will help greatly with the following stages.

Difficult issues should be broken down into smaller issues to help better comprehend what is required.

To better define what the problem is one needs to make a statement that looks at things from the employer’s point of view and has a wide range of choices but is also easy to manage.

All information should be thoroughly investigated to discover insights and connections between points.

When looking at the information gathered it is important to look thoroughly at what the user did how they acted and what they were feeling at the time.

When defining a issue it is important to always ask why. This helps to provide you with specific information that may be required.

(Rikke Friis Dam and Teo Yu Siang, 2020, Stage 2 in the Design Thinking Process)

## Personas

A made up character that is used to represent possible people and how they would react with different tasks and scenarios. Personas are normally created in the second stage of design thinking.

With a detailed level of understanding it is possible to create a persona for any situation when required.

When you are experienced with personas, they will start to appear more and more realistic.

When establishing a persona one should research their topics thoroughly, create a realistic character, create scenarios that are used on the personas, and continuously expand upon that persona.

(Rikke Friis Dam and Teo Yu Siang, 2021, Personas – A Simple Introduction)

## Ideation

This is the step where a large number of solutions get created via brainstorming or other methods. These solutions are then looked at and weeded out to find the best possible solution for the problem. In this step members of the team should look for any possible solution availible nomater how complex or bazar it might appear.

The ideation step can assist in bringing a new light to a difficult situation, increase the creativity of staff, adds a variety of opptions to choose from, and helps look past obvios answers.

Ideation stage should be done carefully in case of an issue arising with staff cohesion. It is best to do this step after fully exploring the previous stages. This help staff look at what is beneficial for the client.

(Rikke Friis Dam and Teo Yu Siang, 2021, What is Ideation)

## Prototype

At this stage a small cheap model is produced that will show features and charecteristics. This model is often used to show any flors or possible insights in a design. Prototypes are often used throughout most stages wether it be demontrating to a client or narrowing down possible ideas.

A prototype can often be used to demenstrate how a client will interact with the real thing.

Once a prototype has been constructed the creater can look at it to determin new insites into their product being created.

Prototypes can be either low fidelity or high fidelity.

Low fidelity means that it is cheaper but is not able to express the full operational function of a design. One expample of low fidelity prototyping would be the paper prototype which is a model that has been created with paper to show the fundomental aspects of a solution.

High fidelity prototyping is a model that has very similay functionality to what is being created. This model takes more time and money compared to low fidelity prototypes.

(Rikke Friis Dam and Teo Yu Siang, 2020, Stage 4 in the Design Thinking Process)

## Testing

In design thinking testing is used to discover issues or errors with a design. If the test fail for that model then a new idea will need to be used and then retested to discover the optimal way to finish the product and please the client.

Tests should be conducted throughout the lifetime of the project and not just at the end of it.

When testing your product it is important to create natural enviroment to where the product will be deployed. This help to ensure that there will be no variaty from test done and the real world work enviroment it will be deployed in.

Test should not only show if the product works but also what the client is feeling from the product (if they like it/hate it). All feedback should be heavaly considered wheather it be positive or negative feedback.

When testing a prototype it is best to give the teste as little information as possible so that you can observe them and determine how people will interact with your product in a real world enviroment. After they have interacted with your model is is important to descuss their experiences and what they thought. Depending on the users feedback the model may need to be redisgned for optimal client satisfaction.

(Rikke Friis Dam and Teo Yu Siang, 2020, Stage 5 in the Design Thinking Process)

# Design Planning Techniques

## Sketch

A hand drawn simple idea that can be created and displayed quickly and costly. This method is useful when trying to get idea out of your head quickly. Commonly created using a whiteboard in meetings and conferences.

(Krause, 2019, Pencils vs. Pixels for UI Protyping and Sketching)

## wireframe

Commonly used to simplify a design and show features and layout. Wireframes tend to keep the level of detail relatively low compered to other models. A wireframe is useful for figuring out the layout of a website without having to input as much data as most prototypes.

(Joyce, 2019, Prototypes vs Wireframes)

## storyboard

A storyboard is a way of expressing information over a number of scenes. These scenes are broken down so that they are easier to be analysed. This is like telling a story over a number of images, hence the name storyboard.

(Sherman, What is a Storyboard?)

# Usability and Functional Testing

## Usability testing

A usability test is when I person is brought in to test a model. In this test the person interviewing them will observe how they interact with the created design. Afterwards the teste will be asked questions about what they thought and how they felt.

This test should be focused on allowing the teste to have free reigns on their choices and how they believe the model should be interacted with.

This test helps identify key issues with the design, identifying areas where the product can be bettered, and learning more about how the people will interact with your product.

(Moran, 2019, Usability Testing 101)

## Functional Testing

A functional test is a test that looks at a product and its features. It then determines what works/functioning properly. It only does a small amount of usability testing to determine how users react with the product. Functional testing also looks at system requirements and how accessible it is for customers. Functional testing is also where errors are found and fixed.

(Hamilton T. , 2021, What is Functional Testing?)

# Audio

## How does sound work?

Sound is created by a vibration which are created by the movement of an object.

Sound travels in sound waves.

There are two types of wave. Transverse wave and Longitudinal wave.

Transverse waves is when an object vibrates at a right angle to the direction of the wave.

Longitudinal waves are when vibrations travel parallel to the wave.

Sound waves can travel through solids liquids and gases.

Sound travels fastest in a solid because the particles are closer together where the particles in liquids and gases are further apart.

The speed of sound in Water is 1,484 m/s which is 4.3 times faster than air

Wavelength is the distance between two compressions.

Sound waves is measured by speed, frequency, and their amplitude.

Sound can bounce back when it hits an object (echo).

Ways to control sound: skip, pause, mute, volume adjustment, etc.

Acoustics: decibel measurement/ratio between a reference point on a logarithmic scale.

Audio can either be synched with the occurrence or it can serve as a trigger when clicked.

Content sounds/furnish information: Narration, dialogue are content sounds

Ambient sounds: reinforce messages and set the mood

sound waves have a recurring pattern; an analogue wave pattern called a waveform

waves travel at a speed determined by the air temperature and density.

Amplitude is the volume measured in decibels.

Decibels are the smallest variation of amplitude that can be heard by people.

Frequency is the number of times a wave passes a point in a second which is measured by hertz.

Digitizing also known as sound sampling is when analogue sounds are converted into numbers. This terns them into digital audio.

(Designmate Pvt. Ltd. - Official, n.d., Science - Transmission of Sound)

## Sound quality

The sample rate is one way to measure a sounds quality. This is the number samples taken of a waveform per second. This is measured in kilohertz (KHz). A sample rate of 44KHz is a better quality then a sample rate of 11KHz.

Resolution is the other way that defines a sounds quality. Resolution also known as sample size is the number of binary bits for each sound wave. The larger the number of bits the higher the quality will be.

## File compression

An audio file can be compressed to lower the files size. This helps with storing and moving audio files.

There are three types of formats uncompressed, lossless compression and lossy compression. Lossy compression loses quality when it is compressed whereas lossless compression doesn’t.

## Digital Audio

Any recorded audio can be digitalized and put online. To do this a sound card and proper audio programs are required

Digital sound can be either mono which is a flat sound recording or stereo which is considered more lifelike and a higher quality, but it is also more demanding storage wise.

To play sounds from a device either headphones or speakers are required. This is done by using a digital-to-analog converter.

# Text

## Text Terms and Rules

main attributes of text: size, font, style, alignment, and other formatting

text purpose: explain

Font selection

fonts come with various weights and styles to form a complete family, plus carefully considered kerning pairs, multi-language support with international characters and expressive alternate glyphs to add character and variety to typesetting

Size

fat and wide; some are thin and narrow.

The height of each character is known as its 'x-height'.

The width of each character is known as the 'set width'.

Leading

vertical space between each line.

leading value should be anything between 1.25 and 1.5 times greater than the font size.

Tracking and kerning

adjusting the space between characters to create a harmonious pairing.

Tracking is the process of adjusting the spacing of all characters in a word

Measure

width of a text block.

should be 52-78 characters in length.

Hierarchy and scale

Size is one way to create hierarchy.

(Hamilton, 2019, Typography design: Rules and terms every designer must know)

## Typography Tips

Don’t use to many fonts

Looks unstructured and improper.

Ensure the font families complement each other

Use Normal Google Fonts

Unique fonts are a distraction from the main content.

Good fonts should help focus the user on the content instead of focusing on the font.

Reduce the Length of lines

Having a good number of characters on each line makes it easier for users to read.

Make text readable on different sized devices

Make users able to view text on different phones tablets and computers.

Choose a font that doesn’t confuse letters

Letters like “I”s and “l”s can be very difficult to distinguish between

Only use capitals when needed

Having a sentence in capitals makes it harder to read.

Have Good Line Spacing

The space between lines should be one third the size of letters.

Proper line spacing makes it easier to read.

Avoid using the same or similar text colours compared to the background colour

Having distinguishable colours makes it easier to read.

Don’t use red and green colours

This is to help people who are colour blind and are unable to distinguish these colours.

Don’t use any flashing effects

These can be seizure inducing and harmful to some.

(Babich, 2017, 10 Tips On Typography in Web Design)

## Good Practices

Headings and Spacing

Headings show a hierarchy between elements.

Having a header and good spacing helps the user distinguish between different topics.

Heading Associations

large headings use extra spacing above and below the text.

Smaller headings should reflect similar styles to the main headers style.

Long worded Paragraphs

The text in large paragraphs should be readable from nearly a meter away.

It is better to have bigger text then smaller so that text is easily readable.

(CAO, 2016, Web Design Best Practices: Minimalism & Typography)

# Animation & Video

A video is a slideshow of images with audio and other data.

Videos are contained in a container type such as AVI and Quicktime MOV.

To encode and decode a video signal a codec is used. This allows the video file to be read and used. Without a codec a video can’t be played. This also compresses and decompressed the video file when accessed by devices and software.

## The qualities of a video file.

Size for the length and width measured in pixel.

The rate that images are refreshed also known as frame rate.

The amount of data used when playing the video which is measure in Kilobytes Megabytes or Gigabytes per second. This is commonly known as bitrate or data rate. The higher the bitrate the more information to describe the audio and video which causes better quality.

The rate to which the audio is sampled. The higher the audio sample rate the clearer the audio will be.

Transcoding: When a part of a video file is changed.

This can sometimes cause errors in the file. So, all transcoded videos should be checked for issues.

## Raw Videos

Videos recorded via DSLR cameras contain an extremely large amount of data and quality causing the file to be extremely large. The information recorded is unedited and unprocessed making it a Raw video. Raw data gets compressed and processed before it is used.

## Video compression

Compression can either be lossy or lossless. Lossy means that some information will be lost but it has a high level of compression. Lossless is unaltered and smaller than the original file.

## Video Format

The videos format is basically a list of rules and parameters that distinguish the video. These are resolution, color depth, frames per second and other parameters. Examples of this are DVD video format, the 3GP video format or 1080p and 1080i.

(Richard Harrington And Peter Krogh, 2015, Video File Format OverView)

## Video Container

A container that groups files together. This allows this allows the use of different codecs on videos and audio. The container also determines the structure and how everything works together. Some of the file extensions are AVI, MP4 and MOV.

(Brinkmann, 2011, What's The Difference Between A Codec, Container And Video Format)

## Animation

Animation is a series of frames that are digitally or hand drawn pictures that are played one after the other to symbolise the movement of an object. This compared to a video where it is only real life recording whereas animation is fictional.

Animation is created by using a wide variety of software which create the impression of movement. After that is done sound and text is later added to finish it off. Creating a 3D animation is considered more difficult then a 2D animation because of its higher level of detail. Some common animation types are SWF, MOV, and AVI

With animation it is possible to bring anything you want to life. Animation can also be used to add more creativity to a project.

(McClure, 2016, Animation Basics 101)

# Graphics & Images

## The Differences

A picture spans wide variety of options such as photos, sketches, paintings, etcetera. Whereas a Graphic image is only a picture or drawing that normally gets put together with different texts, illustrations, or Colours.

(Davis, 2021, What is the difference between graphics and pictures )

## Image Types

Raster Images

Raster Images are pictures built out of pixels that make up the images detail. The larger an image gets stretched the less detailed an image will look.

JPG: A very commonly used image type that maintains good quality while not having a large file size.

PNG: A bigger and better image type compared with the JPG. It is also able to have a translucent background.

GIF: An image that has a limited amount of colour options. This results the file size being lower then normal.

TIF: has extremely high quality compared to the original. This results in the file size being considerably larger then normal.

Vector images

Vector images are created in a different way from raster image. They are created in a way so that when they are resized the image doesn’t look any different.

EPS: A customizable image that can be resized. This is commonly used for company logos.

AI: Similar to EPS but not easily customisable.

(MODassic, VECTOR, RASTER, JPG, EPS, PNG – WHAT’S THE DIFFERENCE?)

# Conclusion

In this report we looked at a number of topics including design thinking which showed us a method of structuring and operating an IT project in a real world environment. Then looked at a wide variety of topics such as images, audio, and video where I analysed a number of components that effect each topic. This included comparing different types of images, audio, and video to show specific details such as a files size and quality. All of this was done for research of creating an IT project.

# References

Rikke Friis Dam and Teo Yu Siang . (2020). *What is Design Thinking and Why Is It So Popular?* Retrieved from Interation Design Foundation: https://www.interaction-design.org/literature/article/what-is-design-thinking-and-why-is-it-so-popular

Babich, N. (2017, June 24). *UX Planet*. Retrieved from 10 Tips On Typography in Web Design: https://uxplanet.org/10-tips-on-typography-in-web-design-13a378f4aa0d

Brignull, H. (n.d.). *DARK PATTERNS*. Retrieved from DARK PATTERNS: https://www.darkpatterns.org/

Brinkmann, M. (2011, September 7). *What's The Difference Between A Codec, Container And Video Format*. Retrieved from ghacks.net: https://www.ghacks.net/2011/09/07/whats-the-difference-between-a-codec-container-and-video-format/

CAO, J. (2016, April 5). *Web Design Best Practices: Minimalism & Typography*. Retrieved from Design Shack: https://designshack.net/articles/layouts/web-design-best-practices-minimalism-typography/

Davis, B. (2021, February 14). *What is the difference between graphics and pictures?* Retrieved from Mvorganizing.org: https://www.mvorganizing.org/what-is-the-difference-between-graphics-and-pictures/

Designmate Pvt. Ltd. - Official. (n.d.). *Science - Transmission of Sound*. Retrieved from youtube: https://www.youtube.com/watch?v=GkNJvZINSEY

Hamilton, R. (2019, February 26). *Typography design: Rules and terms every designer must know*. Retrieved from Creative Bloq: https://www.creativebloq.com/typography/what-is-typography-123652

Hamilton, T. (2021, August 28). *What is Functional Testing? Types & Examples (Complete Tutorial)*. Retrieved from Guru99: https://www.guru99.com/functional-testing.html

ITP Members. (n.d.). *The ITP Code of Ethics*. Retrieved from IT Professionals New Zealand: https://itp.nz/Members/Code-of-Ethics

Joyce, A. (2019). *Prototypes vs Wireframes in UX Projects*. Retrieved from Nielsen Norman Group: https://www.nngroup.com/videos/prototypes-vs-wireframes-ux-projects/?lm=paper-prototyping&pt=article

Krause, R. (2019). *Pencils vs. Pixels for UI Protyping and Sketching*. Retrieved from Nielsen Norman Group: https://www.nngroup.com/videos/pencils-vs-pixels/?lm=prototypes-vs-wireframes-ux-projects&pt=youtubevideo

M.D, V. L. (2014, February 27). *Gray Matters: Too Much Screen Time Damages the Brain*. Retrieved from Psychology Today: https://www.psychologytoday.com/intl/blog/mental-wealth/201402/gray-matters-too-much-screen-time-damages-the-brain

McClure, L. (2016, July 13). *Animation Basics 101*. Retrieved from TedEd: https://blog.ed.ted.com/2016/07/13/animation-basics-101/

Moran, K. (2019, December 1). *Usability Testing 101*. Retrieved from Nielsen Norman Group: https://www.nngroup.com/articles/usability-testing-101/

*Practice Guidelines*. (n.d.). Retrieved from IT Professionals New Zealand: https://itp.nz/Members/Practice-Guidelines

Richard Harrington And Peter Krogh. (2015, September 22). *Video File Format OverView*. Retrieved from https://www.dpbestflow.org/: https://www.dpbestflow.org/Video\_Format\_Overview

Rikke Friis Dam and Teo Yu Siang. (2020). *Stage 2 in the Design Thinking Process: Define the Problem and Interpret the Results*. Retrieved from Interaction Design Foundation: https://www.interaction-design.org/literature/article/stage-2-in-the-design-thinking-process-define-the-problem-and-interpret-the-results

Rikke Friis Dam and Teo Yu Siang. (2021, January). *Personas – A Simple Introduction*. Retrieved from Interaction Design: https://www.interaction-design.org/literature/article/personas-why-and-how-you-should-use-them

Rikke Friis Dam and Teo Yu Siang. (2021, January). *What is Ideation – and How to Prepare for Ideation Sessions*. Retrieved from interaction design: https://www.interaction-design.org/literature/article/what-is-ideation-and-how-to-prepare-for-ideation-sessions

Sherman, A. (n.d.). *What is a Storyboard?* Retrieved from Storyboard That: https://www.storyboardthat.com/articles/e/what-is-a-storyboard

*Stage 4 in the Design Thinking Process: Prototype*. (2020). Retrieved from interaction design: https://www.interaction-design.org/literature/article/stage-4-in-the-design-thinking-process-prototype

*VECTOR, RASTER, JPG, EPS, PNG – WHAT’S THE DIFFERENCE?* (n.d.). Retrieved from modassic: https://modassicmarketing.com/insights/articles/understanding-image-file-types