

Final Report

Hexactly
Interactive Multimedia Design

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Final Year 2014

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Acknowledgements

I would like to acknowledge the following people who have made lecture notes possible for guidance, George Moore and Paul McCormack. With thanks for continued advice, encouragement and constant reminders throughout the initial planning process of the project, Dr Leo Galway. Initial competitors, ColourHexa and Adobe Kuler, for the inspiration. For taking the time to initially sit down and chat the project through to discuss the feasibility with him and him for advice on the best solution to generate the palettes, Ricky Dunlop.

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1. Introduction

1.1. Introduction To The Challenge

The idea of creating something minimal but beneficial to the web industry is something that is greatly strived for. A challenge was set to allow students to generate an idea to produce a major project. The idea and concept for this final year major project is Hexactly, a simple web app that allows you to generate and download colour palettes based on a search input with the ability to view the hexadecimal code data of the palettes.

1.2. Aims and Objectives

1.2.1. Aim

To design and develop a fully working cross browser web application that provides the ability to quickly generate, view and download colour palettes to provide designers and developers with the required resources to speed up the design process at the beginning of a project.

1.2.2. Objectives

- A. Research the best possible solution to execute the project. Including design choices, best development method and resources required to undertake the project.
- B. Come to grips with relevant programming languages, resulting in studying and learning in the required field using ex-peers, books and the internet.
- C. Research and investigate the user needs of the project by looking at similar applications online and evaluating them on how to make them better.
- D. Focus on the user experience when prototyping the project to ensure that the correct audience is being targeted.
- E. Increase communication skills by talking to people in the industry about the project to gain advice which may enhance the end product.

- F. Become more engaged in social media and more active online by creating a Twitter account for the project which help will raise awareness, promote and support the project.

- G. Test the application through both native and using an emulator where needed, to ensure that it is cross browser and device compatible.

1.2.3. Atomic Objectives

Breaking down the high-level objectives to a set into of “atomic” objectives, which are sub objectives that have been carried out in order to meet the main objective.

Atomic Objectives			
No.	Objective		
A	Research the best possible solution to execute the project		
	Sub Objectives	1	Paper Prototype all areas of the system
		2	Wireframe system
		3	Visual Mock up of system
B	Learn and understand the relevant programming languages		
	Sub Objectives	1	Call into rehabstudio for a chat
		2	Research final intended solution
		3	Go to the library to search for books
C	Research and investigate the user needs		
	Sub Objectives	1	Create a survey
		2	Have a one-to-one chat
D	Focus on the user experience		
	Sub Objectives	1	Research User Experience Design
E	Research the best possible solution to execute the project		

	Sub Objectives	1	Create a Twitter account
		2	Design a brand
		3	Design / Build a holding page
		4	Buy a domain
F	Test the application		
	Sub Objectives	1	Test in Firefox
		2	Test in Chrome
		3	Test in Safari
		4	Test in IE 8
		5	Test in IE 9
		6	Test in IE 10
		7	Test on iPad
		8	Test on iPhone

Table 1, Atomic Objectives

1.3. Overview Work Undertaken

In order to complete a final working solution, through research, planning, prototyping, design and implementation have all been undertaken in order to achieve a final product deliverable. Gathering, completing, integration and contextualisation has been in process in order to get to the current stage of the project.

1.4. Overview Of Report

This report structures and reflects the Agile methodology and describes, validates and verifies the work undertaken at each stage of the project. The use of tools are listed to support each stage of the processes throughout whilst discussing the rational for each decision made and reviewing the plans and any deviations from it.

2. Concept Definition and Testing

2.1. Idea generation

When starting a project or design, often choosing a colour palette can be a very time consuming and frustrating process, especially as a developer or someone whose not fully design orientated. With spare time, bandwidth is had and opportunities arise to work on personal projects. With limited time, it's easy to get frustrated at how long it takes to put together a palette for any given project or design. Thinking of ways to help speed up the design process was throughly thought about and with all preparation, a responsive web application that is fully functional in Mobile and Tablet, with browser support in Chrome, Safari, Firefox and IE8 is anticipated.

The initial approach that was taken after deciding upon the idea was to research main competitors on the market. With the main competitor thought to be Adobe Kuler, whose initial approach is to create colour schemes, instantly knowing that the concept seemed similar to Kuler the initial thought was a different way to execute Hexactly. Kulers main aim seems to be focused around a colour wheel and it runs on Adobe Flash, both which are non applicable to Hexactly's aim. The interface tends to look too crowded and too complex, with an intimidating black background which doesn't appear very user friendly upon first impressions.

Being fully aware of research that states that it is easier to perceive colour differences on darker backgrounds and that charts and that graphical elements display better on a dark background, this opportunity was thought about, however as Hexactly doesn't focus heavily on visual content this isn't a problem as the application is stripped back with lots of white space and subtle colour used where needed, much like ColorHexa - a colour encyclopaedia website, which provides a great user interface and fantastic use of colour, something which has been a great inspiration throughout.

Other inspiring and almost similar web apps found during research include colorcodehex.com, colorpicker.com, colorhunter.com and checkmycolours.com, as shown in *Appendix A, Background Research*. All of which individually include nice features, and some not. However, their design and user interface I feel are simply not enough to engage a user and make them want to use their product.

Hexactly is more focused around having one colour and not knowing what to match it with, so ideally you need to have a starting point. Although, as the above evidence, the web application isn't the only colour palette generator that the users will have access to on the web, therefore ways to define how Hexactly is different is a must.

1. Focus on User Experience
2. Engaging User Interface
3. Different range of features
4. Friendly, fun and easy to use

The name 'Hexactly' is conveyed from the word 'exactly', as hexactly aims to provide you the exact set of hex codes to build up a set of colour palettes. So adding Hex + Exactly = Hexactly.

2.2. Requirements Specification

Capturing requirements is important in order to determine what functionality Hexactly has. It is important to have control over a project, so gathering requirements is a continuous method used throughout and will allow in the end the ability to test against, as the throughout the project, the Agile methodology is used and therefore unpredictability in the outcome is expected.

2.2.1 Requirement Methods

Brain Storming

There are many methods to capturing requirement information, one being brainstorming. Brainstorming is known to be one of the best idea generators when unsure of what to do, often this requires teamwork but is more than possible to do alone. There are different phases when it comes to brainstorming, and all are very straight forward.

Phase 1 is determining the topic that you've chosen to brainstorm, take pen and paper and write the topic down then generate words and phrases that relate to the specific topic.

Phase 2 allows you to organise your words and phrases and gives you the ability to expand upon what you have by thinking of sub-words that relate to some of the words and phrases that you

already have. It gives you the chance to show and ask other people what they think, you can present your ideas or simply talk about them.

Phase 3 is to review the words and phrases that you've came up with, organising them into priority or if they are feasible or practical. This is the final phase and allows you to finalise your words by going through them and summarising.

Interviews

Another type of requirements gathering is to hold an Interview with potential users. This allows you to understand the expectations of the user and what their understanding of the project is, this means we are more likely to satisfy them. This requires great listening skills, this way you are able to analyse and gain more from the interviewee.

2.2.2. Survey

Surveys are a great way to capture the same data from more than 1 person, therefore to gather user information for Hexactly, a Survey has been created on [surveymonkey.com](https://www.surveymonkey.com) and sent to a various selection of people, doing this provides a range of views and opinions as questions, as shown in *Appendix B, User Survey Questionnaire*. Throughout this project there have been many unanswered questions about establishing who potential users are and what they want and therefore a survey is the best way to solve this issue. Including questions and giving users multiple choice answers ensures that the the survey is fast and sufficient for the user to full in, thereby gaining more reliable feedback.

Analysing Results

Evaluating the results from the information gathering proved some valuable feedback gaining not only new ideas but allowing for the ability to re-think some features and to take into consideration some of the suggestions of the user, as shown in *Appendix C, Survey Results*.

2.2.3. Volere Requirements

In order to help the user requirements of the project, Volere Requirements Method has been used for the requirements that have highest priority and those that are mandatory for the project to work well.

ID: VR1

REQ TYPE: Non Functional

TITLE: Intuitive User Interface Design

DESC: To enhance the users experience and make the web application fun and easy to use

RATIONALE: To improve upon what's already on the market

SOURCE: From research www.colorhexa.com provides a fantastic, simplistic easy to use interface. Great inspiration was gained from this and Hexactly aims for the same

FIT CRITERIA: Test the build of the website against the wireframes/visual mock up to ensure that it follows the planned guidelines. Create a questionnaire to gather feedback on the User Interface.

PRIORITY LEVEL: 4

DEPENDENCIES: UR3, UR5, UR9, UR11, UR14

ID: VR2

REQ TYPE: Functional

TITLE: Flickr API

DESC: The intension of this requirement is to use an API to pull in different colours that are used with a specific image on Flickr to generate the palettes

RATIONALE: In order for the application to be a success it must be able to generate a palette for the user based on a hexadecimal input, therefore an API is required to avoid manual generation

SOURCE: This happens to be an exciting feature from www.colorhunter.com which I came across during my background research

FIT CRITERIA: Measure the success of this requirement by carrying out a test plan and having multiple people test the website, by typing in various hexadecimal colour codes into the input box and pressing the 'search' button. Expected result should be a series of palettes appearing on screen

PRIORITY LEVEL: 5

DEPENDENCIES: UR1, SR23

ID: VR3

REQ TYPE: Non Functional

TITLE: Web Host

DESC: A reliable web host should be found for the finalised website

RATIONALE: The site will be uploaded onto the web and email and FTP access will be created

SOURCE: This is an essential requirement in order for the project to go live and for users to access it

FIT CRITERIA: Test this criteria by visiting the chosen URL with an internet connection

PRIORITY LEVEL: 6

DEPENDENCIES: UR13, SR23

2.2.4. User Requirements

MoSCoW

The MoSCoW prioritisation approach has been taken, to prioritise the list of requirements over the period of creating Hexactly, seen in Table 2, User and System Requirements. It allows the ability to see those requirements which are essential and those which are less necessary, which means I can work towards the ‘Must Haves’ and less on the ‘Won’t have’. The term ‘MoSCoW’ means:

- **Must have** – Fundamental to project success
- **Should have** – Important but may not be critical to success
- **Could have** – Can easily be left out without damaging the project
- **Won’t have** - Can be left out for now but may be done later. This is really a ‘would like to have’ but won’t have during the timeframe of this project’

User Requirements			
Req	Req Type	Details	Priority (MoSCoW)
UR1	Functional	The website should allow the generation of colour palettes based on a hexadecimal input	Must Have
UR2	Functional	The website should provide the ability to share	Should Have
UR3	Non-Functional	The information environment should be clean and minimal	Should Have
UR4	Functional	System should allow the ability to store Palettes	Wont Have
UR5	Non-Functional	All pages should have a User Friendly Interface	Must Have
UR6	Functional	The website should allow the ability to download Palettes	Should Have

UR8	Functional	You should be able to preview your colour palette in a wireframe before downloading it	Wont Have
UR9	Non-Functional	Home page should be simple, displaying the logo and an input box to capture the hex code data, and a 'Generate' button	Should Have
UR10	Non-Functional	The about page should explain the application in detail / how it works	Should Have
UR11	Non-Functional	The style of the website should include the chosen colour palette from the style guide	Should Have
UR12	Non-Functional	The main navigation will be situated at the top right of the website, it will link to all suggested pages	Should Have
UR13	Functional	A reliable web host should be found for the finalised website, the site will be uploaded onto the web and email and FTP access will be created	Must Have
UR14	Non Functional	Website must follow the design guidelines	Should Have
UR15	Functional	API must be reliable and not break during generating palette	Must Have

SYSTEM REQUIREMENTS

SR16	Non-Functional	Home screen should provide short instructions on how the website works	Should Have
SR19	Non-Functional	User must be able to see content on the website	Must Have
SR20	Functional	The response from system is 2000 milliseconds if generating palette failed	Could Have
SR23	Functional	API should return a series of 5 palettes after a hexadecimal code has been inputted	Should Have
SR24	Functional	Input Box should accept both numeric and alphabetic data	Could Have
SR27	Non-Functional	The site should be accessible to all search engines and be coded with good search engine optimisation techniques.	Could Have
SR30	Non-Functional	The website must comply with the standards of accessibility contained in W3C WAI level A Guidelines so that it makes sense and is written in a high standard of code to ensure that it continues to work correctly on future browsers	Could Have
SR31	Non-Functional	Any errors or bugs found on the site should be fixed as soon as rectified	Should Have
SR32	Non Functional	Website should work on various browsers, including Chrome, Safari, Firefox and IE8+	Must Have
SR34	Non-Functional	Website should visually appealing	Should Have
SR37	Functional	Website should be built responsive across browser / tablet / mobile	Should Have

SR38	Functional	Website should allow the ability to thumbs-up a palette which then stores it in the ‘favourites’ in the database	Wont Have
SR43	Functional	System should display what the user has input, in a heading tag at the top of the results page, once generated a palette	Should Have
SR45	Functional	When API fails, validation message will appear	Could Have
SR47	Functional	System should automatically download a PNG on click of the ‘download’ button	Could Have
SR48	Functional	System should display hex codes of all generated palettes	Could Have
SR49	Functional	The system will allow the user to choose from a colour widget upon generation of palette	Should Have
SR50	Functional	When no result is found, validation message will appear	Should Have
SR51	Functional	When empty input is submitted, validation message will appear	Should Have

Table 2, User and System Requirements

2.3. Paper Prototyping

Furthermore, after gathering and specifying all requirements the project was ready to be prototyped. Paper prototyping is an important process of any project as it allows to evaluate the thought process of the user interface using a simple and quick sketch approach. A few concerns have been raised regarding the user interface and flow of the website, so in order to overcome this obstacle the best method is to take the problem and prototype the best solution. Paper prototyping is a fast way to mock up an interface as no code is required and therefore encourages creativity due to no restrictions or limitations.

2.3.1. Main Interface

In order to see what problems that are ahead, prototyping the system ensures to overcome these at an earlier stage to allow for further amendments to be made throughout if needed. With a 960 grid in mind, an initial 6-up prototype of how the homepage could be laid out, taking into consideration the search input and where it will be positioned. All containing a solid white background, a logo and an input box that allows the application to focus strongly on a simple interface, as seen in *Appendix C, Paper Prototyping*.

An input box is displayed, purposed to capture the hexadecimal code data. This then searches Flickr for images tagged with the hex entered, using Flickr's API it will take the hex code inputed then look to see which images have been tagged with that colour, then come back with a series of images matching the inputted result.

The Problem

The use of great user experience is important for Hexactly, and this is aimed to be reflected throughout in various ways. The main usability concern is how the homepage displays the search input, or whether or not to include it within the main home page or link it out to a separate page.

Overcoming The Problem

To help overcome the problem a '6-up method' to sketch 6 different possible variations of how the login screen will appear and look was demonstrated. This proves a fast, cost effective working method and allows to find any problems on the interface whilst encouraging creativity and progression. Doing 6-up's allows you to overcome a problem and think about how certain things may or may not work out.

6-Up's

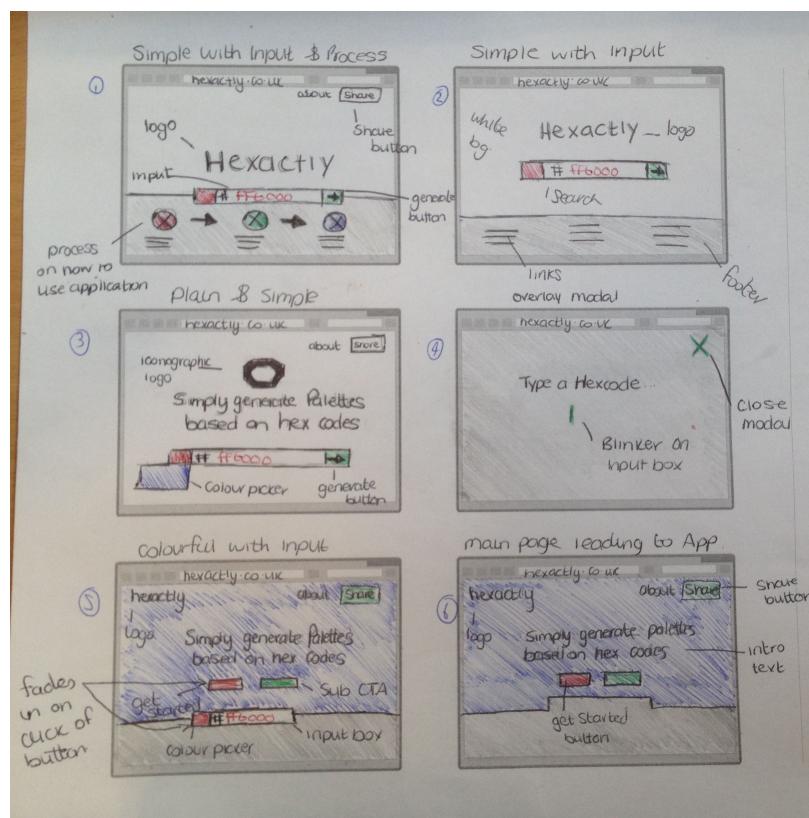


Fig 1. 6-Up Design

1. Accessing the input box from the homepage with an input box provides an easy to use experience and a minimal quick process to generating palettes. With the logo centred in the page, more focus is within it. Both ‘about’ and ‘share’ links are accessible from the top right hand corner whilst a ‘process’ section is visible underneath, which states how to use the application. This process allows the user to generate a palette and view the search box from initial view.
2. With a subtle and simple view indicating main focus on the input box, hexactly’s main aim is to generate colour palettes therefore allowing the user to gain full focus on the main end result is necessary. With subtle information being displayed in the footer including links and a short about section on what the project is.
3. Using an iconic brand to identify the project, a simple and more approachable design has been taken into consideration. With links in the top right navigation, and intro text clearly being displayed in the middle of the page, the input box is still noticeable and therefore attention is not being drawn away from it. Using a colour picker on the input box allows users to quickly select a colour making it more accessible and enhancing the user experience.
4. Displaying the input separate from the homepage in an overlay modal allows full focus to be gained on the search. With ‘autofocus’ on the input box, a blinker cursor will indicate that you need to type, as well as some written instructions or title. A large ‘X’ is present at the top right hand corner, which signals ‘close’ to exit the search and revisit the homepage.
5. A main homepage is visible with a typography logo at the top left, and ‘about’ and ‘share’ at the top right. Intro text is present to give a quick indication and overview of what the website aims to do whilst displaying two buttons underneath. First button is ‘get started’ which then fades in the input box underneath upon click and the second is a ‘watch video’ button which will open an overlay modal of a demonstration video.
6. Similar to 5, this includes the main homepage with the typographic logo and intro. Difference between 5 and 6 is that the ‘get started’ button will link to a separate page, to which you can type the hex code and generate the palettes separately in the app. This allows the homepage to

be separated from the app, although this could take away some user experience and accessibility if the user has to visit separate pages to view the search.

Completing 6-up's encouraged creativity in the thought process and how things will function. With main intentions of the search box being present in a separate app page, much like design 2, where it's a simple and easy process. However, the difficulty in designing something minimal yet visually appealing can be a huge problem and therefore number 6 can be a better option if injected with some of number 4.

Research states that overlays are a common way to show forms and information and they're relatively easy to implement but somehow they don't always improve the user experience due to most overlays not being draggable, so if the user wants to see information displayed in the background they have to dismiss the model entirely which means that the user has lost any data entered into the form. However, if a full width and height overlay is present, and full focus is on the search, this is a good way to draw attention to what the user wants to do, as demonstrated in Figure 2.

1-Up

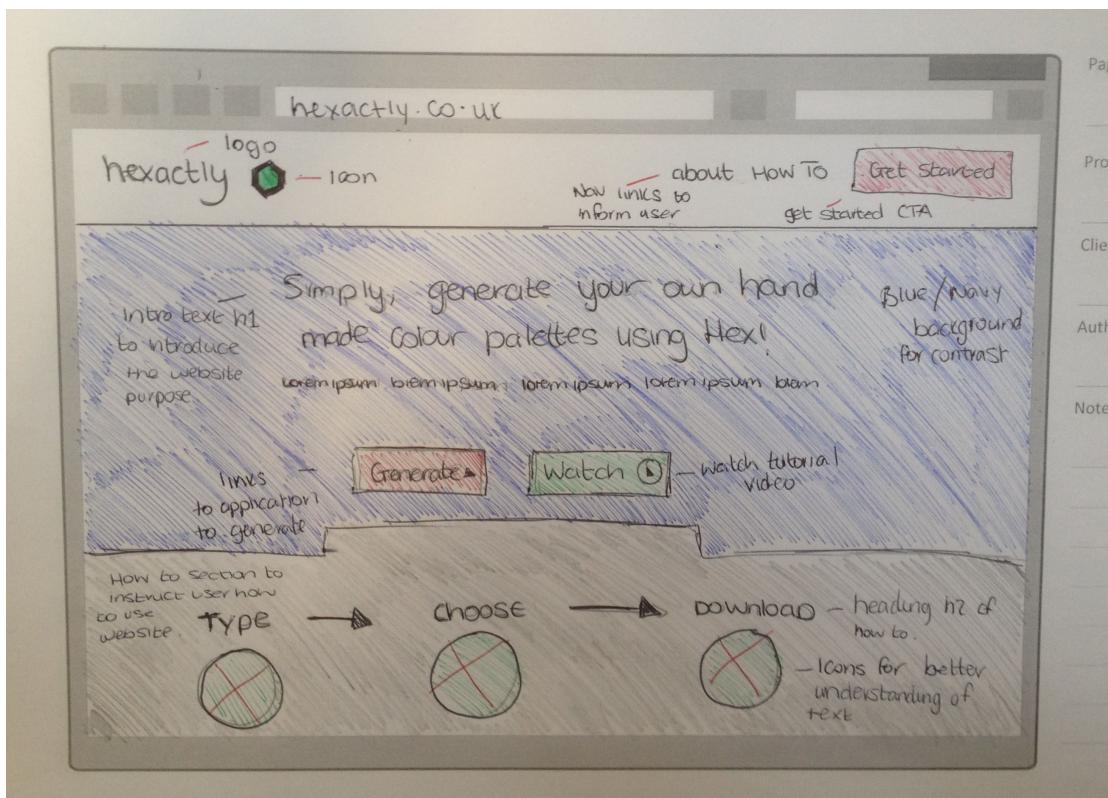


Fig 2. 1 Up design

Having a homepage design before the user is loaded with the main application, ensures that the user will be prompted to insert a hexadecimal colour code so using a mash up of design 4 and 6, the logo shows at the top left hand side, with a main navigation situated floated right. Intro text is included to give the user a better overview of what the website does and a main Call To Action button is included that allows the user to go on to generate a colour palette. A less important button is situated beside the Call To Action to allow the user to watch a video on how to generate a palette.

Not everyone is going to want to watch a video so the next section is a step by step process of how the web application will work which is demonstrated with the use of icons and text to help portray a guide for the user to understand how the website works.

Before finalisation of prototyping, the design has evolved in terms of functionality planning and design planning, with anticipation of the application consisting of a login to allow users to store and favourite colours palettes, as seen in Appendix D, Login Form. A main usability concern was pressuring Hexactly users to have to sign-in / sign-up to use the application, because everyone prefers a simple process to an end result. With intentions of refraining from a sign-up process, as it's frustrating and time consuming, the problem was where to place the login, how it's going to appear and how it's going to look and function. However since the system no longer requires you to sign in, this problem is no longer.

2.4. Methodology Selection

To manage activity, a Methodology has been used to provide better planning, consistency and to improve the quality of the project. Research states the 4 most popular methodologies as

- Agile
- Prototyping
- Waterfall
- Rapid Application Development (seguetech.com, 2013)

Upon comparing the different methodologies, a modern technology tends to be the best option as it allows more flexibility and the ability for trial error. It's easy to see how the “waterfall” methodology is far from optimised compared to agile methodology. First of all, it assumes that

every requirement of the project can be identified before any design or coding occurs. Put another way, do you think you could tell a team of developers everything that needed to be in a piece of software before it was up and running? Or would it be easier to describe your vision to the team if you could react to functional software? (agilemethodology.org, 2014)

Other methodologies don't provide as much flexibility, comparing to the Waterfall Method, if the project is at testing stage, it is difficult to go back and change something that was not well-thought out in the initial concept stage.

2.4.1. Agile

To manage activity it was decided that the Agile method was be used. It is the preferred method for the project because new technologies are being used and it's the most flexible methodology of the ones during research, allowing for frequent changes of the project throughout.

With plans to the project frequently, this was suitable, due to working with more complex development languages and therefore most of the project will be trial and error to ensure that anything is applied in code works each time, which results in the safest and most beneficial option. Fully understanding that Agile is not the perfect solution for all projects, but realising the benefits of this methodology can really help progress Hexactly's project planning and design.

3. Design

3.1. User Experience Design Evolution

User Experience Design is related to how well something is designed for the intended user. As websites and applications are becoming more complex, user experience design allows you to measure how well somebody can interact with your website. Taking this into consideration, it's important for users to answer 'yes' to questions such as "Is the website easy to user?" and "Can you navigate around the website efficiently?".

3.1.1. Visual Design / Accessibility

Visual Design of Hexactly is extremely important in order for the users to benefit from it as much as possible. From the size of the font to the arrangement of the content, each aspect of the visual design matters in order to make an impact on the users.

Colour

As Hexactly is a colour palette generator, it's important that the colour palette used for the website is appropriate as it is setting a prime example for the purpose of what the website can provide the user with. Solid vivid colours have been used throughout with the main colour palette including blue, grey, orange, green, yellow and white, as shown in Fig 3.

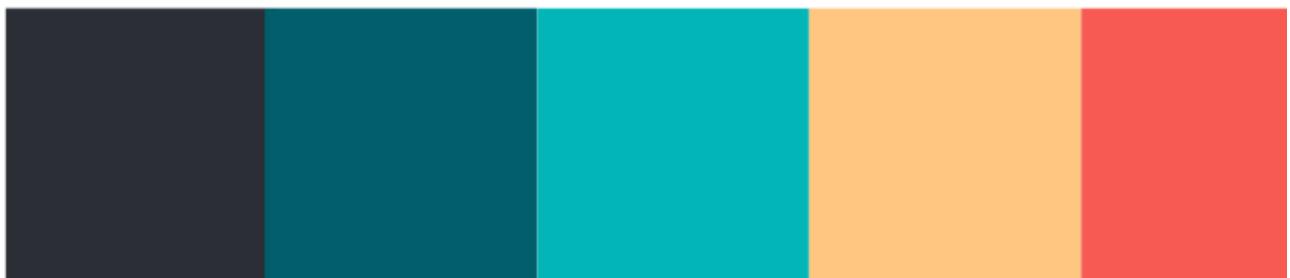


Fig 3. Final Colour Palette

With regards to a great article on An Introduction to Color Theory for Web Designers on tutsplus.com, it gave me a better insight to choosing a colour palette for hexactly. The main lesson learned was to add a bit of vibrancy, contrast and complementation.

Using a variety of contrasting colors can help focus the viewer's attention on specific page elements.” is an agreeable statement because with the use of lighter text on a darker background on Hexactly allows the users attention to be upon certain elements of the homepage. (tutsplus.com, 2014)

It was decided that the website will consist of flat design, a minimal design approach that allows emphasise on the websites usability, which includes bright colours, flat icons, illustrations and clean design. With the website's intensions to be fully responsive across all devices, flat design scales well on smaller screens which in the long run saves time because the website did not need to be designed specifically for mobile devices. To enhance the website performance and load time for the

user, flat design requires less complex development and requires less images and therefore results in a faster loading website and a happier end user.

Using flat design doesn't mean that the website lacks any complex or enhancing features. The fact that subtle colour has been used throughout allows the website to be attractive, adds character and it grabs attention quicker and easily. Using simplistic imagery such as illustrations and icons allow whatever message they're conveying to be perceived quicker than more detailed ones.

Content on the homepage is very minimal, with the title, headings and logo being the main choice of instruction to the user. With use of an informative headings, illustrations and buttons the simplistic homepage portrays a website that allows the user to clearly understand what they have to do in order to generate a colour palette.

The top left hand of the homepage shows where the logo is situated. Originally it was decided that the logo was to be in the middle of the page but referring to onextrapixel.com on Eye Movement Patterns In Web Design it tells us that the eye movement on a website usually starts from the left side, which provides an understanding that the human mind reads left to right and therefore situating the logo left allows it to be viewed first.

At the top, right hand side the navigation links are located, in a subtle off-white coloured typeface. This tends to be usual position for navigational links ensuring they are clear and easy to see.

"Top navigation is the second most common navigation. The advantage of a top navigation bar is that it leaves more room below for content and other relevant information. However, you must make sure that the navigation stands out. People tend to ignore everything that looks remotely like adds. (mardiros.net, 2014)

Simply, fast and **easily** generate
your own Colour Palettes, using Hex Codes.

We make the process of finding Colour Palettes fun and easy, by lorem ipsum etc and stuff and more.

Figure 3.1. Intro Text

Again, similar to the previous prototype, the typography used in the headings and throughout reflects and emphasis on the important information that is purposed to attract the user. By making

“Simply, Fast and Easily” a stronger font weigh, it automatically stands out and adds emphasis to those specific key words. By using white text on a dark background allows for all the information to be easily seen and read, hence visualising a small subtle stroke on the headings to enhance the design and visibility whilst keeping with a sans-serif font as it is a clear and easy to read.

Home Page Design

The image shows the final home page design for hexactly.com. The header features the brand name "hexactly." in a bold, lowercase sans-serif font. A navigation bar with links for "About", "How To", "Testimonials", and a "Share" button is positioned at the top right. The main headline reads "Simply, fast and easily generate your own Colour Palettes, using Hex Codes." Below the headline is a subtext: "We make the process of finding Colour Palettes fun and easy, by lorem ipsum etc and stuff and more." Two call-to-action buttons, "Get Started >" and "Watch ⏯", are located in the center. The middle section contains a diagram illustrating the four-step process: 1. Type (input field), 2. Generate (refresh icon), 3. Choose (checkmark icon), and 4. Download (document icon). Below this, a testimonial from "Zac Efron, San Francisco, CA" is displayed, featuring a circular profile picture of him and a quote: "Hexactly is a great tool for anyone who struggles to compile a colour palette, fast and easily ing. Ut a augue nibh. Sed sollicitudin elementum eros." At the bottom, a footer bar includes links for "GET STARTED", "HOW TO", "ABOUT", "FEEDBACK", "SIGN IN", "SIGN UP", "BLOG", and "TERMS & CONDITIONS". It also features social media links for Twitter and Facebook, and a copyright notice: "© Copyright Hexactly 2014".

Fig 3.2. Final Home Page Design

Typography

When choosing typography the style of choice is Sans Serif Source Sans Pro, resulting on the information on each pages being clean, crisp and easy to read. As the website doesn't contain lots of long copy, a sans serif font was most suitable as the style is likely designed to stand out and be used on headlines and short copy. An article on IADT.edu allowed me to better understand the benefits of using Sans Serif fonts on the web;

"Sans serif fonts are easier on the eyes than serif fonts when displayed on a computer screen due to several factors. First, the poor resolution on some computer screens can cause serifs to appear pixelated, making words difficult to read. Also, serifs can add a lot of extra distractions to a body of text when that text is displayed in a small size on a digital screen. Because sans serif fonts display well on a computer screen, they are generally the first choice of Web designers.

(iadt.edu, 2014)

Within the top section of the web page contains two buttons, both coloured differently. The interactions have evolved slightly since the initial prototype proposed, keeping consistent with the turquoise colour for the main Call to Action but adding a secondary button state for the normal buttons, in a dull grey/navy colour. Although the colour differences in the background and the secondary buttons are subtle, it's still enough for the user to able to recognise the difference between the two buttons. With contrast between the buttons being different, the main Call to Action will be most visible and the user will be more prone to check it out. Using a consistent theme throughout for the 'Sign-In' button at the top and the 'Watch' button allows for the user to recognise a house style.

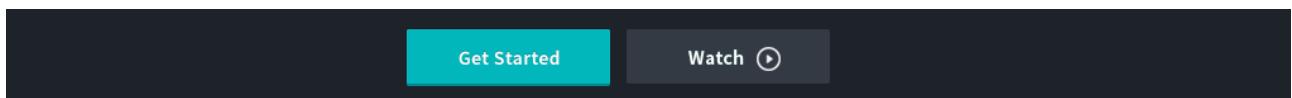


Fig 3.3. Call to Action Buttons

The Guide

Further down the page we are lead to a step by step guide of how to generate a colour palette with the use of custom icons and text. This solves the problem of users not knowing how to work the system and therefore to avoid confusion I have made some little simplistic icon illustrations which will conveying a message and allow it to register with the user quicker than just plain text. It's said

that a famous study proves that that humans can store only 7 pieces of information in their short term memory and therefore you can help reduce short term memory load by designing icons

Revising the psychology behind the home page design, various changes were had in order to enhance the visual appeal and the user experience whilst using the web site.

Originally it was decided that a colour was to be used for the website but revising this didn't reflect the statement as it wasn't used evenly throughout. Mid way down the page we are lead to a step by step guide of how to generate your colour palette with the use of custom icons and text. This solves the problem of users not knowing how to work the system and therefore to avoid confusion various simplistic icon illustrations have been created to conveying a message and allow it to register with the user quicker than just plain text. It's said that a famous study proves that that humans can store only 7 pieces of information in their short term memory and therefore you can help reduce short term memory load by designing icons

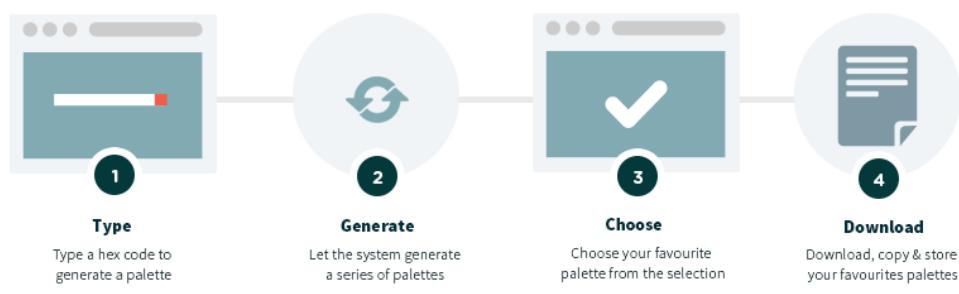


Fig 3.4. Initial Colour Usage

However, when looking at the web design as a whole it seemed to be lacking colour other than the neutral ones. To avoid this conflict and enhance the readability therefore on the number backgrounds within the step-by-step guide I changed to orange, shown below.

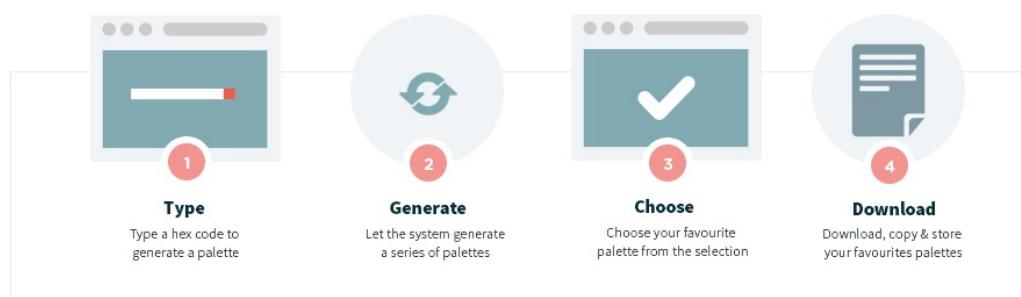


Fig 3.5. Final Colour Usage

Doing this adds more character to the design by allowing a soft subtle tones to be used in the icons making it easier on the eye.

Testimonials

The testimonials section allows for potential users to know what current users think of Hexactly. This is a good way to gain users and attract people to want to use the application.

If you're selling a product on your website, customer testimonials can be a key content element because they are unbiased comments that prompt visitors to buy. By using testimonials in text, audio or video formats on your site you introduce content that will promote your product in convincing fashion. (impactbnd.com, 2014)

The users picture, name, location and their job are placed in the testimonial along with a positive comment on Hexactly. In the background displays a larger image of a speech mark, which indicates that the comments are quotes from the user. This was decided for a very subtle viewing experience, without placing the quote marks directly around the copy.

Just before the footer, is an ending section that allows for the user who has scrolled down the page to be reminded on how to get started with Hexactly. Another Call to Action button has been placed in order to link the user to the app to get started, with copy on the button stating ‘Get Generating Today’, with an arrow to point the user in the direction of the application. This allows for further access and emphasis on indicating the user to get started generating a palette.

It was decided that the footer of the web page consists of handy links for both internal use and external. With a minimal approach to the design, it contains contact information, social media links and repeats the primary navigation. Doing so ensures that the user has access to the links at both beginning and end of the web page as footer links are known to be better for Search Engine Optimisation especially as some of the links are internal pages or links.

Share Modal

It was discussed and planned at very first initial stages that the application allowed for a social sign-in to favourite user palettes, constraints on the project disabled these abilities. Thinking ways around this left a decision that a share ability would be enabled, allowing users to still connect with their social media accounts, refer to *Appendix E, Social Sign In Design*.

Users can share the webpage with their Facebook, Twitter and Pinterest friends. On click of the Share button, an overlay modal opens prompting the user to share via their social media account. Whilst the modal is active, the background of the website appears slightly blurred so that full focus is within the modal

As shown in Fig 3.6. a close button and a dismiss link are both available to close the modal to enhance the users experience and accessibility of the website, as this makes it easier to use and navigate. Using friendly and positive language such as ‘Awesome’ enhances the readability and appears more user friendly to the user making them feel welcome and helps give the website a persona.

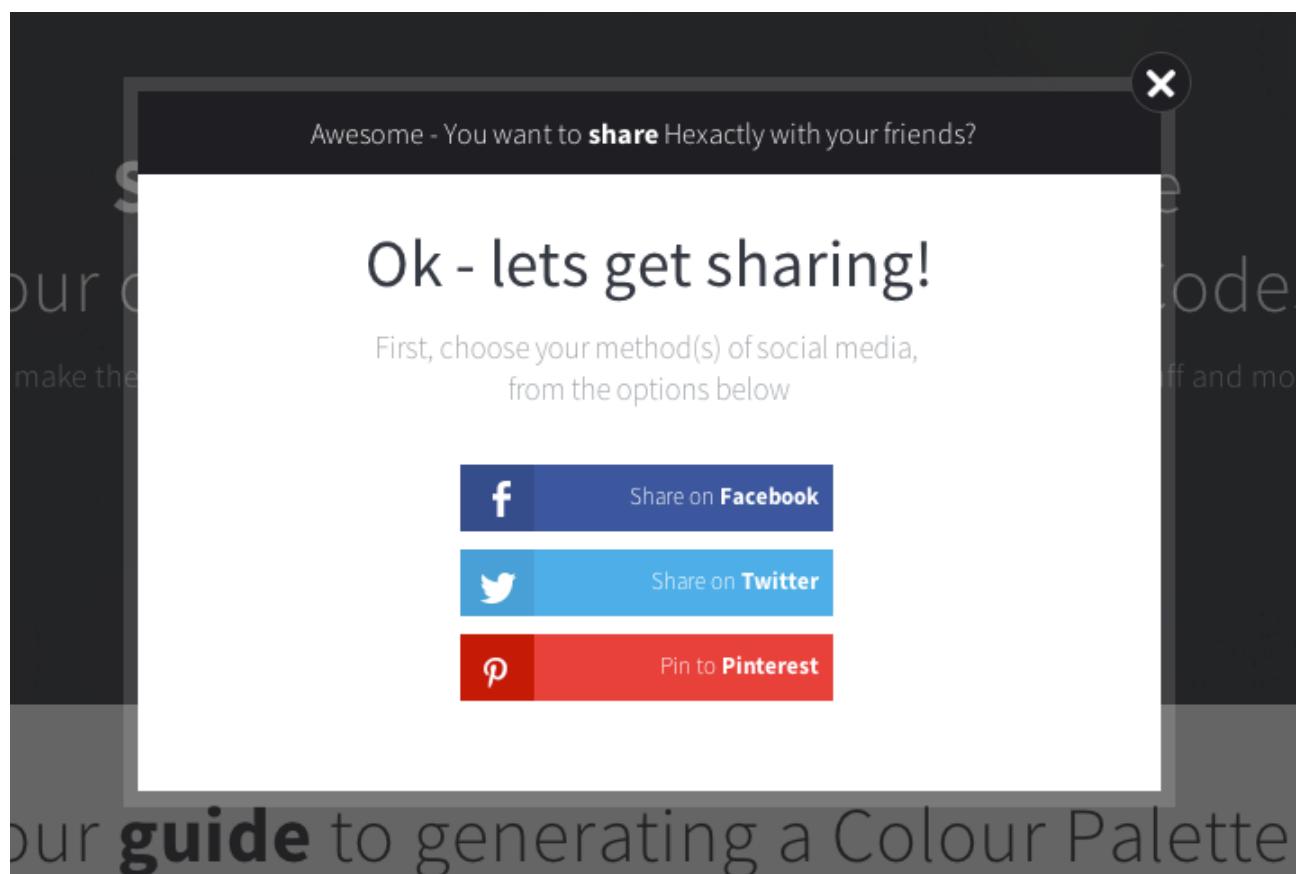


Fig 3.6. Design of Share Modal

It is easy to confuse website with a web app especially if you’re new to user interface design. Website’s usually maintain collection of pages which consists of mostly images, video and static content with its primary purpose to inform.

However, web apps are interactive and dynamic and often help people perform a task within it. This leaves an closed answer to state that Hexactly is Web Application.

The primary role of a Web application is to perform a function that serves the user's tasks and according to defined business rules. - (<http://www.smashingmagazine.com/2014>)

Search

Upon click of ‘Get Started’, it triggers a modal that displays the main search functionality.

Referring to screen 4 in the 6-up method, the design choice is reflected. With the use of minimal design, typography and icon usage a design thaw emphasis on exactly what it needs to do is displayed.

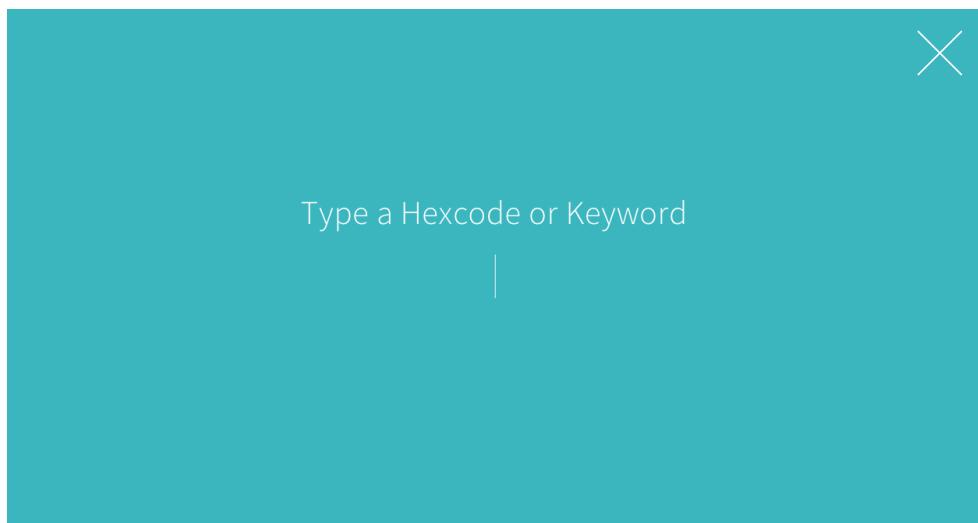


Fig 3.7. Search Screen

It was decided that the background on the form would be transparent, to add consistency to the flat design method. Upon initial load of the modal, jQuery has been used at point when the overlay slides in, to allow autofocus on the form to be present. This helps add a better experience as the user will know from the cursor blinker that something needs to be typed.

```
else if( !classie.has( overlay, 'close' ) ) {  
    classie.add( overlay, 'open' );  
    $('input').focus();  
}
```

Fig 3.8. jQuery code to autofocus form when overlay opens

The use of a large ‘X’ at the top right hand corner indicates ‘close’ to the user and x’s represents close and this is the usual positioning for a close button on modals. With the use of straight to the point instructions ‘Type a Hex or Keyword’ allows the user to know exactly what the system is requiring from them.

App Design

Designing for a web application proven some difficulty when an application serves minimal features and content. Originally, it was decided that the app would be designed for logging in, logging out, favouring and sharing colour palettes. Refer to *Appendix G, 1. Initial App Design*.

As the thought process and planning developed, a more simplistic approach was taken for the design as seen in Fig 3.10. Final App Design. Assuming a user has entered the hex code ‘#ff6000’ to the search, the system searches Flickr for images with that tag and returns a list of results if there is any.

The top of the app design shows another search bar, which allows users to search further for another hex code allowing the user the ability to search at any point. Plenty of whitespace is used in order for all information to be seen and read clearly. On click of the search, a colour picker appears to allow for the ability to choose a hex code from the widget picker. This helps engage the user and provide them with a starting point if they’re unsure of what to search for next. Once a colour is chosen, it will input to the search box automatically as well as a colour preview box aside it. This gives the user confirmation of their choice.

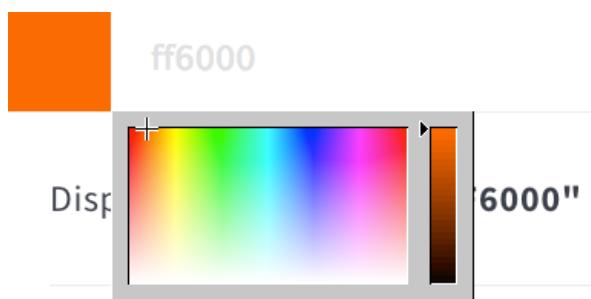


Fig 3.9. Colour Picker

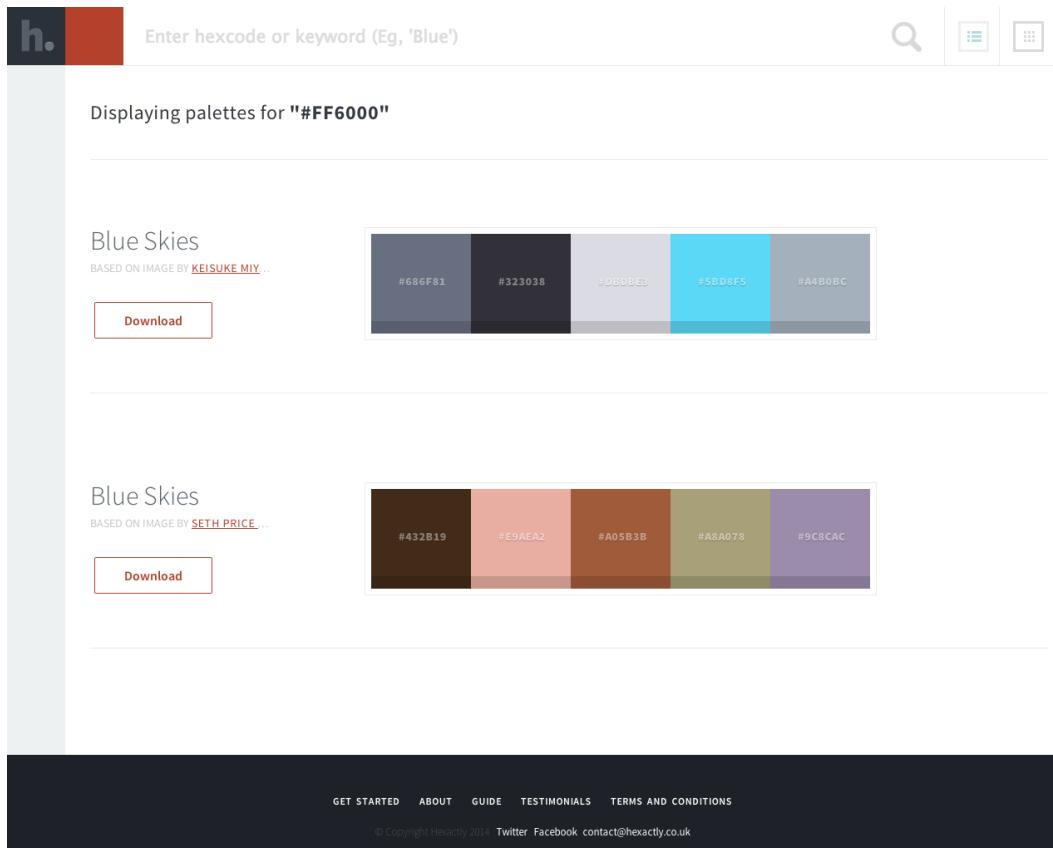


Fig 3.10. Final App Design

The input box provides the user with instructions on what they're to do, in the case of Hexactly, it's 'Enter hex code or keyword (Eg, 'Blue')' which is a very straight to the point instruction allowing the user to enter their data with more than one option. This increases the user experience if the user is not sure of a hex code, but have an idea of the colour they are searching for.

The button aside the input box was decided to display a magnifying glass icon, which indicates to the user 'search'. The use of icon is purposed to be perceived better rather than 'Search' or 'Generate' as their quicker to recognise. At the point where the user has clicked search, the system will allow the user to know that it's displaying palettes for their chosen input. This gives the user confirmation and satisfaction of their input, as shown in Fig 3.11.

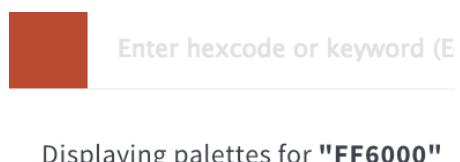


Fig 3.11. Input Conformation

Validation

If the user searches for a hex code or keyword and no results are found on flickr. Validation is important in order for the user to gain verification on their lack of results. If not, the user may get frustrated and confused which then means that they aren't satisfied with the accessibility and experience of the website.

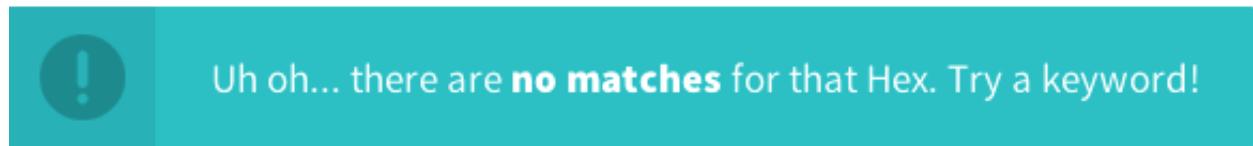


Fig 3.12. No results for hex code

Including an icon within the validation message was purposed for the user to pick up on and recognise what the message is informing them, using an exclamation mark which symbolises there is a warning or an error. This allows the user to interact with the element quicker and allows for better communication between the user and the website. Using a darker icon creates contrast allowing it to be easily recognisable.

It was decided that validation was present on various other aspects of the website, as seen in *Appendix H, Validation including:*

- If the user tries to search with an empty input
- If the user tries to search a valid hex but there is a problem with the API

Top right hand side of the application shows the option of viewing the palettes in list, or thumbnail view. The current view is list, as it's the one that's active as shown in the darker colour indicating that it's active. The icons used are the standard list and thumbnail view icons.

The user knows that list is active as it's a lighter shade of grey and the list is blue. However, with time constraints the user cannot access thumbnail view and rather than the user trying to access it and no interaction within it, a overstate is active where the icon changes to a question mark and a tool tip appears explaining that the view is not yet available. this allows the user to gain verification that the website is not broken enhancing the user experience.

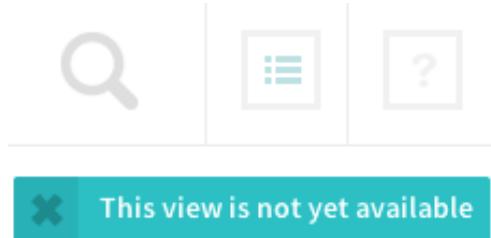


Fig 3.13. List and Thumbnail View

Displaying Results

The use of effective typography makes headings and important information stand out. It was decided that within each palette it would link to the user of the original image to which the palette is based upon. This gives the original poster of the flickr image credit and refrains from any copyright within Hexactly, shown in Fig 3.13.

It was decided that the links within hexactly would contain various states, including:

- a:link – this is the normal state of a hyperlink
- a:visited – this is when the link has been visited before
- a:hover – this is when the user hovers their mouse over a link
- a:active – this is when the user clicks on the link
- a:focus – this is when the user uses the Tab key to navigate to hyperlinks

The pseudo classes that have been used for the inks are, a:link, a:hover and a:focus as it's important for both the user experience and usability. Adding a hover state greatly enhances the websites usability as if a user hovers on a link and the state doesn't remain the same, it allows the user to be alerted that something on that link needs to be done and that will encourage them to click on it.

Often users tab through websites it's important for style to be included in order for the user to be able to see which link they are on. This is for users who can't physically click on a link but use their tab key to navigate around the website on links, by including a:focus it enhances the accessibility throughout as it then targets a wider range of audiences and navigation methods.

Download

As planned, the system allows the user to download via a download button. The button is an inverted style of the call to actions on the homepage as its purpose is different so differentiating but still keeping consistency with the style was thought important.

The button is large and not cluttered, which is faster to render and easier to identify on smaller devices. Using a dominant shade of orange I've provided an easy to use and recognisable Call to Action with appropriate copy labelling 'DOWNLOAD', which assists the user what the button is used for, providing an easy to use and friendly user interface, shown in Fig 3.14..



Fig 3.14. Download Button Initial and Hover State

View Hex Codes

It was decided that the hexadecimal codes were to be viewable on each individual swatch clearly with white being the colour of the text, however some palettes may generate a white swatch and therefore this leaves no contrast between a white background and white text. To overcome this issue, text shadow has been used to give the text more definition and to allow for it to stand out more clearly, seen in Fig 3.15..



Fig 3.15. Hex Codes on Swatches

3.1.2. Interaction / Information

Interaction relates to those things that are required to be done in order to complete a task, such as buttons and key processes. Within Hexactly, different buttons are required to carry out different functions of the website. The main function was decided to be the ‘Get Started’ button on the home page, which purpose is get the user to do something. The use of colour relates to the websites contextual flat style using and appropriate shape and subtle enabling it to look ‘clickable’. The icon on the button has been carefully crafted and chosen as it always seems best to use direct language, so rather than ‘Generate a Colour Palette’ I have shortened this to an arrow Icon - This is positive icon as it shows the users that on click of that button they’re able to go somewhere. Changing the shape of the edges of this call to action button adds some contrast that ensures that it gives the button the importance it requires allowing it to be recognised.

Relating to design theory of buttons and principles for successful button designs it is beneficial to design feedback states for the buttons and call to action. It’s said to always work through the core states required for your buttons to ensure they provide the user with sufficient feedback in their context. Users will likely have a mental model of how a button works in the real world as they use it through its various states. Some simple CSS tweaks with shadows, border and gradients and the like can give the user some simple feedback and a touch of eye candy. (tutsplus.com, 2014)

Aside shows the Button feedback state for the homepage ‘Get Started’ Call to Action button. The default and hover states show the various interactions that are undertaken with this button, allowing the user to interact with the button and gain some feedback upon what is happening when they press the button proving a smoother and friendly interface an overall better experience and understanding of the website.



Fig 3.16. Get Started Button Initial and Hover State

3.1.3. Branding

Hexactlys brand has greatly evolved from initial planning to end result, as shown in *Appendix I, Brand Evolvement*. It was planned conveyed the name by using the main shape within it, a hexagon.

A hexagon has 6 sides and by splitting the shape up into 4 triangles allows each triangle to be a different colour, doing so adds dimension and character to the brand. To further the hexagon I've added a background hexagon with opacity to add a little more character to the brand.

However, typographic logos are simple in their looks but extremely intuitive handing of a typographic along with many hours of effort is needed to create a memorable, personal and readable mark. And in many cases a typographic logo design is just a starting point for the addition of a symbolic element. (logodesignnext.com, 2014)

It was decided that using Source Sans Pro an open source font by Adobe that the brand would be typography based with alterations made in Adobe Illustrator to tightening up the letter spacing, making it bold and putting emphasis on the 'x' too enhance readability, as the name is HEXactly, 'X' is one of the most distinguishing letters of the word. Adding a stroke the same colour as the background colour to the 'X', it allows for it to be enhanced even more as it cuts the edges of the 'e' and 'a' adding more definition to the word. This adds character and personality to the brand, making it more contemporary and beneficial to the user.



Fig 3.17. Final Hexactly Logo

In the end though, deciding on the best font for your purpose and medium largely comes down to a matter of preference and pre-disposition. As long as your choices are readable, purposeful and appropriate for the circumstances, most decisions won't be wrong. (speckyboy.com, 2014)

The debate between serif and sans serif fonts and how they target users can be interesting but with all anticipation the decision made reflects the user needs of the project where the user requires readability within the system.

The choice of colour in the logo was decided at plain navy background with white text, seen in Fig 3.17. This ties in with the house style of the main web page and the white on a dark colour is easier on the eye making the brand stand out and appear more readable.

“A brand is an essential element of your business. Branding not only makes your business company unique, but it also establishes credibility. It creates a long-term idea and impression in the minds of a new possible customer or an existing one. Building an image of a great brand can provide you a considerable chunk of market share. (freelancelogo.co/, 2010)

It is therefore important that Hexactly is designed how it is because the use of a memorable brand can really have a long term affect on how people perceive your product.

3.2. System Design

3.2.1. Website Flow

Main Flow

1. User loads the website
2. Website launches a landing page with information about the site and how to get started
3. User launches the 'Get Started' button
4. Modal overlay opens prompting the user to type a hex code or keyword
5. Application interface loads with results
5. System generates a series of palettes based on the hex code
4. User chooses their chosen palette(s) to download or copy hex codes to clipboard

Alternative Flow: User Shares Website

1. User presses share button on homepage
2. The system displays an overlay modal requesting to connect to account
3. Selected integration is pressed and authentication to request access appears
4. Link shares

3.2.2. Data Flow

A main Home Page, 2 sub pages and 2 internal links was decided after prototyping to ensure the user is able to flow through the website quickly and easily. The navigational structure was decided to be an About Page, a How To link, a Get Started button to link to a search modal, which then loads the application interface with a series of palettes and finally Watch, which will allow the user to have the option to watch a video on Hexactly.

Most websites, especially those with a lot of content or functionality, need navigation menus. But as a website grows in complexity, guiding users to that content and functionality shouldn't be the job of any one menu. All of that content just doesn't always fit in one large menu, no matter how organised it may be. Hexactly however is a smaller website and a primary navigation was thought to be best.- (smashingmagazine.com, 2011)

A website is comprised of three main components: Design, content and the URL. When it comes to a website, it's important that the content is given at least as much attention to design. Minimal content was agreed in my initial prototype, but after proposing this to an end user, they suggested that separating the homepage and application so they're on a different page as it came across a little confusing and not as friendly. Adding more content, but not too much into the website allows for better search engine results, as these are content driven and if I have minimal content on the website it means that the SEO won't have as much information to crawl upon search, which results in low search terms.

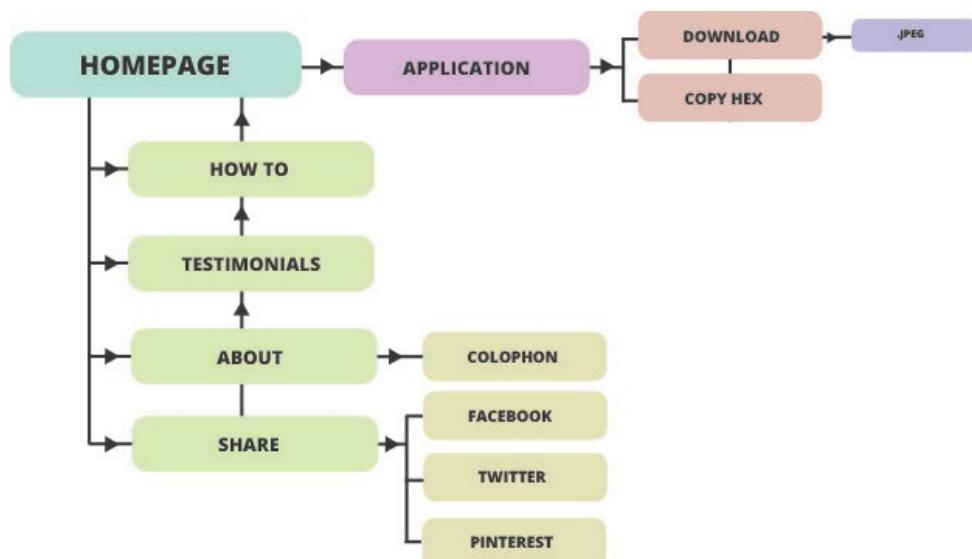


Fig 4. Final Dataflow Diagram

3.2.3. Social Share Flow

From the thought process to the end result, the ability to engage with social media has evolved.

Target audience of the web application are most likely involved with social media, so the thought of integrating it within the system has always been had. Coming from implementing a social sign in to a social share. Statistics show that social media websites are now the top Internet activity. and great user experience is always appreciated.

The flow for the social share is shown in Fig 5. A plugin is used to authenticate the users details once they choose their sign in method, it then checks that that the social media details are not those of a new user but an existing user, once the existing user is confirmed then the share process is complete.

It's said that Facebook attracts roughly 7 times the engagement Twitter does, therefore the options to sign in will be Facebook, Twitter and Social Media are these tend to be the most popular social media platforms. (<http://www.ebizmba.com>, 2014).

This gives users a broader option of signing in, as they're not just limited to one option, as not everybody may have a Facebook account, but may have Twitter account.

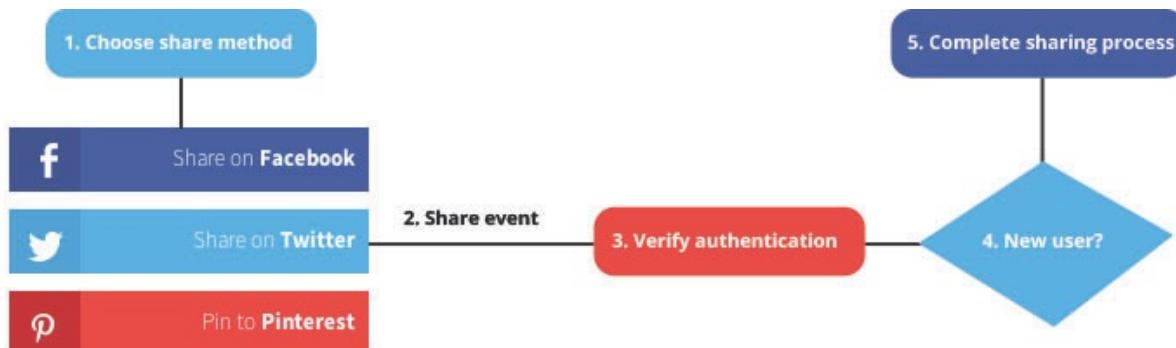


Fig 5. social share diagram

Pros of Social Share:

- Registration Data speeds up the share process
- Target Audience is the Web Industry and their more likely involved in social media
- Multiple Identities allow users to login to the website using more than one account

3.3. Interaction

Interaction is how the website interacts together, shown in Fig 6. The user requests the URL www.hexactly.co.uk which looks to the web server to display the homepage. The server displays the webpage into the users browser allowing them the option to use the Flickr API. Once the user has decided to search, API is requested to the web server, which then finally displays the result on the web page, the CSS hides the image being brought in from Flickr and the Javascript initiates a colour palette from the images in the background displaying a series of colours in a palette for the front end.

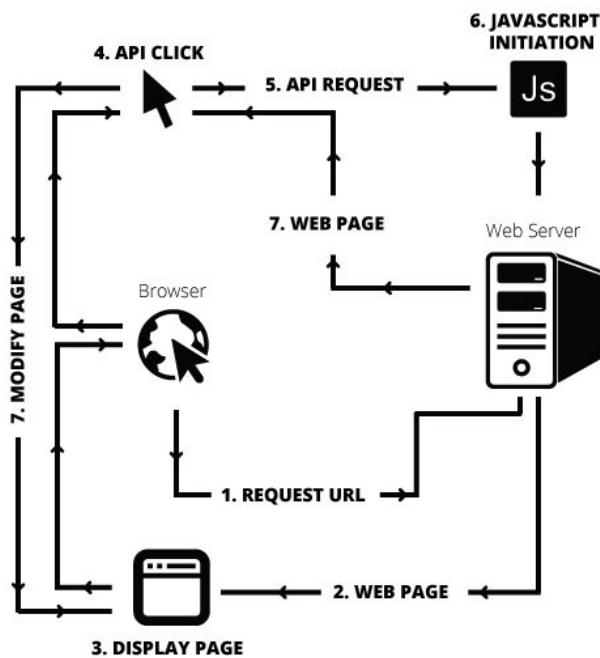


Fig 6. Interaction Diagram

3.3.1. API's

1 API is used throughout the system, to generate the palettes, now that the system no longer requires a database there is no real need for a structure, as seen in *Appendix J, Initial Database Structure*.

1. Flickr - To search photos

Once a user types in a hex, this will act as a ‘tag’ and Hexactly will then search Flickr using Flickr’s API for photographs that contain the tag or title. These images are hereby used to determine what image results are shown displaying a list of results back to the user. This allowed for further implementation to be carried out to enhance all aspects of the web application.

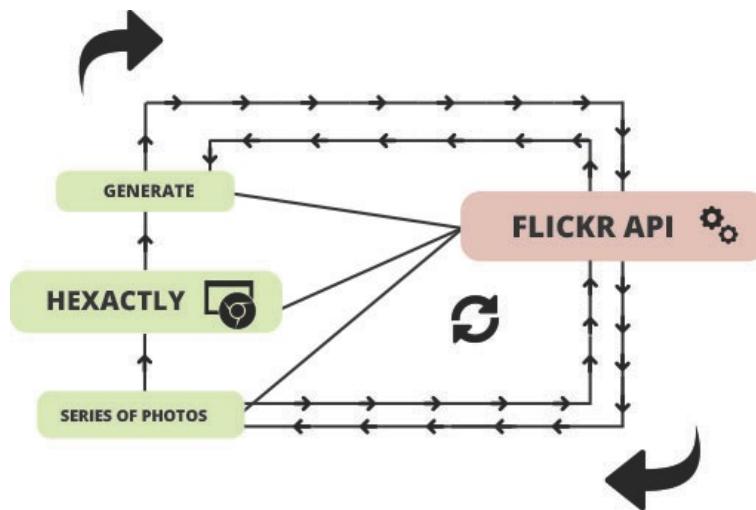


Fig 7. API diagram

4. Implementation

4.1. Technology / Tool Selection

It was decided that Hexactly was designed in Adobe Photoshop CS6 and Adobe Illustrator CS5. Both the front end and back end has been built in HTML5, CSS3, Javascript, jQuery 1.11.0 and PHP 5.5.5.

4.1.1. Languages

HTML5

HTML5 has been used as the main hypertext markup language as it is stated to be the latest technology and proves to be more accessible and cleaner when building websites and web applications. During implementation of Hexactly, elements such as New headings such as <header>, <footer>, <section> and <aside> have been used which allows for screen readers to easily access the content rather than searching for a specific <div>, this proves for a better user experience.

CSS/CSS3

To allow for the web application to be styled, CSS and CSS3 has ben used as a relatively simple web language that is split into user friendly and logical modules such as borders, backgrounds animation and text effects. There is a lot of customisation allowed within CSS3 which meant the development flow is thereby more flexible and enabled able the ability to fulfil the design needs of the user and how they interpreted the system.

PHP 5.5.5

In order for Hexactly to fully function as intended, PHP has been used to bring in images from Flickr, download palettes and to add validation to certain form elements throughout.

To run the website, Apache version 2.4.7 was decided upon, as free open source web server that allows PHP to be run on the computer without hosting it.

jQuery 1.11.0

The recommendation of interaction to the web application upon initial planning resulted in jQuery to be used to enhance usability features such as smooth scrolling and moving carousels. It was decided that jQuery 1.11.0 rather than version 2.0.2 was to be used to allow for the website to be supported in Internet Explorer 8, relating to system requirement 32. The use of jQuery results in Hexactly being user friendly and to provides a better user experience upon usage of the system. By using keyboard events such as .keyup() when implementing the Colour Picker, it allows the user to input data and generate a result on press of an element. Therefore this adds more interactivity to the web page and benefits the user by generating an end result.

Javascript / Canvas

The use of Javascript throughout the implementation of Hexactly allowed for the ability to scrape the images from flickr for the most popular colours. Using the script ‘Color Theif,’ by Lokesh Dhakar which uses Javascript and Canvas, this allows a series of swatches to be outputted. It was decided that Javascript was an easy to learn language which is executed within the client side meaning that it saves bandwidth for the user, and the web server has less strain.

Adobe Photoshop CS6

Adobe CS6 has been used to represent a visual mock up of the homepage design, application interface design and interaction designs such as buttons and button states.

Adobe Illustrator CS6

A result of illustration and branding in Hexactly, Adobe Illustrator CS6 has been used to create these assets as it allows the ability to create vector files. Unlike Adobe Photoshop, you can magnify the image as many times without rasterising it and this proves to look to a brighter future for the project, with the potential to resize the brand to a larger scale, if needed.

QuickTime Player v 10.3

QuickTime Player has been used to allow for screen capture and recording of the application being used. This gives potential users a sense of direction when they go to use the system and also enhances advertising purposes as uploads to YouTube and Vimeo will encourage it to be recognised.

iMovie v 10.0.2

Furthermore, iMovie was used to edit the demo video on the home page. To introduce only background music and a title, it was decided to be the best method for the requirements and timescale, rather than devoting time to a more complex program such as Adobe After Effects, which would require more time to produce.

4.1.2. Frameworks

Skeleton

The resulting framework method was based upon research on the front end HTML framework Skeleton. Other competing resources include Twitter Bootstrap, Foundation and HTML5

Boilerplate. Although Bootstrap is a modern front-end UI development framework that it allows for a responsive build, which Hexactly will be.

However comparing Boilerplate to Skeleton, it seems to be more popular but harder to use. With all required thought, the project has been based on Skeleton as it's a free lightweight framework that provides build in media queries, which refers to system requirement 37.

960 Grid System

When designing the website visually, a grid system has been used for Adobe Photoshop that has allowed for a 16 column grid that consists of 40 pixel increments. Each column has 10 pixels of margin on the left hand side and right hand side, which then creates a 20 pixel gutter width between each columns.

4.2. Technology / Tool Use

Technology and tool use throughout the application consists of various programming languages. The high level code is needed for the application to run smoothly and are the most important as the application is based of these core functionalities.

4.2.1. Flickr API

Main functionality of Hexactly is based from Flickr's search API and the main language is PHP. From the front end it displays an input box and a search button used to capture the data.

The API works when you request it from Flickr using flickr's photos.search, which allows you to return a list of photos matching a criteria entered, but as this only returns photographs and not palettes, further action was taken. After created an app to generate an API key, customisation of the API was had.

The array

The params array contains the API key and method, which originally was happened to be flickr.photos.getInfo, but because the purpose of Hexactly is to search it was only understandable that this was changed to flickr.photos.search in order to search the flickr photos

```
if (isset($_POST['hex']) && !empty($_POST['hex']) && isset($_POST['submit'])) {
    #
    # build the API URL to call
    #
    // $secret = '21f1f1ef72524eae';
    $params = array(
        'api_key' => 'f0f6a7307c5d5d67eeaf867d551d28fa', //api key
        'method' => 'flickr.photos.search', //searches flickr photos
        'text' => $_POST['hex'], // posts info from input class="hex"
        'per_page' => 5, // displays 5 palettes per page
        'format' => 'php_serial',
        'extras' => 'owner_name,date_upload' // gets the owner name from each of the image pulled in
    );
}
```

Fig 8. params array in flickr API

The ‘text’ is ‘hex’ as this allows communication and search information to the input value inside of the input class named ‘hex’.

It was decided that 5 images per page was to be pulled in, which then generates 5 palettes per page. When set to a larger value the API runs remarkably slower on value’s that brought back lots of results. Considering the user experience of the project it was the safest option to decrease the size of the images set in CSS whilst displaying:none on them, and setting the value to 5, which means the user can still get a range of results from the application at a fast and easy pace, which is one of the initial requirements of the project.

Implementing the title of the original user who uploaded the Flickr image was relatively simple without doing another the api call. Adding ‘owner_name,date_upload’ within ‘Extras’ in the array gets the owner name from each of the image pulled in and allowing this to link out to the owners profile .

To do this for each individual palette generated, it was decided that outputting the html in the foreach loop would generate this for each of the swatches, making it consistent and reliable.

```

// writes out the html to output series of palettes

        echo '<div class="image-section">';
        echo '<img class="target-image" src="" . $src . "" />';
        echo '<div class="color-thief-output"></div>';
        echo '<span class="function-sub-title">';
        echo 'Based on image by <a href="http://www.flickr.com/people/' . $photo['owner'] . '/">' . $photo['username'] . '</a>';
        echo '</span>';
        echo '</div>';
    }

```

Fig 8.1. Outputting the html in the foreach loop

Displaying a link to the users profile uses the format ‘<http://www.flickr.com/people/{user-id}>’ , so swapping {user-id} with \$photo[‘owner’] allows the users to click on the link and be directed to the owners profile.

4.2.2. Javascript

Connecting the API to Javascript

To convert the image to a swatch, a script called ‘Colour Theif’ by Lokesh Dhakar (<http://lokeshdhakar.com/projects/color-thief>) which uses javascript and canvas to pull the most used colours from an image and output it as a swatch. Using jQuery and Javascript within the application, colour their uses mustache.js and colour-theif.js which both are used to further implement a palette from an image.

```

<script id="color-thief-output-template" type="text/x-mustache">

    <div class="function get-palette">
        <div class="palette-details">
            <h3 class="function-title">Blue Skies</h3>
            <span class="function-sub-title"></span>
        </div>
    </div>

    <div class="palette-tools">
        <div class="rndBtn">
            <a href="#">Download</a>
        </div>
    </div>
    <div>
        <div class="function-output">
            <div class="swatches">
                {{#palette}}
                    <div class="swatch" style="background-color: rgb({{0}}, {{1}}, {{2}})" data-rgb="rgb({{0}}, {{1}}, {{2}})"><span class={{/palette}}>
                </div>
            <div class="shadow"></div>
        </div>
    </div>

```

Fig 8.2. colour theif output template

To output the template of colour theif, the html is output through a script, this allows it to generate the div’s for each palette generated, so whatever style is on the div will apply to all.

Generating Hex Codes

Color theif uses RGB in their swatches, however it was decided that hex codes were to be viewable upon each swatch created. Using Javascript to convert RGB to display hexcode, the RGB value was passed into PHP and an image was made using the colours that are within the swatch.

```
<script type="text/javascript">
  function rgb2hex(rgb) {
    var hex = "#";
    for (var i=0;i<3;i++) {
      var c = Math.floor(rgb[i]/16);
      var v = c < 16 ? "0" : "";
      hex += v + c.toString(16);
    }
  }
</script>
```

Fig 9. passing RGB to PHP to create the image

At the point where colour theif script runs, the hex is applied to the ‘span’ in the HTML, this outputs the hex on each individual span class on .swatch.

```
$('.swatch').each(function() {
  var hex = rgb2hex( $(this).data('rgb') );
  $(this).find('span').html( hex );
});
}, false);
```

Fig 9.1. Hex being applied to span

Within div class=“swatches”, a span class has been applied to enable styling on the hex codes to allow for better visibility purposes as some swatches may be white, therefore placing a shadow on the hex code allows it to be easier on the eye.

4.2.3. PHP

Downloading Palettes

The user is able to download each palette that has been generated via a download button, seen in *Appendix K, Downloading Palettes*. PHP has been used to get the c from \$_GET and explode it using the explode function which breaks a string into an array makes it the colour from the palette.

Using imagecreatetruecolor, it creates the image at 120 pixels wide, with each swatch being 30 pixels wide. This outputs a small downloadable image that is quick to download yet still clear and easy to view the colours within it.

For each of the swatches, \$key will be \$rgb_set, so that if its empty the program will end, and if it's not it will create a list of colour values and multiply the value of \$key by 24. By using imagefilledrectangle it will draw the rectangle with the \$swatch colour selected.

On the front end, within ‘palette-tools’, a button is located to trigger the download, locating the php within an anchor, allows the PHP to run on click of the button. When the user downloads a palette, it will default to be named ‘hexactly_swatch’ by setting a ‘download’ value.

Form Validation

Form validation is a very important element of the application as not all hex values or keywords are going to be applicable to Flickr’s API. It was decided that validation on an empty search, no results for search and if there was a problem with the API used that it would bring back a validation message.

Form validation saves time and allows the system to give the user more information to where they have went wrong and why they are not getting the results they intended.

Within the API call, else statements have been used to determine validation. The system echo’s a message wrapped in a div class when there are no results from flickr, upon no results, the #welcomeDiv will hide, as there is no need to display the statement if there are no results. This applies if there is an error with the API or if there has been no hex code entered.

Styling the validation message adds character and appears to be a more friendly way of showing the user there is a problem. With the use of friendly language, such as ‘oops’ rather than ‘error’ provides user satisfaction.

4.2.4. jQuery

Social Share / Share Overlay Modal

Sharing the application is part of the users intended requirements. To share the web page, addthis.com offers a plugin that enables access for the user to connect to their Facebook, Twitter

and Pinterest accounts and share the site. This is done using two scripts, and wrapping the buttons in a div, to then trigger the ‘fb-root’ which is placed at the very start of the body. The share functionality is located within a share modal, which is activated on click of the share button on the main page.

```
<div id="fb-root"></div>
<script>(function(d, s, id) {
  var js, fjs = d.getElementsByTagName(s)[0];
  if (d.getElementById(id)) return;
  js = d.createElement(s); js.id = id;
  js.src = "//connect.facebook.net/en_US/all.js#xfbml=1&appId=603448589746670";
  fjs.parentNode.insertBefore(js, fjs);
}(document, 'script', 'facebook-jssdk'));</script>
```

Fig 9.2. Facebook root at the beginning of body section

Using a source from <http://tympanus.net>, the search modal structures a modal window that consists of a wrapper and a separate content div. Within the main wrapper, it is used as the container of the modal which is then shown when triggered.

Search Overlay Modal

One of the most important elements of the application is the starting point, searching. It was decided that the search would be in place in a modal as it allows the user to fully focus on the input on screen without any distractions.

[typmanus.net](http://tympanus.net) offers a range of full screen search overlay styles, the anticipated design was implemented and customised into this source. Using ‘slide down’ as the method of introducing the modal, it’s a fast fun and easy way for the user to search.

2.4.5. Responsive

The application has been implemented and styled for browser, iPad and iPhone screen sizes using Skeleton responsive framework. Refer to *Appendix L, Responsive Nav* for screenshots of mobile and tablet design. As it is a web application, the ability to generate the palettes has been dropped for mobile, meaning that the design for a width of 320px, the buttons to generate have been dropped by placing display:none on the media query.

```

#Mobile (Portrait)
=====
/* Note: Design for a width of 320px */

@media only screen and (max-width: 767px) {
    ul.button-wrap { display: none; }
}

```

Fig 9.3. Media query to drop button for mobile

Navigation

On mobile and tablet, it's important for users to benefit from the same experience desktop users do. The primary navigation of the website turns into a drop down once reached a width of 768px wide. This allows for users on smaller devices to focus on the website elements and not have the navigation take up a larger portion of their screen, unless requested to. Accessibility concerns were raised at point of making the navigation text smaller, but this just wasn't feasible. Using Responsive Nav, a lightweight Javascript plugin which creates a toggled navigation for iPad and mobile screen. With the use of touch events such as 'touchstart' which triggers an event when the users finger comes to contact with the device. CSS3 transitions are in use to allow for great performance with no delay between touch and click event.

Built with accessibility in mind, meaning that everything works on screen readers and with JavaScript disabled, too. (responsive-nav.com, 2014)

jQuery

jQuery has been implemented throughout the project to enhance the usability and viewing techniques. fadeIn is one of the most useful methods used throughout as it animates the opacity of the selected element into the page. This is extremely useful especially as the application is focused around generating a result, therefore enhancing the users viewing experience is the results gradually fade in.

```

<script>
$('.color-thief-output')
.each(function(index){
    var _this = this;
    setTimeout( function(){ $_this.fadeIn('slow'); }, 1000*index );
});

$('.function-sub-title')
.each(function(index){
    var _this = this;
    setTimeout( function(){ $_this.fadeIn('slow'); }, 600*index );
});
</script>

```

Fig 9.4. Setting fadeIn on output, to allow the palettes to ease in

It was decided that this would be set for the palettes loading in, therefore setting fadeIn('slow'); on .color-theif-output and 'function-sub-title' means that the class around the swatch and the information within the class will all fade in together making the experience smoother.

4.2.1. Resources

It was decided that to undertake the project certain resources were to be ruled out to complete a final solution. Referring to Table 3, Hardware and Software Resources the following was decided to carry out the project.

Hardware	Software
Design / Develop	
<ul style="list-style-type: none"> • Macbook Pro 13" / Charger • Apple Magic Mouse • Samsung 27" External Screen • Graphics Tablet • 8GB RAM • A camera 	<ul style="list-style-type: none"> • Adobe Photoshop • Adobe Illustrator • Sip • Google Chrome • LittleSnapper • Sublime Text 2 • Transmit • Xampp
Test	
iPhone	<ul style="list-style-type: none"> • Google Chrome • Mozilla Firefox • Safari • Browserstack • Internet Connection • Mobile Safari • Mobile Chrome
Launch	
	<ul style="list-style-type: none"> • Web Host • Domain Name
Documentation	
	<ul style="list-style-type: none"> • Pages • Wunderlist

Table 3, Hardware and Software Resources

4.3. Notable Challenges

The following challenges have been identified and the appropriate action has been identified to overcome the challenge on the project, refer to Table 4, Challenges Throughout the Project.

4.3.1. Challenges

Challenges	
Challenge	Over coming The Challenge
On click of ‘get started’, auto focus is not applying to the <inout name=“hex”> resulting in an empty looking input box.	The focus is coming through on click of the button and when the overlay comes down it unfocused again. By adding \$('input').focus(); at the point where the modal animates in jQuery, allowed the problem to be solved.
Upon generating the hex codes for each swatch it was anticipated that to add further interactivity it would only be visible upon hover of the swatch, but complications meant that on hover of one swatch it viewed the hex code for all palettes on the page.	By changing the hover ability of the hexcodss to hovering ability on the swatch, to change opacity.
Upon load of the application the #welcomeDiv is not intended to show, using jQuery get set to hide the div until search is pressed.	As the form is a search and a POST method, it reloads the webpage on click and therefore any action within the button are refreshed. To avoid this, <?php echo \$_POST['hex'] ?> has been used the POST method so it shows with the reload.
To add consistence within the website, it was decided that the footer would remain on all pages, including the application interface. The <aside> element of the interface is set to a fixed position and therefore over-rides the footer.	Trying to use a sticky footer was unsuccessful, so a simple z-index on the footer allowed the problem to be solved.
During planning of the project, it was decided that each palette would have a name, being the name of the image it is based from. However, Flickr have a limit on how many calls you can make.	It was rehired that another API call had to be made, with time constraints the title of the palettes had to be inputted as static content, until further improvements.

Table 4, Challenges Throughout the Project

5. Testing

There are many testing approaches to development such as black box testing which allows testing for a wider range of audiences as no knowledge is required, white box testing which is a more detailed investigation of internal logic and grey box testing which is an approach for those with little knowledge of the internal structure of the application.

5.1. Testing Approach Selection

The project is using an agile approach, with daily iterations. The Agile method allows for testing throughout so at the end of each process the requirements identified for the project have been tested. This lead to a shorter work cycle and allowed for constant feedback on the project.

The testing approach selected is Black Box Testing, which allows focus on the functional testing meaning the tester doesn't require knowledge of programming languages as the expected result is listed ensuring it's a faster and efficient process. There are many advantages to this method such as

- *Tester can be non-technical.*
- *There is no need for the tester to have detailed functional knowledge of system.*
- *Tests will be done from an end user's point of view, because the end user should accept the system.*

(codeproject.com, 2010)

However, one disadvantage of Black Box testing is that there is a high possibility of tests being repeated by end users already tested by the programmer, but this problem isn't considered critical and therefore can be foreseen.

5.2. Testing Process

Based on the functional requirements and high level objectives, the project uses a test plan to carry out system testing, refer to Table 5, Testing Table.

5.2.1. Test Plan

High Level / Functional				
Test ID	Description	Verified Requirement	Expected Result	Actual Result
T-REQ-001	Website domain and hosting: Type <u>www.hexactly.co.uk</u> into address bar	UR13	Homepage of hexactly should load	Homepage loads

T-REQ-002	Generate a Palette: Load home page, click the 'Get Started' button, search for hex code #ff6000'.	UR1, UR15	Search modal overlay should appear. 5 palettes should generate	Modal appears, palettes generate
T-REQ-003	Share to Facebook: Load home page, click 'Share' button, share website to Facebook	UR2	Share modal overlay should appear prompting to choose Facebook. Site should share to Facebook.	Share modal appears, site shares to Facebook
T-REQ-004	Share to Twitter: Load home page, click 'Share' button, share website to Twitter	UR2	Share modal overlay should appear prompting to choose Twitter. Site will share to Twitter.	Share modal appears, site shares to Twitter
T-REQ-005	Pin to Pinterest: Load home page, click 'Share' button, pin website to pinterest	UR2	Share modal overlay should appear prompting to choose Pinterest. Site will pin to Pinterest.	Share modal appears, site pins to Pinterest
T-REQ-006	Response time from failed palette: Type 'B675FF' into search	SR20	System should respond with validation within 2 seconds	System responds with validation within 2 seconds
T-REQ-007	System should generate 5 palettes: Type in '#FF6000' into search	SR23, UR1, UR15	5 palettes should generate	5 palettes generate
T-REQ-008	Search should accept both numeric and alphabetic data: Type 'orange' into the search	SR24	Input should accept the word and return a list of results for orange	5 results for orange appear
T-REQ-009	Website should work in various browsers: Open www.hexactly.co.uk in Chrome, Safari, Firefox, IE10, IE9 and IE8	SR32	Website should function and palettes should generate and download in Chrome, Safari, Firefox, IE10, IE9 and IE8	Website function and generates in all requested browsers
T-REQ-010	Website should work in various browsers: Open www.hexactly.co.uk on iPad and iPhone	SR32, SR37	Website should function on iPad and iPhone, app won't be accessible on iPhone	website is viewable on iPad and iPhone. Get started button has been dropped for iPhone

T-REQ-011	Errors and bugs: Test all links and buttons on the page	SR31	Links and buttons should work correctly as instructed	All links and buttons work as intended
T-REQ-012	Type '#FF6000' into search and generate a palette	SR43	Heading should display above results "Display palettes for #FF6000"	Results page displays heading
T-REQ-013	Download palette: Type '#FF6000' into search and generate a palette, click the download button of the first palette.	SR47	A PNG should download of the palette, with the name 'hexactly_palette.png' on all browsers	PNG downloads on all browsers except for Safari, opens image in new tab
T-REQ-014	Displaying hex codes: Type '#FF6000' into search and generate a palette	SR48	Hex codes should be visible on each individual swatch	Hex codes viewable on all swatches
T-REQ-015	Colour picker: Type '#FF6000' into search and generate a palette, on the main application interface, click the search bar at the top	SR49	Colour widget should appear, user should be able to click and choose a colour and hex should input to search box, and colour preview should change	Widget appears, inputs hex and changes preview to the selected colour
T-REQ-016	No result validation: Type 'B675FF' into search	SR50	Validation message stating "Uh oh... there are no matches for that Hex. Try a keyword! " should appear	Validation successfully appears
T-REQ-017	Empty search validation, press return on an empty search	SR51	Validation message stating "Oh boy, it looks like you forgot to enter a hex code" should appear	Validation successfully appears

Table 5, Testing Table

5.2.2. User Survey

Based on the Volere requirements, high level requirements and non-functional requirements, 10 users have taken part in an online survey that questions their user experience whilst using Hexactly.

Refer to Appendix M, End User Survey and Responses for user survey questions.

5.3. Test Results / Evaluating

Test results were 99% positive with potential issues to fix post testing. Using the functional user requirements to test against, it allows the system to be thoroughly tested. T-REQ-013 partly failed during testing due to the palettes not being downloadable in Safari. Post testing, it was decided to be quite a critical issue and as the project uses the agile methodology it was only right that the issue was to be fixed and re-tested. After thorough investigation, this issue is a known issue in Safari as the ‘download’ attribute in the link is not yet fully supported on all browsers. Upon research, using PHP fixes the problem and therefore this issue will be implemented and fixed.

Refer to Table 5, Actual Result column, for results.

5.4. User Surveys Responses / Evaluating

In general, the survey results were positive and most of the objective and requirement criteria were met. Users seemed satisfied with the website’s look and feel most and 100% of users answered ‘Yes’ to ‘Does this site explain enough information about the application’ and “Is information presented clean and minimal”. Various opinions on the question “On a scale of 1 - 10, how reliable is the website for what you’re trying to do”. 44% of users rated 7, 33 rated 3, and 11% rated 9 and 10. Whilst this averages out quite high it is still a concern that most users are not fully happy with the reliability of the web app.

When orally approaching a user about their answer, they referred to the colour picker not being reliable at giving results that flickr has. This raises further usability concern for the system but may enhance future improvement methods.

For full user survey responses, refer to Appendix M, End User Survey and Responses.

6. Evaluation

In evaluation of Hexactly sought to provide a list of features that would allow the user to interact with the application and make the best use out of it. These features were purposed to be designed to differentiate it from other similar products on the web. After completing the prototyping process and engaging more in the user experience of the project, between time scale and ability it wasn’t

feasible to get all anticipated features fully working. Thinking of the users and what is best for them, it would be been unprofessional to provide broken features therefore a revised set of features were added.

The main project aim initially was to design and develop a fully working cross browser web application that provides the ability to quickly generate, view and download colour palettes to provide designers and developers with the required resources to speed up the design process at the beginning of a project. Whilst taking in planning, design, implementation and testing it's proven to have met this criteria. Whilst the project evolved in many ways from beginning to end and may it may not have been turned out 100% how anticipated, it did however initiate improvement upon learning skills and in evaluation an overall success.

Looking back on the Agile Methodology used, it proves a positive choice for this project. Since the project has changed and evolved, agile offered a style that was suited to the ever changing software development environment. With great flexibility, the project wouldn't have been as successful if another methodology was used had there still been rapid changes to the development of the project.

7. Conclusion

In conclusion, this report introduced a new challenge to create a cross browser web application that generates palettes based on a hexadecimal code input. The project introduced new working methods and project management skills and intact introduced

Issues occurred at various points throughout the project to which may have resulted in a let down. In effect, some features initially planned have been revised but ultimately the system works. Referring back to the initial plan and to sum up the purpose of the project, a simple, easy to use application has been developed which as a result fills the gap to which the project was intended, to differ from similar projects on the market by being minimal and easy to use.

Obviously similar competitors consist of further features than hexactly, but their intended users may not be using their product for half of what it offers. Hexactly users in effect will be more loyal, as

the application does what it's purposed for, to generate and download colour palettes based on your search.

The role undertaken as a student gathers, completes, integrates and contextualises all areas of the project. As a result, learning abilities increased in areas such as development, design and planning. The research reported for the project has improves both written text in the english language and motivation. With positive feedback from users on online surveys it proves a strong connection between the project and the intended user.

The future for Hexactly looks promising, with further improvements in thought already as a result of finishing the project proves to look positive. As a result of building the core functionality of the system and knowing from the beginning it wasn't the most reliable API to use, customisation and implementation made it more user friendly. In effect the project hopes to build upon the API further to allow for more reliable search results. As a result of time constraints, old features can be re-thought and possibly reconsidered, but as of now Hexactly does what intended and proves the user with a colour palette based on their input.

8. References

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APPENDICES

APPENDIX A: BACKGROUND RESOURCES

APPENDIX B: USER SURVEY QUESTIONNAIRE

APPENDIX C: SURVEY RESULTS

APPENDIX D: PAPER PROTOTYPING

APPENDIX E: LOGIN FORM DESIGN

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APPENDIX K: DOWNLOADING PALETTES

APPENDIX L: RESPONSIVE NAV

APPENDIX M: END USER SURVEY AND RESULTS

APPENDIX A: BACKGROUND RESEARCH

1. ColorHexa



Fig 1.Screenshot of colorhexa.com

1.1. Color Hunter

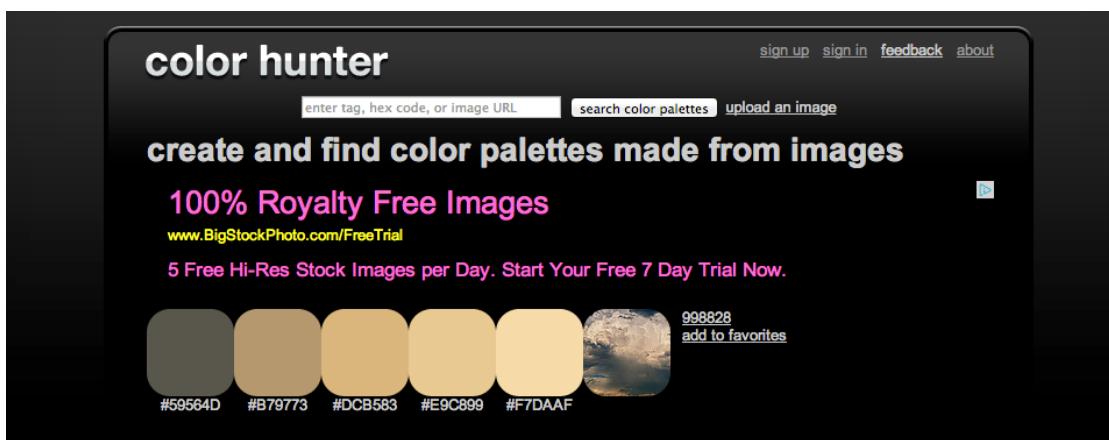


Fig 1.1. Screenshot of colorhunter.com

APPENDIX B: USER SURVEY QUESTIONNAIRE

1. Questions

1. In which would you describe your expertise?

- Design
- Development
- Other (please specify)

2. What is your opinion of a tool for generating Colour Palettes?

- A necessary tool
- A useful tool
- An unnecessary tool
- An unreliable method
- Not sure

3. When starting a project (Personal or Work), do you struggle with choosing a Colour Palette? If so, what is the estimated amount of time spent working on colour?

- Yes, More than 8 hours
- Yes, 4-8 hours
- Yes, 1-3 hours
- No, under 1 hour

4. Do you currently use any tools online for help with choosing a Colour Palette? If so please secfify

- | | | |
|-----------------------------------|--------------------------------|---|
| <input type="checkbox"/> Dribbble | <input type="checkbox"/> Adobe | <input type="checkbox"/> Kuler |
| <input type="checkbox"/> Colllor | | <input type="checkbox"/> Other (please specify) |

5. Do you think it's a good idea to be able to share Colour Palettes with other people?

- Yes
- No

6. What would you ideal information environment look like?

- Minimal / Clean
- Detailed
- Other (please specify)

7. Some systems allow you to choose a colour from a colour wheel, would you use such a feature? Or would you rather use the tool knowing what your starting colour is, and generator a palette to compliment that specific colour?



I'd prefer a colour wheel

I'd prefer to have my own colour

8. Please select a feature(s) you think would benefit a Colour Palette generating website?

- | | |
|--|---|
| <input type="checkbox"/> Ability to store Palettes | <input type="checkbox"/> Ability to download Palettes |
| <input type="checkbox"/> Free Sign-Up | <input type="checkbox"/> Viewing more info on colours |
| <input type="checkbox"/> Intuitive | <input type="checkbox"/> Nice to look at |

9. You have generated a Colour Palette, do you feel that it's important to be able to preview the colours visually on a website before settling with that palette?

Yes No

10. In relation to Question 9, if your answer was 'Yes' would you prefer to see a preview in a Wireframe mode or the ability to view it on a specific website?

- | | |
|--|---|
| <input type="checkbox"/> Wireframe | <input type="checkbox"/> Specific Website |
| <input type="checkbox"/> I answered 'No' to Q9 | |

APPENDIX C: SURVEY RESULTS

1. Analysing Results

Evaluating the results from information gathering some valuable feedback was haas

Question 1

In which would you describe your expertise?

Answered: 28 Skipped: 0

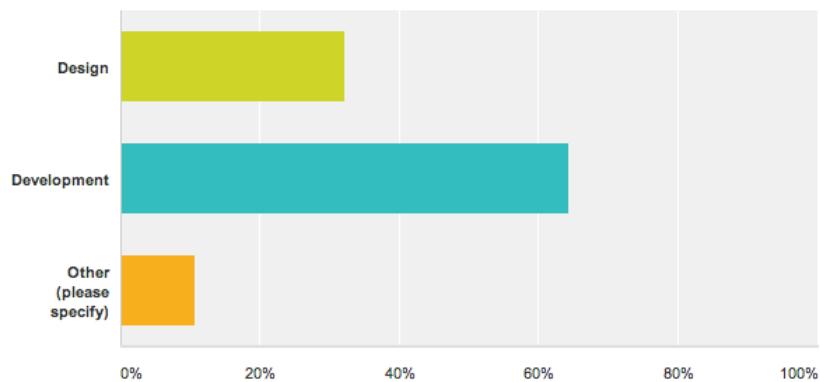


Fig 1. Question 1 results

Question 2

What is your opinion of a tool for generating Colour Palettes?

Answered: 28 Skipped: 0

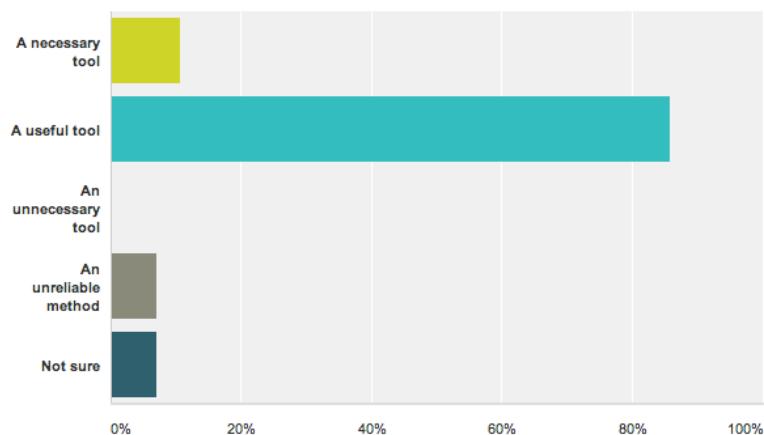


Fig 1.1. Question 2 results

Question 3

When starting a project (Personal or Work), do you struggle with choosing a Colour Palette? If so, what is the estimated amount of time spent working on colour?

Answered: 28 Skipped: 0

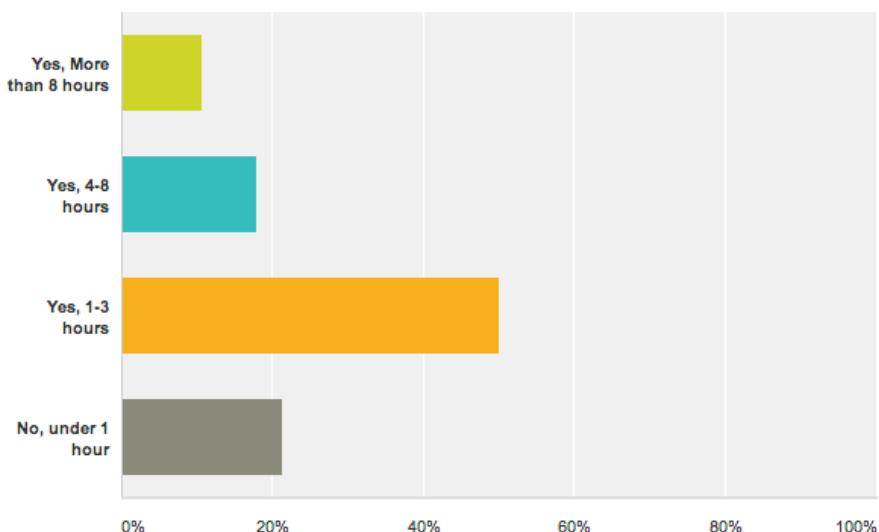


Fig 1.2. Question 3 results

Question 4

Do you currently use any tools online for help with choosing a Colour Palette? If so please specify

Answered: 22 Skipped: 6

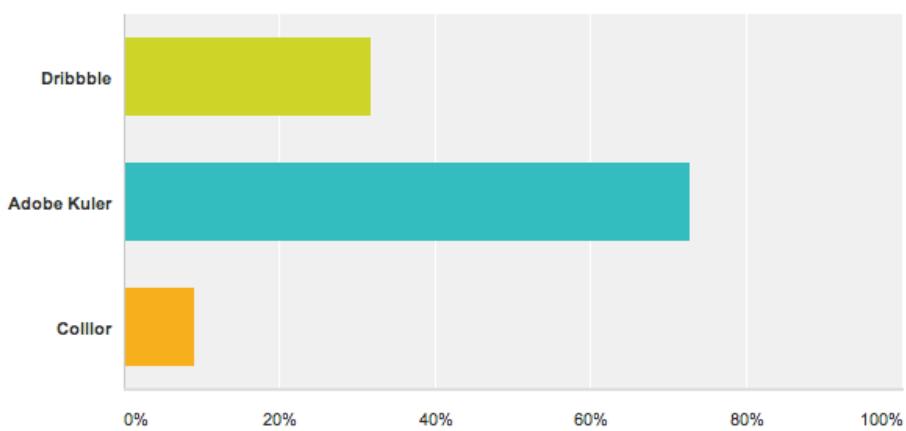


Fig 1.3. Question 4 results

Question 5

Do you think it's a good idea to be able to share Colour Palettes with other people?

Answered: 27 Skipped: 1

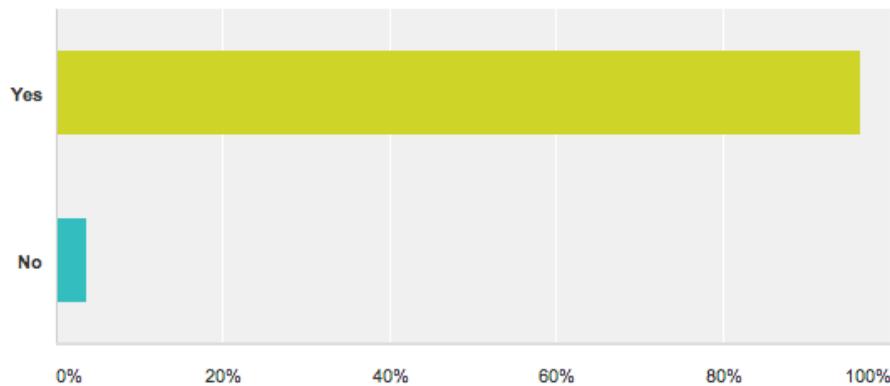


Fig 1.4 Question 5 results

Question 6

What would you ideal information environment look like?

Answered: 26 Skipped: 2

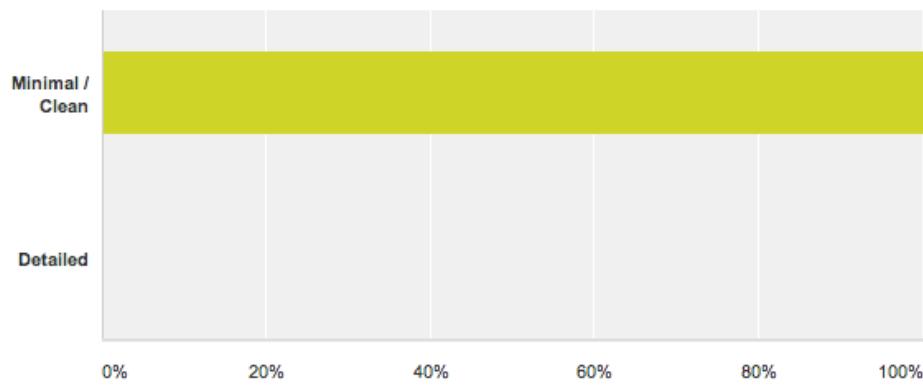


Fig 1.5. Question 6 results

Question 7

Some systems allow you to choose a colour from a colour wheel, would you use such a feature? Or would you rather use the tool knowing what your starting colour is, and generate a palette to compliment that specific colour?

Answered: 27 Skipped: 1

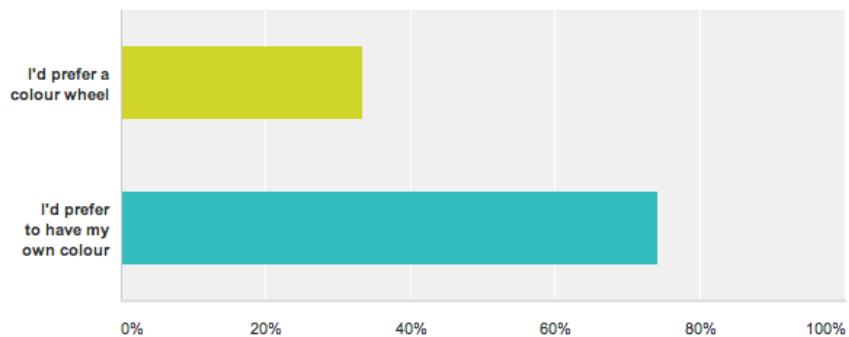


Fig 1.6. Question 7 results

Question 8

Please select a feature(s) you think would benefit a Colour Palette generating website?

Answered: 28 Skipped: 0

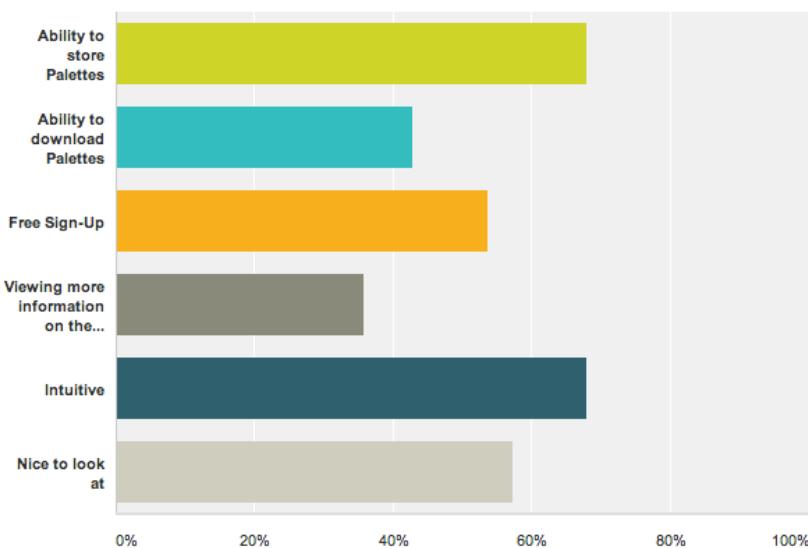


Fig 1. Question 8 results

Question 9

You have generated a Colour Palette, do you feel that it's important to be able to preview the colours visually on a website before settling with that palette?

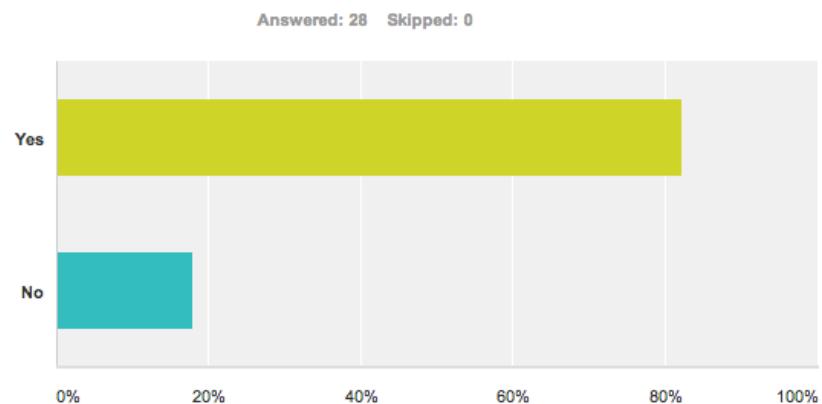


Fig 1.8. Question 9 results

Question 10

In relation to Question 9, if your answer was 'Yes' would you prefer to see a preview in a Wireframe mode or the ability to view it on a specific website?

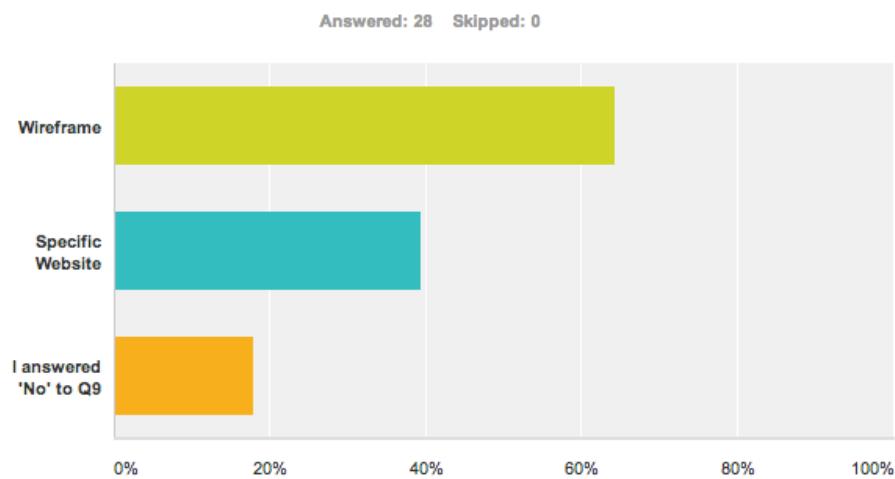


Fig 1.9. Question 10 results

APPENDIX D: PAPER PROTOTYPING

1. Home Page Wireframe

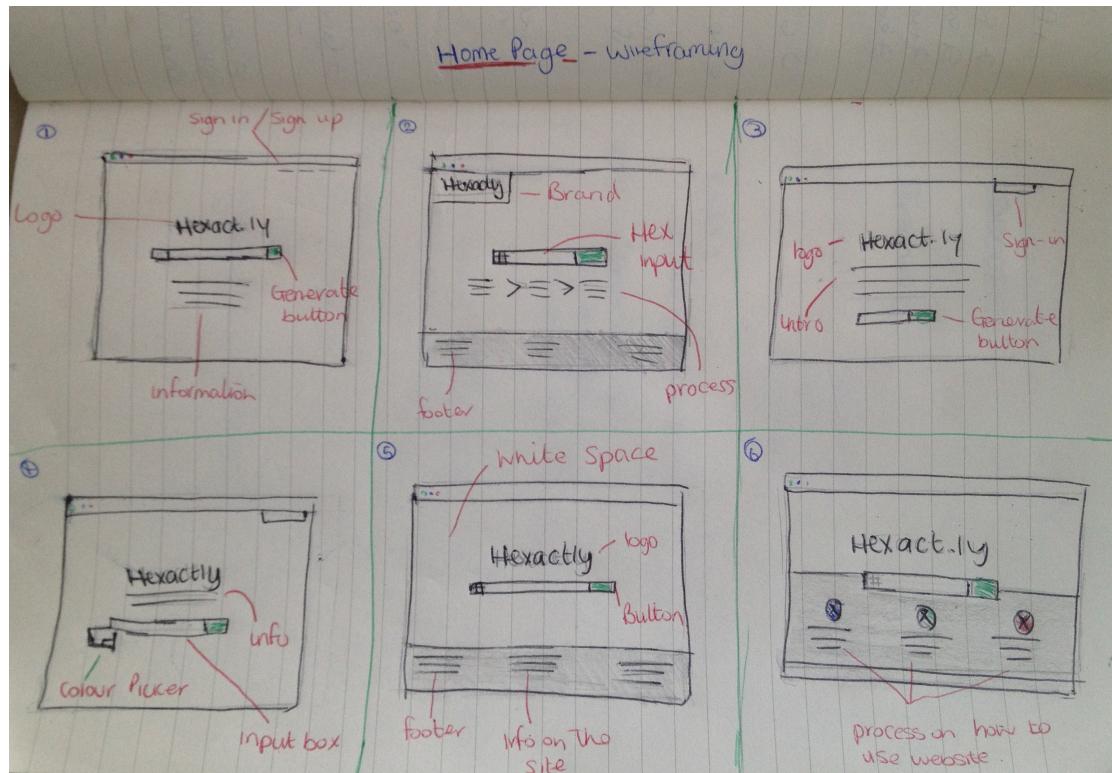


Fig 1. Homepage Wireframe

APPENDIX E: LOGIN FORM

1. Login Form

The image shows a login form with a light gray background. At the top center is a teal hexagonal logo. Below it is a sub-headline: "Why not login and use your Hexactly Account?". The main form area has two input fields: "USERNAME" with a user icon and "PASSWORD" with a lock icon. Below these is a "Remember me?" checkbox. A large red "LOGIN" button is centered at the bottom. At the very bottom, there are two small links: "LOST PASSWORD?" on the left and "REGISTER" on the right.

Fig 1. Login Form

It was intended to appear as a new page after either trying to access some of the features that require you to log in, or from the ‘login’ link on the home page. Using the a consistent style throughout, similar to the main homepage means the user can go back and still recognise the websites as it uses the same style, this helps avoids confusion. The style in which the login form is presented is easy to use and therefore suits further devices such as tablets and mobiles better than the alternative method of having the form display in overlay modal.,

The login form is solely user sign-in only which means no social media integration sign-in is included, but the ability to register an account through a link. The user is provided with two input boxes to capture the username and password, which are accompanied by a custom icon each on the left hand side. Looking at an article at onextrapixel.com on Eye Movement Patterns In Web Design it tells us that the eye movement on a website usually starts from the left side, the human mind reads left to right and therefore I want the icons to be viewed first so positioning them at the left allows for the user to initially grasp this before filling in the form.

APPENDIX F: SOCIAL SIGN IN DESIGN

1. Design of Social Sign In

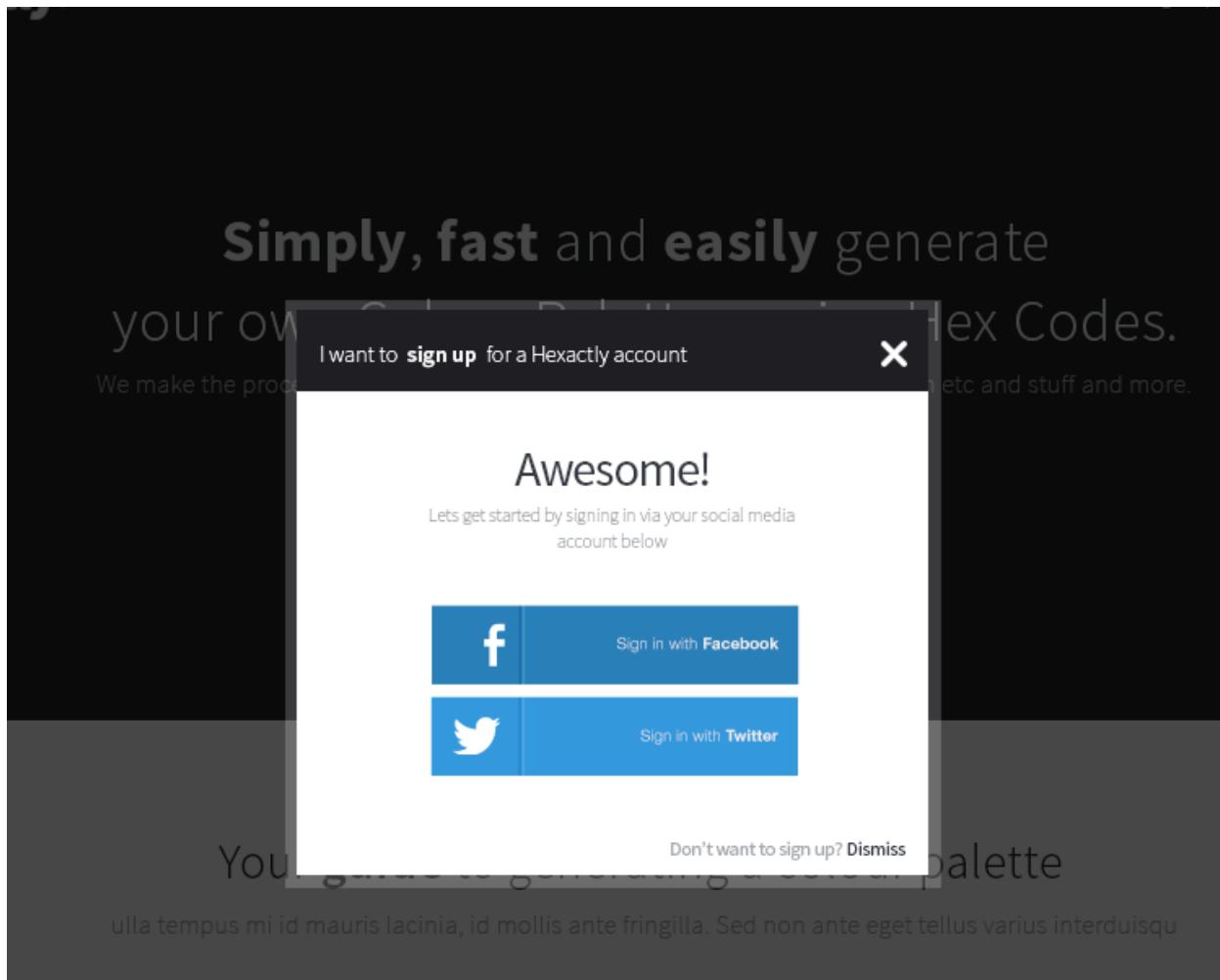


Fig 1. Social Sign In Design

APPENDIX G: APP DESIGN

1. Initial App Design

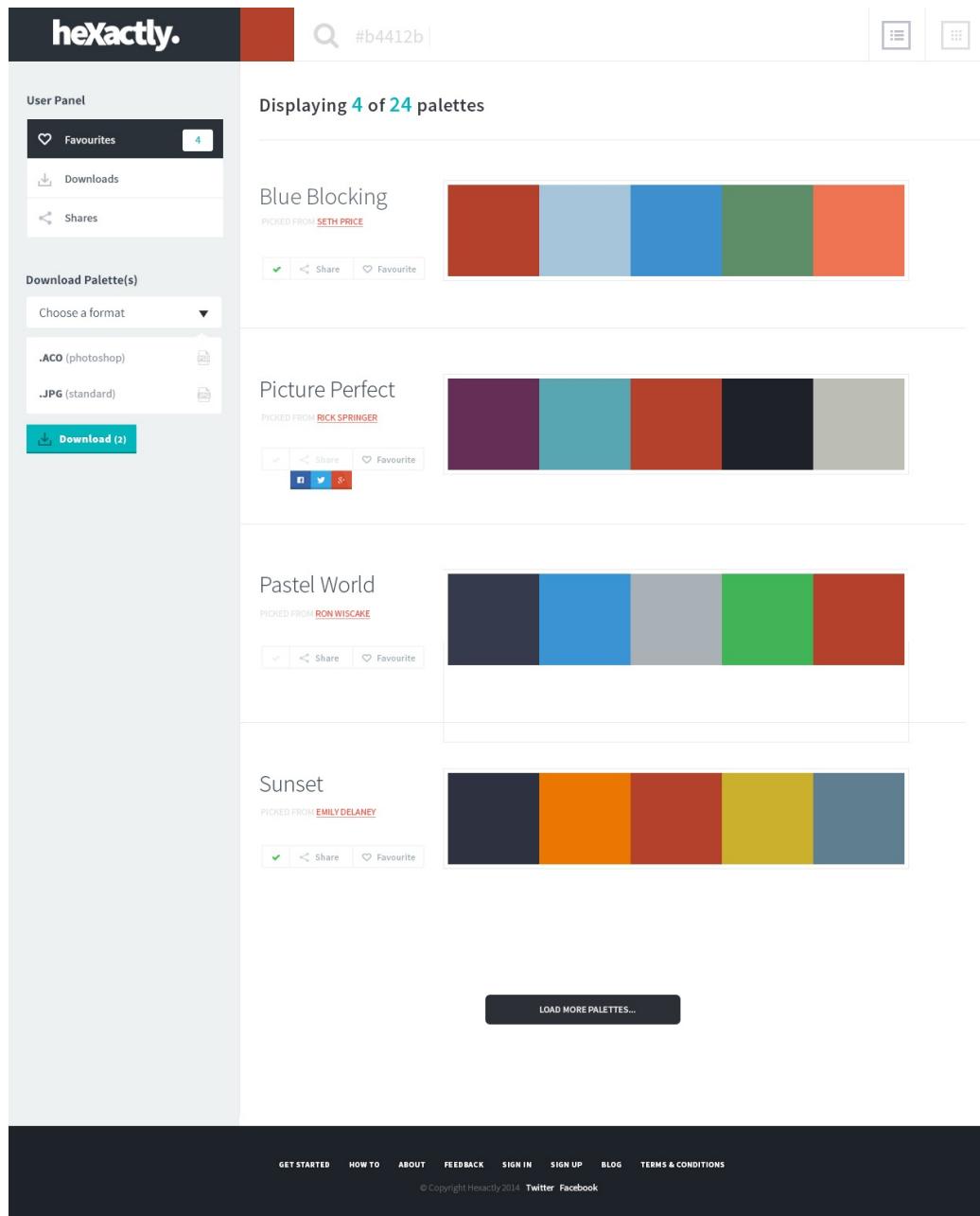


Fig 1. Initial App Design

APPENDIX H: Validation

1. Empty Search

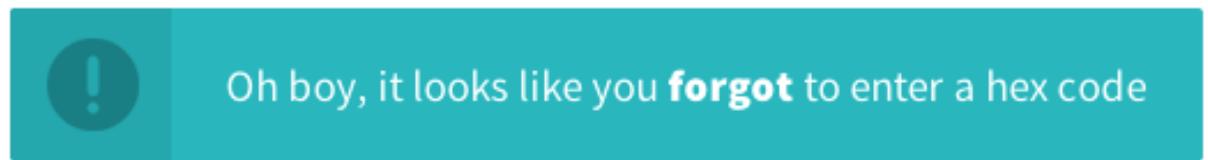


Fig 1. Validation on an empty search

APPENDIX I: BRAND EVOLVEMENT

1. Branding Creative Experimentation and Evolvement

To start Hexactly's brand conveyed the name by using the main shape within it, a hexagon. A hexagon has 6 sides and by splitting the shape up into 4 triangles allows each triangle to be a different colour, doing this it adds dimension and character to the brand. To further the hexagon a background hexagon was added with opacity to add a little more character to the brand.

As Adobe Illustrator was used to create the brand it allowed experiment to go further and the meaning behind Hexactly's name. Wanting the users to be able to benefit from the application and to get what they need from it. Almost as if Hexactly is your target spot for getting colour palettes. When target was thought of, so was bullseye and how it's the centre point of a dartboard that everybody in the game aims for.



Fig 1. Bullseye

In the centre of the hexagon another hexagon is cut out which means anything thing behind the logo on the website will be seen through the centre point. Having a logo helps attract attention to the website and allows to make an impression on the user. The aim was to create a brand that is unique and memorable, for example when you see an apple, you immediately know it's Apple's logo. Hexactly's always aimed for the same impact.



Fig 1.2. Iconographic Logo

However, the branding logo for Hexactly has evolved since initial stages, portraying hexactly with a symbolic logo with the name typeset aside it, which described it well going into the psychology of the reasoning behind the shape and colour.

This logo is themed quite neutral, which appears quite friendly with the tones being approachable to both sexes. Choosing the theme of aqua / blue brings a feeling of security and chilled out, therefore users won't be alarmed and put off on load of the website.

However, since changing the navigation and visual prototype from the initial report, it adds more character to the website design making it more contemporary and the colour and iconic representation of the logo just didn't look or feel right.

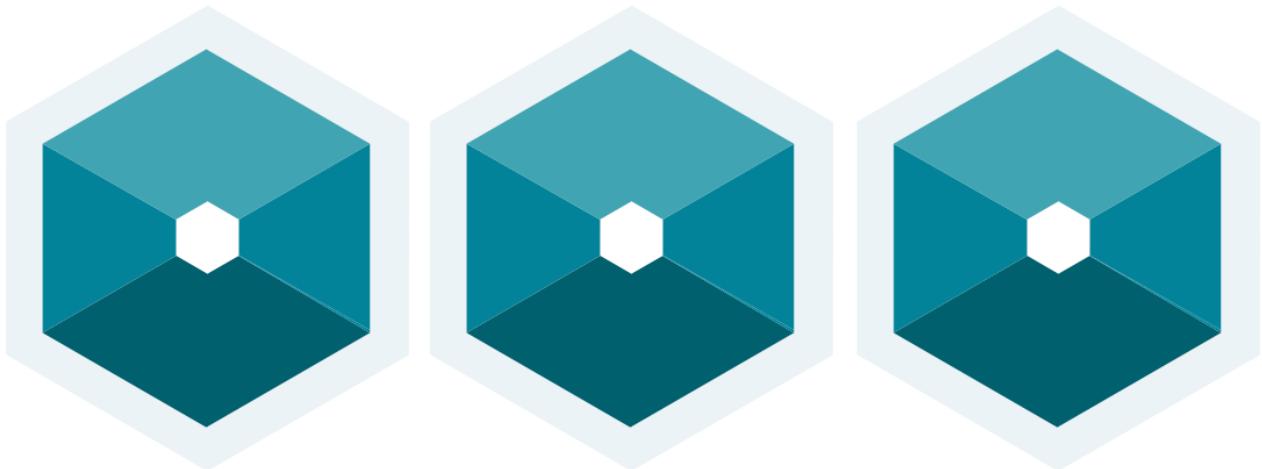


Fig 1.3 Branding Experimentation

APPENDIX J: INITIAL DATABASE STRUCTURE

1. Initial Database Structure

Since the initial system design where the users signed into the site via social sign in. These are the elements that database required for the user to favourite a palette. The palettes were to be generated and once a user signs in they have the option to favourite a palette or palettes, the palettes were to be generated through a series of 5 hex codes and therefore a separate table was required to capture each individual code (palette_colours_tbl).

table	column	datatype
user_tbl	id	INT
	username	VARCHAR(45)
	password	VARCHAR(45)
palettes_tbl	id	INT
	name	VARCHAR(45)
	created	DATETIME
palette_colours_tbl	id	INT
	palette_id	INT
	hexcode	VARCHAR(45)

Table 1. Database structure

APPENDIX K: DOWNLOADING PALETTES

1. Downloading Palettes in PHP

```
<?php
// Get the c from the $_GET
$colours = $_GET['c'];
// Explode it by , making it like (blue, green, red, yellow)
$swatches = explode("|", $colours);

// Create image
$im = imagecreatetruecolor(120, 30);

// For each of the swatches $key will be $rgb_set
foreach ($swatches as $key => $rgb_set)
{
    // If it's empty end the program
    if ($rgb_set=="") break;

    // If not let's again create the list of colour values R G B
    list($r, $g, $b) = explode(",", $rgb_set);

    // Multiply the value of $key by 24
    $x_pos = (24 * $key);

    // Value of swatch is now the $im with R G B values
    $swatch = imagecolorallocate($im, $r, $g, $b);

    // Size of the rectangle with the $swatch colour selected
    imagefilledrectangle($im, $x_pos, 0, $x_pos+24, 30, $swatch);
}

// Set the content type header
header('Content-Type: image/png');
readfile('path/to/myimage.png');

// Save the image
imagepng($im); // Create the Image
imagedestroy($im); // Clear the instance to make it ready for the next image
?>
```

Fig 1. Downloading Palette PHP code

APPENDIX L: RESPONSIVE NAV

1. Responsive Nav Mobile

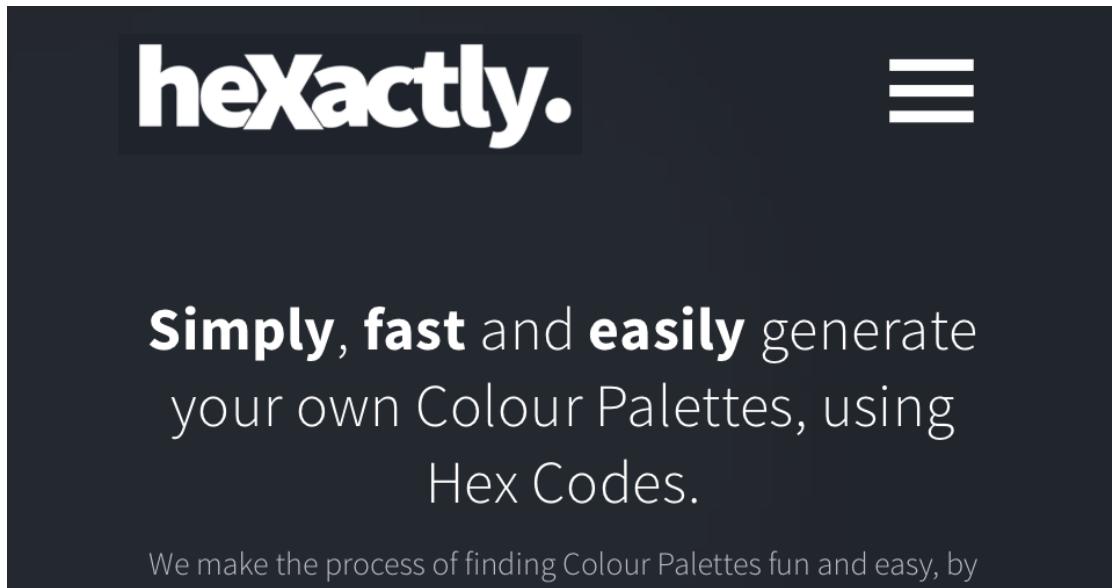


Fig 1. Screenshot of Responsive Navigation on iPhone

APPENDIX M: END USER SURVEY AND RESULTS

1. End User Survey and Results

Question 1

How confident are you in that you are able to Generate a colour palette successfully?

Answered: 10 Skipped: 0

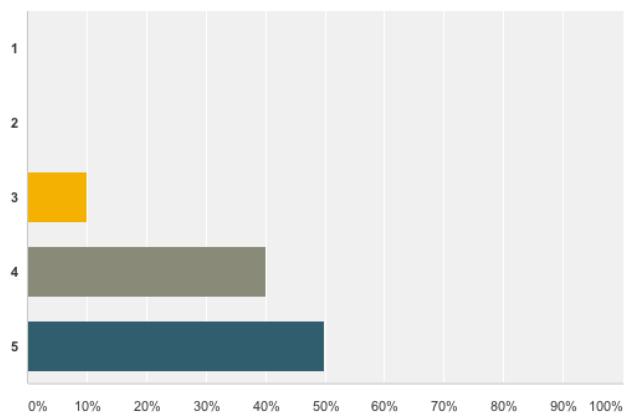


Figure 1. Question 1 and results

Question 2

What is the nature of difficulty in being able to Generate a colour palette?

Answered: 10 Skipped: 0

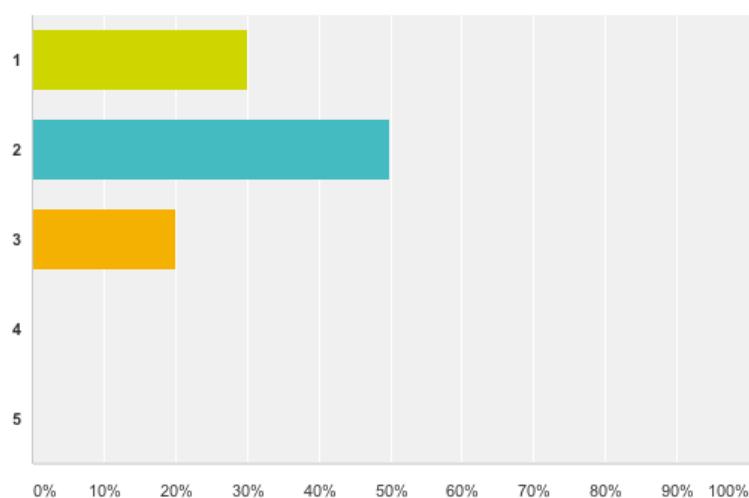


Figure 2. Question 2 and results

Question 3

Using a five-point response items (Strongly Disagree -- Strongly Agree):

Answered: 10 Skipped: 0

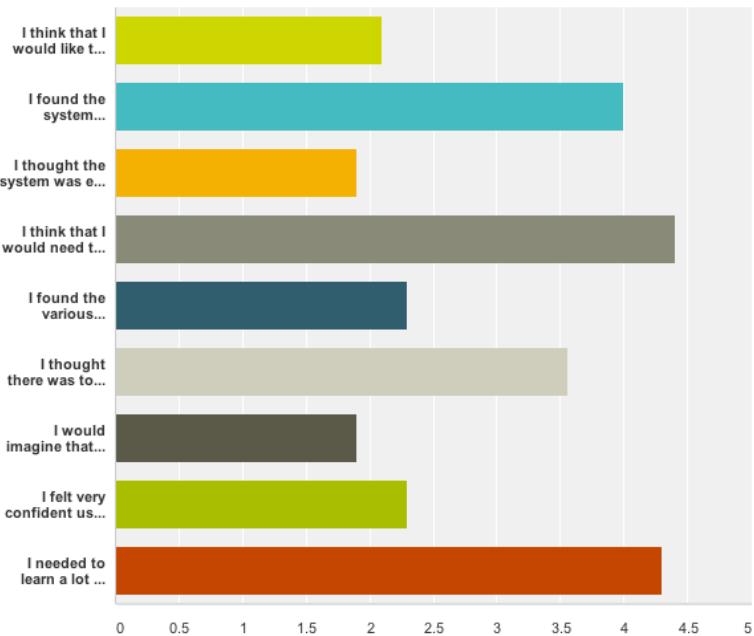


Figure 3. Question 3 and results

Question 4

Is information presentation clean and minimal?

Answered: 9 Skipped: 1

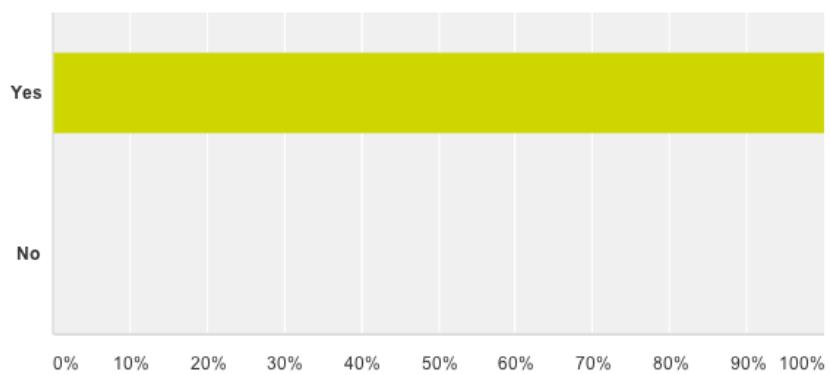


Figure 4. Question 4 and results

Question 5

On a scale of 1 - 5, how user friendly are all pages represented?

Answered: 9 Skipped: 1

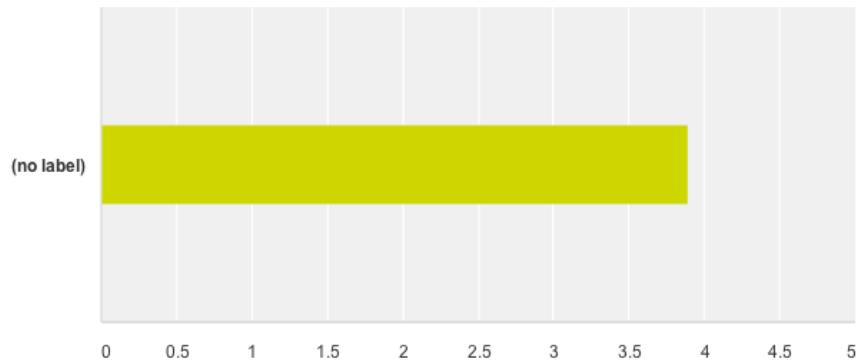


Figure 5. Question 5 and results

Question 6

Does the site explain enough information about the application and how it works?

Answered: 9 Skipped: 1

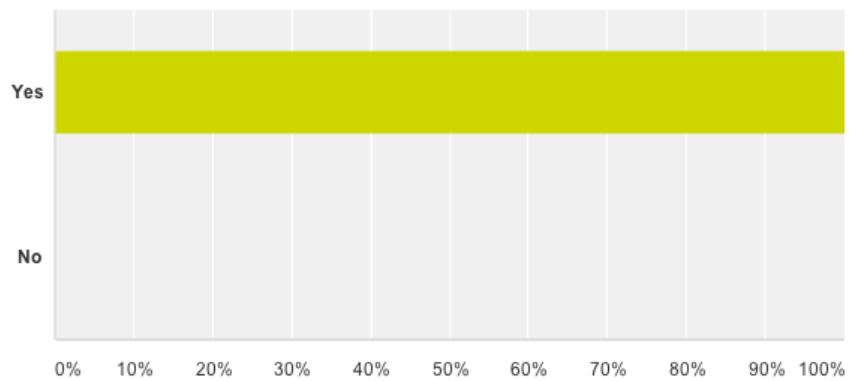
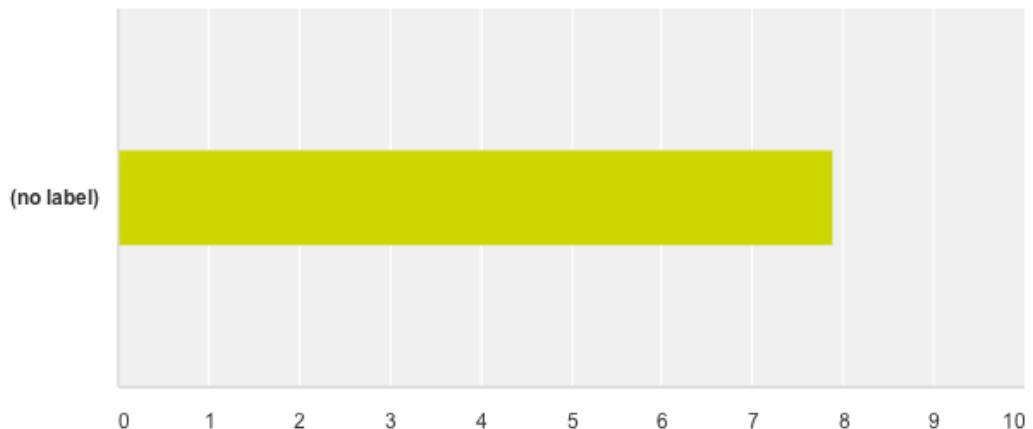


Figure 6. Question 6 and result

Finally, on a scale of 1 - 10, how reliable is the website for what you're trying to do?

Answered: 9 Skipped: 1



Question 7

Figure 7. Question 7 and result