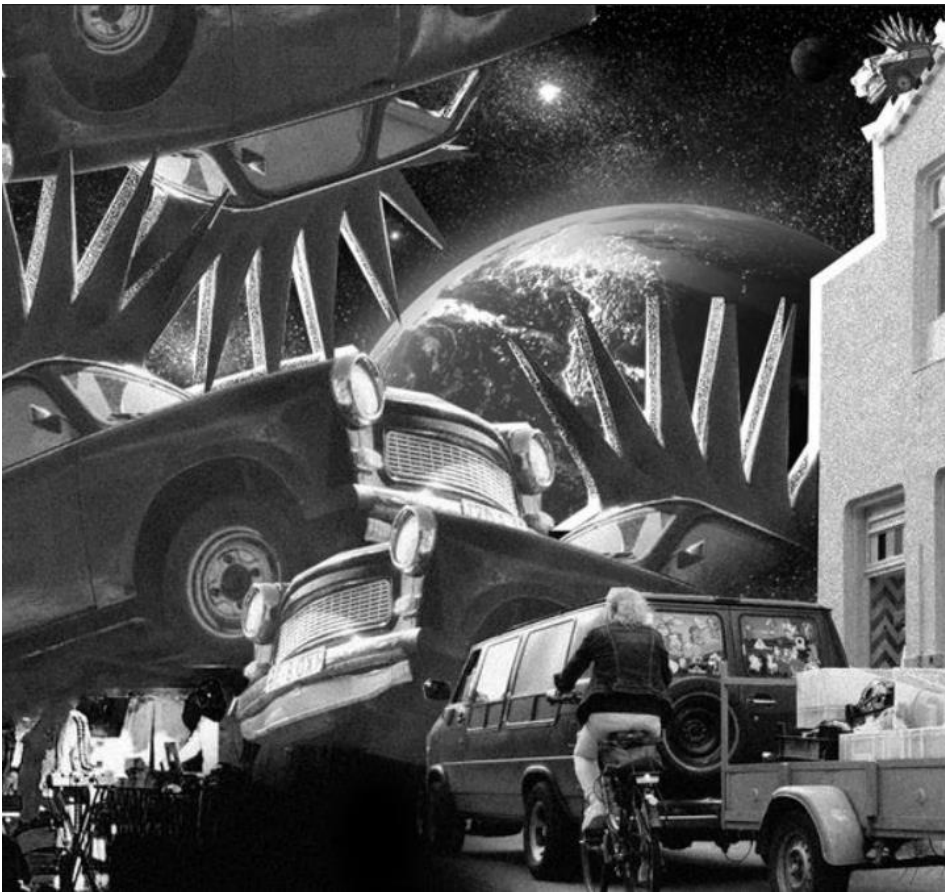


Graduation Assignment
By Viktoria Minkova, 471852

Interactive 2D Installation



Preface

This report has been written to fulfil the graduation requirements of the Creative Media and Game Technology Saxion University of Applied Sciences. I was engaged in researching and writing this report from February 14th 2022.

The project and research topic was initially proposed to PLANETART by me to Gus Eckrodt, who took a liking to it and thus I had received a position in the graduation program. My company coach, Mr. Eckrodt, helped me to properly formulate a research question. The research was either scarce or abundant and it was difficult to decide on what to prioritize, but conducting this research was worth it as I am personally interested in the information and results as an artist.

Fortunately, both Ms. Eckrodt and my tutor from the CMGT, Joeri Constandse, were always available and willing to answer my questions and assist where possible. I would like to thank the community that's around the company for their extensive feedback and support during this process. I also wish to thank all of the respondents, without whose cooperation I would not have been able to conduct this analysis.

To the other graduates with whom I've worked for the past months: I would like to thank you for your wonderful help as well. It was always helpful to bounce off ideas and feedback with you, as peers and fellow graduates it has been a pleasure working with you.

I hope you enjoy your reading.

Viktoria Minkova

06.14.2022

Abstract

Since 1995, PLANETART has been nurturing art and aiding artists in their growth. The project is a logical evolution of the company's aims and has practical relevancy to the company and the festival industry. The objectives highlight the capabilities of existing technology, systems, and research, as well as how they might be used to market the company to more artists. This involves recognizing and comprehending what is required to create interactive 2D art and allowing 2D artists to participate in festivals as guest artists, therefore establishing a mutually beneficial relationship between the firm and the artists.

Contents

I. INTRODUCTION	1
1. PERCEIVED PROBLEM	1
1.1 COMPANY OUTLINE	1
1.1.1 Company	1
1.1.2 MEDIALAB and WARP Technopolis	1
1.1.3 Company Values and Goals	2
1.2 MARKET AND TRENDS	2
1.2.1 Interactivity and Art	2
1.2.2 PLANETART Festivals and Competitors	2
1.3 PRELIMINARY CONCLUSION	3
2. PROBLEM STATEMENT	3
3. MAIN QUESTION	4
4. INDICATORS OF SUCCESS	4
5. SUB-QUESTIONS AND RESEARCH METHODS	4
5.1 Finding insights on interactivity in and out of the context of art installations.	4
5.2 What are the popular interactive/immersive technologies that get employed in the festival industry?	4
5.3 What software would work best for this assignment?	5
6. RELEVANCY	5
7. RESEARCH SCOPE	5
7.1 Deliverables	5
7.2 Inclusion	6
7.3 Exclusion	6
7.4 Assumptions	6
7.5 Constraints	6
8. RESEARCH APPROACH	6
II. ITERATIONS	7
1. ITERATION I	7
1.1 Empathize	7
1.2 Define	12
1.3 Ideate	14
1.4 Prototype	16
1.5 Test	17
2. ITERATION II	18
2.1 Define	18
2.2 Ideate	22
2.3 Prototype	23
2.4 Test	23
3. ITERATION III	26
3.1 Empathize	26
3.2 Define	26
3.3 Ideate	26
3.4 Prototype	29
3.5 Test	31
4. ITERATION IV	32
4.1 Prototype	32
4.2 Test	33
5. ITERATION V	34
5.1 Prototype	34
6. ITERATION VI	35

6.1 Prototype	35
6.2 Test	38
II. CONCLUSIONS	38
1.ANSWERS TO SUB-QUESTIONS.....	38
1.1 Finding insights on interactivity in and out of the context of art installations.	38
1.2 What are the popular interactive/immersive technologies that get employed in the festival industry?	39
1.3 What software would work best for this assignment?	39
2.ANSWER TO MAIN QUESTION.....	39
2.FINAL PRODUCT	40
Discussion	40
Recommendations	41
III. PERSONAL REFLECTIONS	41
IV. LITERATURE REFERENCES	42

I. Introduction

1. Perceived Problem

Before conducting any research, the perceived problem and subject matter of this project was offered to the company regarding a certain art medium. The company's art festivals were discussed in regards of how, despite the range of art, artists, styles, and mediums, digital 2D art has been noticeably missing thus far. This seems to have either been an oversight or complete accident, but either way it is an issue worth investigating.

1.1 Company Outline

1.1.1 Company

PLANETART is an artist's collective (Kunstenaarsinitiatief) originally established in Hengelo in 1995 that has produced multiple projects, events and festivals that showcase art, technology and music (PLANETART, n.d.). As a collective they make art, but mostly showcase it for the masses and give artists exposure through their numerous organised events. The company has grown and developed exponentially and its current ongoing and new events are:

- **GGOBOT:** The first edition was organised in 2004 and is an annual September festival in Enschede for four days and nights where avant-garde art, electronic music, and critical discourse, with a focus on new technological advancements in the creative industry. During said period, artist's talent is shown in a series of exhibitions and performances at key locations across the city (GGOBOT - PLANETART, n.d.; PLANETART, n.d.).
- **TEC ART:** In 2014 the first edition of TEC ART was held in Rotterdam, providing an action-packed program with pioneering art by major international artists, electronic music and inventive technology (TEC ART - PLANETART, n.d.; TEC ART, 2021). They collaborate with the WORM Foundation, who provide an atmosphere for alternative creative production and experiment with different ways of life by digging into non-academic knowledge growth. (WORM - ROTTERDAM, n.d.).
- **Museum of the Future:** A permanent display as of 1st April this year, the museum includes works by well-known artists and emerging creative talents from throughout the globe and including works from previous festivals (Museum of the Future – PLANETART, n.d.; *Museumnacht Enschede - In Het Donker Zie Je Meer!*, n.d.).

1.1.2 MEDIALAB and WARP Technopolis

Medialab was founded when PLANETART moved to Enschede from Hengelo, essentially being the first headquarters of the company after moving to Enschede in 2002. PLANETART continued to host events and festivals about art, technology and music, but also branched into a few new artful aspects such as performance art. An example is the artist Cas Klaver called 'De Klok' where he streamed himself in the display window for 24 hours and told the time for every minute that passed (Remie, 2021). As PLANETART expanded and even more creative people joined the team, the company founded WARP Technopolis and moved their headquarters to a bigger building in early 2020, where it still resides today. Essentially, WARP is the breeding ground for creative endeavours and new technology, offering creative studios for people who have the same values to rent out and apply their creativity (WARP Technopolis – PLANETART, n.d.).

1.1.3 Company Values and Goals

PLANETART strives to push innovation in art and self-expression as close to the limit as possible, whilst honing artists' skills and creativity further. They work under the Fair Practice Code (*De gedragscode voor de culturele en creatieve sector*, n.d.) which entails that within the company there is solidarity, diversity, sustainability, trust and equality (G. Eckrodt, personal communication, 17.02.2022). The goals for the near future are to continue art incubation and artist's development through government subsidies and non-profit organisation funds that are solely to help the artists. This ensures that PLANETART continues to help talent grow and also ensures that they have connections with the local art community (G. Eckrodt, personal communication, 17.02.2022). The long term objective of the company is to make Enschede the cultural centre of Europe by 2033. By being transparent with their plans and intentions, putting young talent at the forefront of the operations and collaborating with artists, PLANETART will solidify its presence in Enschede and set its roots deeper into the local art community, making it one of the most valuable locations for artists within the city (G. Eckrodt, personal communication, 17.02.2022).

1.2 Market and Trends

1.2.1 Interactivity and Art

Interactivity has changed after the start of the digital era, the definition of it becoming broader with each new technological development. It became a matter of time before artists gained access to said technology, computers and software and used them to create art. It was a new way to express themselves and their thoughts, posing questions to the audience regarding various topics, especially that of the impact of technology and the flow of information on society (Contributor, 2021b; Cooper, 2020; Digital Art Movement Overview, n.d.).

Artists and designers use technology as a creative tool, creating digital installations with varying elements of interactivity, either available online for the audience to interact with freely or somewhere on display. Such displays are referred to as exhibitions, there are digital art museums with permanent and temporary interactive installations. Experimenting with the divide between real-virtual and how the audience, or the "user," interacts with this divide and the overall digital dimension. Interactivity in art is often present by touch, general physical engagement, and overall exchange of information, although there isn't a specific definition and says what is or is not interactive (Contributor, 2021b; Cooper, 2020; Digital Art Movement Overview, n.d.). These displays often have a significant impact on a variety of issues, from social matters to rising awareness for different illnesses or simply are there for people to experience.

Despite the obvious interest in interactive 2D digital art, there are few examples of it in popular and more accessible social gathering events like festivals. Furthermore, getting art into a museum is a tough and expensive endeavour. There are several blogs and lists on what an artist must do to get their work into a museum, and most of them have numerous conditions, such as having a large social media following, financing their own art shows for the sake of exposure and curating their art to fit within the museum's goal. Thusly, it makes it near impossible for young and developing artist to receive such a boost in their career.

1.2.2 PLANETART Festivals and Competitors

GOGBOT and TEC ART are unique festivals, combining music, art, discussions and a very social environment, making them a strong competitor for other festivals. Annebel Bunt from the marketing and communications department brought to light that the festivals, due to their complexity, size and duration, can be a bit overwhelming, while the competitors are more focused (A. Bunt, personal

communication, 21.02.2022). Regardless of their focused approach, the following competitors have not provided much when it comes to interactive 2D digital art either.

1.2.2.1 Sonic Acts

The most relevant competitor to PLANETART, Sonic Acts is an Amsterdam based organisation that researches, commissions and co-produces new art works and markets itself as a platform for artists, curators and critical thinkers across the globe. Similarly, to PLANETART, they are a hub to promote artists' development, working with local and international organisations and offering facilities for creatives to build up their talent and to experiment. Sonic Acts analyses the ever-changing link between art, science, technology and politics, promoting new and innovative mediums, all while celebrating and fuelling artistic and critical perspectives. The company runs their namesake festival annually ever since 1994, establishing itself as a consistent and thematic festival with strong ties to art and the development of art, science, music and technology (Sonic Act n.d.).

1.2.2.2 TodaysArt

TodaysArt is a cultural production company based in The Hague and specialises in experiences that combine art and technology. The company is active in international initiatives, bringing artists' talent throughout the world, as a member of four Creative Europe projects and with collaborations in Europe and Asia. The company has created a presence since 2002, by commissioning audio-visual creations, immersive art and by having connections with leading artists and creative technologists. They have organised an annual festival since 2005 and during these festivals they promote creativity, offer access to new technology and seek new shapes of expression (TodaysArt, n.d.).

1.2.2.3 CTM

CTM is an independent, non-profit, multinational initiative that works directly with artists, curators and academics to help them create, realise new ideas and transfer new knowledge through performances, exhibits, lectures and artistic laboratories, writing, and etc. The company first appeared in Berlin in 1999 and has been at the heart of the DIY and club scene ever since. It highlights a variety of sound-related techniques and encourages experimentation and exploration. The festival plays with forms, places, technologies, and methods of listening through annual themes, offering many access points from which to engage with music and its settings (CTM, n.d.).

1.3 Preliminary Conclusion

Interactivity and art are a popular combination of the digital era. Digital art created to be interacted with is not a new concept, but is not as popular in museums and festivals. There is no evidence to suggest what is the reason behind the lack of 2D digital art installation, but it can be assumed that the popularisation of abstract art and the software knowledge that is needed to realise such a project might play a part. Regardless of the reasons, it becomes evident that neither PLANETART nor their competitors feature 2D digital art at their festivals, despite being centred around all forms of art.

2. Problem Statement

PLANETART events have creative installations on display for the public to observe, however works exhibited more frequently are audio-visual, 3D simulations/sculpts/animations, and sculptures, rather than 2D digital art. This is due to technological constraints and a lack of time to explore and create techniques to make 2D digital art interactive and suited for the festivals hosted by PLANETART. Despite possessing a diverse array of technical equipment, PLANETART has yet to research and create an example of how to display 2D art in an interactive manner.

3. Main Question

How can 2D digital art be represented within an art festival in a creative, yet interactive manner that festival goers can also use independently?

4. Indicators of Success

This product must create an example of a user friendly interactive 2D digital artwork, which incorporates the values and themes of the festivals and companies while also expanding on the future possibilities of having 2D digital art in the festival as an interactive installation.

This project will be a success when chosen ideas are developed into Low-Fi or Mid-Fi prototypes. Said ideas can be combined together for the sake of convenience, but regardless of how many and how intricate the prototypes may be, they must have an interactive element.

5. Sub-questions and Research Methods

A collection of open sub-questions must be examined in order to offer an adequate response to the main problem. Sub-questions that further explain factors relating to the topic matter will serve as a guide and outline for the main question, making the answer clear and comprehensive. Once the sub-questions are correctly completed, the answer or solution to the main topic will be easier to attain. As a result, some criteria will be developed to assess the length of each of these sub-questions.

5.1 Finding insights on interactivity in and out of the context of art installations.

Secondary desk research will be utilized to find academic publications, reports, blog posts, and videos from professionals, researchers, or individuals from the field in order to address this issue. These findings should shed light on what are the general guidelines for defining, quantifying, and contextualizing interaction. This will give useful knowledge when moving forward with the project since it will provide an overall better understanding of interactivity and also provide insight within the context of art installations.

Essential information:

What is the definition of interactivity?

Satisfaction will be achieved once it's concluded that either there is a universal definition or there are multiple, regardless the findings will be analysed.

Can interactivity be measured?

Satisfaction will be achieved once it's concluded that there are methods to measure interactivity and have been analysed or there aren't any.

Are there different types of art installations?

Satisfaction will be achieved once it's concluded that there either are multiple or a single type of art installations, either way it will be analysed.

What are the components of an art installation?

Satisfaction will be achieved once it's concluded that either there aren't any or there are aspects of it that are core components, along with how they interact with one another, and thus they have been analysed.

5.2 What are the popular interactive/immersive technologies that get employed in the festival industry?

Secondary desk research will be utilized to find academic publications, reports, blog posts, and videos from professionals, researchers, or individuals from the field in order to address this issue. These findings should shed light on the relationship between festivals and interactive/immersive technologies.

Essential Information:

What is the purpose of a festival in a city?

Satisfaction will be achieved once it's concluded that the festivals either have or don't have an impact on the city and it's explained how that affects what the festivals put on display.

What has been present in the GGOBOT festivals thus far?

Satisfaction will be achieved once it's explored what has been used by GGOBOT in the past and present.

What are the benefits and drawbacks of popular interactive/immersive technologies?

Satisfaction will be achieved once the technologies' pros and cons have been reviewed and analysed.

5.3 What software would work best for this assignment?

Secondary desk research will be utilized to find academic publications, reports, blog posts, and videos from professionals, researchers, or individuals from the field in order to address this issue. These findings should shed light on which program is more suitable in creating an example of an interactive 2D digital artwork for GGOBOT.

Aside from that, quantitative-unmoderated remote user testing with a minimum of at least five to ten testers. The testing will provide other opinions on the software. The unmoderated responses will be gathered via an online survey in which a general description and the properties of the software will be listed.

Essential Information:

What are the available software?

Satisfaction will be achieved once the most plausible options for software have been reviewed and analysed.

What are their properties?

Satisfaction will be achieved once the properties of the software are properly analysed and have been tested with other people to gather an opinion before making further conclusions.

6. Relevancy

This project is academically irrelevant since the subject at hand does not necessitate extra investigation and analysis beyond what is currently available. Existing academic research will be merged to obtain a conclusion that will lead to the project's practical relevance. Additional user testing will be conducted to direct this project down the most appealing and successful path. This project connects the festival industry (e.g., GGOBOT), 2D digital artists and customers, therefore extensive study is required to obtain accurate information. Its goal is to provide an example and to examine the potential of technology and software that may be used to create an interactive 2D art experience. If done correctly, this would encourage the use of 2D digital works at festivals and open up the festival industry to another field of artists.

7. Research Scope

7.1 Deliverables

This project will concentrate on one to two Mid-Fi prototypes with some Low-Fi prototypes for concepts that have potential but are constrained in some way. A Low-Fi (low fidelity) prototypes are those with which ideas can be quickly developed and tested on a low production scale (e.g. a paper prototype).

Mid-Fi (mid fidelity) prototypes are ideal when transitioning from Low-Fi to Hi-Fi (high fidelity) prototypes, as they showcase more of the product and the functionality of it. Ideally, a Mid-Fi prototype will be upgraded to a Hi-Fi prototype, which will have better visuals, more user input, smoother interaction, and fewer flaws than the Mid-Fi prototype.

7.2 Inclusion

The prototype will have rudimentary interaction capabilities, such as zooming, rotating and navigating through the artwork.

This year's festival subject will be conveyed through visual cues, environmental storytelling, and details pertaining to current issues. Thus, the festival's subject will be addressed briefly in the first iteration cycle.

7.3 Exclusion

Ideas that include a great deal of programming will be excluded or moved down on the list, due to the lack of technical skills to achieve something more complicated than a paper prototype.

7.4 Assumptions

In the end, rather than a single final product, a series of prototypes will be produced. They will demonstrate how 2D digital art and new software may be utilized at festivals, as well as the overall possibility of making enjoyable and engaging digital art at a low cost. It is impossible to expect many prototypes and a finished product to be created within the time limit specified.

7.5 Constraints

Because TEC ART, the sister event, will be held later than planned, mass participation of intended GOGBOT visitors in the prototypes' production and testing will be limited. Consequentially, people who have the characteristics of the target audiences will be sought out to offer feedback during the development process. As a result, user tests will be conducted in person wherever feasible, but online testing may be preferable if a wider and larger quantity of feedback is needed.

8. Research Approach

For this project the Design Thinking approach is needed to be able to balance the workload and to reach an outcome that pleases both the company and the end user. Working with Design Thinking is a problem-identification approach, which means dividing projects into stages that identify the problem and require contact with company personnel and users to resolve them. The Design Thinking research paradigm contains five major phases- Empathize, Define, Ideate, Prototype and Test- and is used to handle an issue by using an iterative approach to better understand and solve the problem. This paradigm contains the necessary steps in creating an iterative process that benefits from repetition and user-centred research and testing.

This way, some major flaws in other methodologies are directly addressed and solved. For example, this overcomes the ambiguity about whether or not the product would appeal to the final consumer. This is due to the iterative method of including the audience in the process of production and modifying depending on input. Another key issue it solves is risk assessment, as it allows for early risk identification before committing to activities that would waste time, effort, and resources.

Thusly, working in such a way is the preferable choice for a small-scale project like this one. From this point onward this paper will follow the iterative process of Design Thinking. The next chapter names will contain the number of the iteration and within it, sub-chapters will be present to signify which phases were used and revisited after gathering new knowledge.

II. Iterations

1. Iteration I

1.1 Empathize

1.1.1 User Information

The main goal of the festivals is to bring awareness about current social topics, to make people discuss the future and to promote artistic expression and technological experimentation. Through different user testing the company has provided three documents that aided in forming the target groups. One document covered the wants, needs and frustrations of the target group (*Table 1*), while the other two documents showcased the most recent user testing conducted by the company. Both documents are from 2021 and utilise qualitative testing on GGOBOT, TEC ART and/or FAKE ME HARD visitors which aided the company to characterise the target groups and update older information. One was created by the company itself (PLANETART. (2021) *Marcom_Evaluatie*. Unpublished internal company document) and it polled visitors on the quality of their experience. The test was carried out in the festival's rest area, where attendees were more willing to answer an unmoderated questionnaire. The questions covered the visitors' content and motivation when going to the festival, as well as minor personal inquiries peppered throughout. The questions supplied PLANETART with a more complete image of their target demographic, which contributed in the construction of the target audience. These include, to mention a few, age, home area, how they learned about the event, what they were most looking forward to, and whether or not they took anyone with them. The other was conducted by an independent company known as Rotterdam Festivals, who likewise created a qualitative questionnaire for visitors but also analysed information from the ticket system (PLANETART/Rotterdam Festivals. (2021) *Rapport Fake Me Hard 2021*. Unpublished internal company document). They used their own grouping method, which was then converted to PLANETART's understanding when the testing was completed. Because of the broad extent of PLANETART's research, this project would depend on the information provided by the company and only do extra research as and when necessary.

Table 1 - Table recreated from an internal company document about the target audience of PLANETART

Art Lovers & Artists	Families	Students
Ages: 18-60+ <ul style="list-style-type: none">- Concerned with societal issues.- Willingness to discuss current and trending topics in society.- Come from far for substantively strong and impressive art.- Looking for a sharp selection of art.	Adults Ages: 30-60+ <ul style="list-style-type: none">- Accessibility for all ages.- Being relatively child-friendly.- Relaxing pastime Children Ages: 4-16 <ul style="list-style-type: none">- Energetic, playful and inquisitive- Want to participate in entertaining and mentally enriching activities	Ages: 16-30 <ul style="list-style-type: none">- Low income.- Looking forward to a new party/experience.- Excited by new encounters.- Eager to learn and curious about lectures/talks & workshops.
Lovers of electronic music	Professionals	Lovers of technology
Ages: 18-40 <ul style="list-style-type: none">- Intrigued by the futuristic & technological aspect of the festival.- Workshops related to music.- Partygoers come to listen to strong line-ups with well-known headliners.	Ages: 30-60+ <ul style="list-style-type: none">- Exclusive experiences.- Looking for a sharp selection of art.- Discussing current, relevant themes and topics.- Also interested in the talks of artists, researchers, scientists.	Ages: 16-60+ <ul style="list-style-type: none">- Interested in the futuristic aspect of the festival.- Looking forward to workshops, talks and presentations.- Interested in electronic and interactive works and impressive installations.

1.1.2 Project Target Audience

With the nature of the broad target audience of PLANETART, most of the visitors, regardless of age and interests, can be entertained by an interactive art installation. However, for the sake of creating a proper feedback loop with groups that can give more feedback on the project, only three of groups would be used, which are Artists/Art Lovers, Professionals and Students (especially the art students of the surrounding area).

The information from the company was put into a table to simplify the given information and to have a clear overview of the known target groups of the company (*Table 1*). As previously mentioned, the graduation assignment can both cover specific groups and all of the target groups can be entertained by

the final product. Thus the target groups that were specifically analysed are Artists/ Art Lovers, Professional and Students, as they have a deeper interest with the topic, rather than just entertainment. According to the unpublished company documents, the target groups' interests and requirements that coincide are gaining knowledge, addressing societal concerns, and a desire to explore new technologies, experiences, and art.

Commented [JC1]: What are the needs and wants of this target audience?

1.1.3 Required Research on Sub-Questions

Before being able to begin the creative process, non-empirical research had to be conducted to be able to answer the sub-questions that would dictate the progression of the project. The non-empirical research covered the aspects that were required to then further on conclude the sub-questions.

1.1.3.1 Finding insights on interactivity in and out of the context of art installations.

1.1.3.1.1 What is the definition of interactivity?

There is no single definition of interactivity (Jensen, 1998, 2008; Rafaeli & Ariel, 2012). It turns out to be a situational phrase based on the research that was conducted. This is problematic as terms cannot simultaneously have a variety of definitions and also lend itself as a useful to a study. Jensen (1998, 2008) and Rafaeli and Ariel (2012) propose that there are different domains that properly explain the meaning of interactivity outside of its dictionary definition and are used based on context. Rafaeli and Ariel (2012) don't attempt to define interactivity, while Jensen (1998) propose three definitions, two of which prove relative due to having a broader reach. One is a sociology term that describes interaction as a social event that occurs whenever two individuals communicate. This involves at least two people who are mutually independent and aware of each other's presence. The second concept is informatics, which deals with human-machine interaction. Finally, Smut (2009) debunks some additional prominent ideas of interaction and offers his own. He contends that anything is interactive if it does not provide fully random effects when manipulated and is also not completely controlled. These definition variants are useful because they demonstrate a number of meanings that may be derived from context, implying that no single definition is wrong if properly contextualised.

1.1.3.1.2 Can interactivity be measured?

There are various ways that interactivity can be measured, mostly dependant on how one was going to define interactivity (Jensen, 1998, 2008; Rafaeli & Ariel, 2012). Rafaeli and Ariel (2012) measure interactivity by giving it variables that change depending on the context. Jensen (1998), on the other hand, concluded example-based methods of measuring interactivity—as a prototype, criteria, or continuum. Prototype refers to media that aids in person-to-person connection, while criteria refers to a certain quality or feature that must be present, and continuum contends that interactivity exists in variable degrees and is assessed across several dimensions (e.g. 1-dimensional, 2-dimensional etc.). Jensen (2008) returns to the issue later and investigates another method of assessing interactivity in terms of a media's potential to be changed by a user, which is further subdivided into dimensions. Clearly, there is no one guaranteed technique to assess interactivity, all of the available approaches have shortcomings of their own, but can serve as a general guide.

1.1.3.1.3 Are there different types of art installations?

When seeking for information to further define interactivity and art installations, information was found by Edmonds et al. (2004) on three basic categories of interactive installations. One is "Static" art, which refers to art that the user cannot interact with and does not alter due to any factors. The second is "Dynamic-Passive," which means that the installation has its own systems that allow it to change and be

influenced by outside variables but not by the observer. Finally, "Dynamic-Interactive" is identical to the preceding type but incorporates viewer participation.

1.1.3.1.4 What are the components of an art installation?

In research from Ahmed (2018) four major components are established: artwork, audience, environment, and artist. These components interact with one another and generate mutually beneficial partnerships that influence them in certain ways.

As per the traditional nature of an art installation, the most prevalent relationships that appear in one are those without the presence of the artist: audience-artwork, audience-audience and artwork-environment. They are more likely to be present, as usually it's the artwork reacting to the audience or environment and often times the audience members mingle among themselves and discuss. When the artist is involved as a component, Ahmed (2008) argues that it is mostly to receive feedback for their work and to observe how it is perceived by others. Learning the importance of these components helps understand art installations better.

1.1.3.2 What are the popular interactive/immersive technologies that get employed in the festival industry?

1.1.3.2.1 What is the purpose of a festival in a city?

Festivals serve a variety of functions and provide long-term cultural, economic, and social revitalization, have grown in popularity, diversity, and number since the 1980s. (Bakas et al., 2019; Quinn, 2005). It stimulates the economy in terms of revenue and tourism, which is one of the key reasons why these festivals benefit the towns where they are hosted. They can serve as a means to decrease unemployment as volunteer work is always present due to the increase in tourism (Bakas et al., 2019; Qu & Cheer, 2020; Quinn, 2005). One of the well-known negatives of city festivals is the irritation it causes the local population owing to the flood of tourists along with the potential debasement of any cultural significance behind a celebration (Quinn, 2005). However, with the increased use of art in urban regeneration processes and the formation of a tighter social network, which connects residents and boosts community morale (Bakas et al., 2019; Qu & Cheer, 2020; Quinn, 2005). (see appendix for more in depth information)

1.1.3.2.2 What has been present in the GOGBOT festivals thus far?

These festivals are drawn to new and topical social issues, art, technology, and other forms of entertainment. For artistically inclined events, new technologies and young artists are primarily sought after, and there are certain technologies that are trendy to employ at the present. According to Annebel Bunt, the regional competitors and GOGBOT/TEC ART employ a variety of Extended Reality (XR) technologies such as VR, AR, and MR, audio-visual systems, and, more recently, facial recognition and generally algorithmic systems that are more for observing and experiencing than engaging (A. Bunt, personal communication, 26.04.2022). She briefly mentions how, despite many festivals presenting themselves as interactive, there are a lot of static installations or artworks that are only there to look aesthetically pleasing. (see appendix for more)

1.1.3.2.3 What are the benefits and drawbacks of popular interactive/immersive technologies?

Popular immersive technologies recently have been Virtual Reality (VR), Augmented Reality (AR) and Mixed Reality (MR) and most people understand the advantages and potential provided by prominent Extended Reality (XR) technology. They act as a portal to the virtual world, allowing a variety of situations to be enacted in a secure environment, they enable experimentation, mental healing, and unique storytelling opportunities (*Virtual and Augmented Reality: Pros and Cons*, 2022). Additionally, VR

has been applied in cultural tourism, giving potential visitors information on their destination prior to their arrival (Lee et al., 2020).

They do, however, have certain downsides. There are the more visible and easily identified issues, such as price. Some equipment is very costly, such is the price of a good VR or AR headset and a company would always face the risk of someone attempting to steal or break the device during a festival. Aside from the price, there are several restrictions to the usage of the device, which is regrettable given the price and generally restrict the person to an individualistic experience, which is paradoxical to the social nature of festivals. Furthermore, there are several additional minor concerns with this technology that are somewhat overlooked. For starters, there is the issue of hygiene, if not adequately maintained, there is a possibility of infections spreading from user to user. The other is concerned with critical thinking and mental growth. While for the majority, the brain can distinguish between real and fake (Indo-Asian News Service, 2014; Ravassard et al., 2013), one may claim that these technologies pose a risk to the mentally underdeveloped since a gap between reality and virtual reality could form, perhaps causing developmental issues. ([see appendix for more information](#))

1.1.3.3 What software would work best for this assignment?

1.1.3.3.1 What are the available software?

For the nature of this project, the parallax style of presentation is the most viable in creating depth through 2D images and to then implement additional interactive controls for the user to be able to 'walk through' the scene (e.g. touch controls on a tablet or through the use of a controller as an input device). Thus a few programs have the potential of creating such a scene and either exporting assets that can be placed in Unity to then build a scene or to outright export a scene with the aforementioned interactive controls.

The first option is Mental Canvas, which was created and originally released in 2014. It has lately increased in popularity as a result of social media, with Greg Edwards creating the most notable piece in 2021 for the NFL finale (Edwards, n.d.-a). The program works by using planes in a 3D environment to allow the user to draw on the planes and generate a parallax effect of stacked 2D pictures. After finishing the creation process, the user may export an interactive web page that allows the spectator to explore the scene (Mental Canvas - About, n.d.). ([see appendix for more information](#))

Option two is the Blender Grease Pencil, which is a 2D art tool within a 3D modeling software. The tool may be utilized in a variety of ways, including standard 2D animation and cut-out animation (Blender Foundation, n.d.), indicating that it is suitable for the job at hand. Furthermore, having access to 3D software tools may be advantageous. ([see appendix for more information](#))

SketchUp, a non-traditional 3D modeling program that specializes in creating outdoor and interior environments, is the third choice. It's a program that's commonly used in architectural work, interior design, and some video game creation (Gavin, 2018; SketchUp | SketchUp Help, n.d.), so it's not the most conventional software for this job. It is, however, a simple 3D tool for creating any prop and supports the use of 2D stylised textures. ([see appendix for more information](#))

1.1.3.3.2 What are their properties?

Mental Canvas

The system, according to Jolie Dorsey et al. (2007), is intended to allow a designer to arrange concept drawings in a 3D environment that uses planes, and eventually merge a sequence of potentially geometrically incorrect sketches into a collection of 3D strokes, while also accepting standard 2D stroke input.

The customizable canvas planes, similar to layers, are a key element of this software. They have the ability to be rotated, moved along their local axis, and folded (Dorsey et al., 2007). Furthermore, the

user may add as many layers as they like as long as their device can manage them. The system considers its import and export functionalities, as well as certain internal capabilities. Sketches, canvases, and strokes from various projects may be imported or exported independently using the program. There are rendering choices that impact the overall image as well as the quality of how distant strokes are portrayed (Dorsey et al., 2007). ([see appendix for more information](#))

Grease Pencil

Users of this tool benefit from working on concepts in 2D while also having access to 3D tools to assist with complications. To begin, this tool employs 3D approaches to aid the user's 2D art, not only in the construction of elaborate shots for a 2D piece, but also in the usage of 3D models as anchors for the 2D strokes. One might develop unique 2D artworks that also leverage 3D model viewing technologies. There are also stroke editing capabilities including a selection, transformation, and duplication tool, which is a significant advance over standard 2D sketching since it allows the artist to work smarter and reuse existing strokes. Along with the editing tools, there are stroke styles to choose from, which include filled and volumetric strokes (Blender Foundation, n.d.; Leung et al., 2015). ([see appendix for more information](#))

SketchUp

To generate a 3D model, this program has easy 'push-pull' capabilities. By drawing the form of the model with one tool and then extruding up from that shape to build the model. From there, one could easily extrude other forms in and out of the constructed starting point. This tool may also be used to create terrains in a similar manner (SketchUp | SketchUp Help, n.d.).

After designing a model, adding textures and colours is straightforward, and the user has complete control over them. It is also possible to include custom textures and photographs, as well as create unique styles for the model's presentation by modifying the model's edges, faces, and backdrop (SketchUp | SketchUp Help, n.d.).

Finally, there is the option to move and place cameras across the area, as well as examine the model on Google Earth. This is very beneficial and impressive when demonstrating a customer how the project will integrate into the surrounding environment (SketchUp | SketchUp Help, n.d.). ([see appendix for more information](#))

1.2 Define

1.2.1 Correlations of the Users and the Project

These correlations are based on the already overlapping interests. These wants and needs coincide with what can be possibly created as a digital 2D art installation. Regardless if all three of these groups overlap on all wants and needs, they still have some between each other.

Artists/Art Lovers and Students have the overlap of looking for new ways of self-expression (*Figure 1*) and thus a new art installation that is used to express oneself would prove exiting for these groups.

Additionally, these are two groups that consist of individuals who may enjoy seeing this particular art form (2D digital art) represented more in social events in an interactive manner. It is often hard to integrate it in such a setting without it being there to provide a simple visual appearance, not really giving users the chance to interact with it in some way. These individuals vary by age, but are about discussing pressing social matters and trending topics. Students of art degrees have an overlap with the Artists/Art Lovers when it comes to why they would be interested in the final product.

Professionals have their separate overlaps with the other two groups that can be present in the final product. Professionals and Artists/Art Lovers have the shared interest of art, regardless if it's for viewing or creating purposes (*Figure 1*). Art is a way of telling a story and selling a certain narrative and these groups would benefit of a new way to do so. Professionals and Students have in common the interest in technologies, their uses and advancements (*Figure 1*). Whether this product is to use new technologies, it can be assumed that this product will be used in a creative manner with existing devices, thus opening up the audience to more possibilities. Finally, all three groups correlate with one another when it comes to debating current social issues (*Figure 1*). Art has been a very effective way of bringing awareness to issues, charities etc. and his method is so effective due to the eye-pleasing quality of it and the use of subtle or obvious symbols in the piece that tell a story, compelling the viewer to stop and experience it in their own time and way, usually leading to lasting thought or emotions.

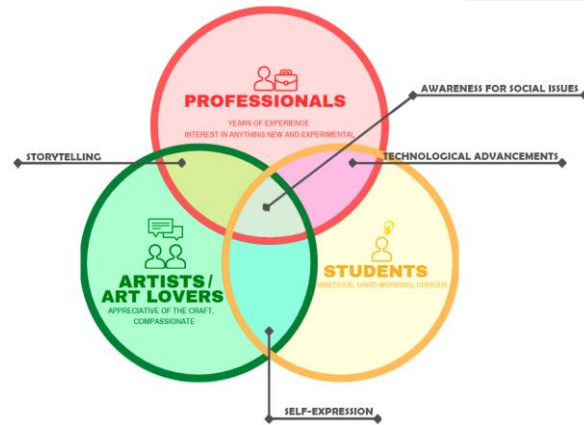


Figure 1 - Overlap of interests amongst the target groups

1.2.2 User Personas

After choosing to use the three aforementioned target groups, user personas (Figure 2) were created to properly illustrate their wants, needs and pains along with additional information that was gathered during the research phase. The user personas were updated over the course of the first three iteration cycles with tweaks after gathering feedback around the company (see Appendix X for the process). They proved to be a useful reminder of who this product was aimed for and what must be done to make the final product both useful to the company and at least entertaining for the audience.

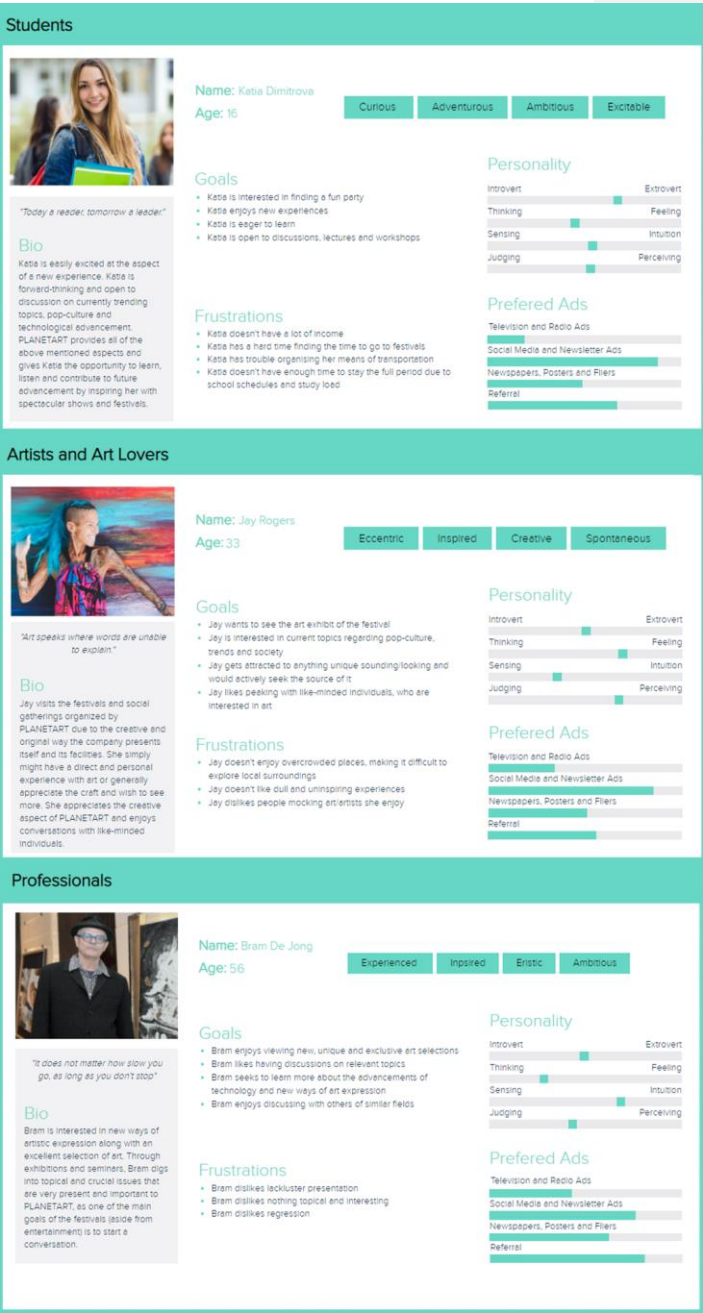


Figure 2 - Final rendition of the user personas

1.2.3 Defining Project Boundaries & Concerns

Some defining questions (*Table 2*) were developed to drive the ideation process later on, keeping in mind the company's needs, constraints, and accessible technology. It would help determine potential issues with the concepts and product, avoiding implementation errors, and other issues such as money constraints, time constraints, and so on. Thusly, the questions were prepared for future rather than present. Having them available when diverging was less important, but having them ready when converging proved quite useful later on as the category helped restrict the field.

Table 2 - Defining questions and the reason for having them

Questions	Reasoning
Marketing opportunities?	This is present to assess the concept on how it can be utilized for marketing, i.e., if it can be incorporated to the website/posters/flyers, whether it can be used to attract visitors, and so on.
Difficulty executing before GGOBOT?	Because the company wants this project to be a part of the GGOBOT festival, it must consider how long the concept will take to complete.
Visual/Thematic compatibility?	To be a part of the festival, the concept must be adaptable to the overall theme and message of GGOBOT. The topic is often left open and broad so that artists do not feel constrained or hampered by it.
Is the product unique in some way?	This reflects the company's commitment to constantly developing and incorporating new ideas and technology into the event.
Is it user friendly?	This is a separate question to emphasize the necessity of a user-friendly product. Despite the fact that this project has a specific target demographic, it is critical that the product be user friendly for a multigenerational audience.
Does it connect with the community?	This is a question for the original PLANETART community. This is for frequent visitors and those involved in the company's projects. They are significant since they are the primary supporters of PLANETART.
Are there any extra costs?	This is another inquiry concerning the product's manufacture. The more costly the product, the more difficult the implementation.

1.3 Ideate

1.3.1 Brainstorming Technique

Mind Mapping was employed for this project's brainstorming sessions. Mind mapping is a method for generating ideas in a non-linear way. It symbolizes the rapid mapping of thoughts and ideas into logical categories (Butler, 2014). To utilize mind mapping as a brainstorming approach, first a skeletal structure

is developed that would be used as groups with overarching subjects, so that when ideas are generated, they can be simply categorised.

1.3.2 Diverge

With questions to help create ideas created (Table 2) they were used in the diverging stage of idea generation. They served as a start by helping inspire ideas that would fit the questions while still being appropriate to the core of the project.

1.3.2.1 Mind Map

An initial rough mind map (Figure 3) was made with some early concepts, but there weren't many of them and not much in terms of branching. This was not in vain, however, because the purpose of this iteration was to build the framework for future iterations. These first solutions allow for some time and complexity planning, as well as some assumptions about restrictions, exceptions, and adjustments.

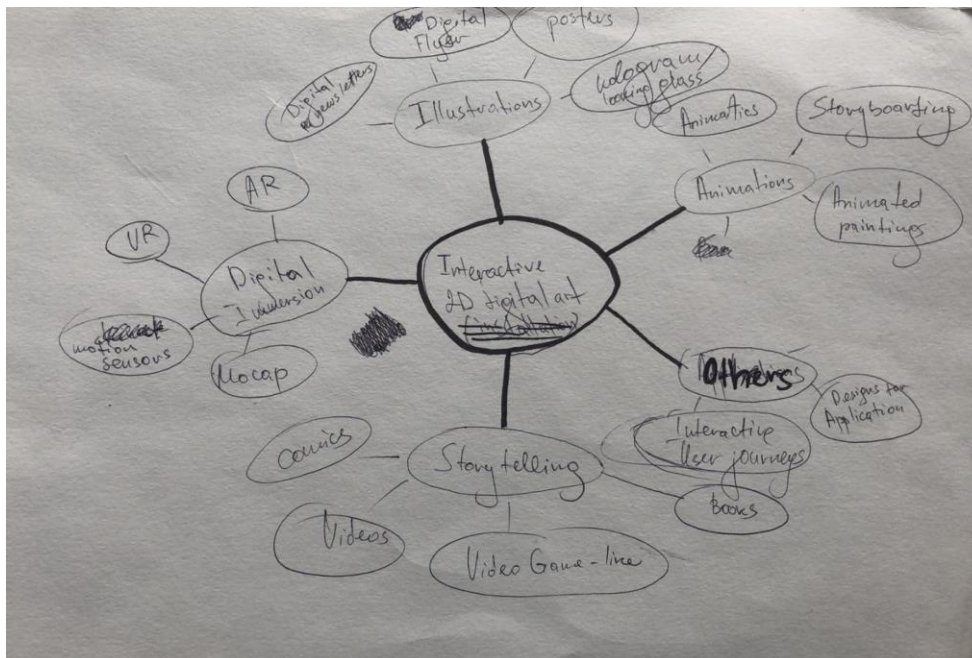


Figure 3 - Rough Mind Map

1.3.2.2 Mind Map Update

The updated and clear overview of the ideas (Figure 4) was created by incorporating feedback from others and branching out into larger and more complicated ideas, all the while eliminating ideas that did not fit with the criteria (Table 2). It was beneficial to brainstorm with the project's target audience, as the majority of the residents of the WARP building are either professionals, artists/art enthusiasts, or students. These group brainstorming sessions provided original ideas as well as inspiration for what further could be added.

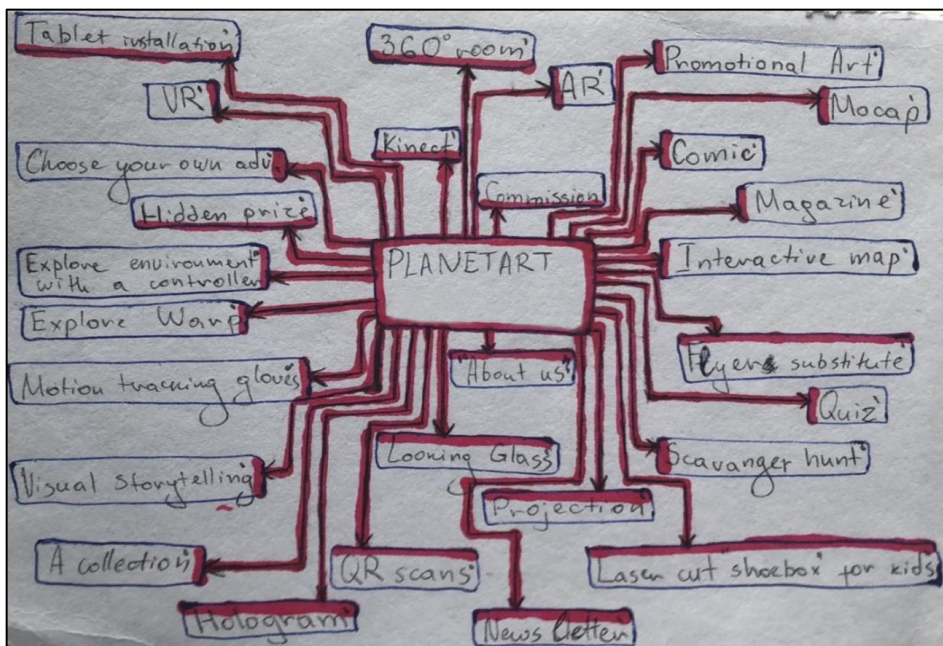


Figure 4 - Mind Map Update/ Idea Circuit

1.4 Prototype

1.4.1 Rough sketch

Before developing the paper prototype, the main concept was sketched out in a flat 2D drawing (Figure 5) to allow people to better see the project's concept from the start.

1.4.2 Paper Prototype I

The first paper prototype (Figure 5) was created to accompany the flat sketches and assist with the diverging and brainstorming with people of the target audience present in WARP.



Figure 5 - First sketch to paper prototype

1.5 Test

The testing in this phase was done to mostly aid the ideate phase by giving the individuals that assisted with mind mapping visualise the purpose and general idea of the project. This test served its purpose well as both it helped people visualise the project to spark new ideas and made people invested in the project and willing to perform future tests when needed. The results of the test are present in the second mind map (Figure 4) as they were naturally added into the map while the brainstorming was taking place.

2. Iteration II

2.1 Define

2.1.1 Software

2.1.1.1 Software Analysis

For this project, specific software was needed and selected to potentially bridge the gaps in converting a digital art production to an interactive stage within time and budget restrictions. Three potential matches were discovered and extensively analysed. Creating a SWOT analysis (Figure 6, Figure 7, Figure 8) after the analysis was done to determine the pros and cons of each program.



Figure 6 - SWOT 1

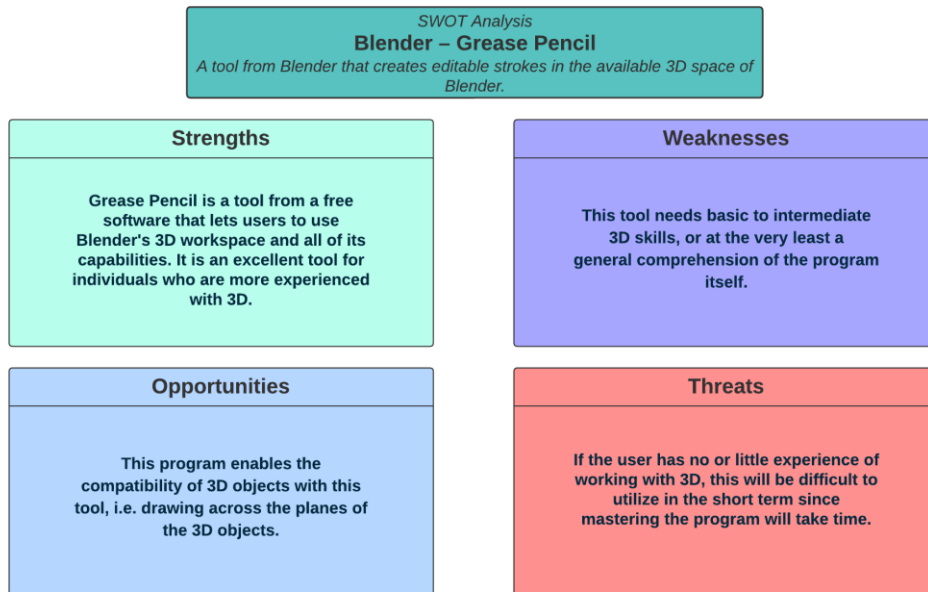


Figure 7 - SWOT 2

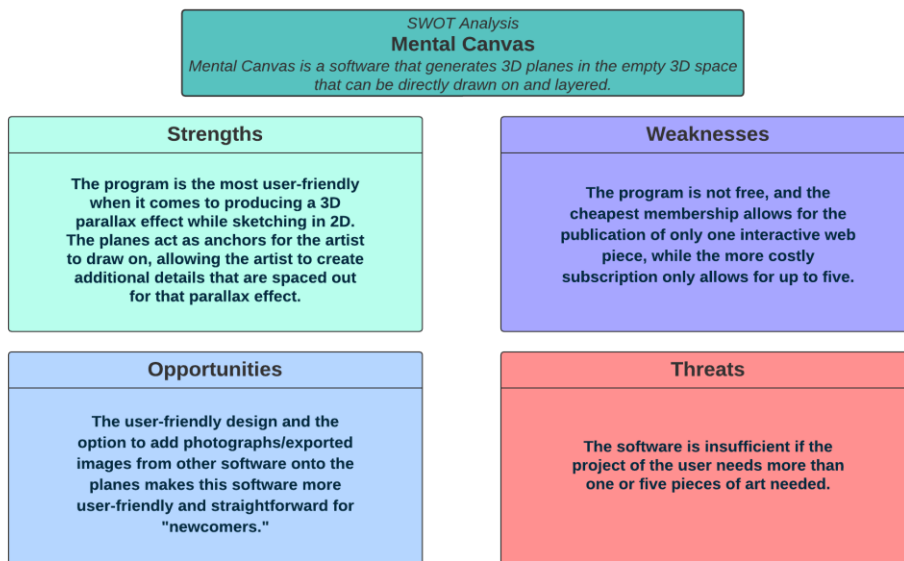


Figure 8 - SWOT 3

2.1.1.2 User Opinion

Unmoderated quantitative remote (Figure 9) user testing was made to get additional opinions from the target audience as most would understand the software that has been discussed thus far. Owing to the fact that there are artists within the target audience, this creates an opportunity to gather valuable data. Artists tend to try and use different software depending on their project, thus having a sample of their opinions could prove to be beneficial when choosing which software to use. This survey was distributed to Saxion students and artists, and a few replies came from persons in the WARP building who are artists or have an affinity and interest in it. Unmoderated quantitative testing was selected since it easily presented information about the program and provided examples of use to help those who understand subjects better by viewing rather than reading. To declare this questionnaire successful, a minimum of five to ten replies were required in order to draw a conclusion from the data. That has been accomplished, and based on the essential questions of the questionnaire, it appears that the majority felt that Mental Canvas is the best option, followed by Blender's Grease Pencil, leaving SketchUp out. This data has been useful and has had an appropriate influence on the project's trajectory.

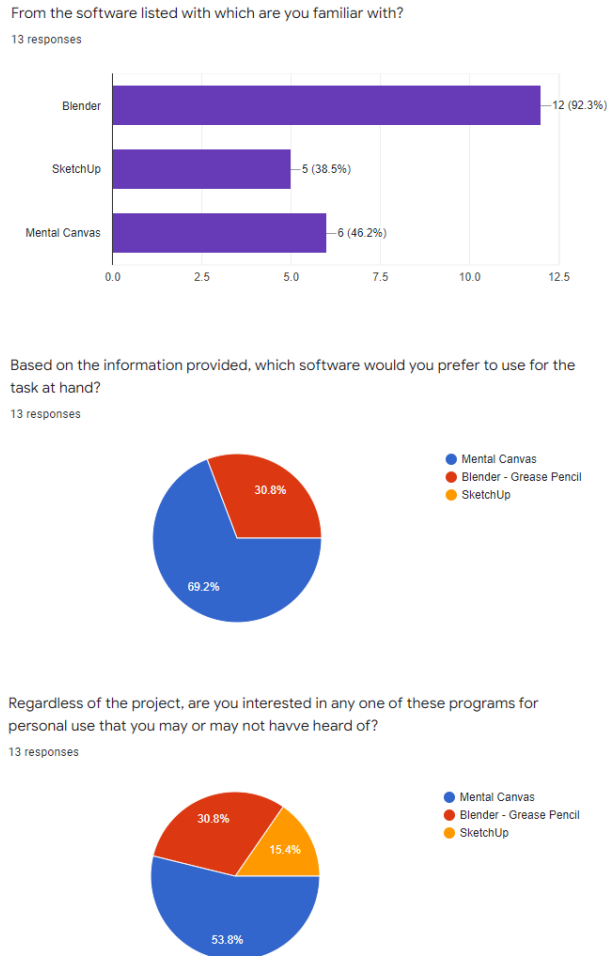


Figure 9 - Software testing

2.1.2 MoSCoW

Dai Clegg developed the MoSCoW approach by creating a framework to assist in prioritizing tasks during product development. MoSCoW is an acronym for the following: "must have", "should have", "could have", and "won't have". The won't-have is often also interpreted as "won't have right now" or even represented as "wish" (MoSCoW Prioritization, 2021). With this system in mind, the questions that were created in iteration one (Table 2) have been used to create a single MoSCoW-based ranking using the information gathered thus far (Figure 10).

Commented [JC2]: Which requirements are you prioritising? These should be presented in *define* and should be a clear result of the outcomes in *empathize*.

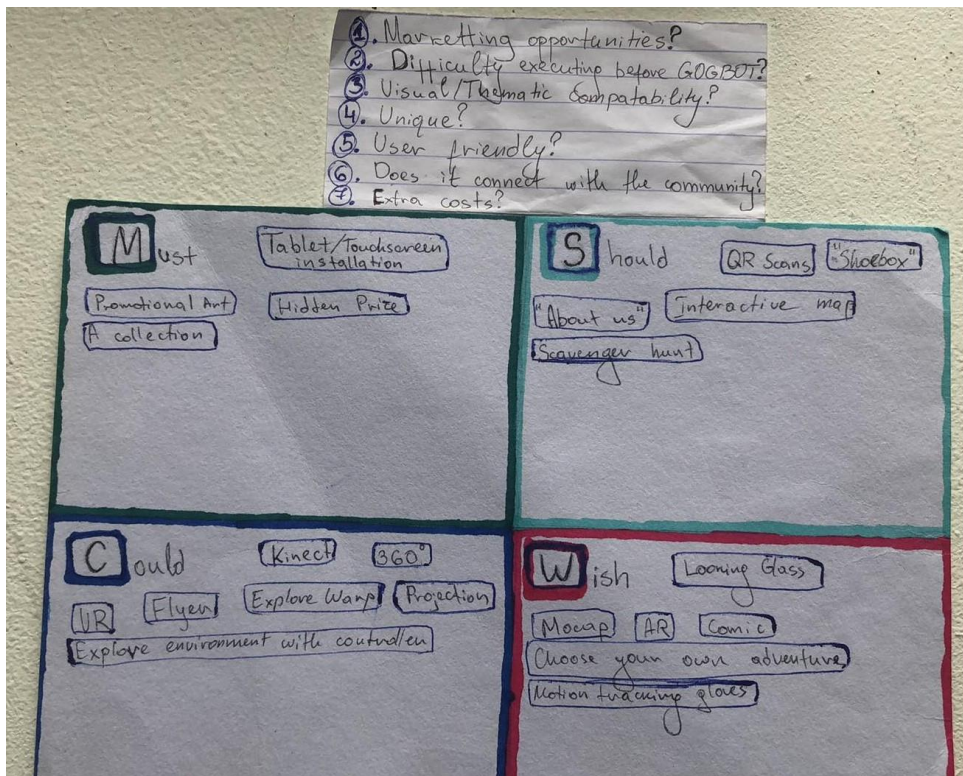


Figure 10 - MoSCoW

2.2 Ideate

2.2.1 Concepts Flowchart

A flowchart (*Figure 11*) was built to show the links between the ideas from the final mind map (*Figure 4*) and how one idea may include several concepts. This is useful later on, following the convergence stage and the idea review for a SWOT analysis. This flowchart shows the possibility for concepts to be melded together, saving time but not cutting on quality when generating the final result. Still demonstrating the potential of various concepts, without the need of several prototypes for each.

2.2.2 Converging

After having sufficiently diverged in the first iteration, it was time to start converging and finding out what ideas are most popular and are most plausible. For the purposes of converging, the MoSCoW (*Figure 10*) prioritization method, the Flowchart (*Figure 11*) and the criteria (*Table 2*) helped illustrate what ideas have the most potential, however these conclusions were based on personal thoughts and observations. It was critical to go around and test the project's interest with company members and request their thoughts, as well as seek support from fellow creatives, both in and out of WARP to help with the converging process.

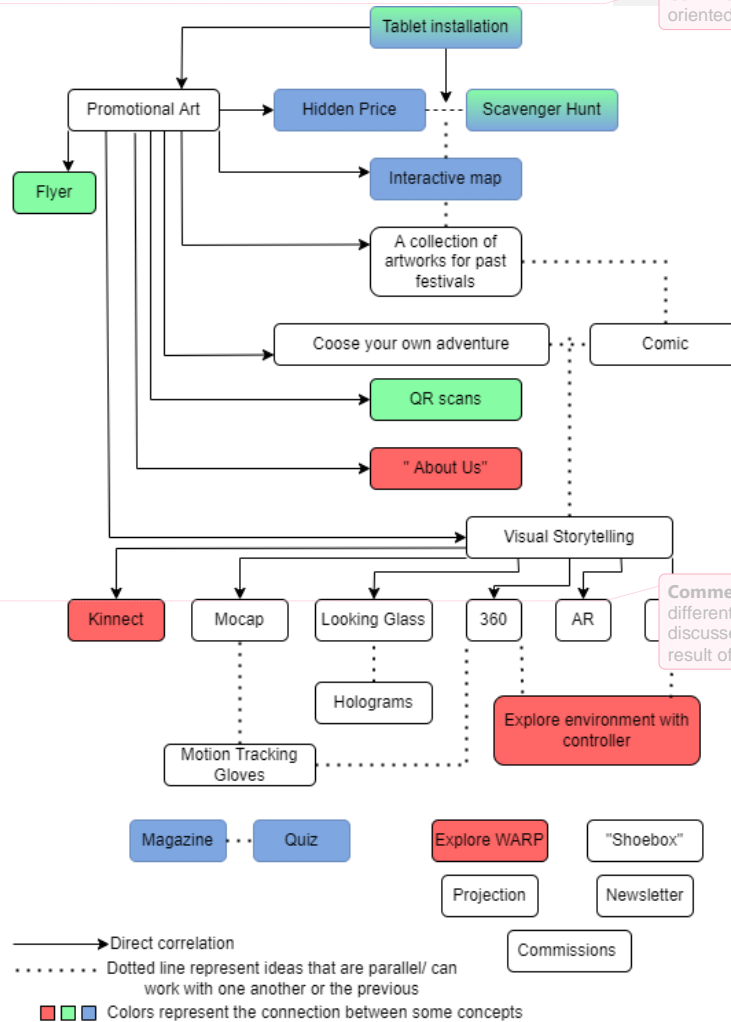


Figure 11 - Flowchart that shows how ideas connect

Commented [JC3]: Is this a flow chart or a vertically oriented mind map?

Commented [JC4]: Again using the list of 1.2.3? Or different criteria? If different, then these should be discussed in the define of this iteration and be a clear result of the empathise in this iteration.

2.3 Prototype

2.3.1 Paper Prototype II

During this iteration, a better paper prototype (Figure 12) was created to better represent the project, how the parallax effect would be used and roughly implementing the theme of this year's GOGBOT. Thus far the people who have helped diverge have a decent understanding of the project, but for converging it was important to provide an even clearer representation. To do that one of the concepts (Flyer) was used to also make the connection between a potential concept and execution.



Figure 12 - Second paper prototype

2.4 Test

2.4.1 Qualitative

Moderated Testing Methods

First, qualitative highly contextual moderated user testing/interviews with WARP renters who fit within the target audience were conducted. It was ideal to take notes while the tester pondered during the qualitative testing, rather than filming or videotaping. People were reserved and liked their privacy, so it was critical to keep them comfortable in order to ease their minds into agreeing to an interview and keep them open and interested. They were presented with the second paper prototype (Figure 12), with the previously made MoSCoW (Figure 10) with criteria (Table 2) and the final mind map ().

2.4.2 Qualitative Moderated Testing Outcomes

The findings of the qualitative research were highly informative and useful in understanding different points of view. WARP has a broad group of people, and their thought processes reveal how their experiences impact their ideals. For example, one user is a professional in their industry and is commissioned to bring other people's ideas to life. They appreciate the addition of questions about the budget, the user, and the time constraints. They discussed how certain issues in earlier projects

stemmed from these three elements, and how sometimes commissioners fail to consider those factors and they must make dramatic adjustments mid-project.

The test findings (appendix x) show that the most popular and discussed concepts were those that bridged the gap between reality and the virtual world. Ideas such as "Hidden Prize", "Shoebox" and "Scavenger Hunt" were either moved up in the MoSCoW ranking or were the interviewees' personal preferences. The Looking Glass was the costliest idea they liked and had never heard of, with one even suggesting that the company look into acquiring a sponsorship with the Looking Glass to be able to utilize one for the festival. Many people seemed to agree with the original MoSCoW (figure), however there appeared to be some disputes with the incorporation of QR codes. Some would argue that they are part of current marketing tools, others voice open opposition to the technology, and yet there were those who would welcome them if they served a purpose. These preferences along with the preferences from the quantitative test will help shape this project and the prototypes to follow.

2.4.3 Quantitative Unmoderated Testing Methods

Another questionnaire was created for quantitative unmoderated remote user testing to obtain the user's rating of the concepts. This was chosen because the qualitative study might be hampered by external variables, personal ties, and possible prejudice and generally speaking quantitative testing was just as important as qualitative testing. The final mind map (figure x) was added, the selected software was detailed, the guiding questions (Table 2) were supplied, extra information to the concepts was added, and other restrictions were described. The questionnaire itself used checklists for each category of the MoSCoW, and the user can freely pick whatever concept they feel belongs there.

2.4.4 Quantitative Unmoderated Testing

Interestingly enough, the quantitative testing slightly mirrors the original MoSCoW (figure) without having seen it and the qualitative interviews as well. The combination of the top four results on "must have" are "Tablet Installation", "Promotional art", "Hidden Prize" and "Interactive map" (figure), which also share similarities with the qualitative testing, and on "should have" the top four are "Scavenger Hunt", "Flyer", "About Us" and "Promotional art" (figure). Knowing what the audience is interested in, these results are what the next phase will explore further. (see entire test result in appendix)

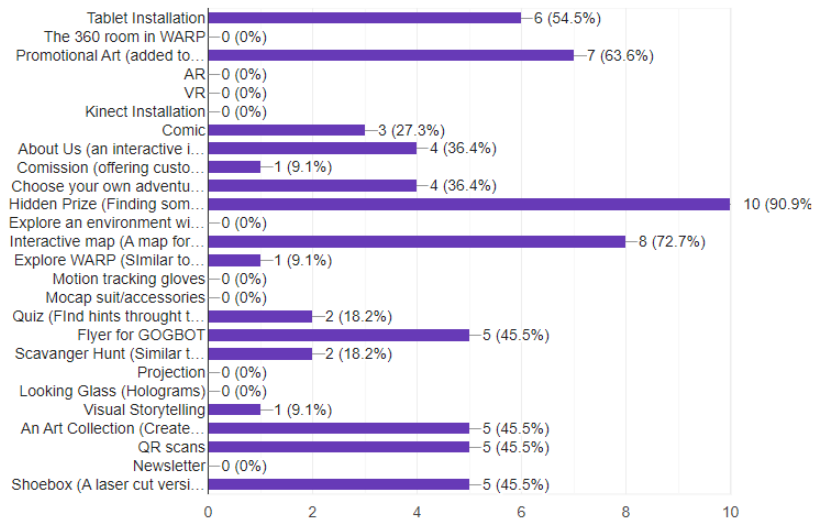
Commented [JC5]: What are the main outcomes of the test and which of those outcomes will you use to proceed into your next iteration?

Commented [JC6]: Move this to the testing subchapter of the previous iteration.

Choose multiple for: MUST

[Copy](#)

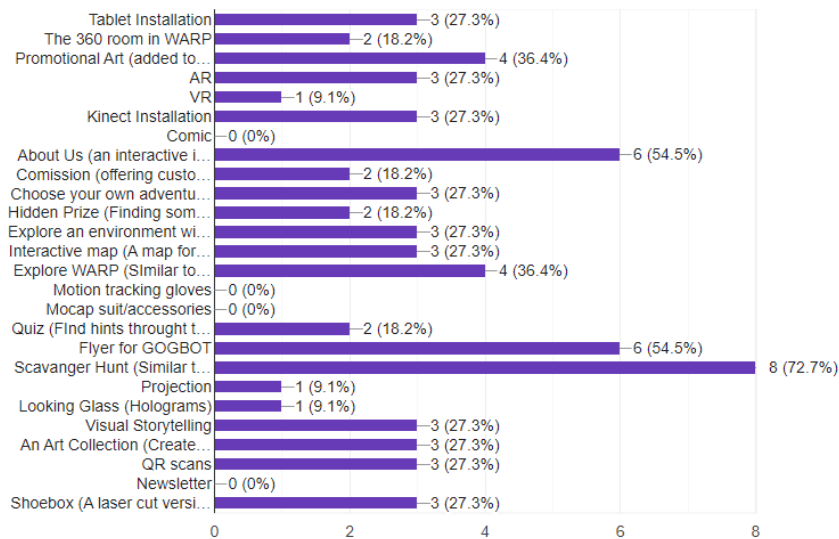
11 responses



Choose multiple for: SHOULD

[Copy](#)

11 responses



3. Iteration III

3.1 Empathize

The results from the tests show that there is an overlap between the original MoSCoW and the target audiences in and out of WARP. “Hidden Prize” is common among all of them, leading to the conclusion that it’s an overall good idea.

The choices from the qualitative group came from people who either have worked on big projects and festivals and understand the value of simple ideas and were not so interested in those that require extra maintenance and costs. They tended to agree with the MoSCoW’s “Must” (figure) section especially from an execution standpoint. While the quantitative research shows that the audience has an overall interest in most ideas, one could still conclude that the majority feels positive about the aforementioned simpler ideas. With “Promotional Art” and “Tablet installation” being in the top four choices of the results, it’s reasonable to assume that they can be viable candidates for the project.

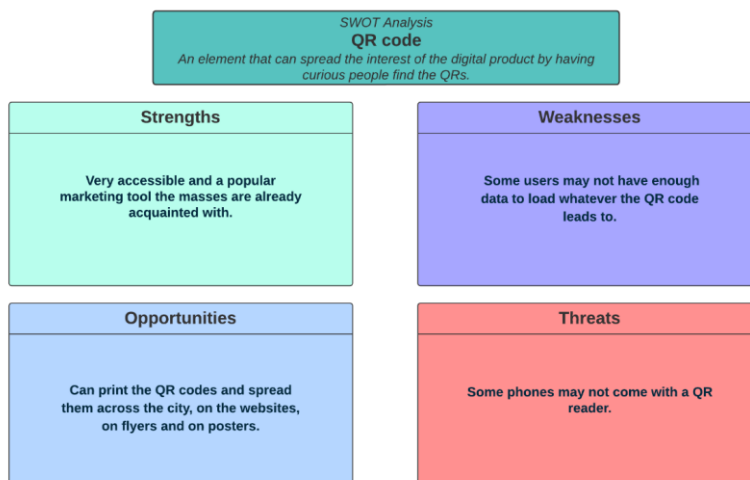
3.2 Define

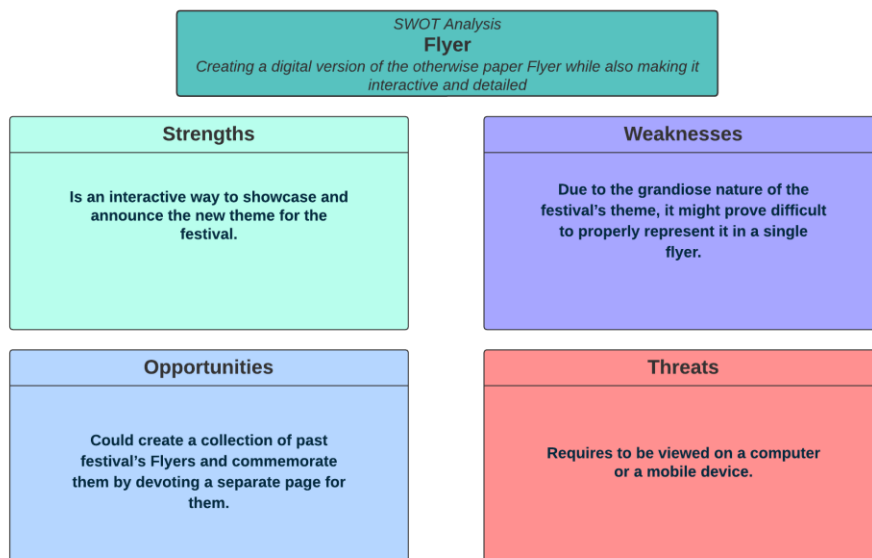
Concluding from the tests and the analysis of those tests, a few ideas will be chosen to further expand on are as follows: “Hidden Prize”, “Tablet Installation”, “Flyer”, “QR code” and “Shoebox”.

“Hidden Prize” was a clear choice due to the interest in it and “Tablet installation” was chosen for similar reasons, including it being the most budget friendly. “Flyer” will be the stand-in for “Promotional Art” as that is quite the umbrella term. A flyer was specifically chosen because of the potential to use visual storytelling when presenting and also the potential elimination of the use of paper flyers that are often improperly disposed of by the visitors. Finally, “QR code” and “Shoebox” were added to the list. The overall consensus for QR codes is that if they serve a purpose, there is a place for them. While “Shoebox” is a unique idea for merchandise and if done well could prove to be quite viable for future festivals.

3.3 Ideate

3.3.1 SWOT





SWOT Analysis
Tablet Installation
Creating an artwork that can be interacted with via touch controls on a tablet

Strengths

Easy to implement; easy to store and move across the festival; tablets come in various sizes.

Weaknesses

Can appear plain if not interacted with.

Opportunities

Can allow for a multitude of ideas to be implemented.

Threats

Since the final interactive product is a web page, there must be measures in place to avoid someone changing the page to something inappropriate.

SWOT Analysis
Shoebox
Creating a physical representation of the digital installation to generate revenue.

Strengths

Can be a relatively cheap product to make and has marketing opportunities.

Weaknesses

Such a product has not been sold before, thus there isn't any specified details on its mirth.

Opportunities

It has potential to be a kit, a ready-made product to buy or an on-location workshop with more options.

Threats

Until properly tested as merchandise, the company would run the risk of either over- or under-ordering.

From the SWOT on all of the ideas (Figure x,y,z) it became clear that the ideas have potential, however, to create a separate prototype to represent each idea would be inefficient. That would take too much time, too much effort and could potentially prove too much for the scope and time of this project. Thus, to eliminate these potential hurdles, the shoebox will be developed first as a prototype. The goal will be to aim for a Low-Fi prototype at minimum and Mid-Fi prototype at maximum.

For the rest, the best course of action will be to merge them into one product. To make this work and not be overwhelming, the main body of the project will be a flyer which will be created in a way to also be interesting to view as a tablet installation at GGOBOT. It will receive the most work when it comes to creating art. The QR code will be added to increase the marketability of the end product, while the promise of prizes hidden within the flyer will considerably raise the people's interest in the product and thus will give the QR code purpose.

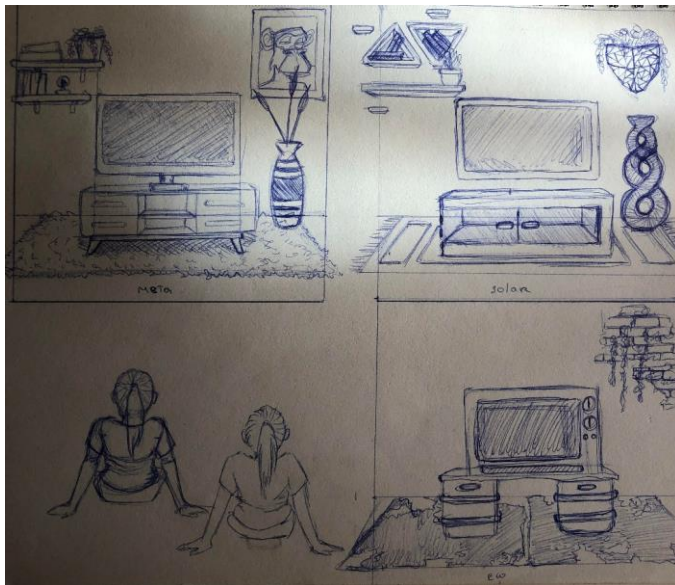
3.4 Prototype

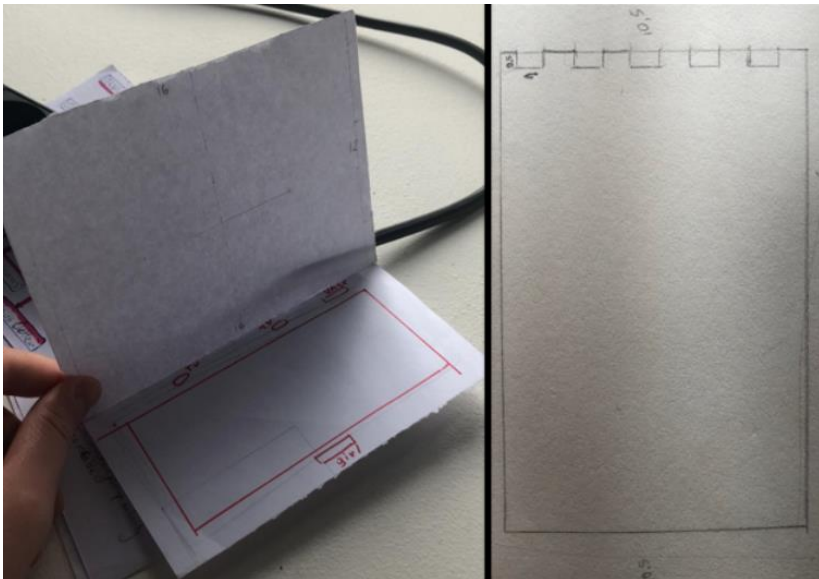
3.4.1 Shoebox - Sketches and Measurements

Starting with the Shoebox idea- a design of this year's festival theme was drawn out on paper to construct the first prototype. These designs (figure) served as the foundation for the digital mock-up (figure), which eventually evolved into a stylized shoebox model.

Before trying to cut anything out, preliminary measurements (figure) were taken to ensure its best portrayal. Taking it a step further, a piece of paper was cut out in the specified measurements (figure) to determine whether it was too big or too small. If it had been too small, the details would have been either severely constrained or simplified. However, if the size was too big, the end product would have been excessively unwieldy and inconvenient.

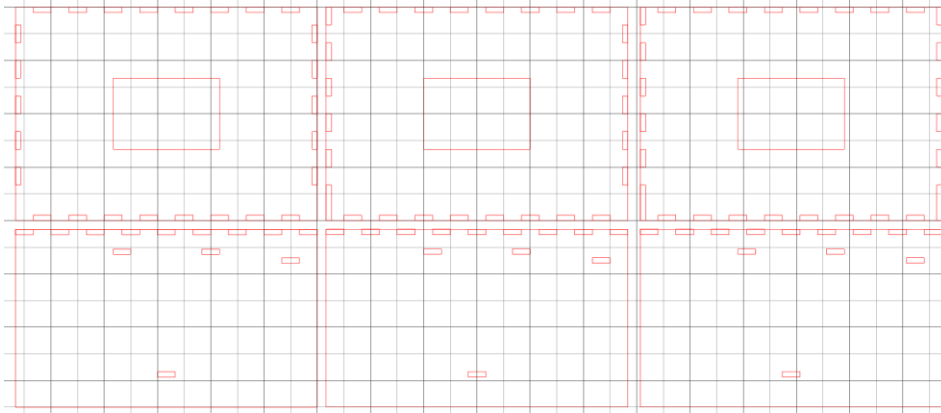
These extra steps of developing and testing aided the manufacturing process that came after. This ensured that no time or money was lost when eventually laser cutting the design out of thicker and more durable material, or that at least the waste was kept to a minimum.



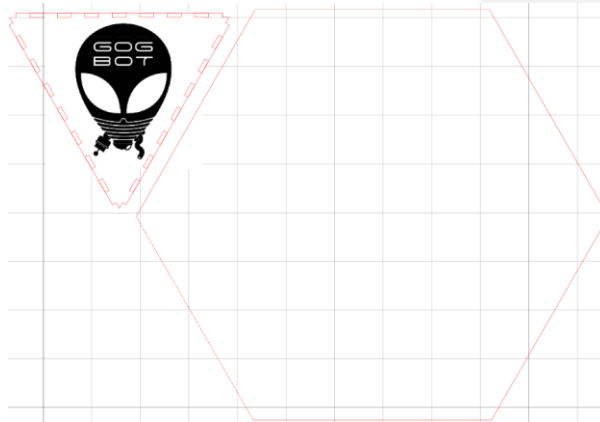


3.4.2 Shell of the Shoebox

The design's shell was cut initially (figure), and it served as a foundation for extra features to be added on top. The foundation was designed with interlocking edges that were cut in line with the thickness of the wood to provide the smoothest possible connection. There were some initial difficulties with the laser cutter that recur later on as well.



The first difficulty was that the laser cutters did not always correctly register the lines on the canvas. Simply put, the lines that needed to be cut should be in red and the lines that needed to be engraved should be in black (figure), and the software occasionally struggled to interpret them. This required backtracking and file modification until the problem was rectified. Second, the cutter had to cut and then engrave at times, but it couldn't be calibrated to start from the same spot and follow the same path, resulting in waste. Thankfully for the first time engraving (figure), the laser managed to overlap with the cut lines and engraved where needed. Finally, the lenses on the cutter had to be cleaned and correctly screwed back on, otherwise the lens would fall out of the laser and waste even more material. These were significant discoveries that proved to be important when troubleshooting later on.



3.5 Test

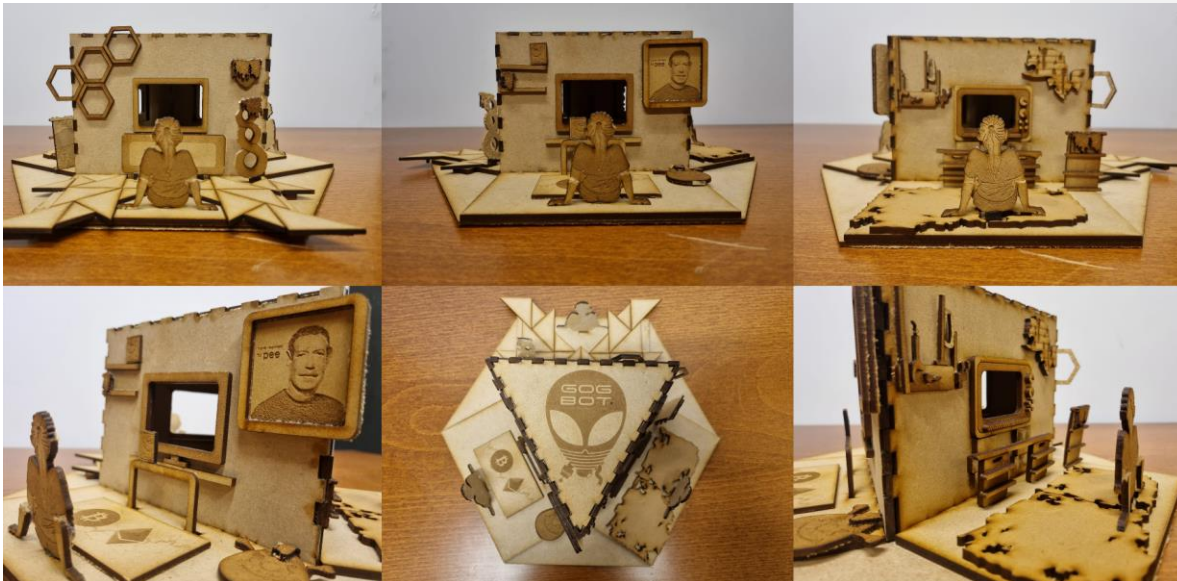
The main outcome of this testing was to generate interest towards the product and receive help in designing additional elements for the scenes. The composition had been liked and the idea was understood, however, in the sketch (figure) some elements that should repeat across the scenes missing. Through the creative input of the users, the missing elements were added and the scenes were better fleshed out.

4. Iteration IV

4.1 Prototype

The previous iteration's remarks assisted in better filling in and matching the aesthetics of each distinct chamber, resulting in discrepancies between the drawings (figure) and the finished shoebox (figure). As previously stated, difficulties with the laser cutter did reappear, the most notable of which being the cutter not going all the way through, necessitating hand cutting of the components. Some waste of material did occur, as the laser cutter had difficulty starting from the same point, so after the engraving, the cutting went over and ruined some of the engravings. The laser cutter couldn't be fixed by the staff, so the solution to this was to extend the canvas and force the laser's point to the very edge. This forced the laser to reset itself and always start from the same point.

Regardless, the prototype was a tremendous success in terms of production, reducing waste to a minimum and finding solutions to difficulties that arose during the process.



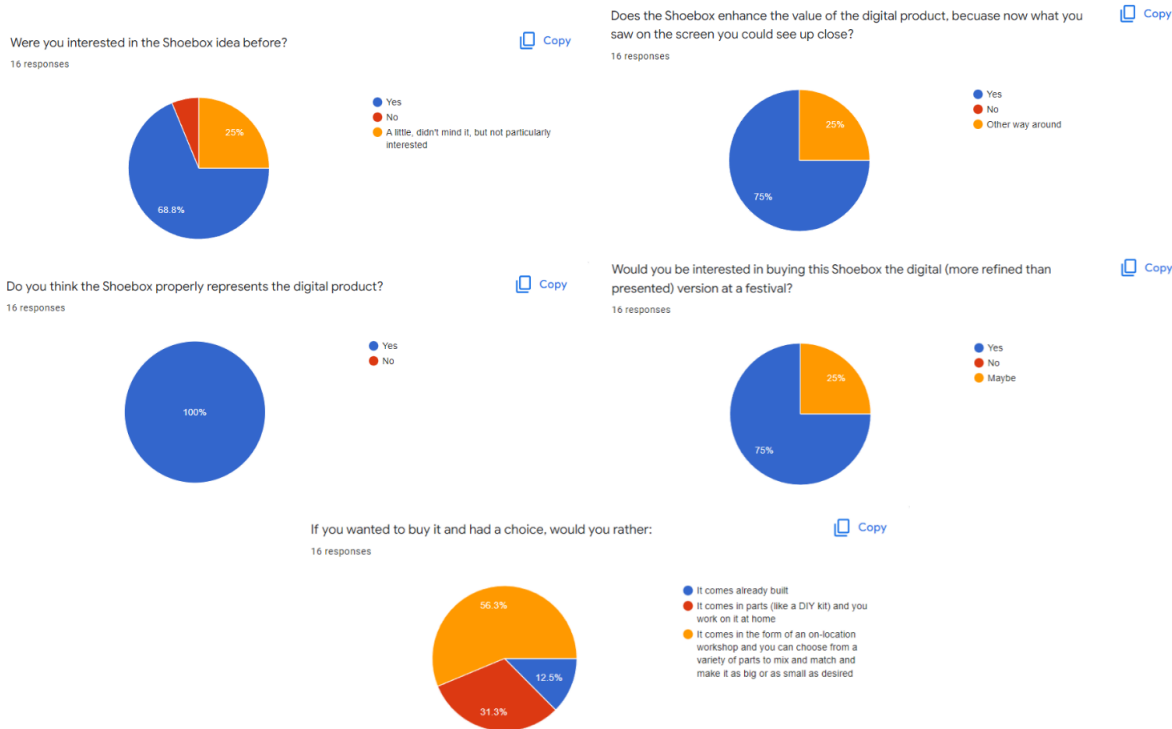
4.2 Test

4.2.1 Quantitative Unmoderated Testing Method

Due to time constraints, the quantitative unmoderated remote user testing approach was chosen. The main outcomes of this test were to gauge if there is interest in the product as merchandise for the festival. The questionnaire compares interest in the product before and after viewing an example of it, and it includes a video of the digital mock-up (figure) and the shoebox final prototype (figure).

4.2.1 Quantitative Unmoderated Testing Results

The quantitative testing findings (figure below) were quite encouraging, and these results indicate that the shoebox has promise. One may presume that the popularity of the product would then be determined by the material, price, and theme, which could not be tested due to the scope of this project. However, for future endeavours the company might include research on this subject, as it has promise.

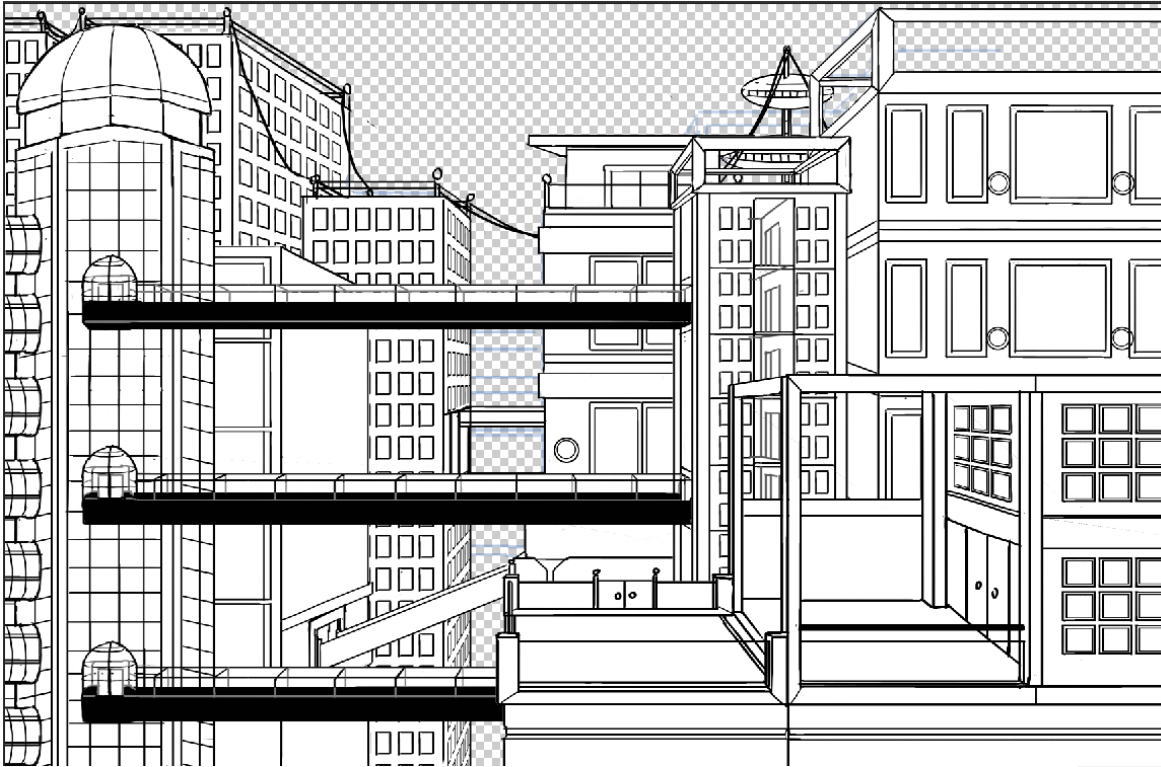


5. Iteration V

5.1 Prototype

For this iteration the linework (figure x) for half of the final prototype was done, along with the front of the flyer which was also coloured (figure). This took longer than expected due to the size of the canvas and the need to keep a lot of details on separate layers. However, the more difficult bits are finished and the next two iterations would be enough to finish the rest.

Next step after this iteration is to finish up as much as possible and then import all of the images into Mental Canvas and test it on the web. After finally publishing it on the web, a QR code will be generated and tested around alongside a tablet compatibility test.





6. Iteration VI

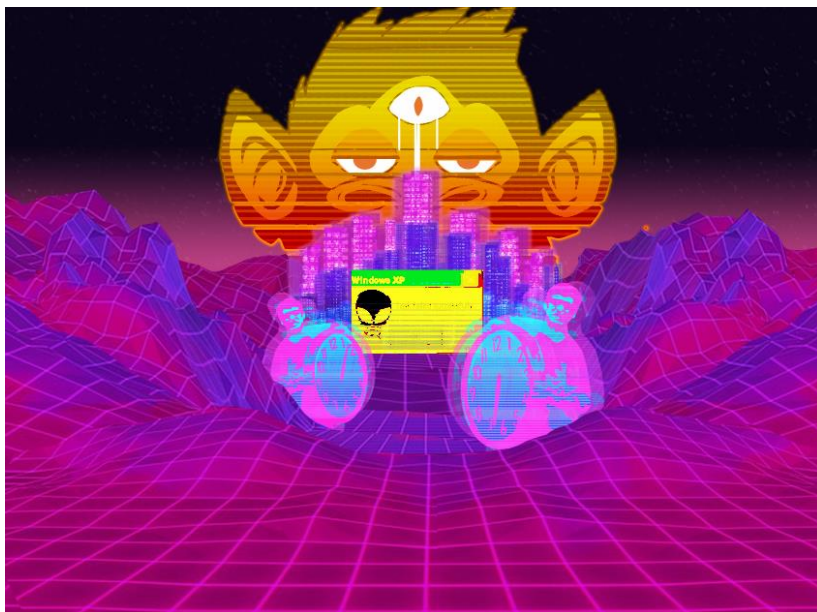
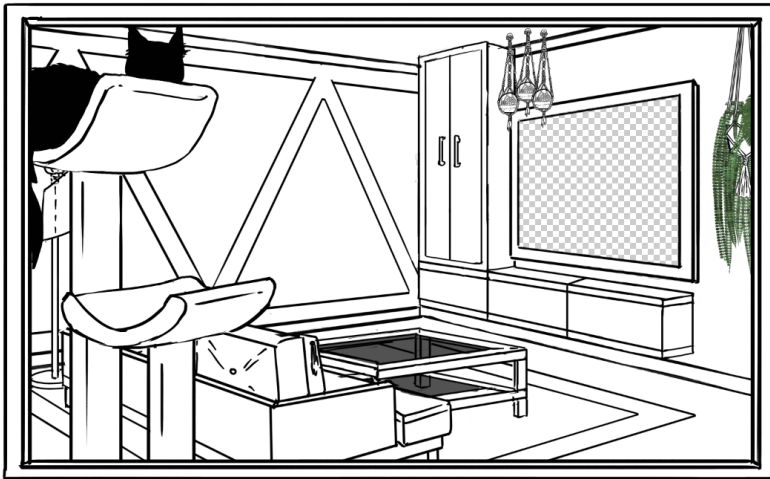
6.1 Prototype

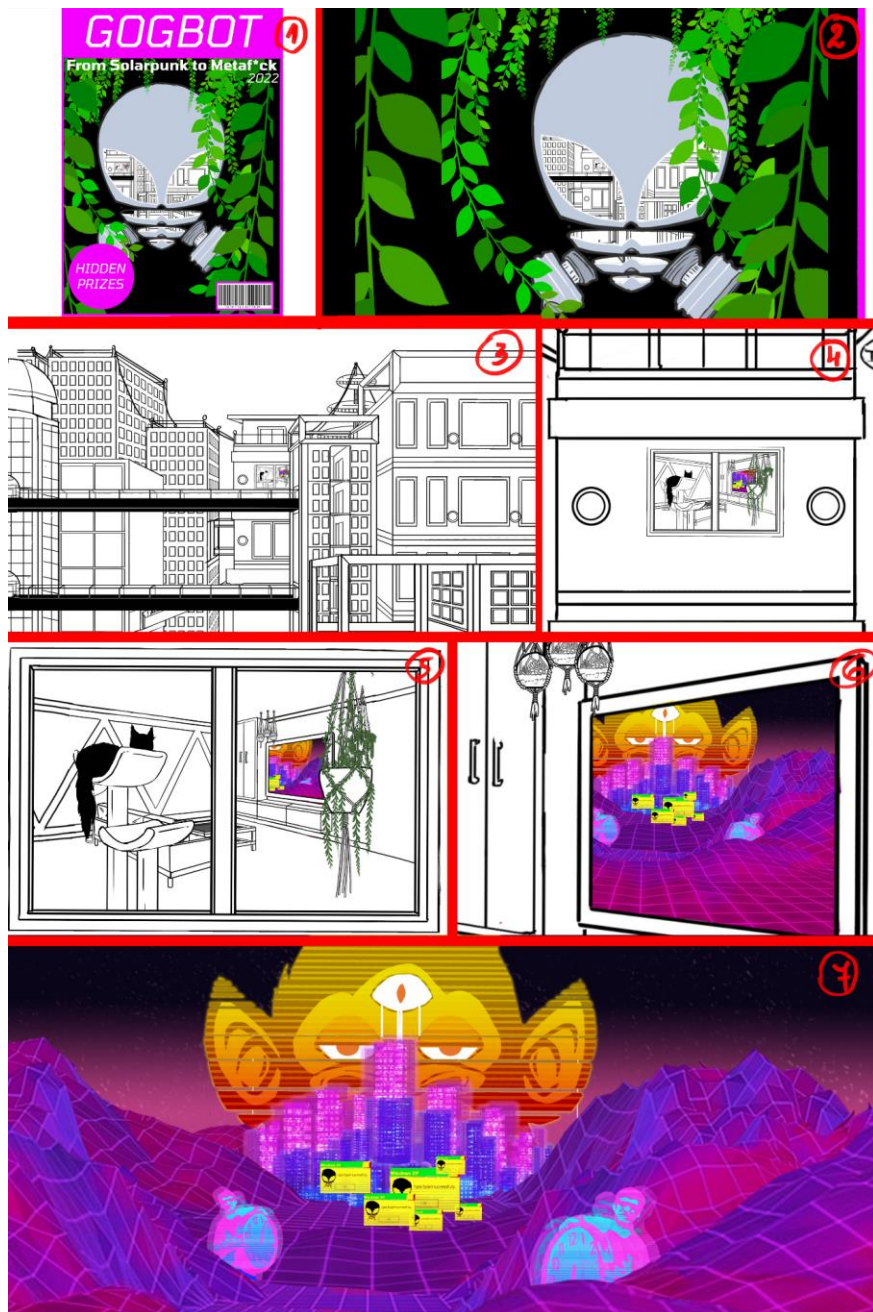
6.1.1 Finishing the artwork

Unfortunately, certain hindrances occurred in the last iteration cycle that were neither planned for nor predicted, and the artwork suffered as a result. This impediment leads to parts of the scenes being left colourless (figure) (figure) in order to control the workload and test the product and to still find a way to implement at least a single code hidden in a scene (figure). Regardless, the final artwork proves sufficient and pleasing to the eye (figure x,y,z,o).

Finally, after creating the artwork in Photoshop on separate layers, all of them have been imported in Mental Canvas. After some time spent placing and tweaking to get the right distance between each

layer, the project was finally exported from the program and was a success. The functionality was there, one could easily navigate the layers, albeit a bit sensitive when tested on a tablet the company assigned as the one to be used for the installation.





6.1.2 QR code

The QR code was quickly tested with a few mobile devices, making sure that the code can be scanned by most devices before moving on to the testing phase. After creating the QR code and explaining how it will be used, the company was more interested in having it there, compared to at first. Most of the company now understands the marketing purpose of it and with the added incentive of free gifts, the chances of people testing the QR code.



6.2 Test

6.2.1 Unmoderated Quantitative Testing Methods

Due to a shortage of time, only quantitative user testing was carried out. The major goal of this test was to find out if the audience liked the product, if they had any problems navigating the controls, and if they wanted to see more interactive 2D digital art. The questionnaire was designed to assess the QR code as well as the product's compatibility with various mobile devices. The survey also includes questions on the usefulness of the QR code, the secret code and general interest in the product.

6.2.2 Unmoderated Quantitative Testing Results

The audience's interest in the offering has been met with positive and reassuring responses (see appendix). As expected, the audience tested a range of devices, with the sole common criticism being that some found the touch screen controls to be overly sensitive when zooming in. However, it does not appear to be a major issue. Additionally, during the final installation, the tablet's controls might be tweaked to make them less sensitive.

Furthermore, virtually all of the testers were aware of the secret code (figure), which is quite encouraging. Although the majority did not properly guess the code, the fact that they are interested in the hidden rewards and were able to navigate their way to the code is a good indicator.

There were no overtly negative responses when asked about the QR code's importance. When asked if they would test it in their spare time knowing that there are prizes to be had, the majority of the testers said yes.

Overall the testing outcomes are positive and show clear signs of interest from the audience. This was the final test that needed conducting and the results directly affect the answer to the main question of this paper.

II. Conclusions

1. Answers to sub-questions

1.1 Finding insights on interactivity in and out of the context of art installations.

This sub-question has levels in order to better comprehend interactivity as a whole rather than as a catch-all phrase for everything. This prompted considerable research on the subject, and it was found that answering this topic in a few words is difficult. The definition of the phrase is largely dependent on the context, as well as any additional additions such as measurement and kind. As a result, this conclusion will summarize the aspects that are significant to the meaning of art installations.

Jensen (1998) provides the best general description of interactivity when referring to it as an informatics notion. It is concerned with the interaction of humans and machines and is particularly relevant in this context because most current interactive art installations include some form of device input and output system. This refers to the user witnessing outcomes, having control over what happens on the screen, dialogues, and so on, and so the user constantly impacts the machine's performance, to which it

Commented [JC7]: Some of these conclusions are new content at this point. Please make sure that everything you discuss here has already been discussed in one of the previous chapters. For example in several of the empathize sub chapters.

responds to the user's input.

Jensen's (1998) characterization of interactivity as continuums aka dimensions is the one that can best assess interactivity, analogous to definition. Jensen (1998) mentions that there is no genuine one method to measure a concept that is already so reliant on other elements; yet, with a multidimensional concept (see appendix for more details), it may be considered that it can adapt to the specific definition. Because the research was for art installations, all of the sorts of art installations previously stated are applicable. The availability of various categories enables for a more accurate categorizing of one's work. The interactive flyer, for example, is of the "Dynamic-Passive" kind since it has its own internal workings that cannot be changed but may react to outside changes, in this instance the user. Finally, knowing the proverbial components of an art installation and how they interact is an undoubtedly extremely significant aspect to completing the sub-questions. This provides insight into the typical dynamic around an exhibit.

1.2 What are the popular interactive/immersive technologies that get employed in the festival industry?

The most popular overall technologies appear to be extended reality gadgets. They are slightly more prevalent than others due to their general appeal among users and creators. However, according to the company, audio-visual content is frequently employed, often serving an additional background function if not at the foreground of an event (A. Bunt, personal communication, 26.04.2022). Furthermore, the company has already detected a trend and expects that the next most popular would be AI created content that reacts to the user (A. Bunt, personal communication, 26.04.2022).

1.3 What software would work best for this assignment?

The conclusion to this sub-question was that Mental Canvas was the optimum choice for efficiently creating a 2D interactive digital artwork. The conclusion is based on research on the program and its attributes (see more in the appendix) as well as user feedback.

This software was selected since it does not require the use of an extra application to generate the interactive component of the product. The application does it perfectly on its own for a reasonable monthly fee, and the only additional step is if the user wants to utilize other drawing software instead of the tools in Mental Canvas. That isn't an issue in this scenario because standard image import retains the resolution of the produced picture without trouble.

2. Answer to main question

How can 2D digital art be represented within an art festival in a creative, yet interactive manner that festival goers can also use independently?

Representing 2D digital art in a creative and dynamic way is a difficult undertaking, especially if the artist's budget does not allow for advanced technology, programming courses, or commercial software. There are several ways to exhibit interactive art at a festival, and none of them are incorrect or correct. This conclusion is based on the most cost-effective approach while keeping creative freedom and originality.

An interactive art display must first be reduced to its fundamental necessities. If the firm has no understanding what is interactive and what is not, it will be unable to effectively design or accept projects from artists to present at their festivals. This is critical since knowing what to strive for makes it simpler to create. Once the fundamentals are established, the focus shifts to devising methods for creating interactive artwork.

This study used an example method of an end product with interactive features to depict 2D digital art.

The project took the position that a 2D picture by itself is not interactive and cannot be coerced to be such. However, if it is possible to build a visually pleasing tale using layers of 2D pictures that can be walked through, then it is reasonable to believe that this is a method of creating interactive 2D digital art. The parallax effect of a picture with depth made purely with 2D pictures appropriately positioned in the foreground, midground, and background comes to mind at this moment. Creating depth and providing visual cues that the image goes farther than what the user can see (e.g., leaving transparent gaps between layers to offer the viewer a glance to the next scene) is how 2D digital art can be made into an interactive experience. As for the controls the user can move forward and backwards through the canvases, can rotate and see the surrounding and pan left and right. This can prompt the artist to create an almost 2.5D or 3D scene solely with 2D digital images that are cleverly placed to do so. This is a great way to make 2D digital art interactive. This method puts the art and creativity of the artist at the front and the controls are not complicated as to distract the user from the art to pay attention to the controls. This way, one creates a story the user can experience on their own pace, can explore and wonder pass what is immediately displayed on the screen.

2. Final product

<https://mentalcanvas.com/vm/x4pfj4c/scene/>



Discussion

These results build on the existing pool of academic knowledge, however it was used to obtain practical knowledge on the creation of interactive 2D digital art installations. The results indicate that this task is achievable and that one could still maintain creative freedom and expression. However, there have been some limitations that need to be addressed as they could have affected the outcomes of this paper. The first to acknowledge is the overall lack of time. The initial plan had been to do more testing than currently available. It was planned to do both quantitative and qualitative testing to get optimal results and to compare findings. However, as time progressed it became glaringly obvious that every minute counts and the time spent away doing active research or work was coming back later in the form of

extra workload. Thusly, to combat this influx of work, mostly quantitative unmoderated research was done. Because of this the sample size was modest in comparison to what it could have been. Another limitation worth noting is that this paper explores one certain way to achieve the goal, which should not mean it is the only way. Finally, there is the fact that the program used for this project has its limitation as of writing this paper. With the current version this project was made with, one cannot have two interactive products active at once. When exporting, the new one replaces the old one, thus meaning that these cannot last for long if an artist were to be commissioned by multiple companies to create interactive pieces.

Recommendations

For future endeavours there are definitely aspects that can be revisited to update or clarify the information of this paper. For example, what would be important to explore other methods and ways to answer the main research question. As previously stated, there isn't a single way to do it, thusly this project should be further iterated upon to look for better solutions. Potentially solutions that implement more programming or are created within another software, such as Blender and the Grease Pencil. Additionally, it would be beneficial for the testing to be repeated for optimal results and to specifically conduct qualitative, as getting other's direct feedback and opinion is sometimes more valuable than getting a lot of people to fill in a questionnaire.

III. Personal reflections

This project overall had a successful end to it. The look for researching materials was overall easy and successful, there was plenty of resources on the broader topics. Some of the topics have proven to be quite niche, but it didn't take too long to find information for those too. I would say that my work ethic and my communication skills were what really kept me from getting too overwhelmed with work. When I work I always strive for consistency and for efficiency and that in of itself is what got this project to the end. The next best quality of mine that managed to assist me on this project is having good communication skills that made those around me comfortable and willing to assist me. Because of this I made many pleasant new acquaintances and even friends that are willing to assist me after graduation. I plan on keeping these two aspects of myself always up to par as they are one of, if not the most important for me. I believe so because having people who are willing to assist you is a luxury that can propel one forward a few steps ahead in one's career.

However, during this project there were some things that could have been better and there were some unfortunate circumstances that ended up affecting my workload. Unfortunately, in the hopes of creating a good report with facts to back up what is presented and why it's there, in the beginning of the project too much time was spent on research and data analysis. This sadly came back later to cause more trouble as my time to work on the final product dwindled and some corners were cut in the process to maintain a certain workload. However, I had fallen ill at some point in this project and from that I lost the time I had designated to finish the product in and then continue writing the report. Additionally, some issues regarding the report kept resurfacing through this project and that also came up to a lot of work for the final weeks.

These issues overall could have been avoided if I had created my planning sooner and had a better overview of my workload, rather than keep working without thinking ahead. Thankfully I did get help with the planning and had an idea of what to do day in and day out, but damage had already been done and I could only try my best to control it. This is something that has happened to me before, this has not been as severe as other times, the biggest inconvenience being getting sick just as I've finally gotten control over my work. Regardless I am aware that this needs to be worked on more and I will try my

best in doing so all the while using any planning tool I can find.

As for if I've met the grading criteria, yes, I believe I have done better than an insufficient on all of them. I believe that, depending on the competence, I am either in sufficient or good. I must admit I do feel that these inconveniences I've experienced have taken a toll on my work and my report, thus I don't think I've excelled in any criteria, but I have not failed in any either.

IV. Literature references

- Ahmed, S. U. (2018, January). *Interaction and Interactivity: In the Context of Digital Interactive Art Installation* (No. 18). Springer, 1st ed. 2018 edition (July 10th, 2018).
https://doi.org/10.1007/978-3-319-91244-8_20
- Bakas, F. E., Duxbury, N., Remoaldo, P. C., & Matos, O. (2019). The social utility of small-scale art festivals with creative tourism in Portugal. *International Journal of Event and Festival Management*, 10(3), 248–266. <https://doi.org/10.1108/ijefm-02-2019-0009>
- Blender Foundation. (n.d.). *Grease Pencil*. Blender.Org. Retrieved March 10, 2022, from <https://www.blender.org/features/grease-pencil/#:%7E:text=Grease%20Pencil%20is%20a%20particular,storyboard%20tool%20among%20other%20things.&text=Grease%20Pencil%20object%20has%20three,points%2C%20edit%20lines%20and%20strokes>.
- Brad Schell Sells Software Company to Google | College of Engineering and Applied Science | University of Colorado Boulder. (n.d.). Brad Schell Sells Software Company to Google. Retrieved April 28, 2022, from <https://web.archive.org/web/20140307045443/http://www.colorado.edu/engineering/profile/brad-schell-sells-software-company-google>
- Butler, A. S. (2014, April 28). *Six Techniques to Brainstorm Ideas: #2 Mind Mapping*. Ava S. Butler. Retrieved May 15, 2022, from <https://www.avasbutler.com/six-techniques-to-brainstorm-ideas-2-mind-mapping/#.YoFlo6jP02w>
- Clock, S. (n.d.). *What Is Interactive Media? | Spinning Clock*. SpinningClock. Retrieved March 8, 2022, from <https://www.spinningclock.com/services/interactive-media/what-is-interactive-media>
- Contributor, G. (2021a, November 7). *Artistic Futures: Digital Interactive Installations*. AMT Lab @ CMU. Retrieved March 8, 2022, from <https://amt-lab.org/blog/2021/10/artistic-futures-digital-interactive-installations>
- Contributor, G. (2021b, November 7). *Artistic Futures: Digital Interactive Installations*. AMT Lab @ CMU. Retrieved February 24, 2022, from <https://amt-lab.org/blog/2021/10/artistic-futures-digital-interactive-installations>
- Cooper, Z. (2020, September 2). *The Future of Art: 8 Digital Installations and Interactive Spaces*. Journal. Retrieved February 22, 2022, from <https://architizer.com/blog/inspiration/collections/digital-art-projection-installations/>
- CTM. (n.d.). *CTM*. Retrieved February 22, 2022, from <https://www.ctm-festival.de/about/what-we-do>
- Dale, B. (2015, September 2). *Mental Canvas Adds More Perspective to a Children's Book About Seeing Two Sides*. Observer. Retrieved March 9, 2022, from <https://observer.com/2015/09/other-side-in-3d-istvan-banyai-mental-canvas/>
- De gedragscode voor de culturele en creatieve sector*. (n.d.). Fair Practice Code. Retrieved February 15, 2022, from <https://fairpracticecode.nl/nl>
- Digital Art Movement Overview*. (n.d.). The Art Story. Retrieved February 22, 2022, from <https://www.theartstory.org/movement/digital-art/>

- Dorsey, J., Xu, S., Smedresman, G., Rushmeier, H., & McMillan, L. (2007). The Mental Canvas: A Tool for Conceptual Architectural Design and Analysis. *15th Pacific Conference on Computer Graphics and Applications (PG'07)*, 201–210. <https://doi.org/10.1109/pg.2007.64>
- Edmonds, E., Turner, G., & Candy, L. (2004). Approaches to interactive art systems. *Association for Computing Machinery*, 113–117. <https://doi.org/10.1145/988834.988854>
- Edwards, G. (n.d.-a). *Interactive NFL Season Recap made with Mental Canvas*. NFL Season Recap. Retrieved June 13, 2022, from <https://mentalcanvas.com/nfl>
- Edwards, G. (n.d.-b). *LinkedIn - Greg Edwards*. LinkedIn - Greg Edwards. Retrieved March 10, 2022, from <https://www.linkedin.com/in/gregedw/>
- Etymology Corner - "Festival." (2020, August 26). Collins Dictionary Language Blog. Retrieved April 25, 2022, from <https://blog.collinsdictionary.com/language-lovers/etymology-corner-festival/#:~:text=The%20origin%20of%20the%20word,to%20a%20religious%20feast>
- FAKE ME HARD. (n.d.). *FAKE ME HARD*. Retrieved February 14, 2022, from <https://fakemehard.nl/>
- Gavin, B. (2018, September 4). *What is Sketchup (and How Do I Use It)?* How-To Geek. Retrieved March 13, 2022, from <https://www.howtogeek.com/364232/what-is-sketchup/>
- GGOBOT - PLANETART. (n.d.). *GGOBOT Festival - PLANETART*. GGOBOT Festival - PLANETART. Retrieved February 9, 2022, from https://www.planetart.nl/gogobot_festival/
- Great Dionysia | ancient Greek festival. (n.d.). Encyclopedia Britannica. Retrieved April 25, 2022, from <https://www.britannica.com/topic/Great-Dionysia>
- Hatton, S. (n.d.). *BEE WORKS - Sarah Hatton - Visual Artist*. BEE WORKS. Retrieved February 28, 2022, from <http://sarahhattonartist.com/conceptual/bees/>
- Hoffman, B., Ware, J., & Shapiro, E. (2020). Assessing the Threat of Incel Violence. *Studies in Conflict & Terrorism*, 43(7), 565–587. <https://doi.org/10.1080/1057610x.2020.1751459>
- Indo-Asian News Service. (2014, November 27). *The Human Brain Can Distinguish Between Virtual and Real: Study*. NDTV Gadgets 360. Retrieved April 27, 2022, from <https://gadgets360.com/science/news/the-human-brain-can-distinguish-between-virtual-and-real-study-626732>
- Jensen, J. F. (1998). Nordicom Review. *Interactivity: Tracking a New Concept in Media and Communication Studies*, 12(1), 185–204. <https://www.semanticscholar.org/paper/Interactivity%3A-Tracking-a-New-Concept-in-Media-and-Jensen/b04de1353d87619b40102fcab04f393615ba4e10>
- Jensen, J. F. (2008). The concept of interactivity -- revisited. *Proceeding of the 1st International Conference on Designing Interactive User Experiences for TV and Video - UxTV '08*. <https://doi.org/10.1145/1453805.1453831>
- Kenwright, B. (2018). Virtual Reality: Ethical Challenges and Dangers [Opinion]. *IEEE Technology and Society Magazine*, 37(4), 20–25. <https://doi.org/10.1109/mts.2018.2876104>
- Koh, A. (2022, April 25). *A comic artist's debut made possible with 3D software*. A Comic Artist's Debut Made Possible with 3D Software. Retrieved April 28, 2022, from <https://blog.sketchup.com/home/a-comic-artist-s-debut-made-possible-with-3d-software>
- Lee, H., Jung, T. H., Tom Dieck, M., & Chung, N. (2020). Experiencing immersive virtual reality in museums. *Information & Management*, 57(5). <https://doi.org/10.1016/j.im.2019.103229>
- Leung, J., Lara, D. M., Blender Foundation, & Pepe School Land. (2015). *Grease Pencil: Integrating Animated Freehand Drawings into 3D Production Environments*. Grease Pencil: Integrating Animated Freehand Drawings into 3D Production Environments. <https://doi.org/10.1145/2820903.2820924>
- Mahoney, K. D. (n.d.). *Latdict*. Latdict. Retrieved April 25, 2022, from <http://www.latin-dictionary.net/search/latin/Festa>

Mental Canvas - About. (n.d.). Mental Canvas - About. Retrieved March 9, 2022, from <https://www.mentalcanvas.com/about>

MoSCoW Prioritization. (2021, September 11). MoSCoW Prioritization. Retrieved May 16, 2022, from <https://www.productplan.com/glossary/moscow-prioritization/#:%7E:text=MoSCoW%20prioritization%2C%20also%20known%20as,will%20not%20have%20right%20now.>

Museum of the Future – PLANETART. (n.d.). *Museum of the Future – PLANETART.* Retrieved February 10, 2022, from <https://www.planetart.nl/museum-of-the-future/>

Museumnacht Enschede - In het donker zie je meer! (n.d.). Museumnacht Enschede 2021. Retrieved February 10, 2022, from <https://www.museumnachtenschede.nl/>

Plane White. (2013, July 24). Architizer. Retrieved February 22, 2022, from <https://architizer.com/projects/plane-white/>

PLANETART. (n.d.). *ABOUT – PLANETART.* Retrieved February 8, 2022, from <https://www.planetart.nl/homepage-a-2/>

Qu, M., & Cheer, J. M. (2020). Community art festivals and sustainable rural revitalisation. *Journal of Sustainable Tourism*, 29(11–12), 1756–1775. <https://doi.org/10.1080/09669582.2020.1856858>

Quinn, B. (2005). Arts Festivals and the City. *Urban Studies*, 42(5–6), 927–943. <https://doi.org/10.1080/00420980500107250>

Rafaeli, S., & Ariel, Y. (2012). Assessing interactivity in computer-mediated research. *Oxford Handbooks Online.* <https://doi.org/10.1093/oxfordhb/9780199561803.013.0006>

Ravassard, P., Kees, A., Willers, B., Ho, D., Aharoni, D., Cushman, J., Aghajan, Z. M., & Mehta, M. R. (2013). Multisensory Control of Hippocampal Spatiotemporal Selectivity. *Science*, 340(6138), 1342–1346. <https://doi.org/10.1126/science.1232655>

Remie, B. (2021, June 13). *Kunstenaar Cas Klaver uit Enschede zegt 24 uur lang elke minuut de tijd: 'Wat doe ik mezelf aan, dit is eenzaam en zinloos.'* tubantia.nl. Retrieved February 9, 2022, from <https://www.tubantia.nl/enschede/kunstenaar-cas-klaver-uit-enschede-zegt-24-uur-lang-elke-minuut-de-tijd-wat-doe-ik-mezelf-aan-dit-is-eeenzaam-en-zinloos~a587d0a8/?referrer=https%3A%2F%2Fwww.google.com%2F>

SketchUp. (n.d.). *3D Design Software | 3D Modeling on the Web.* Retrieved March 12, 2022, from <https://www.sketchup.com/>

SketchUp | SketchUp Help. (n.d.). SketchUp. Retrieved June 13, 2022, from <https://help.sketchup.com/en/sketchup/sketchup>

Smuts, A. (2009). What Is Interactivity? *The Journal of Aesthetic Education*, 43(4), 53–73. <https://doi.org/10.1353/jae.0.0062>

Solon, O. (2013, November 21). *Artist uses dead bees to create mathematical patterns.* WIRED UK. Retrieved February 28, 2022, from <https://www.wired.co.uk/article/bee-art>

Sonic Act - About. (n.d.-a). *Sonic Act - About.* Retrieved February 22, 2022, from <https://sonicacts.com/portal/about>

Sonic Act - About. (n.d.-b). *Sonic Acts - Festival Editions.* Sonic Acts - Festival Editions. Retrieved February 22, 2022, from <https://sonicacts.com/portal/festival-editions>

Spacey, J. (n.d.). *12 Types of Interactive Media.* Simplicable. Retrieved March 8, 2022, from <https://simplicable.com/new/interactive-media>

Statista. (2022, April 8). *XR/AR/VR/MR market size 2021–2028.* Retrieved April 27, 2022, from <https://www.statista.com/statistics/591181/global-augmented-virtual-reality-market-size/>

TEC ART. (2021, March 5). *TEC ART 2020 | Festival for Creative Technology.* Retrieved February 10, 2022, from <https://2020.tecart.nl/>

TEC ART - PLANETART. (n.d.). *TEC ART Festival – PLANETART.* Retrieved February 10, 2022, from <https://www.planetart.nl/tec-art-festival/>

The SPACEBAR – PLANETART. (n.d.). *The SPACEBAR – PLANETART*. Retrieved February 11, 2022, from <https://www.planetart.nl/the-spacebar/>

TodaysArt. (n.d.). *About - TodaysArt - Global platform for art, creativity and technology*. Retrieved February 22, 2022, from <https://todaysart.org/about/>

Trimble to Enhance its Office-to-Field Platform with the Acquisition of Google's SketchUp 3D Modeling Platform. (n.d.). Trimble, Inc. Retrieved April 28, 2022, from <https://investor.trimble.com/news-releases/news-release-details/trimble-enhance-its-office-field-platform-acquisition-googles?releaseid=667690>

Tsai City Center for Innovative Thinking at Yale. (2020, August 19). *Q&A with Julie Dorsey: Yale Faculty Founder of Mental Canvas*. Tsai CITY. Retrieved March 10, 2022, from <https://city.yale.edu/stories/2017/9/26/qa-with-julie-dorsey-yale-faculty-founder-of-mental-canvas>

ViaOral. (2018, July 26). *ViaOral | ++NeoPop++DaDa++ | Mix Media Art Collective*. Via Oral. Retrieved February 9, 2022, from <https://viaoral.nl/>

Virtual and Augmented Reality: Pros and Cons. (2022, February 10). Encora. Retrieved April 27, 2022, from <https://www.encora.com/insights/virtual-and-augmented-reality-pros-and-cons>

Vonesh, M. (2018, June 25). *Interactive, Digital Art Museum Opens in Tokyo*. Smithsonian Magazine. Retrieved March 8, 2022, from <https://www.smithsonianmag.com/smart-news/interactive-digital-art-museum-opens-tokyo-180969439/>

WARP Technopolis. (n.d.). *WARP Technopolis – WARP Technopolis*. WARP. Retrieved February 9, 2022, from <https://www.warp.nl/>

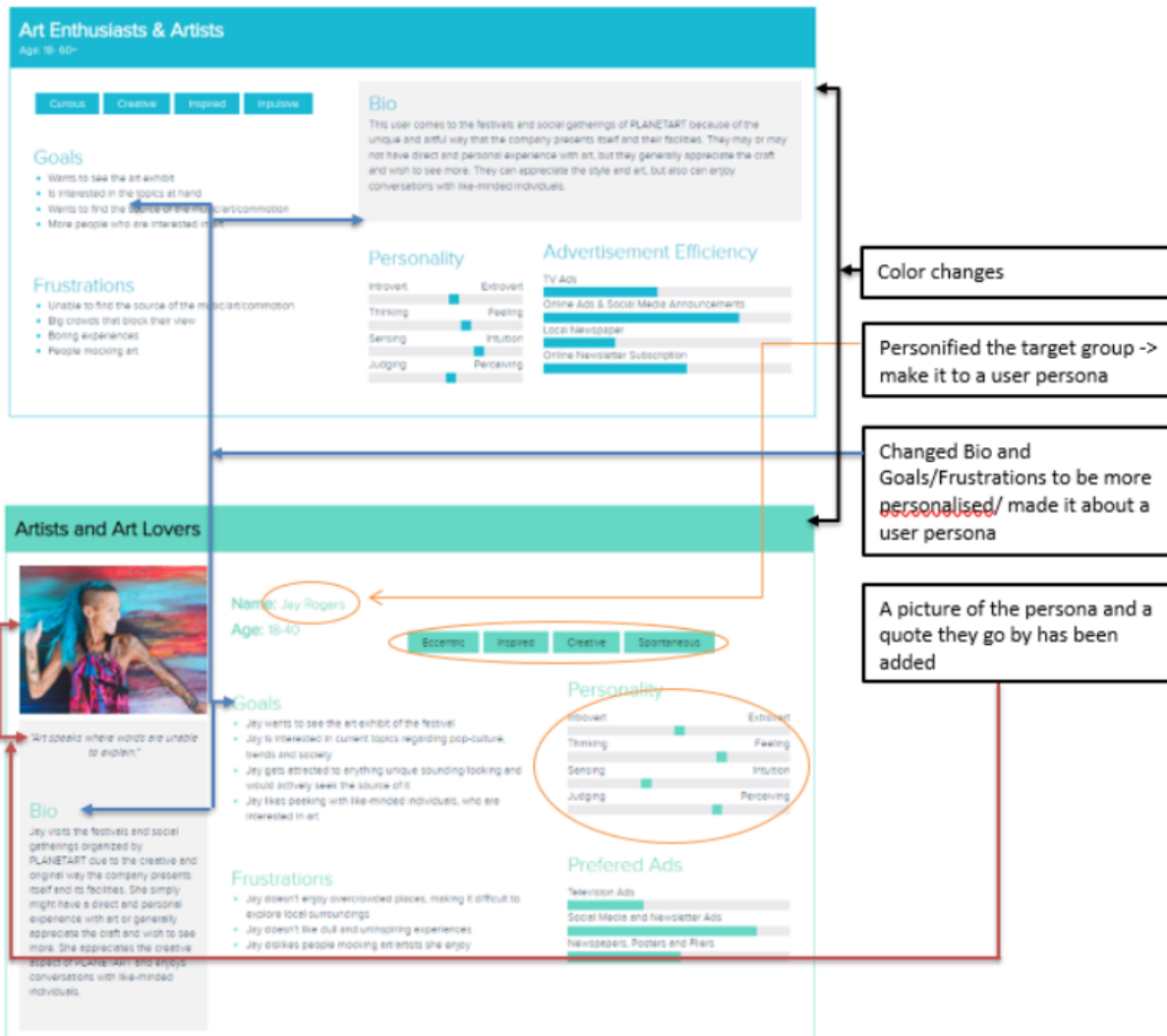
WARP Technopolis – PLANETART. (n.d.). *WARP Technopolis – PLANETART*. Retrieved February 10, 2022, from <https://www.planetart.nl/creative-breedingground/>

Wayback Machine - Mental Canvas - About. (n.d.). Wayback Machine - Mental Canvas - About. Retrieved February 9, 2022, from <https://web.archive.org/web/20161121203153/https://www.mentalcanvas.com/about>

What Is Interactive Media? (2021, December 6). Investopedia. Retrieved March 8, 2022, from <https://www.investopedia.com/terms/i/interactive-media.asp>

WORM - ROTTERDAM. (n.d.). *Worm - A Rotterdam based organisation working at the intersection of culture and arts*. Worm. Retrieved February 10, 2022, from <https://worm.org/about/>

Appendix



Art Enthusiasts & Artists

Age: 18- 60+

Curious Creative Inspired Impulsive

Goals

- Wants to see the art exhibit
- Is interested in the topics at hand
- Wants to find the source of the music/art/commotion
- More people who are interested in art

Frustrations

- Unable to find the source of the music/art/commotion
- Big crowds that block their view
- Boring experiences
- People mocking art

Bio

This user comes to the festivals and social gatherings of PLANETART because of the unique and artful way that the company presents itself and their facilities. They may or may not have direct and personal experience with art, but they generally appreciate the craft and wish to see more. They can appreciate the style and art, but also can enjoy conversations with like-minded individuals.

Personality

Introvert	Extrovert
Thinking	Feeling
Sensing	Intuition
Judging	Perceiving

Advertisement Efficiency

TV Ads	
Online Ads & Social Media Announcements	
Local Newspaper	
Online Newsletter Subscription	


Color changes

Personalized the target group -> make it to a user persona

Changed Bio and Goals/Frustrations to be more personalised/ made it about a user persona

A picture of the persona and a quote they go by has been added

Artists and Art Lovers



Name: Jay Rogers
Age: 18-40

Eccentric Inspired Creative Spontaneous

Goals

- Jay wants to see the art exhibit of the festival
- Jay is interested in current topics regarding pop-culture, trends and society
- Jay gets attracted to anything unique sounding/looking and would actively seek the source of it
- Jay likes peaking with like-minded individuals, who are interested in art

Bio

Jay visits the festivals and social gatherings organized by PLANETART due to the creative and original way the company presents itself and its facilities. She simply might have a direct and personal experience with art or generally appreciate the craft and wish to see more. She appreciates the creative aspect of PLANETART and enjoys conversations with like-minded individuals.

Frustrations

- Jay doesn't enjoy overcrowded places, making it difficult to explore local surroundings
- Jay doesn't like dull and uninspiring experiences
- Jay dislikes people mocking artists she enjoys

Personality

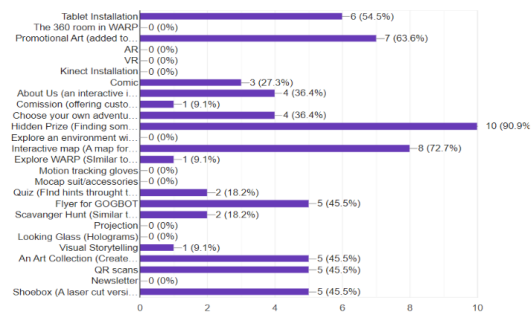
Introvert	Extrovert
Thinking	Feeling
Sensing	Intuition
Judging	Perceiving

Preferred Ads

Television Ads	
Social Media and Newsletter Ads	
Newspapers, Posters and Flyers	

Choose multiple for: MUST

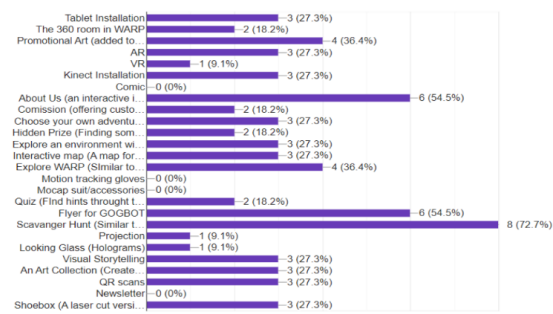
11 responses



Copy

Choose multiple for: SHOULD

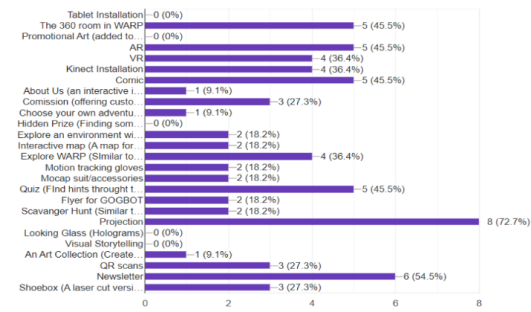
11 responses



Copy

Choose multiple for: COULD

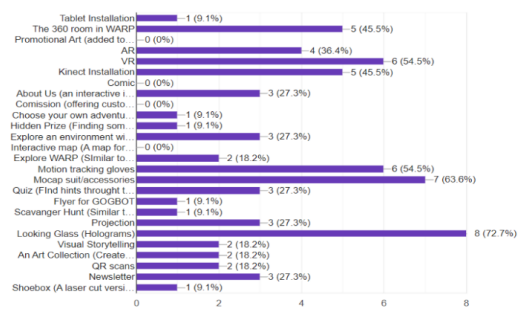
11 responses



Copy

Choose multiple for: WISH

11 responses

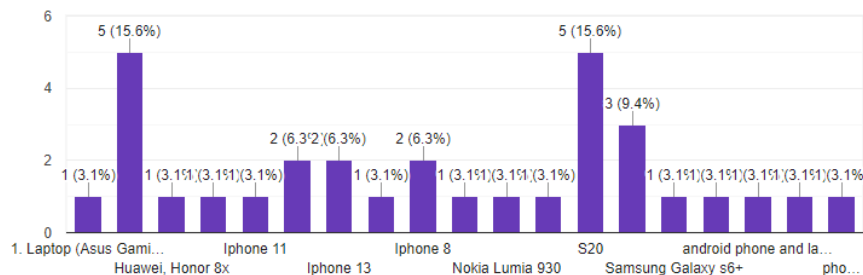


Copy

What device did you scan the QR code with (specify the model of the phone/tablet
e.g Iphone 8, Huawei, Samsung Galaxy etc)



32 responses



Did you encounter any problems? Can something be improved? (please specify if the
problem/improvement is for PC, mobile device or both)

32 responses

Mobile a bit to sensitive but otherwise very nice

A bit to sensitive the scrolling inwards

No

No, pretty self explanatory the controllrs

Very easy to understand the controllrs

Yes

None

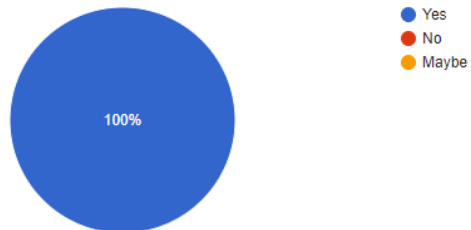
Quite sensitive on the zooming but otherwise no

On mobile a bit to sensitive the zooming but otherwise very nice

Would you be interested in seeing this as an art installation at GOGBOT? For example displayed on a tablet with a custom stand or a bigger touch display

 Copy

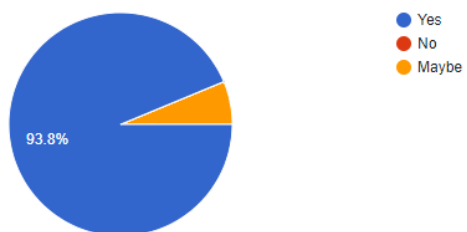
32 responses



Would you look for hidden codes to get prizes such as merch from GOGBOT? (the harder the puzzle, the bigger the prize e.g. a hoodie)

 Copy

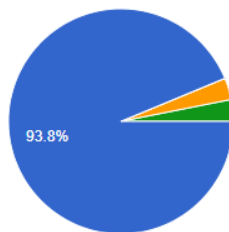
32 responses



Do you like the art displayed on the flyer?

32 responses

 Copy



- Yes
- No
- it's very beautiful
- i don't know how difficult it is to make it but i'd colour everything

Would you like to see more of these interactive flyers in future festivals?

32 responses

 Copy

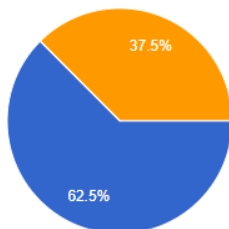


- Yes
- No
- Maybe

If the QR code was on a poster, would you check it out knowing it 's an interactive flyer with prizes?

32 responses

 Copy

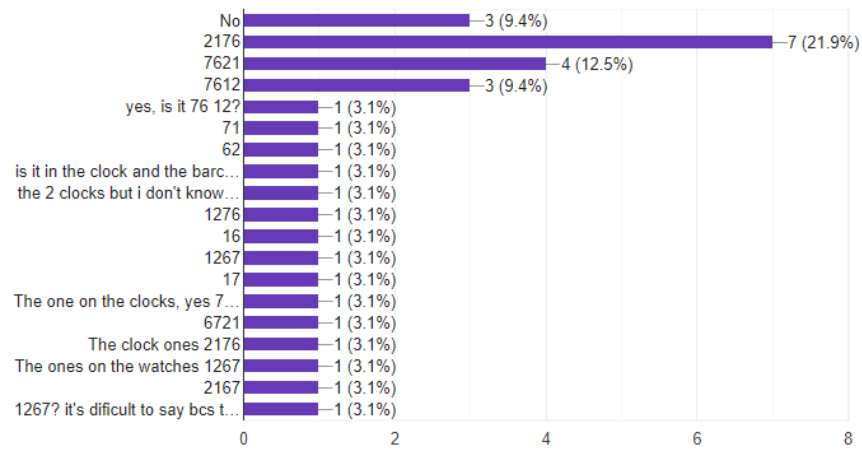


- Yes
- No
- Maybe

Did you see the hidden code? If yes, what is the code?

 Copy

32 responses



Small mistake at the age, instead of a single number that indicates that this is supposed to be a persona, there stood an age range. Additionally, the 'Preferred Ads' had two small changes, adding 'Radio Ads' on the first row along with 'Television Ads' and an entirely new row was added for 'Referrals' to showcase how word travels among the target group.

