Digital Portfolio Gallery - Africa Red Jackets

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Outline of goal:

To create an interactable virtual portfolio for job seekers looking to present an innovative demonstration of work and personal growth.

Contents

1. Initial Opportunities

1.1. Summary

As a group we were able to determine one of the central factors of this prototype would be portability. Though there was some debate between whether we take a marker-based or markerless approach, as both had their advantages, we settled on markerless due to the flexibility it provides alongside it aligning with the client's preferences.
Similarly, we determined who would be the central users of this prototype, this being students wanting to present their portfolio in an innovative way. This would likewise be useful for those out of school wanting to simply present their portfolios in a manner that allows the individual artefacts to be interacted with, further showcasing the level of skill the student has. This AR program would also provide opportunities for teachers, employers and other users to look through previous iterations of the portfolio artefacts. This allows for viewers to witness how the portfolio was initially and what it looked like after it was refined further, as a way of reflecting the owner's personal growth to potential employers.

1.2. Hayden Ry'dell

During the initial group discussion of the augmented reality (AR) digital portfolio gallery, many ideas and concepts were shared and debated and after discussing with the client and establishing their needs and wishes for the AR program, it was concluded that we would:

- Be primarily creating this program for students, teachers, employers and those wishing to be hired;
- That the AR program would run on Android, with an iOS version planned for the future;
- Host portfolio artefacts that would include 3D models, code, audio files, images and textures;
- Version control system that would allow the user to browse previous iterations of individual artefacts.

Given that the hardware being worked on is mobile through the use of its camera/s, there was reason to discuss based on limitations of equipment. Markers, scanners, projectors and other physical components would make the program impractical and unreliable for the majority of stakeholders, so efficient alternatives were argued.

At first, many of the team members continued to come back to the idea of marker-based tracking through the use of Quick Response (QR) codes, likely due to it being a simple concept to envision developing for and its portable nature—where you can quickly pick up the code and give it to someone else. Upon further discussion with the client, focusing attention away from marker-based tracking and onto a more sophisticated

technology was proposed. Discussion delved into local area networks (LAN), gyroscope, location, Global Positioning System (GPS) technologies, and room scanning.

1.3. Thomas Bickley

During discussion, I focussed my attention on the big picture regarding what our solution was trying to solve and for whom. This involved attempting to really hone down who the audience was and what they wanted from our potential solution.
In order to accomplish this, we interviewed our client on their intentions for the product and brainstormed amongst ourselves who would best benefit from such a solution. From there, we were able to narrow our direction towards providing the best experience for our would-be users.
From our discussion we decided that users looking to be employed, such as students or recent graduates, would benefit most from the ability to showcase their work and their own personal growth through it. Likewise, we found this type of medium; an AR gallery, would be of most use for portfolio elements which lend themselves better to an AR environment, due to the increased level of interaction.

1.4. Ben Fili

As per any project that has been done in the past, at the start of each project, the important questions have to be answered at the start. The questions follow a template that I have been using in the past and have been proven to work successfully. These are the 5W1H questions methodology. As a result, this context raises these questions; “What the product is about?”; “Who is it for?”; “Where will it be used?”; “When will the product be of use?”; “Why does it exist?”; and “How would it exist?”. From first impressions of the product goal, it seems like an educational product that will be utilised by students for showcasing their work through a modern and interactive manner, used in a professional setting that usually would be in university scenarios, but also portable enough to be displayed anywhere. Which can be accessible anytime, even long after the original prime date of the presentation of said work, to be shown as a portfolio of one’s career. And stored mostly online, but have the capability to be stored offline, to be easily accessible for impromptu display.

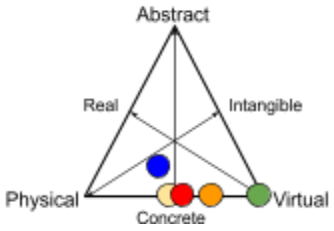
1.5. Stephanie Sagolj

During the “How Might We” phase, we as a group were debating whether to go with marker-based tracking or some other method. Upon asking the representative of the client, we were steered toward perhaps using an alternate method, specifically to not rely on the use of marker-based tracking and go towards markerless. The reasoning behind

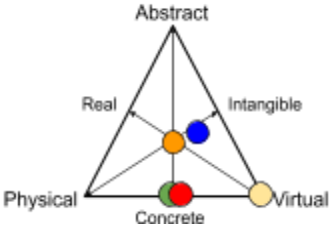
this was to allow the application to potentially acknowledge the space it is placed within and figure out its parameters in order to set up a virtual gallery within any unique space. Through research we discovered that markerless tracking has already been used in such a manner, with the application PLNAR, meaning that this is something that can be achieved via the use of a smartphone camera. With this as a starting point we could attempt to construct something similar in nature whilst allowing the user to then place their own portfolio elements within this defined space. Given the constraints on us also in regards to equipment, markerless tracking is actually highly beneficial to use with mobile AR due to it being able to work in unprepared locations, therefore being able to utilise it would be advantageous.

2. Classification

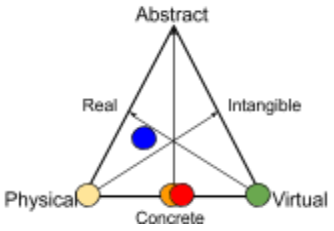
Nature of Reality



Location (setting)

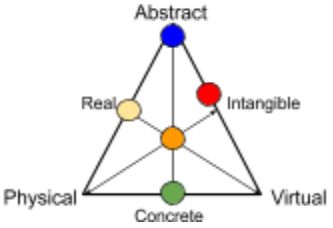


Objects

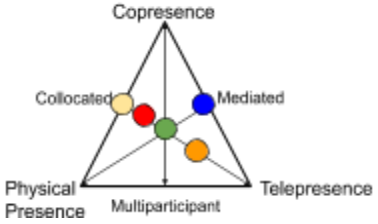


Interaction and Feedback

Concepts Explored



Participant Engagement



Design of Experience

Key

2.1. Group Consensus

Although having different opinions, there are some areas that we agree on. For example, we agreed on the lack of abstract aspect in the nature of reality and objects for interaction, or the lack of physical aspect in the location (setting) and interaction and feedback.

2.1.1. Nature of Reality - (Concrete)

The gallery itself will be a virtual space ‘stretched over’ the physical room it is being launched in. Utilising markerless tracking, the program will detect the dimensions of the room, then form the gallery within the dimensions.
As the gallery finds space available, it will place portfolio elements within the available space.

2.1.2. Location (setting) - (Concrete)

The gallery itself, whilst completely virtual, is located within a physical room. Not only this, but the gallery is most likely, as per most people's tech restrictions, viewed through a phone. As such, the location can be classified as concrete.

2.1.3. Objects - (Concrete)

All of the objects found within the gallery, the portfolio elements, are virtual. However, as the phone, used for viewing into the virtual gallery, can be considered a physical object, the objects category can be classified as concrete overall.

2.1.4. Interaction & Feedback - (Towards Concrete)

The gallery would exist having all forms of feedback possible. Physical interaction & feedback refers to interacting with the gallery via the physical phone and how the view changes as you move the phone. Virtual interaction & feedback refers to interacting with the portfolio elements themselves and seeing how they react, such as playing music or showing code in the gallery. Finally, whilst there would not be much to justify an even split between all three forms, there would be abstract feedback in the form sound cues as you interact with the gallery itself.

2.1.5. Concepts Explored - (Intangible, Towards Abstract)

Essentially asks what the purpose of the application will be. Given this application is situated around allowing the user to create their own portfolios of their own work, it would suggest the application uses more intangible oriented concepts. This is primarily to do with the amount of freedom a portfolio creator would have, as their artefacts would have a degree of spatial representation when being viewed but may not necessarily reflect the real world. Given narration of descriptions are available to the creator, this could shift towards more abstract concepts some more.

2.1.6. Participant Engagement - (Towards Collocated)

Whilst the focus of the gallery will be users interacting with each other in-person as well as with the gallery itself, it could be beneficial for the ability to interact with potential employers virtually within the gallery itself, should the owner only be able to communicate remotely.

2.1.7. Design of Experience - (Improvisation)

Whilst we expect the owner of the gallery to personally show viewers around the gallery, if this is to be best used as a tool for gaining employment, this all falls within the owner's control. As such, whilst the owner might script and how they show the viewers around, this does not fall upon the gallery. As such, this falls under improvisation.

2.2. Hayden Ry'dell Justification

In order to better understand virtual reality (VR) and augmented reality (AR) being viewed as one general spectrum, the idea of randomly designating points on the previously shown triangles and justifying the application based on the setting received was thought of. The process simply involves randomly generating a number between one and seven, where one is the setting listed at the top of the triangle, then incrementing clockwise with seven being the middle of the triangle. Generally my actual views on how the application should be conceptualized align with those provided in the *2.1. Group Consensus* listed above.

2.2.1. Nature of Reality (Concrete)

The nature of reality refers to the type of application being built—that being VR, AR, mixed reality (MR) or something else entirely. Defining the portfolio as a concrete application would likely entail functioning by projecting the 'virtual' portfolio artefacts onto a 'physical' or real-world space, through the use of some type of camera. This is essentially the ideal nature given the project.

2.2.2. Location (Virtual)

The location would refer to where the application's world is present, whether it is situated in a virtual world or could be used in the physical one and to what extent. Given a completely virtual setting, the application would take place in a fictional world that the user would navigate through use of an avatar, which would likely require the use of an external device such as a headset diminishing the application's desired portability.

2.2.3. Objects for interaction (Physical)

Refers to the elements or instances found in the environment of which the user would be able to interact with. Given the objects were to be completely physical, it would not function as intended. By this logic, it would be almost impossible to create a full AR portfolio application with physical objects for interactivity.

The application would be used on a physical device such as a phone and would require some form of physical marker that the phone's camera would focus on that would present the portfolio through the mobile screen. The physical marker would then be rotated to rotate the current view of the portfolio/artefact, and to cycle through options such as ones related to version control, we could use participant hand gestures in front of the phone's camera. The portfolio itself would have to be a virtual component, unless we found a way to do sophisticated spatially augmented reality (SAR) techniques; creating the appearance of a virtual object coexisting in the physical world.

2.2.4. Interaction and Feedback (Intangible)

The way in which feedback is given to the user and how the user provides input to the application. Trying to provide an intangible concept for this setting in a portfolio application without becoming too bizarre will be challenging. Feedback is provided to the user through how we interpret our senses, so without touch we still have sound, smell, sight and taste, whereas interaction is typically provided through touch. Interaction given this setting would be to have the majority of the application voice controlled—detecting words such as "open", "close", "rotate", etc.. Feedback would then in turn be either provided through the visual display or sound cues, such as a voice synthesiser or pre-recorded messages requesting more information from the user.

2.2.5. Concepts Explored (Real)

Questions the purpose of the application. As the real setting is halfway between Physical and Abstract, it would probably suggest that the portfolio would have spatial representation but also a degree of communicating what is being presented in a more expressive manner. Given this description, the portfolio software would require a lot more freedom than initially anticipated. Ideas include allowing the creator to fix the size of their augmented artefacts' size which would scale with how the user moves around, providing 3D/directional sound, and possibly the addition of a narrator to talk about what is being presented which could extend to the version control function and have the narrator comment on how the artefacts evolved.

For instance, the creator could create a scene based on an environment and resize it properly so that when the portfolio is passed on, the user would gauge the size and scale that the creator intended for the scene to have. The creator could then further add sound that comes from, for example, a waterfall, where the closer the user comes to it, the louder it can be heard. Then say there is a part of the scene such as a statue, the creator might have put in some dialogue that could be presented to the user about its story, version evolution or purpose in the scene.

2.2.6. Participant engagement (Collocated)

Refers to the way in which the user will engage with the application, other users inside it and what is present in the developed world. The collocated setting would essentially mean that the user can interact with another user within the physical space utilised by the application. An example of how this could be used may be when user A moves or rotates an artefact such as a 3D model, that information would be updated on the device of user B simultaneously, allowing a degree of interaction between the users.

2.2.7. Design of Experience (Improvisation)

Refers to how the overall experience is defined in the context of the application, whether it is more story driven, presented as a game, up to the user's imagination, or there for the user to experience the actual design of it. Given the application's design was based on improvisation, being the opposite of narrative, the functions the user would use would respond as expected with no additional events given unless the portfolio creator inputted it themselves in their artefacts. Given the nature of portfolio creation, this could intrinsically create other experience designs though this would be entirely up to the portfolio's creator therefore being unrelated to the application's personal design.

2.3. Thomas Bickley Justification

2.3.1. Nature of Reality (Virtual)

The gallery itself is a completely virtual location, despite it's mapping of a physical room, once the mapping is done, there is no need for the physical anymore.
However, one could argue this does require some level of physicality in order to function, as it cannot work without a physical room to track and adapt to.

2.3.2. Location (Concrete)

The location is made up of a virtual gallery stretched over a physical room, mapped out via markerless tracking.

2.3.3. Objects (Virtual)

The objects found within our gallery are virtual portfolio elements, put there by the gallery's owner, in order to showcase to potential viewers in future.

2.3.4. Interaction & Feedback (All)

Physical in interacting; utilising the phone to look around and move in to interact; plays a part as the first layer of interacting and viewing changes in virtual space

Virtual comes from interacting with virtual UI elements affixed to portfolio elements; also feedback from this in the form of seeing the environment change when interacted with (i.e. buttons press, code snippets showcased in the environment
Abstract comes from sounds to indicate interaction to the user, such as a boop when pressing a button, or sound cues to indicate movement of portfolio elements

2.3.5. Concepts Explored (Concrete)

Given the purpose of this gallery is to convey portfolio elements to potential employers, the abstract element is simply not useful. Conveying concrete information to the employers through portfolio elements in the virtual gallery in order to secure a physical job; that is its purpose.

2.3.6. Participant Engagement (All)

I believe that the product could benefit from all kinds of participant engagement.
The benefit of physical presence is that the owner can easily communicate with the viewer personally and benefitting from body language.
The benefit of telepresence is that, if no physical presence is possible, the owner can guide the viewer remotely, via the gallery itself in virtual space.
The benefit of copresence is that even without the owner to show them around, the gallery can still engage with the viewer to some degree.

2.3.7. Design of Experience (Towards Narrative)

While some level of improvisation is useful for potential employers, and thus viewers, to feel like they are in control, a level of experience and narration in order to drive the viewers experience through the gallery can be useful. At the end of the day, this gallery exists in the hopes it allows someone to have better chances at being employed; tailoring the viewer's journey through the gallery aids in this.

2.4. Ben Fili Justification

2.4.1. Nature of Reality (Virtually Concrete)

The conception of the presentation would be mostly virtual due to the nature of the assets being presented. For it to work, it would need a physical space to project the assets. But since it would need to be able to be shown anywhere, it would need to be more virtual than physical. And for it to be shown as a presentation, it would need to be concrete to be able to easily distinguish it from other assets.

2.4.2. Location (Balanced)

This would need a balance of all three aspects, physical in terms of the actual space to project the presentation onto, virtual in the scenario of the assets being presented and

abstract to imagine the whole picture of where the assets are supposed to fit in the complete version of the scenario.

2.4.3. Objects (Concrete)

For seamless integration onto the surroundings, the object would need to be concrete and have a good balance between physical and virtual. Concrete that the object can be inspected with great detail. Physical and virtual balance, so the object does not look out of place for the way it is presented mixed with the location.

2.4.4. Interaction and Feedback (Virtually Intangible)

As the location can be altered depending on the use, most of the interaction and feedback would be virtual. Too much physical interaction would result in the high dependency on the interacting hardware required. And if it was abstract then it would result in the lack of interaction.

2.4.5. Concepts Explored (Balanced)

The concepts explored would be highly dependent on the presentation of the assets and its theme, so a balance would keep the presentation a believable representation of the idea trying to be conveyed.

2.4.6. Participant Engagement (Towards Telepresence)

Since it will be a multi-participant presentation, telepresence is dominant to ensure everyone has an equal chance of interaction, without much assistance from the content creator, with also not having the need to be physically present with the presenter.

2.4.7. Design of Experience (Balanced towards Experience)

The reduction of interaction is required for the audience as the users would like to present their work and the audience would focus more on doing that, rather than joining the presentation altering the experience for different audiences. But has enough ability to interact with the presentation for adequate inspection of the assets and enough context for the audience to understand the experience.

2.5. Stephanie Sagolj Justification

2.5.1. Nature of Reality (Towards Physical)

This project would be closer aligned to be a physical application and more concrete in concepts. This would be an Augmented Reality system one could interact with via a mobile device, with an onscreen UI utilised to help navigate through the portfolio elements. These virtual elements would be implemented due to the point that was

chosen not being solely physical, so having virtual components would explain how this application is constructed. This blend of the physical world and the virtual one is what makes it an augmented reality system.

2.5.2. Location (setting) (Towards Intangible)

The location of the gallery itself would be completely virtual, so a virtual space would be able to be navigated with the help of a mobile device, this means that nothing is tied to any physical space within the world but rather this virtual plane. An abstract leaning virtual setting is a difficult thing to quantify, though it does mean that the objects within the virtual realm themselves cannot be touched directly.

2.5.3. Objects (Towards Real)

The point randomly selected states that the objects must be real in some sense, therefore, the object that would be utilised within the application would be the physical phone itself. The phone serves the purpose of examining the virtual space and as a method of both managing the space and interacting with it, physically. Examples of this would be using the device to upload artefacts into the virtual space and using the UI to interact with said artefacts, such as viewing the upload history and seeing previous iterations of specific artefacts.

2.5.4. Interactions and Feedback (Towards Virtual)

The way the user would interact with this space would be mostly virtual, this would combine a mixture of using the inbuilt UI to select artefacts and to manipulate them, allowing a level of interactivity with each artefact, whether this be simply spinning a 3D model or seeing how a fragment of code actually works within its parameters. This feedback would occur within the virtual space and be witnessed through the phone screen, these projections would demonstrate the user's successful inputs alongside the direct outcomes from their actions.

This would make up the concrete aspect of interaction and feedback, as the via viewing the phone screen, a physical, material form, the interaction and such has grounds within the physical space. Another example of this could simply be the phone buzzing to indicate that the gallery has been set up successfully alongside a notification stating so, this gives a more connected response to a user, allowing them to successfully feel the task being accomplished.

2.5.5. Concepts Explored (Abstract)

Concepts explored allow clients to see the true innovative potential within an overall product, this with an augmented reality system would showcase special concepts with ease, examples being the ability to see where elements are placed and their intended

size. However, an abstract approach can still be applied. It can simply be that whilst a user is examining an artefact a voice file is played in tandem, explaining the intended direction of said artefact and reflecting on where things went wrong and how they can improve their skills from the experience. By giving context to these artefacts' users are not only able to witness a creator's drive behind some artefacts but also can see how they would do better in subsequent projects. This audio narration alongside the portfolio artefacts would create a connection between the creator and the observer, giving them an in depth look into the creation process.

2.5.6. Participant Engagement (Mediated)

Participant engagement focuses on how different users engage with each other whilst using an application, in this instance it would be a mediated approach. Similar to collocated, it would allow several users to interact with the virtual gallery at the same time, each using their own devices to navigate the space and interact with artefacts separately. Whilst collocated would focus on updating artefacts simultaneously for all users to see the results of another's actions, a mediated approach would have all the users be within the same space but none the portfolio elements would update in real time. This means that each user can examine artefacts in their own way for as long as they desire without having to disrupt any other observer methods. An example of this would be one user zooming in on a part of a 3D model whilst another is spinning the same model around. The users would however be able to see within the virtual plane what other users are doing based off messages within the virtual space that would explain what each user is currently doing. This would also be useful in that they can then choose to observe artefacts in a similar manner afterwards if they so wish.

2.5.7. Design of Experience (Scripted)

How the users experience this portfolio could greatly change their final observations on everything as a whole, due to this a more scripted approach may be a wise decision. This would allow the creator to structure the experience, showcasing specific groupings of artefacts first before others. This sequencing can also exhibit one's attention to detail and presenting ability. This structure in the portfolio layout would also work well alongside the narration aspect that may be applied, as seen in the concepts explored section, as it would showcase a narrative of improvement through the separate artefacts. This process would essentially serve to guide the users through the portfolio in order to showcase development not only with individual artefacts but with the entire portfolio as the users can see skills that were applied in previous elements being done again at a better skill level.

3. Individual Ideas

3.1. Hayden Ry'dell Ideas & Sketch

Given who the client specified the audience for this AR portfolio application would be—being students, teachers, employers and those looking to get employed, it would be ideal to give as much freedom to individual creators as possible to widen the application's user base. Ensuring the program can be used for different types of media and file types as well as staying relatively portable and easy to give to someone else will be important factors to consider.

The actual creation of each individual portfolio would not take place in a virtual or augmented environment, rather a simple menu UI on the mobile device in use will assist with functionality, performance and will ensure navigating and creating is simple. Hopefully this should enhance the user experience and reduce the time it takes for users to produce the perfect portfolio. The portfolio's creator will need to upload their artefacts and any "versions" they wish to present through this UI and once uploaded will be able to organise the version history and any relevant information the creator wishes to provide. If they would like to add narration or any descriptions, this could be done here. This would also be accompanied by an option to view the model in an AR setting and allow the user to tweak how it appears, such as its default rotation or size.

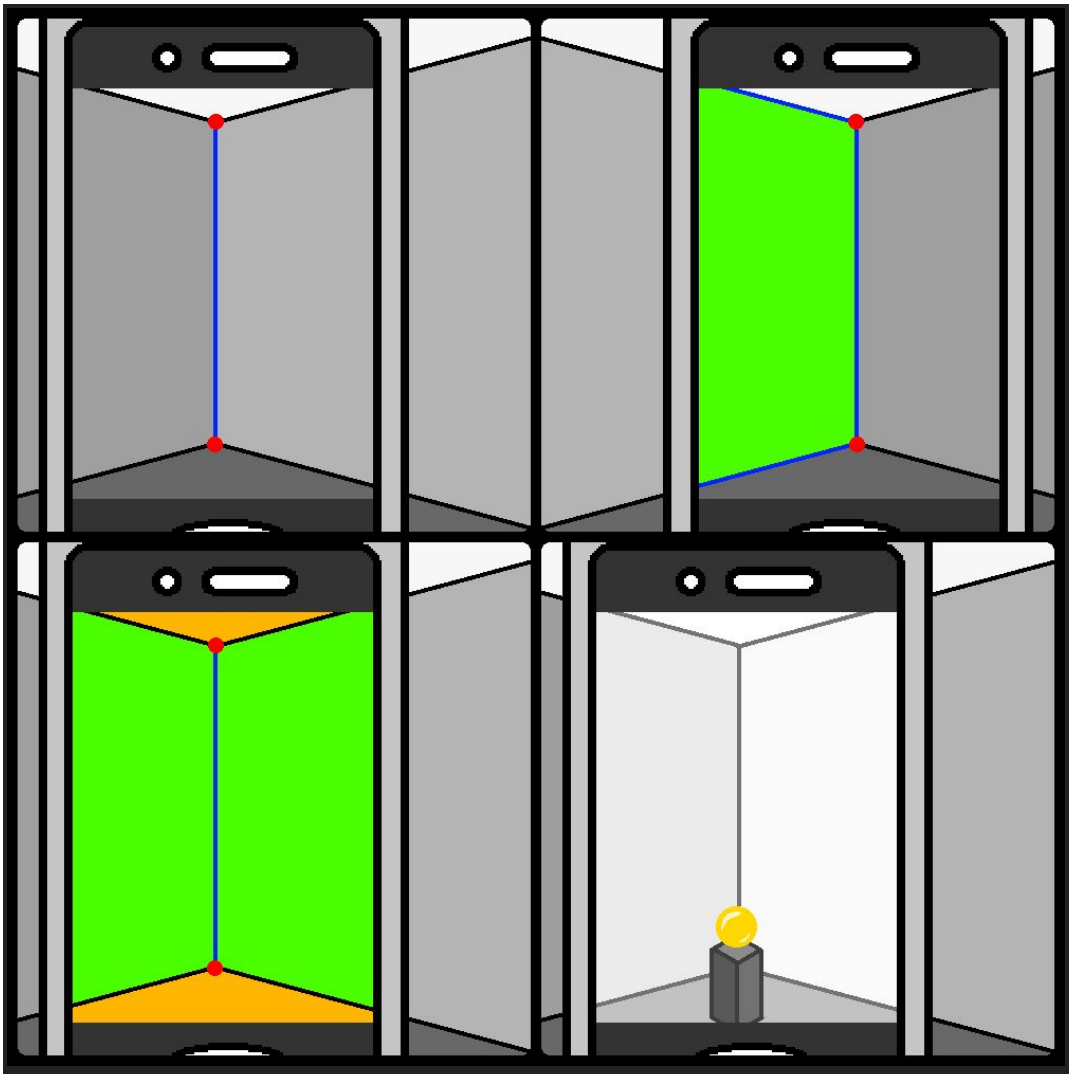
Once artefacts are present in the application itself, the creator may choose to create a scene. The concept of scenes can allow the user to place multiple items and personalise their portfolio's world and its content. For instance, if a creator provided waterfall model assets alongside waterfall sound files, they could combine the two objects and overlap them so that when viewing the scene, the sound would emit from it. Once registered and uploaded with an online database, the creator can pass it around as a link or potentially through an in-app library or store. It may also be beneficial to consider an offline method of saving portfolios to the user's local storage.

Though I don't have a full grasp on what utilities could be used effectively, I envision the actual presentation of the portfolio projecting its scenes and artefacts based on information retrieved from the device's accelerometer, gyroscope, and magnetometer or GPS features. To elaborate, the accelerometer should measure directional acceleration and movement of the mobile which could be utilised to allow the user to inspect the augmented environment from different perspectives and locations, the gyroscope would then add additional information such as orientation and rotation of the device, and the magnetometer or GPS information could be used to specify coordinates or the area where the portfolio would appear from. If we can define a specific location or coordinate for the portfolio to appear at, the previously mentioned features could be used to better engage with the portfolio. Then by considering local area networks, it may be possible to

open a viewing room where two or more devices could look at the same portfolio simultaneously which would be ideal in situations such as presenting a portfolio.

3.2. Thomas Bickley Ideas & Sketch

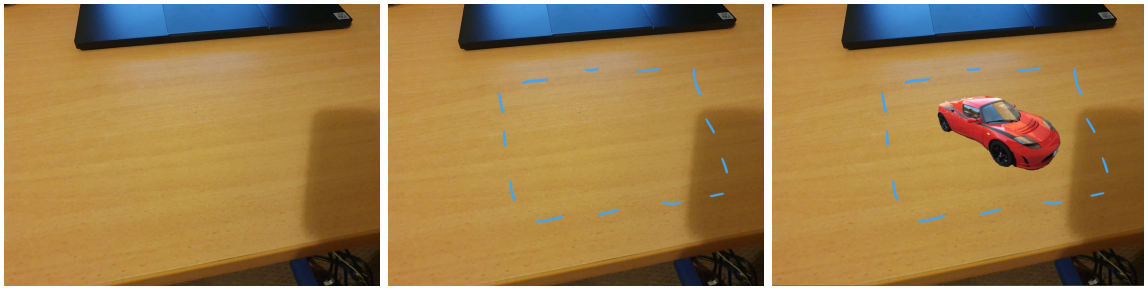
My vision for the gallery was a system whereby each user has their own gallery, filled with portfolio elements they submit to the gallery. This gallery would then form via markerless tracking, with the device detecting the corners and edges of the room and using this to form the ‘skin’ of the gallery. From here, it could determine the available size in virtual space, reflected in the physical world, that the gallery has to work with. This space would then be filled with said portfolio elements as space becomes available. From here, the potential viewers can be shown through the gallery by the owner, either in person physically or virtually interacting within the gallery.



In the image above we see how the phone is used to find the points of the room, then use this to find the space available to construct the gallery. Once constructed, a portfolio element is placed in the available space.

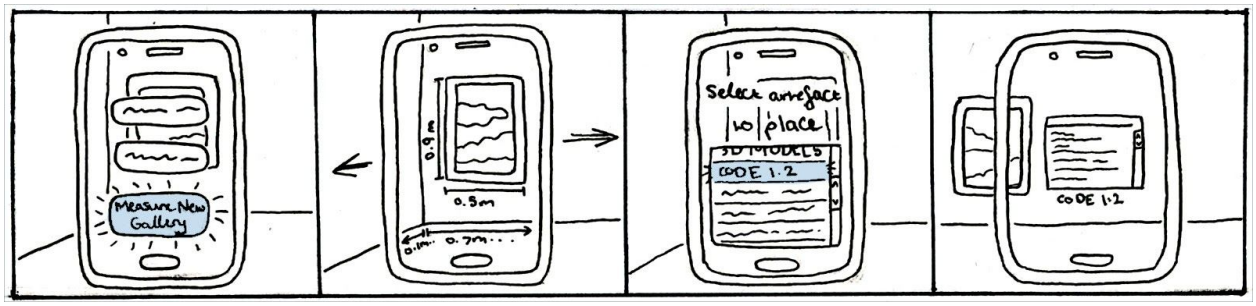
3.3. Ben Fili Ideas & Sketch

For easy accessibility for all users, it will take shape in the form of a web app. In this web app, users are able to upload, download or stream the assets. When a compatible asset is compiled, through either from a local file, or streamed from the database of the web app, it looks for somewhere to display it. Hardware required for all of this to work include, a device with a camera to use as a base for augmenting and a flat surface for the software to recognise as a space to project the asset. After being loaded up, the user would select the asset folder containing all the essential files for displaying the portfolio element. And after the program is ready to display the asset, it starts to augment it.



The way the asset presentation works would be to point at a flat surface, and allow the device to recognise the flat surface. After a suitable flat surface is found for it to project the assets, the app would then project the asset on the space it has found suitable. What users can do while viewing the asset, would be to physically move around it, or change its position by rotating it. This idea allows for great portability and accessibility for it to be easily set up by anyone who has set it up before. And for better presentation for those wanting to give a complete experience, they will be able to create different UI for the app. Another extension to this product is the ability to view the product at a pre-rendered scene for devices that have no ability to augment the asset in a real setting.

3.4. Stephanie Sagolj Ideas & Sketch



This four panel sketch showcases the potential process of measuring a room and then selecting the artefacts to be placed within the area. So far these are sketched to be on screen UI elements though these could alternatively be placed within the virtual space. The user would select to measure a new gallery space and then use their phone's

camera to scan around the room. From here the system would register when a complete scan has been acquired and would then prompt the user to place their artefact where they desire. This process of placing down the artefacts would continue until the user deems the gallery complete, after which it can be viewed in its entirety within this mapped virtual space.

4. Nature of the Prototype

The prototype itself will consist of several features, with a central focus on the portability aspect of the whole system. After discussing with the team and the client, it was concluded that portability is one of the most important features and is why it is being deemed an imperative part of the first real prototype. Creators should be able to bring their portfolios and its relevant artefacts with them and establish placement of them anywhere. By giving these portfolios the ability to be projected anywhere at any time, it will allow others to inspect elements of it in a more advanced way compared to a standard portfolio.

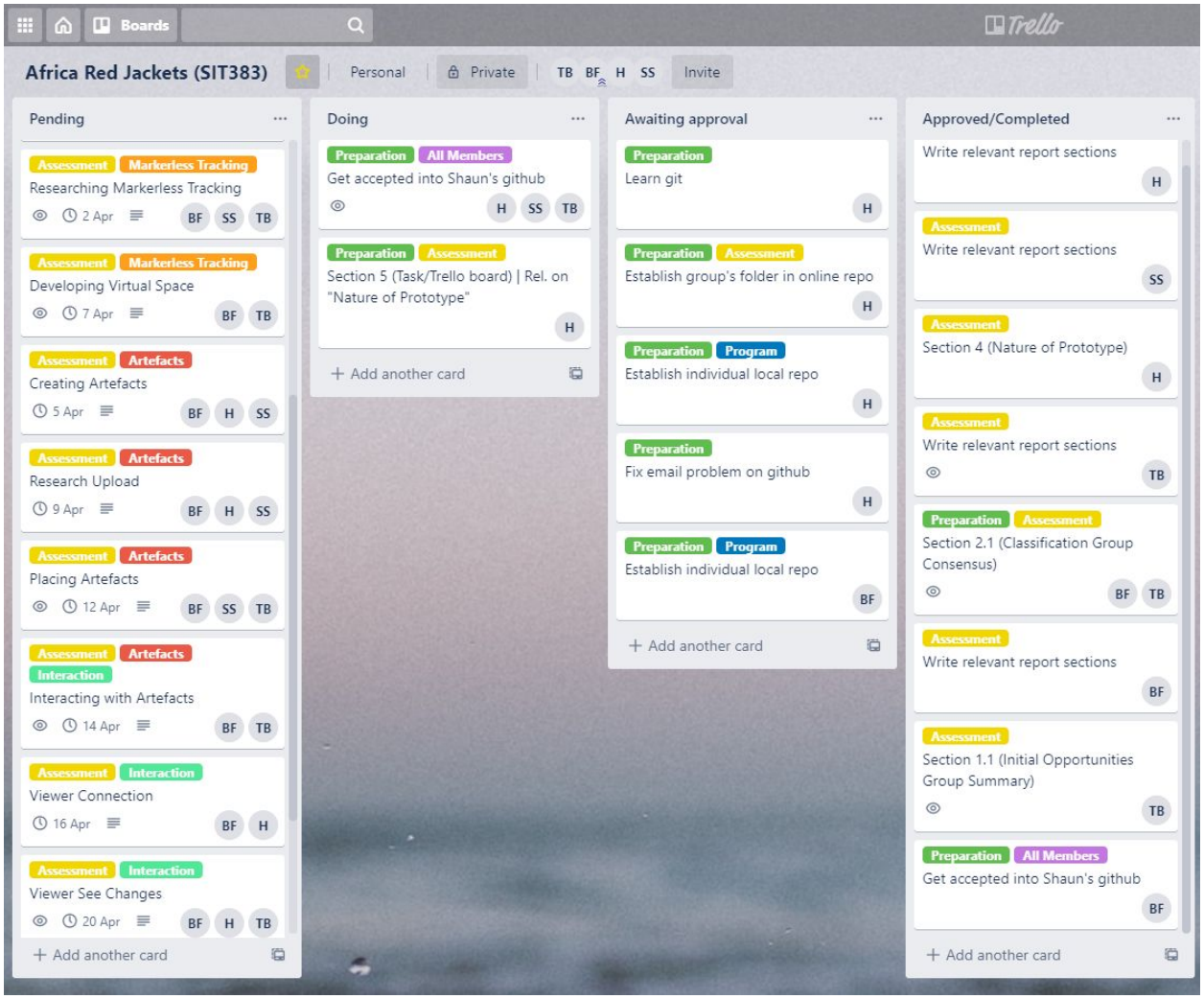
All of the features that will be proposed will require the user to have the ability to add their own artefacts into the portfolio. Ideally, the prototype will provide a method of uploading artefacts to the portfolio through the application itself although given how Unity compiles at runtime this may become an issue or be impossible altogether. This will therefore need to be researched early on so we can deduce what course of action we will be taking.

These elements would be placed within the space dedicated to the portfolio where they can be viewed through a device, in this case a mobile phone, creating a portfolio that is highly accessible. The ability to manipulate these objects will highlight how an individual constructed an element. For the prototype, priority will go to importing models though given enough time, we will delve into importing audio files, code snippets and 2D textures. The viewer of each portfolio should also be able to view the development or version history and observe iterations that the artefact has gone through. This would be advantageous, especially when pitching the portfolio to potential employers allowing them to see what techniques one may use or at what general speed they develop at. The main aim of this version history function is to provide them with a more in-depth look at the creator’s skill set.

This could work in tandem with the ability to view who contributed to what aspects of a project, not only providing evidence of what work is their own but also showcasing that they have worked in a team environment when developing certain artefacts. This would give insight as to how much experience they have with working in a team.

The prototype itself will be constructed for use on Google Pixel model G-2PW4200, developed through the Unity Engine and C#. It will be developed with client-side capabilities in mind, it should be able to run without the need for an external server for now and produce an observable response. The addition of server-side artefact hosting will be considered in the future, however despite that we would like to test out local area network (LAN) capabilities and attempt to have multiple users viewing the same portfolio at the same time. To do this, we will preload the same assets on the different devices.

5. Task Board



Trello Page
https://trello.com/b/vSwGOuZe/africa-red-jackets-sit383

Trello Invite
https://trello.com/invite/b/vSwGOuZe/307da95081499ec920643ed9524956b6/africa-red-jackets-sit383

1. **Markerless tracking to fit virtual gallery into space**
    a. Researching markerless tracking with mobile - may include actually seeing if the device has the hardware
        i. Output: A better understanding of how markerless tracking can be implemented, this will be determined as successful if we understand how to implement it properly.
        ii. Assigned members: TB, SS, BF

iii. Prerequisites: None
iv. Dependencies: Developing Virtual Space
v. Start/End Date: 30/03 - 02/04

b. Developing Virtual Space - Developing a method to use markerless tracking to create virtual room based on physical room
i. Output: Virtual space can be constructed using data sourced from markerless tracking.
ii. Assigned members: TB, BF
iii. Prerequisites: Researching markerless tracking
iv. Dependencies: Research Upload
v. Start/End Date: 03/04 - 10/04

2. Artefact placement/adjustment

a. Creating Artefacts - Creating artefacts themselves/sourcing them
i. Output: Having objects to display within the virtual space of varying types to showcase how dynamic the program is, this will be determined as successful if we can find/create this range.
ii. Assigned members: SS, HR, BF
iii. Prerequisites: None
iv. Dependencies: Research Upload, Placing Artefacts, Viewer See Changes, Viewer Interaction
v. Start/End Date: 03/04 - 07/04

b. Research Upload - Research how to upload artefacts through the application itself
i. Output: The ability to enter new portfolio elements, this will be deemed successful if this is an achievable feat.
ii. Assigned members: SS, HR, BF
iii. Prerequisites: Developing Virtual Space, Creating Artefacts
iv. Dependencies: None
v. Start/End Date: 07/04 - 10/04

c. Placing Artefacts - Developing logic for placing them within gallery automatically upon startup/during runtime
i. Output: The ability for the gallery to populate itself with artefacts upon startup, this will be deemed successful if the gallery does indeed begin with artefacts within it.
ii. Assigned members: TB, SS, BF
iii. Prerequisites: Developing Virtual Space, Creating Artefacts
iv. Dependencies: None
v. Start/End Date: 09/04 - 12/04

d. Interacting with Artefacts - Ability to interact with artefacts (3D models, code, etc.)
i. Output: The program being able to interact with the different kinds of artefacts, such as spinning a 3D model, seeing how a line of code functions and viewing the previous iterations of an artefact, this will be

deemed successful if a user has the capability to successfully do this by using the UI elements that are affixed to the artefacts.
   ii. Assigned members: TB, SS, BF
   iii. Prerequisites: Placing Artefacts
   iv. Dependencies: Viewer See Changes, Viewer Interaction
   v. Start/End Date: 12/04 - 17/04

3. **Interaction between people (viewing same changes within gallery)**
   a. Viewer Connection - Ensure all viewers can connect to the host
      i. Output: Enabling other people to view the same gallery, this will be deemed successful if we can see another person's avatar within the gallery space if they are not there in person.
      ii. Assigned members: HR, BF
      iii. Prerequisites: None
      iv. Dependencies: Viewer See Changes, Viewer Interaction
      v. Start/End Date: 14/04 - 18/04
   b. Viewer See Changes - All viewers see changes in artefacts in real-time
      i. Output: Users are able to see other users interact with artefacts in real time, this will be deemed successful if a secondary user is able to see what the primary user is doing to specific artefacts.
      ii. Assigned members: HR, BF, SS
      iii. Prerequisites: Viewer Connection
      iv. Dependencies: None
      v. Start/End Date: 18/04 - 24/04
   c. Viewer Interaction - All viewers can interact with artefacts (not only host)
      i. Output: Users who have downloaded the gallery are able to interact with the artefacts, this will be deemed successful if not only the host can interact with artefacts, but other users besides the host.
      ii. Assigned members: HR, TB, BF, SS
      iii. Prerequisites: Viewer Connection
      iv. Dependencies: None
      v. Start/End Date: 18/04 - 24/04
4. **Downloadable/shareable virtual gallery**
   a. Sharing Gallery - Method of sharing gallery
      i. Output: The virtual space has the ability to be shared to other mobile devices and downloaded, enabling other users to view the portfolio, this will be deemed successful if this virtual space with its artefacts can be shared to other individuals.
      ii. Assigned members: HR, SS
      iii. Prerequisites: Developing Virtual Space
      iv. Dependencies: None
      v. Start/End Date: 20/04 - 26/04