Project Deliverable C

Conceptual Design, Project Plan, and Feasibility Study

Part C3: Feasibility Study

Group A3

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Project concept

The solution for this project is an auxiliary interface that runs as a desktop application concurrently to Photoshop. This system can be controlled by voice, mouse, wacom tablet (as mouse), or keyboard. The UI should include large icons and simple menu navigation, color picking, and brush selection. These tools are all tied to the corresponding Photoshop tools. Functionality of the system also includes a record of command history that can be repeated. *(see section C1 - Decision on group design concept for details)*

Uncertainties and risks associated with the project

Experience coding desktop applications

Of the five members of the project team, only one (Eleanor) has experience with building applications from scratch. Eleanor also does not have much experience building desktop applications. However, all members of the team have experience with coding in some capacity and feel confident that the code necessary to create the product will not be beyond the team's collective skill level.

Voice commands

A main feature of the product is its ability to be controlled by voice. However, voice command systems are notoriously unreliable and difficult to implement. The team has performed some research and intends to make use of voice command libraries and open-source tools that are available online. Decision of the best voice command tool will be done during the prototyping phase of the project, once other system specifications have been established.

It will be important to communicate with the client that the product's voice command system, like any other, will not be one hundred percent reliable. As the client specifically mentioned the need for voice input during our initial interview, the value added by a voice command feature outweighs the risk that it is not perfect.

Keyboard mapping

The concept at the moment involves simulating the keyboard shortcuts that are used to access tools in Photoshop. Austin has some experience with custom key-mapping with hardware and the team is confident that this can be achieved through JavaScript. As none of the team has experience simulating these key presses using software, there is a risk that this solution will be time consuming. However, it is the simplest solution that has been discussed, that involves the fewest changes to the client's current work environment.

Feasibility study - TELOS factors

Technical: Expertise and Resources

For our chosen solution, Ellie's experience with building UIs leaves her comfortable with using tools to build a new desktop software such as Electron to go with Photoshop. Callum can provide support with many steps as he has experience with HTML/CSS and JavaScript as well. The rest of the team members all have some experience with programming for smaller portions. This solution takes little to no resources other than selecting a framework and time coding in JavaScript. We also plan on implementing GAVPI or another voice command framework to improve the accessibility of our solution.

Economic: Cost Benefit/Analysis

We will look for tools and frameworks on open-source sites to avoid recreating tools which would be difficult for our team's level of experience and very time consuming. We have looked at existing solutions that try to add to the accessibility and ease of use of photoshop, however most of the items selected to be used for the benchmarking does not have the same specifications as we desired. Most of the items only have one or two similar features and that was taken into consideration when attempting to calculate the costs. Hardware solutions tend to be on the more expensive side compared to add on software. Some software that was used for benchmarking was also open source, reducing the costs for the consumer.

In terms of marketing, the primary event for showing off the project and its applications will be on design day. An additional opportunity that the group has though is to advertise through the client's foundation; as they specialize in art therapy for disabled persons. If the client happens to like the solution then there is an avenue of advertising through the client's foundation. Because there are no foreseeable financial costs related to our software, this "marketing" isn't for the purpose of making money, but simply to spread the software and improve the lives of disabled artists. However, if we decide to include a hardware component then it is possible that we will have to reevaluate any additional costs required and the corresponding marketing strategies.

Legal: Determination of Applicable Laws

Our client is currently using Adobe Photoshop for their digital art however, Adobe remains the exclusive owner of their services and software. Since photoshop is an Adobe product and remains closed source, the individual source code cannot be directly changed or edited in any way. The users do own any content that they create using Adobe software though, an important note for the artists. We must be careful and make sure that we are creating our own toolbar that assists with Photoshop rather than change Photoshop. Adobe expressively states in their legal code note number 17: "17. No Modifications, Reverse Engineering. Except as expressly permitted in the Terms, you may not (A) modify, port, adapt, or translate any

portion of the Services or Software; or (B) reverse engineer (including but not limited to monitoring or tracking the inputs and outputs flowing through a system or an application in order to recreate that system), decompile, disassemble, or otherwise attempt to discover, within any Service or Software, the source code, data representations or underlying algorithms, processes, methods, and any other portion of such Service or Software". In any solution the team creates, maintaining these legalities in the front of our minds will ensure that the product created does not infringe upon any applicable laws and will be able to be distributed legally.

Operational: Organizable Constraints and 'other' Factors

Our team will face many constraints such as location, finances, prototypes, development speed, reliability on feedback, product life and ease of use. Because all team members are currently working from home due to COVID-19 restrictions, in-person team meetings and discussions are impossible, which can possibly decrease the speed of product development. Finances are currently not predicted to be an issue since we are focused on the software solution, however if we do decide to incorporate the hardware solutions that we came up with in any way the budget could pose as a constraint. The development speed could be slowed down as well due to personal schedules since every member of the team has strict schedules and will not always be able to work on deliverables at the same time. Team members will need to balance this course with their test, labs or other assignments from different classes and personal commitments. Reliability on feedback is another factor that could slow down the process of our project. Because none of us can truly experience what Madison is going through we will need to ask for feedback often to make sure our solution is still on the right track. Our client is also a student and will not always be available to provide feedback as soon as we request, which could create blocks in our development. The product life is a constraint that we have very little control over since the software that we are improving is not made by us. The team will most likely be unable to provide further updates to our product after the completion of the course, and so would be unable to adapt to any future versions of Photoshop.It is possible that if Adobe continues to update their product, our modifications could become outdated and that our final solution is only functional with the current version of Photoshop (2020). Finally the ease of use is a very important part of our solution but we have already seen that it is difficult to measure without directly observing the client testing our prototypes and therefore will be completely reliant on the user's feedback.

Schedule: Deadlines and Reasonability

Attached to this submission as a PDF document is a Gantt chart showing the proposed schedule for the completion of the project, as well as all related deadlines. Seeing as this is a class that has been run successfully for years, churning out helpful products, the timeline and deadlines are reasonable. To ensure the reasonableness of these deadlines though, the project scope has been toned down from the described "Ideal" solution (seen in part C1) to a more realistic and feasible one. If everything goes mostly as planned, a successful project will be able to be produced.