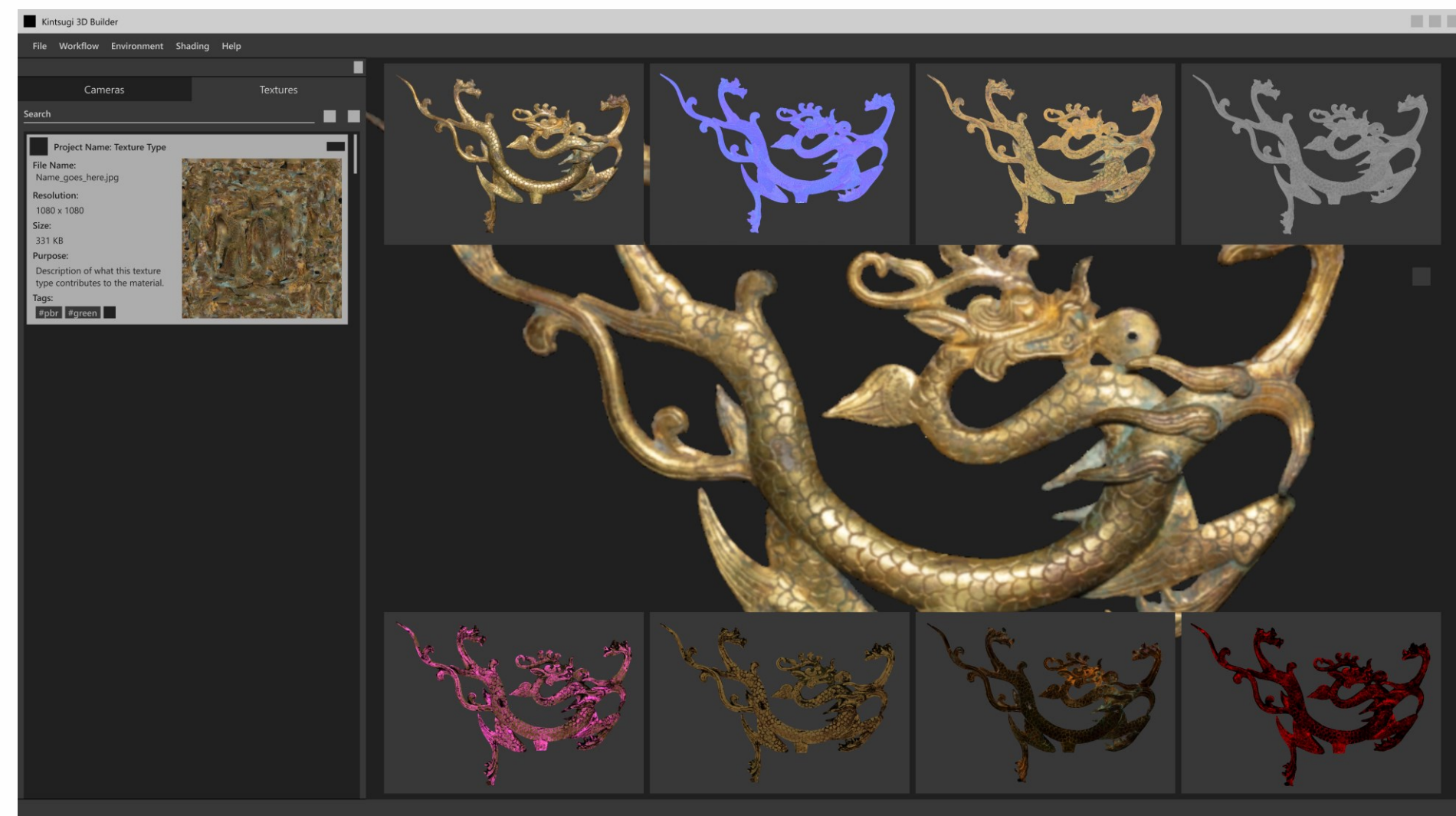


User Experience of Visualizing Empirically-Based Textures in Kintsugi 3D Builder

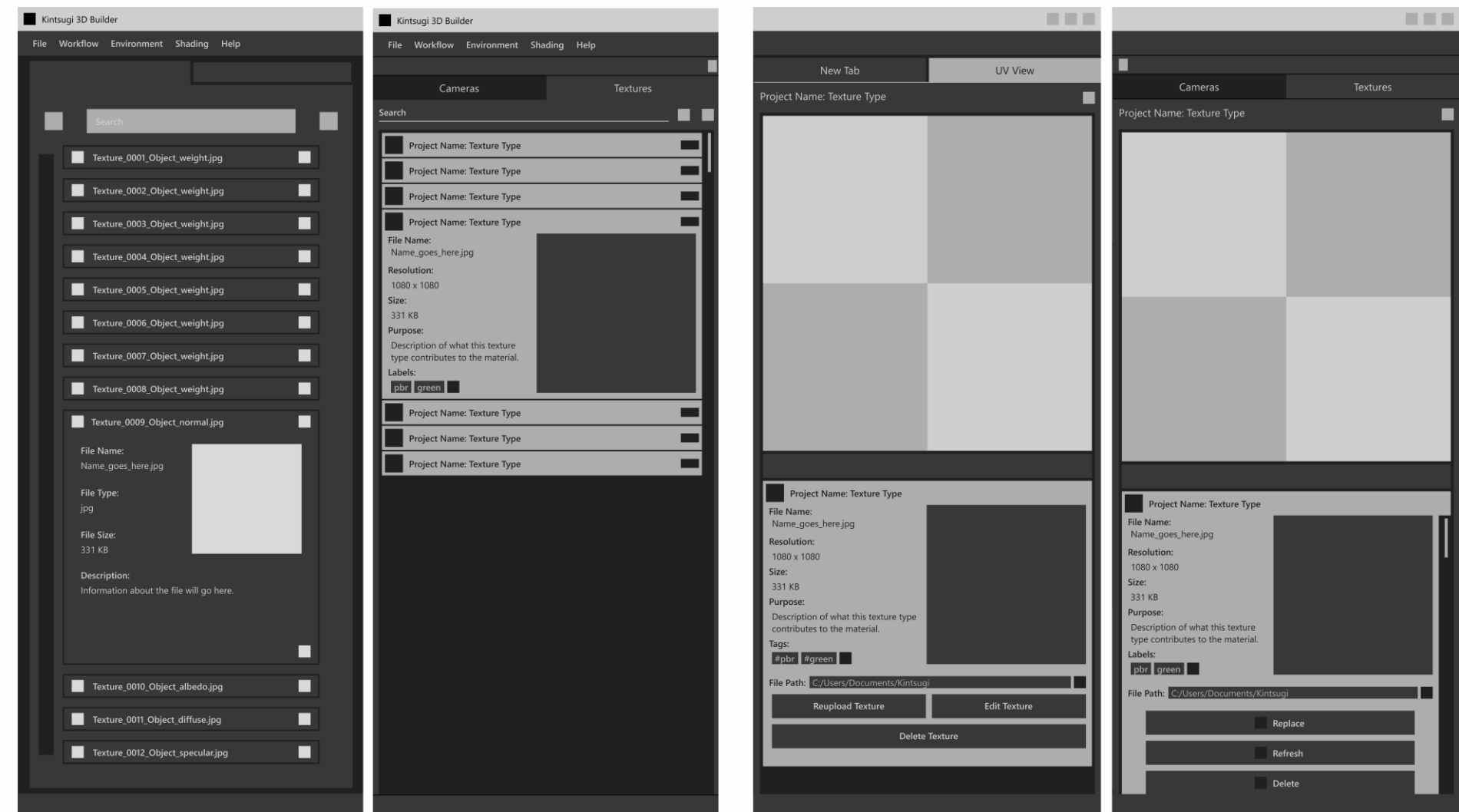
Atlas Collins, Chloe Ferguson, Jacob Buelow
Michael Tetzlaff, Darcy Hannen

INTRODUCTION

The main purpose of this project was to design and implement additional features to Kintsugi 3D Builder's existing user interface, using iterative development and feedback from stakeholders, with the intention of creating a method for users to interact with the textures created by Kintsugi 3D Builder. The additional features should be intuitive, easy to understand, and give the users more control in the application.



Initial Mockup of the 3D Texture View



Initial and Final Iterations of the Right and Left Pannels

METHODS

Stakeholder Meetings: Every two weeks, a meeting would be held with stakeholders to demonstrate prototypes and gain feedback on how to improve future designs

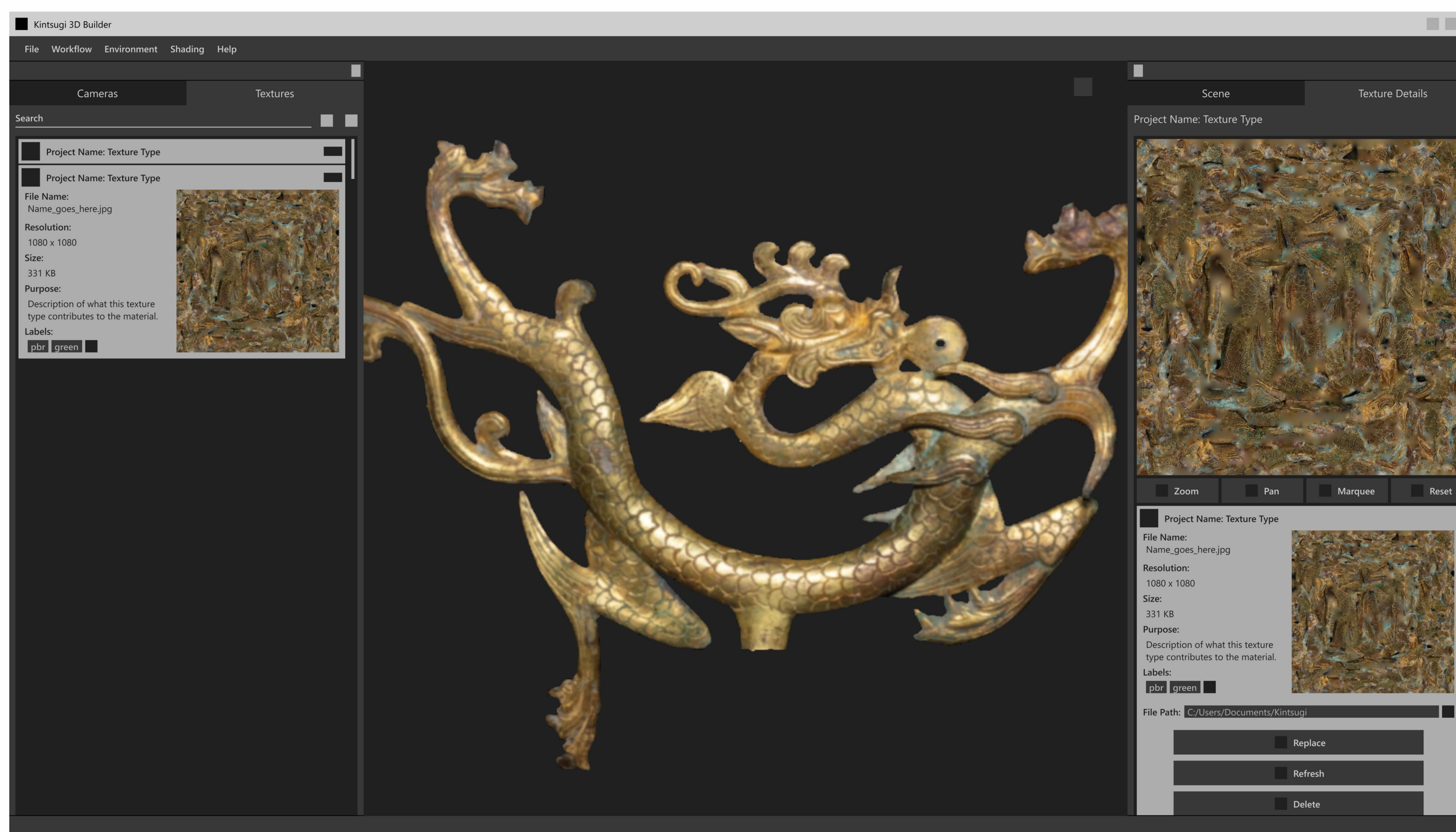
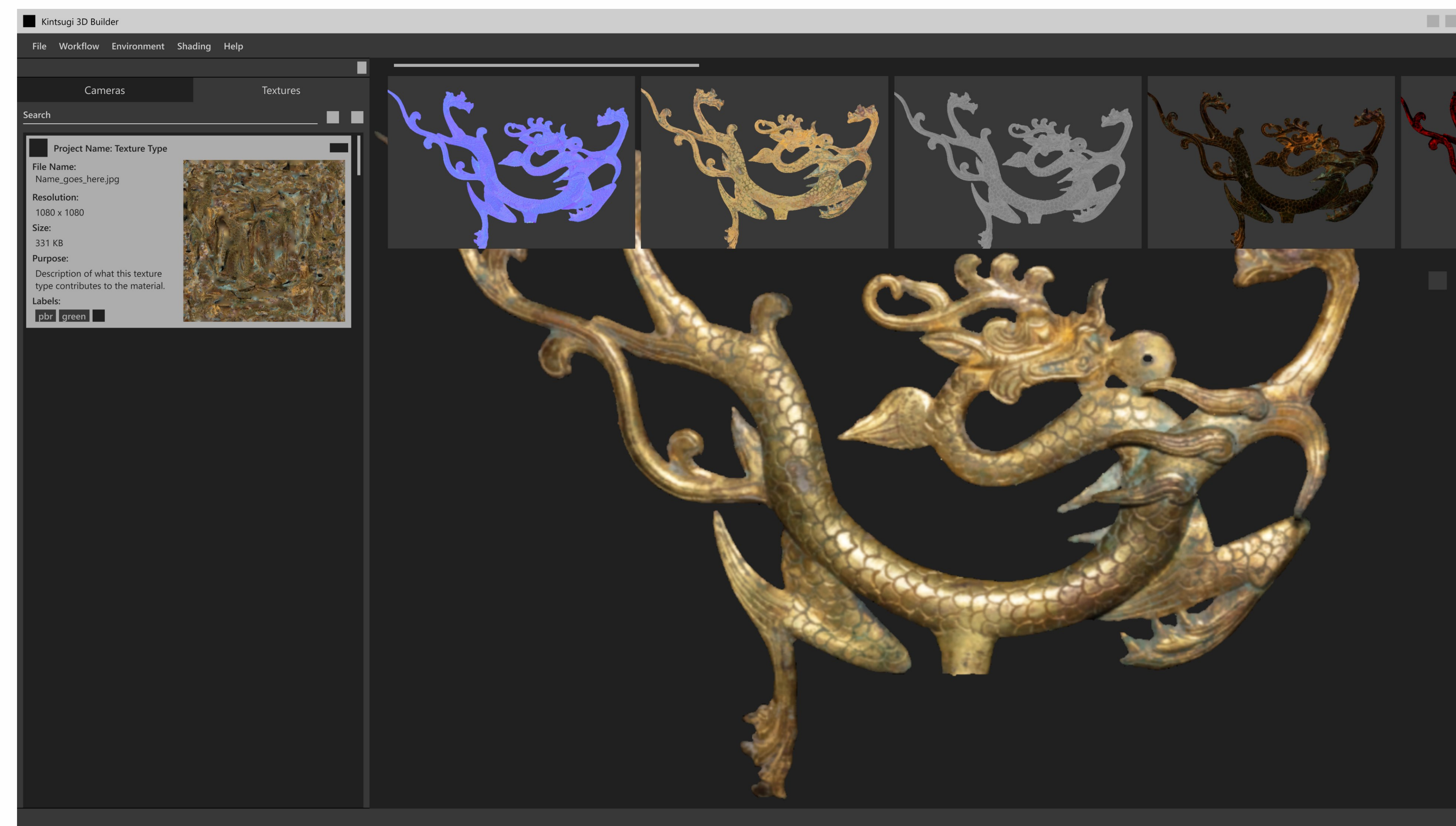
Coded Prototypes: While design elements were still being decided, prototypes of potential features were programmed, tested, and implemented through GLSL shader programming and JavaFX

KINTSUGI 3D BUILDER

Scan this QR code to be taken to Kintsugi 3D's website, with instructions and documentation on using Kintsugi 3D.



WIREFRAMES



DISCUSSION

Feedback from stakeholders led us to the conclusions that Kintsugi 3D Builder would be best optimized with:

- A more intuitive way to make manual adjustments to shaders
- More visualizations to allow users to understand where textures and maps are applied and how they impact the model's appearance

INSPIRATIONS

With the intent of keeping our new features intuitive to our users, we referenced several pre-existing programs.

These programs included Sketchfab, Unreal Engine, and the Adobe Substance series.

CONCLUSIONS & RECOMMENDATIONS

Our time on this project allowed us the ability to prototype texture visualizations that were previously unused in Kintsugi 3D Builder. These visualizations, along with stakeholder feedback, led to the creation of the wireframes shown on the left. Due to the time constraints of this project, and the iterative nature of UI/UX design, these wireframes were unable to be prototyped in Kintsugi 3D Builder but will be implemented in the future.

Future Development: More feedback and user testing is required, but development after this project will include:

- Implementation of the wireframe designs created over the course of this project
- Further exploration of dynamic creation of menu items based on given data
- Communication between shader programs and back-end programs

ADDITIONAL WORK

An additional goal of this project was to add support for importing projects from Reality Capture into Kintsugi 3D Builder. Licensing changes have made Reality Capture free for projects below a revenue limit, expanding access to photogrammetry software to more organizations, and adding support to Kintsugi 3D Builder for additional workflows will allow more users to utilize the project.

Documentation for organizations that want to host the Kintsugi 3D Viewer app has been created and improved, which will allow organizations to much more rapidly set up the application using Microsoft Azure or another cloud hosting provider of their choice.

ACKNOWLEDGEMENTS

We would like to thank our stakeholders at the Minneapolis Institute of Art for their collaboration and input on this project.

We'd also like to thank Dr. Michael Tetzlaff and Darcy Hannen for their assistance throughout the course of this project.