3D Design Exchange (3DEx)
Executive Summary

Purpose

The problem with low-cost commercial 3D printing is that it has been difficult to market to consumers. If 3D printing is going to be made more accessible, there's going to need to be a way to buy and sell 3D printable products. A streamlined method of exchanging designs. *3D Design Exchange* is a digital distribution application for 3D design files. The main function of this software is to allow users to browse designs, download purchases, and let individuals and organizations sell designs securely.

Design

- 3D Design Exchange harnesses Ruby on Rails and the built-in Model-View-Controller (MVC) architecture.
- Given the size of this project, we created it with extensibility in mind, knowing that many parts would have to be added later.
- 3DEx utilizes the power of many different technologies to deliver a versatile and intuitive user experience. These include Ruby on Rails, Python, and Javascript.

Verification

For quality assurance we used **Cucumber,** a widely known testing framework commonly used with Ruby on Rails. With Cucumber, we chose to use **behavior driven development** to rapidly flesh out our application. As an added bonus, we formed these tests into test suites for use with **regression testing**. We developed a practice of running all of our tests after adding new features to guarantee all previous functionality remained intact.

Conclusion

3D Design Exchange is a marketplace and distribution center for 3D design files. It's being built with maintainability and extensibility at its core, 3D Design Exchange has the potential to do for 3D printing what iTunes did for music. Current implemented features include a library, and future additions include an API and direct connection to manufacturers. If 3D printing is going to revolutionize manufacturing, than 3D design exchange is going to revolutionize 3D printing. A software platform that connects designers with consumers, enabling a whole future of creativity.