# TORUS: A digital asset marketplace

### Introduction

Discovering and sourcing 3D assets is an infamously difficult task for designers. Given the industry’s high-specialized nature, many freelance creators don’t have a platform where their digital products can easily be found.

The Torus Project aims to provide a platform which caters to 3D artists and designers from all backgrounds. With Torus, a character designer could easily find the work of a professional animator on the same platform, saving valuable time. This solution provides a marketplace where anyone with a particular niche – shader developers, texture artists, modellers and the like – can share or sell their creations.

Collaboration is the backbone of Torus’s model. After all, freelance creators and independent designers don’t have access to their own production team. The platform aims to enable anyone to licence content from other users with minimal friction.

### Analysis

The end users of this service are freelancers working on 3D asset design. Certain considerations were made in the design of Torus to accommodate those familiar with this industry, such as the inclusion of alternative asset categories such as shaders.

Client Research

Gathering data from those working in the field of 3D design was crucial for understanding the exact requirements of Torus’s intended market. As such, a brief interview was conducted with six freelancers working in this field. One common complaint expressed toward existing art asset distributors was a poor browsing experience. After asking about the experience of searching for required assets using similar services such as *CGTrader*, there were multiple accounts of high “visual noise” between listed items introducing confusion, which worsened the browsing experience. As such, consistent theming was a priority for a professional frontend. Another common complaint was a lack of ubiquity between the assets provided by these websites. The current solution of separate webservices for animations, meshes and shaders needlessly complicated the workflow of these freelancers, an opportunity for Torus to offer a more holistic 3D asset marketplace.

Relevant applications

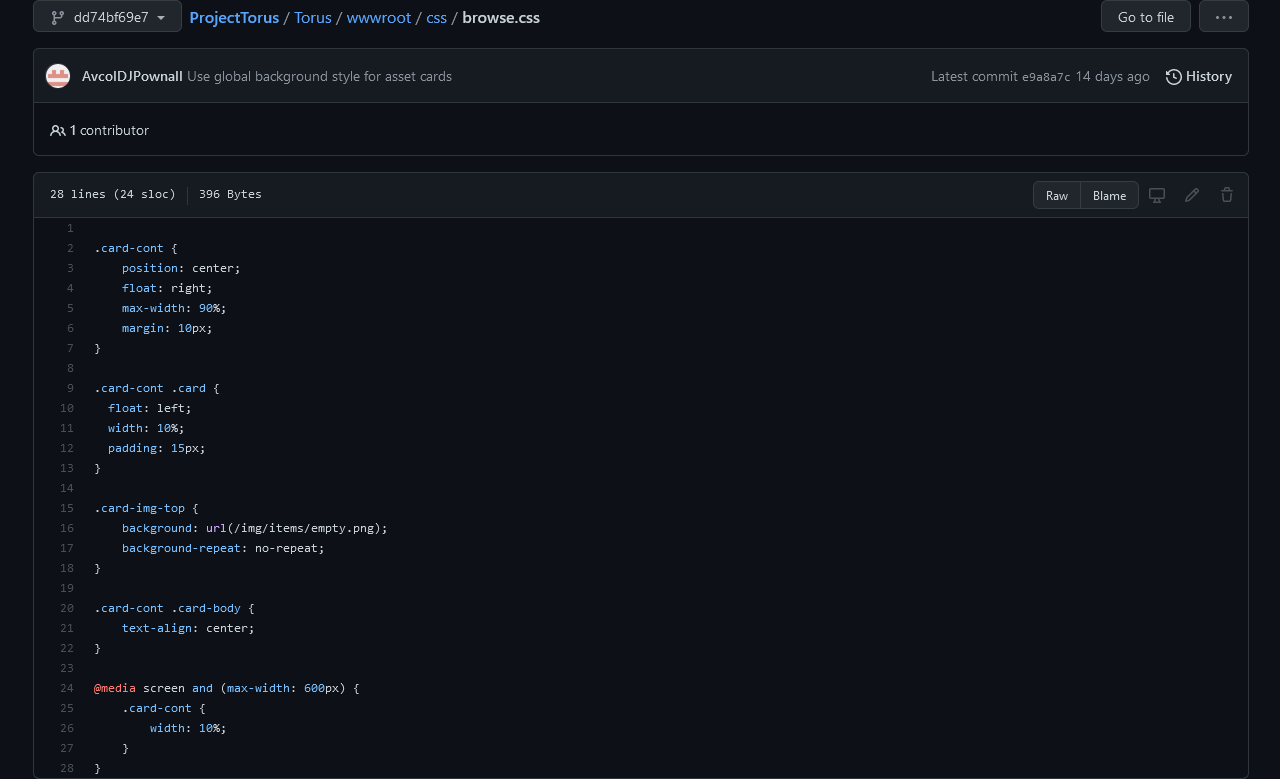
As with any online marketplace, careful consideration was needed throughout the design process. To mitigate potential issues with copyright and third-party licensing, all product-related metadata and images were generated in-house for this project. However, some static content such as material font icons and internal javascript libraries (i.e jQuery and Bootstrap) were required for this website’s design requirements. To host this content locally without embedding the assets via an external Content Delivery Network (CDN), this code was selectively licensed from permissive, copyleft sources such as FontAwesome and the JS Foundation.

Privacy was also a key consideration in the design of Torus. The decision to host all required libraries without the use of Cloudflare and Google’s Content Delivery Networks was partly made to reduce the risk of persistent tracking across multiple webpages. The privacy community has expressed concern over the reliance on centralized CDNs for embedding libraries, so Torus has aimed to reduce unnecessary external connections. The application also avoids accessing the HTML canvas DOMRect and WebGL for realtime 3D rendering, unlike existing 3D asset marketplaces. Most similar web services offer a 3D preview of its user-hosted content along with WebXR rendering capabilities, both features which are strong browser fingerprinting vectors. As these features are frequently abused for web tracking, the Torus frontend has elected to offer a barebones pre-rendered image solution where users can be confident about the handling of their data. This also makes the site available to browsers which block WebGL by default, such as LibreWolf and the Tor browser.

### Development & Testing

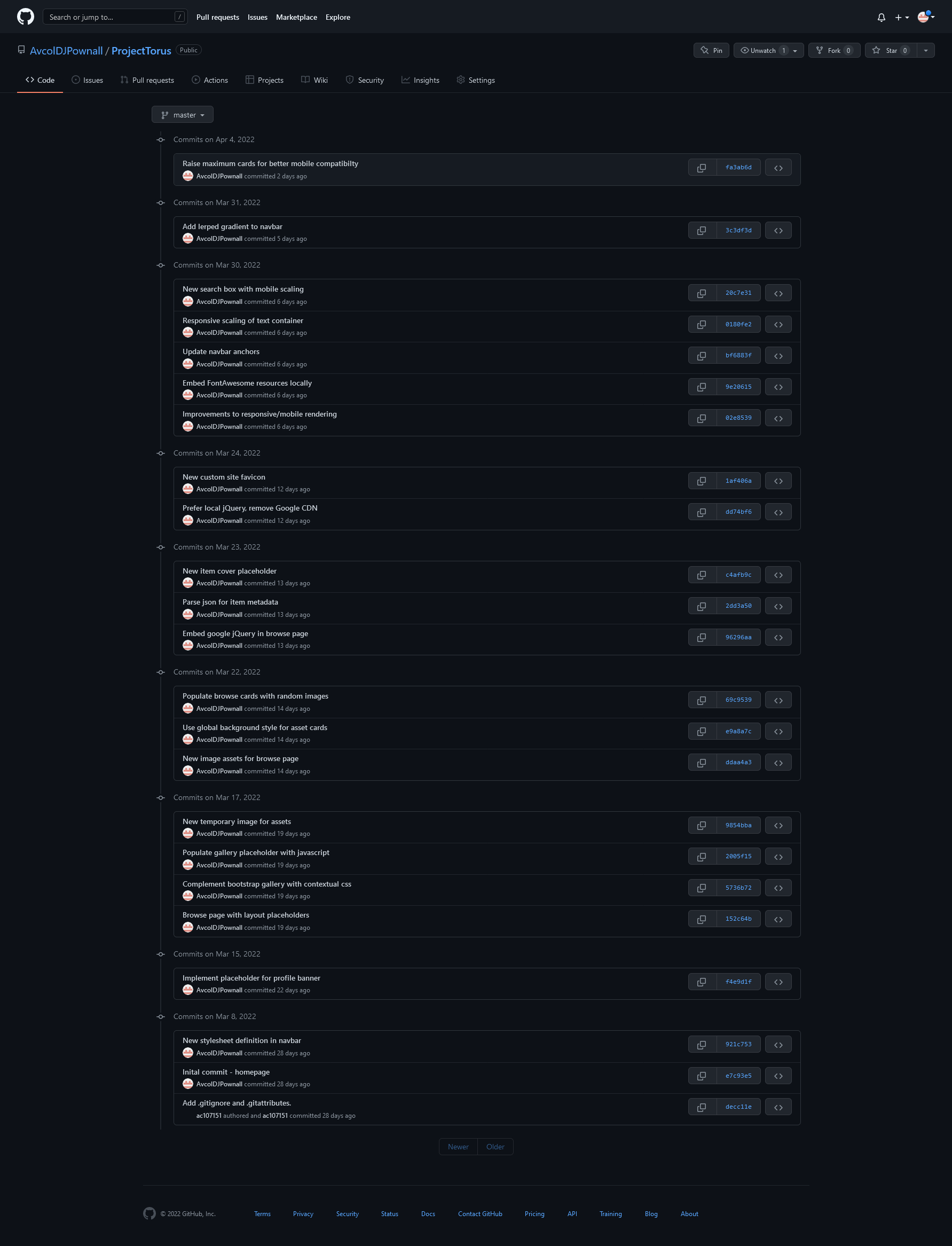
Throughout the development of Torus, various design changes were needed to ensure the user experience would remain positive between devices.

Testing was conducted with a wide range of browsers and device display emulators. A large focus was placed around the Browse page, as this would be where the end user would spend the majority of their time. Edge’s Chromium-based browser showed good results at the browser’s default 1920x1080 resolution, but ran into inconsistent grid sizing if the user scaled their window below 75% or above 120%. To mitigate this, a fixed maximum box width was introduced in the page’s stylesheet:



This satisfied most situations with a 16:9 aspect ratio while also enabling compatibility for LibreWolf’s privacy.resistFingerprinting.letterboxing setting. However, this change later revealed to cause issues with some mobile devices. Certain screen aspect ratios were not able to render the grid’s elements without introducing gaps in the grid. After some consideration, the page’s styling was modified to maintain a dynamically-scaled three column grid for mobile devices, while still using five columns in the desktop version. The number of displayed images was also raised to 60, a multiple of 2, 3 and 5. This would allow compatibility for devices of all aspect ratios, including edge-cases such as the Galaxy Fold.

### Github Commits



### Maintenance

The Torus front end was designed with future functionality in mind. While full functionality of the Torus marketplace was beyond the scope of this initial front-end design, the project’s UX development aimed to make adapting an appropriate backend significantly easier.

The included placeholder item metadata is formatted in a similar fashion to a real backend, remaining modular for future maintainers to easily implement their own backend using ASP.NET’s razor pages.

The web application’s simplistic design aimed to keep core functionality easier to maintain. The existing front-end offers the key components seen in online marketplace websites (browsing areas, search filters, etc.) with little unneeded functionality. This makes the website more flexible for future maintainers to add their own necessary feature set for Torus, saving them from dealing with the unneeded bloat.