Dream Gallery

By Riley Campbell

A virtual gallery that’s generated around its contents.

Concept

Dream Gallery is a virtual gallery that builds itself using procedural generation. It takes image files supplied by the user and displays them on the walls. The size and layout of the gallery will be determined by the images supplied.

The program will be built in Unreal Engine 5 for virtual reality, targeted at the Meta Quest 3, though a version will also be available for PC. All models for the project will be made in Blender.

Why?

Throughout my time studying I have worked on many visual projects, some of which are shared online, while others are collecting dust in folders on my laptop. By building a virtual gallery, I will be able to collect everything together in one place and share the gallery, rather than the work.

As a portfolio piece, it will demonstrate my interest in VR, programming and asset creation, and act as a creative way to display my other projects.

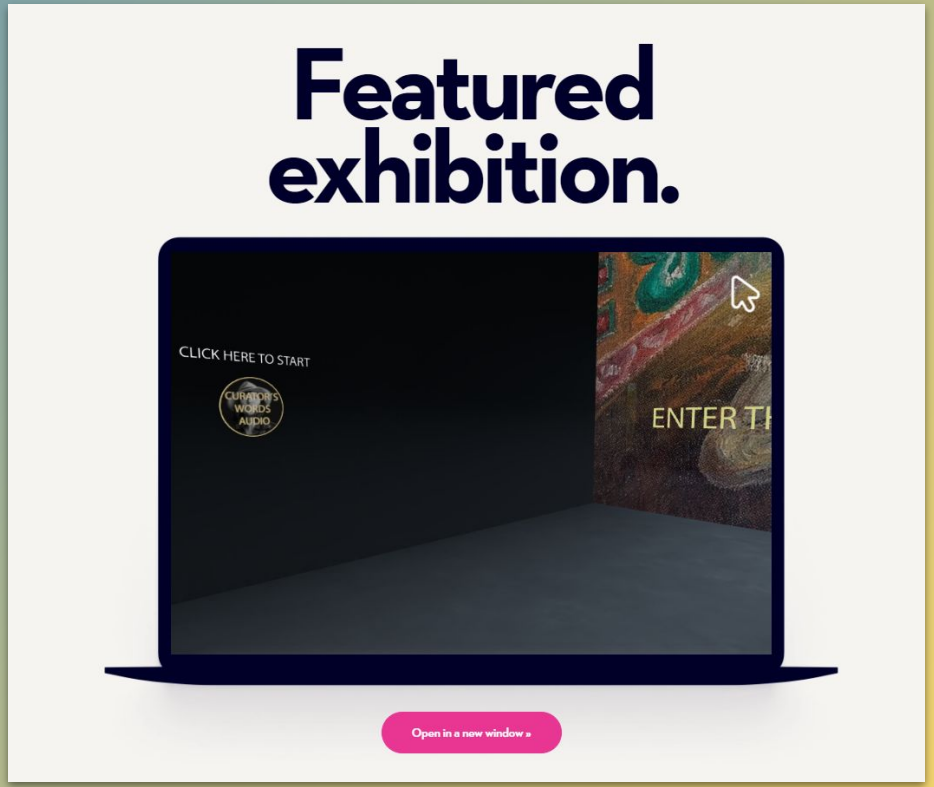
Rather than create this just for me, I'd like to make it a tool anyone can use. This would be perfect for other students or classes to showcase work.

Some of my work from DSDN132 Animation and Visual Effects 1, 2020

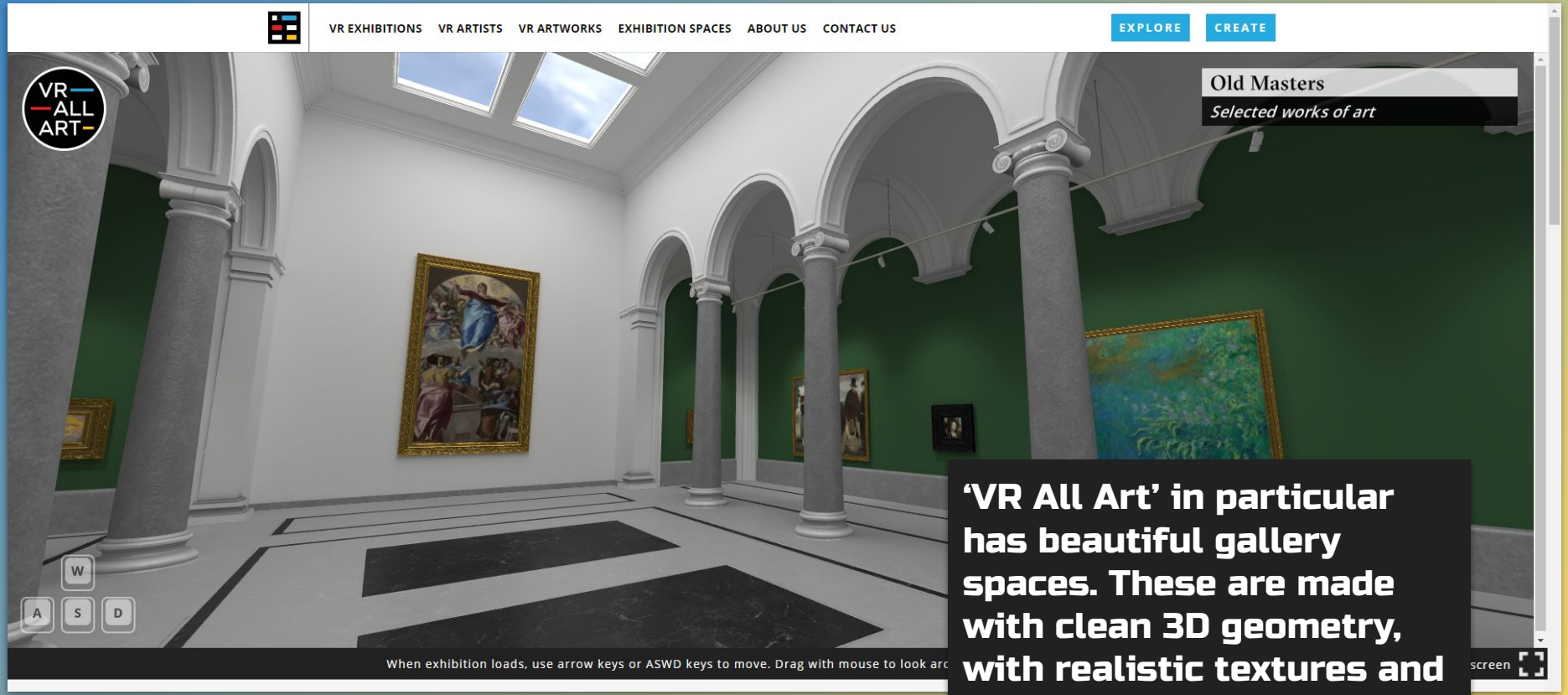
Some of my work from ANFX201 Animation and Visual Effects 2, 2021

Existing Examples

There are many existing virtual galleries, some have been created as replicas of real exhibitions, others only exist online. I found a few websites offering services where users can create their own 3D galleries and explore them online or in VR.



Screenshot of interactive 3D featured exhibition, taken from Virtual Art Gallery's website.



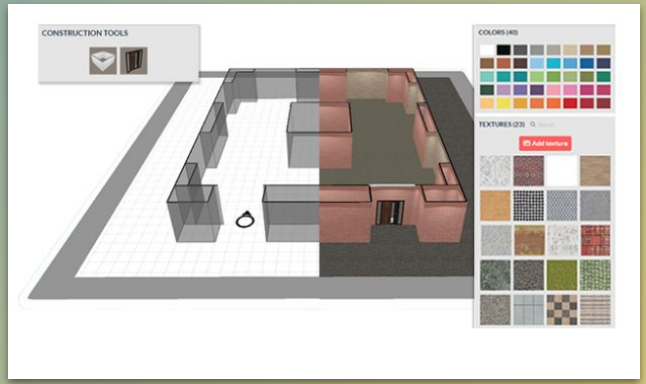
Screenshot of interactive 3D exhibition from VR All Art's website.

'VR All Art' in particular has beautiful gallery spaces. These are made with clean 3D geometry, with realistic textures and nice lighting. I would like Dream Gallery to have a similar standard.

Both ‘Virtual Art Gallery’ and ‘VR All Art’ use template galleries. This is something I’m avoiding in Dream Gallery because it limits how many images can go in the gallery and how they can be arranged.

‘Artsteps’ allows the user to build their gallery using architecture tools online. This is very impressive and much more flexible than procedural generation, however it would require much more manual set up.

Compared to these, Dream Gallery should require by far the least set up from the user. Ideally they will only need to put their images in a folder and launch the application.



Screenshots of gallery creation tools, taken from Artsteps’ website.

These examples have been very successful at creating a platform for people to make their own galleries. ‘VR All Art’ even has options for buying art from their virtual spaces. I’m not planning on going quite that far with Dream Gallery, however it’s clear there is a market for tools like it.

I was able to find an example of a procedurally generated gallery on itch.io called The Anything Gallery, where it would generate images from Google. Unfortunately it doesn’t seem to be working anymore.

While I will take a lot of inspiration from these projects for Dream Gallery, I feel it has the potential to stand out as being very adaptable and simple to use.

Screenshot of The Anything Gallery, from The Anything Gallery itch.io page.

Links to Virtual Galleries

https://virtualartgallery.com/

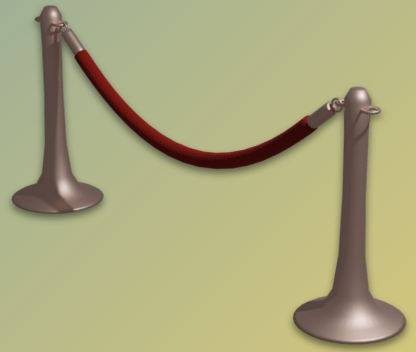
https://www.artsteps.com/

https://vrallart.com/

https://jan-malitschek.itch.io/the-anything-gallery?ac=jXdAbFQF

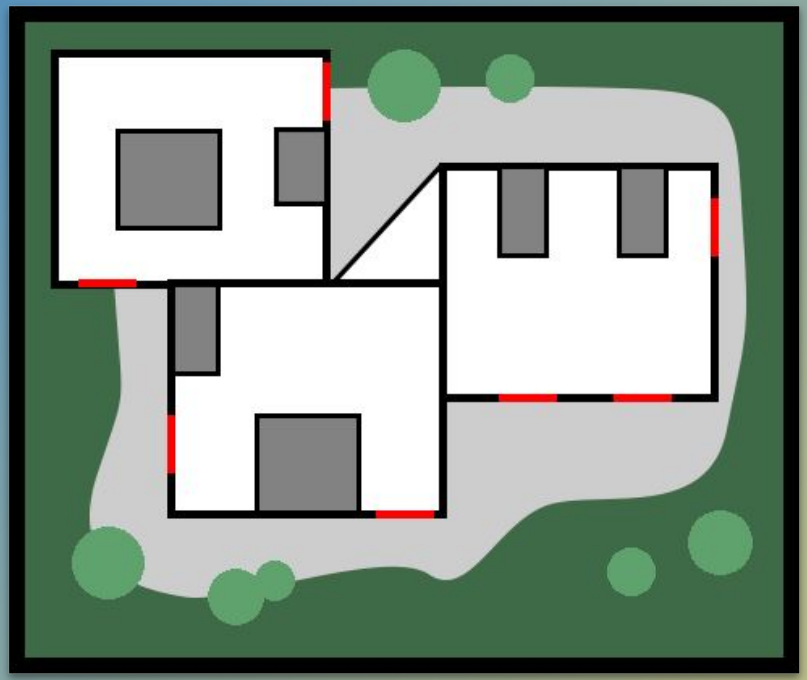
Initial Design

I experimented with the idea of creating my own gallery a few years ago, getting as far as having a few buildings and displaying some art in Unreal Engine. Unfortunately I've lost the old project file, however I do have some renders of the buildings I made for it.

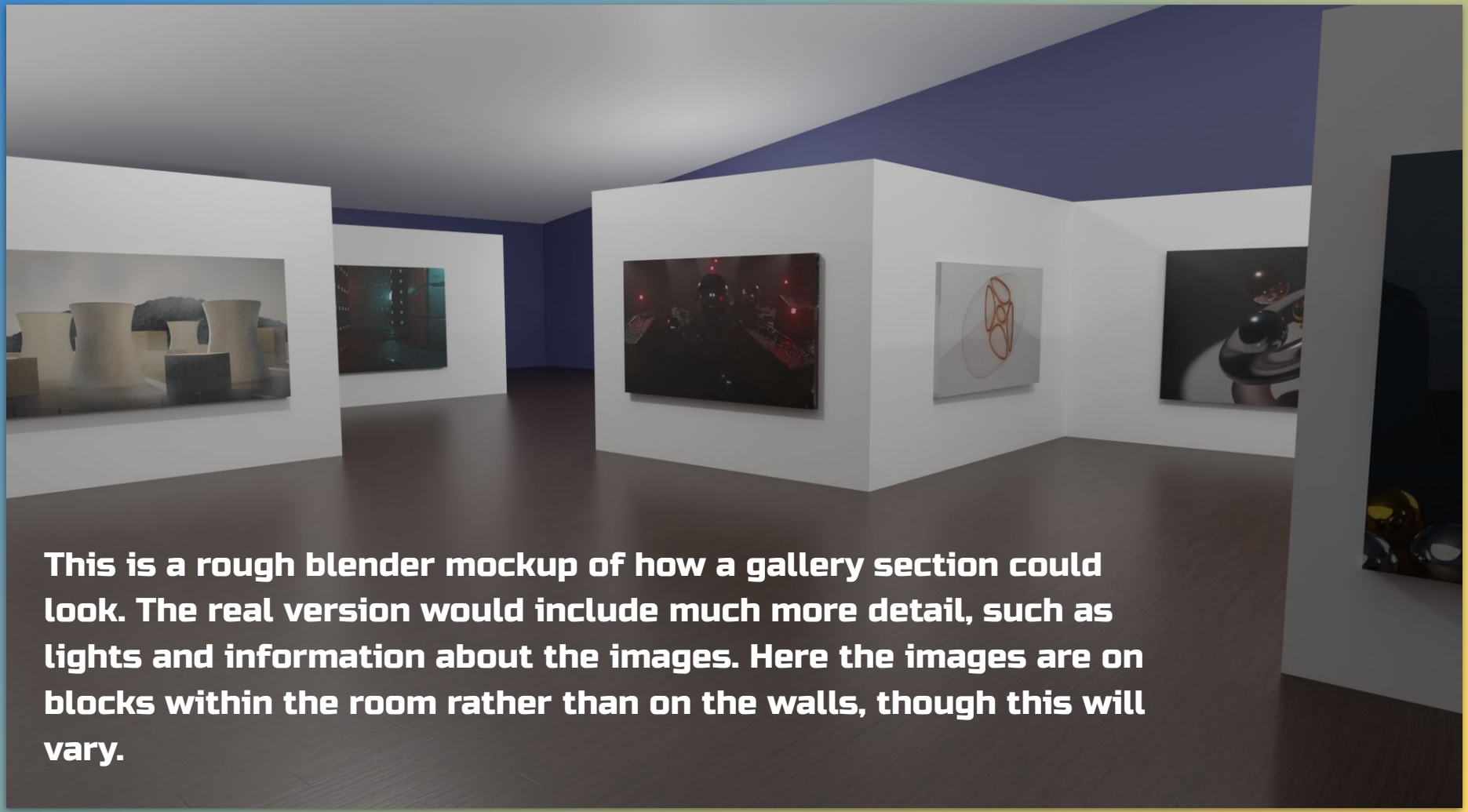


I designed this gallery to be split up between different buildings, connected by an outdoor space. This is a possibility for the generation in Dream Gallery, though I will be primarily using a room based system.

For this project, I intend to generate the rooms so that the gallery will fit all the user's images without being too sparse or too crowded. The images themselves will also ideally be grouped appropriately, such as by artist, date, colour, etc.



The program will generate random gallery sections and connect them together. Within these sections it will generate places for images to go, depending on their size. These places may be on walls or on blocks within the rooms.



This is a rough blender mockup of how a gallery section could look. The real version would include much more detail, such as lights and information about the images. Here the images are on blocks within the room rather than on the walls, though this will vary.

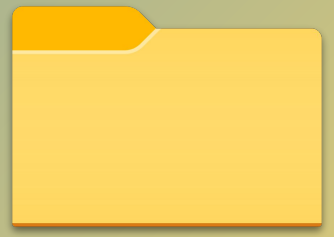
How will it work?

Users will download Dream Gallery from itch.io, choosing between the PC and VR versions.

To add their images to the gallery, they will need to put them all into a specified folder. A text file can also be provided to add a caption to the image.

Once the program has loaded all the images it will generate an appropriate gallery to display them in.

The user can navigate the gallery on PC by using W, A, S, D to move and the mouse to look around. In VR they will be able to teleport around using the controllers.



Publishing

Itch.io will be a great place for me to upload Dream Gallery. I have a lot of experience with the website, having uploaded many game jam games to it. It also includes a section for tools, which is more appropriate for this project. There will be a comment section on the project page where users can leave feedback or ask questions. It is also possible to view analytics about the page to see informations such as downloads and views.

Other than putting Dream Gallery online, I would like to set up a showcase for it at the University for other students to try it, using their own images. As a game design student, I've learned the value of playtesting. This approach would allow me to gain some feedback and test whether the program is user friendly. Ideally this would happen before I post the application to Itch.

Time Schedule

During this project I will also be working on the Game Design capstone project, so I will be dividing my time between the two. As with all technical projects I expect there to be complications and delays along the way, I've accounted for this by making the last few weeks have lighter goals.

Week 1 19th Aug - 25th Aug	Week 2 26th Aug - 1st Sep	Week 3 2nd Sep - 8th Sep	Week 4 9th Sep - 15th Sep	Week 5 16th Sep - 22nd Sep
Programming the image import system in Unreal Engine. My goal by the end of this week is to be able to import all image files from a folder.	Create a canvas object that can have an imported image applied to it. Set up the player for PC and VR.	Start work on the procedural generation of the gallery. Use the number of images and their sizes to inform the generation.	Continue working on the gallery generation. Get images to be placed in slots on walls. Aim to complete functionality.	Start 3D modeling for gallery elements. Build modular pieces that can be used across multiple rooms.
Week 6 **23rd Sep - 29th Sep**	**Week 7** **30th Sep - 6th Oct**	**Week 8** **7th Oct - 13th Oct**	**Week 9** **14th Oct - 20th Oct**	**Week 10** **21st Oct - 25th Oct**
Finish 3D modeling for the gallery itself. Create a nice setting for the gallery building.	Create the UI (main menu, setting etc.) By this point the application should be close to complete.	User testing. Get feedback on: • Visuals • User experience • Set up • Technical quality	Polish application based on feedback. Add content to generation. Add sound effects.	Set up the itch page for the project with downloads for both the PC and VR versions. Create a video and take screenshots to showcase the project on the page.

Evaluation

	Excellent	Good	Acceptable	Poor	Terrible
Technical Quality	Bug free. Generation is complex and effective. Images load correctly. Program runs perfectly.	Only minor bugs. Generation is effective and works consistently. Images load correctly. Program runs well.	Some bugs. Generation is simple but functional. Images load correctly. Program runs well enough.	Multiple bugs. Generation doesn't work consistently. Images sometimes load incorrectly. Program runs poorly.	Major bugs. Consistently broken generation or none at all. Images often fail to load. Program barely runs.
	Excellent	**Good**	**Acceptable**	**Poor**	**Terrible**
Aesthetic Quality	Gallery models are of a high quality, with textures applied well. Clean, good looking UI.	Gallery models are well made, with decent textures. UI is readable and looks nice.	Gallery models are simple, mostly well textured. UI is basic but readable.	Gallery models are poorly made, with bad UVs. UI is messy or uses the default Unreal elements.	Gallery models are exclusively primitives. Little to no texturing, with bad UVs. UI is unreadable or non existent.
	Excellent	**Good**	**Acceptable**	**Poor**	**Terrible**
Gallery Layout	Images are evenly distributed in gallery, in appropriate places. Layout fits them very well.	Images are well distributed in gallery. Layout makes sense.	Images are distributed fairly well, though the gallery is fairly crowded or sparse. Little layout rationale.	Images are crowded or sparse in gallery. Layout doesn't make any sense.	Images are in unreasonable places. No design to the layout.
	Excellent	**Good**	**Acceptable**	**Poor**	**Terrible**
User Experience	Almost anyone can set up the program with the given instructions. Controls are intuitive.	People with some computer experience can set up the program with the given instructions. Controls are easy to learn.	Only people that are very comfortable with computers can set up the program. Controls take some getting used to.	Users need help setting up the program. Controls feel uncomfortable for most users.	Setting up the program is tedious enough to put most people off. Controls feel bad for all users.

Evaluation

If all goes well I would like people to consider using Dream Gallery as a way to view and share their work. That's why I'm valuing the ease of set up and user experience very highly.

The technical quality and design of the gallery are very important for this goal as well. It shouldn't be off putting in any way. The aesthetics are very important but are also the easiest element to change or replace after the project is over. As it is intended to be available online, it would make sense to continue to update it and improve it in future.