Guidelines for a Collaborative Open Source Trishaw Platform

Submitted By:
Errica Cheng
Ben Draper
Jadon Laforest
Megan Ouellette
Michaela Sorrento

Submitted By:
10/15/2020

Submitted To:
Ole Kassow, Founder of Cycling Without Age
Pernille Bussone, Global Community Captain of Cycling Without Age

Introduction

The goal of these guidelines is to streamline the process of establishing a collaborative community for the creation, replication, and modification of open source trishaw and alternative bike designs. Ideally, Cycling Without Age will be able to utilize these guidelines and bypass most of the research and decision-making processes that are usually necessary in this endeavor. Using these guidelines, Cycling Without Age will implement this platform at their earliest convenience. The contents of these guidelines include information regarding licensing, security, community, collaboration, website features, and vending. To see the data and findings to support these guidelines, please refer to the full "Developing Guidelines for a Collaborative Open Source Trishaw Platform" report. To see the guidelines in action, refer to the prototype deliverables that are included in supplemental files.

Making the Prototype a Reality

Intended Readers: CWA Administration

The prototype our team built was designed to be used as a template, and can be used as much or as little as Cycling Without Age sees fit. Its objective was to include and visualize the functional components that the stakeholders desired. The aesthetics and things like names and tab organization may be changed to create an attractive platform when it is built.

Preliminary Action: Further Researching Stakeholder Interest

We recommend that further research be done with stakeholders we were unable to get in contact with to gain a better understanding of their interests regarding the platform. Local trishaw and bike manufacturers, trishaw designers, trishaw part sellers, and chapter representatives are a few that will be a vital part in making the open-source platform and its community thrive. Before building the platform, a critical step is determining manufacturer, designer, and part seller interest. A positive response from most or all stakeholder groups is necessary to ensure the success of the platform.

Open-Source Implementation

There are three primary options for implementing the final website:

1. Completely independant site, not related to CWA
2. Independant site linked to current CWA site
3. Integrated into current CWA site

Option one will require a new website built from scratch, via WordPress or whatever website platform CWA chooses. Creating the website will take funding and it will cost more depending on how many advanced features are included. For example, something like ecommerce would require a lot of back-end work and maintenance. Without this feature, users would not be able to purchase directly from the website, but instead, the platform could take them to a third party website (such as Christiania Bikes) for purchasing. We recommend that CWA starts with only the simple features, such as directing users to third party sites for purchasing.

Option two would involve building the platform on a different website, but would have an obvious connection to CWA's site. This could be through a tab or prominent link on the main CWA website. There would also be links to CWA's main website on the OpenShaw website to link it back as well. It would work similarly to how cyclingwithoutage.com branches off of cyclingwithoutage.org when navigating to USA chapters.

The third option involves renovating the current CWA website and regrouping some of the website tabs. For example, "Getting Started" could include Starting a Chapter, Joining a Chapter, Finding a Chapter, and Becoming a Designer or Manufacturer. While this is the most complex to implement, it would keep everything in one place and make it easily accessible to anyone interested in Cycling Without Age. The following list shows a possible CWA website restructure that focuses on regrouping sections for easy implementation of open source features.

Recommended CWA Website Structure:

- **Home**
- **About Us**
  - SDG
- **Getting Started**
  - Starting a Chapter
  - *Joining a Chapter**
  - *Finding a Chapter**
  - *Becoming and Designer or Builder**
- ***Trishaws****
  - Trishaw Designs
  - *Alternative Trishaws**
  - *Upload a Trishaw**
- ***Community****
  - *User Forums**
  - The Hood
  - Social Media
  - Blog
  - *Find a Designer or Manufacturer**
- **Resources**
  - *How-To Guides**
  - *Video Tutorials**
    - Pilot tutorials
  - *Find a Designer or Manufacturer**
  - Fundraising
  - FAQ

* Tabs and features that are not currently in the CWA website

Prototype Features

Intended Readers: All

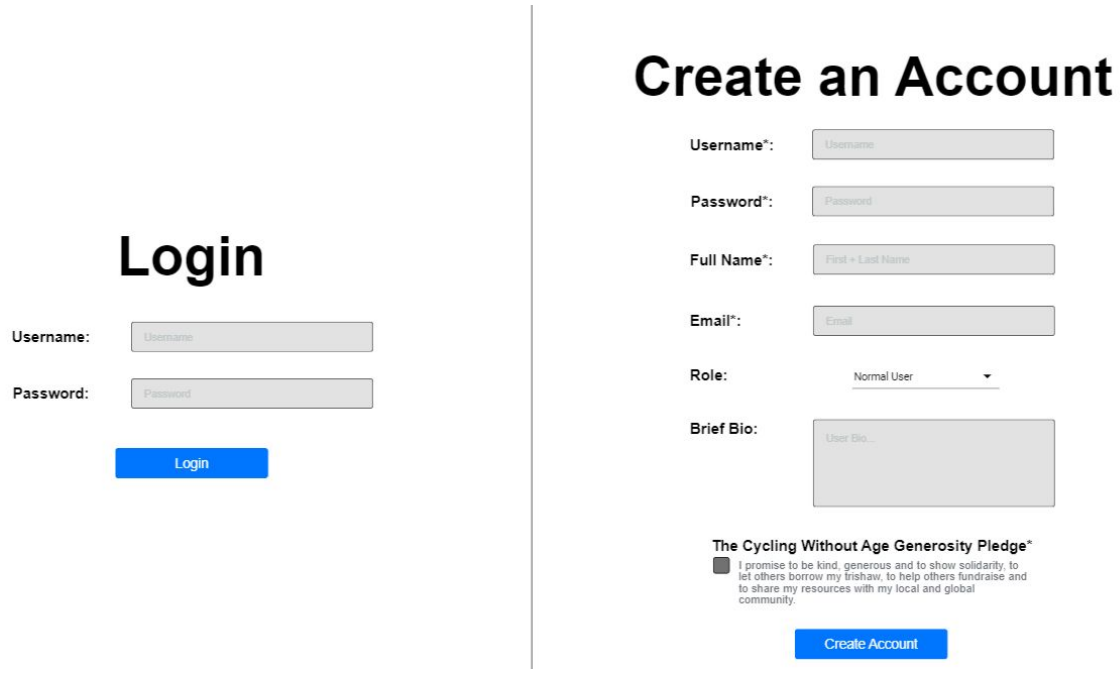
Through our data and analysis, we created a concise list of features that we believe will fulfill the stakeholders' expectations of the platform. These prototype features are categorized by different areas of the platform including security, community, and design/build features.

Security Features

Account Creation/Login

Research and interviews have proven that a simple login can deter negative actions like the abuse of free designs or inappropriate usage of community features. Linking an email, full name, and other information about themselves to their public account encourages positive interactions, especially after accepting the CWA Generosity Pledge. This login could be connected to The Hood login process -if feasible- or something else altogether. A link to the login page should be included on both the homepage and the navigation bar so it is always accessible. If the user is logged in when accessing the login page, it should instead route to a profile page where they can edit their information.

A user should be required to create an account or login before using the community forums, commenting on any designs, and before uploading or downloading designs. We recommend that a small profile biography be required to allow for individuals to identify as a member of a specific chapter, as a designer, or a manufacturer. During account creation, downloads, and uploads of designs, users should be required to accept certain user agreements to further encourage positive use of the website.



<u>Figure I1</u> - Platform Prototype Account Creation Page

Community Features

User forums

User forums are the most community-driven feature on the website and will be the source of a lot of useful information. Found on almost all community driven websites we researched, user forums are an integral part of community building and information sharing. This forum would follow standard Internet forum formatting in order to be a well-organized place users can collaborate and share new information with people from all over the world. To make it easier to navigate, several "boards" will be grouped together under a "topic." Within each board, there are individual threads. All logged-in users will be able to start or reply to any thread.

The forum should start with multiple default threads that would encourage collaboration and continuous conversation. Open-ended topics, for instance, are much more successful at producing very active forums. There should also be an option to suggest a topic. Before these suggested topics are actually added to the forums, they would need to be approved by the moderators to ensure they are appropriate and unique. We understand that this feature may be difficult to implement, so we think that incorporating it with the Hood could be used as a temporary or even permanent solution.

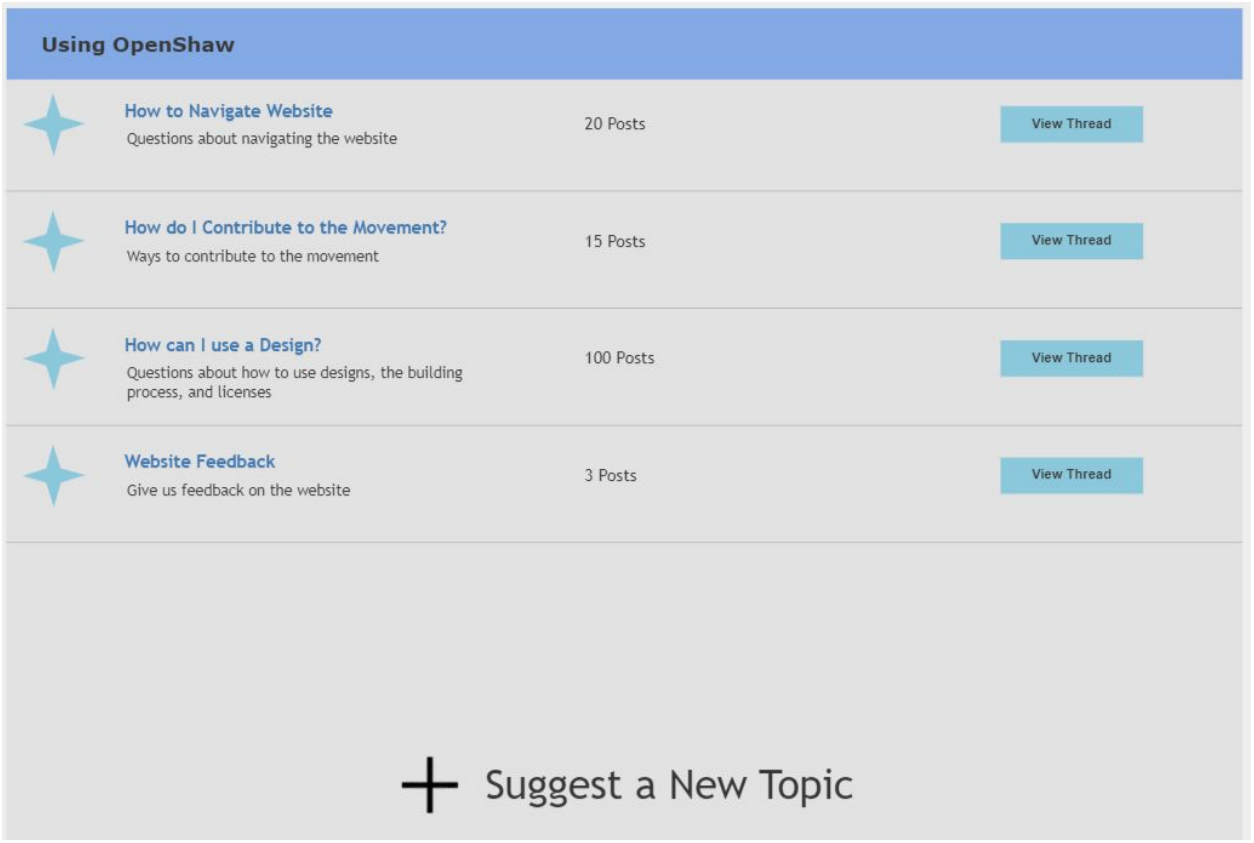


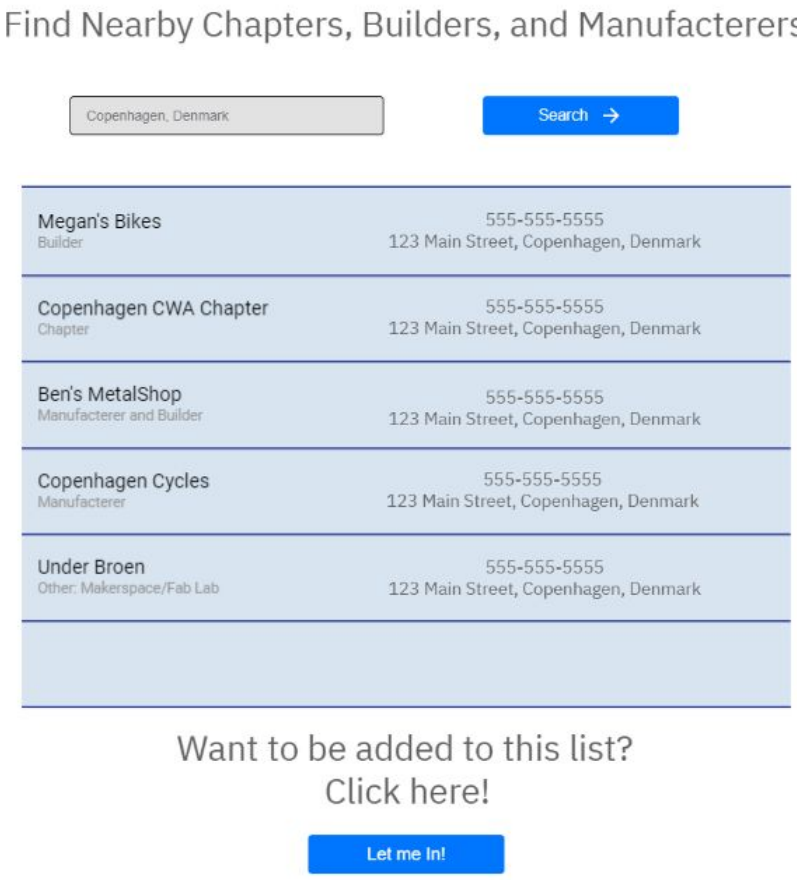
Figure I2 - Platform Prototype User Forum Page

Direct Messaging

One feature that chapters highly requested was the ability to direct message other chapters, builders, or designers. This feature would obviously require some kind of account, whether that be an OpenShaw Initiative login or The Hood login. While private messaging seems straightforward, implementation can be complicated. We think that the Hood's direct messaging abilities could be used as an easier way to make this feature come alive. A possible issue with this method is that The Hood would need to be expanded to account for designers, manufacturers, and others that would be joining through the website.

Chapter, Builder, and Designer Finder

The ability to find nearby chapters, builders, and designers would allow a user to type in their location to get a list of nearby organizations involved with the OpenShaw Initiative. Each list entry would include the organization name, their phone number, and their address. A helpful map with pins in each location could also be an optional way to implement this kind of feature. Optimally, if a list entry was clicked on, it would lead to the organization's website. The "Find A chapter/builder/designer" page would also include a button on the bottom or side that encourages new organizations to sign up to be on the list.



<u>Figure I3</u> - Platform Prototype Nearby Chapter, Builder, and Manufacturer Search Page

Design/Build Features

Main Trishaw/Alternative Design Pages

With the possibility of many future designs, there will need to be a dedicated page to display them all in an organized way. One option is to have all the designs, whether trishaws or alternative bike designs, on one page. This would keep everything in one place, but would also put all designs on the same level, regardless of quality or type. This may lead to confusion for the users as they try and decipher the differences between designs. Another option would be to separate all trishaw designs onto one page and any other alternative bike designs onto another. This option was favored by Cycling Without Age because it can be used as a method to isolate and draw attention to trishaws, the preferred design of the organization.

In either of these cases, there are a few necessary features that should be included in the main design page(s). When displaying each design on the main page, each should be accompanied by a preview image and the name of the design. This way, users can easily find what they may or may not be interested in. When the user clicks on one of the preview images or names, it should send them to the individual design page for more information (these design pages are described in detail in the next section). Another necessary feature of the main page is the ability to sort or filter results. For example, there could be an option to filter designs by ones that can be built and bought, only built, or only bought. Another example would be the ability to filter designs by ones that are free or ones that have fees associated with them.

The visual design of this main page is essentially up to the creator and CWA preferences. What is seen in the prototype is just one way to display the information, but almost anything could work to effectively contain everything in one place.

Individual Trishaw/Alternative Design Pages

Each trishaw or alternative bike design should have its own page that includes a design description, designer information, build or buy options, easy sharing links, a user-sourced rating function, and user-sourced comments.

The design description should be provided by the designer in the upload process (described in the Design Upload Process section). Similarly, the designer information will be provided by the designer via their website profile. This information will help users decide which design to purchase to best suit their needs.

The build and buy options should be different buttons. The buy option would bring them to the designers website, and the build would bring them to a build page, which would hold how advanced the trishaw assembly is, detailed build instructions, a materials and tools list, and a list of parts that can be bought. Like the descriptions, these buttons are part of the core of the platform's purpose and are non negotiable.

The user rating function could be a "like" function with a number of likes (maximum one per user), or an average rating out of a number of stars. Ultimately, one of these functions should be able to be used as a filter for finding bikes. Comments can either be formatted like Amazon

reviews or YouTube comments, depending on which is found to be most suitable. The ability to comment will give users the ability to leave helpful information for each other and feedback for designers.

The "share" link should automatically copy the design URL to the user's clipboard - alternatively, a popup with various sharing methods (e.g. Facebook, LinkedIn, Twitter) would also be acceptable. This function is less important than the others by far, as it is primarily to make it easier for users to send designs to others.

In terms of the actual trishaw content, we recommend that designers primarily upload designs with parts that are:

A. able to be shipped together in a flatpack
B. pre-assembled
C. simple and easily obtainable through a third party bike shop or otherwise

The results of the preliminary survey and interviews showed that chapters do not have access to trishaw or bike building equipment, do not have the skillset to build trishaws, and are primarily interested in assembly only trishaws. As such, chapters will mostly be interested in designs that have the necessary parts either on the OpenShaw website, a third-party website, or easily accessible through local bike building. While we do not recommend that CWA restrict their trishaw designs to explicitly easy assembly or flatpacks, we do recommend having advanced bike building separate from the higher-demand bikes.

How-To Section

The How-To section of the website should include how-to articles or videos created by CWA, designers, and/or builders. Ideally, this page will have some way to sort, filter, or search through the how-to materials. When a designer submits a bike design that has the option to be built, they should be encouraged to create a how-to article or video to accompany their design. These how-to materials could include assembly videos, videos showing how to use the bike, or text-based assembly guides. If created, the how-to page(s) will be included in the individual design page. This will make the build process more straightforward for users.

Design Upload Process

Uploading a design will require three pages. First, several fields regarding the design will need to be filled in. We identified that the most important ones include name, type of design (i.e. trishaw versus alternative bike), description, image(s), and whether the design is bought or built. Then, depending on the final choice, other fields will be required. For designs that are purchased directly, they will simply require a link to the buy page and an estimated price before shipping. For designs that are built, they will require design files, a how-to guide upload, an estimated build price, a price for the design (with "free" being an option), and a choice of license.

After these fields have been submitted, the site should bring the designer to an agreements page. It will reiterate the values of Cycling Without Age and any other legal documentation required. The designer will simply need to check off a box and click a button go to the next page.

The final page will simply contain confirmation of submission. Once that has been clicked, the designer will be thanked and returned to the platform's home page.

Miscellaneous Features

While the specific features above are fundamental for the platform, we cannot forget about the miscellaneous features that are essential for any website to function properly.

A home page is the first impression a user will get of the platform, and it is important that this page is aesthetically pleasing, and also provides the necessary information for the user to understand the purpose of the website. As shown in the prototype, this page can be formatted in a plethora of different ways, but we suggest that information about Cycling Without Age, trishaws, and how to get involved in the community be present. Pictures of different trishaws and a definition explaining what a trishaw is would be helpful to new users. We also recommend linking all of Cycling Without Age's social media at the bottom of this page to further publicize the organization.

Components that allow for a smoother user experience should also be prioritized. One important feature to consider implementing is a cart, usually found in the upper right corner of the page. A cart would be helpful for users to keep track of what items they are thinking of purchasing or downloading. The cart would also provide the option for users to purchase or download multiple items at once, instead of checking out one at a time. The difficult part would be implementing the vending through the Cycling Without Age platform. Another option is incorporating a bookmarking method instead. This way users can still bookmark designs they like, but there would be no need for CWA to commit to an ecommerce platform.

Another important interaction is a search feature to make navigating the website faster and easier. This search bar should bring them to a page that shows a list of various tabs that will show them the desired information.

Additionally, offering the users the ability to have notifications allows them to save time when looking for things that pertain to them. Users could customize what notifications they want, whether it be for updates of trishaw parts/designs availability, or direct messages/community forums.

To create better global accessibility, the website and guides should allow for translations, both automatic and sourced by users.

Lastly, having dedicated places for users to go to if they have questions will help diminish any frustrations that may occur. We suggest having both an About Us and Frequently Asked Questions (FAQ) pages. The about us page will go in depth on Cycling Without Age as an organization, why trishaw accessibility is important, and any other important information such as how to contact CWA. The FAQ page will focus on common questions that arose during the first

stages of the platform as well as questions that CWA experiences over time. Somewhere on this page we also recommend having a help section where users can write their question if it is not already answered.

Licensing and I.P. Protection

Intended Readers: CWA Administration

When creating an open source initiative, the topic of licensing often arises. Due to the variety of licensing options and the varying open source philosophy, it is in the best interest of Cycling Without Age to give the designers the option to choose their own license. Many people in the open source community believe that any significant restrictions on open source projects invalidates the project even being considered open source. As such, these people generally use licenses that guarantee restriction-free use of their work or any derivative of the work. On the other hand, some designers post their content in open source communities with the intention that people can modify their work to suit their own needs and share their modifications with the community so that it may help someone else. The challenge is that these same designers may want to restrict iterators from commercializing their content or any derivative of it. Although this method does not exactly fit the definition of open source, existing licenses do accommodate for it. The following is a non-exhaustive list of licenses we recommend to give as options to designers.

Creative Commons

Creative Commons licenses are a category of licenses. When choosing a Creative Commons license, the licensor can choose as many or as few of the terms listed on the right to build the license they want. The most commonly-used Creative Commons license in the open source community that still follows the terms of the official open source hardware definition would be the Creative Commons Attribution Share Alike License. Anyone that acquires content under this license has the right to modify, build upon, and redistribute a product for commercial or non-commercial purposes. The only requirements are that any derivative content credits the original designer, indicates if/what changes are made, and is licensed under the same terms as the original design.

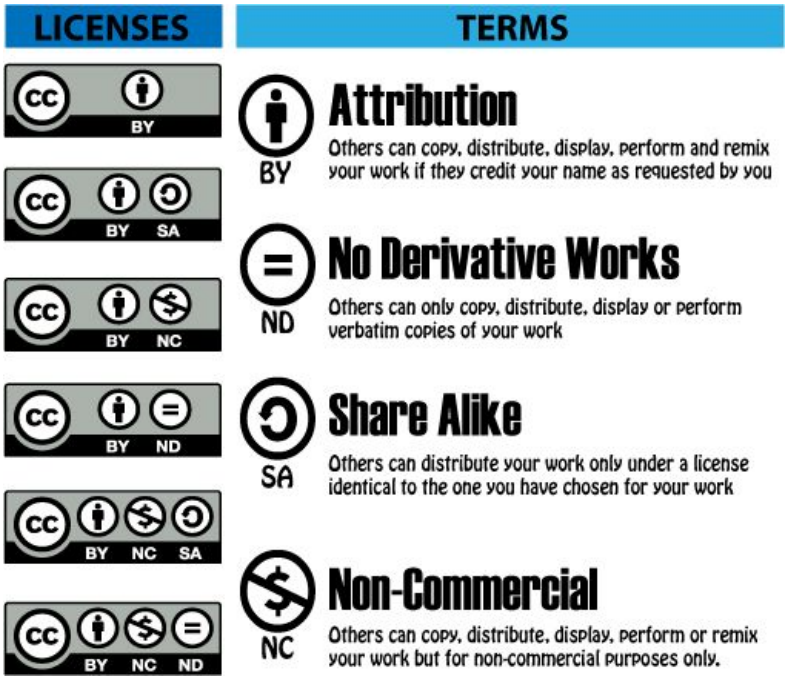


Figure I4 - (Creative Commons, 2020)

TAPR Hardware License

The TAPR Hardware License is specific to open source hardware. This license guarantees the freedom to share and create with the source hardware and its supplemental materials. More specifically, this license "forbids anyone who receives rights under the OHL to deny any other licensee those same rights to copy, modify, and distribute documentation, and to make, use and distribute products based on that documentation"(TAPR, 2007). It also addresses patent issues that may be a concern when publishing open source hardware by enforcing that "those who benefit from an OHL design may not bring lawsuits claiming that design infringes their patents or other intellectual property" (TAPR, 2007).

Solderpad Hardware License

The Solderpad Hardware license is another open source hardware-specific license. It grants almost identical permissions as the TAPR license but is "permissive", meaning that any derivatives of the hardware can be licensed with a different license.

Note: There are hundreds of open source hardware licenses that are available to designers. The ones listed above happen to be the most popular licenses and as such we would recommend these licenses to designers when they upload content but would not mandate them so that designers can still have control over their intellectual property. If we were to make a more specific recommendation that protected the property of the designer while complying with the official definition of open source hardware, we would recommend the Creative Commons Attribution Share-Alike License.

Website/Community Moderation

Intended Readers: CWA Administration

The final aspect that we believe is key to the success and longevity of the platform is the inclusion of some form of moderating. From the data analysis discussed in depth in our report, we found that all of the stakeholders considered some form of moderating essential, and that community moderating was common among other open source platforms.

Platform moderation gives the platform owner more control. Moderators can oversee user interactions, design submissions, platform updates, and so much more. Moderators prevent the platform from being static and outdated by having the ability to consistently update and change with the community. On a collaborative platform such as this, staying dynamic is more important than ever to accommodate new users or designs and keep current users intrigued.

The responsibilities of the moderators are essentially dependent on the desired level of supervision for the platform. For this particular platform we recommend that the moderators regulate overall community discussion at the minimum. Whether this be on forums or direct comments, the moderator would ensure that all conversation public on the platform was appropriate and relevant. Improper conduct such as inappropriate language, self-promotion, or posting unrelated content will be addressed in order to keep the platform centralized on its main purpose. Moderators will also discourage any of that behavior as the users will understand there are consequences if they use the platform incorrectly. We believe this will help build a community of dedicated users, as well as keep the platform free from any spam.

Another duty we suggest the moderators have is reviewing the trishaw or alternative bike design uploads. This would ensure that designs meet the safety and quality standards of Cycling Without Age. We recommend Cycling Without Age create a list of the basic requirements a design needs to have to be considered acceptable that the moderators can base their reviews on. Other aspects such as price, materials, and building difficulty should also be reviewed to make sure all the information being published is correct.

One final recommendation we have for moderators is updating the forums regularly. This could be with information of new designs, updates from Cycling Without Age, or anything else applicable to users. This will help support the community aspect of the platform by keeping the users engaged and wanting to come back to see new updates. This can also be a great opportunity to stimulate community discussion and gain feedback on what users want to see next.

Moderating a platform can come in many forms, such as a team of moderators or pre-programmed settings. At this point in time, we believe either option would perform well. However, after researching more about Cycling Without Age's website "The Hood", we found that it was moderated through volunteers and had great success. Looking forward, this may also be a viable option for recruiting a team of moderators. Overall, we believe that in future stages of this platform, some form of moderation would be essential to its longevity.

Closing Remarks

Based on our findings, we investigated what areas of the project could be expanded upon to further enhance the final product. The next few sections detail a set of recommendations for Cycling Without Age's next iterations of the platform.

Refining Guidelines

Although our guidelines and wireframe prototype showcase several recommended interactions for the final open source platform, they are by no means exhaustive. As such, more features will likely be needed, and what we created will need to be continuously iterated on. While our team cannot predict or provide the specifics of what may be added, we fully understand the likelihood of the entirety of our prototype being changed in the future.

It is also crucial to continue improving upon the platform based on any further feedback from stakeholders - especially manufacturers, designers, and consumers. We recommend that Cycling Without Age keep an open line of communication between themselves and all users of the platform. Using their thoughts and opinions to improve the platform past our guidelines and recommendations is essential to its success.

Expanding Community Reach

Finally, it would be prudent for Cycling Without Age to expand their social media presence in order to gain more platform traction. In a FarmBot interview, it was stressed that much of FarmBot's success was due to an active social media presence across many mediums. By posting on various other places frequented by others, Cycling Without Age can both expand in general as well as spread the use of the open source platform. This expansion will allow the community to grow even faster, further increasing trishaw accessibility around the world.