

# Open-source Handbook: Standards and Philosophical Outlook

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## Introduction

This document is divided into three parts: a **features** section, a **standards** section, and an **engagement** section. The features section includes information on contributions, open publishing, licensing and attribution, organizational ecosystems, and modes of working. We also have community standards developed around several key values. Engagement covers education, research, and design support initiatives adjacent to the [Rokwire Open-source Community](#), the [Rokwire Initiative](#) and the [Smart, Healthy Communities Initiative](#).

We invite contributors to join in our mission by contributing code, ideas, and other technical expertise. Feel free to explore our content, join in our community discussions, and participate in our community events. [Subscribe to our newsletter](#) for the latest updates from the world of community-building, then browse the following resources to get started: Rokwire Community [contributor guide](#), [Wiki](#), and [video tutorials](#). Become a contributor and [get recognized](#)!

## Getting Started

To get oriented to our Community, please consult our onboarding materials. These include our [Community Navigator](#), [Onboarding Guide](#), [Community Blog](#), [Community Wiki](#), [video tutorial library](#), and [bi-monthly Newsletter](#). Interact with these resources as needed, and use them to make the most of your open-source community experience. If you make a contribution, you can join our [contributor stage](#). The rest of this document provides a comprehensive reference for our procedures, values, and philosophical outlook.

## Community Features

In this section, we will cover all things contributor and how they interact with the open-source community. This includes contributor areas (open organization ecosystem), multitude paths to contribution, the reconfigurability of expertise, and basic types of contributor.

## Contribution Areas

According to our Onboarding Guide, we have multiple areas to which one can contribute. This includes both code and non-code contributions, and can include open discussion forums, Github repositories, collaborative papers/talks, Rokwire-related research, and reports, requests, and developing an instance.

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**Open Discussion Forums.** One easy way to contribute is to pose a question or raise an issue for community discussion. This should be a question or discussion point that is not easily answered by consulting the Community Wiki or existing documents such as the Rokwire white paper.

**Github Repositories.** Rokwire has a Github organization, which contains many public repositories containing the code base of Rokwire and its associated applications. This Github organization also hosts a separate repo for Rokwire Community, which hosts many of the gateway participatory activities listed here. Be sure to submit all pull requests, bug reports, and new feature requests using our standardized templates.

**Collaborative Paper or Talk.** We are in the process of soliciting ideas and working to publish both technical and academic papers on Rokwire-related issues. This might range from technical documentation to related applications, and from software architectures to research problems in adjacent fields. While the projects will be managed using platforms such as Google Docs and Box, check the Rokwire Community project board on Github to find specific opportunities.

**Rokwire-related Research.** We are also interested in research-intensive applications of the Rokwire architecture. Take a look at the research page on our website as it is developed. Whether it is an application for self-report data or as a means to stitch together spatial data, please join the conversation!

**Reports, Requests, and Developing an Instance.** To make a bug or accessibility report, or if you have an idea for a new feature request, please visit the appropriate wiki stub for links and instructions. If you are interested in developing an instance of Rokwire for your community, or licensing an instance of Safer Illinois for your campus, please have a look at our Licensing Guidelines and our Terms of Service.

## **Paths to Contribution**

Our contributor master plan (1) consists of five parts: **incentives**, **embedding**, **sustainability**, **communication and innovation**, and **catalyzation**. **Incentives** involve the ways in which we can encourage people to contribute beyond (and sometimes including) a paid position. **Embedding** refers to how we can package information about the community in our existing user and/or subscriber base. Ideally, we can use the Illinois App to advertise updates on community activities and vice versa. Since we are located in the University, we can also embed open-source education into community activities. **Sustainability** demonstrates a strategy for keeping contributor work relevant to changes in the development environment. Our **communication and innovation** focus involves getting people into the contribution pipeline, in addition to the social media tools that enable distributed collaboration. Finally, **catalyzation** involves ways to encourage contributors from a wide range of backgrounds and skillsets.

**Open Publishing.** Open publishing allows us to develop documents with frequent updates, that are formatted according to a set of standards, and that serve as resources made citable (given proper attribution). Such documents can be prepared using a version-controlled compatible platform (ranging from [Google Docs](#) to [Atom](#) documents), and are generally published on [Github](#) for documentation and [Figshare](#) for more formal documents or when a doi ([digital identifier](#)) is desired.

**Licensing and Attribution Standard.** The Rokwire platform is licensed under an Apache Open Source 2.0 license. We also require a contributor's license agreement (CLA) to be signed by any code contributor. We also have an Onboarding Guide (2), Community blog, and tutorial videos that serves as a reference guide for new contributors. Finally, we ask that fork and instance developers use proper attribution, which can be found on our Wiki (3) in the form of an attribution standard.

### Basic Types of Contributor

Rokwire is unique in that it did not begin as an open-source initiative, but rather opened up after developing a significant amount of infrastructure. Our default configuration is one of multiple layers. Each layer represents a layer of familiarity and expertise. The innermost layer (or center) contains internal contributors who are Rokwire employees. These people are the most well-versed in terms of procedure and technical expertise. Internal contributors either train or consult with the middle layer, or the external contributors (see Figure 1).

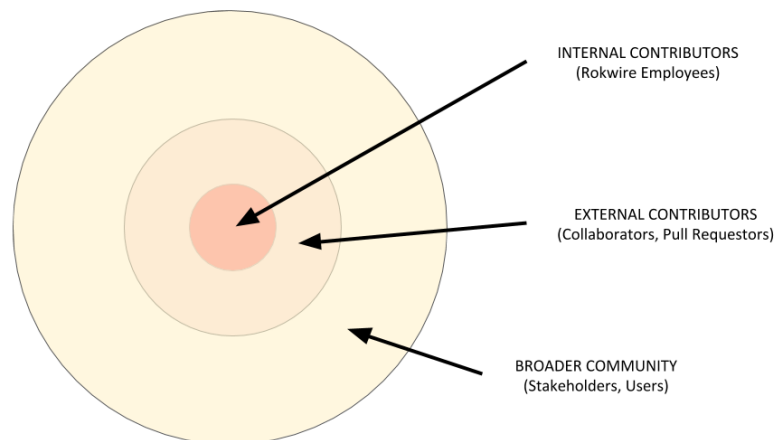


Figure 1. Three-tiered concentric structure of the Rokwire open-source community.

### Open Organization Ecosystem

Ideally, our community will operate like an ecosystem. New contributors can take a defined role based on their own specialties and ability to commit time. These defined roles allow for contributors to cultivate niches that are not discussed in the potential issues mentioned in the Onboarding Guide.

**Niche #1: founder.** A founder is an originator of new ideas, and/or someone who takes the initiative on project advancement. This could be the *de novo* creation of a new initiative, but also includes people who consistently create new project issues.

**Niche #2: maintainer.** A maintainer is someone who consistently improves upon the existing infrastructure or project issues. Maintainers might also specialize in accepting pull requests from other contributors, checking them for relevance and completeness.

**Niche #3: leading edge contributor.** A leading edge contributor is a relatively new member of the community who, while not leading a project, takes an active interest across multiple issues or projects.

**Niche #4: casual contributor.** A casual contributor is one who might consume community-related media or be passively involved in community events. Casual contributors might also make a one-time active contribution to a set of project issues.

## **Modes of Working**

We utilize two modes of collaboration in the Rokwire Community: synchronous and asynchronous. Synchronous contributions are made during group meetings, public events, and collaboration via platforms such as Slack. Asynchronous contributions are made using version-controlled contributions via Github or Google Docs, as well as chat threads that last days or even weeks.

**Synchronous.** The synchronous working mode involves people coming together in the same virtual workspace (e.g. Jitsi) or communication channel (e.g. Slack) at the same time. This allows for a rapid back and forth, and for issues to be addressed quickly. One drawback of the synchronous mode is that it may be inconvenient, particularly peripheral members of the team or people in different time zones.

**Asynchronous.** The asynchronous working mode involves people who interact by responding to messages and watching archived events for a longer period of time between collaborator interactions. Asynchronous modes allow for more reflection on conversation points and content, but can also suffer from a lack of spontaneity.

## **Reconfigurability of Expertise**

One key aspect of our open-source flexibility is the notion of *reconfigurable expertise*. As our members are contributors who join and leave the community as different opportunities arise, we can address seasonal and even one-time issues that would otherwise require a formal hiring process and significant team-building. Consider the example of documentation development. We might need significant technical writing expertise to get our documents prepared, then occasional expertise to develop revised or specialized versions. For a task such as website maintenance, we might need occasional revisions on a regular basis, requiring a maintainer to devote only a few

hours weekly. Developing a major new version of app software might require intense expertise only for a few months, after which time the contributors might shift to new tasks or away from the organization entirely.

## Modes of Contribution

The Rokwire Community has two modes of contribution: direct version-controlled contributions, and packager contributions (Figure 2). In the case of the former (direct version-control), small contributions to Community issues or configuration files for a specific application (e.g. Illinois App) are submitted directly via Github pull request. These can be reviewed by an individual maintainer and/or the Community Manager for suitability. Packager contributions are larger affairs, and involve the development of entire capabilities. Depending on the external contributing organization, capability packages can either be open or closed, and managed by either the internal Rokwire development team or the contributing organization. Contributions made via packager are subject to a formal review process, which involves a pre-check and a longer dialogue with the internal development team (on a case-by-case basis if necessary).

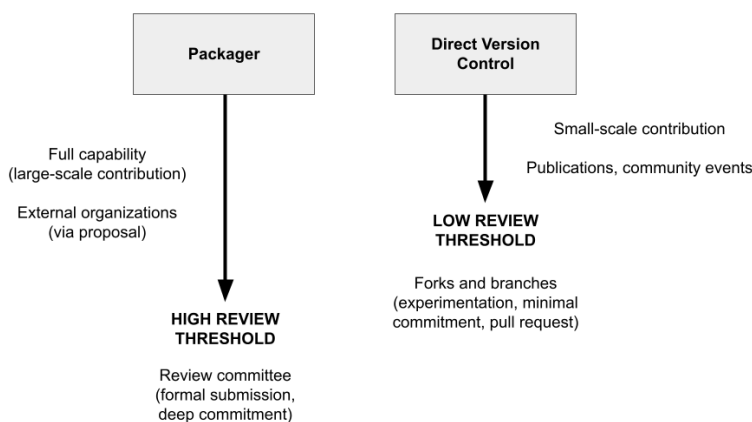


Figure 2. Dual stream contribution procedure for open-source submissions.

## Community Standards

We expect that all collaborators and developers adhere to our [Open Source Community Guiding Principles](#). Our [guiding mission](#) is to *enhance human capabilities* in a way that results in healthier, safer, more equitable, and sustainable places. This should serve to improve decision-making and fuel innovation for all members of our community. Our community works from an [open-source ethos](#). Rokwire’s guiding values are as such:

- \* we do no harm to our users and strive for respect towards others.
- \* we are innovative but use data for social good.

- \* we put people at the center of the technological solution.
- \* we seek to leverage the diversity of our University setting.

To leverage diversity, we encourage students from all backgrounds to contribute to the Rokwire Community, particularly students with a non-programming background and students from underrepresented groups. See our [Community Contributor Pipeline](#) for multiple paths to success in Rokwire Community.

### **Rokwire Community Approach to Community-building**

[Our approach to community-building](#) allows for three levels of contributor: internal contributors, external contributors, and potential contributors/stakeholders. [Internal contributors](#) are paid members of the Rokwire team, while [external contributors](#) are unpaid collaborators who make a defined contribution to the community. Please see our guidelines for [internal](#) and [external contributors](#) for more information. Also watch our tutorial on [why we have a community](#).

**External Contributor Guidelines.** Are you looking to license the Rokwire platform for your institution? View our [contributor's licensing agreement](#) for more information. Are you an individual or small group seeking to learn and create new parts of the platform? View our [Open-source license \(Apache 2.0\)](#) for more information. Finally, if you create a derivative work (your own application), we ask that you adhere to our [attribution standard](#) (see standalone section below).

**Github and version control.** We use Github for version control. While you are allowed to issue pull requests for targeted issues and open documents, code contributions should be made through three channels: pull request template for bug reports and new feature requests, a contribution packager for developed capabilities and talents, and contribution pipelines developed for specific initiatives. For documents, we have a pipeline that involves shared documents and the use of Atom as a staging platform. Atom allows for pull requests into Github, as well as document formatting. For details on how to work open and associated version control issues, [please consult this tutorial](#).

**Contribution standards: attribution.** If you are developing a capability or other derivative of the Rokwire platform, please adhere to our contribution standards. This can be found on our [Community Wiki](#). Compliant attribution involves an easy to access LICENSE file, in addition to the Rokwire logo (particularly for derivative mobile apps).

**Contribution standards: review thresholds.** To have a code-based contribution accepted to the Rokwire platform, you must meet a basic review threshold. For small-scale contributions (focused contribution of changes to a few files), a direct pull request reviewed by a single maintainer is sufficient. For larger contributions (full capabilities), submitting to our packager and a multi-step review process is required.

## Community Engagement

Our community engagement efforts cover educational, research, and documentation. We offer many opportunities that intersect with our being located within a University.

### Educational Initiatives

Rokwire Community also sponsors educational initiatives, ranging from an open-source curriculum to opportunities to enhance educational opportunities across academic fields. Our mission is to enhance interdisciplinary learning and collaboration, especially across fields not generally in contact with one another. We also sponsor public events with educational value on topics including (but not limited to): mobile development, smart communities, and AI ethics.

**Microcredential System.** Rokwire Community hosts a digital badge (micro credential) system on [Badgelist](#) that highlights niche skill acquisition as well as being a means to motivate contributors to complete small-scale tasks.

**Open-source Curriculum.** We are also in the process of developing an open-source curriculum, which will involve basic information about version control, licensing, working open, full-stack solutions, and more. This curriculum will be made available under the [Creative Commons](#) license for use in academic and open-source community settings.

### Documentation and Research Initiatives

Rokwire Community sponsors documentation and research initiatives, both internally and in collaboration with various campus units. The Rokwire initiative has established relationships with both the Siebel Center for Design and the Center for Social and Behavioral Sciences. Rokwire Community also has an investment in documentation and technical writing. There are opportunities to acquire skills in technical writing for technically-minded students, which is something that may enhance their vocational skill set.

In addition to our educational mission, Rokwire Community sponsors research initiatives. These include independent study on a number of topics relevant to Computer and Information Science. We also support the development of research methodologies based on the Rokwire platform (4). Future areas of research might include engaging with virtual reality technologies and computational techniques for simulating smart, healthy communities. The research component of our community engagement might also support so-called pie-in-the-sky ideas that might mesh with either mobile development or smart, healthy community development.

**Publication Interest Group.** To build upon the mission of transparency and education, we run a Publication Interest Group for all interested internal and external contributors. The Publication group's mission is to develop better documentation, technical papers, and engage in communication with the public. We are interested in contributors with expertise in technical writing, but anyone is welcome to join in and contribute.

## Involvement in the STRAT Laboratory

We are also affiliated with the STRAT Laboratory. STRAT Lab is a partnership between the [Smart, Healthy Communities Initiative](#) and the [Siebel Center for Design](#). STRAT Lab enables potential collaborators the opportunity to receive human-centered design support for their ideas, ultimately making them viable or implementable. Human-centered design support ranges from process prototyping to strategies for research design.

## Community Measures

As the Rokwire Community is diverse, we can utilize network analysis to visualize and quantify the interconnectedness across contributors. Figure 3 introduces the Rokwire Community Contributor Badge network. The network is visualized using [Gephi 0.9.2](#). Each node in the network is a single contributor, and each edge represents one or more contributor badges in common between contributors. In Figure 3, the contributor nodes are color-coded according to contributor role.

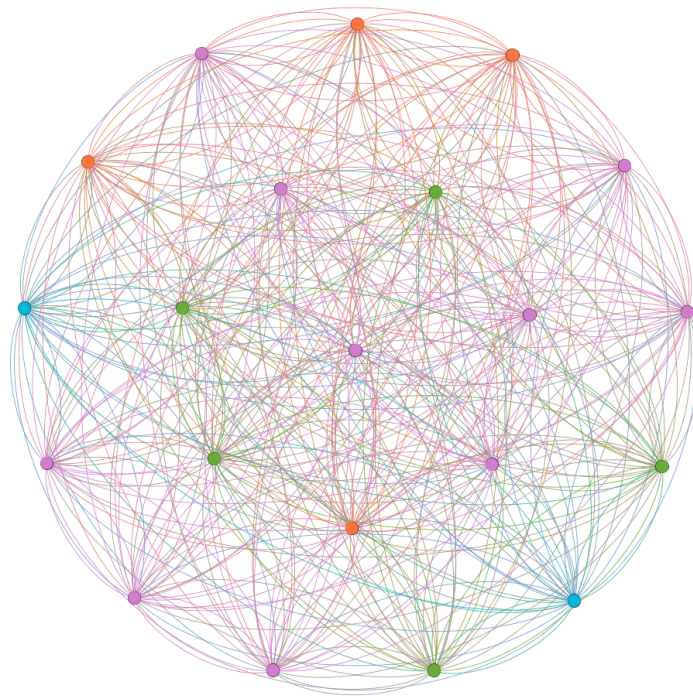


Figure 3. Rokwire Community Contributor Badge Network. Community contributors (N=21) with at least one badge in common. Nodes are color-coded, edges show transitions from one node to another. Blue: Verizon capabilities group, Red: Internal contributors, Green: Disciplinary contributors (disciplinary skills from a campus academic unit), Orange: Other contributors.



The color-coded nodes in Figure 3 can be mapped back to the concentric circle model of project involvement level shown in Figure 1. Network analysis also allows us to acquire various network statistics. While the structure of a non-stratified network model is minimally distinguishable from a random network, stratifying the network by specific contributors can yield interesting structure. This also provides a means to initiate education- and research-based initiatives built around complexity theory and open-source communities. The open dataset for the Rokwire Community network is version-controlled and available on [Figshare](#).

## References

- (1) Rokwire Community Contributor Master Plan. *Figshare*, doi:[10.6084/m9.figshare.14489274](https://doi.org/10.6084/m9.figshare.14489274).
- (2) Rokwire Community Onboarding Guide. *Substack*, <https://rokwirecommunity.substack.com/p/onboarding-guide-to-rokwire-community>
- (3) Attribution Standard. Rokwire Community blog, <https://github.com/rokwire/rokwire-community/wiki/Attribution-Standard>
- (4) Building Community Response to Violence through the Rokwire Smart City Platform. *In progress*.