

# Patterns for Regulating Behavior in Innovation Communities

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Innovation communities enable organizations and their customers to jointly develop new products, discuss product ideas, and promote new products. For an innovation community to be productive, community members need to agree on what behaviors are expected and acceptable. The patterns in this paper focus on regulating community behavior by rewarding appropriate behavior and sanctioning inappropriate behavior, and on ways of communicating and creating rules of community behavior. The audience for these patterns include organizations and individuals involved in the creation, operation, and growth of innovation communities.

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General Terms: Design, Management

Additional Key Words and Phrases: Innovation Community Design, Community Design Canvas, Rules, Patterns

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## 1. INTRODUCTION

Innovation communities enable organizations and their customers to jointly develop new products, discuss product ideas, and promote new products [Möslein 2013]. A successful example of applying innovation communities is the open source development model [Weiss 2015]. The open source model allows companies and their customers and partners to collaborate. In many cases, open source even enables competitors to work on solutions to common challenges. Open source communities expect that project decisions related to project plans, bugs, and features are made in the open. There must also be clear rules on intellectual property ownership. Note that while we will often refer to open source examples in this paper, innovation communities are not limited to open source.

Designing online communities, in general, presents a range of challenges: starting a community, attracting new members, encouraging member contributions and commitment, and regulating behavior [Kraut et al. 2012]. Innovation communities, in particular, impose specific challenges on top of those challenges, such as the management of the intellectual property produced by an innovation community. This paper documents patterns for keeping innovation communities productive by regulating member behavior. The audience for the patterns include organizations and individuals involved in the creation, operation, and growth of innovation communities.

The paper first describes the challenges in designing an innovation community, and presents a tool for designing communities. Then, the paper documents the method used to mine the patterns. Next, it provides an overview of the patterns that will be documented in the paper. This is followed by a presentation of the proposed patterns for regulating behavior in innovation communities. Finally, the paper concludes with observations and future work.

## 2. DESIGNING INNOVATION COMMUNITIES

### 2.1 Design challenges

Designing online communities, in general, presents a range of challenges derived from Kraut et al. [2012]:

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- (1) Starting a community requires carving out a new niche for the community, defending the niche in an ecosystem of competing communities, and getting the community to critical mass.
- (2) Attracting new members raises the challenges of recruiting new members, selecting the right members, retaining newcomers until they have robust ties to the community, teaching newcomers about expected behavior, and protecting the community from potentially damaging behavior of newcomers.
- (3) Encouraging member contributions calls for providing incentives for community members, increasing their intrinsic motivation, and preventing members from gaming the system.
- (4) Encouraging commitment entails creating a level of belonging or connection to the community among (this also deals with retaining existing members), and increasing the satisfaction of committed members.
- (5) Regulating behavior asks for limiting the damage that bad behavior can cause on the community, and encouraging compliance with community norms. This challenge is the focus of this paper.

Innovation communities, as a specific type of online communities, share those design challenges. However, we found that they also present unique challenges that justifies their separate treatment. For example, online communities can produce outcomes that are either tangible (e.g., product designs) or intangible (e.g., relationships), innovation communities will also have, at a minimum, tangible outcomes. Innovation communities also raise the issue of how ownership over the intellectual property created by the community is distributed among its members. General online communities may not create intellectual property, or be concerned about who will own it. Finally, innovation communities have sponsors who expect a return on their investment in the community.

## 2.2 Community design canvas

Weiss [2017a] developed a tool for communicating the decisions involved in designing an innovation community in a clear and systematic manner: the community design canvas contains nine sections as shown in Figure 1 that cover different aspects of designing a community.<sup>1</sup> The middle of the canvas holds the purpose of the community. The left side (sponsor, activities, places, rules) can be viewed as holding the “means” that support the “ends” on the right side (members, engagement, recruitment, outcomes). The patterns in this paper help with the design of the rules section of the canvas. Weiss [2017c] already documents patterns for engagement and activities.

The purpose section answers the *why* question. It includes a vision of what the community will look like when it is working well, as well as its scope in terms of geography, demographics, topics, or types of activities. The purpose of a community needs to align with the needs of its members, as well as those of its sponsors. Members are *who* (the audience that) the sponsors want to target by creating the community. Sponsors include a company and other organizations that wish to gain a return on their investment in the community.

The engagement section describes the incentives and mechanisms put in place to motivate members to contribute and retaining them for the long term. A sense of belonging can be instilled by providing identity, bonding, status, and leadership opportunities. The recruitment section centers around attracting members to the community. This deals with issues like turnover and building the initial base of members. Outcomes are *what* the community produces. These could be permanent assets, such as product ideas or ephemeral, such as conversations.

Activities are about *how* the community produces its outcomes and creates engagement, how it recruits new members, and how it enforces rules. Creating content, providing feedback, and networking are specific examples of activities. Places are the spaces, platforms, and tools (such as forums, wikis, or a rating capability) *where* these activities occur. Rules keep the community productive by establishing what behavior is expected from community members, and defining a protocol for how members should engage with each other.

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<sup>1</sup>The idea of a canvas for describing design decisions is not new. In particular, the canvas approach has become a popular tool for the articulation and refinement of business models [Osterwalder and Pigneur 2010; Borseman et al. 2016].

Sponsors	Activities IDEA FUNNEL	Purpose	Engagement HIGHLIGHT TOP RATED IDEAS SHOWCASE USER PROFILES	Members
	Places		Recruitment	
		<b>how</b>		
		<b>where</b>	<b>why</b>	<b>who</b>
Rules <i>CODE OF CONDUCT</i> <i>MODERATOR SCREENS CONTRIBUTIONS</i> <i>INTERNAL CURRENCY</i> <i>GRADUATED SANCTIONS</i> <i>MEMBERS CREATE RULES</i>			Outcomes	
			<b>what</b>	

Fig. 1. Sections of the community design canvas from [Weiss 2017a]. Also indicated are the names of patterns documented in this paper (in *italics*) and in [Weiss 2017c] that are part of this pattern language, and the sections of the canvas that they belong to.

### 3. METHOD USED TO MINE THE PATTERNS

The patterns were mined using an evidence-based approach [Weiss 2017b]. Mining drew on three sources of input. The first source consisted of projects from a graduate-level course on online community design. The students were assigned the book by Kraut et al. [2012] on online community design as a core reading, and were also asked to prototype their designs. The second source was the community design literature (e.g. [Kraut et al. 2012]). The third source was the author's own experience with studying and participating in open source communities.

The evidence-based approach uses semantic word clouds (introduced by [Barth et al. 2014]) to extract a high-level summary of the design documents. These summaries are then used to trigger the pattern discovery. They do not provide the full content for those patterns, but typically suggest pattern names, forces, and elements of solutions. The pattern mining process still relies on the experience of the pattern author to act on those triggers, and to supply the remaining pattern elements. In preparation for the analysis, the design documents were split according to the sections of the canvas, and one document was compiled for each section. Figure 2 provides an example of a semantic word cloud generated from the "rules" section of the design documents.



Fig. 2. Semantic word cloud generated from the rules section of the design documents.

What is interesting about semantic word clouds is that, unlike conventional word clouds, they place words that appear in the same context of a document close to each other [Barth et al. 2014]. For example, the words *sanctions*, *repeat*, and *offending* form one unit, and the words *conduct* and *code* form another unit, suggesting two potential patterns that were ultimately called GRADUATED SANCTIONS and CODE OF CONDUCT. The words *banned*, *removed*, and *account* that appear in the same cluster as *sanctions* suggest details of the solution for the first pattern (GRADUATED SANCTIONS). Weiss [2017b] defines a template that allows pattern authors to capture and organize the insights gained from visual inspection of the semantic word clouds in a systematic manner.

#### 4. OVERVIEW OF THE PATTERNS

Table I provides thumbnails of the patterns documented in this paper. These patterns focus on regulating the behavior of community members, ensuring that innovation communities are productive. Within the larger pattern system for designing innovation communities [Weiss 2016; 2017b], these patterns belong to the rules category, which is based on a section of the community design canvas [Weiss 2017a], a tool for designing communities (see Section 2.2). Other patterns will be documented in future papers. There is also already a body of patterns on the creation of communities, in general, e.g. [Homsy and Raveh 2007] and [Schümmer and Matschke 2013].

Table I. Patterns for online innovation community design: regulating behavior

Category	Name	Summary
Rules	CODE OF CONDUCT	Using clear and simple rules, lay out what behavior is expected from all members of the community in a code of conduct
	MODERATOR SCREENS CONTRIBUTIONS	One way to deal with inappropriate contributions is to contain them at the source by involving a moderator who screens contributions
	INTERNAL CURRENCY	Reward members for appropriate behavior in terms of an internal currency that gives them privileges in the community
	GRADUATED SANCTIONS	Increase the level of sanctions only when inappropriate behavior persists
	MEMBERS CREATE RULES	Involve community members in the creation of the code of conduct to get their buy-in

The pattern descriptions use a narrative format [Alexander et al. 1977]. Each pattern starts with a description of the context, in which the pattern can be applied. This is followed a statement of the problem that the pattern helps address in **bold**. The problem statement is subsequently elaborated in terms of the forces that create tensions for the design. The description of the solution is next. It is introduced by a solution statement in **bold**, and followed by details of the solution, and a discussion of the consequences of using the pattern. The pattern ends with a description of known uses. For emphasis, the key sections of a pattern are separated by three stars (\* \* \*).

#### 5. PATTERNS

##### 5.1 CODE OF CONDUCT

*Rules:*

1. *Be open*
2. *Be empathetic*
3. *Be patient*

...

... you want community members to feel safe and inclusive. Your community has grown beyond the initial group of founding members who share an implicit understanding of the norms of the community.

\* \* \*

**As a community grows, it cannot be taken for granted that all community members will know what behavior is considered acceptable when they participate in the community.**

Enabled by new forms of online collaboration, innovation communities often have many members with diverse backgrounds. Diversity includes experiences and interests, but also gender and ethnicity.

More diversity (especially, in gender and tenure) is associated with higher productivity [Tourani et al. 2017].

However, diversity of community members also harbors potential for conflict. Where people from different cultures, personalities, or interests interact, there is also greater risk of offensive or disruptive behavior.

Such destructive behavior can lead the project members involved to leave the community.

\* \* \*

Therefore,

**Using clear and simple rules, lay out what behavior is expected from all members of the community in a code of conduct.**

Communities increasingly use codes of conduct to promote what behavior is expected from community members. A code of conduct outlines the expectations and values of the community [Tourani et al. 2017]. Its goal is to create a safe and inclusive environment for community members. Consequences of violations of the code of conduct range from a gentle referral to the code of conduct to the exclusion of members (→ GRADUATED SANCTIONS).

Tourani et al. [2017] conducted a study of codes of conduct across open source communities. A good code of conduct shared five common elements:

- Purpose: diversity and creating a welcoming environment are common purposes
- Positive behavior including: respect, patience, focus on best for community, being considerate, and collaboration
- Unacceptable behavior including: bad language, harassment, violence, and threats
- Enforcement mechanism for reporting unacceptable behavior
- Scope: community members, online and offline

While communities can create their own codes of conduct, it is often better to reuse an existing code of conduct, or start creating a new one from an existing one. There will also be likely be pushback from some community members. Tourani et al. [2017] cite Hermans as saying that a code of conduct that does not meet with some resistance is not working properly. There may be disagreement on what rules should be part of the code of conduct. Thus, it is vital to the adoption of a code of conduct to let → MEMBERS CREATE [ITS] RULES.

The role of moderators or community managers is to help members understand and adhere to the code of conduct, as discussed further in → MODERATOR SCREENS CONTRIBUTIONS.

\* \* \*

The community will be more productive when community members follow an explicit code of conduct, as suggested by the literature on the use of codes of conduct in open source projects [Tourani et al. 2017].

A code of conduct gives moderators a tool for responding to conflicts as they arise [Tourani et al. 2017].

However, if the rules in a code of conduct are perceived as too restrictive, they might discourage participation.

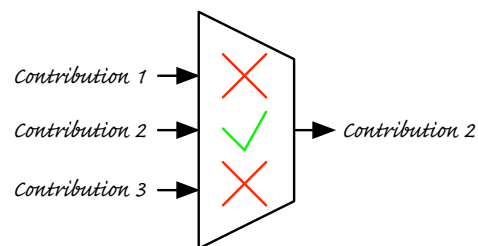
In addition, having a code of conduct is not sufficient on its own. You also need to inform members of the code of conduct, for example, by sending new members a welcome message stating the rules of conduct.

In the case of company-sponsored communities (such as corporate open source projects), the code of conduct of the community must also comply with the company's policies [Tourani et al. 2017].

\* \* \*

**The WELL**, one of the first online communities, documents the rights and responsibilities members have in a member agreement.<sup>2</sup> Examples of rules are that members have to use their real names to sign up as a member; members should, in the first instance, try to resolve conflicts with other members by contacting those members; and that members access posts by other members for their personal use only. In its Open Code of Conduct, **The TODO group**, a community of practice founded by a group of major software vendors, documents goals open source communities strive to achieve, and includes a definition of harassment, a diversity statement, and reporting guidelines.<sup>3</sup> **The Apache Foundation** requires its participants to abide by its code of conduct.<sup>4</sup> This code of conduct includes guidelines on openness, empathy, and collaboration; a statement on diversity of age, ethnicity, gender, etc.; and reporting guidelines on how violations of the code of conduct should be handled (participants should first assume good faith, then involve staff of the Apache Software Foundation, if the behavior persists). The code of conduct of the **Dell IdeaStorm community**, an innovation community in which customers can suggest and vote on product ideas, contains both sections that one would expect to find in a non-corporate-sponsored community (such as guiding principles, moderation process, and enforcement), but also sections related to company policy (such as warranties, licensing of ideas posted, and content restrictions).<sup>5</sup>

## 5.2 MODERATOR SCREENS CONTRIBUTIONS



... you are using a → CODE OF CONDUCT to communicate what behavior is expected from community members. You need a way to enforce the rules, when members break them.

\* \* \*

### **Inappropriate contributions can disrupt a community, if not properly contained.**

The interaction of community members should be as unconstrained as possible. However, unfiltered inappropriate contributions from members can be destructive to the community. The impact of destructive behavior needs to be contained to prevent it from spreading.

\* \* \*

<sup>2</sup>[https://www.well.com/member\\_agreement.html](https://www.well.com/member_agreement.html)

<sup>3</sup><http://todogroup.org/opencodeofconduct/>

<sup>4</sup><https://www.apache.org/foundation/policies/conduct.html>

<sup>5</sup><http://www.dell.com/content/topics/global.aspx/policy/en/ideastorm?c=us&l=en&s=gen>

Therefore,

**One way to deal with inappropriate contributions is to contain them at the source by involving a moderator who screens contributions.**

Rather than sharing contributions with all members as soon as they are posted, they can be first screened by a moderator. Inappropriate contributions include posts that use bad or violent language, harass other members, or express threats. Based on those criteria, a moderator decides whether a contribution will be shared with the community.

Moderators are, generally, assigned on the basis of the merit of their past contributions. Merit is often made explicit in the form of a metric or → INTERNAL CURRENCY that everybody can see. The tenure of moderators can also be limited in order to prevent moderators from taking too much control over the community, and to allow novice moderators to learn how to moderate. (This is, by the way, is a common pattern used in writers' workshops at PLoP conferences. Usually, different members of a writers' workshop play the role of the moderator.)

Instead of single moderator or small group of moderators, moderation can also be distributed among members. For example, members can rate posts, and filter posts based on the ratings assigned to them. Filtering of contributions can also be supported by algorithms. For example, contributions that contain certain keywords can be flagged for inspection by the moderator or removed automatically.

To support moderators in their task, consider creating a separate → CODE OF CONDUCT just for moderators that provides them with criteria for screening contributions and examples of inappropriate contributions. Such a code of conduct should also identify the boundaries that moderators themselves will be held to.

As an alternative to screening contributions, you can use → GRADUATED SANCTIONS. In this case, the contributions are not screened in advance. Instead, inappropriate contributions are called out by a moderator or other community member of high stature in the community, and the contribution is discussed in public.

\* \* \*

Contributions that would otherwise be unacceptable no longer disrupt the community.

Having contributions screened by a moderator can delay posts and disrupt the natural flow of interaction.

The behavior of moderators itself needs to be guided by its own code of conduct.

\* \* \*

**Slashdot** is a community for science and technology news that are contributed and evaluated by its members. Each news item has an associated threaded discussion. Instead of a single moderator screening contributions (news or comments), community members can up-vote or down-vote contributions.<sup>6</sup> Members can also set a threshold to filter out news that has received a low total vote, and is considered of low quality. Slashdot is an example of distributed moderation system. Members get “karma” points for contributions. They can become moderators once they have accumulated sufficient karma points. Each moderation deducts karma points.

**OpenOffice** has a Moderator Code of Conduct that guides moderators through their task.<sup>7</sup> This includes a description of what constitutes unacceptable contributions, and policies for editing contributions, redirecting contributions to the appropriate forum (e.g. a forum for rants), and warning community members. The Moderator Code of Conduct also aims to constrain what moderators can and cannot do: it reminds them that moderation is a privilege that needs to be exercised carefully. In particular, moderators should not abuse their powers.

<sup>6</sup><https://slashdot.org/moderation.shtml>

<sup>7</sup><https://forum.openoffice.org/en/forum/viewtopic.php?f=50&t=12535>

### 5.3 INTERNAL CURRENCY



... you are using rewards to encourage members to comply with the → CODE OF CONDUCT.

\* \* \*

**You want to reward good behavior, but discourage members from gaming the system.**

Rewards can be used to encourage good behavior. They can be of different types: e.g. rewards could be of a financial nature, or in the form of recognition of achievement within the community (e.g. badges).

However, rewards that are valuable outside the community, such as financial rewards, can entice participants to “game” the system by engaging in the rewarded behavior without benefiting the community as such.

\* \* \*

Therefore,

**Reward members for appropriate behavior in terms of an internal currency that gives them privileges in the community.**

Rewards become an internal “currency”, when they can be traded against something else in the community that is of value to community members. One example of an internal currency are reputation points given to users for posts to a forum that can also be “spent” to vote on the posts of other users. An internal currency should be designed in such a way that it cannot be used in another community. For instance, reputation points in one community can generally only be spent there, and users cannot transfer their reputation out of one community.

\* \* \*

Participants who just want to gain the rewards without truly participating in the community will be discouraged from engaging in such behavior, because the rewards are not valuable outside of the community.

Rewards in form of an internal currency will strengthen members’ commitment to the community. Members have to work (by contributing to the community) in order to acquire internal currency.

\* \* \*

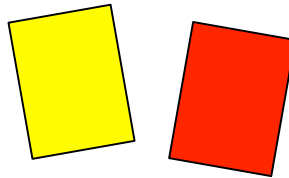
In **Slashdot**, “karma” points are awarded for constructive comments. Karma points give people the power to moderate the comments of other users, but users also use up karma points when they do so. Similarly, **Stack Overflow** allows users to up or down vote each others’ questions and answers. However, to do so, they need to have spend reputation points that they have previously collected.<sup>8</sup> **Yahoo! Answers** is another example. Users can spend points they receive for answering questions to ask questions themselves within the community.

<sup>8</sup><https://stackoverflow.com/help/whats-reputation>



**Open source projects** are often operated on the principle of meritocracy: what members of a project can do (i.e. privileges they are given) depends on merit. Merit is acquired through frequency and quality of contributions. Typically, open source community members progress along a “ladder” of using the software, submitting bugs, and contributing patches, before they are allowed to commit code to the project core [Crowston and Howison 2005]. The internal currency is merit. The privileges gained in one project are not easily transferred to other projects.

#### 5.4 GRADUATED SANCTIONS



... you are considering sanctions to enforce the → CODE OF CONDUCT.

\* \* \*

**When applying sanctions, you want to be able to tolerate inevitable mistakes members make.**

Sanctions that are out of proportion with the offense may be perceived as unfair. Harsh sanctions for new community members (“newbies”) might dissuade participation from other potential members.

Violations of community rules may be accidental and not the result of deliberate action.

\* \* \*

Therefore,

**Increase the level of sanctions only when inappropriate behavior persists.**

This is an application of Ostrom’s fifth principle for managing common pool resources [Ostrom 1990; Kraut et al. 2012]. Ostrom [1990] writes that severe sanctions “imposed on a person facing an unusual problem may produce resentment and unwillingness to conform to the rules in the future”. For example, a first offense in an online community should be treated privately for a member to save face [Kraut et al. 2012], and may simply justify a private message, whereas repeat offenses may call for closing the member’s account. (An everyday analogy are the red and yellow cards used in soccer. When a player is behaving unsportsmanlike, they are usually given a yellow card for their first offence and a red card for their second offence, as well as being removed from the game.)

\* \* \*

Light sanctions for initial offenses will be viewed as fairer and more legitimate by community members.

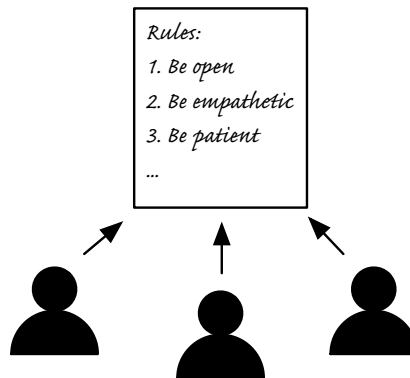
The same way as members can make error when breaking community rules, community moderators can err when applying sanctions. When graduated sanctions are applied, such errors will have less impact.

\* \* \*

In the Apache open source project, participants who violate the project’s → CODE OF CONDUCT are reminded of the rules assuming good faith. As stated in the code of conduct of the Apache project, “it is more likely that participants are unaware of their bad behaviour than that they intentionally try to degrade the quality of the

discussion”. An good example of a reminder to adhere to the project’s group code of conduct is a discussion in the Django project around the term “master/slave”. While master/slave is accepted terminology in computer science, the discussion derailed into a general rant on slavery. The offending poster was reminded by a core contributor to use respectful language.<sup>9</sup> If reminding users of the rules does not address the problem, e.g. if members continue to disrupt discussions, the situation can be escalated to the project leaders for more formal sanctions.

## 5.5 MEMBERS CREATE RULES



... you want community members to follow to the → CODE OF CONDUCT.

\* \* \*

**When you impose a code of conduct on a community, even with the best intentions, it will likely be viewed as lacking legitimacy, and as a result be ineffective.**

Rules imposed on a community will likely not get the support from community members, because community members were not consulted.

It is difficult to anticipate the precise needs and priorities for the community as a whole.

\* \* \*

Therefore,

**Involve community members in the creation of the code of conduct to get their buy-in.**

Ostrom’s third principle for managing common pool resources (“collective-choice arrangements”) requires that “[m]ost individuals affected by the operational rules can participate in modifying the operational rules” [Ostrom 1990; Kraut et al. 2012]. The key message of this principle is that adoption of the rules will be higher when community members were involved in their creation. To a significant part, this is so, because involving community members will result in a → CODE OF CONDUCT that reflects the specific needs and priorities of the community.

In practice, involving the community can be achieved by putting the current draft of the code of conduct into a public repository, where it can be seen by all community members. Alternatively, it could be distributed via the

<sup>9</sup>[https://groups.google.com/d/msg/django-developers/Y\\_Tq7w4PAeI/WurT7J3Rcd0J](https://groups.google.com/d/msg/django-developers/Y_Tq7w4PAeI/WurT7J3Rcd0J)

community mailing list. Comments can, likewise, be made through the mailing list or an issue tracker. For each suggestion made by the community, the decision whether and in what form it will be included should be made in a transparent manner by maintaining an → OPEN DIALOG [Weiss 2009] with the members.

\* \* \*

Rules created by the community will be tailored to the specific needs of the community. Involving community members will also increase the legitimacy of the rules, and thus adherence to them. Community members whose reservations about the rules are addressed may turn into advocates. However, involving the whole community in the discussion of the rules will take more time.

\* \* \*

**LambdaMOO**, one of the first online communities ever, solicited feedback from its members to create its → CODE OF CONDUCT. [Kraut et al. 2012] quote two of the community’s founders, known as Haakon and Lambda, expressing their rationale as: “. . . we started having disagreements about what was and was not proper conduct here. Eventually, I was approached by a number of players and asked to draft a set of rules for proper MOO behavior . . . I showed the draft to a bunch of people and asked for their comments on its style, completeness, and correspondence with their impressions of the ‘right’ way of things.”

**Wikipedia**’s guidelines were written with direct involvement of the community [Viegas et al. 2007]. Any community member can participate in the discussion of the guidelines by editing the wiki pages where the guidelines are documented, or posting to the “talk” pages associated with each wiki page.<sup>10</sup> From a technical perspective, the barriers of entry to participating in the discussion are also low (editing a wiki page, posting to a talk page). The wiki nature of the guidelines also means that they can adapt easily as community needs change.

In open source projects, project leaders commonly ask participants to provide feedback when creating the code of conduct for the project community [Tourani et al. 2017]. For example, the **Django** project made its code of conduct available through its GitHub code repository, and collected feedback on it through pull requests to the code repository and a Google Groups mailing list, where the requests were discussed.<sup>11</sup>

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<sup>10</sup>[https://en.wikipedia.org/wiki/Wikipedia:List\\_of\\_guidelines](https://en.wikipedia.org/wiki/Wikipedia:List_of_guidelines)

<sup>11</sup>[https://groups.google.com/forum/#!searchin/django-developers/code%20of%20conduct/django-developers/SXav1z5Qdyk/Pf0HaGxC\\_vYJ](https://groups.google.com/forum/#!searchin/django-developers/code%20of%20conduct/django-developers/SXav1z5Qdyk/Pf0HaGxC_vYJ)

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