Contribution ID: **89** Type: **Talk (15min + 5min)**

Effective workflows for community engagement of users and developers in open-source software development

Wednesday 26 February 2025 16:00 (20 minutes)

Open-source software development has become a fundamental driver for innovation in both academia and industry, fostering transparency and enabling collaboration among individuals who may not have formal training in computer science. Academic researchers benefit from open-source collaboration in several aspects: (1) User engagement in feature development and interfaces, enhancing the (re-)usability of the software; (2) developer engagement in software maintenance and feature development, thus gaining contributors and improving developer workload balance; (3) promotion of academic and scientific output, hence boosting visibility and impact; (4) higher research excellence in harnessing collective intelligence and diverse contributors. However, despite these numerous advantages, efficient collaboration remains challenging—particularly for new contributors who often encounter incomplete documentation, undefined requirements, or lack of a structured workflow that keeps the projects alive in the long term.

With this in mind, this contribution presents a structured methodology to optimize used feedback workflows and foster successful community engagement in open source projects. The main goal is to maintain a balance between Software Engineering good practices, flexibility in collaboration, and efficient use of resources (people, open-source tools, documentation, etc.). The primary example for this methodology is the BioCypher framework, an open-source initiative designed to unify biomedical data and provide insightful knowledge graphs for researchers in biomedical science and beyond.

Our methodology outlines three primary phases: onboarding and knowledge transfer, structured contribution, and ongoing community engagement.

The onboarding and knowledge transfer phase is essential in familiarizing new contributors with the existing project ecosystem. This phase includes communicating the project's goals, reviewing its roadmap (milestones), and familiarization with coding and documentation standards. We propose structured templates for tutorials, documentation, issues, and discussions, allowing all the participants to talk in a clear and simple language while contributing.
In the structured contribution phase, the focus shifts to managing the technical aspects of contributions and adhering to GitHub-specific workflows, such as branching strategies, commit messaging conventions, and pull request (PR) protocols. Additionally, automated tools, such as GitHub Actions, are used to automatically validate and test code before it is reviewed, ensuring contributions meet project standards.

The ongoing community engagement phase focuses on sustaining long-term involvement in the project, meaning that documentation should be sustainable and maintained to engage all new contributors and users. At the same time, outreach is a key activity to ensure that the tool is known by the community and remains useful.

I want to participate in the youngRSE prize

yes

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Session Classification: Open Source Community Building

Track Classification: Education: best practices for research software development