Code reviews

Introduction

At the eScience Center, we value software quality. Higher quality software has fewer defects, better security, and better performance, which leads to happier users who can work more effectively.

Code reviews are an effective method for improving software quality. McConnell (2004) suggests that unit testing finds approximately 25% of defects, function testing 35%, integration testing 45%, and code review 55-60%. While that means that none of these methods are good enough on their own, and that they should be combined, clearly code review is an essential tool here.

Code review also improves the development process. By reviewing new additions for quality, less technical debt is accumulated, which helps long-term maintainability of the code. Reviewing lets developers learn from each other, and spreads knowledge of the code around the team. It is also a good means of getting new developers up to speed.

The main downside of code reviews is that they take time and effort. In particular, if someone from outside the project does the reviewing, they'll have to learn the code, which is a significant investment. Once up to speed, the burden is reduced significantly however, and the returns include a much smaller amount of time spent debugging later.

Approach

It's important to distinguish between semi-formal code *reviews* and formal code *inspections*. The latter involve "up to six participants and hours of meetings paging through detailed code printouts" (SMARTBEAR 2016). As this extra formality does not seem to yield better results, we limit ourselves to light-weight, informal code reviews.

Process

We haven't yet decided on how to integrate code reviews into our working process. While that gets hashed out, here is some general advice from various sources and experience.

- Review everything, nothing is too short or simple
- Try to have something else to do, and spread the load throughout your working day. Don't review full-time.
- Don't review for more than an hour at a time, after that the success rate drops quite quickly