

Measuring Software Engineering Report

CSU33012 Software Engineering



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1. Introduction

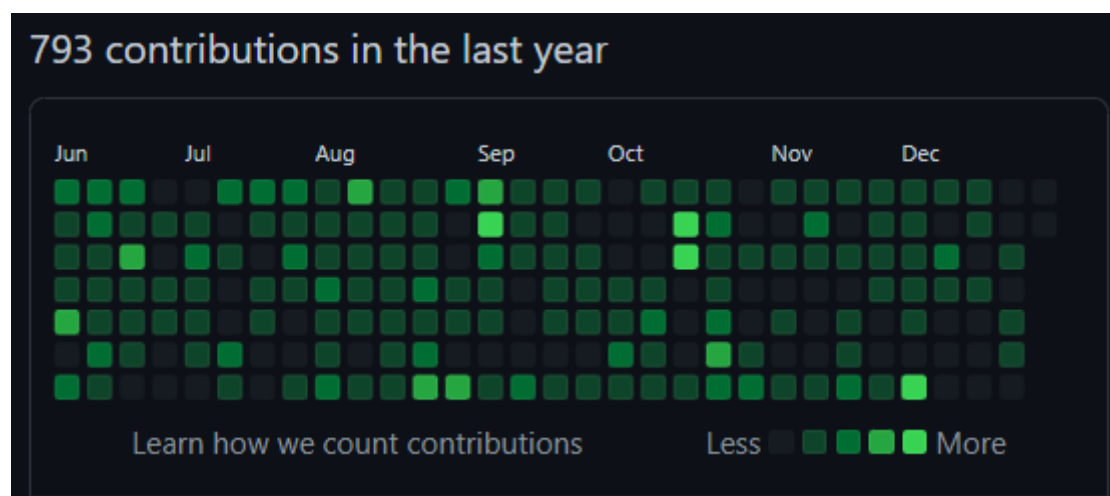
This report discusses the different aspects of measuring software engineering. We are going to focus on how one can measure software engineering activity, what platforms are used to process relevant data, and what kinds of computations could be made over the software engineering data. In addition, the last topic discusses the ethics and legal or moral issues related to the processing of such data.

2. Measuring engineering activity

Being able to measure engineering activity is vital to software engineers and their employers. It is fundamental to the efficiency of software development and maintenance.

2.1. Frequency of commits

In a software development team, when developers make changes to the current code base they are together working on and make pull requests, all other members of the team are then notified about these changes. Number of pull requests submitted is sometimes a quantifiable measurement of software engineering activity. The contributions graph on GitHub is a known example of this method of measuring engineering activity.



Contributions graph of GitHub user barrettotte showing frequency of commits in the last year[1]

However, quantity does not equal quality. One could make many commits with few necessary changes, but they can only be considered as little engineering activity.

2.2. Code review

Code Review, also known as Peer Code Review, is the act of consciously and systematically convening with one's fellow programmers to check each other's code for mistakes and has been repeatedly shown to accelerate and streamline the process of software development like few other practices can.[2] The main purpose of code review is to discover quality issues. Through code review, software engineers can achieve better code quality, find defects, and as well as acquire new knowledge from their peers.

It is necessary to point out that the effectiveness of code review is related to the speed of reviewing. It is recommended that code review should be performed at a rate between 200 to 400 lines per hour.[3] Code review practices that are too fast would make it unlikely to spot errors.

3. Platforms

Various platforms for measuring software engineering have emerged as its importance is being recognized by developers and companies. These platforms provide services that help to analyze and visualize software engineering processes.

3.1. Jira

Jira is a software development platform made by Atlassian. Atlassian claims Jira to be “the #1 software development tool used by agile teams”. Jira has released a number of products, namely Jira Software, Jira Service Management, Jira Work Management, and Jira Align.

The screenshot displays the Jira Work Management interface for a project named 'The Next Big Thing'. The left sidebar contains navigation options: Summary, List (selected), Board, Calendar, Timeline, Form, Reports, and Project settings. The main area shows a 'List' view of tasks. At the top right, there are filters for 'Assigned to me' and 'Due this week'. The task list has columns for Key, Summary, Status, Assignee, Due date, Priority, and More. Tasks are listed with their keys, summaries, and current statuses (TO DO, IN PROGRESS, IN REVIEW, DONE, or Blocker). The task 'Write content for blog posts and' is highlighted with a blue border.

#	Key	Summary	Status	Assignee	Due date	Priority	More
NBT-12		Collaborate with Finance to approv...	TO DO	Alana Song	17 Feb, 2021	Low	
NBT-14		Request Marketing assets for brand...	TO DO	Jie Yan	18 Mar, 2021	Low	
NBT-18		Set up a full Design team review	TO DO	Fran Perez	29 Mar, 2021	Low	
NBT-22		Write content for blog posts and	TO DO	Amar Sundaram	01 Apr, 2021	Lowest	
NBT-27		Sales enablement materials and pitch	IN PROGRESS	Alana Song	12 Apr, 2021	Lowest	
NBT-33		Establish post-launch success	IN PROGRESS	Jie Yan	12 Apr, 2021	Minor	
NBT-35		Legal contract approval for vendors	IN REVIEW	Alana Song	27 Apr, 2021	Medium	
NBT-40		Hire contractors for April and May	DONE	Amar Sundaram	28 Apr, 2021	Medium	
NBT-43		Pitch marketing campaign options	DONE	Jie Yan	07 May, 2021	Medium	
NBT-44		Finalize budget of The Next Big Thing	IN REVIEW	Fran Perez	16 May, 2021	High	
NBT-45		Draft budget for The Next Big Thing	DONE	Molly Clark	18 May, 2021	Highest	
NBT-47		Prepare initial project poster	DONE	Grace Harris	25 May, 2021	Major	
NBT-49		Wireframe user journey	DONE	Andres Ramos	30 May, 2021	Blocker	

+ Add item

List view of Jira Work Management[4]

3.2. GitHub

3.3. Trello

Similar to Jira,

4. Computation of data

5. Ethics

6. Conclusion

7. References

1. <https://github.com/barrettotte>
2. <https://smartbear.com/learn/code-review/what-is-code-review/>
3. Kemerer, C.F.; Paulk, M.C. (2009-04-17). "The Impact of Design and Code Reviews on Software Quality: An Empirical Study Based on PSP Data". *IEEE Transactions on Software Engineering*. 35 (4): 534–550
4. <https://community.atlassian.com/t5/Jira-Work-Management-Articles/Announcing-the-waitlist-for-Jira-Work-Management/ba-p/1627313>