# Kanban Issue Tracking Application

## Automated Issue Management

Domenic Martin
Computer Science
Virginia Tech
Blacksburg VA USA
dmartin80@vt.edu

Samantha Austin
Computer Science
Virginia Tech
Blacksburg VA USA
samanthaaustin@vt.edu

Ayda Haydarpour
Computer Science
Virginia Tech
Blacksburg VA USA
ayda@vt.edu

Peyton Ludwig
Computer Science
Virginia Tech
Blacksburg VA USA
peymae6@vt.edu

## ABSTRACT

In recent years the adoption of collaborative tools has increased from 55% in 2019 to 75% in 2021 according to Tajammul Pangarkar in his article Collaboration Software Statistics 2024 By Workplace, Workers, Technology [1]. The foundation of any collaboration tool is to increase productivity in hopes of becoming more efficient. As software engineering becomes more embedded into society the need to continue to grow becomes more relevant. Due to the growth of the software engineering field, the lack of efficient collaborative tools has a noticeable negative effect on communication and general productivity; where money, company time, and general product functionality experience adverse effects.

Our Kanban Issue Tracking application is a bot created with the intent of addressing all losses of productivity software engineers and companies experience. The purpose of the application is to create a bridge between teams that considers each developer's workload and equally distributes work based on effort value, required skills, and team hierarchy. By automating and streamlining the Kanban workflow to increase developer productivity and tackling the problem of decreasing productivity within the software engineering field, the Kanban Issue Bot serves to push software engineers to their full potential.

## CCS CONCEPTS

• Software development process management • Software development methods • Software configuration management and version control systems

## KEYWORDS

Issue Assigning Automation, Software Tools, Software Development Management, Kanban, Issue Tracking, Project Management, Software Development Processes, Agile Methodology

## 1 Introduction

In modern software development, issue tracking plays a crucial role in managing the progress and efficiency of teams working on complex projects. Especially as companies scale, the challenges of effectively assigning tasks and balancing workloads among developers become more prevalent. Existing issue-tracking systems help with these problems, but they often lack features that automate key aspects of task assignment and workload distribution. Efficiently managing a software development team involves not only tracking progress, but also ensuring tasks are appropriately distributed based on the skills, experience, and availability of team members. This is especially important in Agile environments, where flexibility and adaptability are very important to the project's success. Automating these task assignments would save time, reduce bottlenecks, and improve overall productivity. Our solution is the Kanban Issue Bot, which automates the assignment of issues in the development workflow. It would consider factors such as team hierarchy, required skill sets, and workload distribution, and by doing this would enhance the productivity of software developers, streamline project management, and reduce the administrative burdens of team leads.

## 2 Related Work

A few of the most popular issue-tracking software include Jira, Bugzilla, GitHub Issues, and Backlog. Out of these products, Jira and GitHub are the most relevant to our solution. Jira is by far the most popular issue management product on the market with over 97,000 organizations using the software [2]. A few highlights of the product are its extensive functionality, customizability, and integrations with other products, but it also comes with the drawback of a high learning curve. While Jira is mostly popular at larger organizations GitHub Issues is more popular with the open-source community. One of the biggest benefits of this product is its ease of use and integration with GitHub repositories. However, both products lack the functionality to automate assigning issues to developers.

Another relevant product is Asana. Asana is a project management tool that allows for AI delegation of tasks similar to our solution. However, Asana is a general project management tool that does not focus on managing software development and does not have support for software development processes.

Our product will fit into the market by serving as a solution to the lack of software development products with the ability to automatically assign issues. It will have the ability to serve as a standalone program or to integrate with existing issue-tracking software such as those mentioned above.

## 3 Description of the software engineering process

We will use the Agile methodology because we want the flexibility to change requirements. Agile allows for a flexible implementation, valuing interactions within our group. The changes are iterative, adaptive, flexible, and rapid. Agile has also increased software development's success rate over the past 25-30 years [3]. Specifically, we will use the Kanban approach, which will help us visualize the workflow, prioritize tasks, and assign them to different team members as we progress the project. Kanban also ensures we don't overlook any tasks [4]. Additionally, it helps us manage the flow and prioritize tasks efficiently.

The Kanban system allows us to deliver the product while making improvements along the way. We chose the Agile methodology because we are working as a team, and it enables us to make changes as we develop the product. The final product will not be frozen, and we can still upgrade the system if needed. Moreover, as we start the project, it does not have to be perfect, and we can always adjust the requirements.

## REFERENCES

[1] Tajammul Pangarkar. 2024. Collaboration Software Statistics 2024 By Workplace, Workers, Technology. Market.us Scoop. https://scoop.market.us/collaboration-software-statistics/

[2] Megan, Cook. 2023. Not (just) your product team's Jira: New Jira capabilities help every team manage their work. Atlassian. https://www.atlassian.com/blog/work-management/new-jira-updates-help-every-team-manage-work

[3] Darrell Rigby, Jeff Sutherland, and Hirotaka Takeuchi. 2016. Embracing Agile: How to master the process that's transforming management. Harvard Business Review. https://hbr.org/2016/05/embracing-agile

[4] Rachaelle Lynn. 2020. Kanban System: Maximize Time and Improve Efficiency. Planview. https://www.planview.com/resources/guide/introduction-to-kanban/kanban-system-maximize-time/