

FlatFeeStack Go-Live

Graduate



Andy Pfister



Pascal Knecht



David Kalchofner

Advisor
Dr. Thomas Bocek

Co-Examiner
Dr. Guilherme Sperb Machado, AxLabs

Subject Area
Internet Technologies and Applications, Software

Initial Situation: FlatFeeStack is a platform that allows companies and individuals to sponsor open-source projects. Compared to other sponsoring platforms, FlatFeeStack has a fixed annual subscription of \$125 instead of paying for each project individually. FlatFeeStack will analyze the contribution of each project member using Git metrics and distribute the funds accordingly. Payouts are done in cryptocurrencies to keep the payout process simple and transparent.

The platform has been in development for several years but is mostly feature-complete. After adding remaining missing features, the platform should be launched, using a cloud provider to keep operation efforts low.

Approach / Technology: The project started by conducting functionalities already built into the platform, identifying missing or incomplete features. A list of tasks to complete was compiled in discussions with the advisor and expert, and a go-live date was set. DigitalOcean was chosen as a platform provider for the production instance. The different microservices which compose the FlatFeeStack platform were deployed as services under a common domain. For a simple deployment process, Docker images are built from GitHub Actions and pushed to the DigitalOcean registry. Metrics are collected using Prometheus and displayed using Grafana, completing a modern, cloud-native deployment.

The existing decentralized autonomous organization (DAO) should receive a new component to discuss proposals. The forum allows users to create posts and comments. The forum observes the Ethereum blockchain, taking action when certain events happen in the DAO, for example when a new proposal gets created. As different papers have been written about FlatFeeStack, as well as the advisor and expert working on the platform in their free time, a complete overview over features on the platform had to be created. These are documented now in the form of use case diagrams. A test plan was created to ensure those use cases worked, as well as bugs fixed that occurred during testing.

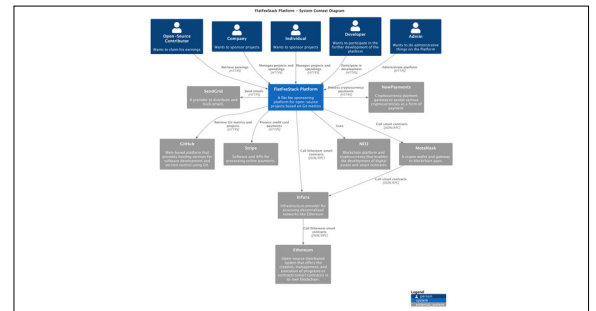
Conclusion: The platform was silently launched successfully on June 2nd 2023. The first contributions to open-source projects were even distributed the very same day.

Given the time constraint, some work had to be excluded. For example, some major library updates still need to be done. This was either due to them being released late in the project (hardhat-toolbox v3) or other dependencies not yet ready for the new version like neow3j not having support for Gradle v8. Cryptocurrency pay-ins still need to be activated, as the integration with the respective payment provider was not extensively tested.

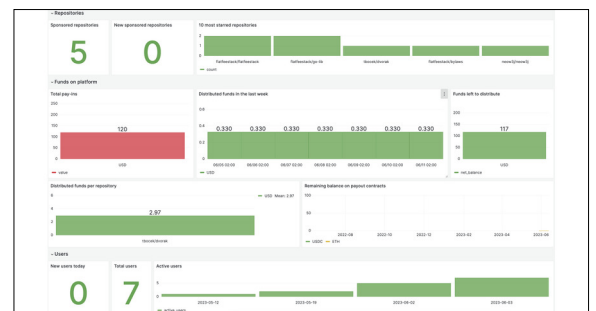
The platform is now in good shape for potential users and developers to continue improving it. Users benefit

from the changes and improvements made in the frontend. The developers benefit from a good code base with up-to-date libraries and the designed continuous integration and continuous deployment. The chosen deployment with GitHub Actions, DigitalOcean, containers, and the monitoring infrastructure with Grafana and Prometheus is considered state-of-the-art in the industry. The forum component will help in the daily business of the DAO, allowing members to communicate with each other easily.

C4 System Context Diagram Own presentation



FlatFeeStack Grafana Dashboard Own presentation



FlatFeeStack Search Repository Page Own presentation

