Bonus Buddy: Final Report and Retrospective PM5

Kenneth Lao
Department of Computer Science, Virginia Tech
Blacksburg, VA, USA
kennethlao120@vt.edu

Zachary Beritt
Department of Computer Science, Virginia Tech
Blacksburg, VA, USA
zberritt@vt.edu

Albert Essiaw
Department of Electrical and Computer Engineering, Virginia Tech
Blacksburg, VA, USA
alberte@vt.edu

Qitao Yang
Department of Computer Science, Virginia Tech
Blacksburg, VA, USA
yqitao@vt.edu

ABSTRACT

For many employees on the job, it is difficult to remain motivated for tasks for a long period. Our application, Bonus Buddy, plans to solve this problem. Bonus Buddy is a gamified productivity management application that enhances workplace motivation and efficiency. To do this, it integrates task management, rewards, and a leaderboard into a unified platform. The system encourages employees to complete workplace-related tasks, compete with colleagues, and collaborate more effectively. Bonus Buddy addresses the critical challenge of maintaining employee engagement, particularly in remote or hybrid work environments, by fostering a dynamic and competitive work culture. The system achieves this through a seamless user interface, robust performance metrics, and customizable rewards, tailored to meet organizational goals.

1 INTRODUCTION

Motivating employees to perform consistently at their best remains a persistent challenge for organizations, particularly in today's hybrid and remote work environments. Bonus Buddy, our gamified productivity management application, solves this problem by blending traditional task management with gamification principles to incentivize workplace productivity. The application allows employers to assign tasks, define rewards, and monitor productivity, while employees earn points for task completion, compete on leaderboards, and redeem points for customizable incentives.

1.1 Objectives

The core objectives of Bonus Buddy are to:

(1) Enhance individual motivation through immediate, tangible incentives.
(2) Promote collaboration and healthy competition within teams.
(3) Provide actionable insights into employee engagement and productivity trends.

2 MOTIVATING EXAMPLE

Imagine a software engineer, Alice, who works within a development team at a tech company. Alice's tasks would be to implement features, fix bugs, and review code. Using Bonus Buddy, Alice gets incremental points for completing tasks based on complexity and speed. After fixing a critical bug, she unlocks an achievement, "Bug Slayer," and earns leaderboard points, moving her to the top of her team's rankings. Inspired by such incentives, Alice approaches her responsibilities with increased zeal, which results in increased productivity of the team and a more motivating work environment.

Now, let's consider another example, Bob who is a software Engineer. He finds it difficult to avoid procrastination when faced with huge assignments. Bonus Buddy will help Bob break down the huge project into manageable and attainable milestones. Every time Bob achieves a milestone, he earns points and unlocks small achievements like "Milestone Champion." This helps Bob see his progress and keeps him motivated. Over time, Bob learns better task management habits, becomes more productive, and contributes more effectively to the goals of his team.

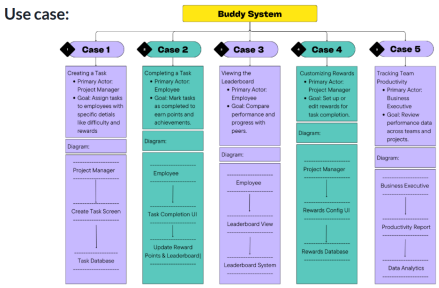

Figure 1: Buddy System Use Cases for Different Roles

3 BACKGROUND

3.1 Gamification

Gamification is the application of game-like elements in non-gaming contexts. It has gained traction as an effective strategy to increase engagement and motivation. By leveraging points, leaderboards, and rewards, organizations can foster a sense of achievement and competition, driving employees to excel in their roles. Despite its potential, existing tools often fail in scalability, customization, and integration with standard workplace systems. For instance, traditional productivity platforms frequently struggle to adapt to the unique workflows of software development teams, limiting their effectiveness.

3.2 Issues to Address

Bonus Buddy aims to fill this gap by addressing the following key concepts:

Figure 2: Gamified Progress Representation with Visual Increments

- **Gamification in Productivity:** Gamified environments can increase task completion rates as they provide clear goals, feedback loops, and rewards that resonate with intrinsic and extrinsic motivators.
- **Task Management:** Effective task management tools streamline workflows, reduce administrative overhead, and ensure accountability. Bonus Buddy incorporates intuitive interfaces and automation to simplify task assignment and tracking.

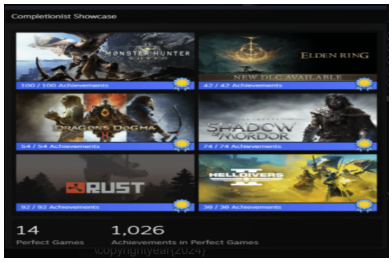

Figure 3: Achievement Showcase for Task Completion

- **Employee Engagement:** Engaged employees will be more productive than their disengaged counterparts. Bonus Buddy's features are specifically designed to maintain high levels of engagement by offering personalized incentives and frequent recognition of achievements.

4 RELATED WORK

Gamification techniques have been widely applied to workplace applications like Asana and Trello to increase user engagement through features like badges and progress meters. However, these apps often lack the complexity and specificity required for software engineering projects.

Bonus Buddy innovates by integrating immediate rewards and continuing streaks with dynamic leaderboards tailored for software engineers. Using SCRUM as a development methodology—carried out through sprint planning, daily standup meetings, and retrospective analysis—Bonus Buddy iterated step-by-step to effectively meet all its goals. In addition, tools like Canva provided an opportunity to create user-friendly, aesthetically pleasing mockups, hence helping the overall user interface design of the application. A gamification and user-centered design combination is a first for this category of productivity tools in the workplace.

5 IMPLEMENTATION DESIGN

5.1 Design Decisions

- **Architecture:** Bonus Buddy employs an event-driven architecture, ensuring real-time updates through producers and consumers.
- **Gamification Elements:** Incorporates leaderboards, streak tracking, and achievements for motivation.

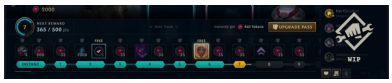

Figure 4: Reward System Progress Bar

- **Privacy Controls:** Provides anonymized leaderboards and opt-out options to address employee privacy concerns.

5.2 Processes

(1) **Task Tracking:** Automates task updates using APIs from tools like Jira and GitHub.
(2) **Reward Distribution:** Implements dynamic algorithms to calculate rewards based on task complexity and completion speed.
(3) **Leaderboard Management:** Ensures fair rankings with frequent updates and privacy filters.

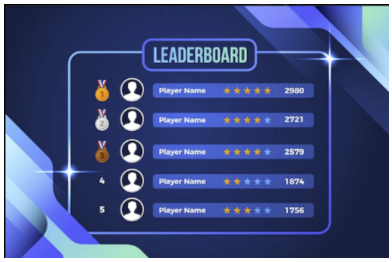

Figure 5: Leaderboard Mock-Up for Team Competition

5.3 Software Engineering Process

SCRUM:

- Sprint assignments are collaboratively planned and reviewed.
- Standup meetings discuss progress and address blockers.
- Retrospectives highlight successes and areas for improvement.

5.4 UI Design Tool

Canva:

- Used for creating visually appealing diagrams and mockups.
- Facilitates quick and efficient generation of design assets.

5.5 Testing Approach

Since the project is not being implemented, the testing approach focuses on theoretical validation and planning:

(1) **Theoretical Unit Testing:** Outline potential test cases for core functionalities, such as task tracking, reward calculations, and leaderboard updates.
(2) **Integration Test Design:** Describe how APIs and system components (e.g., task manager, reward system) would interact in a real-world implementation.
(3) **Mock User Testing:** Develop user scenarios to simulate interaction with features like achievements, rewards, and leaderboards. Gather hypothetical feedback to validate design assumptions.
(4) **Design Validation:** Review diagrams and wireframes to ensure consistency and usability across all system components.

6 DEPLOYMENT PLAN

The deployment plan outlines the steps required to release Bonus Buddy into a live organizational environment. It considers infrastructure needs, user onboarding, and continuous improvement strategies to ensure seamless integration.

6.1 Infrastructure Setup

- **Cloud Hosting:** Deploy Bonus Buddy on a scalable cloud platform such as AWS or Azure to ensure reliability and support for real-time updates.
- **Database Management:** Use PostgreSQL for structured data storage and Redis for real-time leaderboards and cache management.
- **API Integration:** Implement secure APIs to integrate with tools like Jira, GitHub, Slack, and Trello for task management and notifications.
- **Security Measures:** Deploy HTTPS encryption, role-based access control (RBAC), and GDPR-compliant data privacy controls to safeguard user information.

6.2 Deployment Phases

(1) **Beta Testing:** Roll out the application to a pilot group of users to gather feedback on usability, performance, and potential bugs.
(2) **Phase 1 - Core Features:** Deploy task tracking, leaderboard management, and reward systems to all users.
(3) **Phase 2 - Gamification Enhancements:** Introduce streak tracking, achievements, and advanced reporting tools.
(4) **Phase 3 - Full Rollout:** Release Bonus Buddy organization-wide with user guides, onboarding sessions, and ongoing technical support.
(5) **Monitoring and Updates:** Continuously monitor system performance and user engagement metrics. Schedule periodic updates and enhancements based on feedback.

6.3 User Onboarding and Training

- Conduct virtual and in-person onboarding sessions to introduce the system.
- Provide comprehensive documentation, including user manuals, FAQs, and video tutorials.
- Collect feedback during onboarding to identify and resolve usability issues early.

Figure 6: Mock Interface 1: Task List, Leaderboard, and Reward Hub

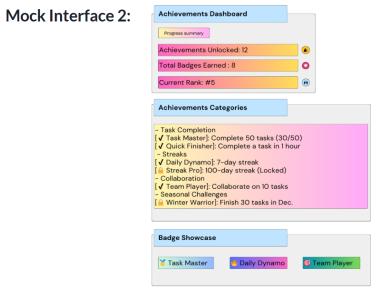

Figure 7: Mock Interface 2: Achievements Dashboard and Badge Showcase

7 LIMITATION

While Bonus Buddy presents an innovative solution for workplace productivity, it does have limitations:

- **Overemphasis on Competition:** While leaderboards and rewards promote engagement, they may inadvertently create stress or unhealthy competition among team members.
- **Privacy Concerns:** Employee performance tracking raises concerns about data privacy, even with anonymized leaderboards and opt-out options.
- **Scalability Issues:** Real-time updates and leaderboards may become resource-intensive for very large organizations, requiring careful infrastructure optimization.
- **Reliance on Task Integration:** Effective performance tracking depends on successful integration with external tools like Jira or GitHub, which could pose challenges for teams using custom systems.
- **Motivation Saturation:** Over time, gamified rewards may lose their effectiveness as employees adapt to the system, requiring frequent updates to maintain engagement.

8 FUTURE WORK

To enhance Bonus Buddy and address its limitations, we propose the following future improvements:

- **AI-Driven Personalization:** Integrate machine learning algorithms to tailor rewards, achievements, and task recommendations based on individual user behavior and preferences.

- **Advanced Analytics Dashboard:** Develop customizable dashboards for managers to analyze productivity trends, team performance, and engagement metrics more effectively.
- **Cross-Platform Integration:** Expand compatibility with additional task management tools, email clients, and communication platforms to support diverse workflows.
- **Enhanced Privacy Controls:** Introduce advanced privacy settings, such as selective leaderboard visibility, anonymous task contributions, and encrypted data storage.
- **Gamification Refresh Cycles:** Implement periodic updates to rewards, challenges, and achievements to prevent motivation saturation and keep users engaged long-term.
- **Mobile Application Development:** Build a fully functional mobile app to allow users to track tasks, view leaderboards, and redeem rewards on the go.

9 CONCLUSION

Bonus Buddy provides a gamified solution to address employee engagement and productivity challenges in modern workplaces, particularly within remote and hybrid environments. By combining task management with rewards, leaderboards, and achievements, the system encourages individuals to remain motivated and fosters healthy competition among teams.

Through careful design decisions, such as an event-driven architecture, privacy controls, and an intuitive user interface, Bonus Buddy delivers an adaptable platform tailored to organizational needs. While certain limitations, such as privacy concerns and motivation saturation, remain challenges, future enhancements like AI-driven personalization and advanced analytics promise to further improve its impact.

Ultimately, Bonus Buddy empowers employees to stay engaged, manage tasks effectively, and contribute to a productive, dynamic workplace culture. With iterative development and user-centered design principles, Bonus Buddy can become a vital tool for organizations striving to balance motivation, efficiency, and collaboration in the evolving workplace landscape.

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