Key Aspects of Managing Game Development Teams

Protasovsky Sergey
Founder, Deputy Director for Foreign Economic Activity,
Sababa Labs LLC
Minsk, Belarus

Abstract: Digital product management is a constantly evolving direction. With the arrival of new technologies, changes in customer expectations and user experience models that appear every day, digital product owners and product managers must be ahead of time to succeed.

If we talk about the modern gaming industry, it is currently experiencing a significant upswing. Thus, according to the American research and consulting company Grand View Research, the average annual growth rate in the period from 2020 to 2027 is estimated at 10.7% [1]. This growth, in turn, is due to an increase in the number of players around the world and the expansion of the availability of gaming platforms. The rapid development of the computer game industry has also attracted attention to the processes of their creation. In this connection, the importance of a structured approach to game development is becoming more and more obvious. Consequently, effective management of game developers becomes a key success factor in any project.

In this article, the author considered the main aspects related to the management of game development teams, as well as analyzed the key stages of the game creation process and evaluated their communication methods on each of them.

The methodology of this article includes an extensive analysis of scientific publications, articles and research on such topics as key aspects of managing game development teams. Which in turn will allow you to get a general idea of the current state and trends in this area.

Keywords: game creation, aspects of game developer team management, stages of game creation, team management approaches.

Introduction

A game development team comprises a union of exceptional experts in the fields of technology and design, with the goal of creating innovative video games. Such groups may include experts from various professions, including game designers and video game artists. To effectively manage a game development team, the following measures should be taken:

The team leadership should have a precise understanding of the project they are working on, as game development involves numerous aspects. Therefore, having a deep understanding of the project's goals is crucial for successful management of the game development team. This helps identify areas that require additional attention or explanation and simplifies task allocation among team members.

For successful management of a game design team, maintaining open communication with team members is essential. This ensures that everyone has a clear understanding of the current project status and their roles in it. It is important to ensure that every team member understands the project's ultimate goals, their responsibilities, and the resources they can rely on for assistance if needed.

Regularly reviewing the work of designers is also necessary, as it helps track progress and identify potential errors or tasks that require a different approach. Regular reviews contribute to maintaining high team productivity and responding quickly to unexpected situations.

Regular feedback helps the team learn and grow. Provide feedback to suggest more efficient ways to complete tasks and highlight successful aspects of the work. This contributes to correcting the team's efforts and improving the design processes.

Since video game development often involves complex technologies, some project aspects may require adjustments [2].

Moving on to the game development process, it is worth noting that it is a complex but fascinating art. Many potentially successful games have never made it to the market due to the inability to effectively manage development and successfully complete the project. Therefore, a structured approach in this process is crucial, with a history dating back several decades, starting with the early days of the video game industry in the 1970s and 1980s. As the industry evolved, it became evident that a systematic approach was needed, leading to the creation of the Game Development Life Cycle (GDLC). For instance, Arnold Hendrik, in his article "Project Management for Game Development," identified 5 key stages of GDLC: Prototyping, Pre-production, Production, Beta Testing, and Release.

Over time, the gaming industry has constantly evolved, and many international companies have expanded and refined this development method. As a result, GDLC has grown to encompass 8 fundamental stages: Initiation, Team Formation, Technical and Economic Justification, Software Preparation, Pre-production, Production, Alpha Testing, Beta Testing, and Release.

It is important to note that each stage of GDLC plays a unique role, and their significance may vary depending on the concept and goals of a specific game. Game design, platform, monetization model, and other factors can influence the prioritization of certain stages.

The use of GDLC allows companies to create high-quality games with efficient management while adhering to budget and development timeline constraints. After studying the game development stages, it is also essential to explore team management methods for developers at each stage and develop corresponding strategies [3].

I. Team Management Approaches

Fig.1. Existing approaches to managing a team of game developers

First, a working environment conducive to comfortable work is established. Subsequently, two main project and team management methods are applied in game development: Agile and Waterfall.

Agile

Within the Agile framework, there are numerous specific management methodologies that may vary slightly, but all are united by key principles. One of these principles is continuous team interaction with the customer or users, as well as receiving feedback at each development stage. After each refinement, the product is demonstrated, and in case of identifying new deficiencies or bugs, the project is returned, and necessary changes are made. An important feature of Agile is a focus on individual abilities and functioning software, which is valued more than documentation. The core idea is to make changes "on the fly," rather than strictly adhering to a pre-defined plan. However, budget adherence can be a challenge when using Agile.

Waterfall

The Waterfall approach is based on a sequential development cycle, where each stage strictly follows the previous one. Traditionally, Waterfall includes 7 stages, and revisiting previous stages is not allowed. For instance, if an error is discovered during the testing stage, it is necessary to start the process from the very beginning. However, modern companies working within the Waterfall framework can use iterations, breaking down the stages into shorter time intervals, e.g., 2 weeks. Within the team, any approach can be chosen, but when working with a publisher or investor, knowledge of Waterfall is often required.

SCRUM

SCRUM is arguably the most well-known methodology within the Agile framework. It encompasses all the core principles of Agile and adds a few of its own elements. SCRUM uses the term "sprints" to denote iterations and defines 4 mandatory ceremonies: sprint planning, daily stand-ups, sprint review, and retrospective. Additionally, SCRUM defines key roles, such as the Product Owner (responsible for the product's vision) and the SCRUM Master (supporting processes within the team). SCRUM adds structure and rituals to Agile

principles, making them more manageable and organized. The choice between Agile and Waterfall, as well as the use of SCRUM, depends on the specific needs of the project and the team. Each of these methods has its advantages and limitations, and the right choice depends on the context and goals of game development projects [4].

II. Game development management

Creating video games is a meticulous process that is managed by several key companies in the industry. The entry of a new company into this field is a real test, and achieving significant results is an even more difficult task. The beginning of development is determined by the creation of the concept of the game, and ends with an analysis of the reaction of gamers to the finished product and making adjustments to the identified errors.

Modern technologies have reached a level where creating a successful game requires more than 40 specialists, each of whom specializes in their own field. There are many platforms and consoles for video games, and the expectations of modern consumers have grown significantly.

Every detail of the game requires weeks or even months of work, making the entire development process extremely difficult, stressful and profitable. The gaming industry has evolved to the level of futuristic technologies, which gives this area a special status of elitism. However, we must not forget that the speed from the moment of idea to production is a key factor, since this area is quite dynamic, and what is being developed for a long time may become irrelevant. In this connection, rapid response and the introduction of new technologies can significantly increase the speed of game development [5].

And in this case, the factor influencing the acceleration when creating a game is the effective interaction between artists / developers and testers in game development, since the optimization of processes will depend on such interaction. In order to speed up this process, you can simultaneously perform the main stages of game development, for this it will be necessary:

At the stage of developing concepts, textures, animations and other components of the game, divide the team into subgroups, where everyone will do their own tasks. That is, based on partial art resources, developers will start working with temporary art, programming game mechanics and artificial intelligence for NPCs. And using file sharing tools, you can achieve fast and efficient interaction and debugging of processes.

At the next stage of testing, you can achieve parallel tasks by starting alpha and beta testing of the game with testers who will help test the basic mechanics of the game, even if the final art resources are not ready yet. In this case, feedback will help you find bugs faster and fix them.

In the future, the need to regularly demonstrate the results to the customer or the stakeholder is an integral part of the work on the project. In the early days, the concept of stakeholders was presented by Edward Freeman. This approach emphasizes that the sustainable development of an organization depends on the quality of relationships with various stakeholder groups. This is important not only for shareholders, but also for a wide range of persons known as stakeholders.

Each party has its own expectations and ability to respond to the actions of the organization. This reaction can be either positive if the expectations correspond to the current results for a particular party, or negative if they do not correspond. Identifying expectations and evaluating their implementation for key parties is an important stage of the company's strategic diagnostics.

The essence of this process is that a regular demonstration is carried out after the completion of each stage and is aimed at presenting the completed work to the client. Usually demo helps to determine whether the project is moving in the right direction, forms a general idea of the final product, tracks progress and allows you to make adjustments at the development stage, and not before the final delivery of the project [6,7].

III. Motivation Methods

1. **Provide Weekly Team Updates:** Begin by creating a work environment that fosters comfortable collaboration. In the context of game development, two primary project and team management methods are commonly used: Agile and Waterfall.

    Agile: Under the Agile framework, several specific management methodologies may slightly differ but are all united by key principles. One such principle involves constant interaction between the team and the client or users, as well as receiving feedback at every stage of development. After each refinement, the product is showcased, and if new issues or bugs are identified, necessary changes are incorporated. Agile places emphasis on individual skills and functional software, valuing them more than documentation. The core idea is to make changes "on the fly," rather than rigidly adhering to a pre-established plan. However, budget adherence can be challenging with Agile.

Waterfall: The Waterfall approach is based on a sequential development cycle where each stage strictly follows the preceding one. Traditionally, Waterfall comprises 7 stages, and revisiting previous stages is not allowed. For example, if an error is detected during testing, the process must start from the beginning. Nevertheless, modern companies using Waterfall may incorporate iterations by breaking stages into shorter time intervals, such as 2 weeks. While teams can choose any approach internally, knowledge of Waterfall is often required when dealing with publishers or investors.

2. **Share Good News:** Positive news is always uplifting. If your team successfully resolves significant issues or achieves substantial progress in a project's development, share this information with the entire team.
3. **Showcase Team Members:** Give team members the opportunity to be visible. For instance, if you have a 3D artist, create a showcase section on your website to display their work. People appreciate recognition for their work and aspire to be acknowledged, even within a small community.
4. **Provide Examples of Successful Teams:** Offer examples of successful teams that have done similar things and achieved success. Metrics like sales statistics, earnings, and ratings can inspire your team and drive them to continue their work.
5. **Share Your Enthusiasm:** If you're inspired by a project and have worked on it all night, brainstormed, drawn, written, and programmed, share your enthusiasm with the team. Effective transmission of enthusiasm is contagious and can motivate others.
6. **Recognize and Implement Team Ideas:** When team members see their ideas being realized in the project, it boosts their engagement and interest in the work [8,9].

IV. Game Development Stages and Existing Tools

After exploring team management methods, it's important to consider the specific aspects of leadership at different stages of game development.

1. **Preparation:** At this stage, discuss project ideas with colleagues and the intended audience, and formulate the project's essence in a concise document. Determine methods for project implementation. Create documentation, including a concept, art-style document, budget, business plan, and project plan. The concept should provide a detailed description of the project, including the target audience, market size and structure, character behavior model, level of casualness, setting, competitors, and the project's release definition. Conduct audience and market analysis to develop the final monetization model. Consider monetization and business models, identify who will pay, what will be sold, and potential risks. Prepare a list of major competitors and develop a risk management strategy using SWOT analysis.
2. **Pre-production:** In the pre-production phase, create a task list and develop a project plan. Within the task list (feature list), estimate time requirements and categories (code, graphics, etc.). The project plan should include detailed work descriptions and their current status.
3. **Production:** During this stage, develop the game, create documentation for game design and marketing plans, as well as a promotion plan. Manage the project, solve emerging issues, and adjust plans. By the end of this stage, there should be a version of the game ready for user demonstration (early access, closed beta testing, open beta testing). This stage requires careful planning and process organization. Project management tools like Jira or Trello can be used.

● **Jira:** Jira is the primary tool for managers, although it requires the use of paid plugins for full efficiency. For small teams, Trello can be an alternative.
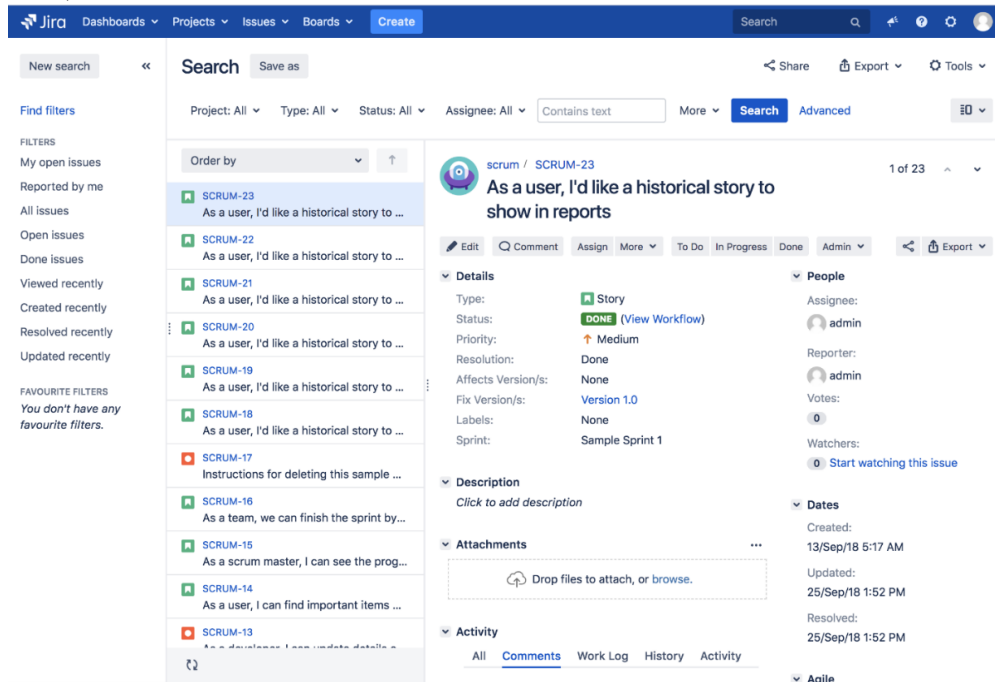

Fig.2. Jira Interface

● **Trello:** Trello is an excellent tool for small teams. It is a simple and free task tracker. In the classic Trello model, tasks are organized into three columns: "To Do" (planned tasks), "In Progress" (tasks currently being worked on), and "Done" (completed tasks). If you have a small team of 7-8 people, Trello can also be used for backlog management.
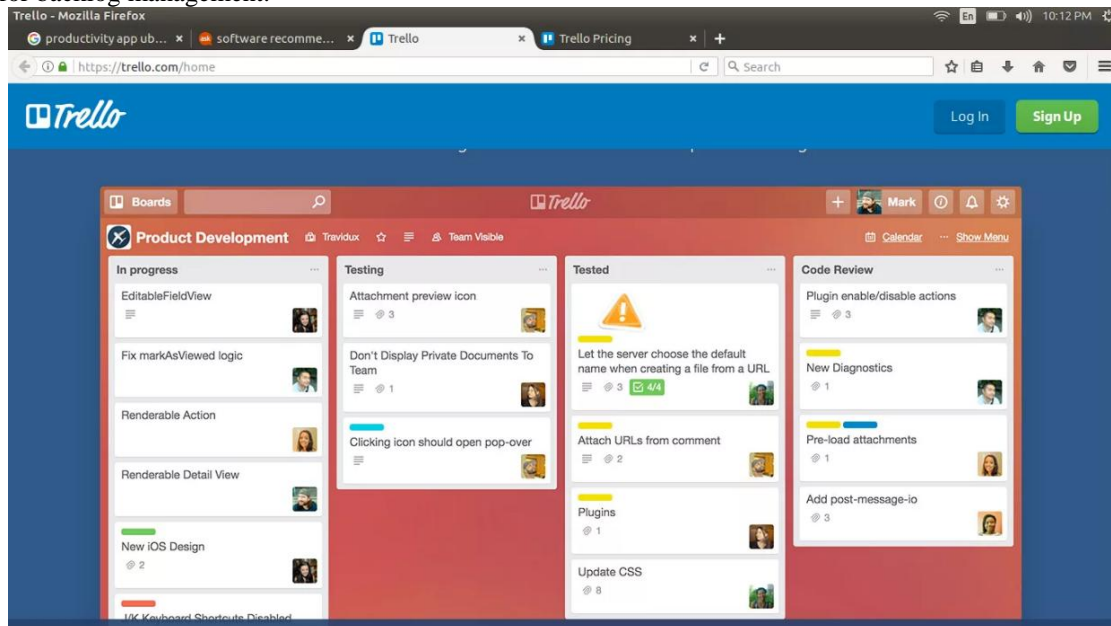

Fig.3. Trello interface

4. **Release:** In the final stage of development, fine-tune the product, optimize the game for various devices, create versions for key platforms, prepare for publication in stores, and carry out marketing activities. This stage culminates in the release of the final game version, which becomes available for download and purchase in stores [10].

Conclusion

This article underscores the paramount importance of the Game Development Life Cycle (GDLC) in the context of the modern game development industry. GDLC represents a structured and systematic approach to game creation, encompassing various stages, from initial preparation to testing and product release. The GDLC methodology has gained widespread recognition in the gaming industry and has played a crucial role in the success of many gaming projects. Understanding the key aspects of GDLC enables informed decision-making regarding how to best approach game development and successfully bring projects to fruition. In turn, the choice of team management methods depends on the specific project, the level of investment from the company, and the number of participants involved.

References

[1]   Forecasts and research of the world market / [Electronic resource] Access mode: http://www.techportal.ru/market/grand-view-research /.– (accessed 09.09.2023).

[2]   How to manage a game development team (with steps and tips) / [Electronic resource] Access mode: https://hr-portal.ru/story/kak-upravlyat-komandoy-razrabotchikov-igr-s-shagami-i-sovetami .– (accessed 09.09.2023).

[3]   Sokolov, T. A. Basic concept of the life cycle of computer game development (GDLC) // Young Scientist. 2023. No. 6 (453). pp. 11-14.

[4]   The most complete instruction: how to create a project in the gaming industry / [Electronic resource] Access mode: https://rb.ru/opinion/upravlenie-komandoj /?ysclid=lm1y19r6k13795390.– (accessed 09.09.2023).

[5]   Stages of computer game development / [Electronic resource] Access mode: https://gdjob.pro/stati/soiskatelyam/etapy-razrabotki-kompyuternykh-igr /.– (accessed 09.09.2023).

[6]   Creation of initial demonstrations for the development of video games / [Electronic resource] Access mode: https://vr-app.ru/blog/sozdanie-pervonacalnyx-demonstracii-dlia-razrabotki-videoigr /.– (accessed 09.09.2023).

[7]   The concept of stakeholders: what is its meaning and why is it important for sustainable business growth? / [Electronic resource] Access mode: https://vc.ru/marketing/133904-koncepciya-steykholderov-v-chem-ee-smysl-i-pochemu-ona-vazhna-dlya-ustoychivogo-rosta-biznesa. – (accessed 09.09.2023).

[8]   How to form a team for a game dev studio correctly / [Electronic resource] Access mode: https://vc.ru/life/535353-kak-pravilno-sformirovat-komandu-dlya-geymdev-studii   – (accessed 09.09.2023).

[9]   Innovative management of development teams and digital products / [Electronic resource] Access mode: https://na-journal.ru/6-2023-ekonomika-menedzhment/5921-innovacionnoe-upravlenie-komandami-razrabotki-i-cifrovymi-produktami – (accessed 09.09.2023).

[10]   Game project management: from idea to release/[Electronic resource] Access mode: https://proglib.io/p/menedzhment-igrovyh-proektov-ot-idei-do-reliza-2020-04-09–(accessed 09.09.2023).