

POMEGRANADE

LIMBO

Game Technical Document



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1 Revision History

This section tracks the changes made to the document.

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2 Project Goal

Pomegranade: Limbo is a cooperative survival game designed to deliver an atmospheric, fast-paced, and emotionally rich experience centered on teamwork and strategic coordination. Set in a haunted, limbo-like forest realm, the game combines action and resource management with subtle narrative mysteries and light puzzle elements for players who seek deeper exploration. Built to support cooperative play from the ground up, it emphasizes dynamic interaction, emergent player strategy, and emotionally driven communication using non-verbal tools (emoticons).

The project's main objective is to provide a technically stable and immersive multiplayer experience, supported by a distinct visual identity and minimal UI for maximum diegetic clarity.

Key technological and experiential goals include:

- **Cross-Platform Multiplayer (Planned):** Initial development targets Windows PC, with plans for future releases on console platforms, mainly the Nintendo Switch. Cross-play & Cross-save support is a long-term objective to broaden accessibility and unify the player base.
- **Stable Online Cooperative Sessions:** Smooth peer-to-peer or server-based multiplayer functionality allowing players to seamlessly connect and cooperate in real-time, even in high-intensity gameplay moments like wave combat and debuff phases.
- **24/7 Availability:** Ensuring the game is always accessible globally, with near no offline maintenance windows that interrupt scheduled play. Any necessary extra offline maintenance will be communicated well in advance and scheduled during off-peak player hours to minimize disruption and ensure a smooth experience for the community.
- **Dynamic Environmental Feedback:** Implementing real-time changes to environmental visuals (fog, lighting, ambient effects) that reflect player performance and gameplay phase (e.g., dawn petrification, boss wave storms). All non-gameplay feedback—such as decorative elements like particle effects, visual flourishes, and sound cues—is handled locally on the client side to ensure fast and smooth responsiveness.
- **Diegetic UI and Communication:** Emphasizing in-world feedback such as emoticon wheels, overhead icons, and minimal HUD overlays to maintain immersion while allowing players to share tactical information quickly and intuitively.
- **Visual Identity Optimization:** The game features a stylized cartoon aesthetic that's both striking and performance-friendly, allowing scalability across a wide range of systems.

By achieving these goals, *Pomegranade: Limbo* aims to offer a uniquely replayable cooperative survival experience rooted in emotional storytelling, environmental tension, and player synergy.

Note: This technical document refers to the Beta PC version only. Future releases will include specific platform features and optimizations tied to console environments. Those services and requirements are excluded from this beta-focused scope.

3 Provided Services

3.1 Community and Support Services

- **Official Discord Server:** A dedicated Discord server will serve as the central hub for the game's community. It will facilitate:
 - **Community Engagement**
 - Channels for general chat, strategy sharing and team-finding.
 - Themed spaces (e.g. off-topic, fan art) to foster camaraderie and creativity.
 - **Announcements**
 - A read-only "News & Updates" channel for patch notes, upcoming features and event alerts.
 - Pinned posts for long-term roadmaps and important milestones.
 - **Customer Support**
 - A "Help Desk" channel—staffed by our development team and volunteer moderators—where players can report bugs, ask gameplay questions or submit feedback.
 - A private ticketing system for one-on-one issue resolution.
 - **Lobby Coordination**
 - Dedicated text channels for scheduling both public and private game sessions.
 - "Looking for Group" boards where players can post session times, roles needed and game versions.
 - Clear role-based permissions: only designated channels allow real-time text chat during matches, ensuring coordination without cluttering general discussion.
- **In-Game Support:** An integrated support system within the game will allow players to report bugs, provide feedback, and access FAQs directly.

Note: This technical document pertains exclusively to the Beta version of the game for PC. Please note that not all features and functionalities described here are currently implemented in the prototype. For detailed information on the features available in the current prototype, refer to Section 9: "Prototype: Current Implementation" in the Game Design Document.

3.2 Distribution and Platform Services

3.2.1 Steam Platform

The game will be available on Steam initially, leveraging the platform's extensive features to enhance both distribution and user experience:

- **Seamless Distribution:** Steam provides a robust infrastructure for game distribution, ensuring easy access to game downloads, updates, and patches. This system guarantees that players always have the latest version without manual intervention.
- **Community Features:** Players can engage with a vibrant community through forums, guides, and user-generated content. These features foster collaboration, strategy sharing, and a sense of belonging among players.
- **Automatic Updates:** Steam's auto-update mechanism ensures that all players operate on the same game version, reducing compatibility issues and enhancing multiplayer experiences.
- **Cloud Saves:** With Steam Cloud, players can save their progress online, allowing them to continue their game from any device seamlessly.
- **Achievements and Trading Cards:** Steam supports in-game achievements and collectible trading cards, providing additional incentives and engagement for players.
- **Regional Pricing and Global Reach:** Steam's regional pricing strategy makes the game accessible to a global audience by adjusting prices based on local currencies and economic conditions.
- **Early Access and Beta Testing:** Developers can utilize Steam's Early Access program to release playable versions of the game, gather feedback, and make iterative improvements based on community input.
- **Steamworks Integration:** By integrating Steamworks, developers can access a suite of tools for multiplayer matchmaking, in-game economies, and anti-cheat systems, enhancing the game's functionality and security.
- **Comprehensive Analytics:** Steam provides developers with detailed analytics on player behavior, sales, and engagement, enabling data-driven decisions for future updates and content.
- **Promotional Opportunities:** Participation in Steam sales events and featured promotions can significantly increase the game's visibility and attract a broader player base.

By capitalizing on these features, the game aims to deliver a seamless, engaging, and community-driven experience to players worldwide.

3.2.2 Nintendo Switch Platform

As part of our commitment to reaching a broader audience and enhancing player accessibility, we plan to expand the game's availability to the Nintendo Switch platform. This expansion leverages the unique features and capabilities of the Nintendo Switch to provide an enriched gaming experience:

- **Hybrid Console Flexibility:** The Nintendo Switch's design allows players to seamlessly switch between handheld, tabletop, and TV modes. This flexibility enables players to enjoy the game at home or on the go, catering to various playstyles and environments.
- **Joy-Con Controllers:** The detachable Joy-Con controllers offer versatile control schemes, including motion controls and HD Rumble feedback. These features can enhance gameplay immersion and provide intuitive control options.
- **Local and Online Multiplayer:** With support for local wireless multiplayer, up to eight Nintendo Switch consoles can connect for cooperative play without the need for an internet connection. Additionally, Nintendo Switch Online enables players to engage in online multiplayer sessions, expanding the game's social and cooperative aspects.
- **Nintendo Switch Online Features:** Subscribers to Nintendo Switch Online gain access to cloud save backups, ensuring game progress is preserved across devices. The service also offers a library of classic NES, SNES, and other retro games, providing additional entertainment options.
- **Nintendo eShop Integration:** The game will be available for digital download via the Nintendo eShop, allowing for easy access and updates. Players can also benefit from eShop features such as user reviews, wishlist, and promotional discounts.
- **Portability and Convenience:** The compact and lightweight design of the Nintendo Switch makes it convenient for players to carry and play the game anywhere, promoting continuous engagement and flexibility in gaming sessions.
- **Family-Friendly Features:** Nintendo Switch offers robust parental controls and family sharing options, making it suitable for players of all ages and facilitating shared gaming experiences among family members.

By expanding to the Nintendo Switch platform, we aim to provide players with a versatile and accessible gaming experience that leverages the console's unique features to enhance gameplay, social interaction, and overall enjoyment.

3.3 Social Media Presence

To generate hype, excitement and cultivate a vibrant community around the game, a comprehensive social media strategy will be implemented across multiple platforms. This approach aims to provide timely updates, foster player interaction, and orchestrate a global countdown culminating in the game's release.

3.3.1 Official Website

A centralized hub offering:

- **Game Information:** Detailed descriptions, features, and lore.
- **News and Updates:** Latest announcements and development blogs.
- **Support Resources:** FAQs, contact forms, and troubleshooting guides.
- **Countdown Timer:** Real-time tracker leading up to the game's launch.

3.3.2 Social Media Channels

Active engagement on platforms including X (formerly Twitter), YouTube, Twitch, Instagram, and TikTok to:

- **Promote Content:** Share trailers, gameplay footage, and developer diaries.
- **Engage the Community:** Host live streams, Q&A sessions, and interactive polls.
- **Announce Merchandise:** Reveal upcoming game-related products and collectibles.
- **Build Anticipation:** Implement a structured countdown with daily posts highlighting game features, character spotlights, and behind-the-scenes content.

3.3.3 Community Building Initiatives

- **Founder's List:** An exclusive group for early subscribers offering sneak peeks, closed beta access, and special badges.
- **Contests and Challenges:** Encourage user-generated content through fan art competitions, cosplay events, and gameplay challenges, with winners receiving in-game rewards or merchandise.

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- **Influencer Collaborations:** Partner with content creators for early access previews, live gameplay sessions, and co-hosted events to reach broader audiences.

3.3.4 Global Launch Countdown

A coordinated campaign across all platforms featuring:

- **Daily Updates:** New content releases each day leading up to launch.
- **Interactive Elements:** Community milestones to unlock additional content (in-game bonuses, little lore hint,...).
- **Live Launch Event:** A streamed event on launch day with developer interviews, gameplay showcases, and community interactions.

By leveraging these strategies, the game aims to create a dynamic and immersive pre-launch experience, fostering a strong community and ensuring a successful debut.

3.4 Maintenance and Updates

To ensure a stable, engaging, and evolving gaming experience, our maintenance and update strategy encompasses the following components:

3.4.1 Regular Content Updates

- **Scheduled Content Releases:** Introduce new gameplay elements, seasonal events, features, and little narrative lore expansions on a regular basis to maintain player interest and engagement.
- **Bug Fixes and Performance Enhancements:** Address identified issues and optimize game performance through routine patches, ensuring a smooth and enjoyable experience for all players.

3.4.2 Balancing and Gameplay Adjustments

- **Data-Driven Balancing:** Utilize analytics and player feedback to make informed adjustments to game mechanics, ensuring fair and competitive gameplay.
- **Iterative Testing:** Implement changes in controlled environments before full deployment to assess impact and gather community input.
- **Micro Public Test Realms (McPTRs) - Events driven:** Offer players the opportunity to test upcoming features and provide input before official

release through special events.

3.4.3 Scheduled Maintenance

- **Advance Notifications:** Communicate planned maintenance windows well in advance through in-game alerts, official website updates, and social media channels.
- **Off-Peak Scheduling:** Conduct maintenance during periods of low player activity to minimize disruption.
- **Transparent Communication:** Provide detailed information on the scope and purpose of maintenance activities to keep the community informed.

3.4.4 Emergency Response and Hotfixes

- **Rapid Deployment:** Establish protocols for the swift release of hotfixes to address critical issues that may arise unexpectedly.
- **Community Feedback Channels:** Maintain open lines of communication for players to report issues, facilitating prompt identification and resolution.

3.4.5 Version Control and Compatibility

- **Cross-Platform Consistency(when/if delivered to consoles):** Ensure that updates are synchronized across all supported platforms to provide a uniform experience.
- **Backward Compatibility:** Maintain compatibility with previous versions where feasible, allowing players to continue their progress without interruption if the updates happen while playing.

3.4.6 Community Engagement and Transparency

- **Patch Notes and Developer Insights:** Publish comprehensive update notes and developer commentaries to explain changes and gather feedback.
- **Feedback Integration:** Actively incorporate community suggestions into development cycles to foster a collaborative environment.

By adhering to this multifaceted maintenance and update strategy, we aim to deliver a dynamic and responsive gaming experience that evolves in tandem with our player community's needs and expectations.

3.5 External Services

To deliver a robust, secure, and scalable experience, *Pomegranade: Limbo* will integrate the following external services:

- **Cloud Hosting & CDN**

We'll leverage cloud infrastructure (e.g., AWS, Azure, or GCP) with global data centers and auto-scaling to ensure low-latency, reliable game server performance and 24/7 availability. A Content Delivery Network will distribute patches, assets, and updates quickly to players worldwide.

- **Matchmaking & Lobby Services**

Through dedicated backend services (either custom or third-party like PlayFab, Photon or Steamwork), we will handle player discovery, lobby creation, and seamless session joins—ensuring smooth, low-lag connections for cooperative play.

- **Authentication & Account Management**

Secure login is delegated to platform providers (Steam, Nintendo, ...) or OAuth social logins. This offloads sensitive data handling, guarantees compliance with each platform's policies, and simplifies account linking.

- **Payment Processing & Economy**

For premium currency (Golden Seeds) purchases, we'll integrate with each platform's in-app purchase systems and/or trusted payment gateways (e.g., Stripe), ensuring secure transactions, regional pricing, and fraud protection.

- **Anti-Cheat & Security**

We'll incorporate industry-standard anti-cheat solutions (e.g., Easy Anti-Cheat) and platform-native protections to maintain fair play, detect tampering, and safeguard player data.

- **Analytics & Monitoring**

Real-time telemetry and dashboards (via services like Unity Analytics, GameTelemetry, or Google Analytics) will track player behavior, session metrics, and system health. Crash-reporting tools (e.g., Sentry, Crashlytics) enable rapid detection and resolution of issues.

- **Push Notifications & Live Ops**

Configurable push notifications and email alerts will keep players informed about events, updates, and community challenges. Live-Ops tools will power time-limited modes, global countdowns, and in-game announcements.

- **Customer Support & Ticketing**

An integrated helpdesk system (Zendesk or similar) will manage player inquiries, bug reports, and feedback, with support portals linked in-game, on Discord, and via the official website.

By combining these services, we ensure that *Pomegranade: Limbo* remains performant, secure, and continuously evolving—fostering a vibrant community and long-term player engagement.

4 Client side

These specifications were selected based on games with similar performance and workload as *Pomegranade: Limbo*.

4.1 Hardware Requirements

The following table shows the requirement for *Pomegranade: Limbo*. The requirements are divided in minimum and recommended in order to have a wide range of systems on which the game can run.

	Minimum Requirements	Recommended Requirements
Processor	Intel Core i5 / AMD equivalent	Intel Core i5 7500K / AMD equivalent
Memory	8 GB of RAM	16 GB of RAM
Graphics Card	NVIDIA GTX 750-Ti / AMD RX 550, 2GB VRam	NVIDIA GTX 1060 / AMD RX 580, 4GB VRam / Intel Arc A380
Network	Broadband Internet Connection	Broadband Internet Connection
Storage	12 GB	12 GB

These specifications are similar to the one used by "Party Animals" since it shares physics simulation and low poly 3D models like ours. Considering "Party Animals" is a brawl with fast paced scenarios, we are confident that with the current recommended requirements players can enjoy a smooth experience in *Pomegranade: Limbo*.

Players with systems that meet the minimum requirements will still be able to enjoy the game, but they might experience lower performances and need to lower the overall quality of the game. This won't affect the game experience.

For future Switch and Steam Deck releases (see section 3.2 of the GDD) the system requirements are the one offered by the consoles.

In addition, the system requirements might change in phase of production if necessary.

4.2 Software Requirements

To run *Pomegranade: Limbo*, players must have the following software installed in their systems:

	Minimum Requirements	Recommended Requirements
OS	Windows 10, 64-bit / Windows 11, 64-bit	Windows 10, 64-bit / Windows 11, 64-bit
Direct X	Version 10	Version 11

4.3 Additional Requirements

- **Required Applications:**
 - Steam Client: the game will be initially distributed through the Steam platform. Players who want to enjoy the game need to have the client installed and an active account.
 - Nintendo Platform: when Nintendo releases will be planned, players that want to enjoy our game on a Nintendo Switch need to have an active Nintendo account in order to purchase and download the game from the e-shop.

5 Workload Estimation

To estimate the workload for *Pomegranade: Limbo*, we analyzed potential competitors' games (see section 3.4 of the GDD). Looking at the numbers of players at launch date and during the first year of release of similar games on Steam it is possible to define the potential concurrent users (CCU).

5.1 Overcooked

"Overcooked" is a kitchen coop simulation developed by Ghost Town Games and published by Team17. Players have to coordinate in the kitchen to prepare dishes under a certain limited time. The figure below shows that the numbers of concurrent players on release date was around 600 and the average concurrent players is between 500 and 1000 for the first 2 years. As the time progresses we can see a lower interest from the players having an average around 500 of concurrent players.



Data taken from SteamDB. It is expanded to show the overall lifetime of the game over the course of a few years after release.

Launch CCU	Around 600 Players
Peak CCU	Around 1000 Players near release / Around 1500 Players on 2024
Average CCU	Between 500 and 1000 Players

Our game has a similar co-op experience where players need to help each other in a frenetic environment that might get the attention from the same playerbase, making these good estimation parameters that resemble our situation minus having a publisher.

5.2 Moving Out

"Moving Out" is a cooperative moving simulator developed by DevM Games,

SMG Studio and published by Team 17. Players need to cooperate and coordinate to move the furniture and objects from within the house to a truck solving puzzles. The figure below shows how the game had around 650 concurrent players on release date that quickly dropped after a few months. After the initial drop in CCU, "Moving Out" stabilized its number of concurrent players between 150 and 250 remaining stable throughout the years.



Data taken from SteamDB. It is expanded to show the overall lifetime of the game over the course of a few years after release.

Launch CCU	Around 650 Players
Peak CCU	Around 650 at release
Average CCU	Between 150 and 250 Players

Like overcooked, *Pomegranade: Limbo* shares some similarities with "Moving Out" and might get the attention from the same playerbase, making these good estimation parameters that resemble our situation minus having a publisher.

5.3 Party Animals

"Party Animals" is a brawler game with a cooperative mode developed by Recreate Games and published by Source Technology. The main mode is called "Last Stand" and leverages on the cartoonish and silly fight mechanic based on the ragdoll physics of the characters. The figure below shows an astonishing 100 000 concurrent players at release date and after an initial drop during the first couple of months it stabilized the average number of players between 5 000 and 12 000.

We can see that after the initial peak of release date, we have another peak in September 2024 of about 25 000 players.



Data taken from SteamDB. It is expanded to show the overall lifetime of the game over the course of a few years after release.

Launch CCU	Around 100 000 Players
Peak CCU	Around 100 000 at release and around 25 000 in September 2024
Average CCU	Between 5 000 and 12 000 Players

Differently from the other two games used in comparison, this one is a bit of an exception. The playtest came during the "Steam Game Festival: Autumn Edition in 2020" and Covid-19 where the game registered a peak of CCU of 134 000. The main genre of the game is different, but it shares some key features like a physics based throwing system and cartoonish art style. This might not be a good estimator for the release of *Pomegranate: Limbo*, but it is worth taking into consideration in case the game receives a similar welcome during the open beta.

5.4 Super Mario Party Jamboree

We don't have exact statistics about "Super Mario Party Jamboree", but we know that it sold around 6 million copies in the first 3 months of launch making it a successful and very welcomed party game.

5.5 Workload Estimation

Being our game mostly similar to "Overcooked" and "Moving Out" we will take mostly those two games in consideration to evaluate the esteemed workload for *Pomegranade: Limbo*.

We plan to do both a closed and an open beta:

- During the closed beta we will invite at most 1000 players. We can expect a peak of CCU between 250 and 400, which leads at most having around
- During the open beta we can expect a peak of 800 CCU with a number of parallel games running between 200 and 400.

After the open beta, expecting a major interest from the player community and an increase in the advertisement right before the final release we can expect a peak of 1 500 CCU. Since there is a trend downwards in the few months after release it is most likely that the number of players will decrease and stabilize between 500 and 1000 after 3 months.

6 General Architecture

This section provides a comprehensive overview of the technical architecture that supports *Pomegranade: Limbo*. The system is designed to ensure a consistent and stable gameplay experience, while maintaining scalability, ease of maintenance, and potential extensibility to other platforms in the future.

The architecture is structured around two primary components:

- **Front-end**, which includes all client-side elements such as the game client, user interface, distribution platform, community channels, and the official website.
- **Back-end**, which encompasses the infrastructure and services responsible for networking, data persistence, matchmaking, authentication, and server-side logic.

Each part of the architecture is built with modularity in mind, allowing individual components to be updated or maintained independently, with minimal disruption to the overall system.

Wherever possible, the project adopts services from **Amazon Web Services (AWS)** as the preferred infrastructure provider. This choice is motivated by the availability of a rich ecosystem of integrated services, global deployment capabilities, and the inclusion of a generous **12-month free tier** for new users, which significantly reduces initial costs during development and early release phases.

This section also presents an overview of expected workload capacity, including estimates for concurrent users, session throughput, and scaling strategies.

6.1 Technology Stack

This section outlines the key technologies and frameworks used to develop *Pomegranade: Limbo*. These tools form the foundation of both the client and server architecture, enabling cross-platform compatibility, scalable networking, and optimized performance for a stylized 3D online cooperative game.

- **Game Engine:** The project is built using **Unity 2022.3.50f1 LTS**, which provides long-term stability, extended support, and a robust ecosystem ideal for 3D game development.
- **Rendering Pipeline:** The game utilizes the **Universal Render Pipeline (URP)**, chosen for its balance of performance and visual quality, ensuring compatibility across a range of hardware without compromising the game's stylized aesthetic.

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- **Networking:** Multiplayer functionality is handled by **Mirror**, a high-level networking library for Unity. Mirror offers seamless synchronization and is optimized for server-authoritative architectures, making it suitable for online co-op experiences.
 - **Version Control & Collaboration:** Development is managed using **Git**, integrated with platforms such as GitHub or GitLab, facilitating collaboration across team members and continuous integration/deployment for the website and backend services.

6.2 Front-End

The front-end includes all client-side elements that the player directly interacts with. It encompasses all visible and interactive components of the game, from the application that runs on the player's machine to external services that enhance the user experience. This includes the game client itself, the distribution platform, the community communication channels, and the official website.

This section details each of these elements, explains the services and technologies used to implement them, and provides estimated costs where applicable. The goal is to ensure a functional, seamless, and engaging experience for the player at all touchpoints.

6.2.1 Game Client

The *Pomegranade: Limbo* game client is the core application through which players experience the game. It is designed to render stylized 3D environments in real time and respond seamlessly to player inputs. The game features a cooperative, fully online experience with a top-down third-person perspective.

The client is responsible for:

- **Rendering:** Displaying the game's cartoon-style 3D visuals, environmental effects, and lighting.
- **Input Handling:** Supporting both keyboard/mouse and gamepad configurations, including custom keybindings.
- **Client-Side Simulation:** Handling local physics and animation playback, which are synchronized across clients via the central game server.
- **User Interface (UI):** Managing HUD elements like health, ammunition, barricade status, and communication gestures.

6.2.2 Steam Distribution Platform

As the primary platform for distributing *Pomegranade: Limbo*, Steam provides a comprehensive suite of tools for publishing, updating, and monetizing the game through its [Steamworks](#) developer services.

Steam handles: [MY AWS+2780 Level+27XenonStack+27](#)

- **Game Installation and Updates:** Seamless delivery and updating of the game client via the Steam platform.
- **Digital Rights Management (DRM):** Protection of the game content through Steam's DRM solutions.
- **Cloud Saves and Achievements:** Integration of Steam Cloud for save data and Steam Achievements for player engagement.
- **User Authentication:** Secure user login and identity verification through Steam's authentication system.
- **Microtransactions:** In-game purchases facilitated via the Steam Wallet system.

Cost Estimation:

- **Steam Direct Fee:** A one-time, recoupable fee of **\$100 USD per application** is required to publish the game on Steam. This fee is refunded after the game achieves at least \$1,000 USD in gross revenue from sales and in-app purchases. ([Steam Direct Fee Info](#))
- **Revenue Share:** Steam retains a **30% commission** on all game sales and in-app purchases. (This percentage decreases to 25% after \$10 million in sales and to 20% after \$50 million.)

6.2.3 Discord Server Integration

To foster community engagement and provide real-time communication outside the game, *Pomegranade: Limbo* will maintain an official Discord server. This platform offers:

- **Community Support:** Channels for player feedback, support, and discussions.
- **Developer Announcements:** Official updates, patch notes, and event notifications.
- **Matchmaking and Coordination:** Facilitation of player matchmaking and cooperative play arrangements.

Discord is a free service; however, additional features can enhance the server experience:

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- **Discord Nitro:** A subscription service offering benefits like increased upload limits, high-quality video streaming, and server boosts. Pricing is **\$9.99/month or \$99.99/year**. ([Discord Nitro](#))
 - **Server Boosts:** Enhancements to server capabilities, such as improved audio quality and increased emoji slots. Each boost costs **\$4.99/month**, and multiple boosts can elevate the server to higher levels with additional perks.
 - **Bot Hosting:** While creating a Discord bot is free, hosting it for 24/7 availability may incur costs. Hosting services like [PebbleHost](#) offer plans starting at **\$3/month**.

6.2.4 Official Game Website

An official website will serve as a central hub for *Pomegranade: Limbo*, providing:

- **Game Information:** Trailers, screenshots, feature descriptions, and developer blogs.
- **Community Links:** Redirects to the game's Steam page and Discord server.
- **Press and Media:** Access to press kits, contact information, and news updates.

The website will be hosted using [Amazon S3](#) for static content storage and [AWS Amplify Hosting](#) for deployment and hosting services.

AWS Amplify Hosting is a fully managed CI/CD and hosting service that simplifies the deployment of static and server-side rendered web applications. It supports modern web frameworks and provides features like continuous deployment, custom domains, and global content delivery through Amazon CloudFront.

Cost Estimation:

- **AWS Free Tier:** Includes 5 GB of storage, 50 GB/month of data transfer, and 1 million HTTP requests/month for the first 12 months.
- **Post-Free Tier Pricing:** Approximately \$0.023 per GB of storage and \$0.09 per GB of data transfer. ([AWS Amplify Pricing](#))

For domain name registration and DNS management, [Amazon Route 53](#) will be utilized.

- **Domain Registration:** Costs vary by domain extension (e.g., .com, .net) but typically range from **\$12 to \$15/year**.

-
- **Hosted Zones:** Each hosted zone incurs a fee of **\$0.50/month** for the first 25 hosted zones. ([Route 53 Pricing](#))

6.3 Backend

This section outlines the backend architecture of *Pomegranade: Limbo*, detailing the essential components required to support the game's online functionalities. Each subsection introduces a specific backend service, justifies its necessity, and presents the chosen implementation strategy, often utilizing AWS services as "go-to" solution since they offer a 12-month free tier for new users. Where feasible, Steamworks integrations are employed to simplify development and minimize costs.

6.3.1 Game Server Hosting

To facilitate seamless multiplayer experiences, *Pomegranade: Limbo* necessitates a robust and scalable game server infrastructure. We have selected [Amazon GameLift](#), a managed service designed for deploying, operating, and scaling dedicated game servers in the cloud. GameLift offers features such as session management, player matchmaking, and autoscaling, ensuring low-latency and high-availability gaming sessions.

Cost Estimation: Amazon GameLift provides a 12-month free tier for new AWS customers, including 50,000 Player Packages and 5 hours of matchmaking per month. Beyond the free tier, costs are based on the type and number of EC2 instances used, as well as additional features like FlexMatch. ([GameLift Pricing](#))

6.3.2 User Authentication and Management

Secure and efficient user authentication is critical for managing player identities and access controls. We utilize [Amazon Cognito](#), which offers user sign-up, sign-in, and access control mechanisms, along with integration capabilities for social identity providers such as Google and Facebook. Cognito also supports multi-factor authentication and encryption of user data, enhancing security.

Cost Estimation: The AWS Free Tier includes 10,000 monthly active users (MAUs) for Amazon Cognito for the first 12 months. After this period or beyond the free tier limits, charges apply based on the number of MAUs. ([Cognito Pricing](#))

6.3.3 Notifications and Communications

To keep players informed about game updates, events, and other critical information, a reliable notification system is essential. We employ [Amazon Simple Notification Service \(SNS\)](#), which enables the sending of messages to various endpoints, including email, SMS, and push notifications. SNS ensures timely and scalable communication with the player base.

Cost Estimation: The AWS Free Tier offers 1 million publish requests and 1,000 email notifications per month for the first 12 months. Additional usage incurs charges based on the number and type of messages sent. ([SNS Pricing](#)).

6.3.4 Asset and Static Data Storage

Storing and delivering game assets such as textures, audio files, and configuration data require a scalable and durable storage solution. We utilize [Amazon Simple Storage Service \(S3\)](#), which provides object storage with high availability and security. S3 allows for efficient distribution of static content to players worldwide.

Cost Estimation: The AWS Free Tier includes 5 GB of standard storage, 20,000 GET requests, and 2,000 PUT, COPY, POST, or LIST requests per month for the first 12 months. Costs beyond the free tier depend on storage usage and request volumes. ([S3 Pricing](#))

6.3.5 Relational Database Management

Managing structured data such as player profiles, game statistics, and progression requires a reliable relational database system. We have chosen [Amazon Relational Database Service \(RDS\)](#) with the MySQL engine, offering a managed database environment with automated backups, patching, and scaling capabilities.

Cost Estimation: The AWS Free Tier provides 750 hours of db.t2.micro instances and 20 GB of storage per month for the first 12 months. Beyond the free tier, charges are based on instance size, storage, and I/O requests. ([RDS Pricing](#))

6.3.6 Microtransactions and Payments

Implementing in-game purchases necessitates a secure and user-friendly payment system. For the PC version of *Pomegranate: Limbo*, we leverage [Steamworks Microtransaction APIs](#), which integrate seamlessly with the Steam platform, allowing players to make purchases using their Steam Wallet. This

integration simplifies the transaction process and ensures compliance with Steam's policies.

Cost Estimation: Steam typically retains a percentage of each transaction, commonly around 30%, as their platform fee. There are no additional charges for using the Steamworks Microtransaction APIs. For future releases on Nintendo Switch, payment systems will be adapted to align with Nintendo's infrastructure and guidelines.

6.4 Workload Capacity

The architecture of *Pomegranade: Limbo* is designed to support the expected workload outlined in section [5 - Workload Estimation](#), ensuring reliability and responsiveness even under varying user activity levels.

6.4.1 Front-End

Front-end services rely largely on third-party platforms that are inherently scalable:

- **Steam** and **Discord** are designed to handle large volumes of users and traffic without requiring infrastructure management on our part.
- The **official website**, hosted on **AWS Amplify** with content delivery via **S3 and CloudFront**, is optimized for high availability and can manage peak access efficiently. **Amazon Route 53** is used for DNS management.

6.4.2 Back-End

The back-end infrastructure is built with scalability in mind using AWS services.

Amazon GameLift is used for server hosting, providing auto-scaling capabilities based on player demand. It dynamically adjusts the number of active instances depending on current load, ensuring that sufficient resources are available during peak usage while minimizing costs during low-activity periods. Additionally, GameLift preserves active sessions during scale-down events to avoid disconnections.

Amazon Cognito, RDS, S3, and SNS are all usage-based services that naturally adapt to fluctuating player numbers and data throughput. Their elastic nature helps maintain system responsiveness and avoids unnecessary resource allocation, keeping operating costs under control during off-peak hours.

Together, these services provide a reliable and cost-efficient backend architecture capable of supporting the game's projected user base while maintaining flexibility and performance.

7. External Services

In addition to its core technical infrastructure, *Pomegranade: Limbo* relies on several external services that support key aspects of the project such as community engagement, marketing, monetization, and compliance. These services are not directly hosted within the back-end or client architecture but are essential to ensure a professional and sustainable product lifecycle.

7.1 Social Media and Community Presence

To promote the game and foster an engaged player base, *Pomegranade: Limbo* will maintain an active presence on major social media platforms, including:

- **Instagram** – Used to share visual content such as concept art, behind-the-scenes posts, reels, and character spotlights.
- **X (formerly Twitter)** – For quick updates, developer notes, patch announcements, and direct interaction with the player community.
- **YouTube** – Hosting trailers, devlogs, and in-depth gameplay showcases.
- **TikTok** – Used for short-form promotional content with a focus on humorous or viral-friendly game moments.
- **Twitch** – For occasional live development streams, community Q&As, and gameplay events. Eventually used to collaborate with streamers to promote the game and expand the community.

These platforms will be used to:

- Share development progress and major announcements.
- Build anticipation for releases and updates.
- Collect community feedback and foster brand identity.
- Promote the game to the public.

7.2 Payments and Monetization

At launch, all transactions will be handled through **Steam's payment system**, covering purchases of the base game and any additional downloadable content (DLC).

For the **Nintendo Switch release**, monetization will be managed through the **Nintendo eShop**, which provides platform-specific support for secure purchases, region-based pricing, and content delivery.

7.3 Achievements and Player Progression

The achievement and progression system is designed to incentivize continued engagement and reward long-term play. On PC, achievements are integrated directly through **Steamworks APIs**, allowing players to unlock visible rewards, badges, and statistics that are tied to their Steam profiles. These can be used to track milestones, mastery of mechanics, or participation in special events.

For potential future releases on **Nintendo Switch**, where no native achievement system is available, similar functionality will be replicated within the game through internal tracking and in-game feedback, such as badges, titles, or visual effects.

This modular approach ensures consistency in progression feedback across platforms while aligning with the technical capabilities of each.

7.4 Authentication Services

User authentication is handled through **Steamworks** for the PC release, which provides a secure and platform-native solution for managing player identities and access permissions. Steam handles user login, session management, and basic security layers directly via its ecosystem.

This approach reduces backend complexity and data management obligations on our side, especially in terms of **GDPR compliance**, as sensitive user data is handled directly by the platform.

For potential Nintendo Switch releases, **Amazon Cognito** (as outlined in [Section 6.3.2](#)) would be employed to provide a scalable, secure alternative with built-in support for federated identity providers and compliance features such as data encryption and multi-factor authentication.

7.5 Legal and Compliance

All legal documentation, including the **Terms of Service**, **Privacy Policy**, and **Contact Information**, will be published and maintained on the official website. These documents will be fully compliant with international data protection laws, such as the **General Data Protection Regulation (GDPR)**.

To ensure legal consistency and risk mitigation across all business and publishing activities, the team will rely on a **dedicated legal consultant**. This professional will be responsible for:

Drafting and maintaining **Terms of Service** and **Privacy Policies** compliant with EU and international regulations.

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- **Managing GDPR compliance**, including user data handling, consent collection, and data breach protocols.
 - Overseeing the creation and review of **freelance or contract-based employment agreements** related to development, audio, art, or marketing.
 - Advising on the **registration and protection of trademarks** associated with the game's brand identity.
 - Managing potential issues related to **copyright and intellectual property**, including external assets, music licensing, and user-generated content.

This legal support will be retained through a specialized external law firm or an independent consultant experienced in the video game industry and digital publishing.

7.6 Summary of External Services

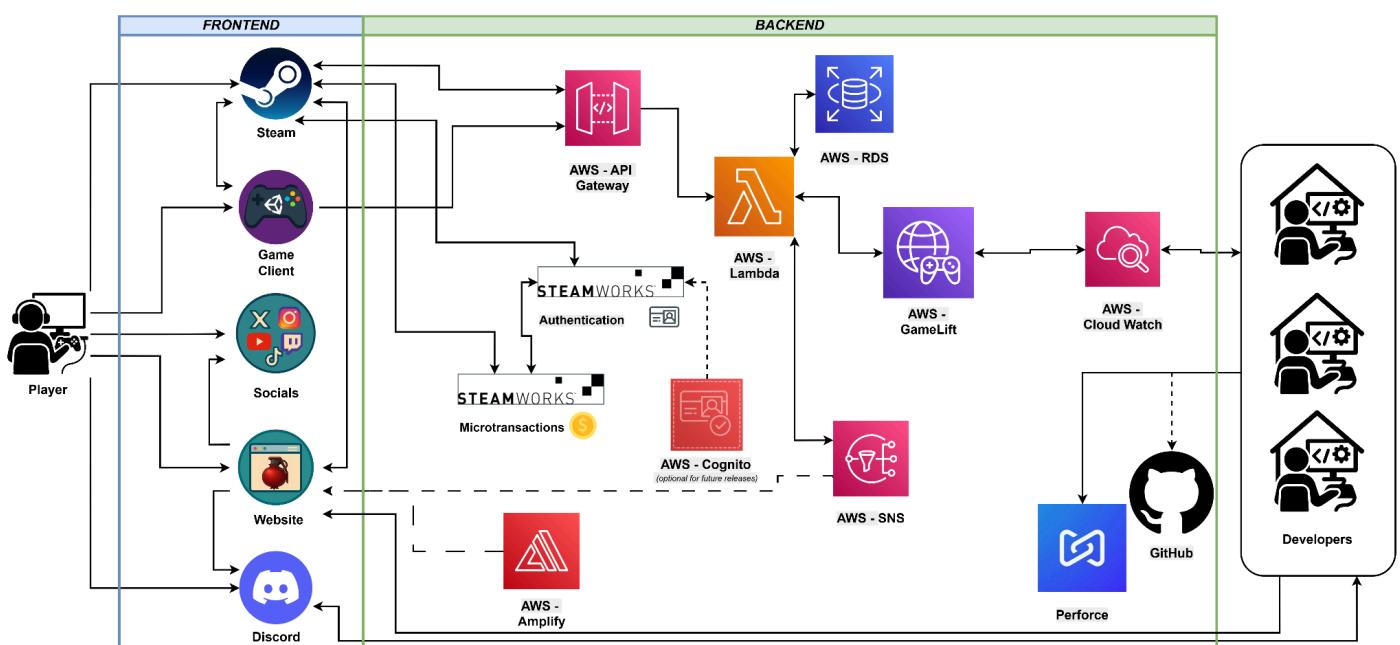
Service Type	Platform / Provider	Purpose
Social Media	X, Instagram, YouTube, etc.	Marketing, community engagement, communications.
Game Distribution	Steam (now), Nintendo Switch (future)	Downloads, updates, visibility
Payments	Steam / Nintendo eShop	Secure transactions
Multiplayer Auth	Steam ID / Nintendo Account	Account validation and access control
Community Support	Discord	Community interaction and announcements
Legal Documents	Official Website	Policy publication and contact form, game info, links to socials.

8. Connection

This section presents an overview of how *Pomegranade: Limbo* connects with its players through both server-side and client-facing systems. The back-end leverages Amazon Web Services (AWS) to manage multiplayer sessions, data persistence, and global distribution of assets. On the front-end, players interact with the game via the client application, the Steam platform, community features like Discord, and the official game website.

8.1 Global Infrastructure

The following picture provides a visual representation of how the services detailed in [section 6](#) and [section 7](#) interconnect to support the overall game infrastructure. The architecture is designed to prioritize low latency and high availability by distributing resources across reliable cloud regions, ensuring a responsive and consistent experience for players in different parts of the world.



8.2 Network Requirements

Pomegranade: Limbo is designed as a real-time cooperative multiplayer game incorporating shooting mechanics. To ensure smooth gameplay and low-latency interactions, the following network requirements are recommended:

Bandwidth Usage

Drawing from data on comparable titles:

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- **Fall Guys: Ultimate Knockout:** Approximately 70 MB per hour.
 - **Overcooked! 2:** Less than 50 MB per hour.
 - **Fortnite:** Approximately 100 MB per hour.

Considering the additional data demands of shooting mechanics, *Pomegranade: Limbo* is estimated to consume between 50 MB and 100 MB of data per hour per player.

Network Speed

- **Minimum Bandwidth:** 10 Mbps download / 2 Mbps upload
- **Recommended Bandwidth:** 20 Mbps download / 5 Mbps upload

These specifications align with industry standards for online gaming, ensuring stable connections and responsive gameplay.

Work Environment Connection

For our development workspace, each team member will utilize a high-speed internet connection, preferably Fiber To The Home (FTTH), or an alternative fast and stable connection. This ensures efficient access to cloud services, version control systems, and remote collaboration tools essential for development and testing.

9 Delivery

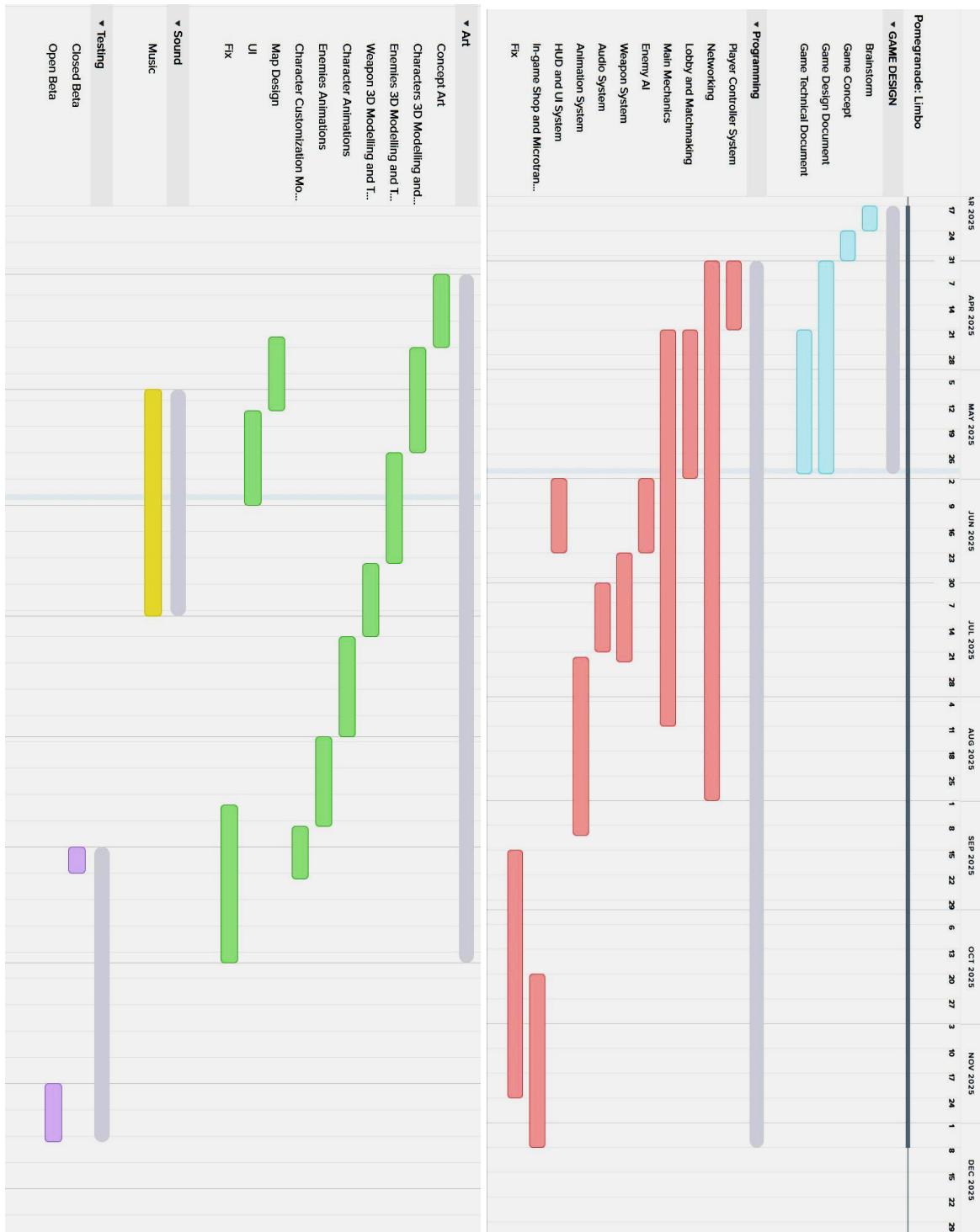
9.1 Estimated Delivery Time

In this section is described a roadmap with the estimation time for each major milestone regarding the delivery of *Pomegranade: Limbo*. For a detailed development time table refer to the Gantt diagram in section 9.2.

Roadmap from prototype to release:

- **Prototype:** From the start of the project it will take 2 months to deliver the prototype. Refer to section 9 of the GDD for more details.
- **Closed Beta Release:** Scheduled for 5 months from the prototype. In the closed beta we will provide the *co-op mode*-the base game.
- **Open Beta Release:** Scheduled for 7 months from the prototype. In the open beta version we expect to provide both *co-op mode* and the *versus mode* with all the fixing from the feedback of the open beta.
- **Final Release:** Scheduled for 10 months from the prototype. Includes the polished version of the *co-op mode* and the *versus mode* plus, the *endless mode*.

9.2 Gantt Diagram



Note: in the Gantt Diagram the Environment 3D modelling and the SFX tasks are missing because we plan on purchasing those from external asset stores, meaning the time allocated will be negligible.

9.3 Delivery Platform

The chosen platform for delivering *Pomegranade: Limbo* is the **Steam Platform**.

Steam provides tools to manage the distribution for both the beta and final release. In addition, it can help with showing our game to a wider audience and with the wishlist feature we have another metric to understand how much the game will perform during the releases.

9.4 Post-Launch Plans

Our game is not suitable for DLCs, but to keep the players engaged we plan to have seasonal events that will introduce new cosmetics, different levels, aesthetics matching the theme and in-game rewards. These will encourage players to return throughout the year.

10 Cost Estimation

Each data cost estimation is intended for a global international audience.

10.1 Internal Staff (In-House Development & QA)

Our core in-house team consists of three full-time junior programmers working over a 12-month development cycle in Italy, plus two QA testers engaged for one month before closed beta testing. One programmer—with one year of prior industry experience—is the coordinator and team leader of the entire project.

Role	Qty	Duration	Monthly Rate (€)	Total (€)
<i>Junior Programmer (1 yr exp.) [Team leader]</i>	1	<i>12 months</i>	4 000	48 000
<i>Junior Programmer (0–1 yr exp.)</i>	2	<i>12 months</i>	3 500	84 000
<i>QA Tester</i>	4	<i>1 month</i>	1 500	6000
<i>Subtotal Internal Staff</i>				€138 000

All other roles (art, sound, web, legal, marketing, etc.) are provided by external collaborators and are detailed in Section 10.2.

10.2 External Services (Outsourced)

Our core in-house team will be supported by externals, in fact we will outsource specialized tasks to ensure high quality and efficient delivery. All figures are fixed commitments for the 12-month development period (or as noted).

A senior level designer will be engaged for a one-month period to refine and enhance the overall level design experience.

Service	Unit Cost (€)	Qty	Duration	Total (€)
Music & Sound Effects	5 000/project	1	—	5 000
Graphical Assets & Art	5 000/project	1	—	5 000
Web Development	3 000/mo	1	1 month	3 000
Out-of-Game Support	2 500/mo	1	2 months	5 000
Accountant	4 000/year	1	—	4 000
Social Media Management	3 000/mo	1	2 months	6 000
Marketing & Advertising	6 000/mo	1	2 months	12 000
Legal Support	8 000/project	1	—	8 000
Total External Services				€48 000

- **Music & Sound Effects:** Complete original score and SFX package to set the game's tone.
- **Graphical Assets & Art:** budget to engage a 3d Artist for 1 month and to buy assets on stores like the *Unity Asset Store*.
- **Web Development:** Full website build, including game information, support portal, and community integration.
- **Out-of-Game Support:** Ticket-based customer care during open beta to handle player inquiries and bug reports.
- **Accountant:** Annual financial services covering bookkeeping, payroll setup, and tax filings.
- **Social Media Management:** Two-month campaign to build community, run contests, and coordinate the global launch countdown.
- **Marketing & Advertising:** Targeted digital ad buys and promotional events to drive visibility around open beta.

-
- **Legal Support:** IP protection, contracts, and compliance for both development and distribution phases.

This clear, fixed-cost structure demonstrates prudent budgeting and shows investors exactly where every euro is allocated.

10.3 Location: Remote Work Infrastructure

Given our commitment to a fully remote development model, we've structured a robust digital infrastructure to facilitate seamless collaboration, efficient version control, and comprehensive productivity monitoring.

Collaboration and Communication

To ensure effective communication and project management across our distributed team, we've selected **Slack** as our primary communication platform. Slack offers real-time messaging, voice and video calls, and integrates with numerous other tools, fostering a cohesive work environment.

- **Slack Standard Plan:** €6.25 per user/month
- **Team Size:** 3 developers
- **Duration:** 12 months

Total Cost: $\text{€}6.25 \times 3 \times 12 = \text{€}225$

Version Control System

For managing our codebase and digital assets, we've chosen **Perforce Helix Core**, renowned for its scalability and performance in handling large files and complex projects.

- **Perforce Helix Core Cloud:** \$39 per user/month
- **Team Size:** 3 developers
- **Duration:** 12 months

Total Cost: $\$39 \times 3 \times 12 = \$1,404$

Note: Currency conversion rates may vary; for budgeting purposes, this equates to approximately €1,300.

Time Tracking and Productivity Monitoring

To monitor work hours and ensure productivity, we're implementing **Hubstaff**, a comprehensive time tracking and workforce management tool. Hubstaff

provides features such as time tracking, activity monitoring, and detailed reporting.

- **Hubstaff Team Plan:** \$10 per user/month
- **Team Size:** 3 developers
- **Duration:** 12 months

Total Cost: $\$10 \times 3 \times 12 = \360

Note: This approximates to €330, subject to exchange rates.

Development Workstations

Each developer is equipped with a high-performance workstation tailored for 3D game development, ensuring smooth operation of demanding software such as Unreal Engine, Blender, and Substance Painter.

Testers will use their own machines to run the game depending on their machine performances, on the right quality setting for them.

The specifications are as follows:

- **CPU:** AMD Ryzen 9 7900X (12-Core, 24-Thread)
- **GPU:** NVIDIA GeForce RTX 4070 Ti 12GB
- **RAM:** 32GB DDR5-6000MHz
- **Storage:** 1TB NVMe SSD (e.g., WD Black SN850X)
- **Motherboard:** MSI MAG B650 Tomahawk WiFi
- **Cooling:** Arctic Liquid Freezer II 280 AIO
- **Power Supply:** Seasonic Focus GX-850 850W
- **Case:** Fractal Design Meshify C Mid Tower
- **Monitor:** 27" QHD IPS Display
- **Peripherals:** Mechanical Keyboard, High-Precision Mouse, Ergonomic Chair

The estimated cost per workstation, including peripherals, is approximately €2,800.

This configuration balances performance and cost, ensuring efficient development workflows within your specified budget.

All materials, equipment, and resources provided by the team for the execution of project-related tasks—including but not limited to hardware, software licenses, documentation, and any other assets—are and shall remain the exclusive property of the team. These items are furnished solely

for professional use in connection with the project. Upon termination of the collaboration, regardless of the reason, the recipient is obligated to return all such materials and equipment in their original condition, subject to reasonable wear and tear. Retention of any copies, derivatives, or related materials is strictly prohibited. Failure to comply with this provision may result in legal action to recover the property and any associated damages.

Summary of Remote Work Infrastructure Costs

Item	Unit Cost (€/USD)	Quantity	Duration	Total Cost (€)
Slack Standard Plan	€6.25	3 users	12 months	€225
Perforce Helix Core Cloud	\$39	3 users	12 months	€1 300
Hubstaff Team Plan	\$10	3 users	12 months	€330
Development Workstations	€2,800	3 users	once	€8 400
Total				€10 255

This infrastructure ensures that our remote team operates efficiently, with robust tools supporting communication, version control, and productivity monitoring.

10.4 Backend Infrastructure and Game Server Hosting

To ensure a seamless multiplayer experience and robust backend support, we have chosen **Amazon GameLift** as our primary game server hosting solution. Amazon GameLift offers scalable, low-latency, and cost-effective game server hosting, making it an ideal choice for our project's needs.

Given our plan to provide one year of support from closed-beta release, we have calculated the server hosting costs for a 12-month period. This approach ensures that our infrastructure is fully operational and tested before the game's public release(5 months of intense infrastructure testing before final release).

Amazon GameLift Hosting Details:

- **Instance Type:** c5.large (2 vCPU, 4 GiB RAM)
- **Operating System:** Amazon Linux 2
- **Pricing Model:** On-Demand Instances
- **Data Transfer:** Outbound data transfer costs are included based on estimated usage

Cost Breakdown:

Service Component	Monthly Cost (€)	Duration (Months)	Total Cost (€)
GameLift On-Demand Instances	€0.109/hour * 24 hours/day * 30 days ≈ €78.48	12	€941.76
Data Transfer (Outbound)	€0.09/GB * 100 GB ≈ €9.00	12	€108.00
Total			€1,049.76

Note: The above costs are estimated based on current Amazon GameLift pricing in the EU (Ireland) region. Actual costs may vary depending on usage patterns and data transfer volumes.

By utilizing Amazon GameLift's scalable infrastructure, we can efficiently manage server resources, ensuring optimal performance during peak and off-peak hours. This setup allows us to maintain high availability and low latency for players, enhancing the overall gaming experience.

10.4. Total Cost Evaluation

Below is a consolidated cost summary for the entire 12-month project. Investors can review each section's breakdown, subtotals, and the grand total—including a €25 000 extra fund reserve to cover unexpected overruns, rented meeting spaces with refreshments (food and coffee), and the €100 Steam deployment fee.

Item	Qty	Duration	Unit Cost (€)	Total (€)
Internal Staff				
Junior Programmer (1 yr exp.)	1	12 months	4 000/month	48 000
Junior Programmer (0–1 yr exp.)	2	12 months	3 500/month	84 000

QA Tester	4	1 month	1 500/month	6000
Subtotal				138 000
External Services				
Music & Sound Effects	1	—	5 000/project	5 000
Graphical Assets & Art	1	—	5 000/project	5 000
Web Development	1	1 month	3 000/month	3 000
Out-of-Game Support	1	2 months	2 500/month	5 000
Accountant	1	—	4 000/year	4 000
Social Media Management	1	2 months	3 000/month	6 000
Marketing & Advertising	1	2 months	6 000/month	12 000
Legal Support	1	—	8 000/project	8 000
Subtotal				48 000
Remote & Hardware				
Slack Standard Plan	3 users	12 months	6.25/user·month	225
Perforce Helix Core Cloud	3 users	12 months	39/user·month (~€43)	1 300
Hubstaff Team Plan	3 users	12 months	10/user·month (~€9)	330
Development Workstations	3	—	2,800 each	8 400

Subtotal				10 255
Backend Hosting				
GameLift On-Demand Instances	—	12 months	€0.109/hour (€78.48/month)	941.76
Data Transfer (Outbound)	—	12 months	~€9.00/month	108.00
Subtotal				1 049.76
Extra/Emergency Fund				
Contingency Reserve	—	—	Lump-sum	25 000
Grand Total				€222 304.76

Free tools such as Unity and Blender are excluded from this budget, as they incur no licensing fees.