

## 1. Project Charter

Project Title	VibeVerse		
Project Sponsor	Melon Musk	Date Prepared	13th Oct 2024
Project Manager	Haotian Wang	Project Customer	Music Australia Council

Project Constraints	Description
Time	This project must be completed by 2025 within an 11-month timeline to align with project customer requirements.
Budget	AU\$14856.20 for the whole project. (Including staff wages and device purchasing)
Benefits	The platform must address the limited availability of key resources such as specialized software tools and hardware. Also considering positive feedback coming from the user reaching at least 75% score.
Scope	The project focus is to develop the platform based on core-based features including live streaming, interaction features, and an easy-to-use interface. Other features beyond this core will require separate approval and additional budget allocation.
Quality	Ensure smooth running of online projects and good user experience. The project at least achieved a 95% pass score on the quality assurance test.
Risk	Regulatory issues and intellectual properties for virtual reality usage

No	Duration	Description
Project Initiation Phase	1 Months	This phase clearly outlines the project from a strategic viewpoint, locates the stakeholders in it, assesses its viability, and looks to obtain authorization to proceed. Some of the key outputs or deliverables resulting from this phase will be the Project Charter and preliminary scope statement.
Project Planning Phase	1.5 Months	This phase involves developing a detailed project plan that outlines the schedule, resources, budget, risks, and quality requirements. The planning phase ensures that everyone is aligned on the project scope and expectations
Development Phase	7 Months	This is the longest phase, which includes the creation, development, and production of the project's deliverables. All planned activities from the planning phase are implemented, and progress is closely monitored
Control Phase	0.9 Months	The control phase involves monitoring and measuring project performance to ensure that everything is on track. This involves monitoring the risk, performance, and budget for the purpose of attaining the project objectives.
Closure and Monitoring Phase	0.6 Months	The last stage of the project underscores confirmation that all project objectives have been accomplished, contracts are formally closed, and deliverables are handed over to the client or the end users. Additionally, this stage may cover a post-implementation review for an assessment of long-term outcomes and effectiveness.

Total	11 Months	
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Stakeholder	Role	Responsibilities
Melon Musk	Project Sponsor	The project sponsor establishes the vision and objectives for the virtual reality software, acquires financial resources, and offers overarching support and direction during the project's duration.
Haotian Wang	Project Manager	A person who plans all the project activities monitors the progress, manages timelines, and communicates with team members to keep the project on course regarding goals and timing.
Ka Nok Anson Poon	Development Team Lead	Leads the technical team directly in developing the software by specifications. Specialized concentration is given to solving technical issues and integrating various components of the software.
Thi Han Hein	Design Team Lead	Responsible for the aesthetic and functional aspects of user interface and user experience. The design team lead is responsible for making sure VR software is more engaging and user-friendly.
Thanh Nho Le	QA Team Lead	This role leads and conducts testing to find and eliminate bugs in order for the final product to meet quality standards. This position is important in providing a seamless user experience and avoiding any issues after launching
Josua Geovani Pinem	Marketing Team Lead	Designs and leads implementation processes for promotion plans targeting prospective users of VR software, along with other stakeholders. This role creates anticipation and awareness of the product.
Donald Thumb	Legal Team Lead	The Legal Advisor leads and ensures observance of relevant legislation in respect of copyright, licensing contracts, and data protection. The position is very important and needed for the minimization of potential legal risks.
Barack Omama	Operations Team Lead	Oversees the software implementation while ensuring the setting up of necessary infrastructures. This role involves the technical framework under which the virtual reality experience will be delivered, hence involves server administration among other support systems.

Approvals			
Project Management Signature	Haotian Wang	Sponsor Signature	Melon Musk
Date	13.10.2024	Date	13.10.2024

## 2. Scope

<b>Project Title:</b> VibeVerse <b>Date:</b> 13th Oct 2024 <b>Prepared by:</b> Thanh Le
<b>Project Justification:</b> Using virtual reality technology to build interactive virtual concerts, the VibeVerse project aims to satisfy the increasing demand for such experiences in real-time. By removing geographical barriers, this project will boost the virtual entertainment industry and give artists a new platform to perform for fans all over the world.
<b>Product Characteristics and Requirements:</b> <ul style="list-style-type: none"> <li>- VR Hardware: Oculus, HTC Vive, motion capture devices, and high-performance computers.</li> <li>- Software requirements: Metahuman Creator, 3D modelling software, and cloud infrastructure for real-time event streaming.</li> <li>- Platform compatibility: Assure ability to work across different popular VR platforms.</li> <li>- Scalability: High traffic should be handled smoothly during live events with a large audience for a high-level user experience.</li> </ul>
<b>Summary of Project Deliverables</b> <b>Project management-related deliverables:</b> <ul style="list-style-type: none"> <li>- Detailed project plan including procurement, risk management, and resource allocation.</li> <li>- Progress and performance reports at key milestones.</li> <li>- Final project report and post-launch evaluation.</li> </ul> <b>Product-related deliverables:</b> <ul style="list-style-type: none"> <li>- Fully functional VR concert platform.</li> <li>- Integration of real-time streaming and AI-driven avatars/metahumans.</li> <li>- User-friendly interface compatible with Oculus, HTC Vive, Apple Vision Pro and Meta Quest.</li> <li>- Cloud infrastructure supporting large-scale virtual events.</li> </ul>
<b>In Scope:</b> <ul style="list-style-type: none"> <li>- Development of VR environments.</li> <li>- Real-time concert streaming capabilities.</li> <li>- Compatibility with Oculus, HTC Vive or other popular VR platforms.</li> <li>- Providing tutorials, user guides, and ongoing technical support for event organizers and users to navigate the platform.</li> </ul> <b>Out of Scope</b> <ul style="list-style-type: none"> <li>- Custom VR hardware development: prioritize existing commercial VR hardware such as Oculus, HTC vive.</li> <li>- Physical infrastructure setup: use cloud-based services such as AWS, Azure instead of building private servers or data centers.</li> </ul>
<b>Project Success Criteria:</b> <ul style="list-style-type: none"> <li>- Successful deployment of the VibeVerse platform with a seamless user experience across multiple VR devices.</li> <li>- Ability to handle at least 10,000 concurrent users during live events.</li> <li>- Positive feedback from users and artists regarding performance and ease of use.</li> <li>- Delivered on time and within the project budget of AU\$57,966.</li> </ul>

## 3. Market and Technology Literature Research

### Market Overview

The rise of emerging technologies is reshaping the way we carry out our daily activities, particularly the metaverse. Metaverse technology provides us a new way to interact with the virtual and physical world, introducing an innovative way to create a new opportunity and business model. With this potential to significantly disrupt industries enabling individuals and businesses to express and monetize their creativity (Li & White, 2023; eSafetyCommissioner, 2023).

Leading investment bankers highlighted that the creative economy offers opportunities to experience new feelings and understanding through metaverse technology (McKinsey & Company, n.d.; Morgan Stanley, 2021; J.P. Morgan, 2022). Whereas a virtual concert has the potential to surpass the profitability of a physical concert which eradicates limitations from the building capacity, parking lot, currency differences, and even geographical barriers.

## Market Trends

**Projected Growth of the Metaverse:** Based on a Gartner report, by 2026, a quarter of the population will spend at least an hour daily either working, shopping, education, social media and/or entertainment in the metaverse (Wiles, 2022). The metaverse market size is projected to reach \$100 billion by 2030 and \$500 billion in 2040 (J.P. Morgan, 2022).

**Acceleration Due to COVID-19:** The COVID-19 pandemic has accelerated digital adoption, which led to an increase in investment in digital businesses, especially Virtual Reality (VR) and Augmented Reality (AR) technologies (Morgan Stanley, 2021). VR/AR technology which technically revolves around user experience will further improve in the future, enabling virtual world interactions or the 'metaverse'. This shift will mark the transition of internet 2.0 to internet 3.0 and further mark the beginning of internet 4.0.

**Virtual Goods and Economic Potential:** The metaverse offers a marketplace for virtual goods with an estimated transaction of \$54 billion, virtual platforms like Roblox have seen massive engagement, with 60 billion messages recorded in the server. Metaverse also creates opportunities for the content creator with an estimated revenue of \$80M. Further, \$41 billion in non-fungible tokens (NFTs) are circulating on the market, and 200 strategic partnerships are currently on the roll (J.P. Morgan, 2022).

## Consumer Insights

**Demographic Preferences and Engagement Factor:** Demographically, millennials showed more excitement about the metaverse than Gen Z (35 per cent and 33 per cent, respectively), which is relatively evenly split between metaverse users by gender, 53% and 46% respectively for male and female. Respondents identifying as male prioritized connectivity with people and purchasing real estate, while those identifying as female were most excited by the ability to customize avatars and attend concerts and events (McKinsey & Company, 2022).

**Changing Perspectives on Digital Entertainment:** A stable growth of the music industry and trends in consumption, which is driven by increased streaming revenues, shows that the innovation driven music industry is adapting to digital trends and continues to grow (Rossenblatt, 2024; IFPI, 2024; Business Research Insights, 2024). Further, reports showed that 60% of Australian respondents have a strong belief that digital entertainment in virtual reality will significantly change the way people live over the next 10 years (Digital NSW Gov Australia, n.d.; Grand View Research, 2022).

## Competitive Landscape

**Current VR Platforms Trend:** Current major VR platforms such as Fortnite, Roblox, VRChat and Wave have held virtual concerts for notable artists such as Travis Scott, Ariana Grande and Justin Bieber (Patel, 2022). This trend illustrates the implementation of VR concerts as an emerging revenue stream for artists, content creators and musicians.

**Apple's and Meta's VR Hardware:** Apple has recently released the Vision Pro VR headset which comes with advanced features like high-resolution displays, eye tracking, and hand gesture control to enhance user experience and interaction in spatial environments. Meta (formerly Facebook) with Meta Quest also provided a device with immersive experiences in VR environments. These headsets offer capabilities to host virtual concerts that will enhance virtual interaction between musicians and fans.

**Challenges in the Industry:** Despite promising growth, challenges such as high production costs, technological barriers for non-tech-savvy audiences and the necessity for effective marketing strategies need to be considered for broader adoption.

## Innovation

**Emerging Technologies:** Metahuman is a 3D virtual character who can perceive our bodies in real-time, which surpasses the concept of an avatar that we currently use on social media platforms (Gökhan & Uyanik, 2022). The Metahuman aims to overcome the infamous "uncanny valley" and create a more lifelike virtual environment to robotics, photorealistic computer animation, augmented reality, and virtual reality environment (Maier, 2023). Metahuman Creator is a web-based app to generate Metahuman via cloud app by Epic Game, which enables photorealistic digital human creation through an intuitive workflow. Metahuman Creator significantly reduces the workflow of virtual reality character creation by reducing hundreds of motion capture cameras and actors (Zhixin, et al., 2021).

**Shift from traditional events:** Innovation in the music industry era into virtual reality concerts is also starting to grow from traditional events like Paris New Year's Eve Celebration (Cacciuttolo, 2021) to classical music concerts (Droste, et al., 2018; Hamilton, 2019). A survey paper about virtual reality music concert research trends categorized the challenges into audience, concert venue and performer. One of the key components and building blocks to address is the challenge of virtual avatar creation (Jieun, et al., 2024).

**Research Trends and Challenge:** A survey paper about virtual reality music concert research trends categorized the challenges into audience, concert venue and performer. One of the key components and building blocks based on these challenges to address is the creation of virtual avatar (Jieun, et al., 2024).

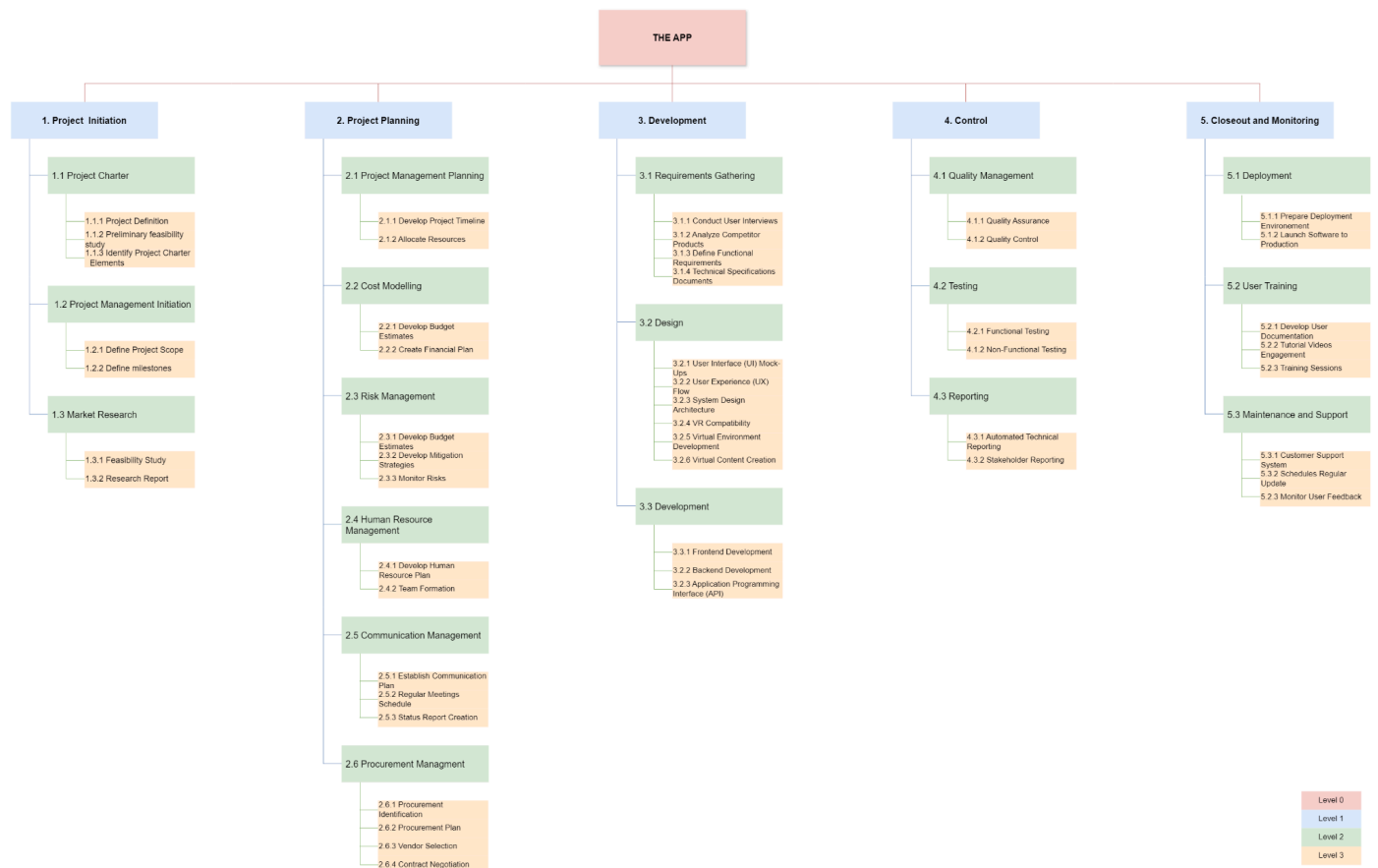
## Conclusion

The market of virtual reality technology in virtual concerts shows a significant expansion, driven by technological advancement and changes in consumer preferences. Metaverse technology which allows us to engage interactively with others, enables us to enjoy more features from it, especially entertainment industries. VR concerts are ready to take advantage of this feature by offering more exciting experiences that go beyond traditional live concerts. Big companies like Apple and Meta are also getting involved and make the market more competitive and offer more opportunities for business. This advancement is also supported by huge investment on metaverse that is predicted to reach market size of \$500 billion by 2040. This growth could open up many ways for businesses to make money by selling tickets, virtual merchandise, virtual goods, and also promote unknown artists.

However, some challenges still need to be addressed such as high production cost, also difficulties for people who are not tech-savvy enough could slow down the growth. Effective marketing will also be important to keep audiences interested. Collaborations between tech companies, artists, and event organizers will be the key to overcoming these challenges.

Finally, as the metaverse becomes more known globally, changes in how people connect and interact with their favourite artist also bring new opportunities. A new era of entertainment that is more engaging and accessible will be achieved by tackling existing challenges and providing more value to the people, attracting diverse audiences, and ensuring continuous growth of this emerging domain.

## 4. Work Breakdown Structure (WBS)



## WBS Dictionary

WBS Code	Task Name	Description	Additional Details
1	Project Initiation	The first step by initializing project setup and stakeholder identification.	A kickoff meeting will be conducted at this step to align stakeholder expectations and define roles and responsibilities.
1.1	Project Charter	Developing the project charter focuses on outlining goals.	Provide a clear timeline with project milestones as project guidelines.
1.1.1	Project Definition	The scope, objectives, and deliverables of the project are defined.	Stakeholder feedback and recommendations are used to ensure alignment with business objectives and market needs.
1.1.2	Preliminary Feasibility Study	Before progressing further, an early initial assessment is needed to determine the viability of the project.	Involve initial early evaluation of the project factors.
1.1.3	Identify Project Charter Elements	Formal identification that authorises the project and outlines the key parameters.	Include elements such as project details, deliverables, cost, time, and roles.

1.2	Project Scope	Define the more detailed scope of the project.	The boundaries or limits of the project, including what is and is not included.
1.2.1	Define Project Scope	Identify key features and establish boundaries.	Specify features included and excluded to avoid scope creep; prioritize based on stakeholder input.
1.2.2	Project Milestones	Identify project achievement.	Consists of achievement in lists to track performance, and assess projects health.
1.3	Market Research	An objective and in-depth market research related to the VR project.	Literature review of current market and industry as technologies using credible and objective sources of information like reputable journals and market research papers.
1.3.1	Feasibility Study	By using objective sources to assess technical and market research related to the project.	Identify potential challenges and future trends of the VR project.
1.3.2	Research Documentation	Summary of the market research and technology research.	Documentation to be presented to the key stakeholders also includes references used using proper referencing style.
2	Project Planning	Detailed planning of the project.	Collaborate with key stakeholders to refine the project plan and ensure all aspects are covered.
2.1	Project Management Planning	Develop timelines and resource allocations.	In this phase, project management tools are used to track progress, and plans are adjusted as needed throughout the project.
2.1.1	Develop Project Timeline	Create a Gantt chart and set milestones.	Visual representation of project phases.
2.1.2	Allocate Resources	Determine team roles and assign tasks.	Align team assignments with individual skills and expertise; consider workload balancing.
2.2	Cost Modeling	Develop budget estimates and financial planning.	Identify potential cost savings opportunities; review budget assumptions with finance stakeholders.
2.2.1	Develop Budget Estimates	Estimate costs for resources (hardware, software).	Identify potential cost savings.
2.2.2	Create Financial Plan	An outline based on funding sources and budget allocation.	Set up cost control mechanisms.
2.3	Risk Management	Identify and mitigate potential risks.	Create a risk register to document risks; schedule regular risk assessment meetings.

2.3.1	Identify Potential Risks	Assess technical and market risks.	Maintain a risk register.
2.3.2	Develop Mitigation Plan	Create contingency plans for identified risks.	Schedule regular risk reviews.
2.3.3	Monitor Risks Throughout the Project	Regularly update stakeholders on risk status.	Use risk management tools.
2.4	Human Resource Management	Documentation of plan and management of human resources for the project.	Develop onboarding processes for new team members; ensure alignment of team dynamics with project goals.
2.4.1	Develop a Human Resource Plan	Identify skills and recruitment strategies.	Determine timelines for hiring, training and development plans.
2.4.2	Team Formation	Formal definition of team formation.	Use communication procedures for faster collaboration between team members.
2.5	Communication Management	Communication protocols and reporting definition through clear documentation	Communication channels are introduced.
2.5.1	Establish Communication Plan	Determine channels and update frequency.	Specify tools for communication (e.g., Slack, email); establish response time expectations.
2.5.2	Schedule Regular Meetings	Set up team syncs and stakeholder updates.	At this task, frequency-based definition of communication is defined based on project phase and team needs;
2.5.3	Create Status Reports	Monthly reports on progress, risks, and tasks.	Focus on key achievements and areas that need to be improved or revised.
2.6	Procurement Management	Identify and manage procurement needs.	Relevant teams are invited to define project requirements to ensure all needs are met.
2.6.1	Identify Procurement Needs	Determine necessary equipment and services.	VR hardware, software licenses, etc.
2.6.2	Develop Procurement Plan	Outline procurement processes and timelines.	Specify vendor selection criteria.
2.6.3	Vendor Selection	Research and evaluate potential vendors.	Request proposals from each prospectus and assess options as product comparison and advantages.



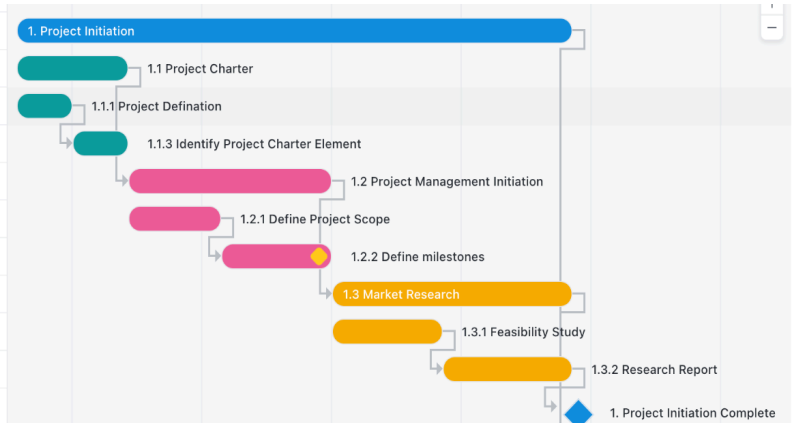
2.6.4	Contract Negotiation	Negotiate terms and finalize vendor contracts.	Ensure compliance with agreements.
3	Development	Implementation of design and development phases.	Based on project management guidelines, all teams execute based on development processes and timelines.
3.1	Requirements Gathering	Gather user and competitive requirements.	By using surveys and internal focus groups to capture user needs; analyze competitor offerings for benchmarking.
3.1.1	Conduct User Interviews	Survey potential users for preferences.	Collect feedback on existing solutions.
3.1.2	Analyze Competitor Products	Review features of leading VR platforms.	Identify gaps for differentiation.
3.1.3	Define Functional Requirements	List and prioritize essential features.	E.g., ticket purchasing, social sharing.
3.1.4	Document Technical Specifications	Define system requirements and API documentation.	Include hardware and software needs.
3.2	Design	Create UI/UX designs and architecture.	Collaborate with stakeholders for feedback on designs.
3.2.1	Create User Interface (UI) Mockups	Design wireframes and prototypes.	Use design tools like Figma or Sketch for prototypes; iterate based on user feedback.
3.2.2	Develop User Experience (UX) Flow	Map user journeys and improve navigation.	Conduct usability testing to refine user flows; document findings for continuous improvement.
3.2.3	Design System Architecture	Outline the system architecture for scalability.	Client-server or microservices model.
3.2.4	Plan for VR Platform Compatibility	Identify target VR platforms and strategies.	E.g., Oculus, HTC Vive.
3.2.5	Virtual Environment Development	Create reusable and flexible virtual environment assets.	Consist of 3D modeling, animation, lighting and rendering and sound design; Consider utilizing AI for faster deliverable

3.2.6	Virtual Content Creation	Develop real world objects and contents.	Consider the reusability of performer models, animation, stage design, special effects, and interactive elements; Consider utilizes AI for faster deliverable
3.3	Development	Build the application based on designs.	Implement agile and/or DevOps development process for flexibility;
3.3.1	Frontend Development	Implement UI components and interactive features.	Ensure responsiveness across devices.
3.3.2	Backend Development	A scalable server-side architecture and scalable DBMS plan that can communicate with VR gadgets.	Version control for code management, database security, and backup protocols need to be considered.
3.3.3	API Integration	API integration of several internal modules and third-party modules.	Regulations of each region need to be considered.
4	Control	Monitor and ensure project quality and progress.	Use control metrics to make it easier to evaluate project success.
4.1	Quality Management	Apply quality assurance and control processes to the product.	Focus on continuous improvement of the product.
4.1.1	Quality Assurance	Focus on plans for quality assurance activities and audits.	Schedule regular QA meetings with related teams and stakeholders.
4.1.2	Quality Control	Monitor and verify compliance with quality standards.	Conduct inspections and testing.
4.2	Testing	Execute testing phases to ensure functionality.	Develop a comprehensive testing strategy that includes various testing methods to assure the quality of the product.
4.2.1	Unit Testing	Write tests for individual components.	Automate using frameworks like JUnit.
4.2.2	Integration Testing	Test interactions between modules.	Ensure seamless data flow.
4.2.3	User Acceptance Testing (UAT)	Feedback from users testing based on real scenarios are gathered.	Make software and hardware adjustments based on feedback.
4.2.4	Performance Testing	Test for load capacity and system responsiveness.	Monitor under stress conditions.

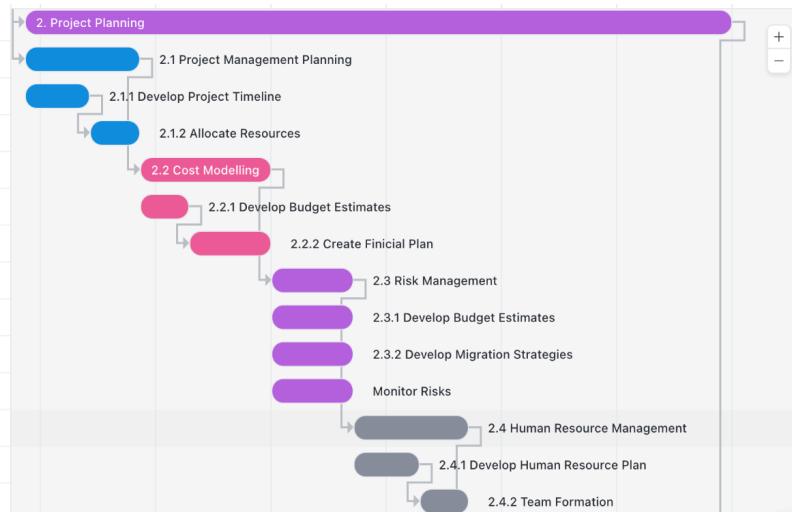
4.3	Monitoring and Reporting	Track key performance indicators post-launch.	Establish specific KPIs (e.g., user engagement, system performance);
5	Closeout and Monitoring	Finalize project deliverables and support.	Confirm all deliverables and project objectives meet acceptance criteria that have been defined at the early stage.
5.1	Deployment	Launch the product to the production server.	Deployment using devops or agile to ease the development scalability.
5.1.1	Prepare Deployment Environment	Set up servers and software configurations.	Hardware and software check; pre-launch testing in the production environment to ensure compatibility;
5.1.2	Launch Software to Production	Execute soft launch and gather feedback.	Make final adjustments based on feedback on limited software usage.
5.2	User Training	Develop user training materials and sessions.	Schedule training sessions before launch.
5.2.1	Develop User Documentation	Create manuals and FAQs for users.	Ensure documentation is clear and accessible; include visuals and examples.
5.2.2	Create Tutorial Videos	Produce guides for key functionalities.	Share on platforms like YouTube.
5.2.3	Conduct Training Sessions	Host webinars and Q&A sessions for users.	Schedule sessions for user engagement
5.3	Maintenance and Support	Customer support system and update processes.	Define support protocols and escalation paths;
5.3.1	Set Up Customer Support System	Create product channels for a user support system.	Further, train support staff on product details to improve quality of services.
5.3.2	Schedule Regular Updates	Company plans for feature updates and regular bug fixes schedule.	Roadmap for future enhancements and collaborations with other products placement.
5.3.3	Monitor User Feedback for Future Enhancements	Feedback from users and related stakeholders are collected, and prioritize requested features for improvement.	Engage users through surveys and forums, and use a rewarding engagement approach.

## 5. Project Schedule

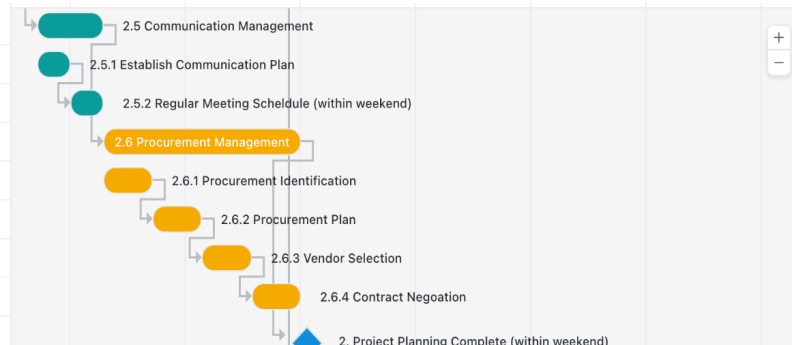
▼ 1. Project Initiation	Jan 1 2025	Jan 31 2025
▼ 1.1 Project Charter	Jan 1 2025	Jan 7 2025
1.1.1 Project Definition	Jan 1 2025	Jan 4 2025
1.1.3 Identify Project C...	Jan 4 2025	Jan 7 2025
▼ 1.2 Project Management I...	Jan 7 2025	Jan 18 2025
1.2.1 Define Project Sc...	Jan 7 2025	Jan 12 2025
1.2.2 Define milestones	Jan 12 2025	Jan 18 2025
▼ 1.3 Market Research	Jan 18 2025	Jan 31 2025
1.3.1 Feasibility Study	Jan 18 2025	Jan 24 2025
1.3.2 Research Report	Jan 24 2025	Jan 31 2025
1. Project Initiation Compl...	Jan 31 2025	Jan 31 2025



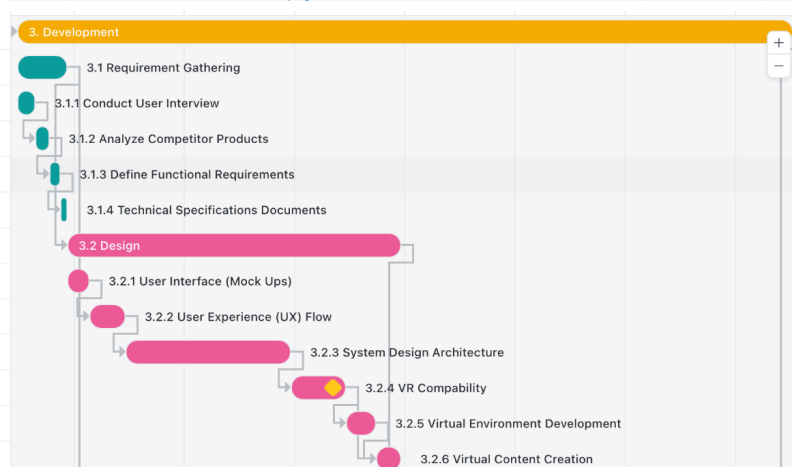
▼ 2. Project Planning	Jan 31 2025	Mar 15 2025
▼ 2.1 Project Management P...	Jan 31 2025	Feb 7 2025
2.1.1 Develop Project ...	Jan 31 2025	Feb 4 2025
2.1.2 Allocate Resourc...	Feb 4 2025	Feb 7 2025
▼ 2.2 Cost Modelling	Feb 7 2025	Feb 15 2025
2.2.1 Develop Budget ...	Feb 7 2025	Feb 10 2025
2.2.2 Create Finical Pl...	Feb 10 2025	Feb 15 2025
▼ 2.3 Risk Management	Feb 15 2025	Feb 20 2025
2.3.1 Develop Budget ...	Feb 15 2025	Feb 20 2025
2.3.2 Develop Migrati...	Feb 15 2025	Feb 20 2025
Monitor Risks	Feb 15 2025	Feb 20 2025
▼ 2.4 Human Resource Man...	Feb 20 2025	Feb 27 2025
2.4.1 Develop Human ...	Feb 20 2025	Feb 24 2025
2.4.2 Team Formation	Feb 24 2025	Feb 27 2025

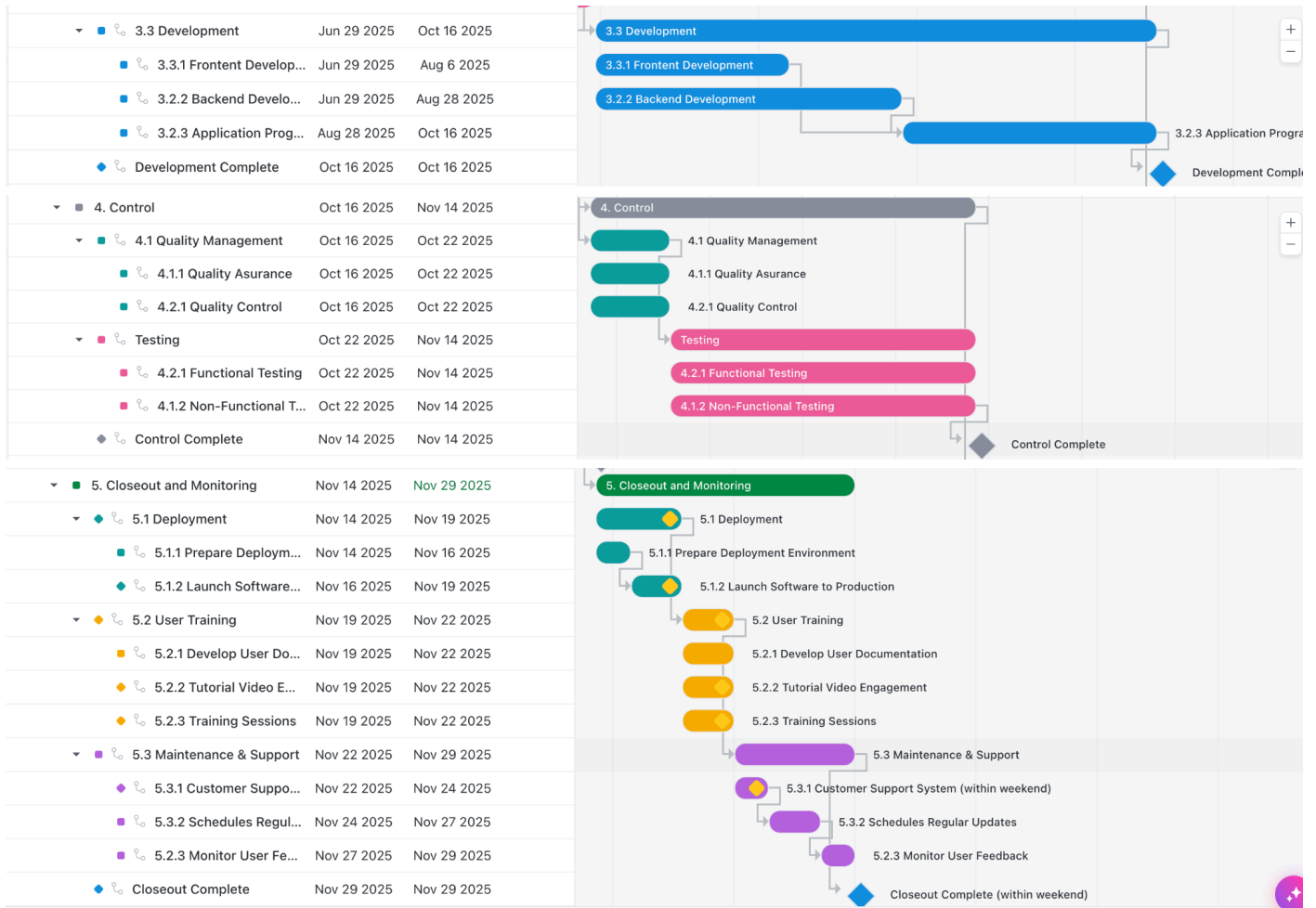


▼ 2.5 Communication Mana...	Feb 27 2025	Mar 3 2025
2.5.1 Establish Comm...	Feb 27 2025	Mar 1 2025
2.5.2 Regular Meeting ...	Mar 1 2025	Mar 3 2025
▼ 2.6 Procurement Manage...	Mar 3 2025	Mar 15 2025
2.6.1 Procurement Ide...	Mar 3 2025	Mar 6 2025
2.6.2 Procurement Plan	Mar 6 2025	Mar 9 2025
2.6.3 Vendor Selection	Mar 9 2025	Mar 12 2025
2.6.4 Contract Negoat...	Mar 12 2025	Mar 15 2025
2. Project Planning Compl...	Mar 15 2025	Mar 15 2025



▼ 3. Development	Mar 15 2025	Oct 16 2025
▼ 3.1 Requirement Gathering	Mar 15 2025	Mar 29 2025
3.1.1 Conduct User Int...	Mar 15 2025	Mar 20 2025
3.1.2 Analyze Competi...	Mar 20 2025	Mar 24 2025
3.1.3 Define Functiona...	Mar 24 2025	Mar 27 2025
3.1.4 Technical Specifi...	Mar 27 2025	Mar 29 2025
▼ 3.2 Design	Mar 29 2025	Jun 29 2025
3.2.1 User Interface (...)	Mar 29 2025	Apr 4 2025
3.2.2 User Experience...	Apr 4 2025	Apr 14 2025
3.2.3 System Design ...	Apr 14 2025	May 30 2025
3.2.4 VR Compability	May 30 2025	Jun 14 2025
3.2.5 Virtual Environm...	Jun 14 2025	Jun 22 2025
3.2.6 Virtual Content ...	Jun 22 2025	Jun 29 2025

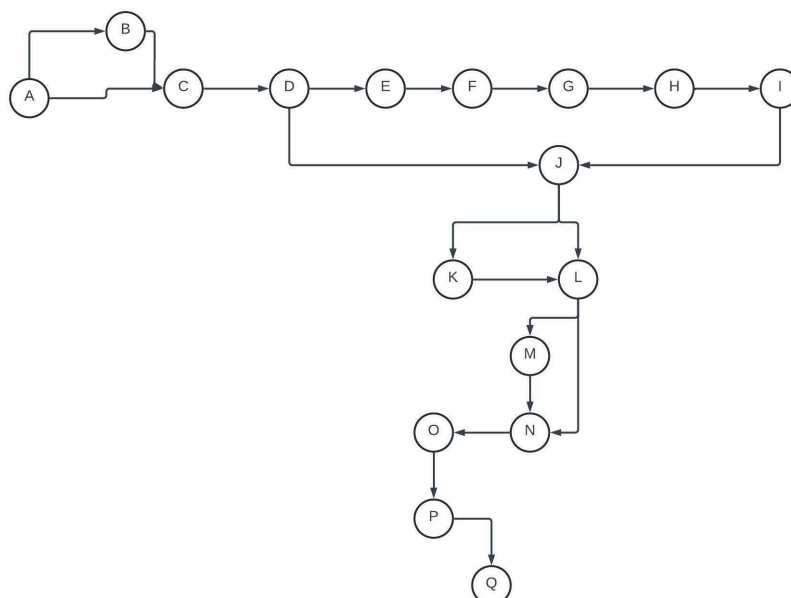




### Activity on Network Diagram (AoN)

Activity	Activity Name	Estimate Duration	Predecessor
A	Project Charter	6 d	
B	Project Management Initiation	11 d	A
C	Market Research	12 d	A,B
D	Project Management Planning	7 d	C
E	Cost Modeling	8 d	D
F	Risk Management	5 d	E
G	Human Resource management	7 d	F
H	Communication Management	6 d	G
I	Procurement management	12 d	H
J	Requirement Gathering	14 d	D,I
K	Design	92 d	J
L	Development	109 d	J,K
M	Quality Management	6 d	L

N	Testing	30 d	L,M
O	Deployment	7 d	N
P	User Training	7 d	O
Q	Maintenance & Support	8 d	L



## 6. Time Management

The project follows a carefully planned time management strategy, with clear milestones, buffer time, and mitigation strategies to address potential delays. The project timeline has been divided into distinct phases with detailed sub-tasks to ensure that each stage is completed within the allocated time frame.

- **Total Duration:** 11 months (January 1, 2025 – November 29, 2025)
- **Key Milestones:**
  - Completion of Project Initiation (January 31, 2025)
  - Completion of Project Planning (March 15, 2025)
  - Beta Release after Development (October 16, 2025)
  - Completion of Control (November 14, 2025)
  - Project Closeout (November 29, 2025)

### Work Breakdown Structure (WBS) - Level 1 and Timelines

No	Start Date	End Date	Duration (Weeks)
Project Initiation	January 1, 2025	January 31, 2025	4
Project Planning	January 31, 2025	March 15, 2025	6
Development	March 15, 2025	October 16, 2025	31
Control	October 16, 2025	November 14, 2025	4
Closure and Monitoring	November 14, 2025	November 29, 2025	2

Each of these phases includes critical sub-tasks, dependencies, and scheduled review points to ensure smooth project progression. The detailed activity breakdown and timing of sub-tasks are designed to minimize risks and allow for flexibility in addressing any unforeseen issues.

## Risk and Contingency Planning

Given the complexity of the project, some of the risks that have been identified include resource shortage, technical hurdles, or scope expansion. To this regard, the following are some mitigation strategies for those risks:

1. **Fast-Tracking:** This involves conducting tasks concurrently that were originally planned to happen sequentially. A good approach comes into play when two activities have little or no dependencies: for example, during development, if Task A were the front-end development and Task B were the back-end development, and these tasks were supposed to be executed sequentially, the usage of fast-tracking would allow for their execution simultaneously, thus reducing the overall duration. However, this may lead to integration complications afterwards. In an AoN diagram, it would be done by crossing over of Task A over Task B in order to accelerate the timeline. In an AoN diagram, this would be depicted by allowing Task A and Task B to overlap to compress the schedule.
2. **Crashing:** Crashing is about allocating more resources, whether people, tools, or budgets, to critical activities to reduce their duration. If one of the critical tasks were running behind schedule-for instance, quality control (Task C)-crashing might involve putting additional testers on the project or otherwise allocating resources in order to catch up. On an AoN diagram, crashing a task that's on the critical path-the path through the project that determines its minimum possible duration have the effect of reducing the total project duration by reducing the time required by that particular activity.
3. **Buffer Time Allocation:** A two-week buffer is added into the development schedule for contingencies and to account for unexpected delays. Delays in certain activities, such as development or Task D, by even one week will be absorbed by the buffer so that the timeline for the whole project remains preserved. This buffer will also afford some leeway during the implementation stage in terms of non-critical activities continuing while critical activities can proceed uninterrupted. Regular project reviews will be performed to oversee the progress of activities and ensure that key milestones are achieved. If a development Task D takes a delay of up to one week, this buffer will accommodate such a situation without shrinking the overall timeline of the project. This buffer serves to allow flexibility for non-critical tasks so that the critical tasks may remain on track. Evaluations will be made periodically with the intent of monitoring progress and realizing key milestones in the project.

## Time Tracking and Tools

1. **Time Tracking Tools:** We will use ClickUp to monitor time spent on tasks and track progress. This will include regular reporting to ensure the project stays on schedule.
2. **Progress Reporting:** Weekly status reports will be shared with stakeholders to ensure visibility and catch any emerging issues early.
3. **Critical Path Management:** The Critical Path Method (CPM) will be use to identify the tasks that are most important which can not have any delay for the successful completion of the project. Careful identification and management of these tasks is important to avoid delays that could extend the overall timeline.

## 7. Cost Modeling

- Detailed budget table

WBS Items	Units / Hrs	Costs/Units/h rs	Subtotal	WBS Level 2 Totals	% of Total
1. Project Initiation			AU\$5796.00	AU\$5796.00	4.06%
1.1 Project Charter	40h	AU\$31.50	AU\$1260.00		
1.2 Project Scope	80h	AU\$25.20	AU\$2016.00		

1.3 Market Research	120h	AU\$21.00	AU\$2520.00		
2. Project Planning			AU\$26275.00	AU\$26275.00	18.39%
2.1 Project Management Planning	200h	AU\$27.30	AU\$5460.00		
2.2 Cost Modelling	60h	AU\$25.20	AU\$1512.00		
2.3 Risk Management	80h	AU\$23.10	AU\$1848.00		
2.4 Human Resource Management	100h	AU\$18.90	AU\$1890.00		
2.5 Communication Management	100h	AU\$21.00	AU\$2100.00		
2.6 Procurement Management	50h	AU\$31.50	AU\$1575.00		
2.6.1 Identify procurement needs	20h	AU\$31.50	AU\$630.00		
2.6.2 Development of Procurement Plans	20h	AU\$31.50	AU\$630.00		
2.6.3 Supplier Selection	10h	AU\$31.50	AU\$315.00		
2.6.4 Contract negotiations	10h	AU\$31.50	AU\$315.00		
2.6.5 Purchase of VR equipment	20	AU\$500.00	AU\$10000.00		
3. Development			AU\$27720.00	AU\$27720.00	19.40%
3.1 Requirements Gathering	100h	AU\$25.20	AU\$2520.00		
3.2 Design	200h	AU\$31.50	AU\$6300.00		
3.3 Development	500h	AU\$37.80	AU\$18900.00		
4. Control			AU\$10080.00	AU\$10080.00	7.06%
4.1 Quality Management	150h	AU\$25.20	AU\$3780.00		
4.2 Testing	200h	AU\$23.10	AU\$4620.00		
4.3 Reporting	80h	AU\$21.00	AU\$1680.00		
5. Closeout and Monitoring			AU\$4410.00	AU\$4410.00	3.35%
5.1 Deployment	100h	AU\$27.30	AU\$2730.00		
5.2 User Training	80h	AU\$21.00	AU\$1680.00		



5.3 Maintenance and Support	120h	AU\$18.90	AU\$2268.00		
6. Staff Wages				AU\$42500	29.75%
6.1 Project Manager	500h	AU\$50	AU\$25000		
6.2 Project team members	500h	AU\$35	AU\$17500		
7. Reserves (20% of total estimate)			AU\$14423.00	AU\$14856.20	16.67%
Total Project Cost Estimate			AU\$14856.20	AU\$14856.20	100%

- Identify cost types and briefly describe

### 1. Tangible Costs

2.6.5 Purchase of VR equipment: The purchase of VR equipment is a one-time, quantifiable expense that can be classified as a tangible cost.

3.3 Development: During the development process, it may be necessary to purchase software tools, hardware equipment or other resources, so these are also tangible costs.

### 2. Intangible Costs

1.3 Market Research: Market research provides information and data that cannot be measured by specific substances, therefore it is an intangible cost.

2.4 Human Resource Management: The long-term effects of staff management and coordination are difficult to quantify, so they are also classified as intangible costs.

4.3 Reporting: The reporting activity does not produce directly visible outputs, except for some information such as meeting materials, but this activity is important for project communication, so it is an intangible cost.

5.2 User training: Training users is similar to human resource management, its effects and impact are also long-term and difficult to quantify, making it an intangible cost.

### 3. Direct Costs

1.1 Project Charter: The project charter needs to be developed well in advance of the start of the project, so this task is directly related to the project, therefore it is a direct cost.

1.2 Project Scope: Defining the scope of a project is directly related to the results produced by the project, and is directly related to the project and therefore it is a direct cost.

3.1 Requirements Gathering: Requirements gathering is an important step in clarifying the requirements of the project; if the project requirements cannot be clarified, the project cannot start, so it is a direct cost.

3.2 Design: Design work includes UI design and software design, so the output results directly affect the project deliverables, which is a direct cost.

4.2 Testing: Testing is an important step to ensure that the output of the design work meets

the project objectives as expected and to verify that the results of the testing of the design work properly, so it is a direct cost.

5.1 Deployment: The final deployment of the project is directly related to the delivery, and will include whether the project can be successfully adapted to third-party software and whether it will run online without lags or bugs, so it counts to direct cost.

#### **4. Indirect Costs**

1. Project Initiation: Project initiation is the preparation for the start of the entire project, including setting project objectives, assembling the team, and developing preliminary plans. They do not directly produce the specific outputs of the project, therefore they are indirect costs.

2. Project Planning: The planning phase involves the development of the overall strategy, schedule, resource allocation, etc. for the project. It is a necessary part of ensuring that the project proceeds as planned, but this phase does not directly generate deliverables and therefore it is classified as an indirect cost.

2.2 Cost Modelling: Cost modelling is used to forecast the financial requirements of a project and to help managers with budgetary control and decision-making. This type of work is primarily a tool to support project management.

2.3 Risk Management: The purpose of risk management is to identify and mitigate potential project risks to ensure that the project proceeds as planned. It is critical to the success of the project and is an indirect cost.

2.5 Communication Management: Communication management ensures the smooth transfer of information between the project team and relevant parties for effective collaboration and decision-making.

2.6 Procurement Management: Procurement management includes vendor selection, contract negotiation and procurement planning.

4. Control: The control phase, which involves monitoring and adjusting the project schedule, cost and quality to ensure that the project is implemented as planned, is a managerial task.

4.1 Quality Management: Quality management is about ensuring that project outputs meet predetermined standards and requirements. While quality management is critical to the success of the outcome, it is primarily a management and monitoring exercise.

5 Closeout and Monitoring: Project closure and monitoring is mainly the acceptance, summary and follow-up of project results, which is the final stage of project management.

6. Reserves: A reserve is used to meet unforeseen expenses or risks that may arise in a project. It is not directly allocated to a specific task but serves as a contingency fund and is therefore an indirect cost.

#### **5. Sunk Costs**

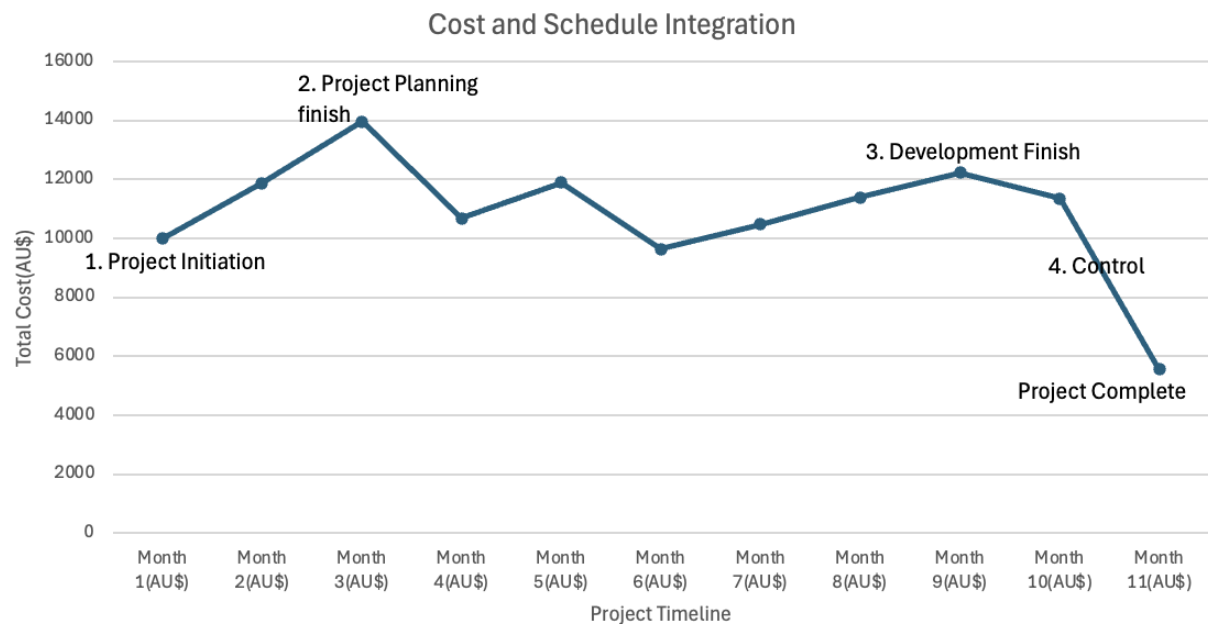
2.6.5 Purchase of VR equipment: Once the purchase of equipment is completed, the expenditure cannot be withdrawn and is therefore a sunk cost.

3.3 Development: The costs and resources invested in the development process, once used, cannot be recovered and are sunk costs.

- Detailed cost baseline

WBS Items	Month 1(AU\$)	Month 2(AU\$)	Month 3(AU\$)	Month 4(AU\$)	Month 5(AU\$)	Month 6(AU\$)	Month 7(AU\$)	Month 8(AU\$)	Month 9(AU\$)	Month 10(AU\$)	Month 11(AU\$)	Total(AU\$)
1. Project Initiation												5796
1.1 Project Charter	1260											1260
1.2 Project Scope	1008	1008										2016
1.3 Market Research	2520											2520
2. Project Planning												26275.01
2.1 Project Management Planning		2730	2730									5460
2.2 Cost Modelling		1512										1512
2.3 Risk Management		462	462	115.5	115.5	115.5	115.5	115.5	115.5	115.5	115.5	1848
2.4 Human Resource Management	378	378	378	94.5	94.5	94.5	94.5	94.5	94.5	94.5	94.5	1890
2.5 Communication Management	190.91	190.91	190.91	190.91	190.91	190.91	190.91	190.91	190.91	190.91	190.91	2100.01
2.6 Procurement Management		315	315	315	315	315						1575
2.6.1 Identify procurement needs		630										630
2.6.2 Development of Procurement Plans			630									630
2.6.3 Supplier Selection			157.5	157.5								315
2.6.4 Contract negotiations				157.5	157.5							315
2.6.5 Purchase of VR equipment					2000	2000	2000	2000	2000			10000
3. Development												27720
3.1 Requirements Gathering	630	630	630	630								2520
3.2 Design			2100	2100	2100							6300
3.3 Development			2362.5	2362.5	2362.5	2362.5	2362.5	2362.5	2362.5	2362.5		18900
4. Control												10080.03
4.1 Quality Management				540	540	540	540	540	540	540		3780
4.2 Testing							1155	1155	1155	1155		4620
4.3 Reporting	152.73	152.73	152.73	152.73	152.73	152.73	152.73	152.73	152.73	152.73	152.73	1680.03
5. Closeout and Monitoring												6678
5.1 Deployment								910	910	910		2730
5.2 User Training									840	840		1680
5.3 Maintenance and Support										1134	1134	2268
6. Staff wages												42500.04
6.1 Project Manager	2272.73	2272.73	2272.73	2272.73	2272.73	2272.73	2272.73	2272.73	2272.73	2272.73	2272.73	25000.03
6.2 Project team members	1590.91	1590.91	1590.91	1590.91	1590.91	1590.91	1590.91	1590.91	1590.91	1590.91	1590.91	17500.01
7. Reserves (20% of total estimate)												23809.8
Total Project Cost Estimate	10003.28	11872.28	13972.28	10679.78	11892.28	9634.78	10474.78	11384.78	12224.78	11358.78	5551.28	142858.88

### • Cost and schedule integration



Several important milestones in the project's life cycle can be seen in this chart, from its inception to its completion. Around AU\$10,000 is spent on the initiation phase of the project. During the planning phase of the project, costs increased to approximately A\$14,000 within two months. During the development and control phase, project costs gradually decreased and stabilised, reaching A\$12,000 in the tenth month. As the project neared completion, the project cost dropped significantly, to A\$5,500 in the final month.

### • Schedule of fund releases

As outlined in the schedule of fund releases, sufficient funds are available before the key milestones start and throughout the project. In addition, it spreads out larger expenses over several months to avoid budget strain, by linking releases to specific tasks, such as the initiation of a project or the start of development. Also included in the schedule are emergency funds for unforeseen costs, which ensures that fund releases remain within budget each month

- **Funding limit reconciliation**

A funding limit reconciliation ensures that project expenditures for each phase of a project do not exceed the budget limit allocated for that period and prevents overspending after the project has been completed. By transferring excess budget from previous months to the current month, this component helps maintain balance by adjusting the allocation of funds when the cost of a given month exceeds the budget. To ensure that the necessary resources are available at each stage and that the set limits are not exceeded, this is done to control the budget for the entire project.

## 8.1 Communication Management I

### Stakeholder Requirements Summary

- **Clear Communication:** Project updates will be shared in plain language(English) to ensure everyone understands the project's progress and changes.
- **Defined Roles and Responsibilities:** We will create a RACI matrix to assign clear responsibilities to each stakeholder.
- **Access to Relevant Information:** Details of project documents and other information will be available on commonly used platforms(Clickup) and ensure easy access for all team members.
- **Involvement in Decision-Making:** Stakeholders will be invited to key decision-making meetings with a view to their input being considered.
- **Feedback Mechanisms:** Feedback forms will be used by the stakeholders and We will establish organized methods for stakeholders can give their opinions and apprehensions.
- **Transparency and Reporting:** Regular progress reports will outline the achievements and challenges faced.
- **Risk Management:** The probable risks will be informed to the stakeholders and the measures we are implementing to alleviate them.
- **The Change Management Process:** A formal procedure will be implemented to modify in scope by promoting transparency.
- **Training and Support:** Training and support of stakeholders for their full involvement in the project will be provided.

### Communication Objectives

#### Ensure Timely Information Dissemination:

- Goal: Project updates and decisions need to be informed quickly as possible to all stakeholders.
- Action: Create a communication schedule that identify when and how updates will be shared using tools and identify the timeline for the communication (e.g., daily stand-ups, bi-weekly reports).

#### Promote Transparency and Engagement:

- Goal: Create an transparency environment where all team members feel motivated and actively engaged throughout the project lifecycle.
- Action: The current project need to get feedback from the stakeholders who can improve with their ideas and comments for the project.

#### Simplify Decision-Making:

- Goal: Provide stakeholders with the data and insights they need to make informed decisions.
- Action: During the timeline, we need to take care of performance metrics, project progress reports, and highlight any urgent issues in regular updates to the corresponding team.

#### Enhance Collaboration Among Teams:

- Goal: Improve collaboration across teams (development, design, QA, etc.).
- Action: Use platforms like ClickUp and Git to centralize documentation and track progress, making it easier for teams to stay aligned and informed when the deadline of the project and the part they are working on.

#### Mitigate Risks and Resolve Issues Promptly:

- Goal: Identify potential risks early and communicate them to the right people for swift action.
- Action: Regular assessments and updates on potential challenges will be included in the risk communication plan which can be easily accessed by the team members during the project timeline.

## 8.2 Communication Management II

Type/list off stakeholder	Level of Interest in project	Description of Interest or Concern	Document Name	Communication Medium	Frequency of communication	Contact person	Communication owner
Project Sponsor	High	Ensure the project is right on track	Project Status Report	Emails, Meetings	Bi-Weekly	Personal Assistant	Project Manager
Project Manager	Very High	Oversees project progress and risks	Daily Standup Reports	Meetings, Clickup	Daily	Personal Assistant	-
Development Team	High	Completing development milestones	Technical Specs, Code Reviews	Clickup, Meetings, git, git pull request	Daily/Weekly	Lead Developer	Lead Developer/ Project Manager
Design Team	Medium	Interface design and user experience	Design Reviews, Mockups	Clickup, Meetings, git, git pull request	Weekly	Lead Developer	Lead Developer/ Project Manager
QA Team	High	Platform stability and bug tracking	Test Reports, Bug Logs	Clickup, Meetings, git, git pull request	Weekly	QA Lead	QA Lead/ Lead Developer/ Project Manager
Marketing Team	Medium	Platform promotion and launch strategy	Marketing Strategy Documents	Emails, Presentations	Monthly	Marketing Lead	Project Manager
End Users (Beta Testers)	Low	Provide feedback on the VR experience	Feedback Forms, Surveys	Email, Feedback Platform	During testing phases	Software Testers	Project Manager
Legal Team	Medium	Compliance with regulations	Compliance Reports	Meetings, Reports	As needed	Legal Advisor	Project Manager
Operations Team	High	Infrastructure and deployment support	Deployment Plans, Logs	Clickup, Email, Meetings	Weekly	Lead Developer/ Project Manager	Project Manager

## 9. Quality Management

### 1. Purpose of The Project Quality Management Plan

The Project Quality Management Plan is designed to ensure that the virtual concert experience in the meta-universe meets the highest standards of user experience, technical performance and engagement. This plan sets out how the virtual events that have been created will be managed, delivered and run. It will also ensure that the stakeholders' experience of the software and their expectations are met throughout the product life cycle.

### 2. Quality planning

#### 2.1 Define project quality

The project will follow the ISO9001 quality management standard, which is a standard set by the International Organisation for Standardisation and relates to quality management systems. The project will also adhere to Metaverse-specific best practices to ensure seamless VR/AR integration and seamless integration with third-party platforms. Our goal is to create realistic avatars and environments using Metahuman technology to give users an immersive and realistic experience.

For stakeholders, including artists, content creators and audiences, high quality means no technical issues that can interfere with a visually immersive and interactive experience. Concert organizers expect performance stability and system uptime of more than 99% to ensure that concerts will run smoothly, even under heavy user loads. Audiences expect realistic avatar interactions, minimal latency during concerts, and high-quality audiovisual effects.

#### 2.2 Measure Project Quality

Key Performance Indicators (KPIs): Quality standards will be measured by the following system performance indicators

- Check uptime/downtime ratio during the event to ensure the reliability of the software.
- Feedback through post-event surveys to measure user satisfaction with avatar interaction, virtual environment immersion, and event flow on a scale of 1-10
- Track latency and responsiveness during user interactions, with the goal of keeping latency to less than 50 milliseconds during high-demand periods.
- Monitor avatar performance in real-time, focusing on the accuracy of facial expressions and body movements during performances, analyze user emotions through expressions and movements and provide feedback to the organizer.

eg. During one of Roblox's live events, latency spikes caused users' dissatisfaction and disengagement. In response, we will use real-time monitoring and server scaling techniques to dynamically allocate resources to ensure that similar issues are proactively avoided during virtual concerts.

### 3. Quality Assurance

#### 3.1 Analyze project quality

We will analyse core data such as incarnation fidelity (using Metahuman), system performance during the concert and user engagement data. Throughout the concert, real-time data on system performance, such as network latency and frame rate stability, will be monitored to ensure consistent quality. Additionally, the survey will measure the user's engagement, focusing on the avatar's experience and the live environment.

After identifying the data to be analysed, we will use statistical methods to analyse data from system logs, performance dashboards and post-event user feedback to identify performance trends. We will also use regression analysis to determine correlations between technical performance (e.g., latency) and user satisfaction to provide insights into key areas of

improvement.

By investigating previous events using VRChat, we found that the server would be often fail during peak usage periods, which affected the overall experience for all the users. Through analysis, we found that areas for improvement were the importance of using a scalable infrastructure and effective load balancing, which we will implement in future concerts to avoid such issues.

### **3.2 Improve project quality**

Using Metahuman technology will reduce the need for expensive motion capture equipment and actors by up to 30%. Furthermore, we will be able to deliver high-quality experiences with fewer resources by optimizing avatar rendering in real-time.

In order to eliminate performance issues such as high latency and unresponsive avatars, we will employ a distributed server architecture that utilizes edge computing. This will ensure that even users in remote locations will experience minimal latency during virtual concerts.

## **4. Quality Control**

System performance, including frame rate, latency, and avatar fidelity, will be continuously monitored in real-time during each virtual concert. These metrics are tracked using automated tools and alerts are triggered when performance drops below acceptable levels (e.g., latency exceeds 100 milliseconds, frame rate drops below 30fps).

In the event of a performance issue (e.g., slow avatar response, high latency), the system will immediately and automatically take corrective action, such as dynamically adjusting server resources or deploying bug fixes mid-concert. We will conduct regular quality audits to ensure that post-event feedback and lessons learned are incorporated into future concerts.

At a virtual concert using Fortnite, we saw a significant drop in frame rate as user traffic surged. By proactively monitoring server performance and dynamically scaling resources, we ensured that similar issues were mitigated at subsequent event

## 10. Risk Management

### RISK REGISTER

Risk No.	Risk Name	Risk Description	Risk Owner	Category	Mitigation Plan	Impact Level (1-5)	Description of Impact	Likelihood of Occurrence	Contingency Plan
1	Users' Data Leakage	User data could be leaked by accidental release or cyberattack.	Project Manager	Legal / Security Risks	Implement encryption, firewalls, regular security audits, and multi-factor authentication.	5	Financial loss, legal penalties, reputation damage, potential lawsuits.	50%	Notify users immediately. Provide credit monitoring and enhance security protocols post-incident.
2	Copyright Infringement	Playing copyrighted music or content without proper licenses.	Project Manager	Legal Risks	Verify all music or content licenses with the legal team and external advisors. Maintain license records.	4	Legal penalties, fines, or project halts due to lawsuits from copyright holders.	70%	Remove infringing music and content immediately. Negotiate settlements and ensure future content is licensed.
3	Regulatory Non-compliance	Fail to follow international data protection laws (GDPR).	Legal Team	Legal Risks	Regular legal audits. Hire legal experts on data protection and GDPR.	4	Suffer from fines and legal action. Loss of user trust.	20%	Reassess data handling practices and update privacy policies. Retrain staff for better compliance.



4	Project Time Overrun	The project finished later than expected.	Project Manager	Schedule Risks	Define a clear milestone. Track progress using project management tools. Allocate buffer time for important tasks.	4	Delayed project launches cause user dissatisfaction.	40%	Reallocate resources to critical tasks. Implement crash development cycles for high-priority tasks.
5	Low Ticket Sales	Ticket sales do not meet expectations.	Market Lead	Market Risks	Conduct market research and conduct targeted advertisements. Monitor KPIs and consider some pre-launch events.	3	Insufficient revenue to cover costs, leading to potential project failure.	40%	Do limited-time promotions. Collaborate with influencers on social media platforms. Adjust pricing strategies to increase sales in the short term.
6	Budget Overruns	The project cost more than expected.	Project Manager	Cost Risks	Conduct detailed cost modelling. Regularly monitor expenses. Establish a contingency budget.	3	Project delays, not following the planned schedule. Can lead to a later fail.	50%	Prioritize critical tasks. Seek additional funding.
7	Poor Project Definition	Unclear scope leads to misunderstandings among team members.	Project Manager	Operational Risks	Select an experienced project manager. Define clear scope in project initiation, document with project management tools.	3	Team members not working in an aligned approach and potential project failure.	20%	Hold regular meetings to clarify and document scope changes. Update stakeholders frequently to any changes.

8	VR Hardware Compatibility	The app may not work with some users' VR devices.	Lead Developer	Technical Risks	Test across multiple VR devices. Update the device compatibility list.	3	Loss of reputation. Reduce the user base. Poor user experience.	50%	Offer 24-hour online user support. Issue refunds to affected users.
9	Server Malfunction	Server may fail under heavy load during ticket sales and live concerts.	Lead Developer	Technical Risks	Implement load testing and scalable cloud infrastructure. Monitor in real time.	2	Users are unable to access concerts or purchase tickets, leading to user dissatisfaction.	40%	Switch to backup servers. Notify users of estimated recovery times. Offer compensation such as credit or free tickets.
10	Project Complexity	Involvement of multiple third parties increases complexity for communication and spread of the latest information.	Project Manager	Operational Risks	Establish clear communication channels and hold biweekly coordination meetings with all stakeholders.	2	Coordination failures leading to project delay, which can cause project setbacks.	40%	Reallocate resources to critical tasks. Use project tracking tools like MS Project to keep all parties aligned.
11	User Experience Failures	Low adoption and retention due to poor user experience.	Design Team	User Risks	Regular UX testing. Gather user feedback to improve.	1	Users dissatisfaction. Reduction on user base and decrease in revenue and future engagement.	30%	Improve the user interface based on feedback. Provide more interactive features. Conduct A/B testing.

## 11. Human Resource Management

Project Roles and Responsibilities	<p><b>Project Sponsor:</b> Provides overall direction and funding.</p> <p><b>Project Manager:</b> Oversees execution and manages the team.</p> <p><b>Lead Developer:</b> Manages development team and technical development.</p> <p><b>Design Team Lead:</b> Oversees user interface and experience design.</p> <p><b>QA Lead:</b> Ensures product quality through testing.</p> <p><b>Marketing Lead:</b> Develops marketing strategies.</p> <p><b>Legal Advisor:</b> Ensures legal compliance.</p> <p><b>Operations Team Lead:</b> Manages deployment and infrastructure.</p>
Required Skills and Competencies	<p><b>Project Sponsor:</b> Leadership, strategic planning.</p> <p><b>Project Manager:</b> Project management, risk management.</p> <p><b>Lead Developer:</b> Software development, problem-solving.</p> <p><b>Design Team Lead:</b> UX/UI design, creativity.</p> <p><b>QA Lead:</b> Quality assurance, attention to detail.</p> <p><b>Marketing Lead:</b> Marketing strategy, communication.</p> <p><b>Legal Advisor:</b> Knowledge of laws, negotiation.</p> <p><b>Operations Team Lead:</b> Operations management, troubleshooting.</p>
Project Team Structure and Reporting Lines	<p><b>Team Structure:</b></p> <ul style="list-style-type: none"> <li>- Project Sponsor</li> <li>- Project Manager</li> <li>- Lead Developer</li> <li>- Design Team Lead</li> <li>- QA Lead</li> <li>- Marketing Lead</li> <li>- Legal Advisor</li> <li>- Operations Team Lead</li> </ul> <p><b>Reporting Lines:</b> All team leads report to Project Manager; Project Manager reports to Project Sponsor.</p>
Staff Acquisition Plan	<p><b>Recruitment Strategies:</b> Looking for employment vacancies from different workforce hiring platforms, or checking LinkedIn as well as other job portals for targeted selection purposes.</p> <p><b>Technical Assessments:</b> Conduct technical assessments and problem-solving tests to evaluate candidate competency.</p> <p><b>Diversity and Inclusion:</b> Opt for recruiting people from all groups with the objective of building a team consisting of various mindsets.</p>
Training and Development Plan	<p><b>Onboarding Program:</b> Bring the new employee on board by giving them the details of the task, materials to work on, and the behaviour expectations of teammates.</p> <p><b>Continuous Learning:</b> Making it mandatory for staff to request and attend training, conferences, or any type of learning platform initiated by the company in the course of their professional practice.</p>

Guidelines for Performance Management	<b>Regular Performance Reviews:</b> Conduct bi-annual performance reviews using the SMART goal-setting framework to ensure clear expectations and measurable outcomes. <b>Feedback Mechanisms:</b> Implement a feedback system where team members can give and receive feedback from peers and managers, encouraging open communication.
Conflict Management and Escalation	<b>Conflict Resolution Strategies:</b> Promote conflict resolution methods for team members to keep away from disputes. The project manager will settle disputes or conflicts as they occur. <b>Escalation Procedures:</b> Identify the guidelines in the organization for the appropriate escalation of resolution where the resolution is addressed through internal means. Any conflicts are to increase the ratio of accountability in problem-solving by recording them and their solutions.

## 12. Procurement Management

### ● Plans

The procurement management plans would provide the outlines of the process to acquire the needs of hardware, software, and services for successful implementation and the scaling of the platform as well as business. The plan should propose all the activities aligned with the objectives, timelines, and budget of the current project so that minimizing risks and maximizing resource utilization can be concentrated on.

#### 1. Identifying procurement needs:

- Hardware: VR headsets (Oculus, HTC Vive), motion capture devices, and high-performance computers to support development and real-time interaction.
- Software: Metahuman Creator for avatar generation, Unity or Unreal Engine for development, 3D modeling tools.
- Cloud Services: Scalable cloud infrastructure (AWS, Google Cloud) to ensure smooth data streaming and storage.
- Technical Support Services: Ongoing vendor support for troubleshooting, upgrades, and performance optimization.

#### 2. Strategies:

- Make/Buy Decisions:

**Buy:** VR hardware (Oculus, HTC Vive), cloud infrastructure (AWS, Google Cloud), and software licenses (Metahuman Creator, Unity, Unreal Engine). These are outsourced to trusted vendors to leverage their expertise and reduce development time.

**Make:** Custom virtual environments and avatars will be developed in-house using the purchased software tools, as the in-house team has the required expertise in 3D modeling and software development.

- Contract Types:

**Fixed-Price Contracts:** These will be used for hardware procurement (e.g., VR headsets, motion capture equipment) to secure predictable costs and mitigate price fluctuations.

**Time-and-material contracts:** applied to cloud services (AWS, Google Cloud) and ongoing technical support. This contract type offers flexibility to scale services up or down as demand fluctuates.

**Service-Level Agreements:** SLAs will be established for technical support services to ensure continuous availability and reliability of the VR platform.

#### 3. Procurement timeline:

Procurement Activity	Start Date	End Date	Dependencies	Remarks
1. Vendor Research and Shortlisting	January 2025	January 2025	Project initiation	Evaluate vendors based on technical needs and cost.
2. RFP/RFQ Issuance	January 2025	February 2025	completion of vendor shortlisting	Issue detailed requests to identified vendors.
3. Vendor Proposal Review & Evaluation	February 2025	February 2025	RFP/RFQ submission by vendors	Evaluate based on cost, reliability, and risk.
4. Vendor Selection and Contract Negotiation	February 2025	March 2025	Proposal evaluation completed	Negotiate fixed-price and time-and-material contracts.
5. Hardware Procurement (VR Devices, Motion Capture Equipment)	March 2025	March 2025	Vendor contracts signed	Required for integration into the development phase.
6. Software License Acquisition (Unity, Unreal Engine, Metahuman)	March 2025	April 2025	Vendor contracts signed	Ensure development tools are in place for the project start.
7. Cloud Service Agreement (AWS, Google Cloud)	April 2025	May 2025	Vendor contracts signed	Ensure scalable infrastructure for

				platform deployment.
8. Technical Support Contracts	May 2025	June 2025	Vendor contracts signed	Establish SLAs for hardware and software support.
9. Delivery and Integration of Hardware and Software	June 2025	June 2025	Hardware/software acquired	Begin integration into the platform development.
10. Testing and Finalization	June 2025	July 2025	Hardware and software delivered and integrated	Conduct initial testing to ensure compatibility.

#### 4. Major suppliers Identification:

- Hardware: Oculus, HTC, Lenovo for VR headsets and motion capture devices.
- Software: Autodesk, Unity, Unreal Engine, and Metahuman Creator for VR development and content creation.
- Cloud services: AWS and Google Cloud for scalable cloud infrastructure.
- Technical Support: Ongoing vendor support for hardware, software, and cloud infrastructure, ensuring smooth operation and quick troubleshooting when required.

#### ● Resource allocation

##### Roles and Responsibilities:

**1. Project Manager:** ensures that all procurement activities are aligned with the overall project schedule. This role coordinates with the Procurement Manager, Technical Lead, and Finance Manager to ensure that all resources are delivered on time and within budget.

Key tasks:

- + Provide oversight of the project's timeline and guarantee that procurement is consistent with critical milestones.
- + Facilitate the integration of procured items by fostering collaboration among teams to prevent bottlenecks.
- + Monitor the overall status of the project and reduce the risks associated with resource delays.

**2. Procurement Manager:** in charge of all procurement actions, including managing relationships with vendors, sending out RFPs and RFQs, and negotiating contracts. This job makes sure that procurement stays within the project's price and time frame. The Procurement Manager will also deal with sellers to settle disagreements and lower risks.

Key Tasks:

- + Coordinate procurement schedules with project timelines.
- + Assess vendors and choose based on technical and economical factors.
- + Oversee contract negotiations for advantageous terms.
- + Ensure timely resource delivery and escalate concerns.

**3. Technical Lead:** Defining technical requirements and overseeing the integration of procured items. Key tasks:

- + Set hardware (VR headsets, motion capture devices) and software (Unity, Unreal Engine, Metahuman Creator) technological requirements.
- + Work with vendors on technical compatibility.
- + Manage all purchases' integration and testing.
- + Verify quality and project standards.

**4. Finance Manager:** keep purchases within budget and monitors payment schedules. Tracking expenses, authorizing purchase orders, and guaranteeing financial transparency throughout procurement are their duties also.

Key tasks:

- + Hardware, software, and services budget should match project needs.

- + Make sure procurement costs fit the budget.
- + Allow vendor payments and monitor project budget.
- + Report procurement finances periodically.

5. **Legal Advisor:** Reviews contracts to ensure they meet the company's legal requirements, mitigates risks by including proper clauses for penalties and performance, and ensures compliance with regulations regarding software licenses and cloud services.

Key tasks:

- + Review and approve contracts with vendors.
- + Ensure all legal clauses related to service levels, warranties, and penalties are included.
- + Provide legal guidance on resolving any disputes or contractual issues.
- + Ensure compliance with software licensing agreements and data protection regulations.

#### **Budget Allocation:**

- AU\$10,000 allocated for hardware procurement (VR headsets, motion capture devices).
- AU\$5,000 allocated for software licenses (Metahuman Creator, Unity, Unreal Engine).
- AU\$8,000 allocated for cloud services and technical support (AWS, Google Cloud).

#### ● **Acquisitions**

##### **1. Vendor selection and evaluation:**

- **Prequalification:** A list of potential vendors will be compiled based on their previous performance in providing VR hardware, software, and cloud services. This list will serve as your prequalification. Industry experience, financial stability, and client portfolio are among the criteria that will be used to prequalify vendors.
- **Technical Evaluation:** Vendors are required to exhibit their capacity to satisfy VibeVerse's comprehensive technical specifications. This encompasses high-performance computing, motion capture devices, and compatibility with the platform (Oculus, HTC Vive) for hardware. Vendors are required to exhibit the security, performance, and scalability of their solutions for software and cloud services.
- **Cost-Benefit Analysis:** The cost-benefit analysis will be carried out for each vendor's proposal, taking into account both the short-term and long-term costs. This encompasses operational expenses, initial acquisition costs, ongoing support and maintenance, and licensing fees. Priority will be given to vendors who provide the most cost-effective solutions while maintaining the highest standards of quality and performance.
- **Support and Warranty:** Vendors will be assessed on the basis of their capacity to offer comprehensive post-sales support, which includes warranties, maintenance services, and updates. Vendors that provide robust support services will reduce the likelihood of technical issues and delays during platform operations.
- **Scalability:** Suppliers must demonstrate the ability to scale their offerings as the VibeVerse platform grows.

##### **2. Contract Negotiation:**

- **Fixed-price contracts:** will be implemented to guarantee cost certainty in the hardware procurement process. This form of contract guarantees prices at the time of signing and safeguards the project from budget overruns or price volatility. Vendors will guarantee the delivery of the specified hardware at the agreed-upon price, with penalties for late delivery.
- **Time-and-Material Contracts:** will enable the flexible scaling of cloud services and software based on actual utilization. This contract type offers the ability to adjust service levels (e.g., cloud storage and streaming capacity) in response to platform growth and user traffic. Vendors will be compensated according to the time and materials consumed, which will guarantee cost efficiency in the face of fluctuating demand.
- **Service-level agreements:** will be a part of contracts for cloud services and software support to make sure a high level of service. These contracts will spell out uptime

guarantees, reaction times for technical problems, and penalties for not following through. For example, cloud service companies must promise 99.9% uptime so that live virtual concerts can go on without a hitch.

### 3. Risk mitigation strategies:

- Vendor Performance Monitoring: Vendor performance will be continuously tracked through regular updates, ensuring adherence to timelines and quality standards via key performance indicators (KPIs) like on-time delivery and support responsiveness.
- Penalties for non-compliance: Contracts will include strict penalties for vendors who fail to meet deadlines or performance standards, with consequences ranging from financial compensation to contract termination and engaging backup vendors.
- Backup Vendors: Backup vendors will be identified for critical components, allowing the project to quickly switch suppliers if necessary, ensuring minimal disruption to the timeline.

### 4. Delivery, Testing, and Integration:

- Hardware Delivery and Inspection: By Week 10, VR headsets and motion capture devices will be delivered and inspected to ensure they meet project quality and performance standards. The guarantee requires quick return of incompatible or damaged items to the vendor for replacement.
- Software Installation and Licensing: By Week 9, Unity, Unreal Engine, and Metahuman Creator licenses will be on the project's development systems. Integration testing will ensure that all software works properly in the platform's environment, focusing on avatar development and real-time rendering.
- Cloud Service Configuration: Cloud infrastructure from AWS or Google Cloud will be established by the end of Week 10. This encompasses the provisioning of scalable server resources, real-time data transmission, and storage. The system will undergo preliminary load testing to guarantee that it can accommodate high traffic volumes, particularly during virtual concerts.
- Complete System Testing and Final Integration: By Week 12, all hardware and software will be incorporated into the development environment for system-wide testing. Compatibility testing will ensure all components work together. This phase will also entail performance evaluation to ensure the platform can meet user demand and streaming needs.

## 13. Team Evaluation

	Group Number: 65				
No	STUDENT_CODE (SID)	FIRST_NAME	LAST_NAME	%Contribution	Sign
1	540349681	Ka Nok Anson	Poon	20%	Poon Ka Nok Anson
2	540331387	Thi Han	Hein	20%	Thi Han Hein
3	530832278	Nho Thanh	Le	20%	Thanh Le
4	540995695	Josua Geovani	Pinem	20%	____Josua____
5	540666223	Haotian	Wang	20%	Haotian Wang
	Total Contribution			100	

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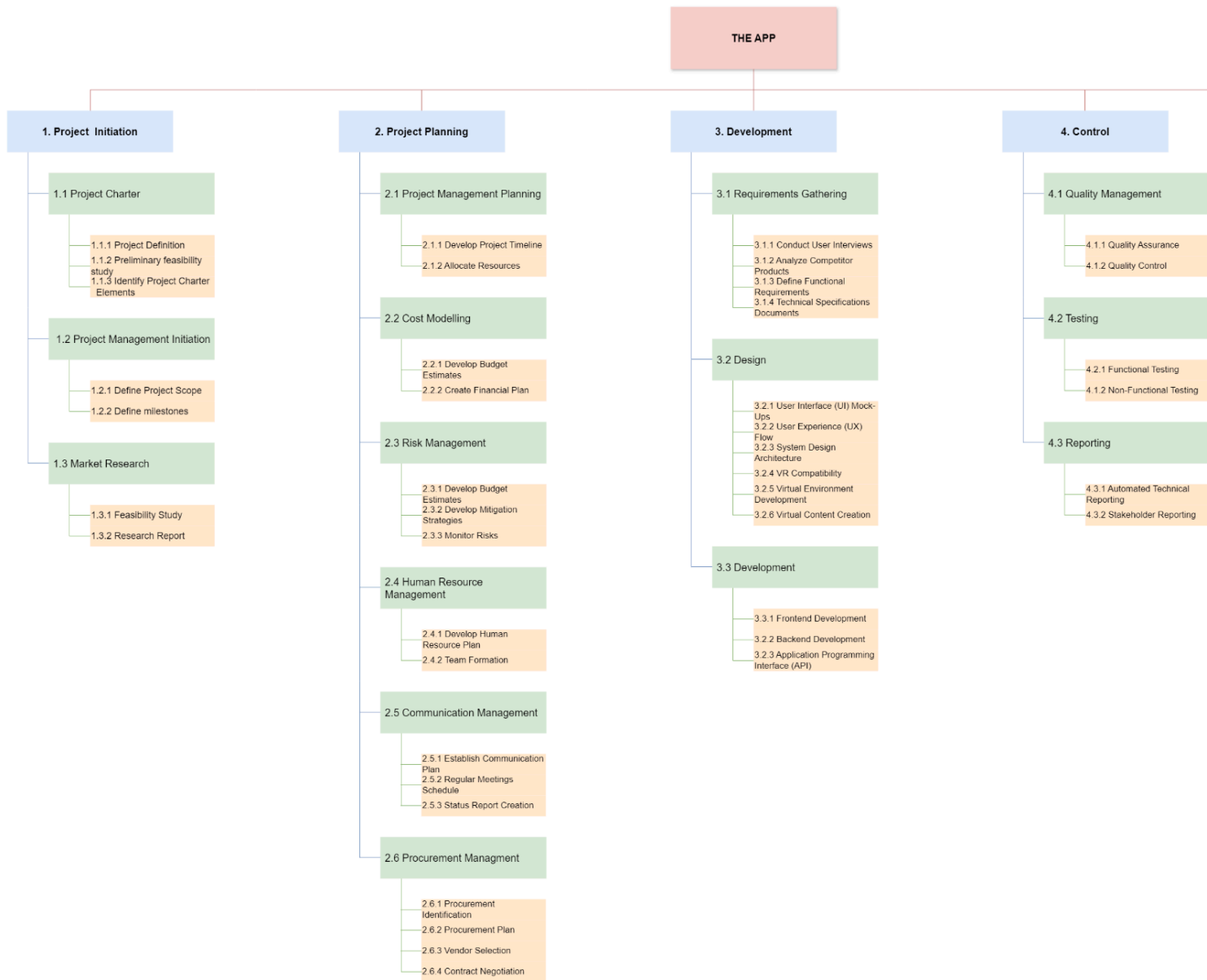
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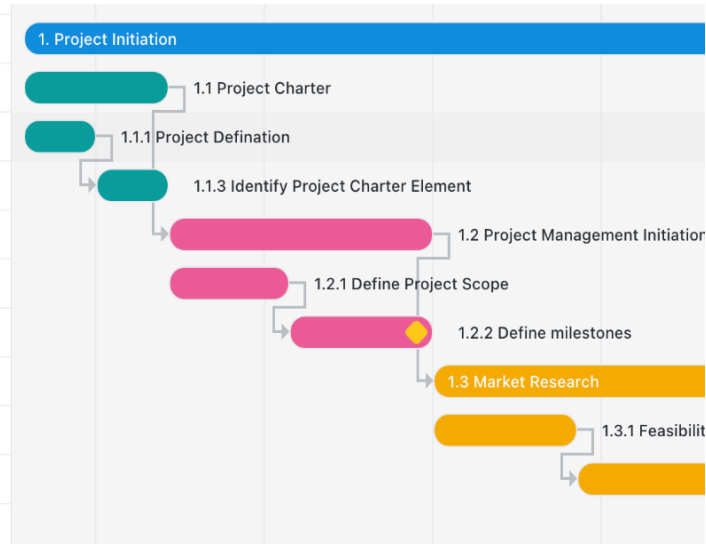
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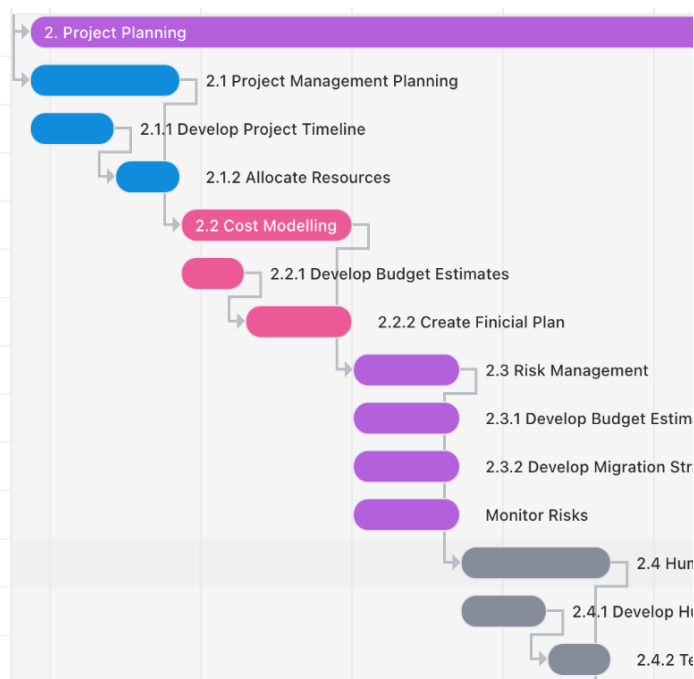
## 15. Appendix



▼ ■ 1. Project Initiation	Jan 1 2025	Jan 31 2025
▼ ■ 1.1 Project Charter	Jan 1 2025	Jan 7 2025
■ 1.1.1 Project Definition	Jan 1 2025	Jan 4 2025
■ 1.1.3 Identify Project C...	Jan 4 2025	Jan 7 2025
▼ ■ 1.2 Project Management I...	Jan 7 2025	Jan 18 2025
■ 1.2.1 Define Project Sc...	Jan 7 2025	Jan 12 2025
◆ 1.2.2 Define milestones	Jan 12 2025	Jan 18 2025
▼ ■ 1.3 Market Research	Jan 18 2025	Jan 31 2025
■ 1.3.1 Feasibility Study	Jan 18 2025	Jan 24 2025
■ 1.3.2 Research Report	Jan 24 2025	Jan 31 2025
◆ 1. Project Initiation Compl...	Jan 31 2025	Jan 31 2025



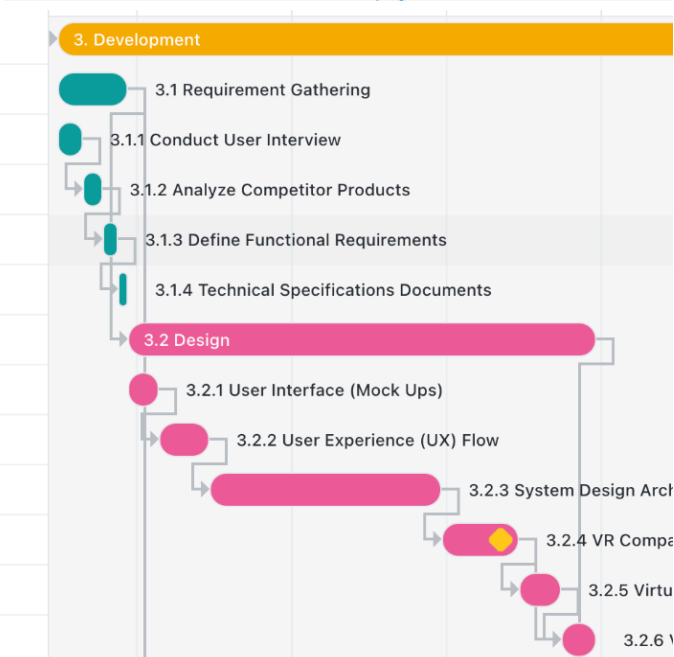
▼ 2. Project Planning	Jan 31 2025	Mar 15 2025
▼ 2.1 Project Management Planning	Jan 31 2025	Feb 7 2025
2.1.1 Develop Project Timeline	Jan 31 2025	Feb 4 2025
2.1.2 Allocate Resources	Feb 4 2025	Feb 7 2025
▼ 2.2 Cost Modelling	Feb 7 2025	Feb 15 2025
2.2.1 Develop Budget Estimates	Feb 7 2025	Feb 10 2025
2.2.2 Create Financial Plan	Feb 10 2025	Feb 15 2025
▼ 2.3 Risk Management	Feb 15 2025	Feb 20 2025
2.3.1 Develop Budget Estimates	Feb 15 2025	Feb 20 2025
2.3.2 Develop Migration Strategy	Feb 15 2025	Feb 20 2025
Monitor Risks	Feb 15 2025	Feb 20 2025
▼ 2.4 Human Resource Management	Feb 20 2025	Feb 27 2025
2.4.1 Develop Human Resource Plan	Feb 20 2025	Feb 24 2025
2.4.2 Team Formation	Feb 24 2025	Feb 27 2025



▼ 2.5 Communication Management	Feb 27 2025	Mar 3 2025
2.5.1 Establish Communication Plan	Feb 27 2025	Mar 1 2025
2.5.2 Regular Meeting Schedule (within weekend)	Mar 1 2025	Mar 3 2025
▼ 2.6 Procurement Management	Mar 3 2025	Mar 15 2025
2.6.1 Procurement Identification	Mar 3 2025	Mar 6 2025
2.6.2 Procurement Plan	Mar 6 2025	Mar 9 2025
2.6.3 Vendor Selection	Mar 9 2025	Mar 12 2025
2.6.4 Contract Negotiation	Mar 12 2025	Mar 15 2025
2. Project Planning Complete	Mar 15 2025	Mar 15 2025

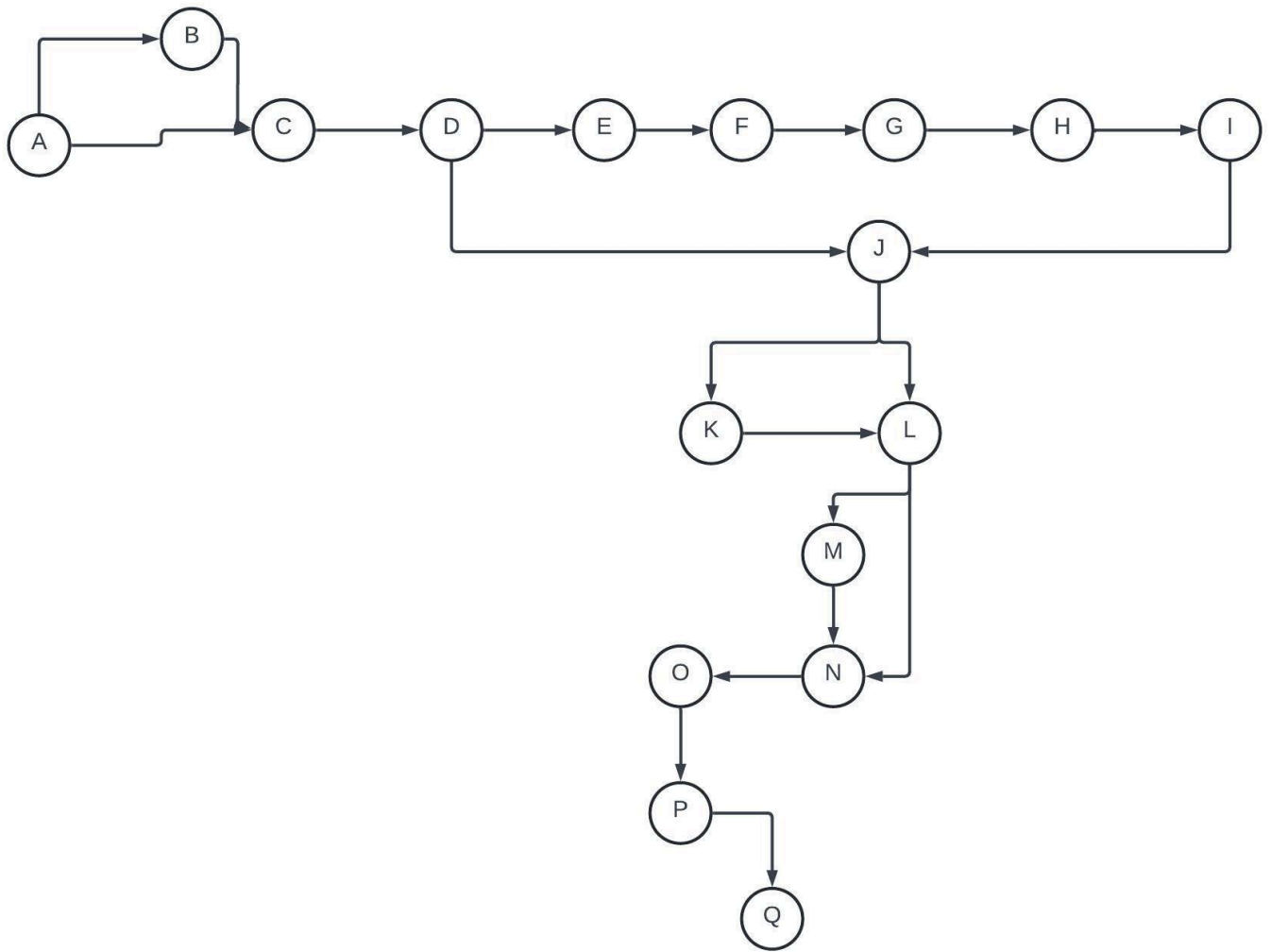


▼ 3. Development	Mar 15 2025	Oct 16 2025
▼ 3.1 Requirement Gathering	Mar 15 2025	Mar 29 2025
3.1.1 Conduct User Interview	Mar 15 2025	Mar 20 2025
3.1.2 Analyze Competitor Products	Mar 20 2025	Mar 24 2025
3.1.3 Define Functional Requirements	Mar 24 2025	Mar 27 2025
3.1.4 Technical Specifications Documents	Mar 27 2025	Mar 29 2025
▼ 3.2 Design	Mar 29 2025	Jun 29 2025
3.2.1 User Interface (Mock Ups)	Mar 29 2025	Apr 4 2025
3.2.2 User Experience (UX) Flow	Apr 4 2025	Apr 14 2025
3.2.3 System Design Architecture	Apr 14 2025	May 30 2025
3.2.4 VR Compatibility	May 30 2025	Jun 14 2025
3.2.5 Virtual Environment Setup	Jun 14 2025	Jun 22 2025
3.2.6 Virtual Content Creation	Jun 22 2025	Jun 29 2025



▼ ■ 3.3 Development	Jun 29 2025	Oct 16 2025
■ 3.3.1 Frontent Develop...	Jun 29 2025	Aug 6 2025
■ 3.2.2 Backend Develo...	Jun 29 2025	Aug 28 2025
■ 3.2.3 Application Prog...	Aug 28 2025	Oct 16 2025
◆ 3.2.4 Development Complete	Oct 16 2025	Oct 16 2025
▼ ■ 4. Control	Oct 16 2025	Nov 14 2025
▼ ■ 4.1 Quality Management	Oct 16 2025	Oct 22 2025
■ 4.1.1 Quality Assurance	Oct 16 2025	Oct 22 2025
■ 4.2.1 Quality Control	Oct 16 2025	Oct 22 2025
▼ ■ 4.2 Testing	Oct 22 2025	Nov 14 2025
■ 4.2.1 Functional Testing	Oct 22 2025	Nov 14 2025
■ 4.1.2 Non-Functional T...	Oct 22 2025	Nov 14 2025
◆ 4.2.2 Control Complete	Nov 14 2025	Nov 14 2025
▼ ■ 5. Closeout and Monitoring	Nov 14 2025	Nov 29 2025
▼ ◆ 5.1 Deployment	Nov 14 2025	Nov 19 2025
■ 5.1.1 Prepare Deploym...	Nov 14 2025	Nov 16 2025
◆ 5.1.2 Launch Software...	Nov 16 2025	Nov 19 2025
▼ ◆ 5.2 User Training	Nov 19 2025	Nov 22 2025
■ 5.2.1 Develop User Do...	Nov 19 2025	Nov 22 2025
◆ 5.2.2 Tutorial Video E...	Nov 19 2025	Nov 22 2025
◆ 5.2.3 Training Sessions	Nov 19 2025	Nov 22 2025
▼ ■ 5.3 Maintenance & Support	Nov 22 2025	Nov 29 2025
◆ 5.3.1 Customer Suppo...	Nov 22 2025	Nov 24 2025
■ 5.3.2 Schedules Regul...	Nov 24 2025	Nov 27 2025
■ 5.2.3 Monitor User Fe...	Nov 27 2025	Nov 29 2025
◆ 5.3.3 Closeout Complete	Nov 29 2025	Nov 29 2025





AON Diagram

WBS Items	Month 1(AU\$)	Month 2(AU\$)	Month 3(AU\$)	Month 4(AU\$)	Month 5(AU\$)	Month 6(AU\$)	Month 7(AU\$)	Month 8(AU\$)
<b>1. Project Initiation</b>								
1.1 Project Charter	1260							
1.2 Project Scope	1008	1008						
1.3 Market Research	2520							
<b>2. Project Planning</b>								
2.1 Project Management Planning		2730	2730					
2.2 Cost Modelling		1512						
2.3 Risk Management		462	462	115.5	115.5	115.5	115.5	115.5
2.4 Human Resource Management	378	378	378	94.5	94.5	94.5	94.5	94.5
2.5 Communication Management	190.91	190.91	190.91	190.91	190.91	190.91	190.91	190.91
2.6 Procurement Management		315	315	315	315	315		
2.6.1 Identify procurement needs		630						
2.6.2 Development of Procurement Plans			630					
2.6.3 Supplier Selection			157.5	157.5				
2.6.4 Contract negotiations				157.5	157.5			
2.6.5 Purchase of VR equipment					2000	2000	2000	2000
<b>3. Development</b>								
3.1 Requirements Gathering	630	630	630	630				
3.2 Design			2100	2100	2100			
3.3 Development			2362.5	2362.5	2362.5	2362.5	2362.5	2362.5
<b>4. Control</b>								
4.1 Quality Management				540	540	540	540	540
4.2 Testing							1155	1155
4.3 Reporting	152.73	152.73	152.73	152.73	152.73	152.73	152.73	152.73
<b>5. Closeout and Monitoring</b>								
5.1 Deployment								909.09
5.2 User Training								
5.3 Maintenance and Support								
<b>6. Staff wages</b>								
6.1 Project Manager	2272.73	2272.73	2272.73	2272.73	2272.73	2272.73	2272.73	2272.73
6.2 Project team members	1590.91	1590.91	1590.91	1590.91	1590.91	1590.91	1590.91	1590.91
<b>7. Reserves (20% of total estimate)</b>								
<b>Total Project Cost Estimate</b>	<b>10003.28</b>	<b>11872.28</b>	<b>13972.28</b>	<b>10679.78</b>	<b>11892.28</b>	<b>9634.78</b>	<b>10474.78</b>	<b>11384.78</b>

# Cost and Schedule Integration

