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**Group – 25**

**Virtual Wedding Planning Concierge**

Submitted To:

Prof. Joumana Dargham

Submitted By:

Habeeb Dashti (40261505)

Snehil Sharma (40267285)

Mohammad Ehtesham Arif (40269948)

# Feasibility Study Document

**Overview:** The feasibility study of a product will help the organization to evaluate whether it will be feasible to create the software solution based on the requirements identified from the market analysis done in the initial phase and whether this project has the potential to be successful in the market. We will evaluate the technical, operational, and economic feasibility of our project “**Virtual Wedding Planning Concierge.**”

## Technical Feasibility:

1. **Evaluation of Technology requirements:** Based on the requirements that we have identified as part of market analysis and the initial proposed solution; we have identified the following technology requirements:

**Programming Language:** Python has been selected as the primary programming language for our software solution because of the extensive library support of python which could help to implement the features like Virtual Reality, recommendations with respect to the decorations for the couples and visualization of the expenditure done as part of cost estimation and budget tracking that the couples might want to focus upon. Moreover, python has an easy syntax which allows rapid application development and doesn't expect a lot of learning curve from the programming language perspective.

**Virtual Reality and Augmented Reality Integration:** We will be using Unity3D, a platform which will allow us to implement the required features of virtual reality in our project since Unity3D provides a good framework on which we can create a great user experience by allowing users to visualize wedding decorations, seating arrangements of the guests, arrangements of snacks and music system inside the wedding venue in a realistic virtual environment.

**Chatbot Development:** Since our users want to interact and make changes to their wedding arrangements at any time of the day (not necessarily the working hours), there is a strong requirement to develop a chatbot that can provide the details of what all has been selected as part of wedding planning and to implement this chatbot we will be using Natural Language Toolkit (NLTK) and TensorFlow libraries for natural language processing with machine learning. These libraries in python offers the features to understand and generate the responses when interacting with the users which is what we want in our software solution.

**Language Localization feature:** Python has support for internationalization and localization (i18n) features with which the platform will be available for users in specific demographic regions so that the language understanding is not a barrier for our customers. The Flask-Babel extension will enable our product to support regional

languages and it is widely used in the industry, so it is well tested for the required functionality.

**Weather Integration:** OpenWeatherMap API can be used to retrieve real-time weather data and forecasts since we as a product do not want our customers' special day to be spoiled because of bad weather and this **OpenWeatherMap API** works on pay as you use model and it provides special integration for the products who will be using them in the long term and this will enable us to send alerts and recommendations of change to our users based on their selected wedding date, time and venue.

**Cost Estimation and Budget Tracking:** Python has immense support for libraries like NumPy and pandas for implementing the cost estimation and budget tracking features. These libraries will help us to do the personalized data analysis for our customer and also show the visualization of their budget, which will allow users to track their wedding expenses in an easy to read and understand format.

**Deployment on AWS Cloud:** We will be utilizing Amazon Web Services (AWS) for hosting our product since it will be easy for the organization to scale the solution when the product will be utilized extensively in the market, and we want to make sure that reliability is important from a software's perspective and AWS provides all these features. Amazon EC2, Amazon RDS (for databases), Amazon S3 (for object storage), Amazon CloudFront (as a CDN) can be used for reliability, scalability, and storage in the long term to scale the solution globally.

## 2. Assessment of Feasibility:

- We have evaluated the selected programming language, ways of storing information, ways of deployment with respect to the compatibility, reliability, scalability, and security of our product and these are compatible with the requirements of our Virtual Wedding Planning Concierge project.
- There is a requirement (from the product perspective) and the availability (from the market perspective) of skilled developers who have experience in Python, Unity3D, NLP and deploying the software solution on cloud environments.
- The chosen technologies integrate well with the selected programming language (Python) and non-functional requirements like scalability, reliability, security are all in the hands of a single Cloud Environment which is having the best resources in the market (AWS) which will help us in having a seamless integration.
- Overall, from the perspective of technical feasibility our software solution is feasible to be implemented and has the potential to meet the expectations of our customers in the wedding planning domain.

**Operational Feasibility:** The study of operational feasibility will help our project in understanding how our upcoming software solution “Virtual Wedding Planning Concierge” will integrate in the market smoothly considering the adoption challenges from the perspective of customers.

1. **Process Integration:** Our software solution will integrate seamlessly into the market by providing easy to integrate workflows for both the customers as well as the vendors as we will be providing a centralized platform for managing all the different aspects of wedding planning from budgeting to coordination between vendors, from selecting decorations to suggesting an effective seating arrangements which will improve the overall operational efficiency of the current market.
2. **Ease of User Adoption:** The primary objective of our product will first be to create a friendly user-interface and intuitive design which will be very easy to understand both from the couples getting married and vendors who will be willing to sell their services making sure that the stakeholders who are not even from technical background can also use the software solution. We will be providing training materials and customer support service to ensure smooth onboarding of the new vendors.
3. **Improved Communication and Collaboration:** The product must make sure that there is always a reliable and transparent communication between different stakeholders which include the couples and the vendors who will be offering their services. Every operation done via chat bot, or any other requirement specified by the customers should be logged and maintained till the completion of the event and even after that for a trustworthy business. Our solution features such as real-time chat, tasks assignment, and document sharing (including bills) will improve collaboration between stakeholders.
4. **Data Management:** Since our product will be handling a lot of data per customer for wedding planning which includes budget, guest lists, vendor contracts and timelines, we will be implementing data management features like data backup, chat backups and version controlling, and our selected cloud vendors (AWS) will maintain our data integrity and provide us fast accessibility which will help us in improving operational reliability.

## **Potential challenges and advantages in the context of operational feasibility**

### **Challenges:**

1. **Resistance to change:** Some users and wedding planners will be used to using existing system in the market and might not want to adopt new technologies or they might have started feeling comfortable in their existing environment and making them change to a new system will be a major challenge.
2. **Training Requirement:** There will be a need to provide training and consistent to the stakeholders in particular the vendors since they might not be knowing how to list their product and services on our software solution and if enough training will not be

provided to them, they might end up not using our software solution which will impact our product in a negative way.

3. **Data Security Concerns:** Since couples will be sharing the details of their guests to our product as well as they might be sharing their sensitive details like their address, contact numbers, they might want to make online payments on our platform in the future, so we as a product will have to be compliant with the data protection regulations by making sure that even if we are storing data on the reliable and secure cloud platforms, we must be storing the data by encrypting it before storing.

## Benefits:

1. **Increased Efficiency and improved user experience:** Our solution will streamline the wedding planning process for both users and planners and will reduce the manual efforts of visiting the planner and finalizing the things, rather everything will be decided online in a very secure and reliable way which will improve the wedding planning experience of the user.
2. **Data Driven Insights:** Our solution's ability to present the data in the form of graphs and charts will help our customers to have better insights of their spendings. Moreover, there is a scope of creating a separate interface for vendors where they can check the tasks they have completed and how much they have spent while doing those tasks and can analyze their profit margins in the business.

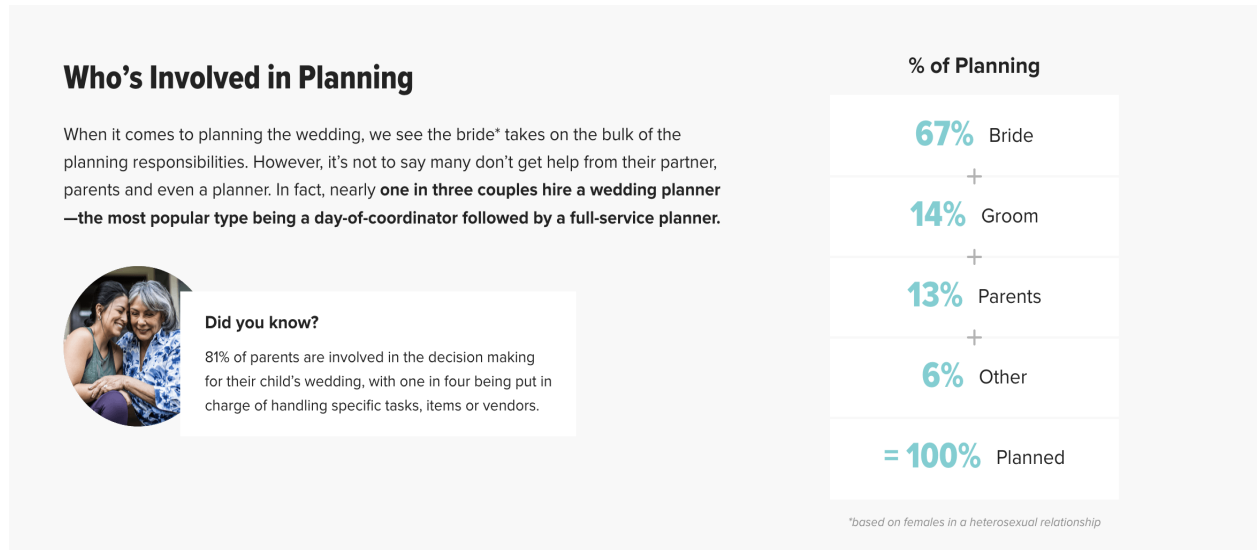


We can clearly see from the above report that on an average couples have the budget of around \$23000 but they end up spending \$30,000 because of less knowledge of where they are spending their money. Our solution will help the customers to keep track of where they are actually spending their money.

Source: <https://go.weddingwire.com/newlywed-report/2020>

3. **Scalability:** Our solution's cloud-based architecture will enable seamless scalability to accommodate growing customers and vendors in different parts of the world which will increase our destination weddings' business which will help us a product in capturing the market.

4. **Enhanced Customer Experience:** By providing personalized recommendations, weather alerts and virtual reality features will improve the customer experience and features like chat history and tracking action items will make our platform more trustworthy from the perspective of customers.



We can visualize from the above statistics that the couples (Bride + Groom) along with their parents are heavily involved in the wedding planning activity and making them satisfied will make sure that there are high chances of succeeding our product.

**Statistics from:** <https://go.weddingwire.com/newlywed-report/2020>

By addressing these challenges and leveraging these benefits, our product will be able to integrate well in the existing wedding planning market and excel operationally as well which will be beneficial for couples as well as planners.

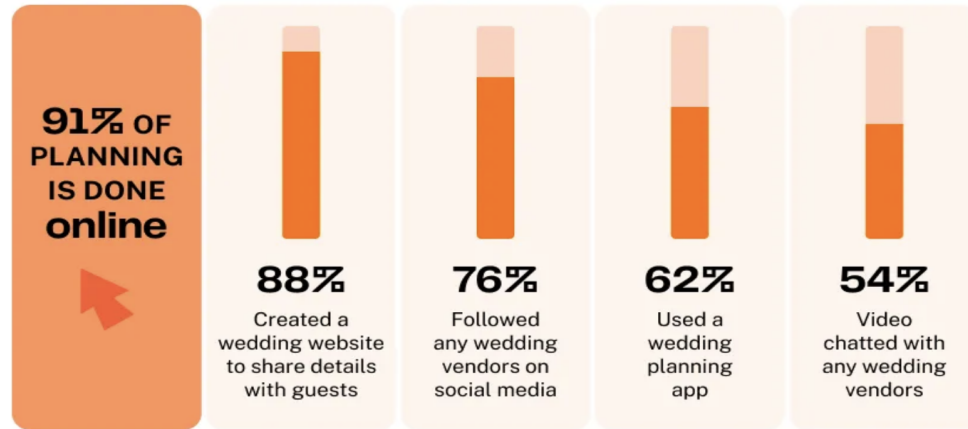
**Economic Feasibility:** The study of economic feasibility of our product Virtual Wedding Planning Concierge will help us understand if it financially feasible for the organization to create such a big software solution considering in mind the return on investment of the product.

#### **Estimation of Economic Viability:**

1. **Market demand analysis:** A lot of market research has already been done which shows that trend of the customers towards the online wedding planning is increasing day by day which increases the feasibility of our Virtual Wedding Planning product as we want to leverage the technology to help our customers plan their weddings.

# Planning Online

How the evolution of tech continues  
to aid in wedding planning



Source: <https://www.theknot.com/content/wedding-data-insights/real-weddings-study>

The above statistics clearly shows that in the current world 91% of the wedding plannings are done online whether it is about following a wedding vendor on social media, or using a wedding planning website or application, or doing an online paid video chat with wedding vendors.

**2. Revenue Potential:** Our product based on the decision taken by management will introduce the following ways of generating revenue:

- **Subscription Model:** The primary revenue stream will be the subscription fees that we will be taking from the users who will be accessing our premium features and services offered by the platform which includes virtual reality visualization, data driven insights for budgeting and weather alerts. Pricing strategies will be done based on the market standards to launch product as competitive based on the market condition.
- **Vendor Partnerships:** Additional revenue will be taken based on commission on sales from the vendors that will be using the data of users of our platform and who will be selling their services using our platform. If they create a long-term partnership with the product, then the charges per sales will be less as compared to temporary vendors.
- **Advertising Revenue:** We will be opening the doors for the advertisers to target the engaged couples if they want to sell their honeymoon tickets, want to show case their hotels for honeymoons or other arrangements of travelling and we will charge them for the time they will be running their ads on our platform.

**3. Cost Analysis:** This section will provide the items on which the organization will be spending major amount. A detailed analysis has been done in the Cost Analysis section.

- **Development Costs:** Initial cost will be majorly because of required resources for the software development activities, design, testing and devOps. Organization first needs to invest upon skilled developers and testers for the efficient product development, for great user experience and a fault tolerant system to ensure that the quality of the software is as per the Service Level Agreement done with the stakeholders.
- **Operation Costs:** Organization will have to invest money in the infrastructure in particular the services of AWS for servers, databases, caching and CDN's along with the storage and security of data in services like AWS S3.
- **Marketing Cost:** A substantial amount will be invested in doing the marketing, to acquire the customers for the product and create hype about the product in the market for better growth upon the launch of product.

**4. Return on Investment (ROI):**

- **ROI Projection:** Based on the features that we will be providing, revenue model as discussed in the above sections, a decent Return on Investment is expected from the product, and it will become even more clear when the sales of the product will start post its launch in the market.
- **Payback Period:** This metric is very important from the perspective of investments that the invested amount will be recovered from the product in how much duration. Since the organization is expecting a good return on investment, then it is high likely that the payback period will be small and the company will be able to recover the initial spent investment quickly.

**5. Alignment with business objectives:**

- The economic feasibility of our product is aligning with the objectives of our project, which includes maximizing the value for money to the customers, achieving sustainable growth, without burning a lot of money and having a good return on investment.
- By doing a strong financial planning, our product is aiming to achieve long term sustainability in the market which will create value for stakeholders, upcoming investors and all the customers of our product.

This economic feasibility study helps us to understand that our product is economically viable to be launched in the market, it will generate good revenue because of its features, and will deliver a good return on investment to the investors and to the organization.



## Solution Proposal

The Virtual Wedding Planning Software solution is designed to improve the wedding planning experience for both couples and vendors by integrating the advanced technology tools such as virtual reality, machine learning and real time communication which will address the challenges that the customers are facing in today's world for their wedding planning and their businesses from the perspective of vendors. Our software solution will be including the following features based on the market analysis done in the previous steps to gain the attention of the customers and to compete in the merchandise:

1. **Virtual Reality and Augmented Reality Integration:** We will implement augmented and virtual reality features in our project so that the customers can visualize how their selected decoration will look at their wedding venue, how the guests and catering would be seated, and organized respectively, which will enhance the ability of the customers to visualize their wedding.

**Scenario:** Sarah and James are a couple who want to visualize their wedding venue with all the decorations.

**Use-Case:** Sarah selects a wedding venue from our platform and applies different decorations offered by the vendors. Using virtual reality, they can now see how their décor options will look on their selected venue which will help them to make informed decisions.

**Outcome:** Sarah and James are able to visualize their wedding day and are confident on the decoration they have chosen within their defined budget.

2. **Recommendation Systems:** We will implement the recommendation systems by using machine learning algorithms which will use the existing trends in the market for instance the decoration used in the weddings of celebrities which couples might want to follow and include in their weddings in their defined budget.

**Scenario:** Sarah and James visited our platform and got overwhelmed by the large number of vendors and so many offerings that they are providing.

**Use-Case:** The platform understands the preferences of Sarah and James and start recommending them the most suitable vendors in the market for catering, photography and entertainment.

**Outcome:** Couple got good recommendation from the platform and has eased their problem of choosing the right vendor providing good offerings for their wedding.

3. **In-App Communication History:** A lot of times whatever was decided between the customer and the providers is not present on the day of the wedding and there is no way with which that communication can be captured since that communication might have

happened on call. Thus, we will provide all the in-app communication history features where everything will be logged and customer-provider both will provide their consent if the same thing is not present on the day of the wedding, compensation will be given to the customer which will build trust on the software solution.

**Scenario:** Sarah and James are talking and interacting with multiple vendors for the activities related to their wedding day.

**Use-Case:** Sarah used our platform to send messages, images and discuss details with vendors and make decisions.

**Outcome:** All the decisions, communication and data exchanged is logged in app communication history which reduces the chance of any confusion on the wedding day.

4. **Integration with Social Media Platforms:** We will provide our users the ability to share their wedding updates, trend hashtags, and premium content on social media with their friends and family.

**Scenario:** Sarah and James want to update the highlights, wedding invitations on social media platforms to share with their friends and family.

**Use-Case:** Platform allows Sarah to create beautiful digital wedding invites using the templated provided on our platform and share them on social media.

**Outcome:** Couple increase their social media engagement, generates lot of excitement, and include everyone as part of their wedding.

5. **Language Localization:** We will provide language localization support in regional languages in countries where there are a variety of languages so that language doesn't become a barrier for users who are not aware of global languages and can easily plan their weddings in the language of their choice.

**Scenario:** Sarah's family speaks another language than English and they too want to understand and enjoy the wedding planning process along with the couple.

**Use-Case:** Sarah shares the insights and highlights of the decisions taken with her parents in their localized language using a URL generated at the website.

**Outcome:** Sarah's family also started feeling confident for the big day and appreciates the decisions taken by the couple.

6. **Weather Integration:** Our software solution will automatically send alerts to the customers about adverse weather conditions such as chances of snowfall or rain which might impact their wedding plan and will also recommend them to change their arrangements in a way, for instance, relocating catering inside the wedding hall for a better wedding on the day if it is planned to set up outdoor before.

**Scenario:** Sarah and James are planning an outside open-weather wedding and their decoration is heavily dependent on weather conditions.

**Use-Case:** The platform automatically analyzes the criticality of weather conditions for their wedding day and monitors the weather very closely if it is going to be worse.

**Outcome:** Sarah and James get updated forecast for the date and location of the wedding in the form of alerts which helps them to make changes before the wedding day if the condition is going to be bad.

7. **Cost Estimation and Budget Tracking:** We will provide a better user experience on the cost estimation and budget tracking window such that the recommendations are also updated if user updates their budget and helps them to visualize how much of their total budget they have spent and where they have spent.

**Scenario:** Sarah and James want to stay in their selected budget and do not want to overspend on the wedding.

**Use-Case:** Sarah uses the platform budget tracking and expense visualization tools to track their spending and how much budget they are left with.

**Outcome:** Couple can make informed decisions and if they want to spend more, they can update their budget on the platform and all their recommendations will be updated accordingly.

8. **Virtual Assistant for Personalized Guidance:** We will implement an intelligently trained virtual assistant which will learn how to converse based on the queries of the customers and will answer during employee off hours. It will make changes to the budget, select vendors as per the customer's instructions, and log everything in the communication history as proof.

**Scenario:** Sarah and James have certain questions for some vendors, and they want to get their queries resolved outside of the working hours.

**Use-Case:** They interact with the platform's virtual assistant and input their queries which will help them to get the answers of their queries or can automatically schedule calls for the vendors during the next working hours.

**Outcome:** Sarah and James got immediate assistance as well as hassle free call scheduling with the service providers.

**Benefits and Impact:** Our software solution will provide numerous benefits to its customers and subscribers as well as to the advertisers:

1. **Improved Collaboration:** We have streamlined the collaboration between engaged couples, vendors, and individual service providers to come on a single platform and sell/opt for the services based on their preferences for their wedding.
2. **Personalized Guidance:** Using machine learning algorithms, we will personalize the guidance mechanism for the couples so that they can use the recommended decorations and venues based on their budgets. AR and VR features add a cherry on

top of the cake by allowing users to visualize whatever they have opted for their wedding.

3. **Efficient Resource Management:** The software solution helps the couples to use their resources efficiently through the features of budget management, vendor selection, music selection, and catering management where they will also be able to see the ratings of the previous customers given to the vendors, DJ, musicians, etc.
4. **Improved Accessibility:** By providing a trained virtual assistant we made the solution even more accessible to busy customers who might want to plan their weddings at the end of their day and to clients who are from a different location and time zone. Irrespective of the time and location, the self-training model will improve the user experience of upcoming customers based on the current queries. Moreover, by including language localization, we have tried to decrease the language barrier for the customers.
5. **Increased Trust:** Implementing the logging functionality of all the conversations and the acceptance of those tasks by both the customer and service provider builds trust in the customers in the software solution. Transparency is the key, and it offers a chance for the customers to have compensation claimed from the vendor who didn't do the logged tasks.
6. **Automatic Risk Management:** In case of unexpected or unwanted situations like bad weather, snowfall, or rain showers, our weather support will generate notification alerts on high priority which will help the customers mitigate the risk and an automatic suggestion for the changes to be done concerning decorations or catering, provides the customer a stress-free experience with the software solution.

## Virtual Wedding Concierge Project Plan (WBS)

### Objective:

The primary goal of our software solution is to create a Virtual Wedding Planning Concierge. This software aims to make planning weddings easier for couples, as well as local and destination wedding planners, vendors, and service providers. We'll achieve this by using cutting-edge technologies such as Virtual Reality (VR), Augmented Reality (AR), Artificial Intelligence (AI) and Machine Learning (ML). These tools will help tailor the planning process to each couple's preferences, making it smoother and more efficient.

However, to make the process of building such an idea hassle free, we need a good planning. It is critically important to generate a plan that is do-able and time constrained. Our project planning will define the approach, data collection, current approximate plan by WBS, SLA and software engineering model.

### **Declaration of Planning:**

The Project planning inputs for the chosen approach of the Virtual Wedding Concierge software solution are mentioned below: -

- **Approach**

For our software solution, we would be using “*bottom-up*” approach to plan as we are following iterative method of working on the project.

Here, we calculate the time of individual tasks, group of tasks in phases and sum up the total time required to complete the planned project timeline.

- **Data Collection gathering requirements and analysis**

The current plan is made according to the data available currently, it is flexible to adapt according to the more accurate data available in the future. In bottom-up approach, we need software requirements to estimate how much time will be taken to develop the product. Project planning consists of risk, resource, task, effort estimation, cost estimation, communication, configuration, tool, supplier, quality, and scope planning.

For our software solution, we need to gather data about project scope, AR, VR, AI, ML, VA chatbot, vendor planning, ML recommendations system, logging communication in database, weather forecasting and SLA.

- **Service Level Agreements**

Plan to create a ticket logging system for taking customer request, resolving issues, fixing bugs, working with repeating issues that become a problem, etc., to keep customer experience purely seamless.

- **Software Engineering Model**

Use appropriate Software engineering model such as Agile, Sprint, Waterfall, etc., to define development strategy and implementation of tasks accordingly.

In our Software Solution, we are using Iterative methodology and henceforth, specifically choosing to work with “*Agile Development Model*”.

The Project planning potential outputs for the chosen approach of the Virtual Wedding Concierge software solution are mentioned below: -

- **WBS Structure**
- **Scope Management**
- **Tools Management**
- **Start Date**
- **End Date**
- **Risk Management**
- **Supplier Management**

- **Configuration Management**
- **Communication Management**
- **Defect Prevention**
- **Project Duration**
- **Project Cost**

#### **Project Timeline:**

- **Phase 1: Requirements Gathering and Analysis**

The duration required for this task is 1 month.

**Task:** Understanding what's needed by talking to everyone involved and write down what they want.

For example, Completion of stakeholder interviews and requirement documentation.

- **Phase 2: Design and Prototyping**

The duration required for this task is 2 months.

**Task:** Planning on how the software would look and work by getting everyone to agree on the User Interface (UI) and how people will use it.

For example, Approval of design prototypes and user experience flows because it stands as at most important aspect in any project that would build trust and provide a premium experience for the user to stick around.

- **Phase 3: Development**

The duration required for this task is 4 months.

**Task 1:** In this part, we need to get the basic setup done and make sure everything is ready to work.

For example, Completion of core functionalities.

**Task 2:** Add the unique solution features of our software solution project.

For example, Integration of VR, AR, AI, Chatbot and Machine Learning features.

- **Phase 4: Testing and Quality Assurance**

The duration required for this task is 2 months.

**Task:** Check everything is working right by making sure everything does what it's supposed to do and fix any mistakes.

For example, Successful completion of all test cases and resolution of defects.

- **Phase 5: Deployment and Implementation**

The duration required for this task is 1 month.

**Task:** Release the software and put it out there

for people to use.

For example, Software goes live and is available for use.

- **Phase 6: Post-Implementation Support and Maintenance**

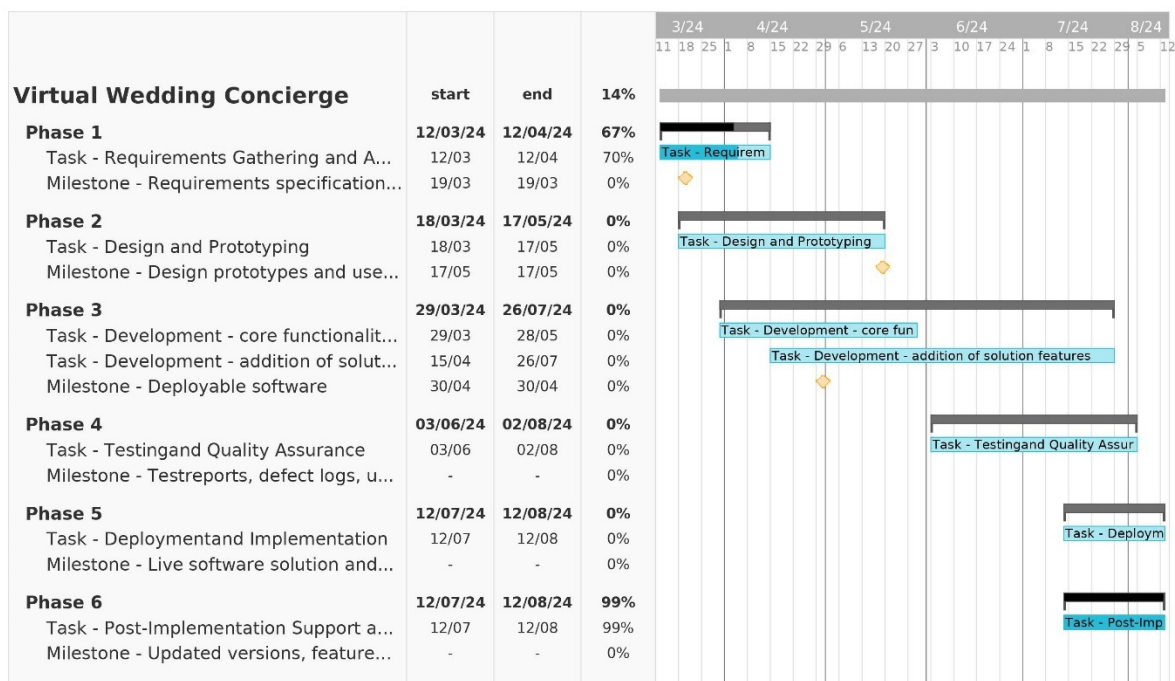
The duration required for this task is always and yet to be more specific in details once the project is close to completion.

**Task:** Keep it running smoothly by updating and improving the software based on what people say they need.

For example, providing regular updates and feature enhancements based on user feedback and changing market demands.

### Gantt's Chart:

The Gantt's Chart below specifies the activity bar and the Phase 6 is going to run forever after deployment. Hence, the end date for it is negligible and the start date is from Beta launch.



### Milestones and Deliverables:

- **Phase 1 Deliverables:** Requirements specification document, stakeholder analysis report

At the end of this phase, we'll have a detailed document outlining all the requirements for the software. This will include what everyone wants and needs from the system. Additionally, we'll provide a report that analyzes the stakeholders involved, identifying their interests and expectations.

- **Phase 2 Deliverables:** Design prototypes, user experience flowcharts

We'll present prototypes that showcase how the software will look and function. These prototypes will give a clear visual representation of the user experience through flowcharts that outline each step of interaction with the system.

- **Phase 3 Deliverables:** Deployable software with core functionalities, VR/AR and machine learning integration

This phase will result in a working version of the software with its core features fully developed. It will also include the integration of VR/AR capabilities and machine learning functionality to enhance the user experience and functionality.

- **Phase 4 Deliverables:** Test reports, defect logs, updated software with bug fixes

We'll provide reports detailing the results of our testing efforts, including any issues encountered and how they were addressed. Additionally, we'll maintain logs documenting any defects found during testing, along with updates to the software that fix these issues.

- **Phase 5 Deliverables:** Live software solution, deployment documentation

The software will be officially deployed and made available for use. Alongside this, we'll provide documentation outlining the deployment process, ensuring that others can understand and replicate it if needed.

- **Phase 6 Deliverables:** Updated versions, feature enhancements and resolved support tickets

Continuous improvements will be made to the software based on user feedback and evolving needs. We'll release updated versions with new features and enhancements, as well as resolving any support tickets or issues that arise post-deployment.

#### **Resource Allocation:**

- **Development Team:** Allocation of software developers, UI/UX designers, and QA testers across all phases with more intensive involvement during the Development and Testing phases.
- **Project Management:** Continuous involvement of a project manager to oversee progress, manage risks, and ensure milestones are met.



- **Stakeholder Engagement:** Regular engagement with stakeholders such as engaged couples, wedding planners, and vendors throughout the project to gather feedback and validate features.
- **Technology Resources:** Utilization of cloud services, development tools, and testing environments. Critical dependencies include the availability of VR/AR technology and machine learning expertise.

Critical dependencies include the timely completion of each phase to ensure subsequent phases are not delayed, the availability of specialized technology and expertise for VR/AR and machine learning features, and the active participation of stakeholders for feedback and testing.

### **WBS:**

In WBS planning, all project tasks are provided with a start and end date. When all tasks are listed in plan, it becomes difficult to identify which task is dependent on another task, which task is on critical path, which task signifies milestone, etc. It is necessary to group the tasks that are part of the same phase and put them under a pseudo task with the name of the phase. Therefore, the last tasks in each pseudo task will be the milestone task. WBS becomes easier and manageable because all tasks pertaining to the same group can be expanded or collapsed at the parent task. Therefore, this is exactly the structure our plan is following.

## **Risk Assessment and Mitigation**

**Technical risks:** These risks are characterized by low or moderate levels of interactivity and can be dealt with through standard operating procedures to resolve the problems.

1. **Compatibility Risks:** Compatibility problems are likely to arise when you combine different technologies like Python, Unity3D, NLTK, and TensorFlow. One may experience such compatibility issues due to version mismatches, library incompatibility, or specific platform limitations. Additionally, compatibility difficulties might slow down the process, increase development efforts, or lead to system failures.
2. **VR/AR learning curve:** We will have to incorporate virtual reality (VR) and augmented reality (AR) functions into the wedding-planning application carries technical intricacy. Making vibrant VR/AR calls for skills in 3-D modeling, rendering, and interaction design. However, a poor implementation of complexity might impact the duration of the project work, leading to either a poor user experience or technical system failure.
3. **Skilled developer availability:** The availability of skilled developers in Python, Unity3D, NLTK, and cloud technology can pose an additional hurdle. Although finding developers with the necessary skills in these technologies might be time-consuming, it may also lead

to delays in the project timelines. With a limited number of experienced developers, there could be a scarcity of resources impacting the quality delivered towards the end.

4. **Data security risks:** Security vulnerabilities within the software platform present are a severe threat to the confidentiality, integrity, and availability of information of users. Such security breaches can have a negative impact on the image of the company, resulting in loss of credibility, legal consequences, and financial loss. Therefore, implementing appropriate data protection protocols is very important to address these risks effectively.

**Operational Risks:** Risks which are associated with daily business operations are called operational risks.

1. **Resistance to change** Resistance from both users and vendors who are used to traditional ways of wedding planning may also impede the use of the innovative software system. The unwillingness to get involved with technology-powered solutions, fear of change, or just inertia can preclude the possibility for an individual to become a user and hence restrict platform uptake.
2. **Inadequate training:** Insufficient training provided to users and providers on how to efficiently use the software application may also cause less than optimal use, stress, and disappointment. Lack of familiarity with features, capabilities, and the best ways to utilize them result in reduced productivity and adoption by clients.
3. **Communication Breakdowns:** Misunderstandings, delays and conflicts are some of the results that can be realized with communication breakdowns among stakeholders, couples, or vendors. Poor verbal exchange channels, misread requirements or lack of openness may inhibit task collaboration and reduce belief.
4. **Data Management Issues:** Losses of data, corruption of information, and unauthorized accessibility to such data are some possible results if there are inadequate management practices e.g., improper backup techniques for records, file versioning control or integrity tests. Failure to protect critical information assets may lead to criminal liabilities, compliance violations and reputation damages.
5. **Dependency on Third Party:** The use of third-party services like weather forecast APIs or vendor payment gateways brings about risks associated with service reliability, availability, and performance. This includes software platform functionality and value being impacted by service disruptions; changes in service terms; protection vulnerabilities in third-party offerings.

**Economic Risks:** These are the risks which are related to the finance of the organization and can cause economic loss to the company if these are not handled correctly.

1. **Fluctuations in the market demand:** Variations in market demand for web-based marriage ceremony planner services can influence subscription earnings, and retailers' partnerships. Recessions, changing consumer choices or transforms in competitive dynamics can also affect market calls and customer commitment.
2. **Unexpected costs:** Unplanned developmental expenses, operational costs, or requirements for regulatory compliance may surpass budget estimates and strain financial resources. Incorrect pricing projections, scope changes or unforeseen technical hitches could result in cost overruns that destabilize budgets.
3. **Generating revenue challenges:** The overall profitability of the project can be compromised by failure to attract advertisers or generate adequate advertising revenues. Similarly, marketing revenues and monetization strategies may be affected by the competitive behavior of markets as well as advertiser fluctuations in demand.
4. **Market competition:** Tougher competition from existing online wedding planning platforms or emerging players may also present hurdles to user acquisition, retention and growth of market share. Competitive positioning and differentiation might be influenced by developing marketplace dynamics, technological advances or customer preferences changes.

## Risk Impact Analysis

This kind of risk assessment is based on the effects it can have on project objectives, timelines, and general success. Risks are ranked in order of their seriousness and likelihood of occurring.

### Technical Risks:

1. **Compatibility issues** - High impact, moderate likelihood

**Effect:** Compatibility issues highly impact this project in terms of delays, lengthened development hours or machine breakdowns affecting assignment timelines and goals.

**Probability:** Although compatibility problems are not new, they will no longer be as frequent if correct versions control methods and connectivity testing were practiced resulting into slight chance.

2. **Skilled developer availability** - High impact, low likelihood

**Effect:** The availability of skilled developers highly influences the pace as well as quality of development efforts hence has a high effect on project timelines and success.

**Probability:** While there is demand for professional developers, the probability that one might face significant difficulties in recruiting them or retaining them could be low if proactive steps are taken to attract and retain talent.

### 3. **Dangers of Incomplete Data Security** – High Impact, Medium Probability.

**Impact:** This source of danger can cause the entire project to be in high risk due to data breaches that may occur, which can lead to legal problems and reputational damages causing a significant effect on project success and stakeholder's confidence.

**Probability:** It is highly likely that any vulnerabilities towards data security are mild as this can be due to different sources like software bugs, human errors or hacking by malicious individuals.

### 4. **Impact of VR/AR Implementation Complexity**- Medium Effects; Chances Higher

**Impact:** The introduction of VR/AR functions introduces moderately complex tasks whose potential consequences include delays or technical failures in the system. Although it might not delay projects timelines, it influences user experience leading also satisfaction and hence the overall success criterion for the project will be affected.

**Likelihood:** Since VR/AR Development Technologies are inherently sophisticated, there is a good chance that implementing them will not be without hindrances.

### 5. **Cloud Services Dependability** – Moderate Impact; Feasibility as Well

**Impact:** Reliability problems with cloud service have a moderate impact on the project. Temporary service disruptions or performance degradation caused by reliability issues affect user experience and satisfaction.

**Likelihood:** There is very less chance of cloud provider being unavailable since AWS is highly scalable, fault tolerant and multi-AZ provider.

## Operational Risks

### 1. **Change resistance** - High impact, high likelihood

**Why:** Resistance to the change makes a big difference in a project because it can impede user adoption and engagement, thus impacting on project objectives.

**How often:** Resistance to change is not uncommon in technological sector, especially during a shift from the traditional systems.

**2. Data loss or corruption-** High impact, low likelihood

**Why this could happen:** Data management problems have a significant bearing on the project because they might result in loss of information, tampering with information or even data breaches which may lead to criminal prosecution and damage the reputation of an organization.

**How often:** Though not frequent occurrences, issues relating to data and information management can be very serious thereby making them become less likely but possibly more dangerous.

**3. Relying on third-party services –** Moderate impact, high likelihood

**Why is this important?** Depending on third party services has some influences on this project since platform functioning, and user experience could be affected if there are service disruptions or changes in terms of service provision.

**How often:** The chance that such dependence-related problems will occur is quite high due to reliance upon external service providers whose activities cannot be managed by means of the project.

**5. Inadequate training -** moderate impact, moderate likelihood

**Why is this important?** As a result of Inadequate training, the project may have been affected in a negative way leading to suboptimal use of the platform and user dissatisfaction but not directly affecting project timelines.

**Likelihood:** In addition, the probability of insufficient training is likely to differ according to how efficient are training tools as well as user support systems hence resulting into a medium chance.

**6. Communication breakdowns -** Moderate impact, moderate likelihood

**Why is this important:** Misunderstandings and delays in project collaboration leading to miscommunication and contact severance by obstructing of projects on time that changes with some stakeholder relationships denote communication breaks having an average effect on the venture.

## Economic Risks

1. **Challenges with revenue generation:** high effect, high possibility

**Impact:** Problems with income generation have a significant influence on project revenue streams and profitability, which directly affects financial objectives and sustainability.

**Likelihood:** It is quite likely that you will run into problems attracting advertising or making enough money, given the competitive landscape and changing market dynamics.

2. **Unexpected expenses:** Moderate chance, high impact

**Impact:** Unexpected expenses significantly affect project finances and budgets, resulting in financial instability and budget overruns.

**Likelihood:** Despite attempts to accurately predict and control project costs, there is a moderate chance that unanticipated expenditures may occur due to things like scope modifications or technical difficulties.

3. **Market rivalry:** High probability, moderate influence

**Impact:** The project is moderately affected by market rivalry as it might have an impact on customer growth, retention, and acquisition as well as corporate goals and market positioning.

**Likelihood:** There is a lot of competition in the online wedding planning sector, which increases the chance of running into market dynamics and competitive pressures.

## Risk Mitigation Strategies

### Technical Risks:

1. **Compatibility problems:** At every development step, the development team should carry out extensive compatibility testing. To find and fix any compatibility problems early on, this entails verifying the compatibility of various systems, libraries, and components. By making sure that all parties involved are aware of compatibility limitations, maintaining thorough documentation of system needs and dependencies may help reduce compatibility risks.

2. **The difficulty of integrating VR/AR:** The development team should work closely with knowledgeable designers and developers of VR/AR. Early in the development process, usability concerns may be found and fixed with the use of user testing and iterative prototyping. Making use of pre-existing VR/AR frameworks and libraries may simplify development and speed up time to market.

3. **The availability of skilled developers:** It is crucial to invest in attracting and keeping top personnel. Attracting competent developers may be facilitated by providing competitive compensation, opportunities for professional growth, and a positive work atmosphere.

Internal development skills can be strengthened via forming alliances with academic institutions or contracting out specific development work to specialist organizations.

4. **Vulnerabilities related to data security:** It is essential to follow industry best practices for secure software development. This entails putting encryption methods in place to safeguard private information, imposing access rules to prevent unwanted access, and carrying out frequent security audits and penetration tests to find and fix holes. The general security posture may be improved by informing users about cybersecurity best practices and offering channels for reporting security problems.

5. **Cloud service reliability:** To guarantee high availability of vital services, the team should have redundancy and failover procedures in place. Utilizing load-balancing methods and multi-region deployment tactics can aid in traffic distribution and lessen the effects of localized service interruptions. Furthermore, minimizing downtime and ensuring prompt resolution of service interruptions may be achieved by establishing service level agreements (SLAs) with cloud providers and keeping an eye on indicators related to the health of cloud services.

#### **Operational risks:**

1. **Opposition to change:** The group ought to fund change management programs that empower and inform vendors and users. Offering thorough training courses, intuitive user interfaces, and prompt customer service may all help allay worries and boost trust in the new platform. Furthermore, gaining input from users and stakeholders during the product development process may help to create a feeling of ownership and promote buy-in.

2. **Insufficient training:** To assist users and suppliers during the onboarding process, thorough training materials, tutorials, and documentation should be created. Peer support and interactive learning can occur when webinars, online forums, and hands-on training events are offered. Creating a specialized customer service department to respond to inquiries from users and fix problems instantly will improve user retention and satisfaction.

3. **Communication breakdowns:** To ensure successful stakeholder interaction and collaboration, the team must also set up clear communication norms and channels. Simplifying communication and ensuring that all stakeholders are informed and involved may be achieved by the implementation of centralized communication technologies, such as message platforms or project management systems. Throughout the course of a project, regular status updates, progress reports, and feedback channels may encourage accountability and openness.

4. **Data management concerns:** To guarantee the availability, confidentiality, and integrity of user data, strong data management rules and processes must be put in place. To prevent data loss or illegal access, this entails putting automatic backup systems, version control

systems, and access restrictions in place. Vulnerabilities in data management may be proactively found and fixed with the use of routine data audits and compliance checks.

5. **Dependency on third-party services:** Prior to integration, it is important to assess the standing and dependability of third-party service providers. Service interruptions can be lessened by putting in place fallback plans or other service providers. Setting up service level agreements (SLAs) with outside vendors and keeping an eye on service health indicators can help to reveal service performance and speed up problem-solving.

## Economic Risks

1. **Variations in customer demand:** The company should carry out market research and keep up with consumer and industry developments. The impact of market swings can be lessened by diversifying revenue sources, providing flexible pricing options, and modifying service offerings to satisfy changing client demands. A healthy ecosystem of service providers may be preserved by cultivating strong vendor relationships and offering incentives for vendor engagement.

2. **Unexpected costs:** To identify possible cost drivers and budgetary issues, thorough risk assessments and contingency planning should be conducted. A reserve budget or contingency fund can offer financial flexibility and protect against budget overruns by covering unanticipated costs. Putting strong project management procedures into place, including frequent cost tracking and budget monitoring, can make it easier to spot cost variations early on and take preventative measures.

3. **Difficulties with generating revenue:** The group ought to diversify sources of income and look into non-advertising monetization techniques. Offering premium membership packages, sponsored content, affiliate relationships, or transaction-based income models are a few examples of how to do this. Targeting specialized market niches and carrying out market research can assist uncover unrealized revenue potential and improve overall revenue production capabilities.

4. **Competition in the market:** The company should set itself apart with its product offering by adding value, delivering distinctive features, or providing better user experiences. Putting money into marketing, branding, and customer involvement programs may assist expand market penetration, promote consumer loyalty, and raise brand recognition. Understanding market trends, rival positioning, and opportunities for development may be gained by performing competitive analysis and benchmarking against peers in the industry.

5. **Regulatory changes:** The group has to be aware of how the regulatory environment is changing, have an open mind, and proactively determine how these changes will affect its operations and business plan. It might be beneficial to detect non-compliance issues and



proactively undertake remedial steps by hiring legal counsel or compliance professionals to conduct regulatory audits and gap analysis. Furthermore, putting in place strong data governance structures, privacy rules, and consent procedures may show dedication.

## Budgeting

The "Virtual Wedding Planning" software budget entails projecting the costs associated with developing, testing, marketing, and maintaining the product throughout its entire lifecycle. Here is a detailed breakdown of the different tasks and requirements that will be contributing to the budget of the project:

### Cost Categories:

#### 1. Development:

##### 1. Software Development Team:

- **Developers:** We need to budget for salaries or contractor fees for software developers, front-end and back-end engineers, UI/UX designers, and database administrators.
- **Project Manager:** We must allocate funds for a project manager to oversee the development process, coordinate tasks, and ensure project milestones are met.

##### 2. Technology Infrastructure:

- **Hardware:** We need to estimate costs for computers, servers, networking equipment, and other hardware required for development.
- **Software Licenses:** Development tools, version control systems, integrated development environments (IDEs), and software licensing must all be included in the budget.
- **Cloud Services:** It is necessary to allocate funds for cloud hosting service which we have selected for our product, Amazon Web Services (AWS) in order to scale and deploy our program.

As the number of users increases, AWS automatically adjusts its capacity to accommodate the growing demand, resulting in higher application costs.

##### 3. External Consultants:

- **Subject Matter Experts:** We must allocate funds for hiring consultants or advisors with expertise in wedding planning, event management, or software development to provide guidance and insights during the development process.
- **Legal and Compliance:** We need to include costs for legal consultations to ensure compliance with regulations such as data privacy laws (e.g., GDPR) and intellectual property rights.

#### 4. Contingency:

- **Unforeseen Expenses:** We need to set aside a portion of the budget for unexpected costs, changes in project scope, or delays in the development timeline.

### 2. Testing:

#### 1. Quality Assurance (QA) Team:

- **QA Engineers:** We need to budget for salaries or contractor fees for QA engineers responsible for creating test plans, executing test cases, and identifying software bugs and issues.
- **Test Automation Engineers:** We must include expenses for automation engineers to develop automated test scripts and frameworks for regression testing and continuous integration.

#### 2. Testing Tools and Environments:

- **Automated Testing Tools:** The price of subscription-based or licensed automated testing tools like TestComplete, Appium, and Selenium must be estimated.
- **Testing Environments:** We need to set aside funds for testing environments, which include staging servers, testing databases, and virtual machines for browser and device compatibility testing.
- **Security Testing:** To find and fix any possible flaws in our program, we must budget for the costs of security testing services and tools, like code reviews and penetration testing.

### 3. Marketing:

#### 1. Digital Marketing:

- **Paid Advertising:** We need to budget for online advertising channels such as Google Ads, social media advertising (e.g., Facebook Ads, Instagram Ads), and sponsored content to promote our software and attract users.
- **Content Marketing:** We must allocate funds for creating and distributing valuable content such as blog posts, articles, videos, and infographics related to wedding planning tips, trends, and advice to engage and educate our target audience.

#### 2. Offline Marketing:

- **Events and Sponsorships:** We need to estimate costs for participating in wedding expos, trade shows, or community events as well as sponsoring relevant industry conferences or workshops to increase brand visibility and generate leads.
- **Print Materials:** We must include expenses for designing and printing marketing collateral such as brochures, flyers, business cards, and banners to distribute at events or share with potential clients.

### 3. **Public Relations (PR):**

- **Media Outreach:** We need to budget for hiring PR agencies or consultants to pitch stories, press releases, and interviews to relevant media outlets, bloggers, and influencers in the wedding industry to generate positive publicity and media coverage for our software.

## 4. **Ongoing Maintenance:**

### 1. **Technical Support:**

- **Helpdesk:** We must allocate funds for staffing a helpdesk or support team to address user inquiries, troubleshoot issues, and provide technical assistance via email, live chat, or phone.
- **Bug Fixes and Updates:** We need to estimate costs for ongoing software maintenance, including releasing patches, updates, and bug fixes to address issues reported by users or discovered during QA testing.

### 2. **Server Maintenance**

- **Hosting Fees:** We need to include expenses for monthly or annual hosting fees for cloud hosting services or dedicated servers used to host our software and ensure uptime, reliability, and performance.
- **Monitoring and Security:** We must budget for tools and services for monitoring server performance, detecting and mitigating security threats, and implementing backup and disaster recovery procedures to protect user data and ensure data integrity.

## **Cost Estimation**

While doing the cost estimation we are making the following assumptions:

- Number of Python Developers: 7
- Number of Virtual Reality/Augmented Reality specialists: 3
- Number of testers (knowing manual and automation testing): 5
- Number of DevOps Engineers: 2
- Product Manager: 1
- Expected time for the product to be delivered: 8-9 months.

1. **Development cost:** We know that this is one of the major expenses of product development, which includes the cost of resources (developers, testers and devOps engineers) as well as the cost of product managers.

**Source for Salary:** <https://www.indeed.com/cmp/Indeed/salaries/Software-Engineer>

**Salaries of resources (in Dollars):**

- Python Developer: 100,000 /year
- VR/AR specialist: 120,000 /year
- Tester (Manual and Automation): 75000 /year
- DevOps Engineer: 90,000 /year
- Project Manager: 120,000 /year

**Monthly Costs of an individual (in Dollars):**

- Python Developer:  $100000/12 = 8333.33$
- VR/AR specialist:  $120000/12 = 10000$
- Tester (Manual and Automation):  $75000/12 = 6250$
- DevOps Engineer =  $90000/12 = 7500$
- Project Manager =  $120000/12 = 10000$

**Cost of an individual for the project (9 months) in Dollars:**

- Python Developer =  $8334 * 9 = 75006$
- VR/AR specialist =  $10000 * 9 = 90000$
- Test (Manual and Automation) =  $6250 * 9 = 56250$
- DevOps Engineer =  $7500 * 9 = 67500$
- Project Manager =  $10000 * 9 = 90000$

**Total cost of development for the required number of resources for individual operations**  
**= 7 \* individual cost of python developer for project duration + 3 \* VR/AR Specialist**  
**+ 5 \* Testing individual cost + 2 \* DevOps Engineer cost + 1 \* Project Manager Cost**

**Total Cost = 7 \* 75006 + 3 \* 90000 + 5 \* 56250 + 2 \* 67500 + 1 \* 90000**  
**= 525000 + 270000 + 281250 + 135000 + 90000**  
**= 1,301,250 (Dollars approx.)**

2. **AWS Cost** = Another major contribution in budget will be of the AWS infrastructure that the company will be using to host the application.

**Assumptions:**

- Number of users visiting per month on the website = 100,000
- User data storage per user = 1 GB

- EC2 instance-type = c5.xlarge (for high computation and processing)
- RDS instance = db.m5.large
- RDS Replica Set = db.m5.large (for fault tolerance and disasters)

**S3 Storage Cost:** <https://aws.amazon.com/s3/pricing/>

1 GB/user \* 100000 users = 100,000 GB /month  
Cost = ~ \$ 1250.00 /month

**EC2 Instance:** <https://calculator.aws/#/>

24 hours \* 31 days (every month) = ~ 80.13 Dollars

**RDS Instance:** Depending on the region of RDS instance and number of replica sets reserved the prices will vary. On making an assumption of On-Demand db.m5.large instance in US East (N Virginia) cost ~ **1994.96** Dollars per month + additional **2798.98** Dollars for replica sets.

**First month application hosting Cost = 1250 + 100 + 2000 + 2800 = \$ 6150**

And we can assume that during the development activities, almost similar resources will be used throughout the 9 months of development together since application will be tested in a similar environment. So, we can consider **\$6150 during development of application.**

**Total AWS Cost = 2 \* 6150 = \$12300**

### 3. Marketing Cost Estimates:

- **Google Ads:** A starting point will be around \$5000-10000 depending on the target audience, keywords, and desired advertisement.
- **Social Media Ads:** This includes advertisements on Facebook and Instagram. A starting point will be \$3000 - \$7000 per month for each platform.
- **Influencer Marketing:** Cost will depend on the type of influencer chosen for doing the promotions. Considering for the initial days, highly paid influencers will be chosen which will cost around 11,000 dollars for one time collaboration.

Based on these factors,

**Estimated initial marketing budget = 10000 + 7000 + 11000 = 28000 Dollars**

This budget can be increased based on the funds available with the organization for promotional activities.

**Total Estimated Cost of Project (Initial Launch) = 1,301,250 + 12300 + 28000**

$$\begin{aligned} &= 1,341,550 + 20,000 \text{ (unexpected risk)} \\ &= \$ 1,361,550 \end{aligned}$$



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