

Project Plan for the Development of an AI E-Commerce Platform

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Introduction

The project plan is for a Development of an AI-powered E-Commerce Fashion Platform, “Style Hub”. The platform will offer a modern and intelligent shopping experience, allowing users to explore a diverse collection of clothing products, initiate secure online transactions, and monitor their orders in real-time. One of the standout features of the platform is its AI-driven recommendation system, which will leverage user data, browsing habits, and previous purchases to make tailored product suggestions. In particular, the platform will provide suggestions like “always bought together” products, personalised outfit suggestions, trending fashion products, and products that are similar to what the users have been shopping around or purchasing in the past. In addition, the system will also use machine learning algorithms to suggest products based on user demographics, seasonal trends, and style preferences, thereby having a positive impact on user engagement and increasing conversion rates.

In recent years, the fashion retail sector has experienced a significant digital revolution, spurred by shifts in consumer preferences and expectations, increasing Internet penetration, and evolving convenience and customization. The fashion retail industry has been transformed to a great degree by changes in consumer demand, the rise of Internet connectivity, and changing convenience and customization (Liu, and Liu, 2025). The potential of e-commerce data-driven technologies to drive customer engagement and boost sales, through personalised shopping experiences, is illustrated in leading platforms like Amazon Fashion and ASOS (Nasri, et al. 2025). To overcome these industry challenges, a significant number of lessons from project management have been designed such as Work Breakdown Structure, Structured Resource Allocation, Risk Management, and Milestone Tracking that help in planning, execution, and delivery of project should be implemented in this project.

Aim, Objectives and Scope

Aim

The aim of this project is to design and develop an AI-powered e-commerce fashion platform that delivers a personalised, secure, and efficient online shopping experience.

Objectives

- To design and deploy a fully customized, on-air and mobile-ready AI eCommerce solution within 6 months.
- To incorporate a secure payment gateway system during the fourth month, ensuring safe payments with digital wallets and credit/debit cards and assuring compliance with data protection standards.
- To design an AI-based recommendation system with a time horizon until the end of the project for the generation of personalized product recommendations according to the customer's behaviour and preference as well as his/her purchase history in order to increase customer engagement.

Scope

The project scope is linked to description of all the work that needs to be performed to achieve the Product scope, including specified features and functions. (Lampa et al., 2017) The project is a complete AI-powered e-commerce fashion website with Web and Mobile App (Android and iOS). They add e-commerce essentials like user sign-up and login, an adjustable product catalogue, shopping cart capabilities, secure payment incorporation, and real-time application of the order. Besides this, the platform will feature an artificial intelligence recommendation system that will make the user experience smoother and more personal by displaying specific product recommendations in accordance with user behaviour, preferences and purchase history. An admin dashboard will also be built, where users can easily manage products, update stock information, and keep track of orders.

Additionally, system design, development, testing, and deployment of the platform to ensure usability, security, and performance standards. Project Scope also includes integration with third party services like payment gateway, cloud hosting solutions etc. However, the project is limited to products focusing on a digital platform and the lack of products with physical operators such as warehousing, shipping and product delivery management. Also, there are no plans to expand internationally, nor to include more than one language for support or to integrate a sophisticated supply chain system. It is a clear scope that assists in managing the boundaries of a project,

prevents the scope creep and makes sure resources are utilized where they'll help maintain the desired result in the specified timeline.

Project Outputs (Deliverables and Direct Results)

The project's successful completion will yield a variety of tangible and intangible outputs that will enhance the overall functionality and effectiveness of the platform.

Key Deliverables

The StyleHub project will produce the following key deliverables:

- Project charter and requirement specification document that outline project objectives, project scope, and system requirements.
- Systems design documentation – Architecture, Database and Technical.
- Built web and mobile applications (Android and iOS) that have all the essential e-commerce capabilities.
- AI-powered recommendation engine that offers tailored product recommendations, like outfit suggestions and trending products.
- Implement a payment integration system and order management system that has live tracking.
- An admin dashboard for quick and easy product, user and order management.
- Test reports and quality assurance reports to ensure the reliability and performance of the system before deployment.

The immediate outcomes of the project involve: Customer Experience: Personalization of the shopping experience, User Engagement: greater interaction with the platform, Operational Efficiency: optimization of processes, and a scalable digital platform that can adapt to future growth in the online fashion sector.

Activities that are required to generate the Project Outputs (WBS Based)

The project activities are planned to use a Work Breakdown Structure (WBS) to ensure systematic execution and quality control for the implementation of the e-commerce fashion platform StyleHub based on AI. WBS was a product-based hierarchy that organises and defines the project's complete scope as described by Burghate, Burghate and Burghate (2018). The StyleHub project is broken down into major phases, which are the top level of the Work Breakdown Structure (WBS) (Figure 1). These are the key activities that need to be completed during each of the phases to successfully implement the AI-powered fashion platform for e-commerce.

In the Initiation phase of this project, the stakeholders will be identified, the project objectives shall be defined, the project charter shall be prepared and the project's viability shall be assessed based on its feasibility, to ensure it satisfies the business needs. During the Planning phase the project team defines the project requirements, formulates the project scope, develops a programme/project timetable and budget, identifies risks, and defines the overall Work Breakdown Structure (WBS) for the project. The Design phase entails system architecture design, database modelling, UI/UX of the system, and designing the AI model-based personalised shopping recommendation system.

In the Development phase the front-end and back-end systems are built, the AI recommendation system is integrated and secured payment gateways are integrated and the back-end admin dashboard is created. The Testing phase involves the rigorous testing of the system with unit testing, integration testing, system testing and user acceptance testing (UAT). The Deployment phase involves cloud configuration, platform deployment, and providing it to end-users via web and mobile applications. In the Maintenance phase, the focus is on ongoing monitoring, bugging, system performance optimization and upgrades to ensure long-term stability and efficiency.

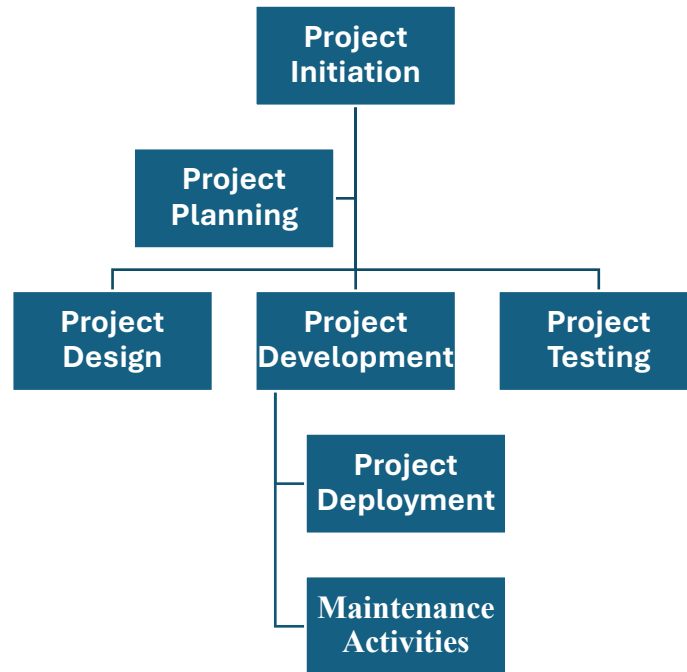


Figure 1 Activities Required to Deliver the Project Outputs (WBS-Based)

Activities into sub-activities and tasks (WBS-Based)

The project activities of the StyleHub AI-powered e-commerce platform are further broken down into detailed sub-activities and tasks for Structured execution, effective control and successful delivery of all project outputs. According to Cerezo-Narváez (2020), stated that for the PMI, the WBS subdivides all project work into components, including its deliverables. This hierarchy enables the easy assignment of tasks, project monitoring and management across the entire project life cycle (as shown in Figure 2). The project starts with initiation activities where project stakeholders are identified, a project charter is prepared and a feasibility study is performed. The activities of planning include collecting requirements, scheduling, defining the WBS, budgeting and risk analysis. The architecture of the system is designed, the designing of databases, prototyping of UI/UX, and the designing of AI recommendations. The front-end and back-end systems are built, the AI recommendation engine is created, secure payment integration is added and the admin dashboard is built during the development phase. To ensure quality of the system, testing activities are: Unit test, Integration test, System test and user acceptance test. The deployment phase involves the setup of the cloud, deployment of the application and release in the app store. Finally, maintenance activities are tasks to keep the system running and fix bugs, tune

performance, and continual adjustments to enhance the satisfaction of users and maintain long-term system functionality. These tasks ensure that all work is completed on time, within scope, within budget, and as per the set quality standards.

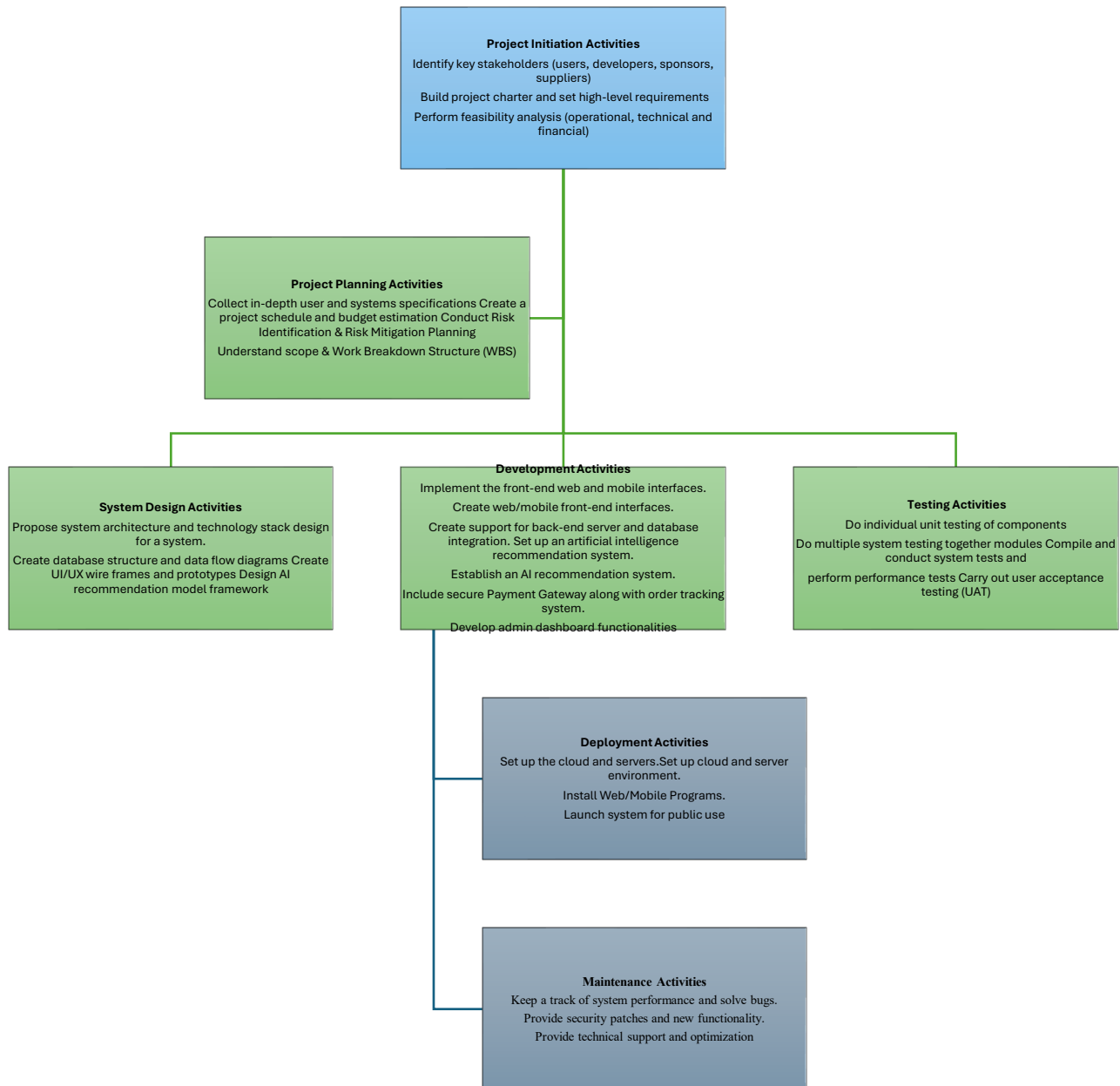


Figure 2 Activities into sub-activities (WBS-Based)

Identifying Deliverables and Milestones of Each Task (Timeline to Complete)

The project's timeline for the StyleHub is structured to ensure effective project control and timely completion, with each phase of the project being linked with clear deliverables and milestones. The figure 3 illustrates the project timeline to ensure project will be completed within the given timeframe (Figure 3). The main milestones of the Initiation phase (20 May 2026 – 3 July 2026) are the project charter, stakeholder register, and feasibility study report, with the feasibility study being formally approved to confirm the viability of the project and to authorise the project to proceed. During the Planning phase (18 May 2026 – 18 June 2026), the project management plan, the risk register, the requirement specification document and the Work Breakdown Structure are generated, and the milestone is the formal approval of the final project plan and the requirements.

The Design phase (18 May 2026 – 24 July 2026) creates system architecture diagrams, database design, UI/UX prototypes, and the AI recommendation model design, and concludes with a milestone approval of the final design solution. Overall, the Development phase (27 July 2026 – 19 August 2026) is designed to provide the working web and mobile application, the AI recommendation engine, payment integration, and admin dashboard, culminating in the alpha version. The Testing phase (20 August 2026 – 27 August 2026) will generate Testing Reports and milestone approval will be granted following successful UAT. The Deployment phase (28th August 2026 – 7th September 2026) provides the live system, the go-live approval is the stage of the deployment phase.

Last, the Maintenance phase (8 September 2026 – 14 September 2026) is about monitoring systems, fixing bugs and optimizing performance; and reaching Milestones is a result of stable performance after the launch of the system.

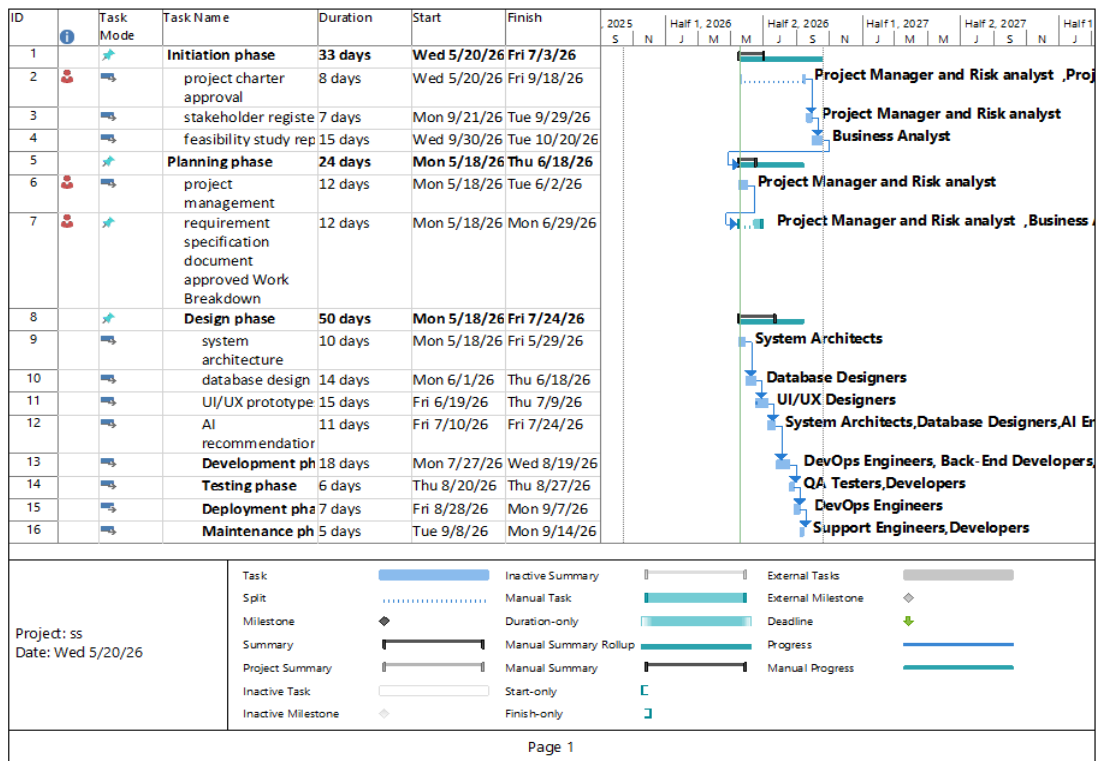


Figure 3 Project Timeline

Resource Considerations (Personnel and Material Required)

The personnel and material resources that will be required for the efficient and successful delivery of the StyleHub AI powered e-commerce solution should be designed, planned and allocated throughout the entire project. Furthermore, Ahmed and Hussain (2024) argued that cross-functional teams need to be provided with the required tools, training and processes for teamwork to be effective for the allocation of resources. This setup fosters teamwork, problem-solving capabilities, and flexibility, letting teams adjust to evolving project demands and requirements.

During Initiation phase, the Project Manager, Business Analyst and Project Sponsor need to determine the goals and objectives of the project, identify project stakeholders and conduct feasibility study with a project documentation tool such as Microsoft Word and common feasibility study report. However, Masanja, (2020) described the feasibility report as a systematic analysis and a plan that covers project sustainability such as production, marketing, technical, management and organizational and the financial aspects. Planning involves the Project Manager, Business

Analyst, and Risk Analyst working together to put together the project plan, requirements specification, schedule and risk register using appropriate software such as a requirement-gathering framework, Excel, and Microsoft Project.

In Design, the development process is determined by the System Architects, UI/UX Designers and Database Designers who use tools like Figma, Adobe XD, MySQL Workbench to draft system architecture, design database models and draft user interface prototypes. The Development phase involves Front-End Developers, Back-End Developers, AI Engineers, and DevOps Engineers creating the platform, employing a range of technologies including React, Node.js, TensorFlow, cloud platforms (AWS/Azure), and GitHub for version control. At Testing, QA Testers and Developers use tools such as Selenium, Jmeter, Jira to validate everything is running as expected and all the system performance is satisfied. DevOps Engineers handle the deployment phase by leveraging cloud infrastructure services and CI/CD tools to release systems and systems involve Support Engineers that use monitoring dashboards and analytics tools to maintain the stability, security and optimisation of systems.

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