Personalised Learning Recommendation System
Product Design Case

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Problem

Problem Statement

- Learners struggle to find relevant courses that align with their goals and skill levels.
- Instructors face difficulty reaching the right learners for their content.
- Admins need data-driven insights to manage and grow the platform efficiently.
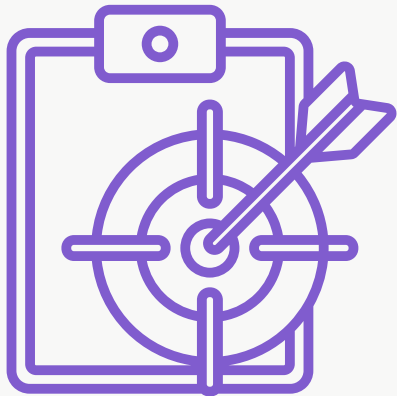
Goal:

Design a personalised recommendation system to improve engagement, completion rate, and satisfaction.

Business Objectives

Objective	Target
Increase user engagement	25%
Improve course completion	30%
Enhance user satisfaction	20%

User Personas

Learners	Instructors / Creators	Platform Admins
Looking for courses matching their career goals and skill levels.	Want visibility and learner insights to improve content reach.	Need control, monitoring, and optimization across the platform.

User Stories

Learners		
1	As a learner, I want to get course recommendations based on my interests so that I can save time searching.	
2	As a learner, I want to set my career goals so that the system suggests a learning path.	
3	As a learner, I want progress tracking so that I can measure my improvement.	
4	As a learner, I want to filter courses by difficulty so that I can start at my level.	
Instructors / Creators		
1	As an instructor, I want insights on learner engagement so that I can improve my content.	
2	As an instructor, I want to tag my courses by skill and topic so that they reach the right audience.	
3	As an instructor, I want to view course performance metrics so that I can refine my offerings.	
Platform Admins		
1	As an admin, I want dashboards to track user activity and performance metrics	
2	As an admin, I want to ensure data compliance and security for all user data.	
3	As an admin, I want tools to manage and validate course listings.	

Functional Requirements

User Type	Feature	Description	Priority
Learner	User profile setup	Capture goals, interests, skill levels	High
Learner	Recommendation feed	AI-based personalized course list	High
Learner	Progress dashboard	Visualize completion and goals	Medium
Instructor	Course tagging	Add metadata for better discovery	High
Instructor	Analytics dashboard	Track engagement and completion	Medium
Admin	Content moderation	Approve or remove courses	High
Admin	System analytics	Monitor platform health and metrics	Medium
All Users	Notifications	Alerts for new courses or milestones	Medium
All Users	Feedback system	Ratings and reviews for content	High
Admin	Role management	Manage permissions and user roles	Low

Non-Functional Requirements

01 **Performance:**

Response time under 2 seconds for recommendation queries.

02 **Scalability:**

Support growing user base (100k → 1M+) without service degradation

03 **Availability:**

Maintain 99.9% uptime through load balancing and redundancy.

04 **Compliance:**

GDPR-ready and adheres to data privacy laws.

05 **Security & Data Retention:**

Encrypt all sensitive data; retain user history only as needed.

06 **Monitoring & Logging:**

Real-time dashboards for errors, usage, and API health.
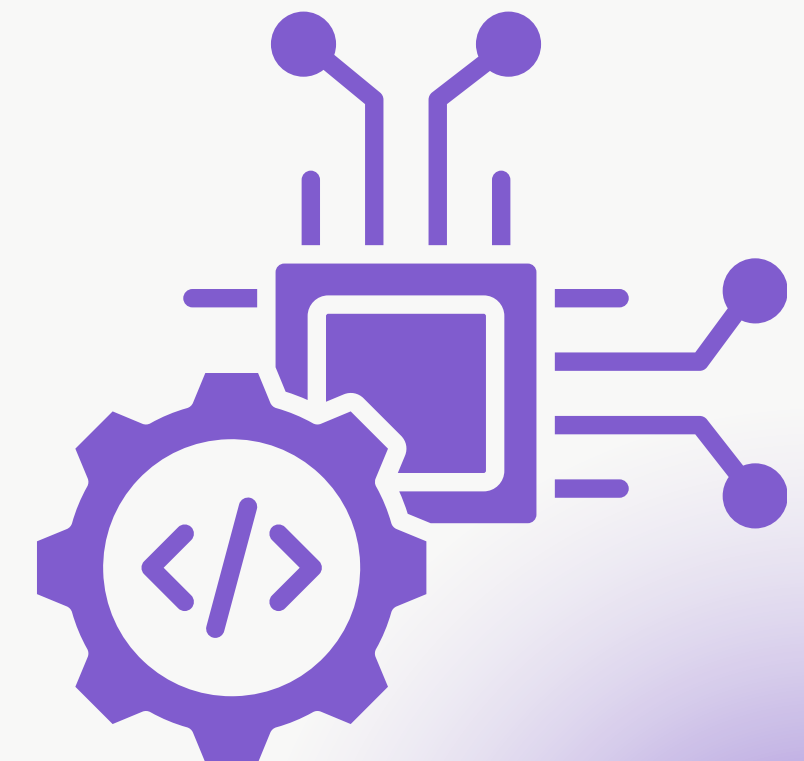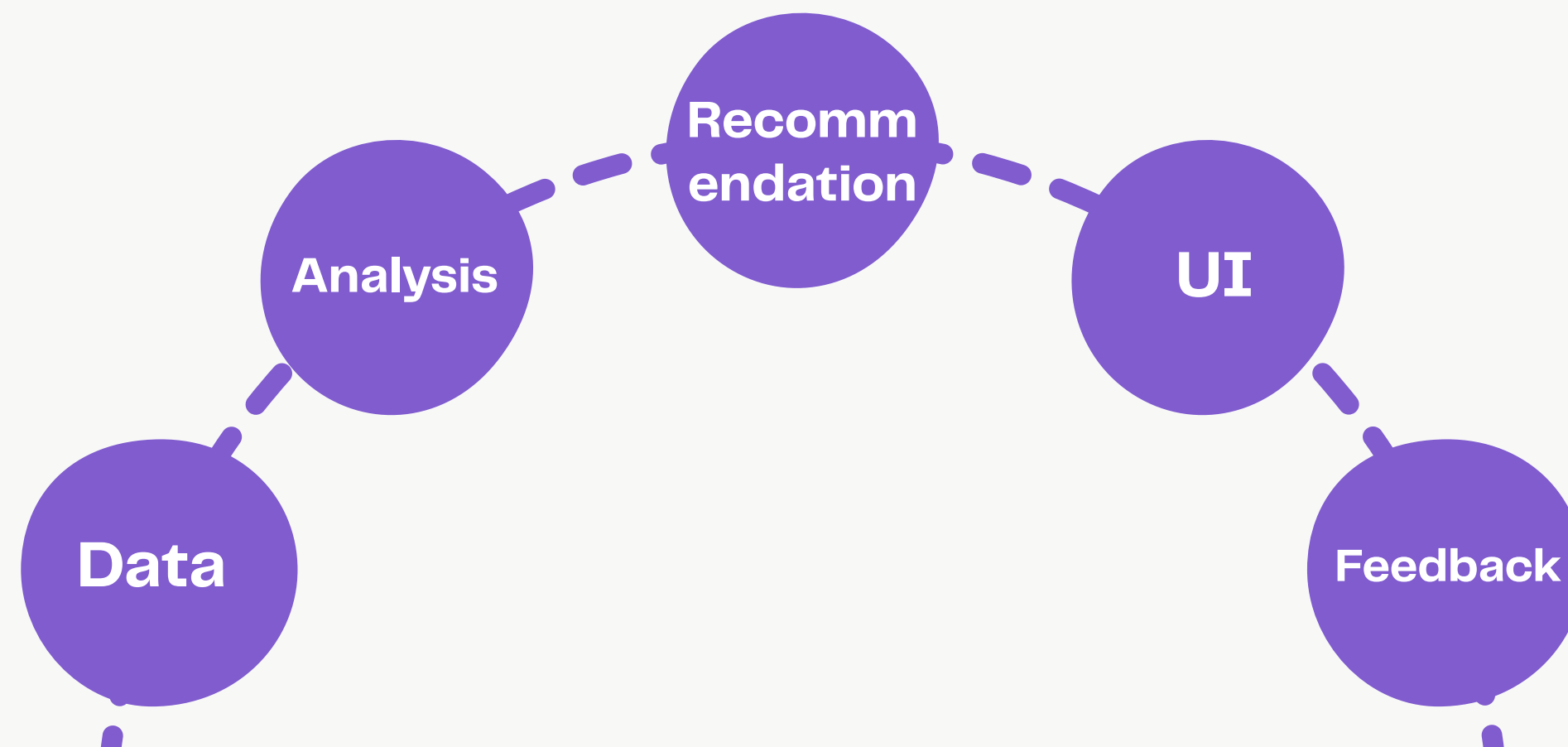
Core System Design

Data Collection Layer: Gathers user interactions, preferences, and progress.

Data Analysis Module: Cleans and segments data for insights.

Recommendation Engine: Uses collaborative + content–based filtering to generate suggestions.

User Interface: Personalized dashboards and recommendation feed.

Platform Integration Layer: Connects existing LMS, payment, and course APIs.
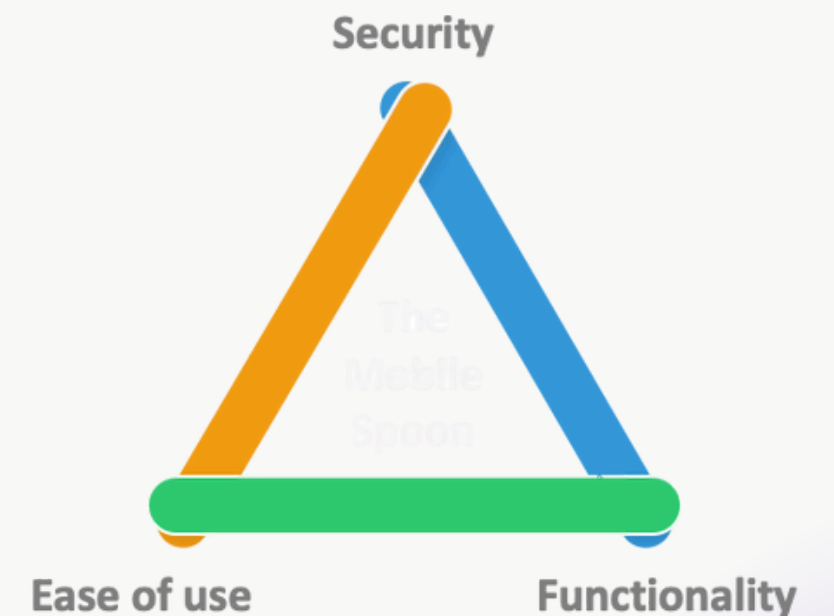
Data — Analysis — Recommendation — UI — Feedback

Trade-off Decision

Conflict   Personalization depth vs.
system performance.

Decision   Once adoption stabilizes, optimize backend for
speed with caching and parallel processing

Reason   Early–stage trust and engagement matter
more than milliseconds of delay.

Security

Ease of use   Functionality

Assumptions

- **Users are willing to share career goals and interests.**
- **The platform already has sufficient course data for AI training.**
- **The infrastructure supports data tracking and analytics.**

Future Improvements

- Introduce **AI-driven mentorship suggestions.**
- Add **career roadmap visualization** for learners.
- Launch **creator monetization dashboards.**
- Explore **integration with LinkedIn or job boards** for career outcomes.

Conclusion

- A personalised recommendation system can drive stronger learner engagement and satisfaction, while empowering instructors and admins with meaningful insights.

- This system positions the platform for sustainable growth and improved learning outcomes.