User Stories & Product Backlog

A Case Study: Developing an AI-Enhanced Budgeting System

Course & Theme Context

This presentation explores the practical application of Agile principles in the Software Project Management (SPM) course, focusing on the progression **From Roles → to Tasks → to Deliverables** within an IDEAL Labs project structure.

Project Team

- Ahmad Sajjad (2023-CS-81)
- Ahmad Hassan (2023-CS-77)
- Huzaifa Arshad (2023-CS-86)
- Atif Awan (2023-CS-154)

Defining the Scope: Project Epics

Our project scope for the AI-Enhanced Budgeting System was initially broken down into three major feature areas, or Epics. These were identified during the initial stages of Sprint 1 and 2 after defining the core system architecture.

Epic 1: Expense Management

Core functionality for capturing, tracking, and validating all incoming expenditure records within the lab environment.

Epic 2: Budget Planning & Tracking

Enables users to set financial targets, monitor real-time spending against those targets, and generate summary reports.

Epic 3: AI Prediction & Insights

Integration of machine learning models to forecast future spending patterns and deliver actionable, data-driven financial advice.

Translating Needs: Core User Stories

User Stories ensure development remains centered on end-user value. Each story describes a desirable outcome for a specific user role.

User Story 1: Expense Categorization

*As a **lab manager**, I want to record and categorize all lab expenses so that I can monitor spending effectively.*

User Story 2: Budget Visibility

*As a **researcher**, I want to view visual reports of lab budgets so that I can understand where funds are being used.*

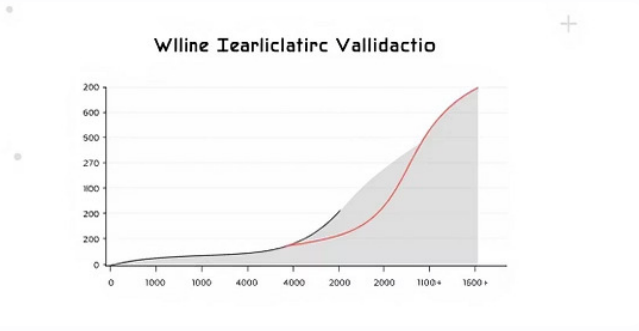
User Story 3: Predictive Allocation

*As an **admin**, I want the AI model to predict future expenses so that I can allocate budgets more accurately.*

Product Backlog: Tasks for Execution

The Product Backlog breaks down each user story into concrete, executable tasks, aligning requirements with the work needed for upcoming Sprints (3 and 4).

Story #	Backlog Items (Tasks)	Priority
1	Design database for expense records; Implement CRUD API for expense tracking; Add data validation for entries	High
2	Create dashboard UI; Integrate backend data visualization; Test report generation module	Medium
3	Integrate AI model for predictions; Optimize data flow; Validate model output accuracy	High



Prioritization, Reflection, and Next Steps

Backlog Prioritization: MoSCoW Method

We used the MoSCoW method to define clear release goals, ensuring critical features are delivered first:

→ Must Have (Critical)

Expense APIs, Dashboard display, AI Prediction core function.

→ Should Have (Important)

Report Export functionality, Comprehensive User Roles Management.

→ Could Have (Desired)

Proactive Budget Alerts and Notifications system.

Key Reflections on Agile Practice

By focusing on User Stories, the team successfully avoided technical debt early on and remained focused on **real-world user value** rather than implementation details.

The structured Product Backlog serves as a crucial artifact, providing a clear roadmap that directly links user requirements to engineering tasks and projected deliverables. This improved team coordination and clarity for Sprint 3 and 4 execution.