

## Project Design Phase Solution Architecture

Date	25 JUNE 2025
Team ID	LTVIP2025TMID59527
Project Name	Smart SDLC- AI Enhanced Software Development LifeCycle
Maximum Marks	4 Marks

### Solution Architecture:

SmartSDLC is a modular, AI-powered tool that automates the SDLC process. It uses Streamlit for UI, Python for backend logic, and IBM Granite (via Hugging Face) for local AI inference. The app supports PDF/text inputs, generates requirements, code, and tests, and enables real-time AI chat—all in one secure environment.

### 🔧 Core Components

- UI Layer: Streamlit (web interface)
- Logic Layer: Python modules for analysis, code, and test gen
- AI Layer: IBM Granite model (local, private)
- Input Handling: PDF/text parsing via PyMuPDF
- Output Layer: Download/share code, tests, and analysis

### Example - Solution Architecture Diagram:

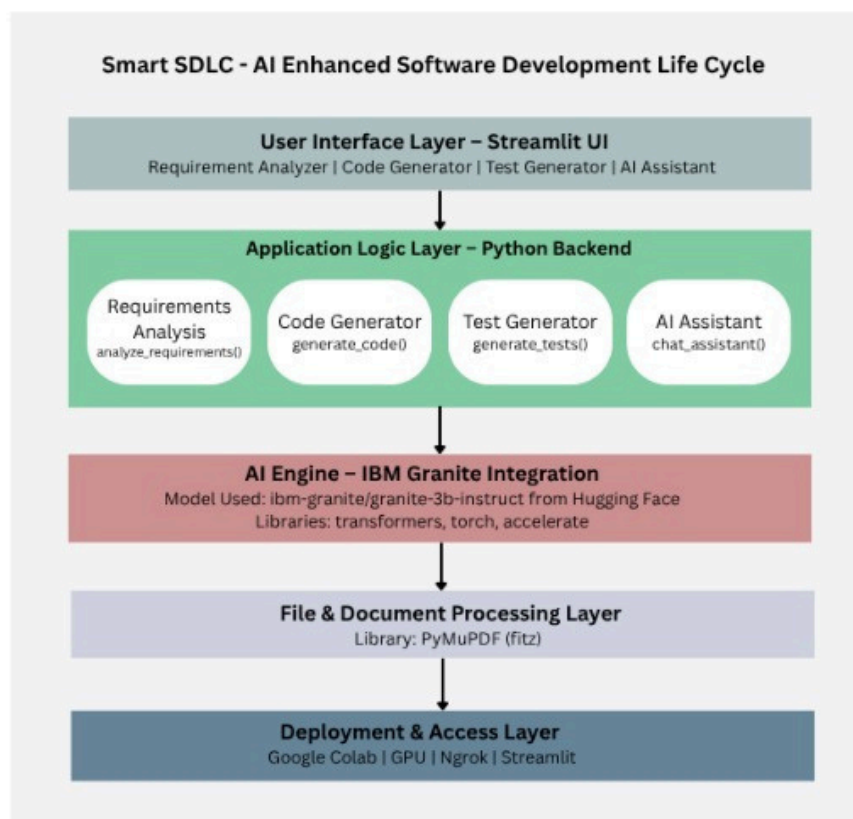


Figure 1: Architecture and data flow of the Smart SDLC.

Reference: <https://aws.amazon.com/blogs/industries/voice-applications-in-clinical-research-powered-by-ai-on-aws-part-1-architecture-and-design-considerations/>