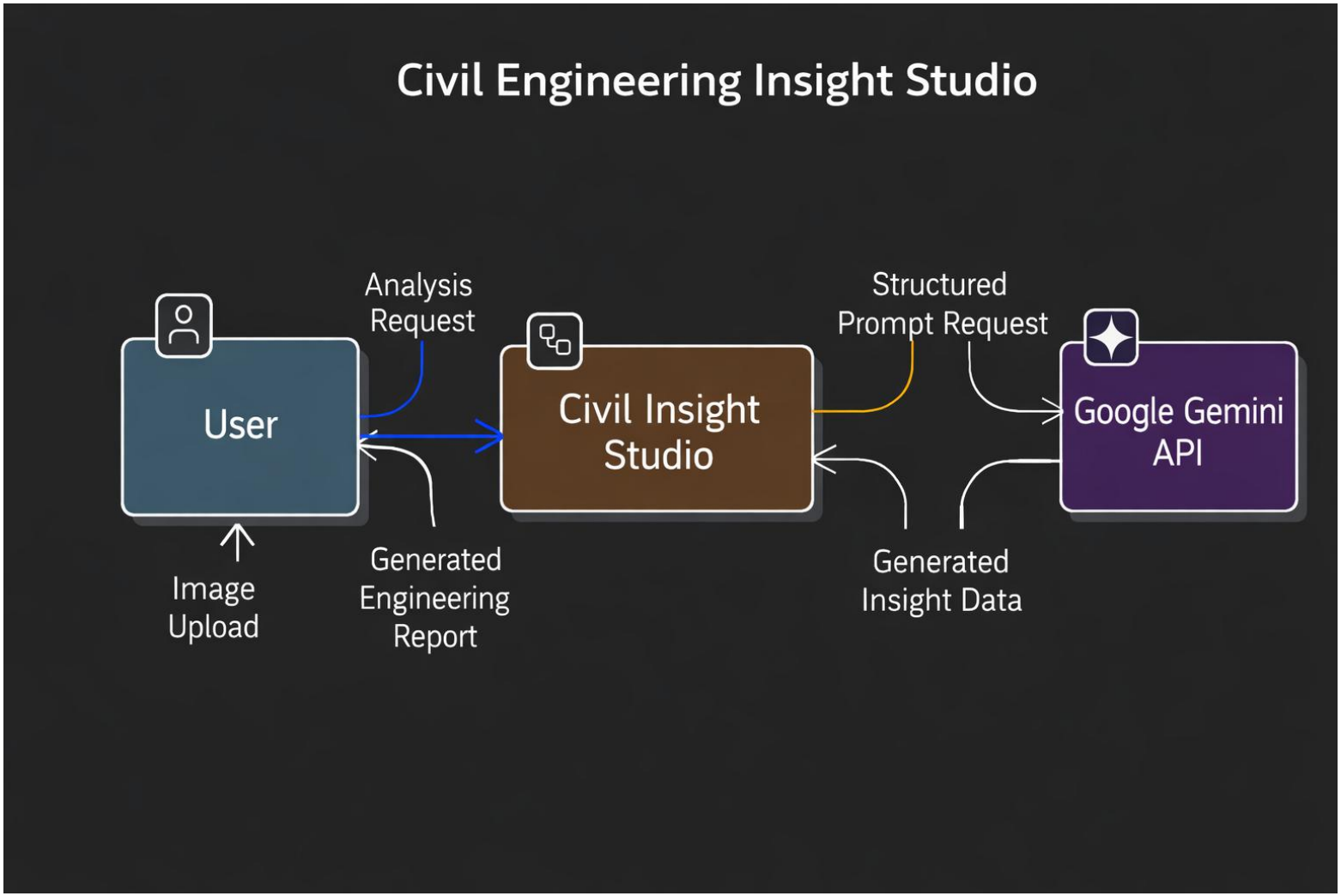
Project Design Phase-II
Data Flow Diagram & User Stories

Date	3 February 2026
Team ID	LTVIP2026TMIDS24988
Project Name	Civil Engineering Insight Studio
Maximum Marks	4 Marks

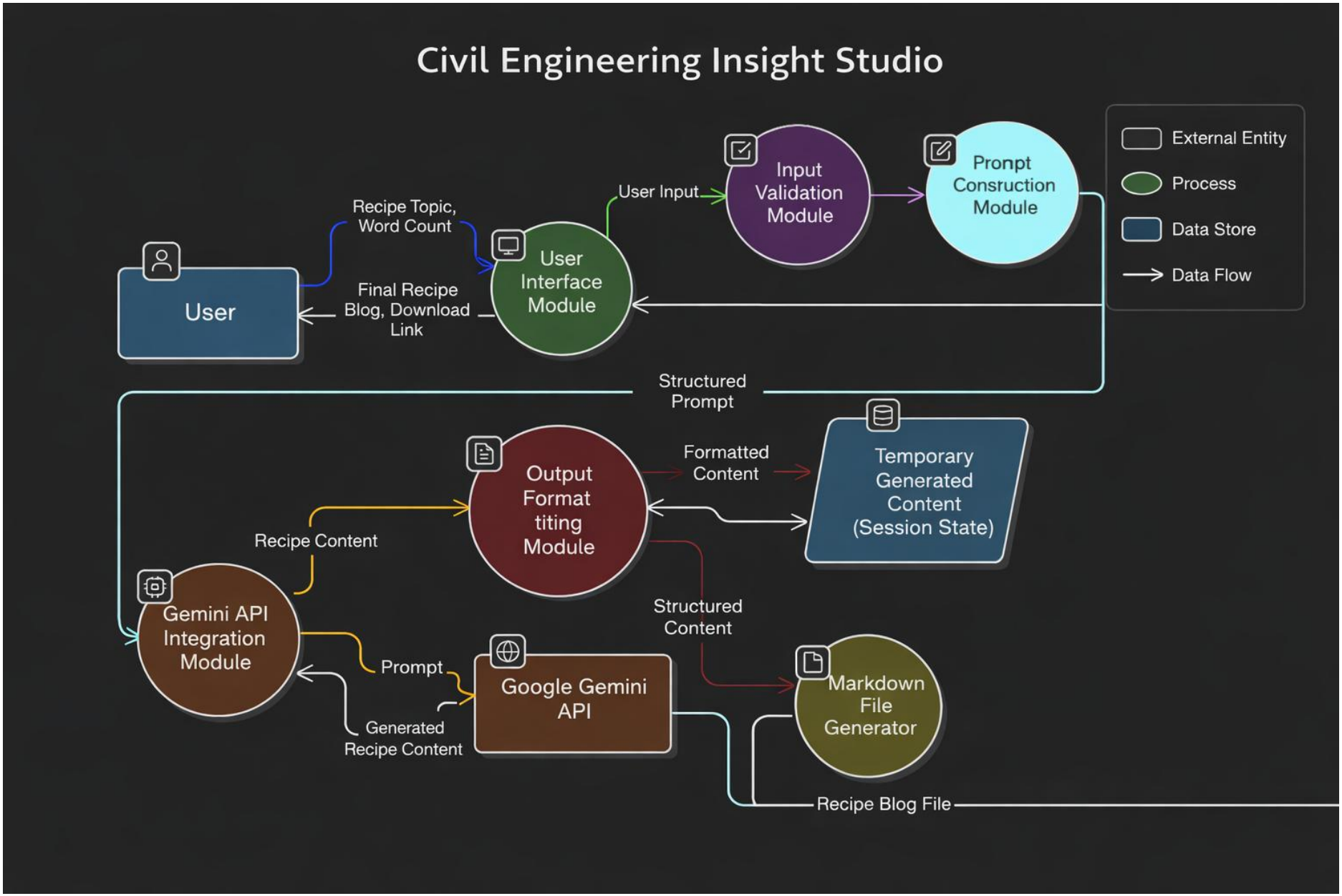
Data Flow Diagrams:

A Data Flow Diagram (DFD) visually represents how data moves through the Civil Engineering Insight Studio system. It shows how user input (text + image) is processed by the AI model and how structured engineering insights are generated and displayed.

DFD Level 0 (Industry Standard)

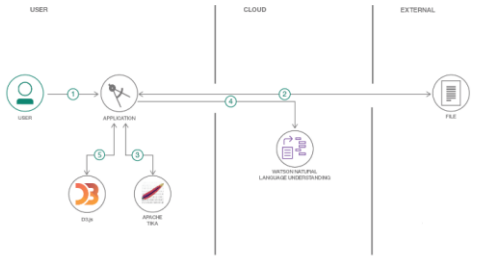


DFD Level 1 (Industry Standard)

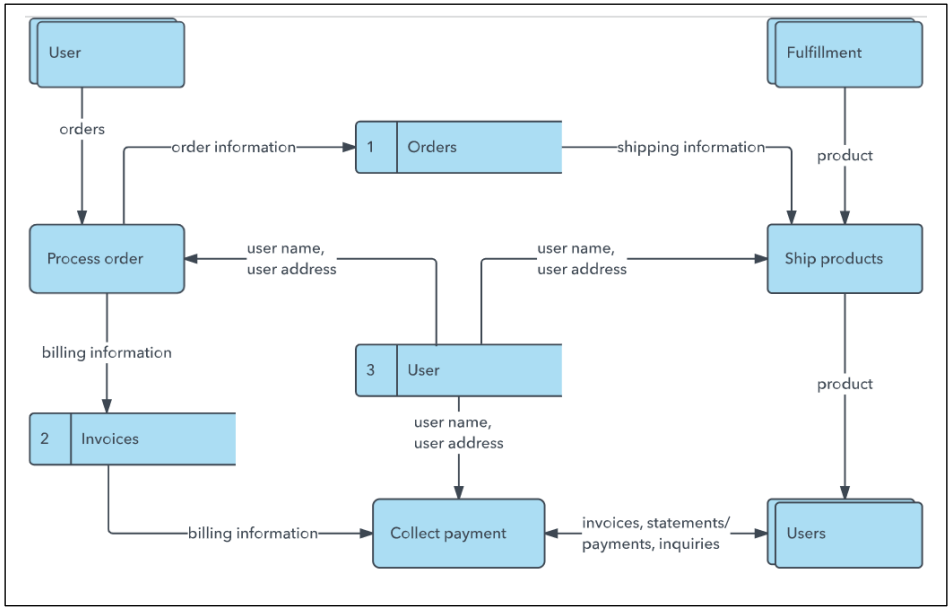

Civil Engineering Insight Studio
External Entity
Process
Data Store
Data Flow
User
User Interface Module
Input Validation Module
Prompt Construction Module
Recipe Topic, Word Count
User Input
Final Recipe Blog, Download Link
Structured Prompt
Output Formatting Module
Formatted Content
Temporary Generated Content (Session State)
Recipe Content
Gemini API Integration Module
Structured Content
Prompt
Google Gemini API
Markdown File Generator
Generated Recipe Content
Recipe Blog File

Example:

Flow



1. User configures credentials for the Watson Natural Language Understanding service and starts the app.
2. User selects data file to process and load.
3. Apache Tika extracts text from the data file.
4. Extracted text is passed to Watson NLU for enrichment.
5. Enriched data is visualized in the UI using the D3.js library.



User Stories

Use the below template to list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance Criteria	Priority	Release
Civil Engineer (Web User)	Upload Construction Image	USN-1	As a user, I can upload a construction site image so that the system can analyze the structure.	System accepts JPG/PNG images and displays preview before analysis.	High	Sprint-1

Civil Engineer (Web User)	Enter Analysis Request	USN-2	As a user, I can enter a structural analysis request.	System accepts text input and includes it in the AI prompt.	High	Sprint-1
Civil Engineer (Web User)	AI Structural Analysis	USN-3	As a user, I can generate a detailed structural report using AI.	System identifies materials, structural components, and construction stage.	High	Sprint-1
Civil Engineer (Web User)	Display Generated Report	USN-4	As a user, I can view the generated structural analysis directly on the screen.	Generated report appears clearly formatted in the UI.	High	Sprint-1
Civil Engineer (Web User)	Download Report	USN-5	As a user, I can download the generated structural report.	Clicking download provides a valid report file containing generated content.	High	Sprint-1

Civil Engineer (Web User)	Input Validation	USN-6	As a user, I am prevented from generating analysis without uploading an image.	System shows validation message and blocks analysis.	High	Sprint-1
Civil Engineer (Web User)	Regenerate Analysis	USN-7	As a user, I can regenerate analysis by modifying the prompt or uploading a new image.	New output replaces previous result without system error.	Medium	Sprint-2
System	Gemini API Integration	USN-8	As the system, I must send image + structured prompt to Google Gemini API and receive a response.	API request succeeds and returns structured engineering insights.	High	Sprint-1
System	Error Handling	USN-9	As a user, I receive an error message if AI analysis fails.	System displays clear error message without crashing.	Medium	Sprint-2