

## Project Design Phase-II

### Data Flow Diagram & User Stories

|               |                                  |
|---------------|----------------------------------|
| Date          | 18 February 2026                 |
| Team ID       | LTVIP2026TMIDS24197              |
| Project Name  | Civil Engineering Insight Studio |
| Maximum Marks | 4 Marks                          |

## Part-1: Data Flow Diagrams (DFD)

### DFD Level 0

**Example: (Simplified)**

Flow

```

graph LR
    User((User)) --> TIKA((TIKA))
    TIKA --> NLU((Watson NLU))
    NLU --> Visualize(( ))
    
```

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

**Example: DFD Level 0 (Industry Standard)**

```

graph TD
    User[User] -- "orders" --> ProcessOrder[Process order]
    User -- "user name, user address" --> ShipProducts[Ship products]
    User -- "user name, user address" --> CollectPayment[Collect payment]
    ProcessOrder -- "order information" --> Orders[1 Orders]
    Orders -- "user name, user address" --> Invoices[2 Invoices]
    Orders -- "product" --> ShipProducts
    Invoices -- "user name, user address" --> CollectPayment
    Invoices -- "product" --> Users[Users]
    CollectPayment -- "Invoices" --> Users
    
```

**Example: DFD Level 0**

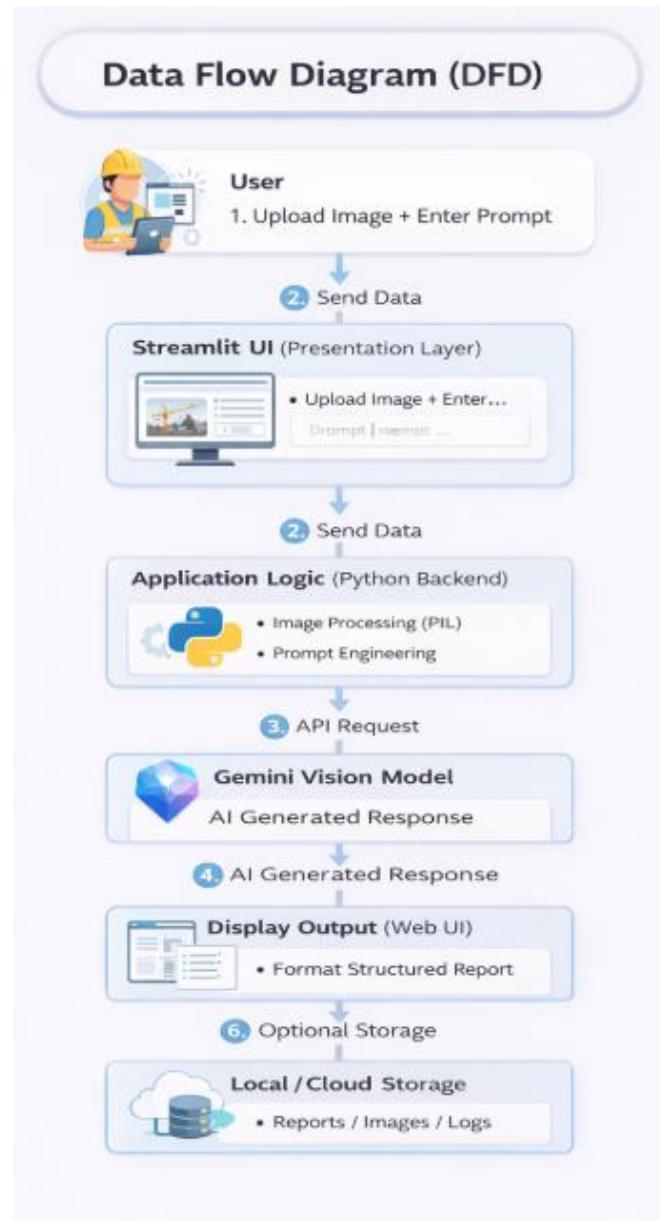
**Example: (Simplified)**

| User Type         | Functional Reqosss                   |
|-------------------|--------------------------------------|
| 1. User Interface | Python, CSS, Javascript / angular Js |

**Example: DFD Level 0 (Industry Standard)**

| User Story | Priorittees | Release | Release  |
|------------|-------------|---------|----------|
| USN-1      | High        | High    | Sprint-1 |

## DFD Level 1 (Detailed Flow)



# Part-2: User Stories

## User Types

- Civil Engineer (Web User)
- Project Manager
- Administrator

## User Stories Table

| User Type                 | Functional Requirement (Epic) | User Story Number | User Story / Task   | Acceptance Criteria   | Priority | Release  |
|---------------------------|-------------------------------|-------------------|---|---|----------|----------|
| Civil Engineer (Web User) | Image Upload                  | USN-1             | As a civil engineer, I can upload a construction site image for analysis    | I can successfully upload JPG/PNG images  | High     | Sprint-1 |
| Civil Engineer (Web User) | Prompt Input                  | USN-2             | As a user, I can enter a text prompt describing what analysis I need        | I can type and submit a prompt successfully                                     | High     | Sprint-1 |
| Civil Engineer (Web User) | AI Analysis                   | USN-3             | As a user, I can receive a detailed structural description after submission | The system generates structured output with materials, components, and insights | High     | Sprint-1 |
| Civil Engineer (Web User) | Material Detection            | USN-4             | As a user, I can identify construction materials from the image             | Materials such as concrete, steel, and bricks are listed in the response        | High     | Sprint-1 |
| Project Manager           | Progress Monitoring           | USN-5             | As a project manager, I can analyze project progress from site images       | The response includes completed and planned elements                            | High     | Sprint-1 |
| Project Manager           | Report Generation             | USN-6             | As a manager, I can generate a structured report from the AI output         | The report is displayed in a clear, structured format                           | Medium   | Sprint-2 |

|                 |                       |        |  |   |        |          |
|-----------------|-----------------------|--------|--|---|--------|----------|
| Administrator   | System Monitoring     | USN-7  | As an admin, I can monitor application usage and API performance | Usage logs and system performance data are accessible | Medium | Sprint-2 |
| Administrator   | API Management        | USN-8  | As an admin, I can securely manage API keys and configurations   | API key stored securely in environment variables      | High   | Sprint-1 |
| Civil Engineer  | Error Handling        | USN-9  | As a user, I receive an error message if no image is uploaded    | System shows warning when image is missing            | High   | Sprint-1 |
| Project Manager | Documentation Storage | USN-10 | As a manager, I can store generated reports for future reference | Reports are saved locally or in cloud storage         | Medium | Sprint-2 |