Project Design Phase-II

Data Flow Diagram & User Stories

Date	31 January 2025
Team ID	LTVIP2025TMID60699
Project Name	Sustainable Smart City Assistant Using IBM Granite LLM
Maximum Marks	4 Marks

Data Flow Diagrams:

Context-Level Overview

At the highest level, the system receives **data from external APIs** (like AQI, traffic, water, and energy metrics) and interacts with the **city resident (user)**. The Smart City Assistant collects, stores, and visualizes this data, providing users with meaningful information.

Data Flows:

- **User → System**: Interacts via chat, dashboard, and input preferences.
- **System → External APIs**: Requests live city data.
- **System → User**: Returns processed insights, summaries, alerts, and visuals.

Internal Functional Flow

The system is divided into six main modules:

1. **Real-Time City Metrics**
    - Fetches and stores incoming data from APIs (air quality, traffic, etc.).
2. **Forecasting System**
    - Uses stored data to predict future trends (3–5) for each metric.
3. **Anomaly Detection**
    - Analyzes data patterns to detect and flag sudden, abnormal changes.
4. **Summarizer**
    - Simplifies weekly data into an understandable report format for the user.
5. **Chat Assistant**
    - Accepts natural language questions from the user and provides intelligent answers based on stored data or summaries.
6. **Eco Tips & Alerts**
    - Delivers timely, personalized sustainability tips and urgent alerts based on real-time or abnormal data conditions.

Data Stores:

- **User Preferences**: Used by chat, alerts, and tips system to personalize the experience.
- **Live Metrics**: Used by forecasting and anomaly detection.

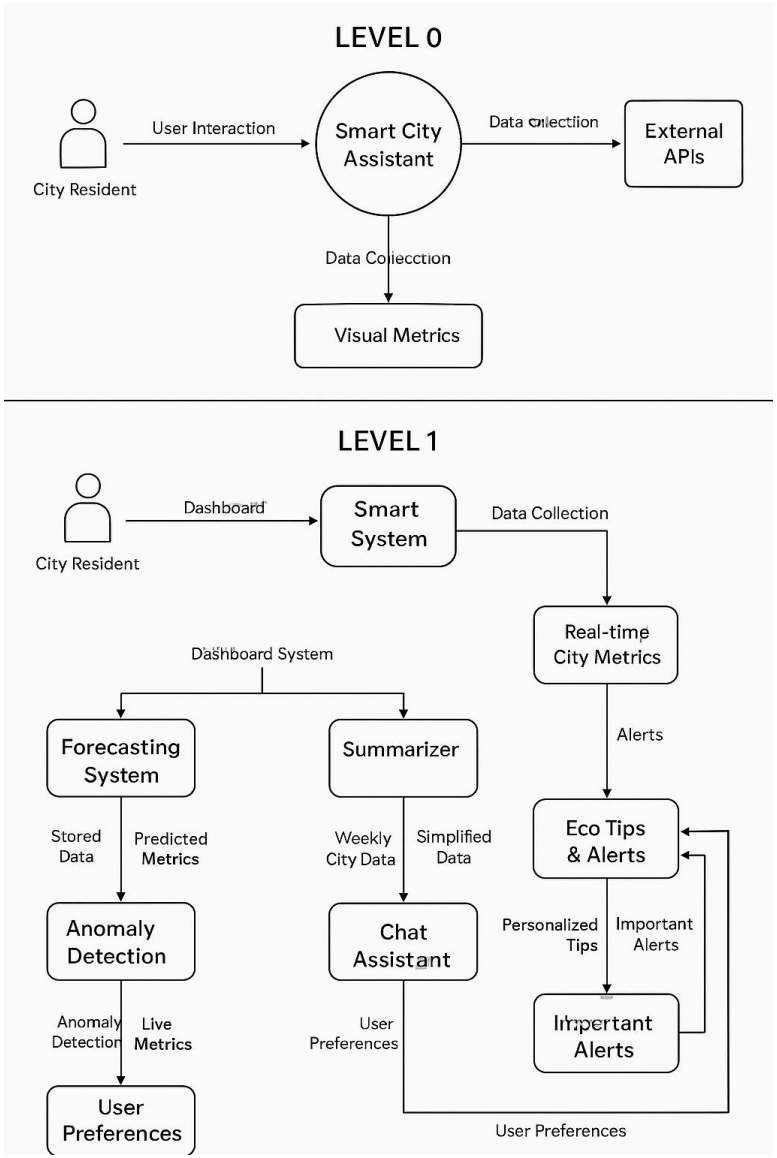
User Interaction Flow:

City residents interact via the UI to receive:

- Dashboard updates

- Chat responses
- Eco tips
- Summarized reports
- Forecasts and alerts

Example: **(Simplified)**



User Stories

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

User Type	Functional Requirement (Epic)	User Story No.	User Story / Task	Acceptance Criteria	Priority	Release
City Resident (Web)	**Dashboard**	**USN-1**	**As a user, I can view real-time city metrics like AQI, water, traffic, energy.**	**I can see clear visuals of metrics updated regularly**	**High**	**Sprint-1**
		USN-2	**As a user, I can switch between cities and themes.**	**Switching city updates all data; themes change layout without bugs**	**Medium**	**Sprint-1**
	Forecasting	**USN-3**	**As a user, I can view short-term environmental forecasts.**	**Forecasts display for 3–5 days clearly for each metric**	**High**	**Sprint-2**
	Anomaly Detection	**USN-4**	**As a user, I get notified when sudden changes happen in the city data.**	**App flags anomalies with a warning color/icon**	**High**	**Sprint-3**
	Smart Chat Assistant	**USN-5**	**As a user, I can ask the assistant eco-related questions or for help navigating.**	**Chat responds accurately to city-specific or generic queries**	**Medium**	**Sprint-4**
	Summarizer	**USN-6**	**As a user, I can see a weekly eco summary of my city.**	**Weekly summaries are generated and easy to read**	**Medium**	**Sprint-4**
	Eco Tips	**USN-7**	**As a user, I get simple green tips based on my city conditions.**	**Tips match local metrics (e.g., if AQI is bad, recommend indoor plants)**	**Medium**	**Sprint-5**
	Alerts	**USN-8**	**As a user, I get important alerts (like high pollution, water warnings).**	**Only critical, personalized alerts are sent**	**High**	**Sprint-5**