

🔍 Brainstorming & Idea Prioritization

Date	20 June 2025
Team ID	LTVIP2025TMID29572
Project Name	Sustainable Smart City Assistant
Maximum Marks	4 Marks

Step-1: Team Gathering, Collaboration and Select the Problem Statement

✅ Before You Collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

- 🔍 Team Gathering:

Participants:

- Janga Sai Sudheshna

-K. Samitha Devi

-G. Bhavya Sri

- K. Alekya Devi

Purpose:

- Define clear roles: backend, frontend, sustainability logic, image generation, dashboard UI.

- 🔍 Set the Goal:

Build a unified AI-powered web assistant that helps citizens and city officials in a sustainable smart city.

The assistant should provide:

- Eco-friendly advice for waste management (recycling).
- Real-time city health dashboards (AQI, water, energy, waste).
- Smart city image generation from text.
- Comparison Between Two Cities Using Retrieval Augmented Generation (RAG)

- 📖 Learn How to Use the Facilitation Tools:

Use collaboration platforms like Mural, GitHub, VS Code Live Share, and Streamlit Cloud for distributed development.

1📖 Define Your Problem Statement

📖 How Might We:

Citizens in growing urban areas face challenges related to sustainability, such as inefficient recycling, rising pollution, and uneven city development. They often lack access to real-time environmental data and clear comparisons across cities. This gap limits their ability to make informed decisions and contribute effectively to sustainable living.

2📖 Brainstorm

💡 Write down any ideas that come to mind for your team roles or modules.

- **K. Samitha Naga Lakshmi** suggested integrating large language models like IBM Granite for providing intelligent recycle suggestions. Additionally, she recommended comparing two cities using Retrieval-Augmented Generation (RAG) for performance benchmarking and deploying the backend using Fast API for scalability. and to Develop a RAG-based solution generator, where users can input city-related sustainability problems (e.g., air pollution, traffic congestion), and the system suggests practical solutions aligned with sustainable development goals.

- **Janga Sai Sudheshna** proposed creating a real-time city monitoring dashboard that includes air quality index (AQI), energy consumption, and water usage. She emphasized the use of Altair and Streamlit for interactive and visually appealing data charts. Sudheshna also suggested adding a text-to-image generation module that visualizes smart city concepts using Stable Diffusion, served via a Fast API endpoint.
- **Gunnam Bhavya Sri** offered to design and develop an interactive front-end interface for the Smart City Assistant using Streamlit, focusing on user experience and modular navigation.
- **Alekya Devi** took charge of gathering all functional and non-functional requirements related to the project to ensure alignment with sustainable smart city goals and technical feasibility

🔗 Key Rules of Brainstorming

- Stay aligned with sustainability and citizen engagement goals.
- Encourage even wild futuristic ideas (drone delivery, solar buses).
- Don't criticize ideas — document everything for evaluation.

3🔗 Step 3: Idea Prioritization

🔗 Criteria: Feasibility, Impact, Innovation, Ease of Integration

✓ Prioritized Ideas:

- 🔗 Recycle Advisor: 4.5/5 (High Priority)
- 🔗 Health Dashboard: 4/5 (High Priority)
- 🔗 Problems of citizens & Solutions Using RAG: 4.8/5 (High Priority)
- 🔗 Image Generator: 4.5/5 (High Priority)

- 📊 Comparison Between Two Cities: 4.5/5 (High Priority)

📦 Tech Stack

- Frontend: Streamlit
- Backend: Python + HuggingFace Transformers + IBM Granite / FLUX
- Data Visualization: Altair
- Storage/Docs: Using Own Raw Data
- Deployment: Fast API

📦 Project Goals

- Promote sustainability through intelligent, real-time assistance
- Promote Smart Waste Management through Recycle Advisor
- Enable Visual Imagination of Future Cities via AI-Powered Image Generation
- Integrate with external LLMs/APIs to demonstrate extensibility
- Benchmark Urban Development through Smart City Comparison
- Provide Actionable Solutions to City-Level Sustainability Challenges
- Deliver Real-Time Urban Insights with an Interactive City Health Dashboard