

Project Design Phase
Proposed Solution Template

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| Date | 28 June 2025 |
| Team ID | LTVIP2025TMID60548 |
| Project Name | Sustainable Smart City Assistant Using IBM Granite LLM |
| Maximum Marks | 2 Marks |

Proposed Solution Template:

Project team shall fill the following information in the proposed solution template.

| S.No. | Parameter | Description |
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| 1. | Problem Statement (Problem to be solved) | Urban areas struggle with decentralized data systems, low citizen engagement, inefficiencies in sustainability planning, and a lack of real-time feedback loops. There is a growing need for AI-powered platforms that assist administrators and citizens in understanding, planning, and acting toward smarter and greener cities. |
| 2. | Idea / Solution description | The "Sustainable Smart City Assistant" is an interactive AI-driven platform powered by IBM Watsonx Granite LLM. It integrates modules like city KPI forecasting, eco advisory, anomaly detection, citizen feedback tracking, policy summarization, and interactive chat. Built using FastAPI and Streamlit, the system features a modular design, real-time data rendering, and semantic vector search using Pinecone, enabling smarter decision-making and citizen collaboration. |
| 3. | Novelty / Uniqueness | Unlike conventional dashboards or siloed reporting tools, this assistant combines real-time data analytics, LLM-generated summaries, semantic search, and forecasting into one unified interface. It empowers both administrators and the public through a single platform with multilingual support, dynamic visualizations, smart routing, and sustainability reports generated instantly using natural language. |
| 4. | Social Impact / Customer Satisfaction | This solution enhances transparency, promotes community engagement, and accelerates urban problem-solving. Citizens are able to easily report issues, access policy insights, and receive eco-tips, while city administrators benefit from rapid anomaly detection, trend forecasting, and actionable sustainability insights—leading to better governance and increased public satisfaction. |

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| 5. | Business Model (Revenue Model) | The assistant can be offered as a SaaS platform for municipalities with tiered subscriptions based on city size and number of modules activated. Additional revenue can come from premium features like automated sustainability report generation, white-labeled interfaces for different cities, and API access for third-party civic apps or urban research institutions. |
| 6. | Scalability of the Solution | The modular architecture ensures that the platform is scalable across cities of different sizes. New modules can be added without disrupting existing features. The use of cloud-based APIs, vector databases, and environment-driven configuration (.env) makes deployment portable and secure. Future extensions can support different geographies, languages, IoT integration, or verticals like transportation, waste management, and healthcare. |