**Project Design Phase-II**
**Technology Stack (Architecture & Stack)**

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|---|---|
| Date | 19 JUNE 2025 |
| Team ID | LTVIP2025TMID29997 |
| Project Name | CITIZEN AI |
| Maximum Marks | 4 Marks |

**Technical Architecture:**

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

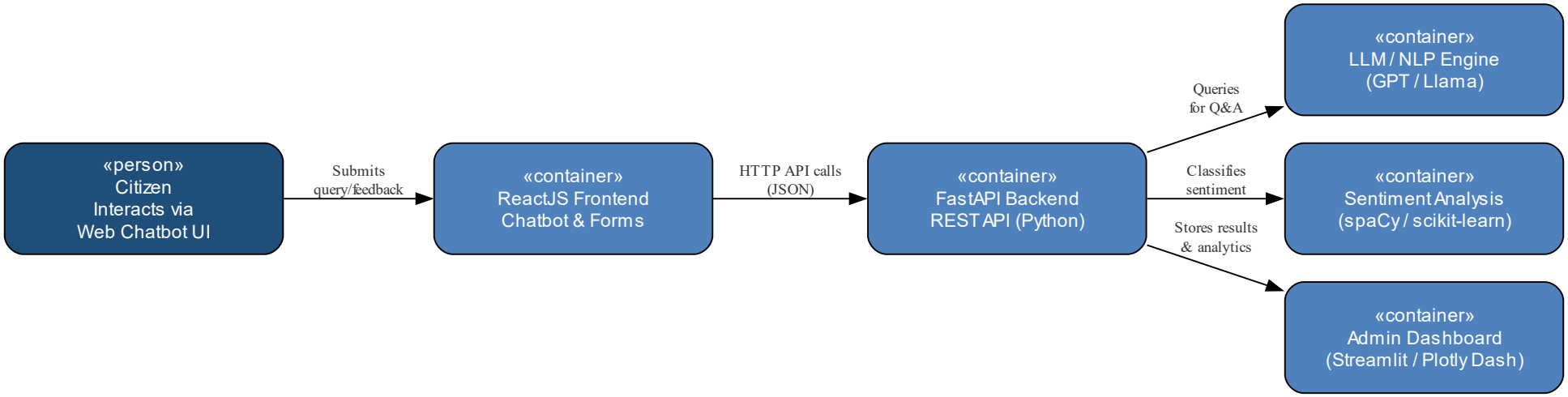

**Table-1 : Components & Technologies:**

| S.No | Component | Description | Technology |
|---|---|---|---|
| 1 | User Interface | Web-based chatbot & dashboard for citizen queries | ReactJS + Tailwind CSS |
| 2 | Application Logic-1 | Natural Language Understanding (NLU) for queries | FastAPI + Hugging Face Transformers |
| 3 | Application Logic-2 | Sentiment analysis & classification | scikit-learn or spaCy |
| 4 | Application Logic-3 | Visual analytics dashboard for officials | Streamlit / Plotly Dash |
| 5 | Database | Citizen query logs & feedback | PostgreSQL |
| 6 | File Storage | Uploaded documents (if any) | Local filesystem or AWS S3 |
| 7 | Machine Learning Model | Pre-trained LLM for Q&A | OpenAI GPT-4-turbo / Llama 3 |
| 8 | Infrastructure | Deployment & containerization | Docker + Kubernetes (optional, for scaling) |

**Table-2: Application Characteristics:**

| S.No | Characteristics | Description | Technology |
|---|---|---|---|
| 1 | Open-Source Frameworks | Backend API, Frontend UI, ML pipelines | FastAPI, ReactJS, scikit-learn |
| 2 | Security | Role-based access for officials, data encryption | JWT Auth, HTTPS |
| 3 | Scalable Architecture | Microservices for chatbot, sentiment engine, and dashboard | Docker, Kubernetes |
| 4 | Availability | Cloud deployment for 24/7 citizen access | AWS EC2 or Azure VM |
| 5 | Performance | Optimized for concurrent queries & real-time feedback | GPU inference where needed |

**References:**

https://c4model.com/ https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/

https://www.ibm.com/cloud/architecture https://aws.amazon.com/architecture https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d