

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

Date	21 June 2025
Team ID	LTVIP2025TMID50896
Project Name	Visualizing Housing Market Trends: An Analysis Of Sale Prices And Features Using
Maximum Marks	4 Marks

Technical Architecture:

The Deliverables shall include the architectural diagrams below and the information as per the table 1 & table 2

Reference: <https://developer.ibm.com/patterns/ai-powered-backend-system-for-order-processing-during-pandemics/>

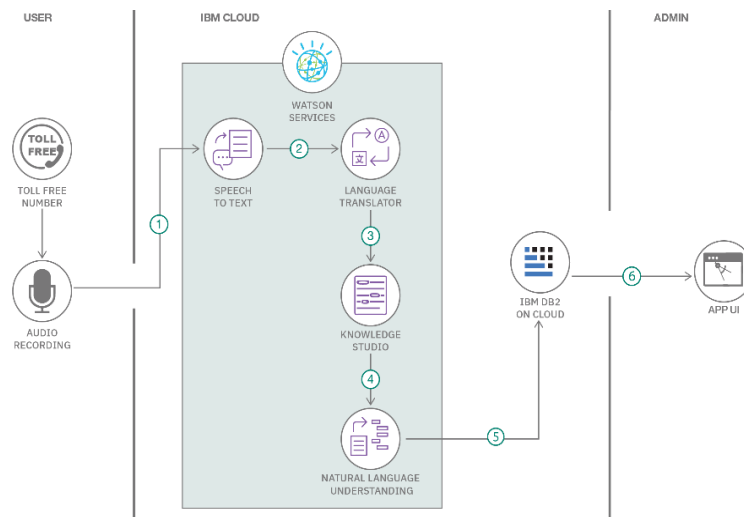


Table-1:Components&Technologies:

S.No	Component	Description	Technology
1.	UserInterface	Webinterfacefordatavisualization&interaction	HTML,CSS,JavaScript,Plotly.js
2.	ApplicationLogic-1	Datapreprocessingandnormalization	Python
3.	ApplicationLogic-2	Correlationanalysisbetweeneconomicindexand indicators	Python(SciPy,statsmodels)
4.	ApplicationLogic-3	Interactivedashboardgeneration	Streamlit/Flask/Dash
5.	Database	Storerawandprocesseddata	MySQL
6.	CloudDatabase	Hostforshared/real-timeaccess	Firebase
7.	FileStorage	Uploadandmanagedatasets(CSV, Excel)	LocalFilesystem
8.	ExternalAPI-1	Pulladditionaleconomicdata	WorldBank API,
9.	ExternalAPI-2	Geomappingorvisualizationervices	GoogleMapsAPI.
10.	MachineLearningModel	Predictprosperitybasedoneconomicindicators	Scikit-learnRegressionModel
11.	Infrastructure(Server/Cloud)	Hostinganddeployment	Local.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Frameworks used for visualization and app deployment	Streamlit, Plotly, Dash, Pandas
2.	Security Implementations	Basic input validation, role access, and secure upload	SSL, SHA-256 hashing, Firebase Auth
3.	Scalable Architecture	Modular, scalable with cloud hosting & stateless APIs	Microservices architecture on Flask/Streamlit
4.	Availability	Cloud-hosted with minimal downtime	AWS EC2, Firebase Hosting, Streamlit Cloud
5.	Performance	Optimized through caching and minimal payload visualization for fast loading	JSON queries

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>