Project Report Format

1. INTRODUCTION

1.1 Project Overview

To analyse the factors influencing **house sale prices** and provide insights into how property features, renovation history, and location attributes impact real estate valuation. The goal is to support better decision-making for property investment, pricing strategy, and renovations.

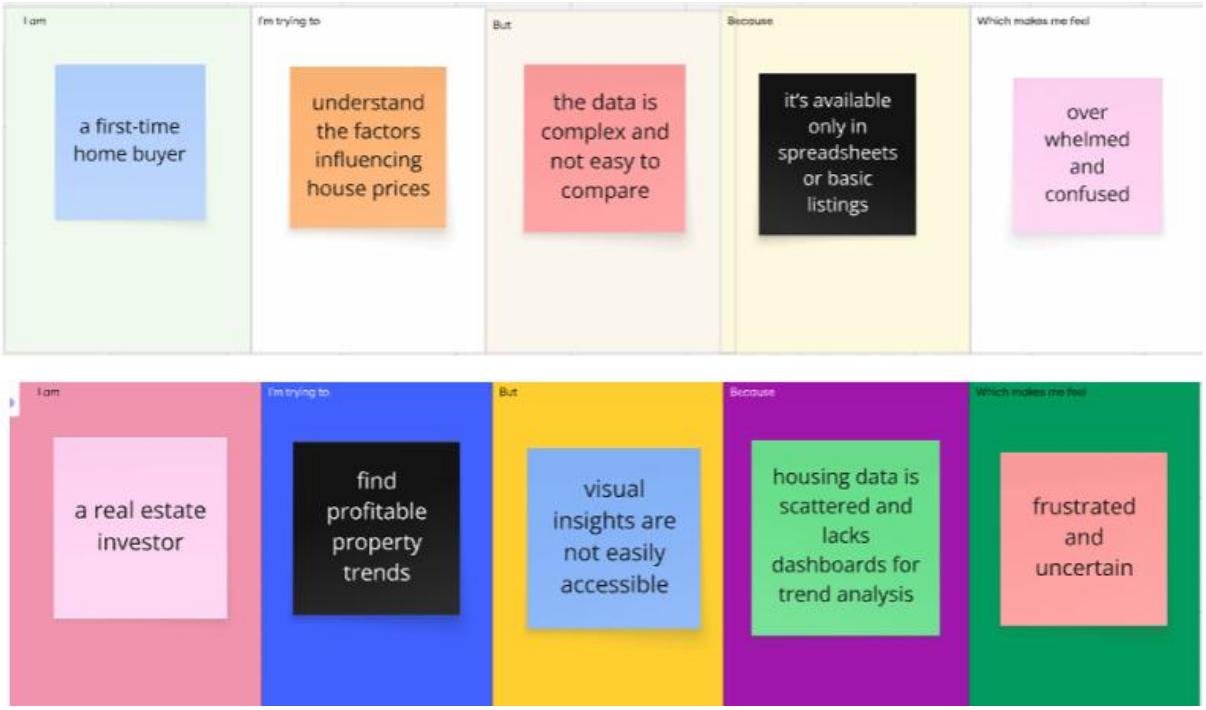
1.2 Purpose

The purpose of this project is to analyse residential property data to understand the key factors influencing **house sale prices**. By examining property features, renovation history, location data, and buyer behaviour, this analysis aims to:

- Identify patterns and correlations between house characteristics and sale prices
- Determine the impact of renovations and house conditions on property value
- Compare pricing trends across different zip code groups and locations
- Provide actionable insights for homeowners, real estate agents, and buyers to make informed decisions regarding pricing, renovations, and investments

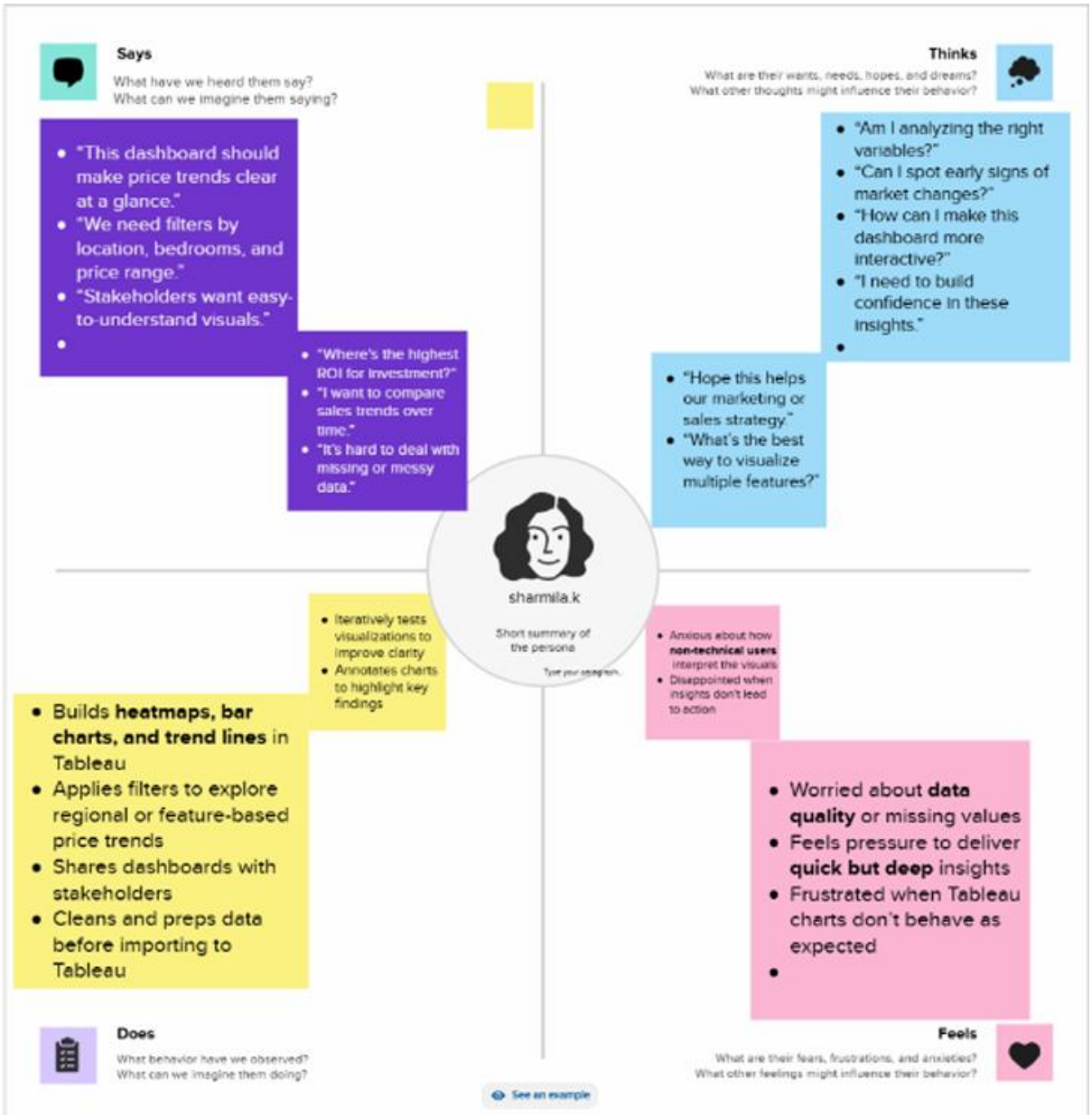
2. IDEATION PHASE

2.1 Problem Statement



Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	a first-time home buyer	understand the factors influencing house prices	the data is complex and not easy to compare	it's available only in spreadsheets or basic listings	overwhelmed and confused
PS-2	a real estate investor	find profitable property trends	visual insights are not easily accessible	housing data is scattered and lacks dashboards for trend analysis	housing data is scattered and lacks dashboards for trend analysis

2.2 Empathy Map Canvas



2.3 Brainstorming

Template

Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

10 minutes to prepare
1 hour to collaborate
2-8 people recommended

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.

10 minutes

Team gathering
- Data analysts, Tableau experts, real estate domain specialists, business stakeholders.

Set the goal
- Identify regional or seasonal pricing patterns.
- Examine impact of renovations on price.
- Visualize trends by number of bedrooms, bathrooms, and square footage.

Learn how to use the facilitation tools
- Use **Tableau's Dashboard and Story features** to present your insights interactively.
- Utilize **filters, highlights, and calculated fields** for more refined insights.
- Create templates or predefined views for others to explore.
- If multiple people are contributing, consider using **Tableau Server or Tableau Cloud** for collaboration.

Open article →

1 Define your problem statement

"It is challenging to understand which factors (like location, size, age, or renovations) most influence housing sale prices. Without proper visual tools, stakeholders struggle to make informed decisions based on market trends."

5 minutes

PROBLEM

"How might we use Tableau to visualize and uncover the key factors influencing housing sale prices and trends over time?"

Key rules of brainstorming

To run an smooth and productive session

- Stay in topic.
- Encourage wild ideas.
- Defer judgment.
- Listen to others.
- Go for volume.
- If possible, be visual.

2 Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

Person 1

- Create a map showing average price per ZIP code
- Use bar charts to compare sales by number of bedrooms
- Timeline showing price trends by year

Person 2

- Analyze impact of renovations on price
- Visualize age of house vs price
- Create filters by property type

Person 3

- Heat map of sale prices by area
- Highlight top 10 most expensive neighborhoods
- Compare sale price by house size

Person 4

- Story dashboard with interactive filters
- Use box plots to show price distribution
- Add tooltips with property photos

Person 5

- Correlation chart: #Bathrooms vs Price
- Show % of homes renovated per year
- Pie chart of property type distribution

3 Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.

20 minutes

1. Location-Based Price Trends
- Map showing average price per ZIP code
- Heat map of sale prices by area
- Compare prices in top 10 neighborhoods
- Combine Tableau with Google Maps

2. Time & Seasonality Insights
- Line chart of sales price trends over time
- Timeline showing yearly change in prices
- Analyze seasonal sales patterns
- Dashboard showing market evolution over years

3. House Feature Comparisons
- Sale price by number of bedrooms/bathrooms
- Bar chart comparing square footage vs. price
- Histogram of house sizes and corresponding prices
- Scatter plot: house age vs. sale price

4. Renovation Impact
- Compare prices before and after renovation
- Show % of homes renovated per year
- Analyze price increase by renovation year
- Dashboard filter by renovation status

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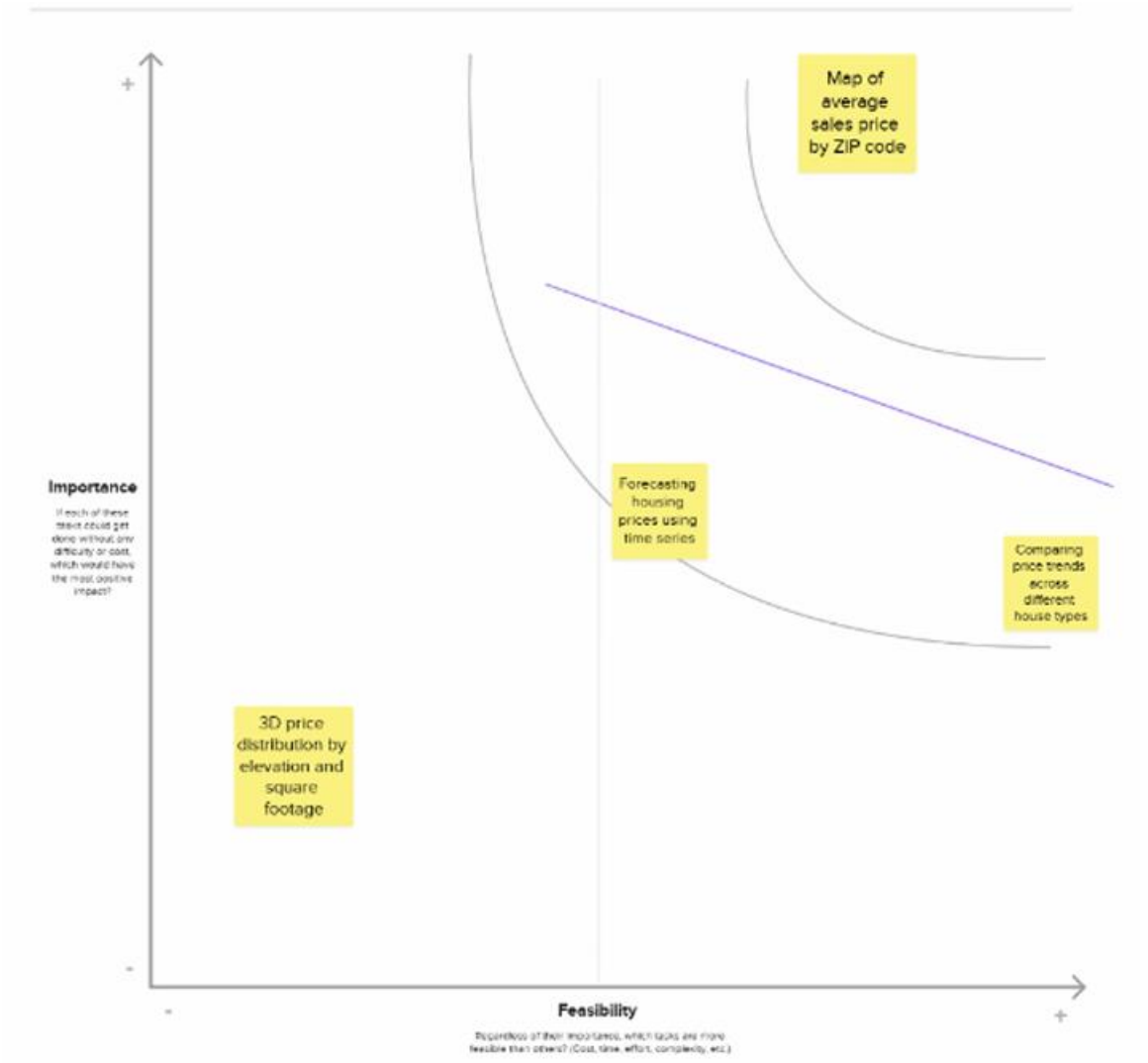


3. REQUIREMENT ANALYSIS

3.1 Customer Journey map

A Customer Journey Map is a visual or structured representation of the entire experience a customer goes through when interacting with a product, service, or process—from the first moment of awareness to post-purchase engagement.

Purpose of a Customer Journey Map:

- Understand the customer's perspective step by step
- Identify pain points, needs, and emotions at each stage
- Improve the user experience by addressing gaps or confusion
- Align product, marketing, and design strategies with actual customer behaviour

3.2 Solution Requirement

Functional Requirements:

Following are the functional requirements of the proposed solution.

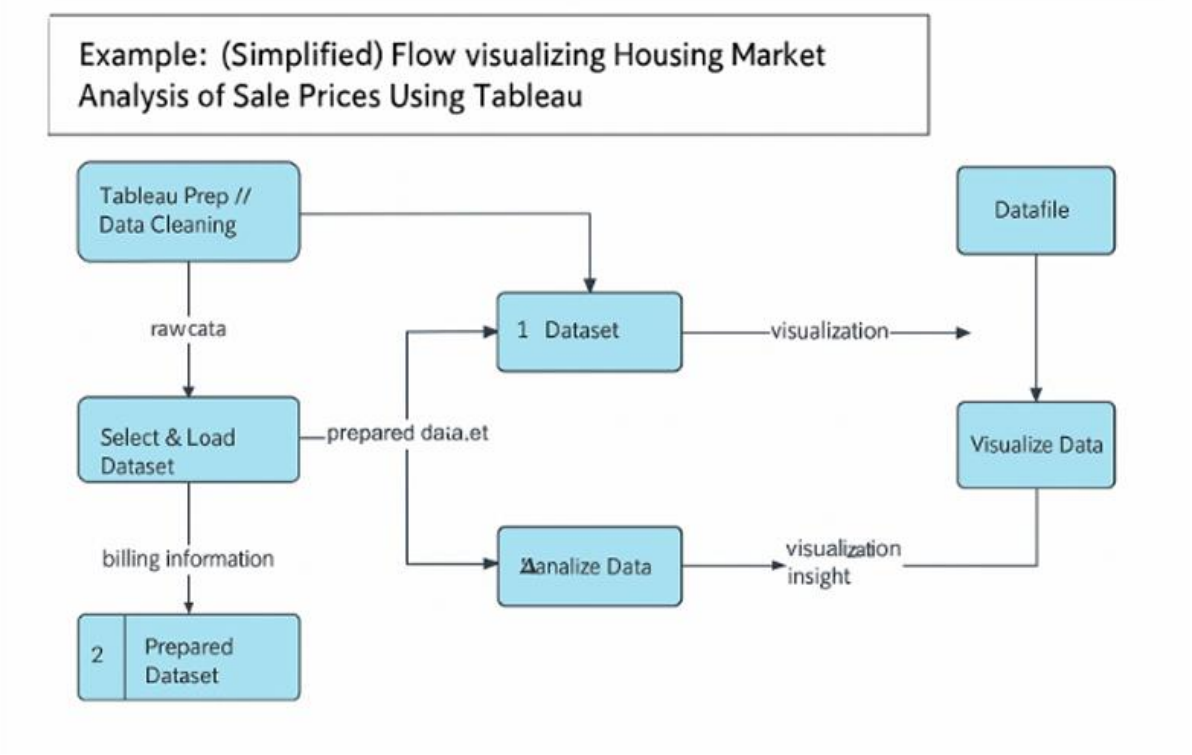
FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIN
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Data Upload & Processing	Upload housing dataset (CSV, Excel) - Data cleaning and preparation - Auto mapping of features
FR-4	Dashboard Visualizations	- Sales price analysis by year, location, house condition - Filters

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Interface must be simple, intuitive, and user-friendly to support non-technical users.
NFR-2	**Security**	All user data and uploaded files should be encrypted. Secure login and authentication must be enforced
NFR-3	**Reliability**	The dashboard must function consistently without crashes, even with large datasets.
NFR-4	**Performance**	Visualizations should load within 5 seconds for smooth interaction.
NFR-5	**Availability**	The solution should ensure 99.9% uptime and be accessible 24/7

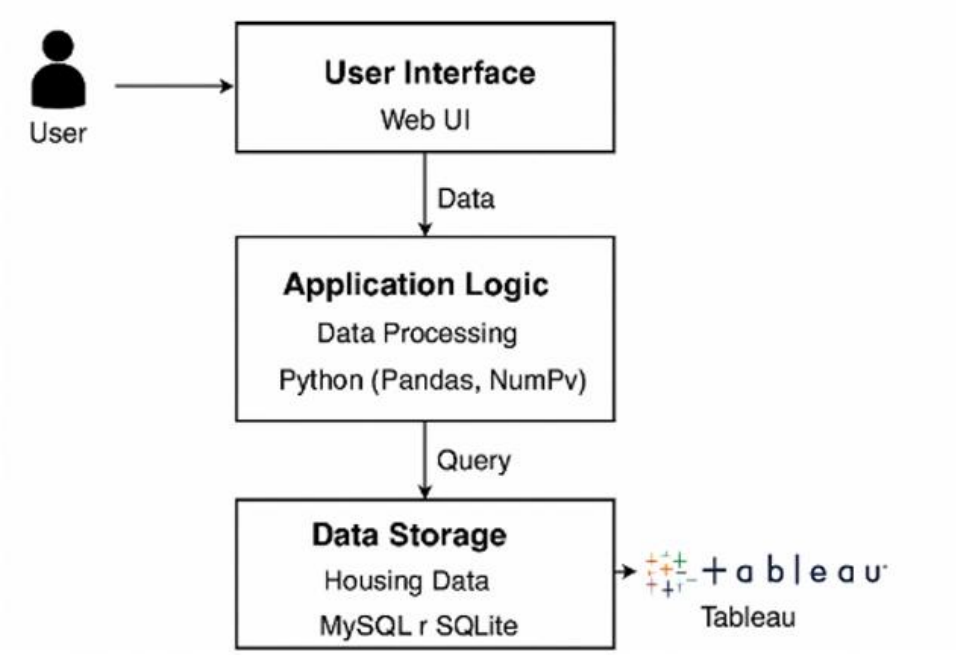
3.3 Data Flow Diagram



3.4 Technology Stack

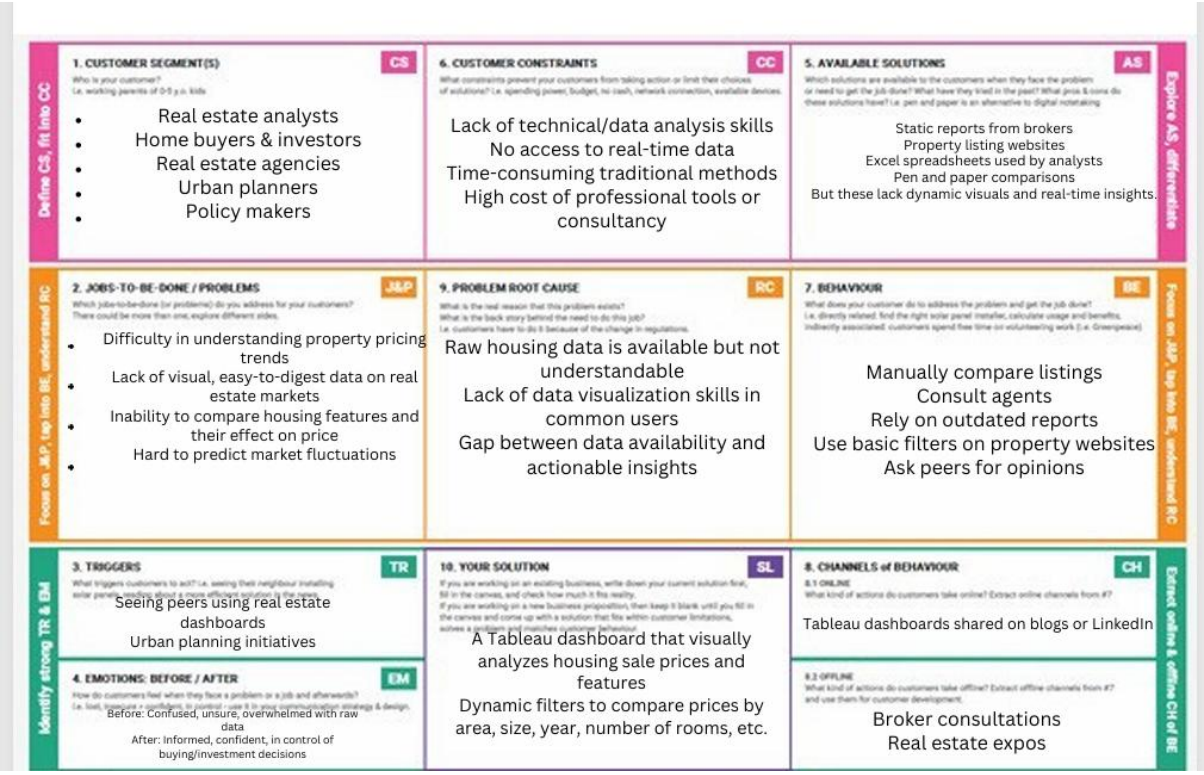
Technical Architecture:

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



4. PROJECT DESIGN

4.1 Problem Solution Fit



4.2 Proposed Solution

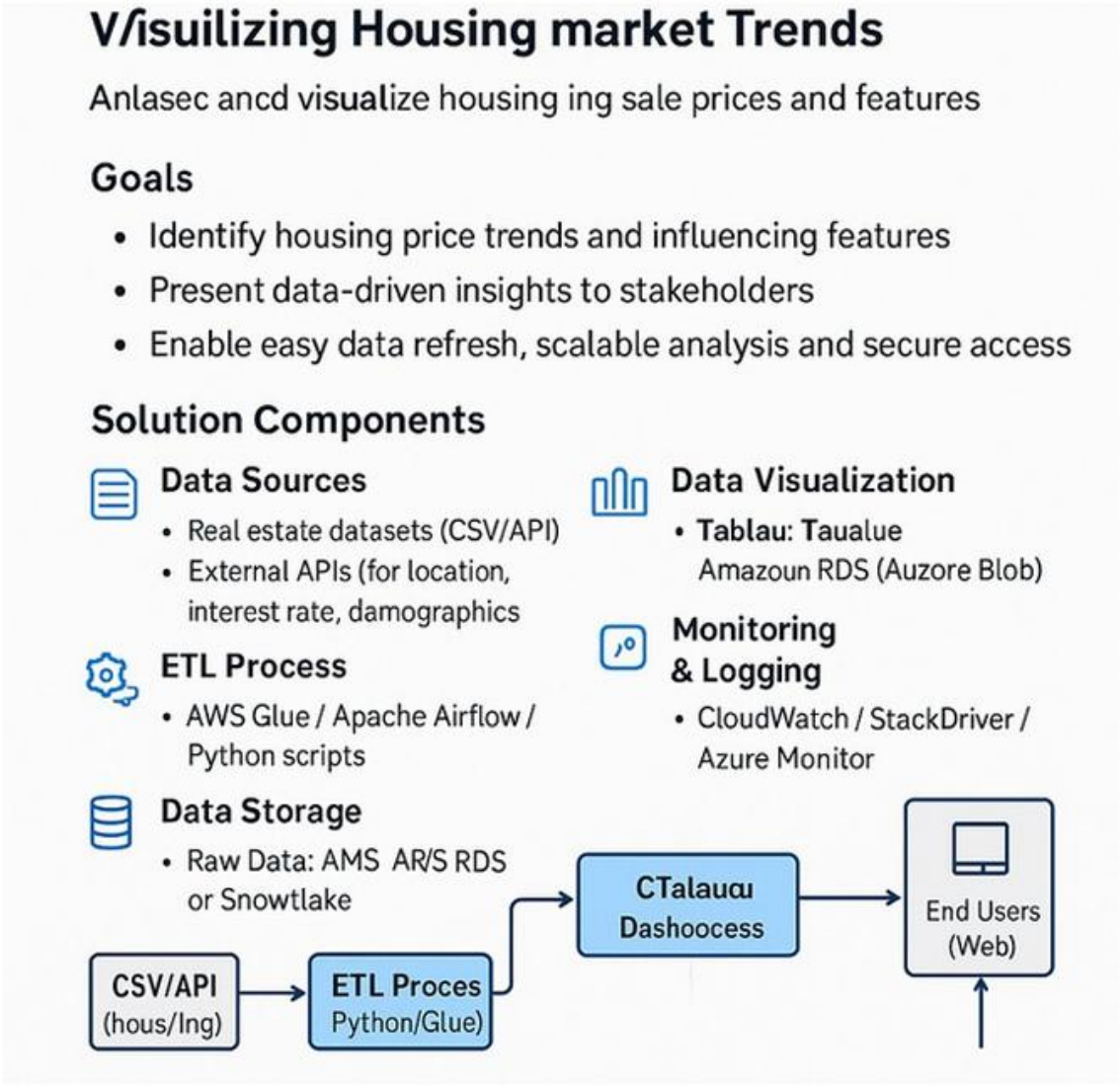
Proposed Solution Template:

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

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	The real estate market is complex, with sale prices influenced by multiple variables such as location, property features, and economic factors. Buyers, sellers, and investors lack clear, visual insights to make informed decisions. There is a need for an intuitive tool to analyze and understand housing market trends.
2.	Idea / Solution description	The project proposes an interactive Tableau dashboard that analyzes housing data, visualizing trends in sale prices based on key features like size, location, number of rooms, and age of the property. The dashboard provides dynamic filters and charts to help users make data-driven decisions.
3.	Novelty / Uniqueness	Unlike static reports, our solution offers real-time, interactive visualizations tailored to user needs. The use of Tableau enables deep drill-down capabilities and insightful trend analysis that is easy to interpret even for non-technical users.
4.	Social Impact / Customer Satisfaction	The tool empowers homebuyers, sellers, and real estate professionals with data transparency, leading to smarter choices and better market fairness. It increases customer confidence and satisfaction by simplifying complex data into visual stories.
5.	Business Model (Revenue Model)	The tool empowers homebuyers, sellers, and real estate professionals with data transparency, leading to smarter choices and better market fairness. It increases customer confidence and satisfaction by simplifying complex data into visual stories.
6.	Scalability of the Solution	The solution is highly scalable. It can be expanded to include data from different regions, integrate predictive analytics using machine learning, and be embedded into real estate platforms or mobile apps for broader accessibility.

4.3 Solution Architecture

● **Example - Solution Architecture Diagram:**



5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

- Define the Project Scope
- Identify Stakeholders and Audience
- Collect and Assess Data Sources
- Select Visualization Tools & Tech Stack
- Determine Key Visualizations
- Set Milestones and Timeline
- Potential Challenges & Mitigation

6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

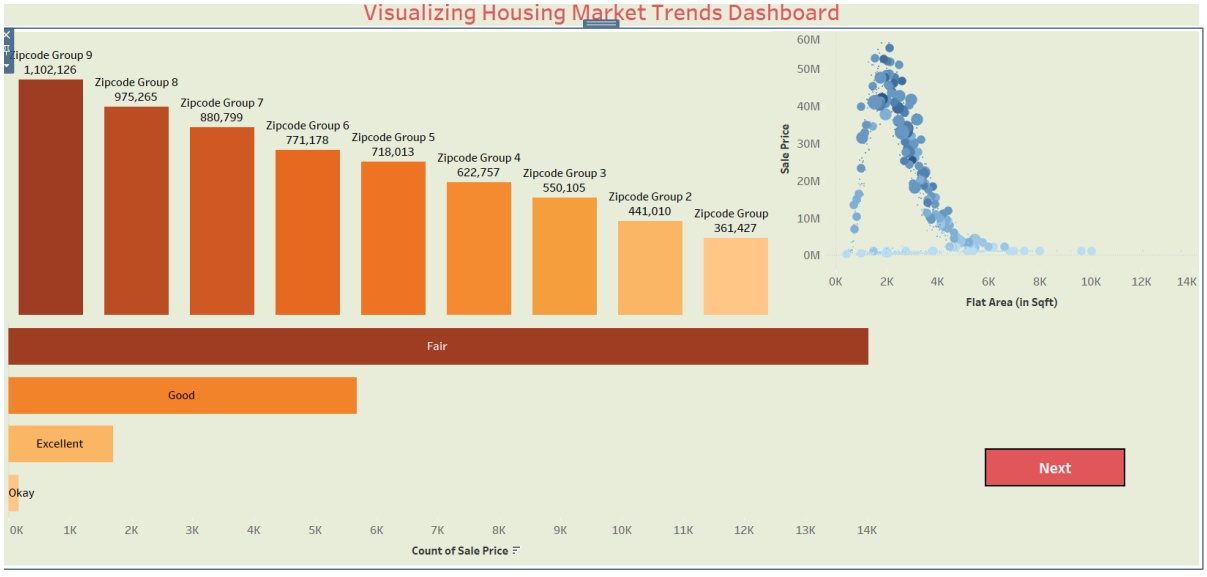
Model Performance Testing:

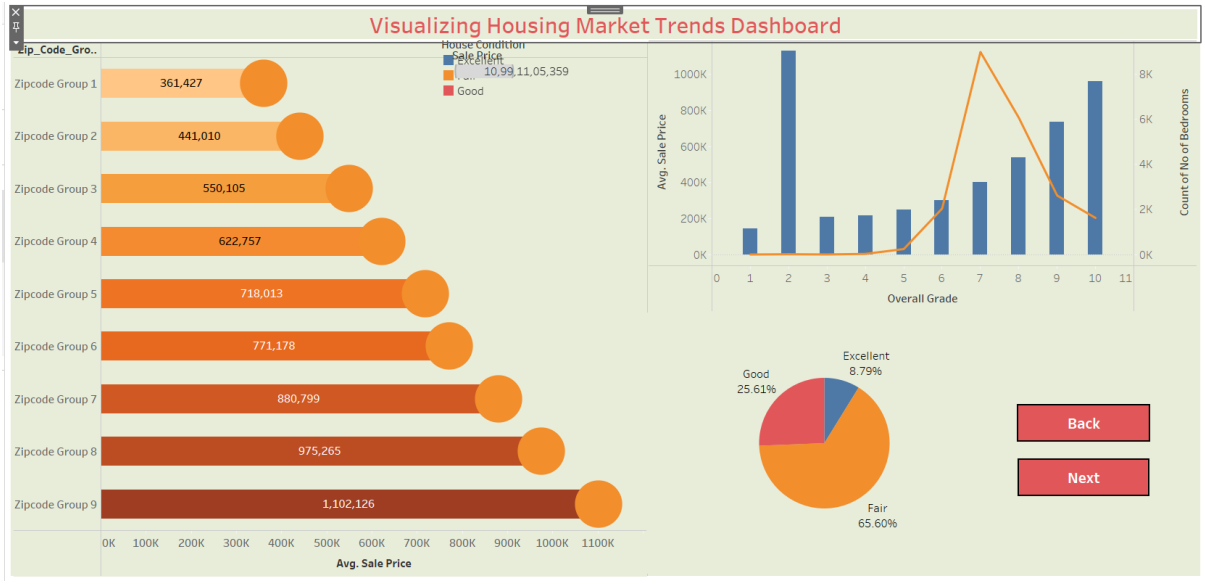
Project team shall fill the following information in model performance testing template.

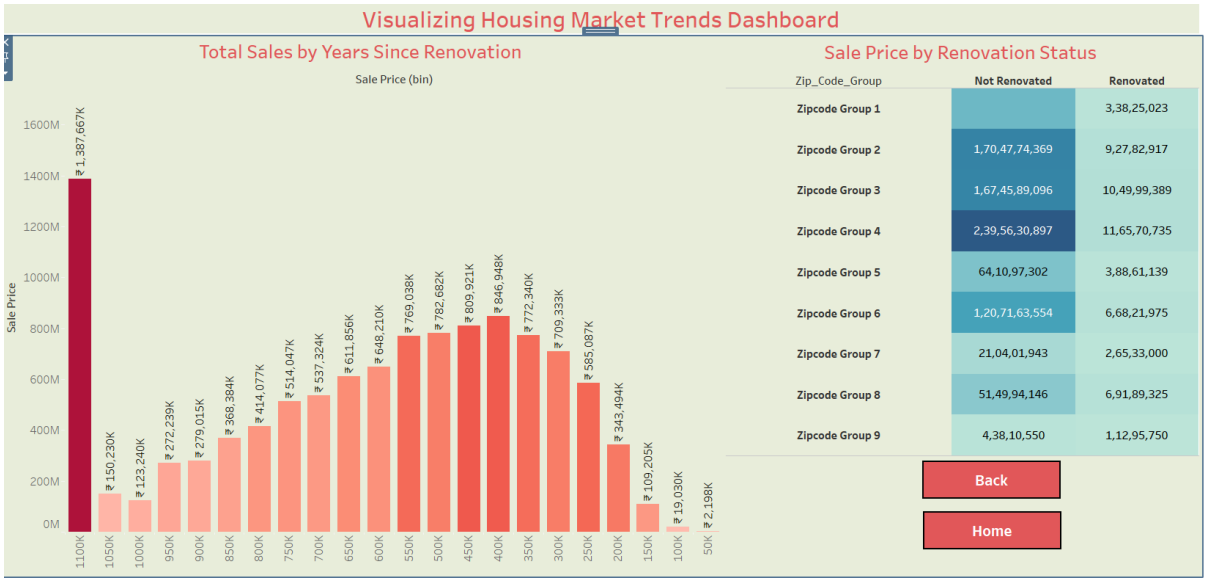
S.No.	Parameter	Screenshot / Values
1.	Data Rendered	10000 rows and 40 fields
2.	Data Preprocessing	Duplicate values removed, Handeling null values
3.	Utilization of Filters	Dimension filter and Measure filter
4.	Calculation fields Used	House Condition, House Renovation, Renovation Group, Renovation Status, Sale price(bin), Zip code Group, Sales ID.
5.	Dashboard design	No of Visualizations / Graphs – Eight (8)
6	Story Design	No of Visualizations / Graphs – Eight (8)

7. RESULTS

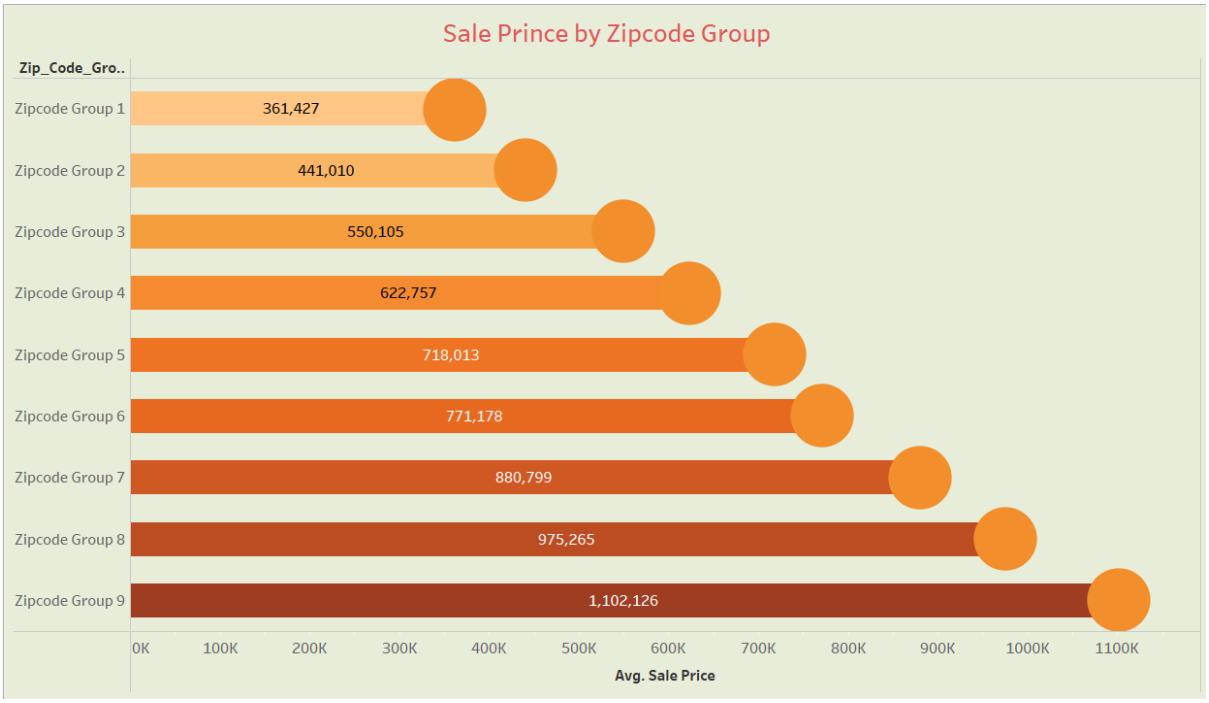
7.1 Output Screenshots




Visualizing Housing Market Trends Dashboard
Zip_Code_Gro..
Zipcode Group 1
Zipcode Group 2
Zipcode Group 3
Zipcode Group 4
Zipcode Group 5
Zipcode Group 6
Zipcode Group 7
Zipcode Group 8
Zipcode Group 9
361,427
441,010
550,105
622,757
718,013
771,178
880,799
975,265
1,102,126
0K 100K 200K 300K 400K 500K 600K 700K 800K 900K 1000K 1100K
Avg. Sale Price
House Condition
Sale Price
Excellent
10,99,11,05,359
Good
Avg. Sale Price
Count of No of Bedrooms
Overall Grade
Good 25.61%
Excellent 8.79%
Fair 65.60%
Back
Next


Visualizing Housing Market Trends Dashboard
Total Sales by Years Since Renovation
Sale Price (bin)
Sale Price
₹ 1,387,667K
₹ 150,230K
₹ 123,240K
₹ 272,239K
₹ 279,015K
₹ 368,384K
₹ 414,077K
₹ 514,047K
₹ 537,324K
₹ 611,856K
₹ 648,210K
₹ 769,038K
₹ 782,682K
₹ 809,921K
₹ 846,948K
₹ 772,340K
₹ 709,333K
₹ 585,087K
₹ 343,494K
₹ 109,205K
₹ 19,030K
₹ 2,198K
Sale Price by Renovation Status
Zip_Code_Group
Not Renovated
Renovated
Zipcode Group 1 3,38,25,023
Zipcode Group 2 1,70,47,74,369 9,27,82,917
Zipcode Group 3 1,67,45,89,096 10,49,99,389
Zipcode Group 4 2,39,56,30,897 11,65,70,735
Zipcode Group 5 64,10,97,302 3,88,61,139
Zipcode Group 6 1,20,71,63,554 6,68,21,975
Zipcode Group 7 21,04,01,943 2,65,33,000
Zipcode Group 8 51,49,94,146 6,91,89,325
Zipcode Group 9 4,38,10,550 1,12,95,750
Back
Home

Story



8. ADVANTAGES & DISADVANTAGES

ADVANTAGES:

- Clear Visual Insights
- Interactive Dashboards
- Data-Driven Decision Making
- Geographical Analysis
- Time Efficiency

DISADVANTAGES

- Heavy Dashboards
- Limited Predictive Analysis
- Data Cleaning Needed Before Use
- Not Ideal for Advanced Testing
- Mobile/Responsive Limitations

9. CONCLUSION

This project effectively analysed real estate housing data using Tableau to uncover the most influential factors affecting house sale prices. Through interactive dashboards and detailed visualizations, it was found that:

- Location (Zip code Group), house condition, renovation status, and total area are the key drivers of sale price.
- Renovated properties, especially those with excellent condition or waterfront views, tend to have significantly higher market values.
- Interactive dashboards allowed users to filter and compare properties based on relevant features, making the data easier to understand and explore.

Overall, the solution delivered valuable insights that can support data-driven decision-making for buyers, sellers, and real estate agents. The project successfully demonstrated how data visualization tools like Tableau can transform raw housing data into actionable intelligence, improving pricing strategy, property evaluation, and investment planning.

10. FUTURE SCOPE

The current project provides strong insights into the factors influencing house prices using historical data and Tableau dashboards. However, there are several opportunities to expand and enhance the project in the future:

- Predictive Modelling
- Real-Time Data Integration
- Advanced Geo-Spatial Analysis
- Mobile Optimization & Accessibility
- Enhanced User Interactions
- Integration with Other Tools

11. APPENDIX

Source Code (if any)

Dataset Link

1. Visualizing Housing Market Trends An Analysis of Sale Prices and Features using Tableau

https://www.kaggle.com/datasets/rituparnaghosh18/transformed-housing-data-2

GitHub & Project Demo Link