I. Business Context & Objectives

Business Context:
Melbourne residential property transactions dataset with fields: `Date, Regionname, Suburb, Price, Rooms, Bathroom, Car, Landsize, BuildingArea, YearBuilt, Type, Method, SellerG`.

Objectives:
Leverage historical transactions and property attributes to support key decisions in **pricing**, **site selection**, **listing strategy** (e.g., auction vs. private sale), **inventory (product) mix optimization**, and **risk monitoring**.

II. Stakeholders

- **Buyers:** Identify areas/suburbs with strong value-for-money and growth potential.
- **Agencies:** Set listing prices, choose sale method (**Method**), and plan product mix and release cadence.
- **Financial Institutions:** Validate valuations, monitor **LVR** (loan-to-value ratio) risk, and track regional price volatility.
- **Government:** Assess regional supply–demand balance, housing affordability, and provide inputs for infrastructure and urban planning.

III. Use Case

UC1. AVM / Pricing

What
Estimate a fair **sale price range** for a property given its region/suburb and attributes.

Why
Price correctly to maximize uplift, manage expectations, and improve sell-through.

Inputs
`Regionname/Suburb, Type, Rooms, Bathroom, Car, Landsize, BuildingArea, YearBuilt, Date, Method`

UC2. Market & Site Selection

What
Prioritize **regions/suburbs** to enter or scale inventory.

Why
Allocate capital to markets with attractive price levels, stability, and positive momentum.

Inputs
`Regionname, Suburb, Price, Type, Rooms (required), Date (trend)`

UC3. Method Strategy

What
Quantify how **Method** impacts achieved price and identify where auctions work best.

Why
Choose the sale mechanism that maximizes price and reduces time to sell.

Inputs
`Method, Price, Date, Regionname/Suburb, Type, Rooms`

UC4. Inventory Structure & Product Mix

What

Define the optimal **property types/configurations** to stock in each target region.

Why
Align product to local demand to improve margin and turnover.

Inputs
`Type, Rooms, Bathroom, Car, Landsize, BuildingArea, Price, Regionname/Suburb`

UC5. Affordability & Targeting

What
Map **budget segments** to regions/suburbs and typical configurations most likely to transact.

Why
Increase marketing efficiency and conversion with budget-fit targeting.

Inputs
`Price, Regionname/Suburb, Type, Rooms, Date`

UC6. Risk Monitoring

What
Identify regions with **high price volatility** and **downside risk**.

Why
Protect margin, pace inventory, and time market entry/exit.

Inputs
`Price, Date, Regionname/Suburb, Method`

UC7. Seller Benchmark (Agencies)

What
Benchmark **SellerG** performance across regions and price bands.

Why
Select the right partners and assign mandates where they perform best.

Inputs
`SellerG, Price, Method, Regionname/Suburb, Type, Date`

UC8. Seasonality Planning

What
Detect **seasonality** and **weekly auction cadence** to optimize timing.

Why
Launch listings and auctions when success probability is highest.

Inputs
`Date, Price, Method`