1. Messaging

The purpose of this narrative visualization is to help users understand **how used car prices and listing volumes vary by brand and day of the week.** It specifically compares **Japanese vs German brands** and **smart timing for used car shopping**. Throughout the scenes, the visualization not only guides through trends by brand and best timing for a car shopping but also allows user exploration.

2. Narrative Structure

The visualization is a **mixture of martini glass structure and interactive slideshow**. It **guides** the users to follow a **linear story** that progresses through four scenes. In the meantime, it also allows users to explore interactively through components like country group filtering and tooltips.

The visualization starts with a question: "What's the Smartest Way to Buy a Used Car?" and each scene builds on the previous one:

- Introduction: What's the Smartest Way to Buy a Used Car?
- Scene 1: Brand-level average prices
- Scene 2: Brand-level listing counts
- Scene 3: Average price by weekday
- Scene 4: Listing count by weekday
- Summary: What did we learn?

3. Visual Structure

Each scene uses a consistent visual template:

- **SVG charts centered on the page**
- **Color encoding by country group**
- **Consistently placed Legends**
- **Axis formatting, font styles, and label positions standardized** across scenes

Throughout the scenes, Next/Prev buttons ensure delivering linear story and annotations are used to **draw the viewer's attention to the most relevant trends**, like country-based brand patterns and price gaps between weekdays.

4. Scenes

The narrative is composed of four scenes:

1. **Scene 1 – Brand Price by Country Group**: A scatter plot shows average used car prices by brand, colored by brand country group. Bubble size represents listing counts. Annotations highlight clusters and price range of Japanese and German brands.

2. **Scene 2 – Listing Count by Brand**: A bar chart showing brand-level listing volumes. Country-based coloring and annotation emphasize regional differences.
3. **Scene 3 – Weekday Price Trend**: A bar chart of average prices by weekday. Annotation boxes highlight Sunday as the most expensive day.
4. **Scene 4 – Weekday Listing Volume**: A dual-axis chart combining average price (bar) and listing volume (line) by weekday. Annotations compare Sunday vs. Monday/Tuesday.

5. Annotations

All annotations follow a consistent template:

- **Colored lines and labels** corresponding to a country group or weekday
- **Textual callouts with bold headers**
- **Framed callout boxes** in weekday charts to explain differences in price and listing counts

Annotations are used to **highlight important insights**, such as:

- "Sunday has the highest prices but the lowest listings."
- "Japanese brands dominate the mid-range market."
- "German brands span a wider and higher price range."

They remain **visible by default** but are **hidden when users engage in filtering**, for example, clicking a legend, keeping the visual narrative concise and clear during exploration.

6. Parameters

The key parameters in this narrative visualization include:

- **currentScene**: Controls which scene is currently active
- **activeCountry**: Used to filter the data points by country group
- **carData**: The preprocessed dataset loaded at runtime

These parameters define the **state of the visualization** at any given time, and are passed into scene-specific functions like **drawScene1()** or **drawScene4()** to determine what data and visuals to render.

7. Triggers

The visualization uses several triggers to manage interactivity:

- **Navigation triggers**:
  ex) **#start-btn, #prev**, and **#next** buttons control the flow of scenes by updating **currentScene** and calling **renderScene(scene)**
- **Filter triggers:**

ex) Clicking a country label or circle in the legend sets **activeCountry** and updates the chart to show only relevant brands

- **Hover triggers:**
  ex) Mouseover events on bars/dots trigger tooltips and temporary opacity changes to highlight selected data points

These triggers are clearly connected to user interface elements, with **visual affordances like hover effects and clickable legends** guiding the user's available actions.