<https://www.guru99.com/what-is-tableau.html>

<https://www.tableau.com/products/public/download>

<https://www.guru99.com/download-install-tableau.html>

<https://www.guru99.com/tableau-vs-power-bi-difference.html>

<https://www.guru99.com/tableau-data-connections.html>

<https://www.guru99.com/tableau-charts-graphs-tutorial.html>

### What is Tableau?

Tableau is a powerful data visualization and business intelligence tool that helps users convert raw data into interactive and shareable dashboards. It enables users to visualize and understand data through an intuitive interface, making it easier to identify trends, patterns, and insights.

### Why Tableau?

1. \*\*User-Friendly Interface\*\*: Tableau's drag-and-drop functionality allows users of all skill levels to create complex visualizations without needing extensive programming knowledge.

2. \*\*Data Connectivity\*\*: It can connect to a wide range of data sources, including spreadsheets, databases, and cloud services, making it versatile for different data environments.

3. \*\*Real-Time Data Analysis\*\*: Tableau supports real-time data analysis, allowing users to make decisions based on the most current information.

4. \*\*Collaboration and Sharing\*\*: Dashboards can be easily shared with stakeholders, fostering collaboration and data-driven decision-making across teams.

5. \*\*Robust Visualization Options\*\*: Tableau offers a variety of visualization types, from simple bar charts to complex geographical maps, enabling users to represent data in the most meaningful way.

### Tableau Architecture

Tableau’s architecture consists of several components that work together to facilitate data visualization and analysis:

1. \*\*Data Sources\*\*: Tableau can connect to multiple data sources like SQL databases, Excel files, and cloud-based data storage.

2. \*\*Tableau Desktop\*\*: This is the primary tool for creating visualizations. Users can connect to data, perform analysis, and build dashboards.

3. \*\*Tableau Server\*\*: This component allows users to share and collaborate on dashboards and reports across an organization. It enables centralized management and access control.

4. \*\*Tableau Online\*\*: A cloud-based version of Tableau Server that provides similar functionality without the need for on-premises infrastructure.

5. \*\*Tableau Public\*\*: A free version that allows users to publish visualizations to the web, making it accessible to anyone.

6. \*\*Tableau Prep\*\*: This tool helps with data preparation, allowing users to clean, shape, and organize data before analysis.

### Tableau Products

1. \*\*Tableau Desktop\*\*: The primary application for creating reports and dashboards.

2. \*\*Tableau Server\*\*: For hosting and sharing dashboards within an organization.

3. \*\*Tableau Online\*\*: The cloud-based solution for sharing and collaborating on dashboards.

4. \*\*Tableau Prep\*\*: A tool for data cleaning and preparation.

5. \*\*Tableau Public\*\*: A free version for publishing visualizations online.

6. \*\*Tableau Reader\*\*: A free desktop application that allows users to view Tableau visualizations created in Tableau Desktop.

Each of these products is designed to cater to different aspects of data visualization and collaboration, making Tableau a comprehensive solution for organizations looking to leverage their data effectively.

**What is Tableau?**

Tableau is a powerful data visualization tool used for converting raw data into an understandable format; visualizations and dashboards can be created quickly and intuitively. It helps in analyzing and sharing insights from data in a user-friendly way, making it a popular choice for business intelligence and analytics.

**Why Tableau?**

1. **User-Friendly Interface**: Tableau offers a drag-and-drop interface, making it accessible for non-technical users.
2. **Real-Time Data Analysis**: It allows users to connect to various data sources and perform real-time analysis.
3. **Interactive Dashboards**: Users can create interactive and shareable dashboards that provide insights at a glance.
4. **Variety of Data Connections**: Tableau can connect to numerous data sources, including databases, spreadsheets, cloud services, and big data.
5. **Strong Community and Resources**: There’s a large user community, and many resources, tutorials, and forums available for learning and support.

### Tableau Architecture

Tableau’s architecture is designed to provide fast and flexible data analysis. Here’s a breakdown of its components:

**Data Layer**:

* 1. **Data Connections**: Connects to different data sources (e.g., SQL databases, Excel files, cloud services).
  2. **Extracts**: Data can be extracted from databases to improve performance and offline accessibility.

**Application Layer**:

* 1. **Tableau Desktop**: The main authoring tool used to create visualizations and dashboards.
  2. **Tableau Server**: For sharing and collaboration, allows users to publish and manage dashboards securely.
  3. **Tableau Online**: A cloud-based version of Tableau Server, offering similar functionalities without needing local installation.

**Presentation Layer**:

* 1. **Dashboards and Reports**: The final output presented to users, including interactive elements like filters, parameters, and actions.

**Data Engine**:

* 1. **In-memory Processing**: Tableau’s fast in-memory engine optimizes data processing, allowing for quick visualizations.
  2. **Live and Extract Mode**: Users can choose between real-time connections (live) and optimized performance with extracted data.

### Tableau Products

Tableau offers various products tailored to different needs:

**Tableau Desktop**:

* 1. Main tool for creating reports and dashboards.
  2. Users can connect to data sources, create visualizations, and save workbooks.

**Tableau Server**:

* 1. Platform for sharing and collaborating on dashboards within an organization.
  2. Allows for user management and security features.

**Tableau Online**:

* 1. Cloud-based version of Tableau Server.
  2. Users can access and share dashboards without requiring on-premise infrastructure.

**Tableau Public**:

* 1. A free version for creating and sharing visualizations publicly.
  2. Not suitable for sensitive data due to its open nature.

**Tableau Prep**:

* 1. Tool for data preparation and cleaning before analysis.
  2. Users can combine, shape, and clean data easily.

**Tableau Mobile**:

* 1. App for accessing Tableau dashboards on mobile devices.
  2. Offers a responsive design for on-the-go analytics.

### Tableau Shelves and Cards

In Tableau, shelves and cards are essential components used to build visualizations. They help organize and manipulate the data to create effective charts and dashboards.

#### 1. Row and Column Shelf

**Purpose**: These shelves determine the layout of the visualization by defining the axes of the chart.

**How to Use**:

* + **Row Shelf**: Drag dimensions or measures here to create rows in your visualization.
  + **Column Shelf**: Drag dimensions or measures here to create columns.

**Example**:

* + **Creating a Bar Chart**:
    1. Open Tableau and connect to a data source (e.g., sales data).
    2. Drag a dimension (e.g., Category) to the **Row Shelf**.
    3. Drag a measure (e.g., Sales) to the **Column Shelf**.
    4. Tableau will automatically create a bar chart showing sales by category.

#### 2. Page Shelf

**Purpose**: The Page Shelf allows you to create a series of visualizations that can be viewed one at a time, effectively allowing for animated visualizations.

**How to Use**:

* + Drag a dimension to the Page Shelf to segment the data.

**Example**:

* + **Creating a Time Series Animation**:
    1. Drag Order Date to the **Page Shelf**.
    2. Select a continuous date (like Year) to segment the data by year.
    3. Click on the play button on the Page control to animate the visualizations through the years.

#### 3. Filter Shelf

**Purpose**: The Filter Shelf is used to control which data is displayed in your visualization. Filters can be applied to dimensions or measures.

**How to Use**:

* + Drag a dimension or measure to the Filter Shelf to restrict the data shown.

**Example**:

* + **Filtering Data by Category**:
    1. Drag Category to the **Filter Shelf**.
    2. Select the categories you want to display (e.g., Furniture, Office Supplies).
    3. Only the selected categories will appear in your visualizations.

#### 4. Mark Shelf

**Purpose**: The Marks Shelf is used to control the appearance of marks (data points) in your visualization, including color, size, shape, label, detail, and tooltip.

**How to Use**:

* + Drag dimensions or measures to the Marks Shelf to customize the visualization's aesthetics.

**Example**:

* + **Customizing a Scatter Plot**:
    1. Create a scatter plot by dragging Sales to the **Columns Shelf** and Profit to the **Rows Shelf**.
    2. Drag Region to the **Color** section of the Marks Shelf to color-code the points by region.
    3. Drag Category to the **Shape** section of the Marks Shelf to differentiate by category.

**1. Row and Column Shelves**

* **Purpose: These shelves allow you to define the structure of your visualization by organizing data into rows and columns.**
* **Implementation:**
  + **Drag and Drop: You can drag dimensions (categorical data) to the Rows shelf and measures (numerical data) to the Columns shelf.**
  + **Example: In the Superstore dataset, you might drag Category to the Rows shelf and Sales to the Columns shelf to create a simple bar chart showing sales by category.**

**2. Page Shelf**

* **Purpose: The Page shelf lets you create animations or segmented views of your data. It’s useful for visualizing changes over time or other sequential data.**
* **Implementation:**
  + **Add a Dimension: Drag a date dimension, like Order Date, to the Page shelf.**
  + **Example: This could display sales over time by creating a series of charts for each month, allowing you to step through the months.**

**3. Filter Shelf**

* **Purpose: The Filter shelf is used to limit the data displayed in your visualization based on specific criteria.**
* **Implementation:**
  + **Add Filters: Drag a dimension or measure (e.g., Region, Segment, Profit) to the Filter shelf and specify the conditions.**
  + **Example: You could filter by Region to only show sales data for the West region.**

**4. Mark Shelf**

* **Purpose: The Marks shelf controls the visual properties of the marks in your visualization, such as color, size, and shape.**
* **Implementation:**
  + **Customize Marks: Use the dropdowns in the Marks shelf to change the type (e.g., bar, line, circle) and to add detail by dragging dimensions or measures.**
  + **Example: Drag Sub-Category to Color to color-code the bars in your bar chart by sub-category, helping to differentiate them visually.**

**Example Implementation Steps Using Superstore Dataset**

1. **Connect to the Superstore Dataset: Open Tableau and connect to the Superstore sample data.**
2. **Create a Basic Bar Chart:**
   * **Drag Category to the Rows shelf.**
   * **Drag Sales to the Columns shelf.**
   * **You should see a bar chart representing sales by category.**
3. **Add a Filter:**
   * **Drag Region to the Filter shelf.**
   * **Select the regions you want to include (e.g., only the West region).**
4. **Use the Page Shelf:**
   * **Drag Order Date to the Page shelf.**
   * **Set it to show years or months, allowing you to navigate through the data over time.**
5. **Enhance with Marks:**
   * **Click on the Marks card and change the mark type to “Bar.”**
   * **Drag Sub-Category to the Color shelf within the Marks card to differentiate bars by sub-category.**

**Notes**

* **Interactivity: Tableau allows you to create interactive dashboards by using the filter and page shelves, which helps in exploring data dynamically.**
* **Best Practices: Keep visualizations simple and avoid clutter. Use colors and filters judiciously to enhance clarity.**