

# Business Intelligence Data Journey (BI Lifecycle)

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## STEP 1: Ingest – Bringing Data into Power BI

- **Data Sources:**
    - Databases: SQL Server, MySQL, PostgreSQL, Oracle
    - Files: Excel, CSV, XML, JSON
    - Web: APIs, Websites, SharePoint
    - Cloud: Azure, Google Sheets, OneDrive, Dataverse
  - **Connection Types:**
    - **Import Mode** – pulls in a static copy of data
    - **DirectQuery Mode** – real-time queries from source
    - **Live Connection** – live link to Analysis Services
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## STEP 2: Transform – Clean & Prepare the Data

- **Power Query Editor** is the tool used
  - **Key Transformation Actions:**
    - Remove nulls/duplicates
    - Rename columns
    - Change data types (text, number, date, boolean)
    - Filter rows
    - Split/merge columns
    - Add calculated columns
    - Create conditional columns
    - Unpivot/pivot
    - Group by
    - Replace values
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## STEP 3: Model – Define Relationships and Calculations

- **Data Modeling Concepts:**
  - Relationships: One-to-many, many-to-one, cardinality
  - Star vs Snowflake schema
  - Fact tables vs Dimension tables
- **DAX (Data Analysis Expressions):**
  - Measures: `SUM()`, `CALCULATE()`, `FILTER()`, `IF()`
  - Calculated Columns

- Time Intelligence: YTD, MTD, QTD, YOY

## **STEP 4: Visualize – Build Reports & Dashboards**

- **Visual Types:**
    - Bar, Line, Pie, Area, Card, Gauge, Matrix, Table, Map
  - **Interactivity:**
    - Slicers
    - Filters (Page, Report, Visual level)
    - Drill-down & Drill-through
  - **Best Practices:**
    - Use titles, labels, tooltips
    - Keep layout clean & aligned
    - Choose appropriate chart types for data
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## **STEP 5: Publish – Upload Reports to Power BI Service**

- **Power BI Service:**
  - Cloud-based platform ([app.powerbi.com](https://app.powerbi.com))
- **Workspaces:**
  - Personal Workspace (My Workspace)
  - Shared Workspaces (collaborative)
- **Dataset vs Report vs Dashboard:**
  - Dataset: raw model
  - Report: visualizations (multiple pages)
  - Dashboard: pinned visuals from multiple reports

### **In Power BI Desktop:**

- Click **Publish**
  - Sign in to Power BI Service
  - Choose Workspace
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## **STEP 6: Share – Distribute Reports/Dashboards**

- **Sharing Methods:**
  - Direct Share (email link)
  - Publish to Web (read-only public access)
  - Power BI Apps (curated collections of reports)

- Embed in Websites/Teams/SharePoint
- **Access Control:**
  - Define viewer vs editor roles
  - Row-Level Security (RLS) to restrict data visibility
- **Subscription & Alerts:**
  - Users can subscribe to reports
  - Set alerts for threshold values in visuals