Business Intelligence

Slide 1: Title Slide

- **Title**: *"Unlocking Insights: An Introduction to Business Intelligence"*
- **Subtitle**: Data-Driven Decisions through BI

Slide 2: Agenda

1. What is Business Intelligence?
2. Need for Business Intelligence
3. Key Terms in BI
4. Components of BI
5. BI Architecture (Added)
6. Data Warehouse vs BI (Added)
7. Demo: Sample BI Flow (SQL + Visualization)
8. Tools in BI Ecosystem
9. Summary

🔍 Slide 3: What is Business Intelligence?

Definition:
Business Intelligence (BI) is the use of tools, systems, and practices to analyze data and deliver actionable insights for better decision-making.

> 📈 “Turning data into actionable insights.”

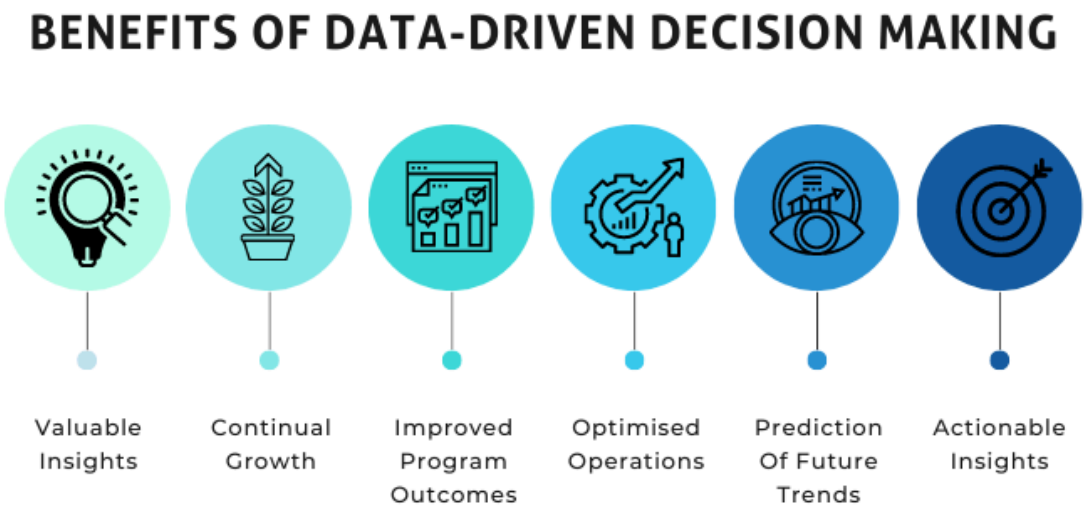
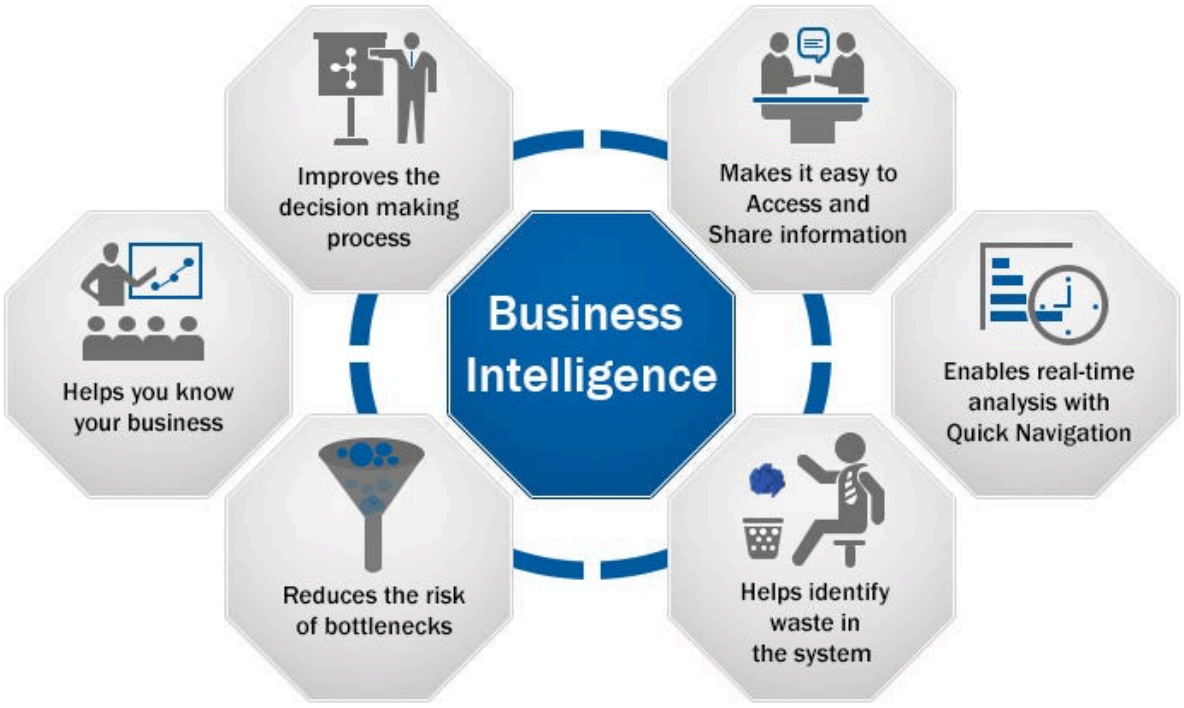


Illustration: Show flow from *Data* → *Information* → *Insight* → *Decision*

🧩 Slide 4: Why Do We Need BI?

- 📊 Huge volume of data from multiple sources
- ⏱️ Need for real-time or timely decision-making
- 🧠 Competitive advantage through data insights
- 🔍 Identifying trends, risks, and opportunities
- 💰 Cost savings and process efficiency

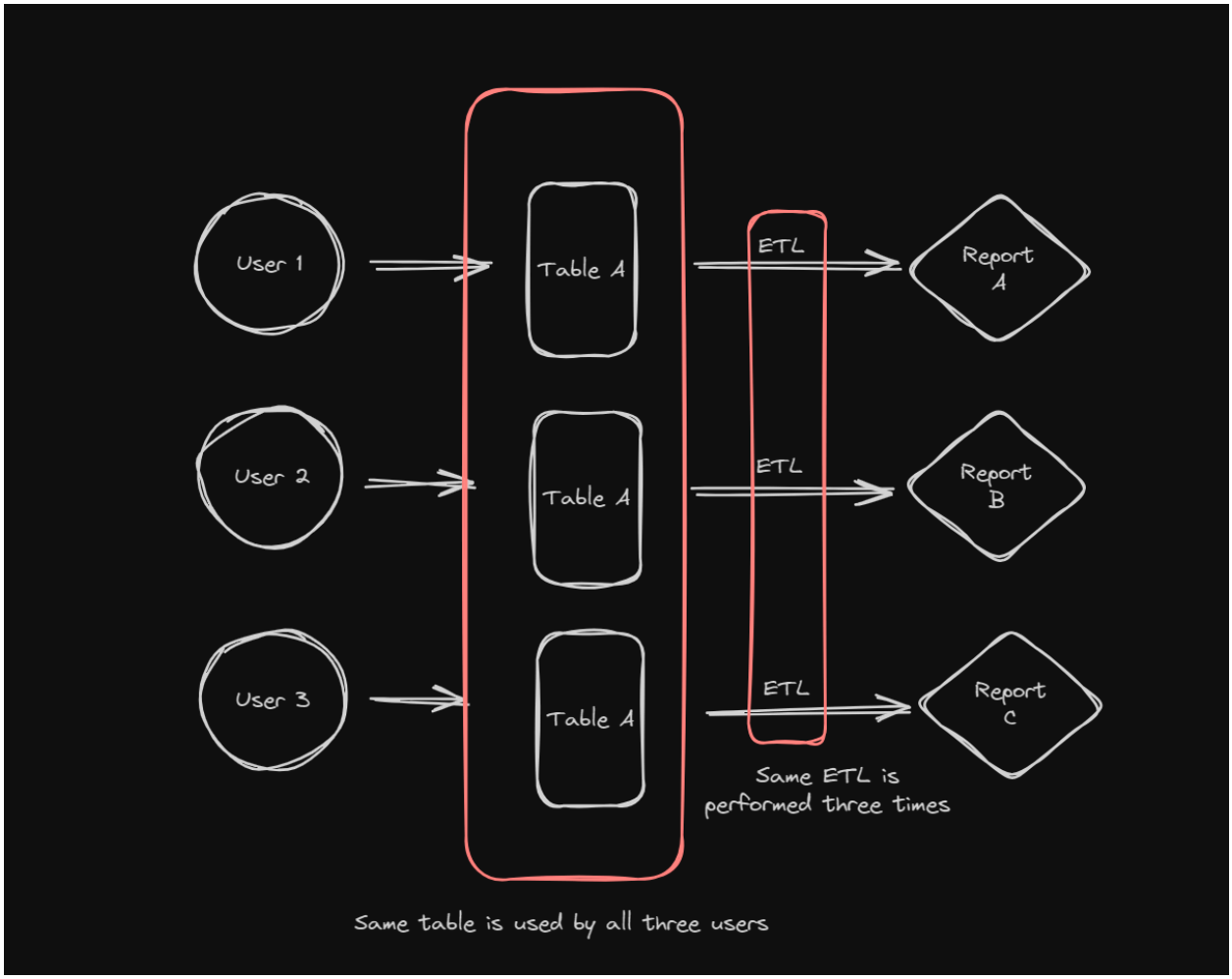


Real-world Use Cases:

- Retail: Sales trend analysis
- Healthcare: Patient care optimization
- Finance: Fraud detection

🏷️ Slide 5: Terms Used in BI

Term	Meaning
ETL	Extract, Transform, Load – used to prepare data
OLAP	Online Analytical Processing – multidimensional queries
KPI	Key Performance Indicator – measures success
Dashboard	Visual representation of data
Data Mart	Subject-specific slice of a data warehouse
Data Warehouse	Central repository of integrated data



⚙️ Slide 6: Components of BI

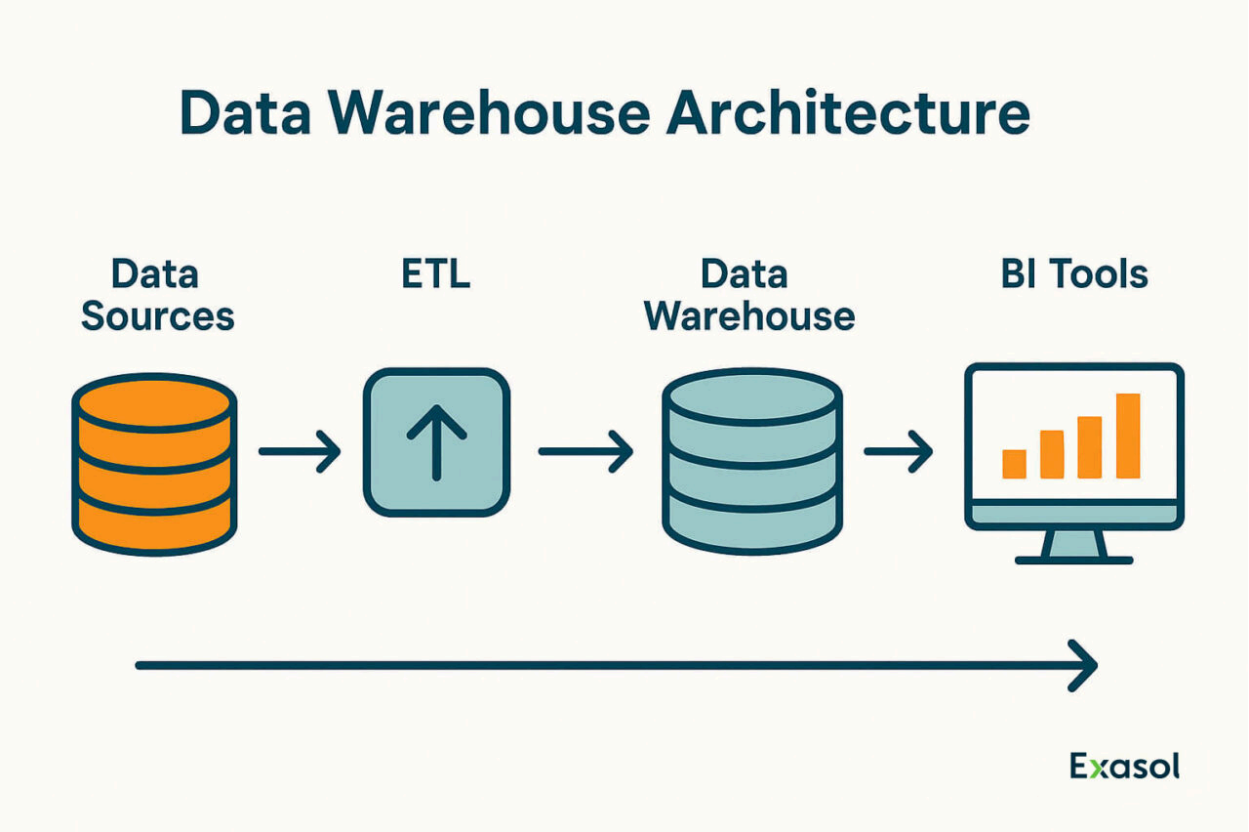
1. **Data Sources**
   - Databases (SQL, NoSQL), Excel, APIs
2. **ETL Tools**
   - Talend, Informatica, Python scripts
3. **Data Warehouse**
   - Central storage: Snowflake, Redshift, SQL Server DW
4. **OLAP Cubes**
   - For multidimensional querying
5. **Reporting & Visualization**
   - Power BI, Tableau, Looker
6. **Dashboards & Alerts**
   - Real-time insights and notifications

🏛️ Slide 7: BI Architecture

Illustration: 4-layer architecture

`[Data Sources] → [ETL] → [Data Warehouse] → [BI Tools/Dashboards]`

- Add layers: Staging DB, ODS (Operational Data Store), Metadata repository



🔄 Slide 8: Data Warehouse vs BI

Data Warehouse	Business Intelligence
Storage platform	Analytical interface
Back-end	Front-end
Used for data consolidation	Used for decision making
Technical users	Business users

💡 Slide 9: BI Demo - Sample Data Flow

Scenario: Sales data for E-commerce company

Step 1: Raw Data (CSV/DB)

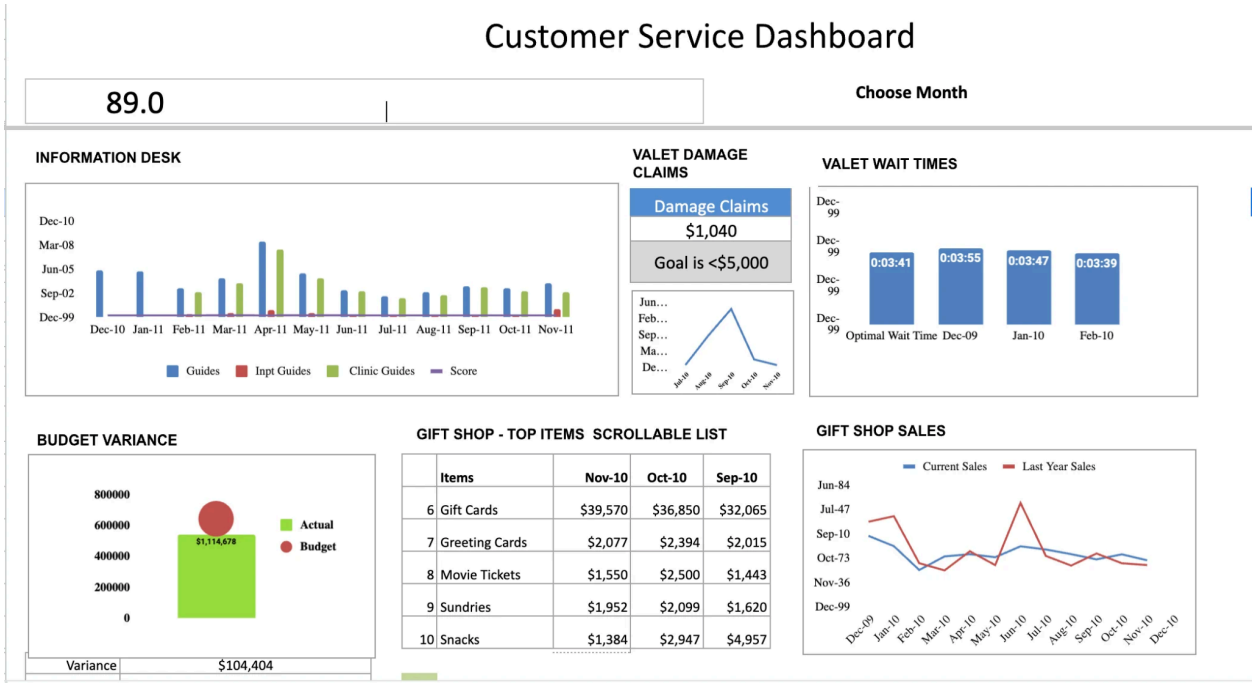
```
SELECT * FROM sales.transactions;
```

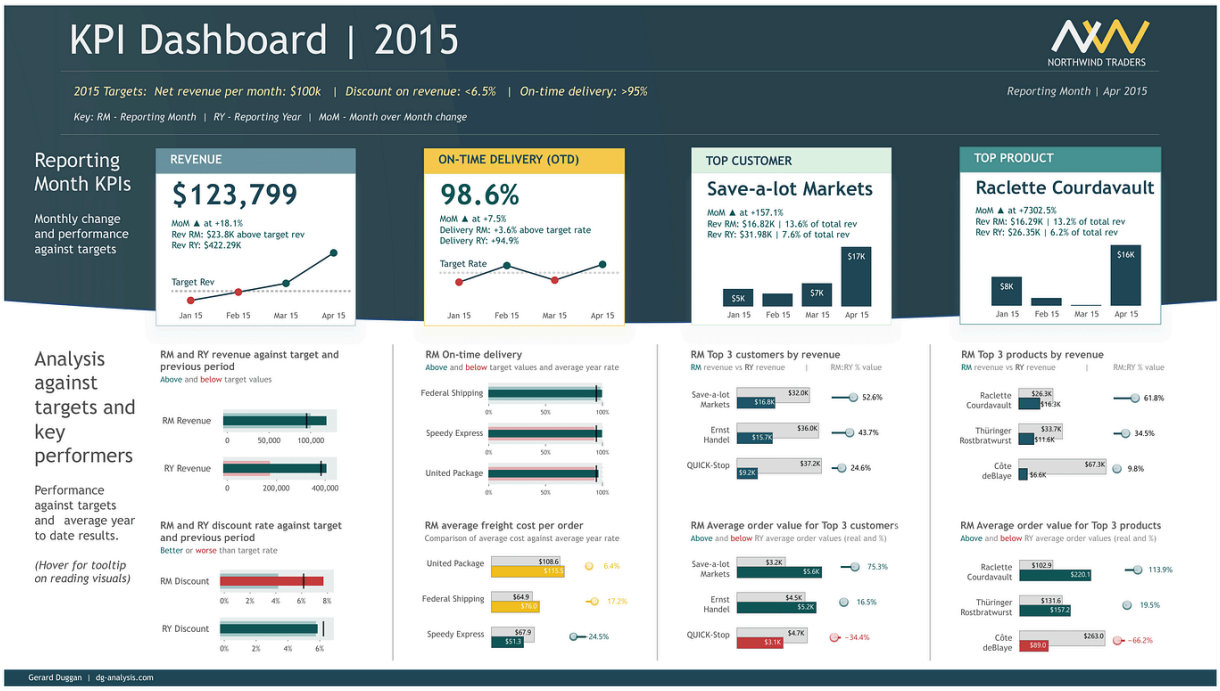
Step 2: ETL using SQL (transformation)

```
SELECT customer_id,
       product_id,
       SUM(order_amount) AS total_spent
FROM sales.transactions
GROUP BY customer_id, product_id;
```

Step 3: Visualization (Power BI/Tableau)

- Bar Chart: Total Sales per Product
- KPI: Monthly Sales Target vs Actual





🛠️ Slide 10: BI Tools Overview

Layer	Example Tools
ETL	Talend, Apache NiFi, Python
DW	Snowflake, BigQuery, SQL Server
Reporting	Power BI, Tableau, Looker
OLAP	SSAS, Mondrian
Monitoring	Grafana, Metabase

🧠 Slide 11: Summary

- BI empowers **data-driven decision making**
- Components include **ETL, DW, OLAP, Visualization**
- BI tools help bridge the gap between **data and insight**
- Strong understanding of BI concepts helps in **data engineering, analysis, and architecture**

📝 Slide 12: Quiz or Q&A

- What does OLAP stand for?
- Name two common BI tools.
- What is the difference between Data Warehouse and BI?