

CS 459

Business Intelligence

Welcome to the Course!

Course Instructor

Abeera Tariq

Lecturer - Computer Science

abeeratariq@iba.edu.pk

Office: F22/B, 1st Floor, Multi-purpose (NBP) Building, Main Campus

- Course Teaching Assistants (TAs) - To be decided

Course Outline

```
SELECT
    Name,
    Batch,
    Experience,
    Fun_Fact,
FROM Class
```

Class Introductions

Business Intelligence



Decision Makers

- Decision makers can no longer wait a couple of days for a report to be generated; *they are compelled to make quick decisions if they want to remain competitive.*
- The key is in having the right data at the right time to support the **decision-making process.**



Answering Business Questions

TABLE 1.2 Business Value of BI Analytical Applications

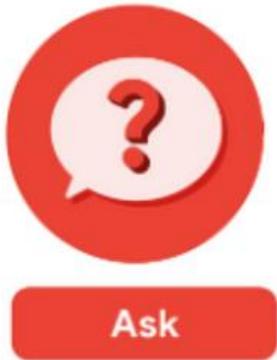
Analytic Application	Business Question	Business Value
Customer segmentation	What market segments do my customers fall into, and what are their characteristics?	Personalize customer relationships for higher satisfaction and retention.
Propensity to buy	Which customers are most likely to respond to my promotion?	Target customers based on their need to increase their loyalty to your product line. Also, increase campaign profitability by focusing on the most likely to buy.
Customer profitability	What is the lifetime profitability of my customer?	Make individual business interaction decisions based on the overall profitability of customers.
Fraud detection	How can I tell which transactions are likely to be fraudulent?	Quickly determine fraud and take immediate action to minimize cost.
Customer attrition	Which customer is at risk of leaving?	Prevent loss of high-value customers and let go of lower-value customers.
Channel optimization	What is the best channel to reach my customer in each segment?	Interact with customers based on their preference and your need to manage cost.

Source: A. Ziama and J. Kasher (2004), *Data Mining Primer for the Data Warehousing Professional*. Dayton, OH: Teradata.

"As you gain fresh *insight* from your data, it opens the door to new questions. As you have new questions, you need to update your instrumentation and analysis. Saying the process is "done" is saying you understand everything there is to know about your users, product, and channels."

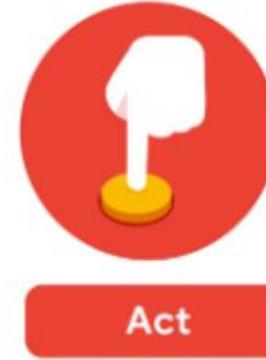
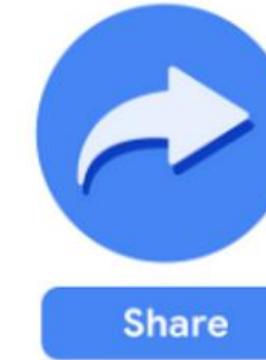
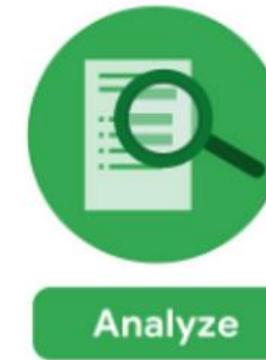
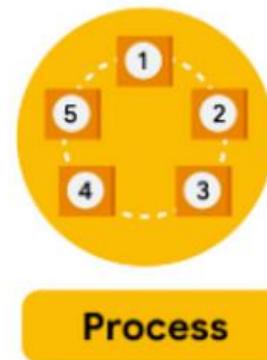
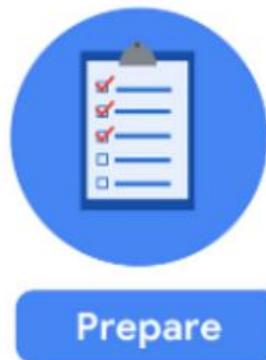
~ Brian Balfour, Founder and CEO of Reforge, Former VP of Growth at Hubspot

Data Driven Decision Making



Ask questions
and define the
problem.

Data Driven Decision Making



Ask questions and define the problem.

Prepare data by collecting and storing the information.

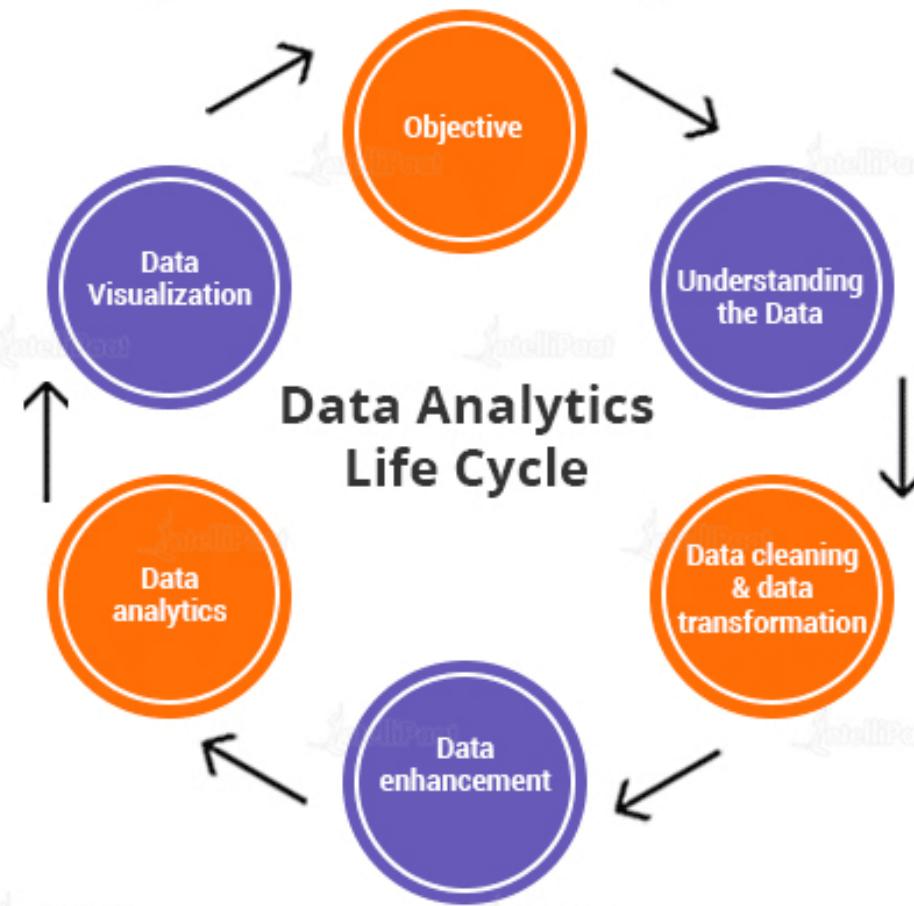
Process data by cleaning and checking the information.

Analyze data to find patterns, relationships, and trends.

Share data with your audience.

Act on the data and use the analysis results.

Data Analytics Lifecycle



Analyze, Report and Present

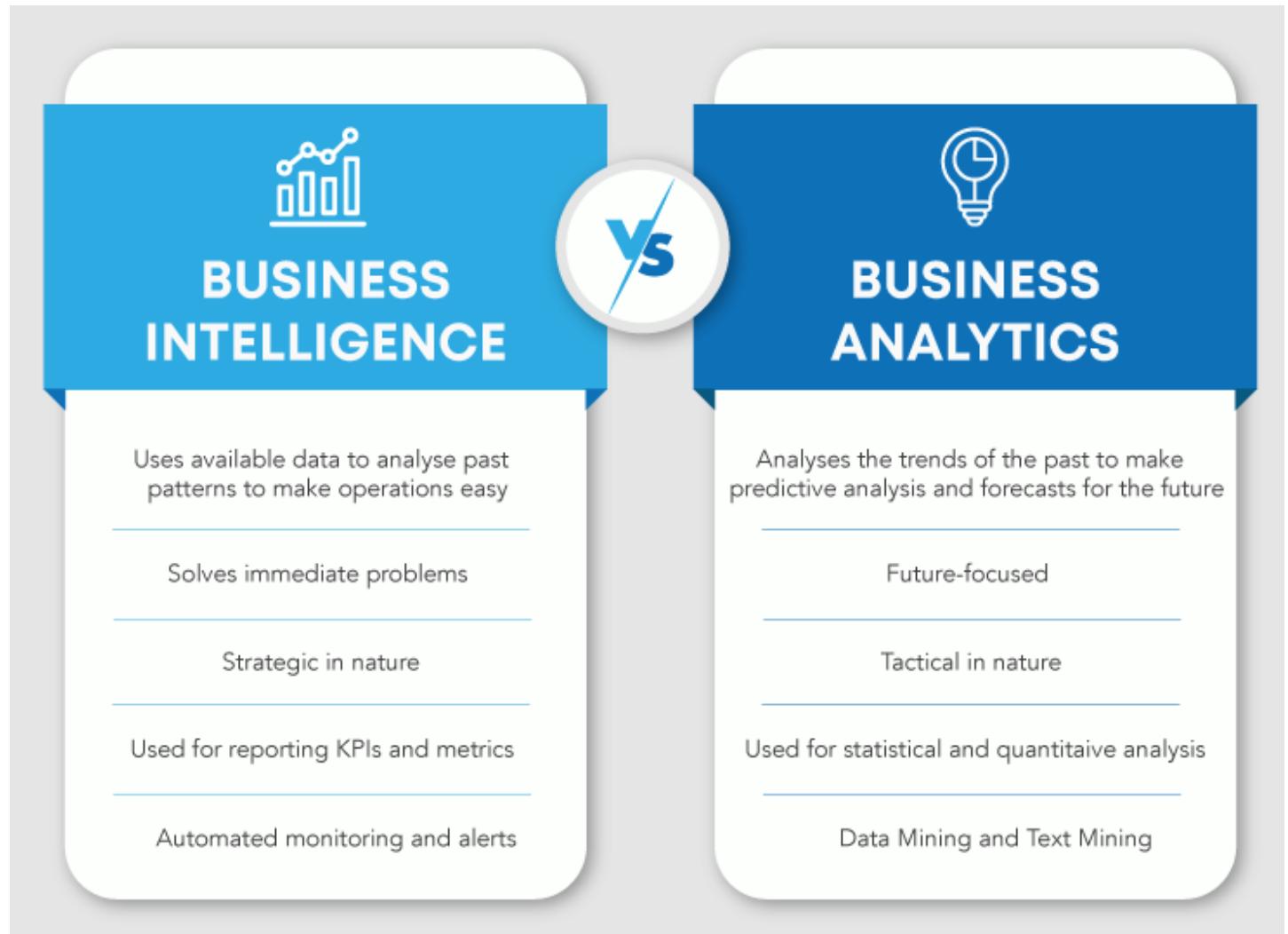
- Goal is to effectively communicate to the business executives.
- How do we do it?
- Create effective data visualizations.
- Design comprehensive dashboards.
- Communicate your findings.



Business Intelligence (BI)

Business intelligence (BI) is a term that describes a comprehensive, cohesive, and integrated set of tools and processes used to capture, collect, integrate, store, and analyze data with the purpose of generating and presenting information to support **business decision making**.

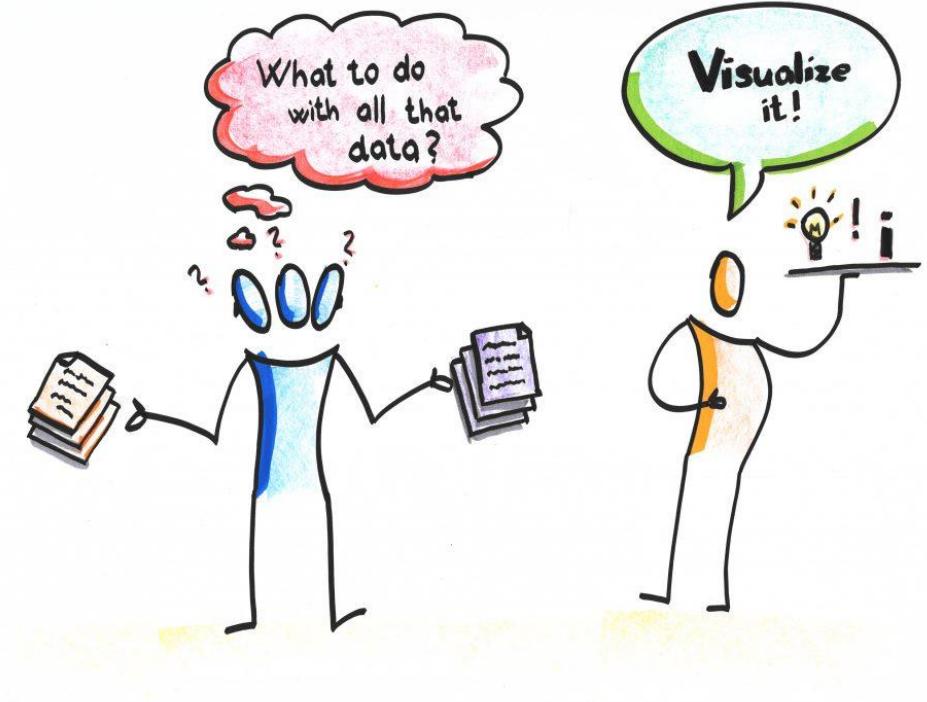
Business Intelligence VS Business Analytics



BI Analyst VS Business Analyst

Factor	Business Analyst	Business Intelligence Analyst
1 Definition	Improves business processes, procedures, and products through data analysis.	Discovers business-focused insights that lead business decisions using data warehousing and BI tools.
2 Process	Defining scopes of business objectives, planning business requirements, implementing a solution, and evaluating the solution.	Understanding the needs of the business end-user, querying from the respective databases, and joining them to derive insight.
3 Type of Data	Unstructured and structured data	Structured data
4 Type of Analysis	Investigational, specific, and ad-hoc analysis	Structured and periodical analysis
5 Skills and Tools Required	Drawing tools Business analysis Excel SQL	SQL Excel Tableau/Power BI ETL tools

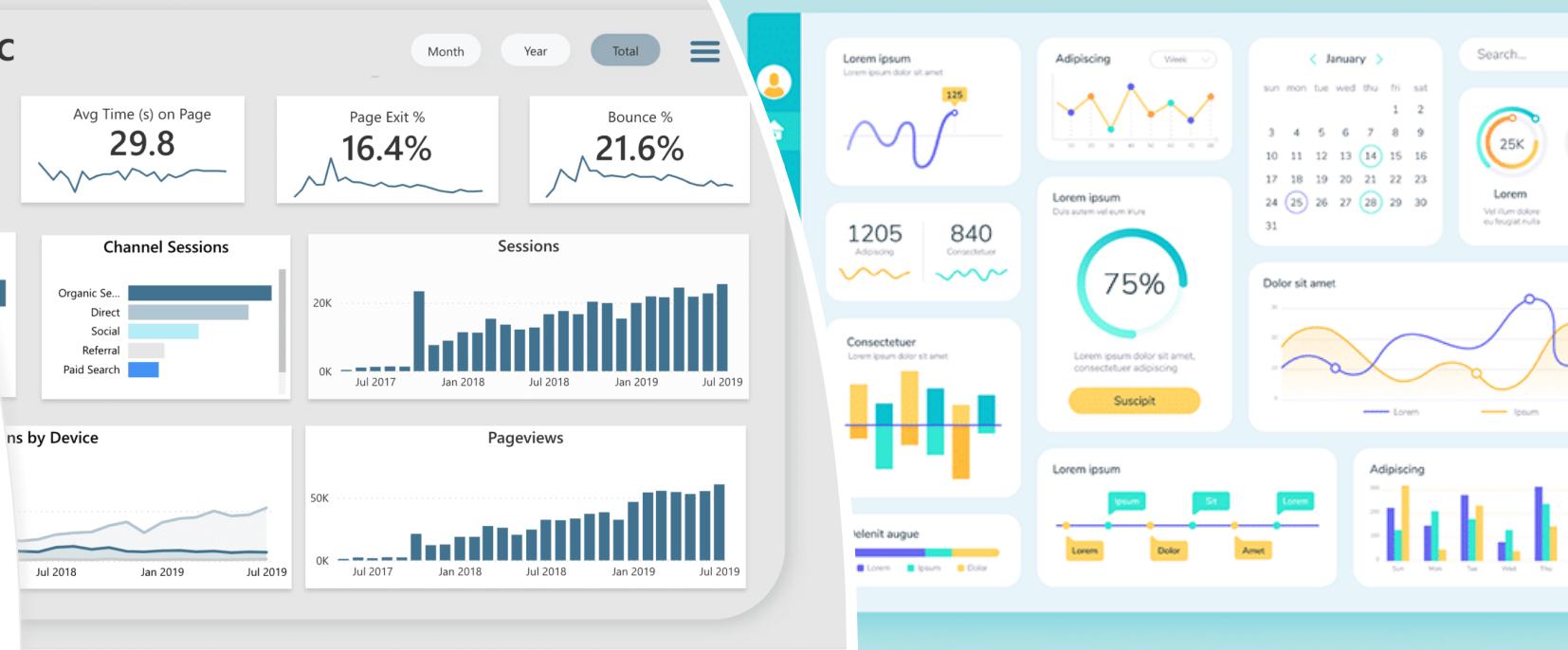
DATA + **Business Problem**



Business Intelligence

BI

Traffic



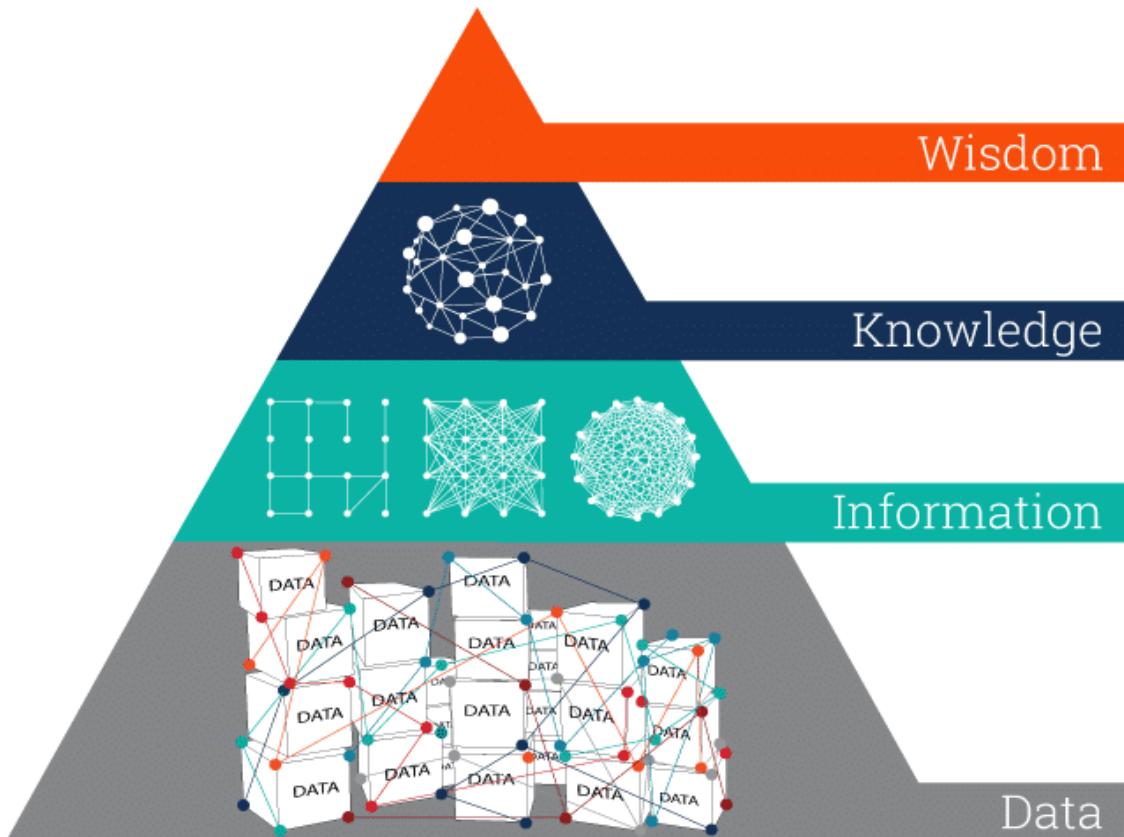
How do visuals help?



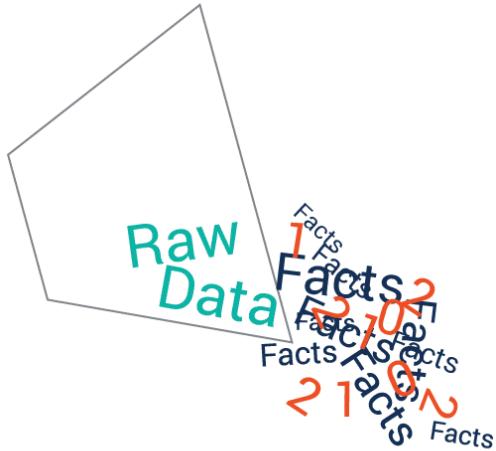
Unlocking Wisdom

BI is a framework that allows a business to transform data into information, information into knowledge, and knowledge into wisdom.

D-I-K-W Pyramid

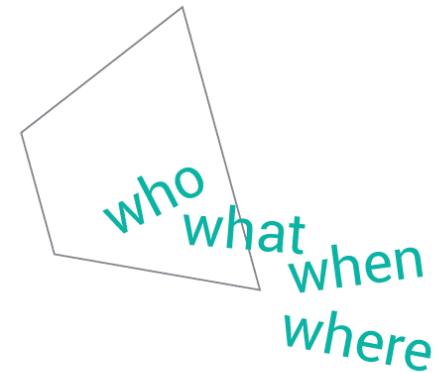


Each step up
the pyramid
answers
questions
about and
adds value
to the initial data.



Base building block - Raw **Data**

=
a collection of facts in a raw or unorganized form



Second building block - Derived **Information**

=
easier to measure, visualize and analyze data for a specific purpose



Third building block - Relevant **Knowledge**



The top of the DIKW hierarchy - Guiding **Wisdom**

Unlocking Wisdom

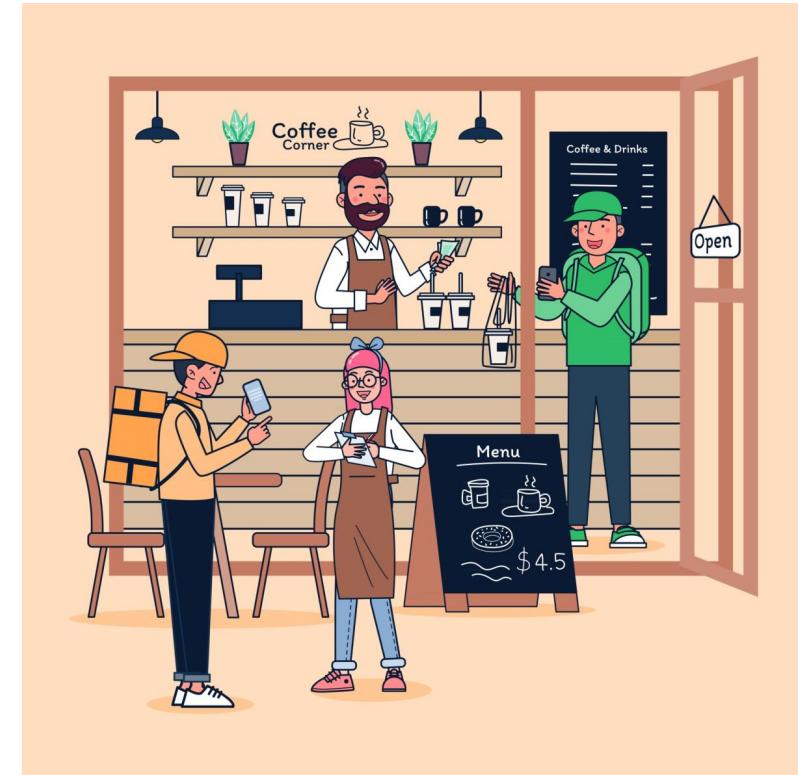
- BI is a complex proposition that requires a deep understanding and alignment of the business processes, business data, and information needs of users at all levels in an organization.
- BI is not a product by itself, but a framework of concepts, practices, tools, and technologies that help a business
 - better understand its core capabilities,
 - provide snapshots of the company situation,
 - and identify key opportunities to create competitive advantage

Information Needs of an Organization



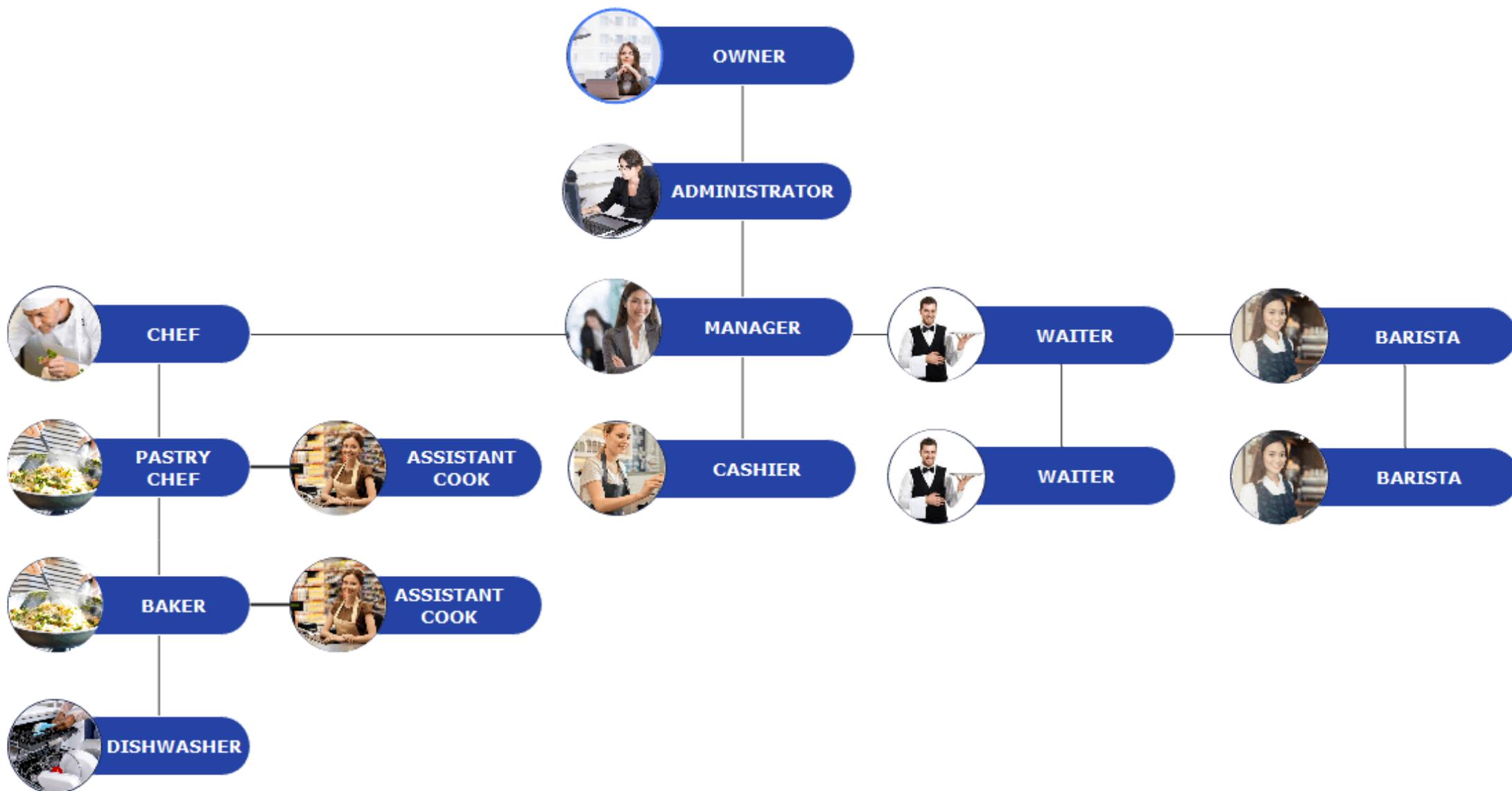
Activity Time - 5 minutes

- Pair up with the person next to you
- On a piece of paper jot down:
 - Who are the people involved?
 - What data is collected and when?



Session 02

ORGANIZATIONAL CHART OF A COFFEE SHOP



What data is collected and when?



Are information needs the same for different actors in the organization?



The Informational Needs of an Organization...

Each level of an organization has different informational needs and requirements:



Buy a coffee... New Data





COFFEE MOMENTS

Mr. Noah Johnson
+222-522-5896
3000 Wilson Ave. Your city, TX

DESCRIPTION	QTY	PRICE	TOTAL
Large Cafe Americano	1	\$10	\$10
Medium Cafe Mocha	1	\$12	\$12

Sub.total 22.00
Tax 6%
Amount Due 20.68

~~~~~

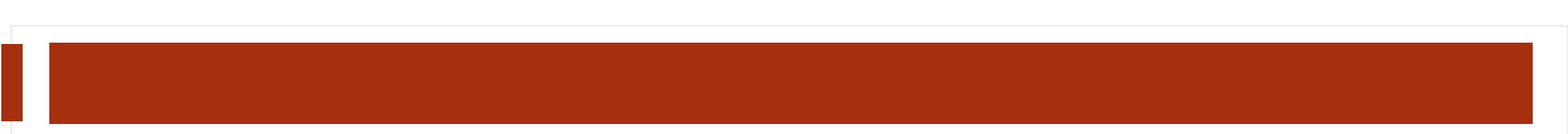
**COFFEE MOMENTS, inc.**

**MAKE YOUR PAYMENT TO**

Account Name: Sam Martin  
 Account No.: 4123 8888 8877

YOURSITE.COM | +22 091 589 | 7979 MAIN STREET, YOURCITY

# **Where** is all the data stored?



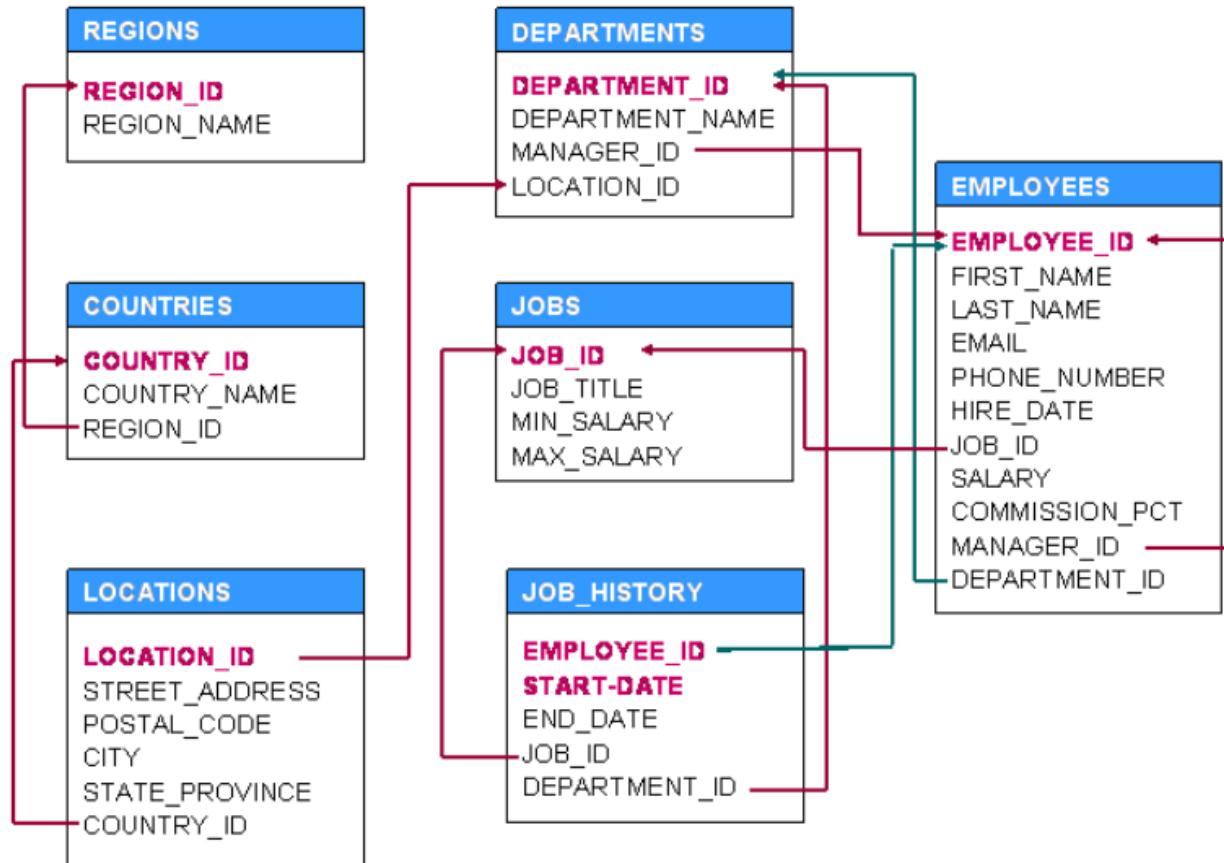
# Defining a Database

A **database** can be defined as a collection of related data items within a specific business process or problem setting

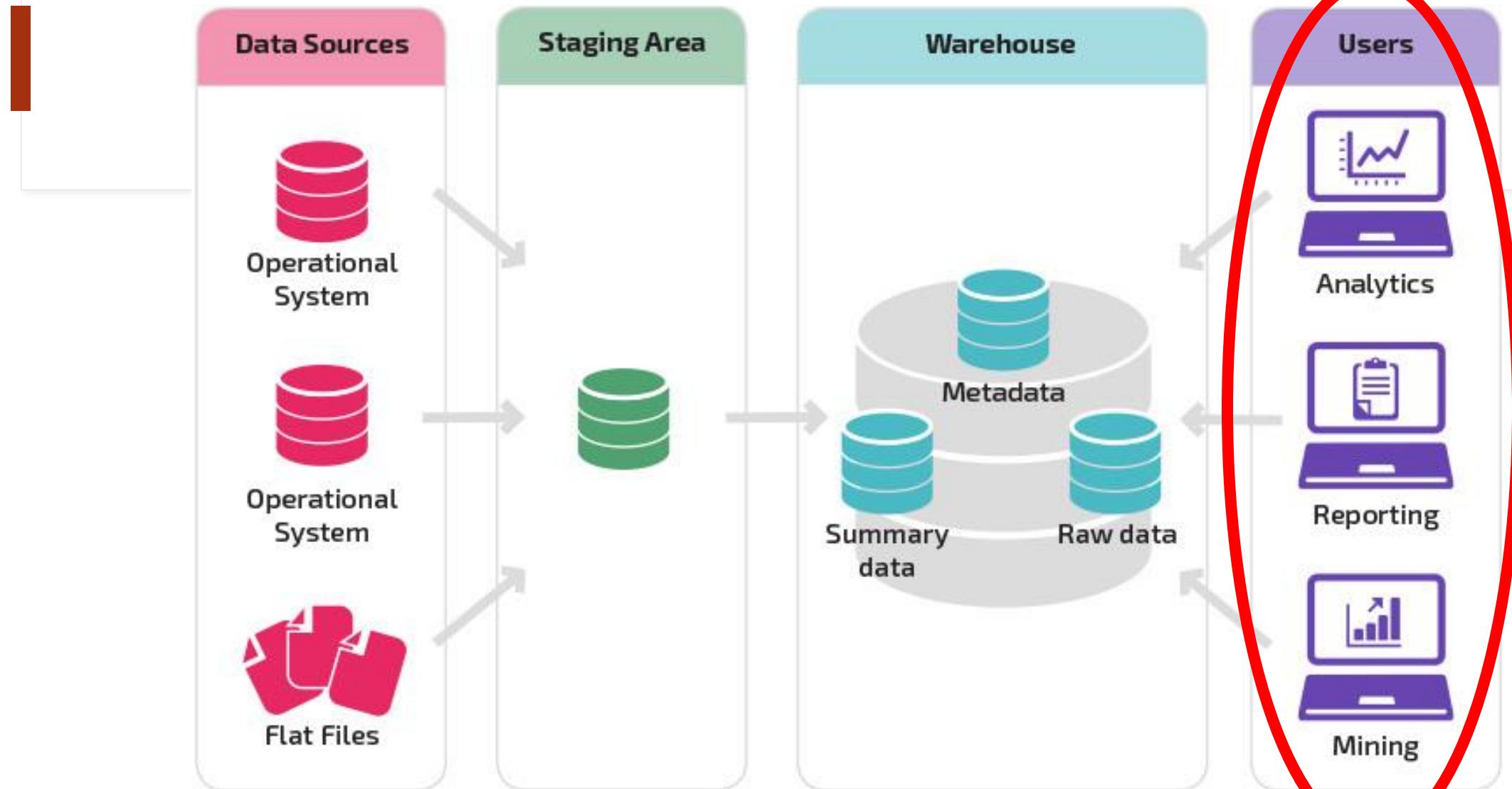
# Key Database Activities (CRUD)

- **Create** - Add new data to the database
- **Read** - Read current data from the database
- **Update** - Update or modify current database data
- **Delete** - Remove current data from the database

# Relational Database



**SQL**  
Structured Query  
Language



# What is a Data **Warehouse**?



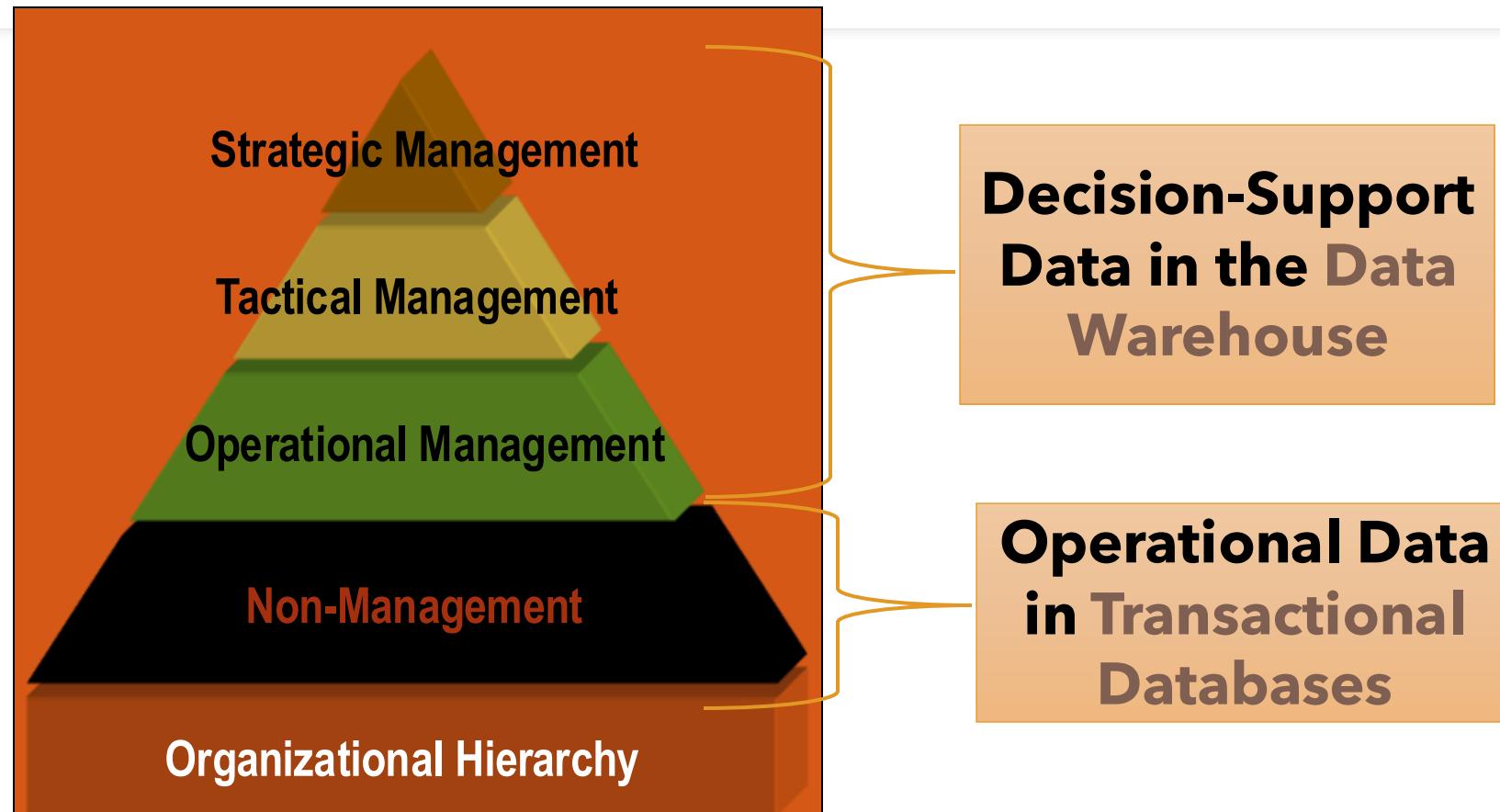
# Data Warehouse



# Data Warehouse

*Developed by businesses to consolidate the data from a variety of databases to help support **strategic decision-making**.*

# The Informational Needs of an Organization



# Data Warehouse or Business Intelligence?

Is the **data warehouse** a component  
of **business intelligence**?

**or**

Is **business intelligence** a component  
of the **data warehouse**?

