

CS 459

Business Intelligence

Welcome to the Course!

Course Instructor

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- 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

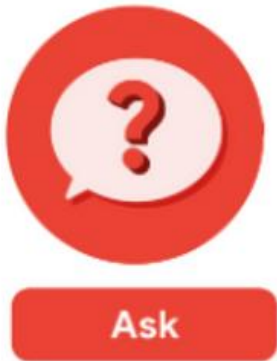
Analytic Application	Business Question	Business Value
Customer segmentation	What market segments do my customers fall into, and what are their characteristics?	Personalize customer relationships for higher satisfaction and retention.
Propensity to buy	Which customers are most likely to respond to my 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

Ask questions and define the problem.



Prepare

Prepare data by collecting and storing the information.



Process

Process data by cleaning and checking the information.



Analyze

Analyze data to find patterns, relationships, and trends.



Share

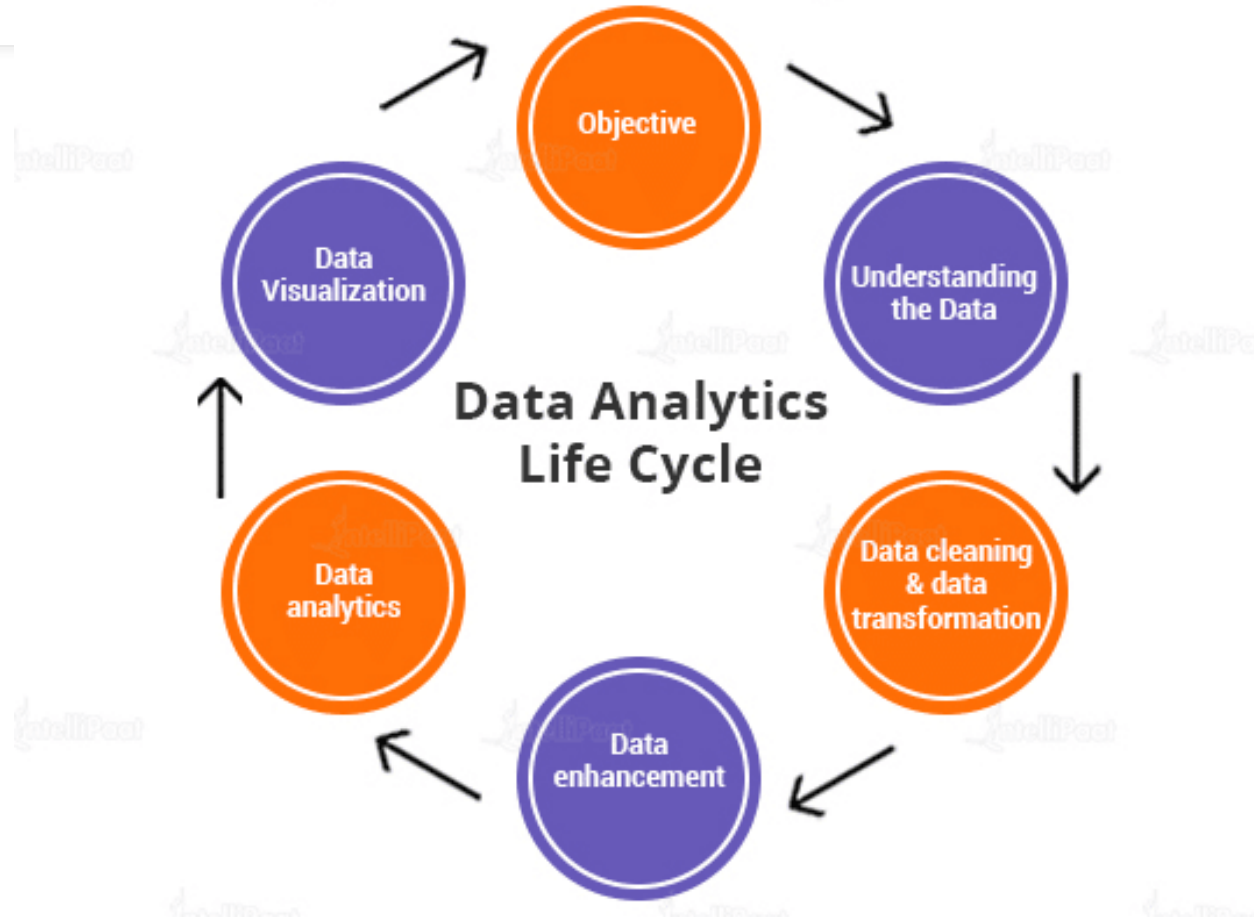
Share data with your audience.



Act

Act on the data and use the analysis results.

Data Analytics Lifecycle



Analyze, Report and Present

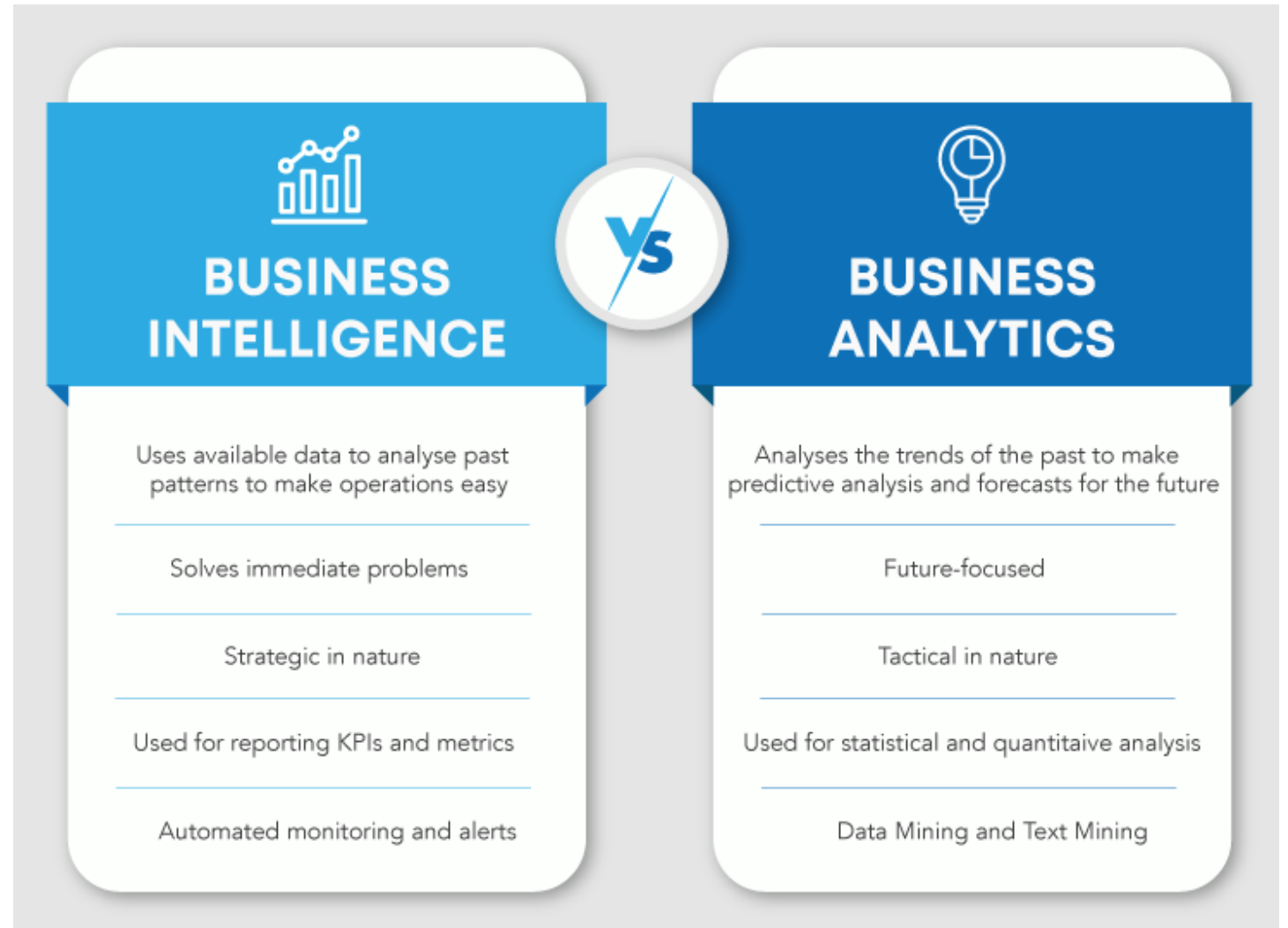
- Goal is to effectively communicate to the business executives.
- How do we do it?
- Create effective data visualizations.
- Design comprehensive dashboards.
- Communicate your findings.



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***.

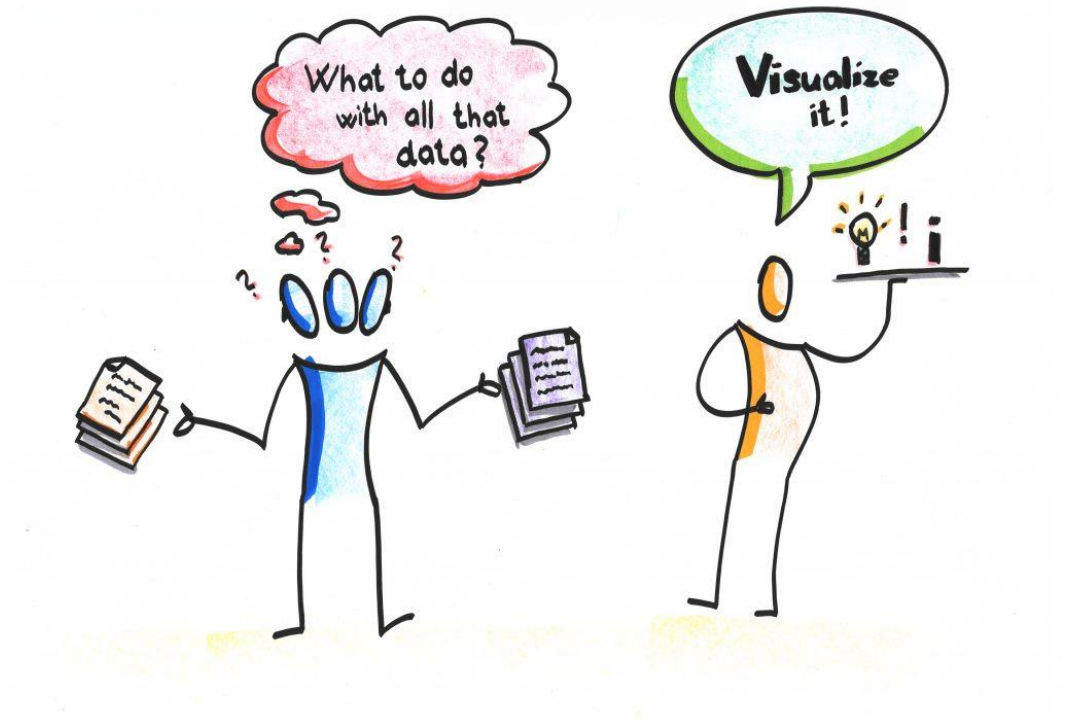
Business Intelligence VS Business Analytics



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

Traffic

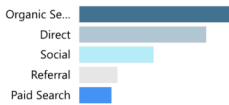
Views

Avg Time (s) on Page
29.8

Page Exit %
16.4%

Bounce %
21.6%

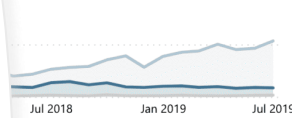
Channel Sessions



Sessions



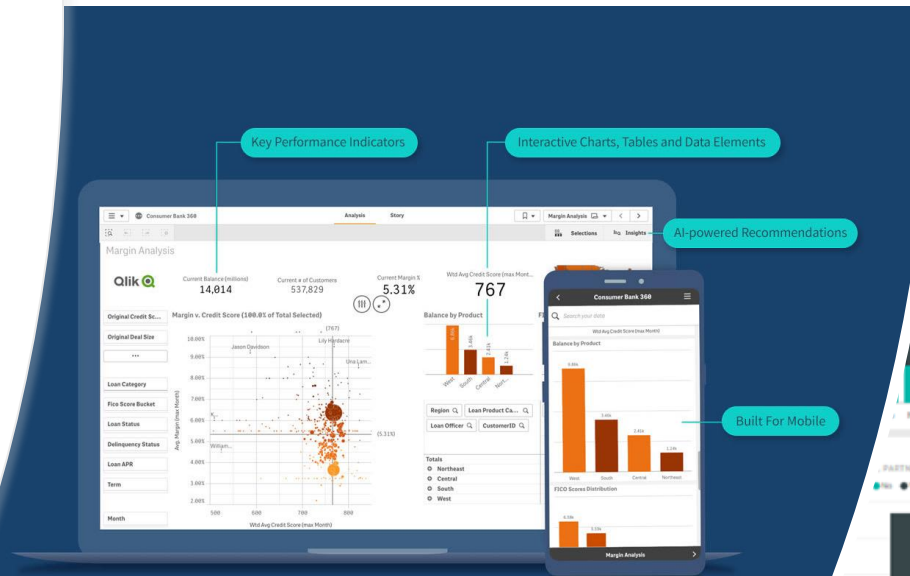
Views by Device



Pageviews



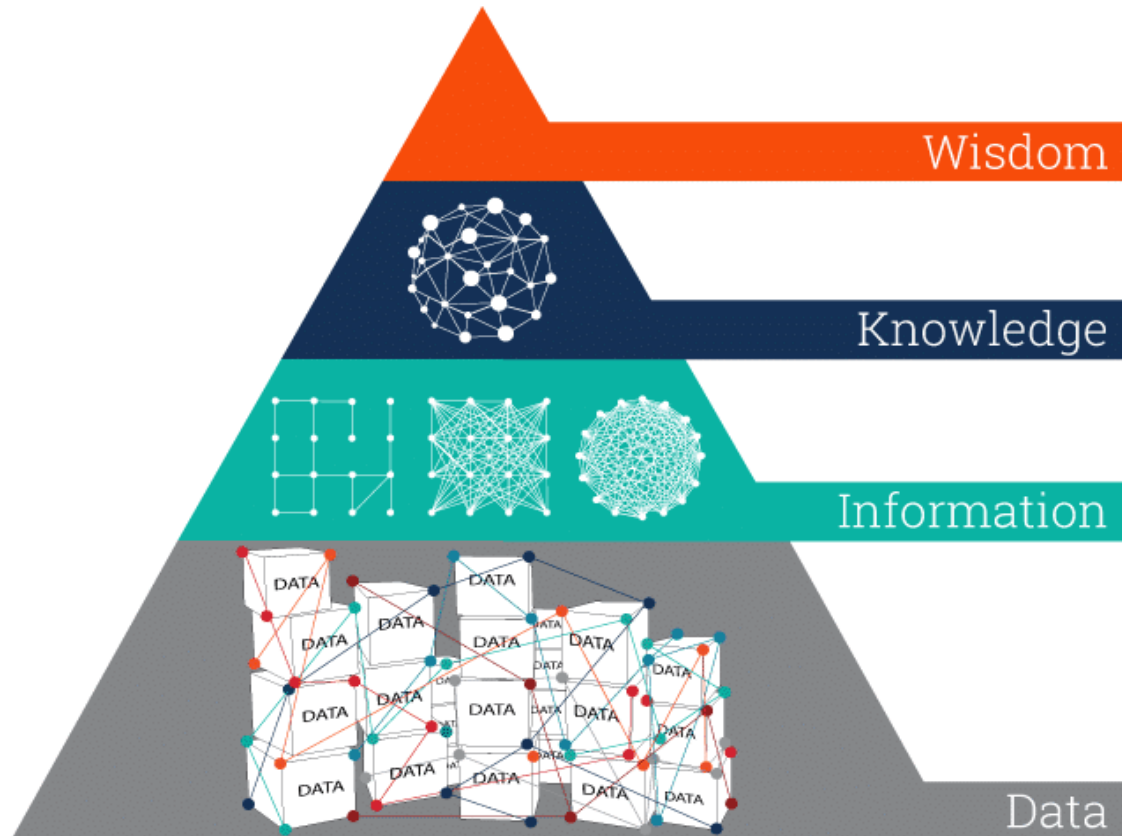
How do visuals help?



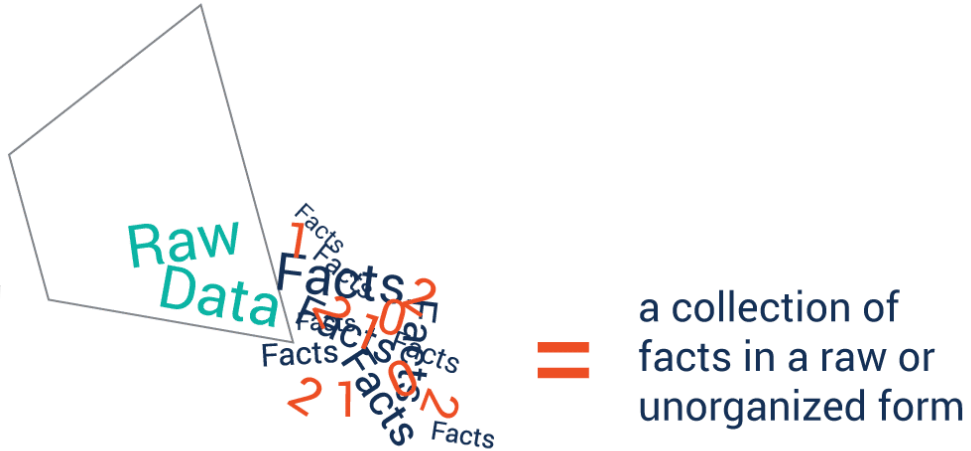
Unlocking Wisdom

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**



Second building block - Derived **Information**



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

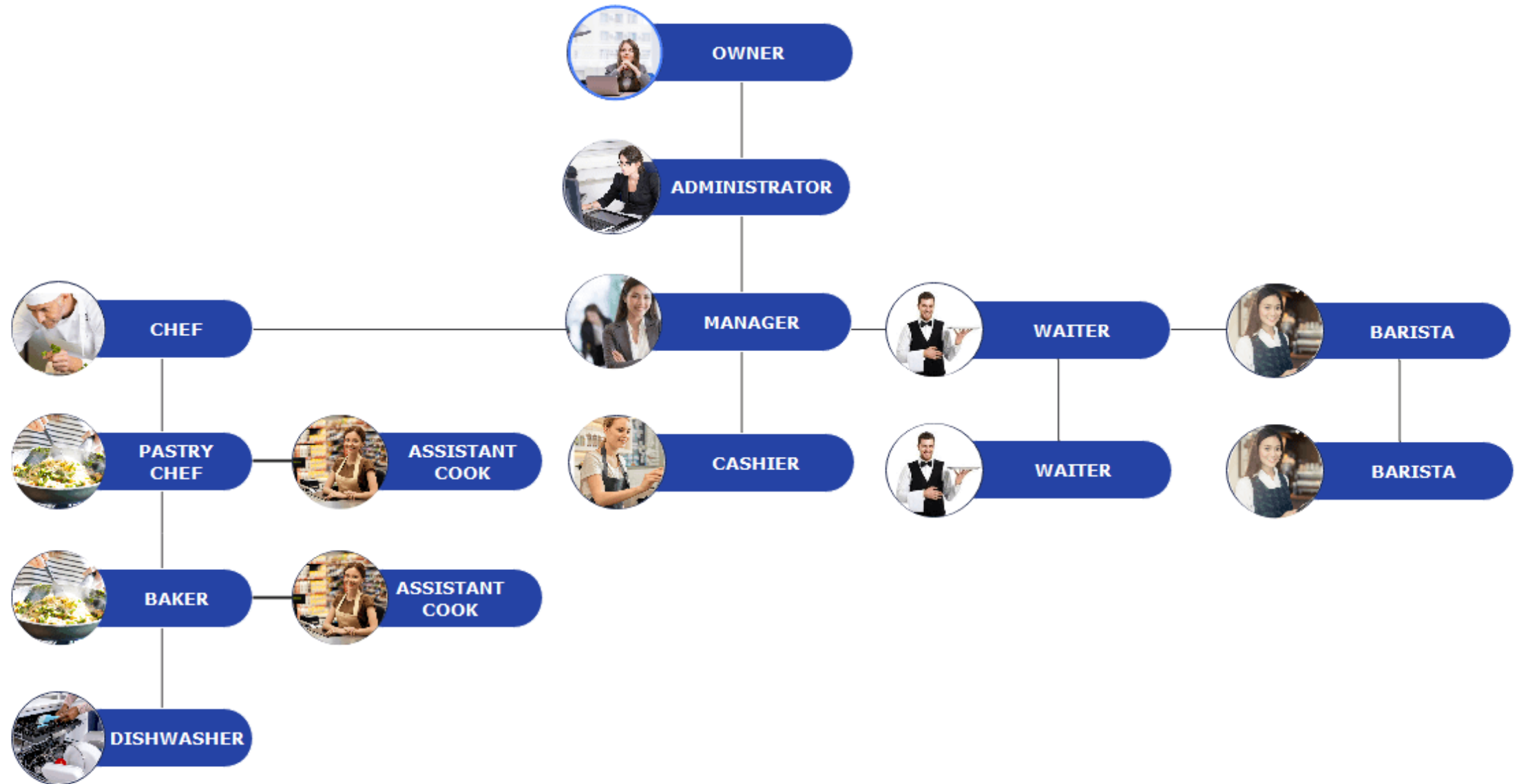
- Pair up with the person next to you
- On a piece of paper jot down:
 - Who are the people involved?
 - What data is collected and when?



Session 02



ORGANIZATIONAL CHART OF A COFFEE SHOP



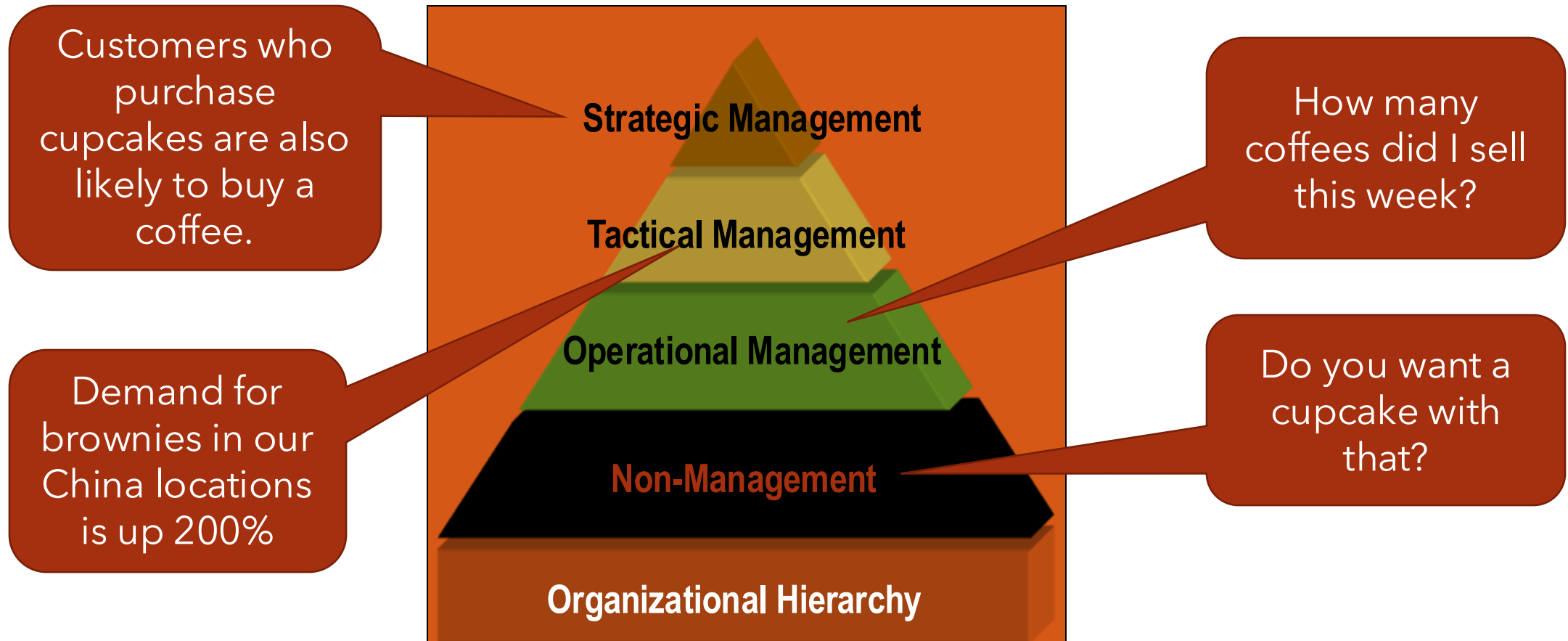
What data is collected and when?

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

Tax

Amount Due

22.00

6%

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?

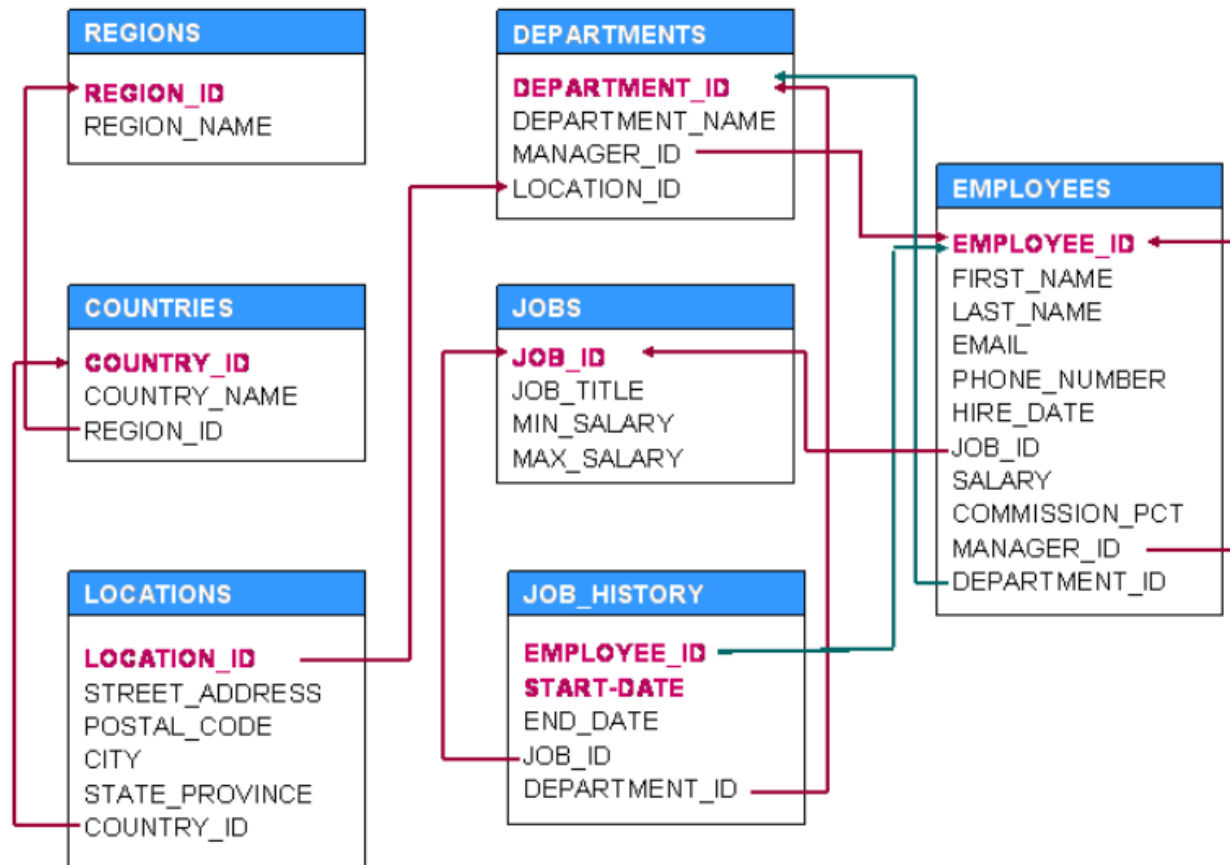
Defining a Database

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

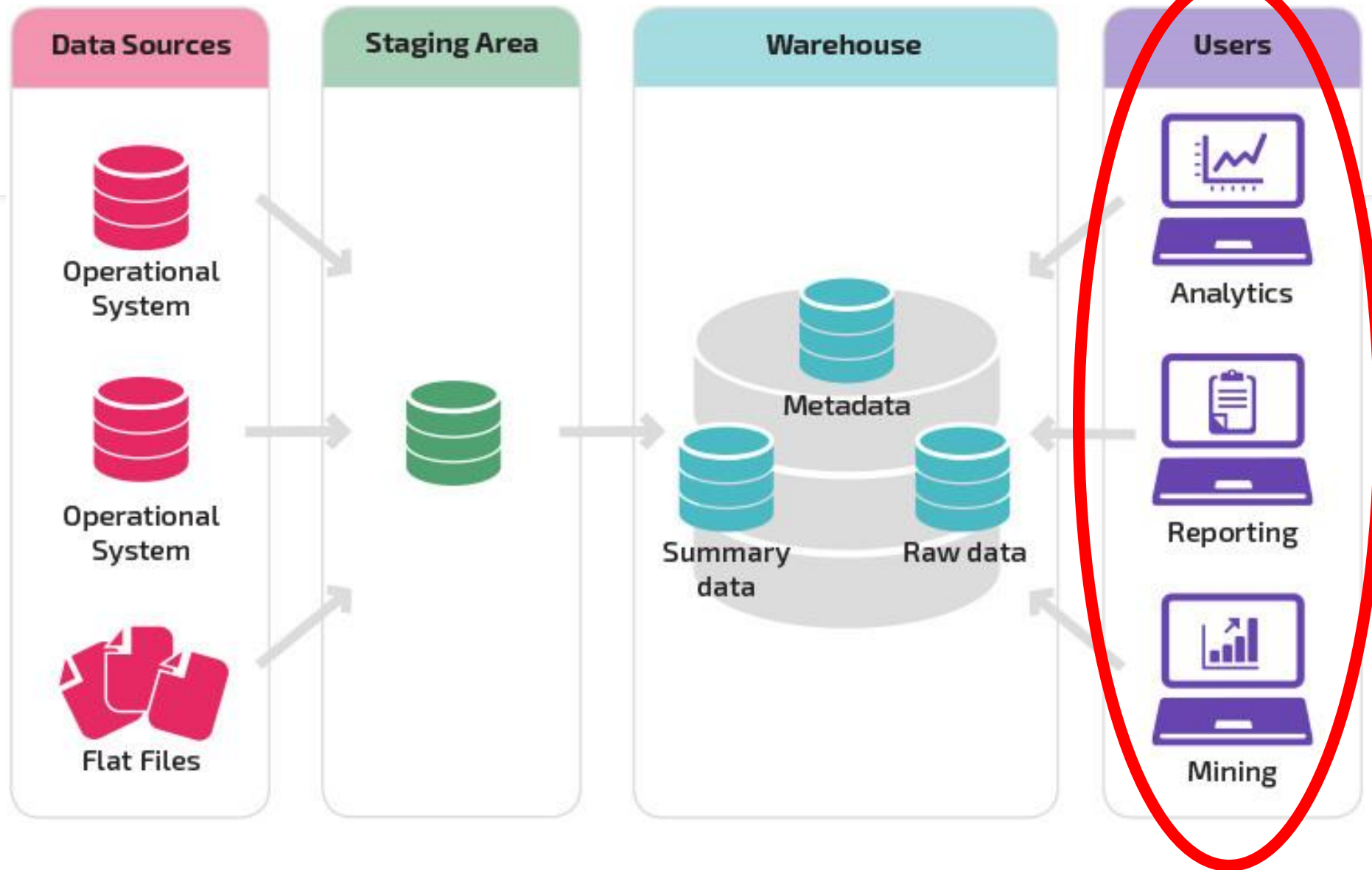
Key Database Activities (CRUD)

- **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**?



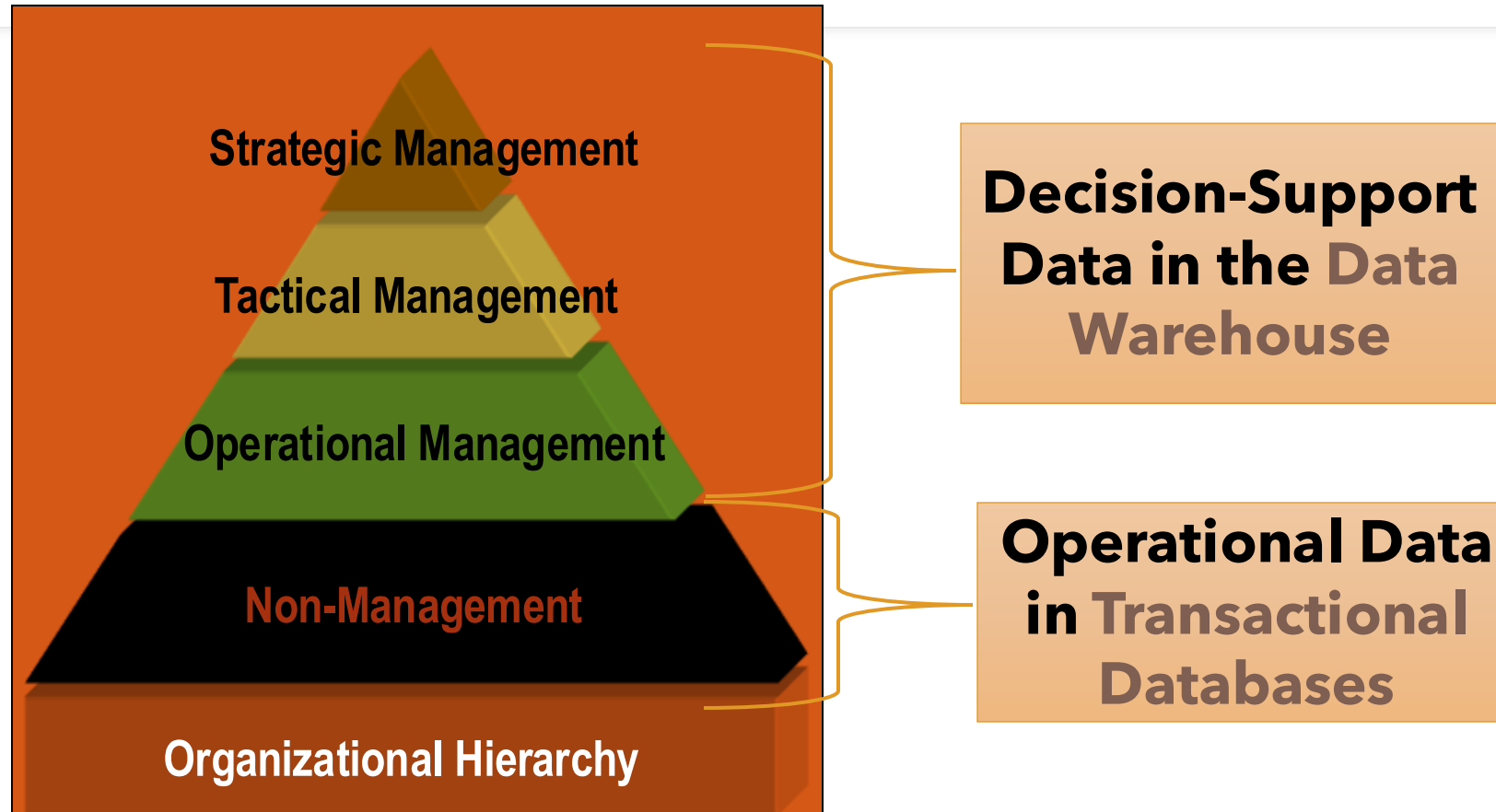
Data Warehouse



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**?

