Marketing Intelligence

1 – Business Intelligence

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Business Intelligence

Business Intelligence = management + technology

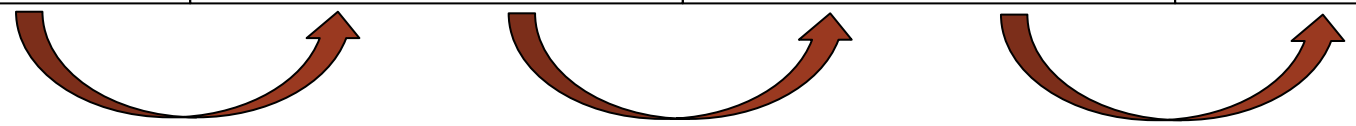
What?
Where to retrieve?
How to unsderstand?
How to manipulate?

What processes?

About what?

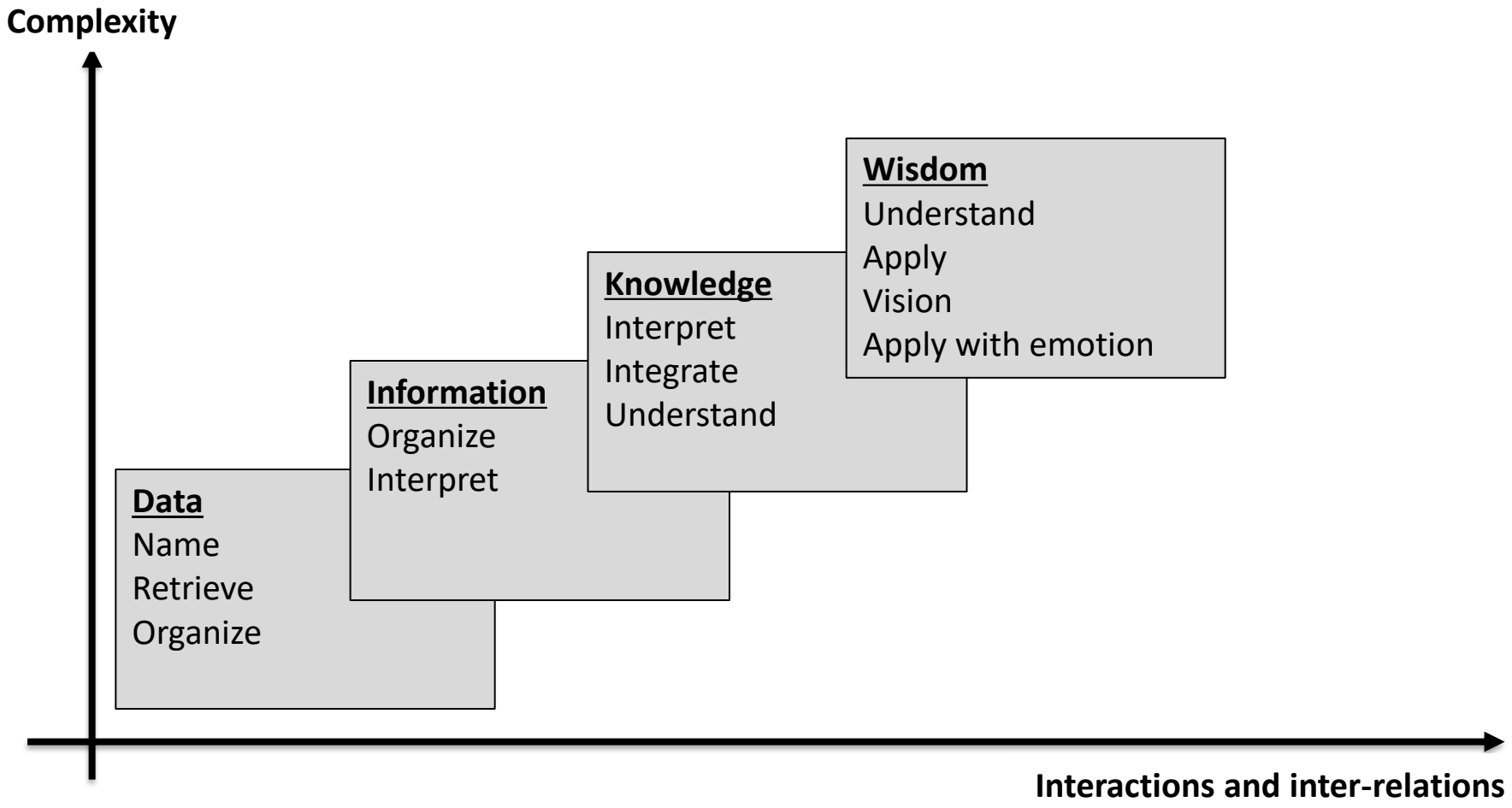
Content

Data	Information	Knowledge	Wisdom
• Observation of the state of the world • Elements not interpreted • Observations • Facts • Characteristics	• Data after some processing • Data with context	• "Organized" information • Obtained after analysing the information and using it for decision making • Formal interpretation of the relationship between data and information	• Integration and evolution of multiple knowledge domains over time • Allows predicting trends and developing new theories
Examples: • 3 • "yes" • 12 • 58 • 65 • 5,00	**Examples:** • Month: March • Did it rain yesterday?: yes • Temperature: 12ºC • Wind speed: 58km/h • Humidity: 65% • Price of umbrella: €5	**Examples:** • Since we're in March, it rained yesterday, the temperature is 12ºC, the wind is at 58 km/h and the humidity at 65%, probably it will also rain today. • … and the price of the umbrella will rise to €5	**Examples:** • Regarding the observations on temperature, humidity, etc it is possible to establish a connection that allows predicting the demand on umbrellas during the day



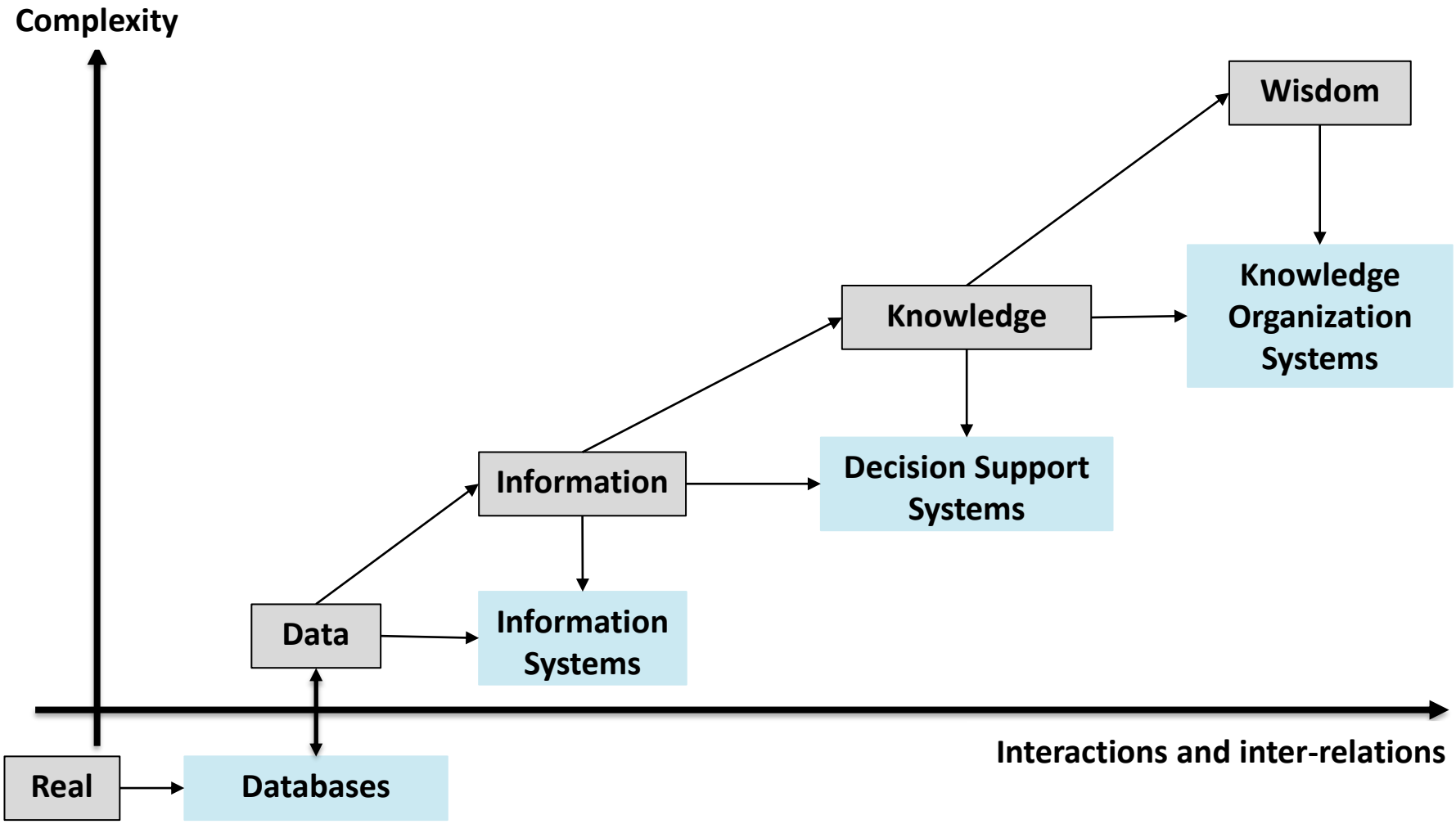
Processing Analysis Integration

Content

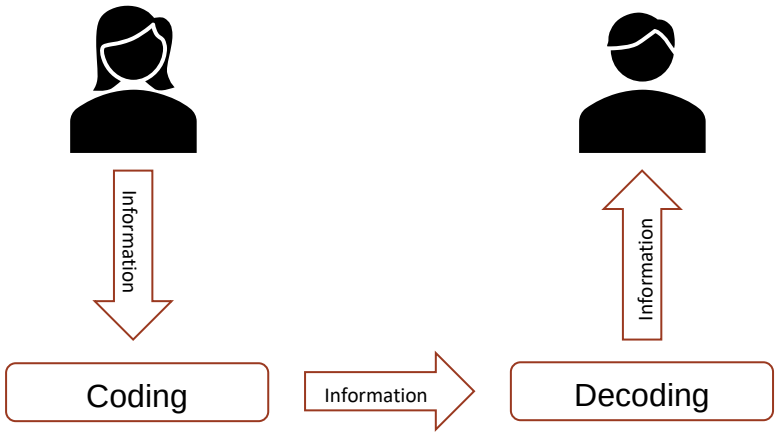


Nelson and Joos, 1989

Content


Complexity
Wisdom
Knowledge
Knowledge Organization Systems
Information
Decision Support Systems
Data
Information Systems
Real
Databases
Interactions and inter-relations

Information Communication



Three levels of **communication analysis:**

- Technical
  - Does the hardware/software work?
- Semantical
  - Does the receiver understand what the sender wants to communicate?
- Efficacy
  - Does the message produce the desired outcome?

Data quality attributes

- Timely
- Accurate
- Strict
- Easy to understand
- Current
- Concise
- In suitable format
- Quantifiable
- Available quickly and easily
- Independently verifiable
- Free from modification and influences
- Reliable, regardless of who collects it
- Suitable for the user's needs

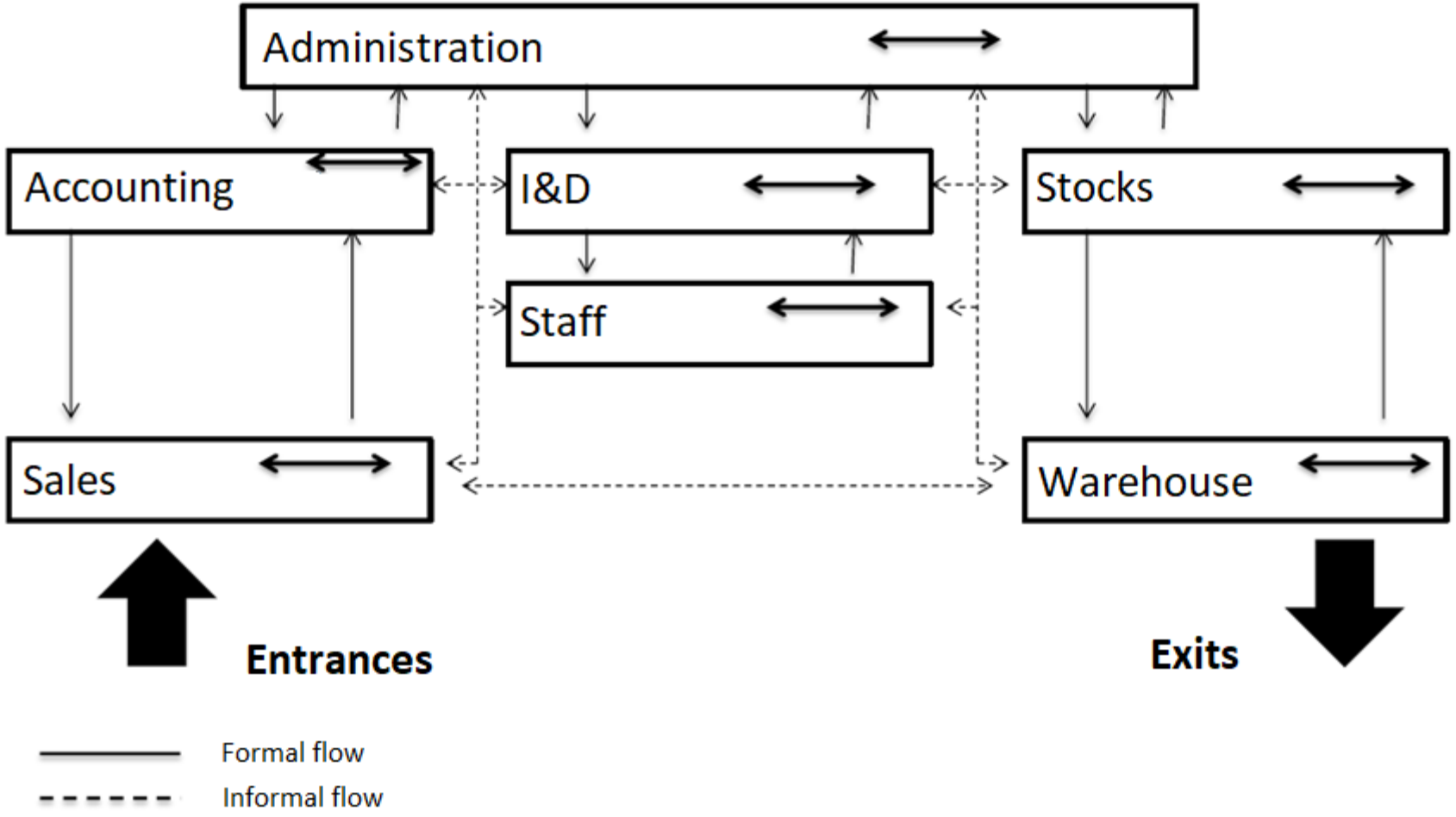
The need for information

Why do organizations need information (systems)?

- Way to achieve objectives

- Planning. Levels:
  - Strategical: Long-term planning
  - Tactical: Supervision and activity planning
  - Operational: Short-term (daily activities) planning

Flow of information in an organization



System definition

system *noun*

1 ★ A2 [countable] an organized set of ideas or theories or a particular way of doing something

2 ★ A2 [countable] a group of things, pieces of equipment, etc. that are connected or work together

3 ★ B1 [countable] a set of computer equipment and programs that are used together

4 ★ B1 [countable] a human or an animal body, or a part of it, when it is being thought of as the organs and processes that make it function

Pesquisas relacionadas com sistema

sistema **conceito**	**tipos de** sistema
o que é sistema **de informação**	**conceito de** sistema **pdf**
exemplos de sistemas	**definição de** sistema **geologia**
definição de sistema **biologia**	sistema **conceitual**

A **system** is a group of interacting or interrelated entities that form a unified whole.[1] A system is delineated by its spatial and temporal boundaries, surrounded and influenced by its environment, described by its structure and purpose and expressed in its functioning. Systems are the subjects of study of systems theory.

Translation:

Searches related to system

System concept	Types of system
What is an information system?	Concept of system pdf
System examples	Definition of system geology
Definition of system biology	Conceptual system

System

Set of components that interact to reach a common objective.

- A component may be another system/subsystem.
  - A subsystem may be a component of more than one system
  - The set of components that forms the system represents more than the sum of the parts

- All and any system has a set of identifying characteristics
  - The knowledge of these characteristics allows the analysis, design and control of a system

Characteristics of a system

- **Objective**
  - Main proposal that justifies the system
    - Can be more than one
- **Components**
  - Parts of the system that work together to attain the expected results (objectives).
- **Structure**
  - Relationships between the components;
  - Responsible for defining the edge of the system to the environment.
- **Behaviour**
  - How the system responds to its surroundings.
  - Determined by the processes developed to reach the goals of the system.
- **Life cycle**
  - Occurs in any system and includes phenomena of evolution, wear, inadequacy, aging, replacement, repairing and "death" of the system.

Description of an organization

- **Objetive**
  - Depending on the level, it is possible do establish strategical, tactical and operational objectives.
  - A certain amount of information is needed to reach these objectives.
- **Components**
  - Organizations include s set of people. Peopele are grouped by function.
  - The departments contribute to the organization and each of them demands information from different levels.
- **Structure**
  - In an organization, the structure is defined by how the authority and responsibility are distributed by the staff.
  - The structure defines the system's border.
  - Certain relations, invisible in the structure, condition the organization and determine its external appearance.
  - Defines the complexity
- **Behaviour**
  - Determined by the organization's procedures.
  - The procedures are specific sequences of activities performed to reach the goals.
  - The procedures constitute an organization's patrimony, as they are specific to the organization
- **Life cycle**
  - An organization passes through several stages during its life.
  - Demands revising the objectives.
  - One solution may be solutions with deadlines.
  - Leads to defining periodic revisions on objectives.

Characteristics of an Information System (IS)

- **Objective**
  - May be an autonomous system by itself
  - Its main utility is to support other systems
  - Guide the decision making on the three levels (operational, tactical and strategical)
  - Besides being precise, concise, simple and timelu, the information needs to be obtained with reasonable cost.
  - Must unsure information security and availability.

- **Components**
  - Main study object to system analysts and reason for information technologies

- **Structure**
  - By studying IS theory, it is possible to obtain the information needed to analyse, design and implement the best suited solution for the system

- **Behaviour**
  - Information system theory is the work base for system analysts and support the understanding of a business area to auditors, consultants and the decision makers
  - Fulfilment of the IS's objectives
  - Provision of information to the organization in the appropriate format, time and cost

Information Systems

- Component that supports the flow of information in and out of the system
- Exists in an organization as a network spread by the different system components (not an isolated department)
- Due to their importance, they are taken as a main subsystem on which much attention falls on the part of
- Examples:
    - Accounting information systems
    - Stock control systems
    - Navigation support systems
    - Sales support systems
    - Support systems for liberal professions…

Characteristics of Information and Communication Technologies (ICT)

- Information infrastructure brings power and easy access to resources
  - Competitiveness gain
  - Quick access to information
- Today's supercomputers will be tomorrow's personal computers
  - Smaller format
  - Lower purchase price
- Information integration capability
  - Internally
  - Between multiple organizations
- Its performance is measured by the process integration aspect
  - The computer being only one of several processes
  - Supports iperationalization

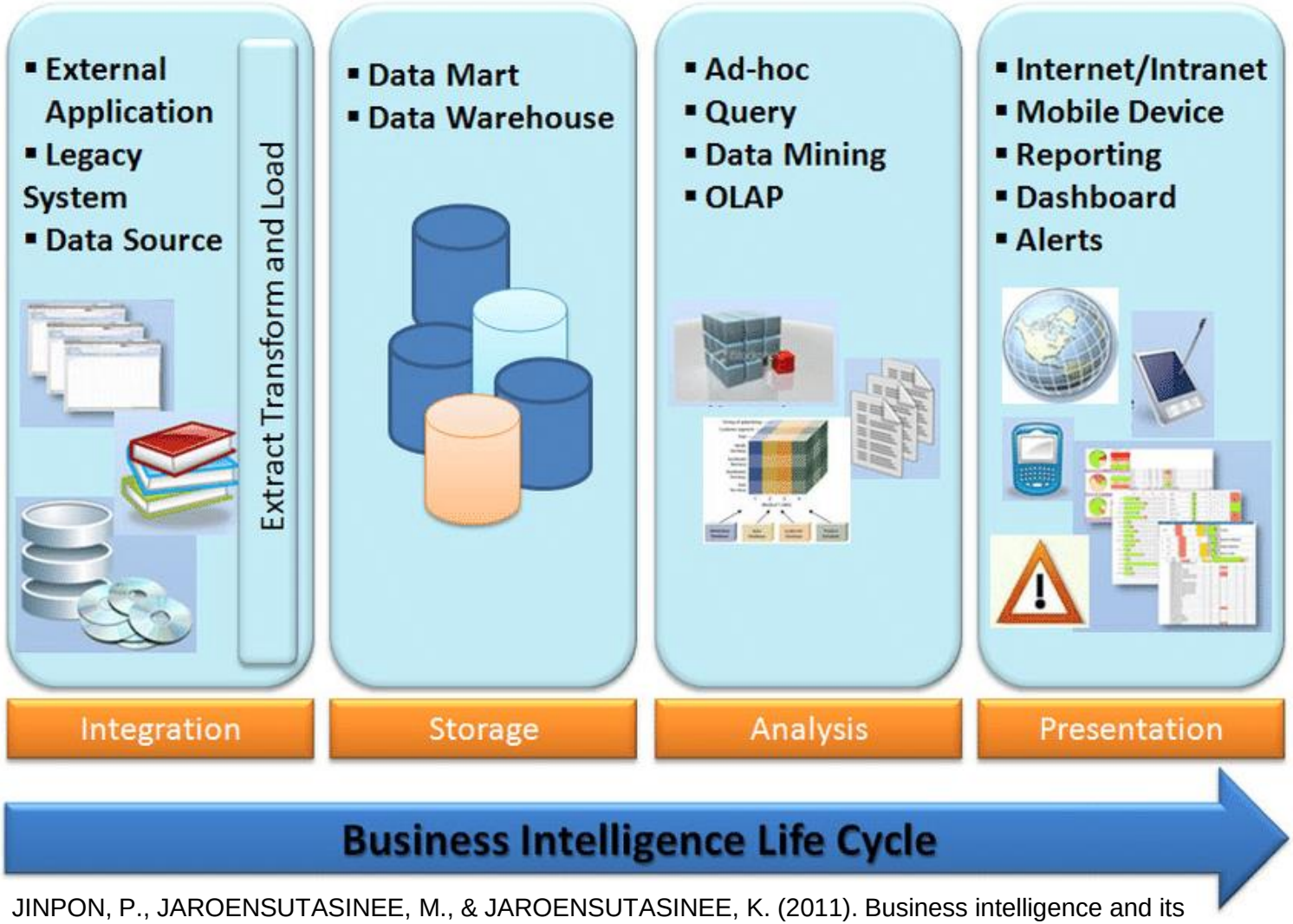
IS potential problems

	Technical	Functional	Socio-organizational

Focus	• IS technological weaknesses
	  • Hardware
	  • Infrastructure
		• Shortcomings of business processes
		  • Information failure and redundancy
			• Direct relationship between organizations and society
			  • Mission, Culture, Posture and Behavior (employees)

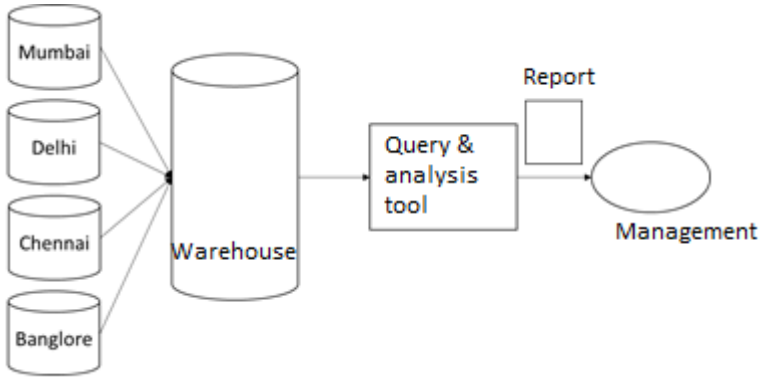
Examples	• IS age • Poor organization and lack of methodology in implementation • Obsolete and outdated platforms • Rigidity of applications • Proliferation of different applications that repeated common procedures • Difficulties in maintaining applications and their evolution • Performance issues • Absence of development homogenization policies • High application maintenance costs in all areas • Poor information security and confidentiality	• Dispersion and duplication of information • Lack of information integrity • Large manual workload • Poor security in the context of information • Process rigidity • Time-consuming information flows • Major reporting limitations • Proprietary information • Poor communication between the group's areas / companies • Interfaces with other systems / applications were processed in batch (sequential process) • High manual workload in spreadsheets	• Poor communication between employees from different areas • Lack of employee training • Little willingness of managers / employees for change / innovation • Little affirmation of the IS area in the organization

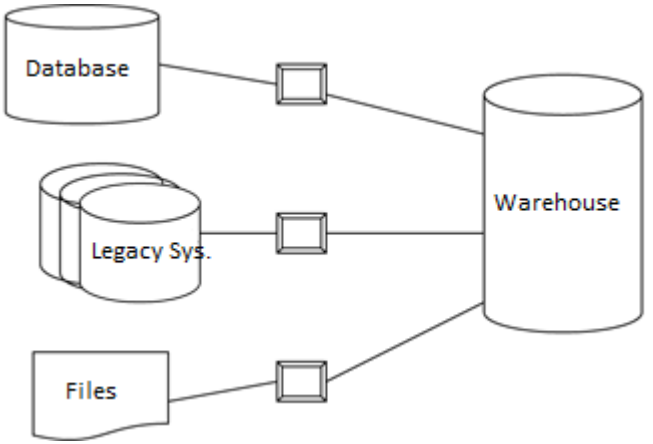
Business Intelligence process



JINPON, P., JAROENSUTASINEE, M., & JAROENSUTASINEE, K. (2011). Business intelligence and its applications in the public healthcare system. Walailak Journal of Science and Technology (WJST), 8(2), 97-110.

Integration / Storage

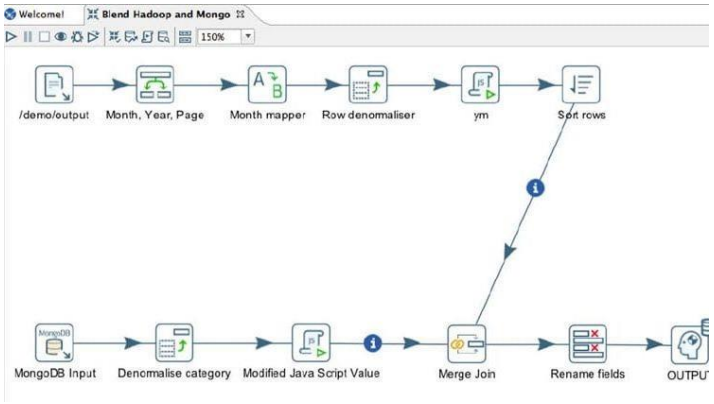




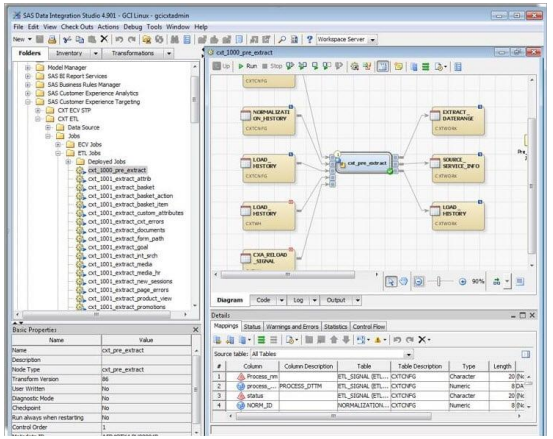
- A data warehouse is built by integrating data from more than one source, these sources being typically heterogeneous.

- Data processing is carried out in order to ensure the consistency of that data.

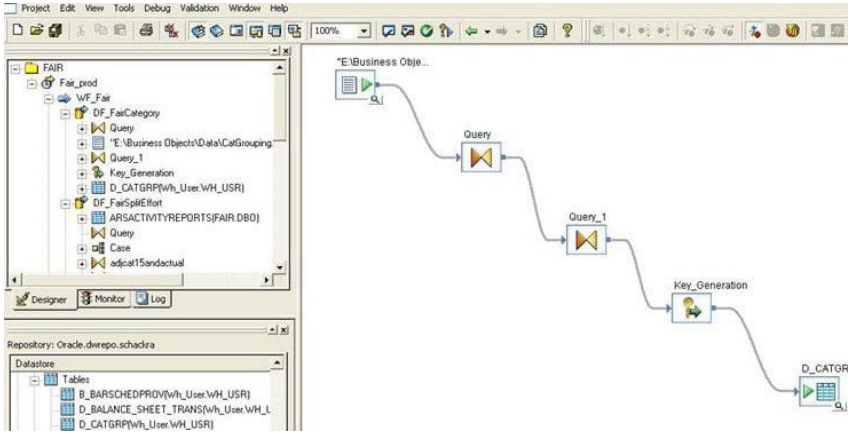
Integration / Storage tools



http://www.pentaho.com/product/data-integration



https://support.sas.com/en/software/data-integration-studio-support.html

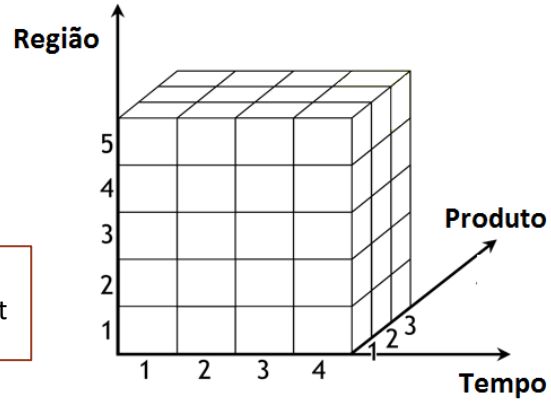


https://www.sap.com/india/products/data-services.html

Analysis

		Jan		Fev		Mar		Abr	
		$	U	$	U	$	U	$	U
Mumbai	Pão de trigo					7.44	3	24.80	10
	Queijo	7.95	3	42.40	16	15.90	6		
	Alheira	7.32	4	29.98	16	10.98	6		
Pune	Pão de trigo					7.44	3	17.36	7
	Queijo	7.95	3					21.20	8
	Alheira	7.32	4	16.47	9	27.45	15		

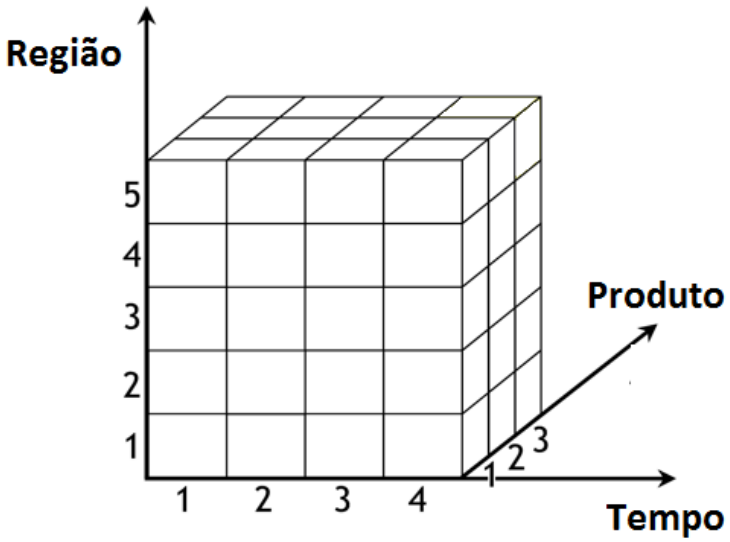
- Measure
  - Revenue
  - Units sold
- Dimensions:
  - Product,
  - Time,
  - Region.



Região = Region
Produto = Product
Tempo = Time

- OLAP cube operations
  - Detail
  - Generalize
  - Slice and dice

OLAP Operations: Detail



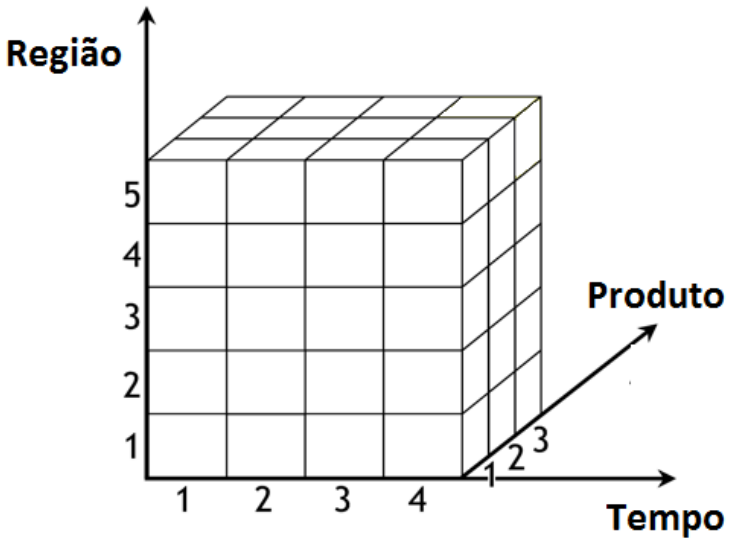
Região = Region
Produto = Product
Tempo = Time

Categoria, por ex., aplicação eléctrica

Sub Categoria, por ex., cozinha

Produto, por ex., torradeira

OLAP operations: Generalize



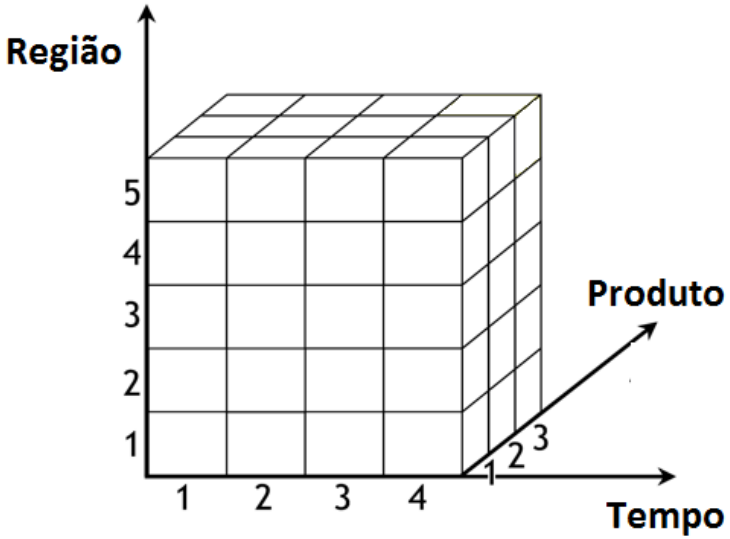
Categoria, por ex., aplicação eléctrica

Sub Categoria, por ex., cozinha

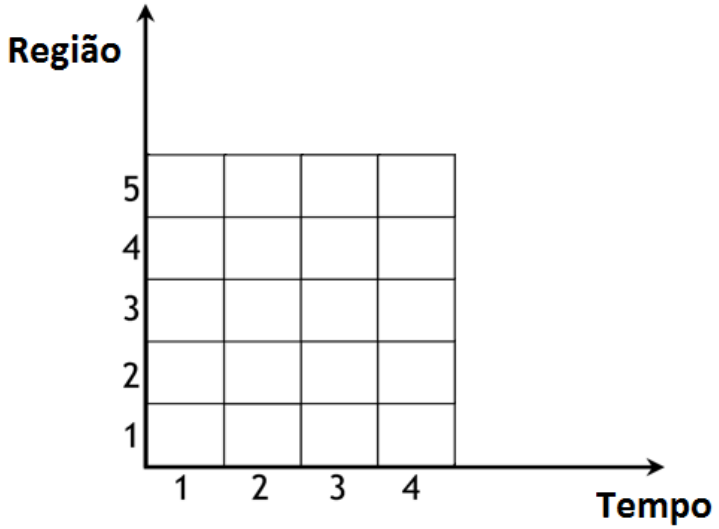
Produto, por ex., torradeira

Região = Region
Produto = Product
Tempo = Time

OLAP operations: Slice and Dice

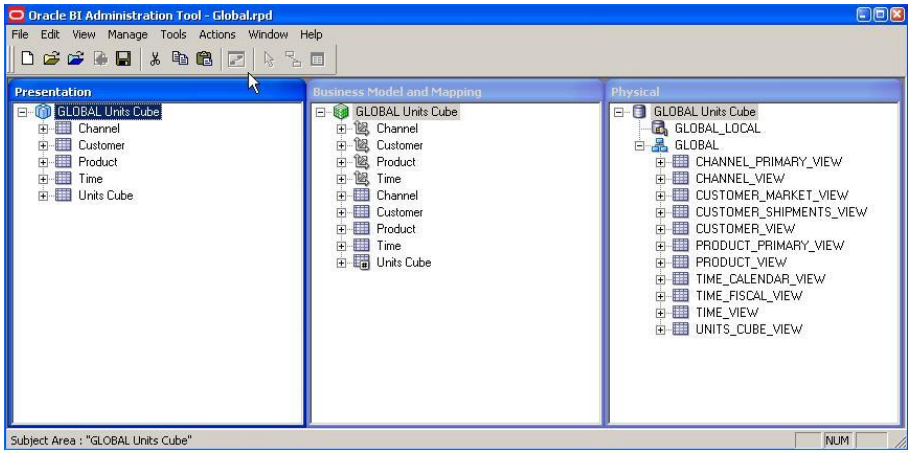


Product = toaster

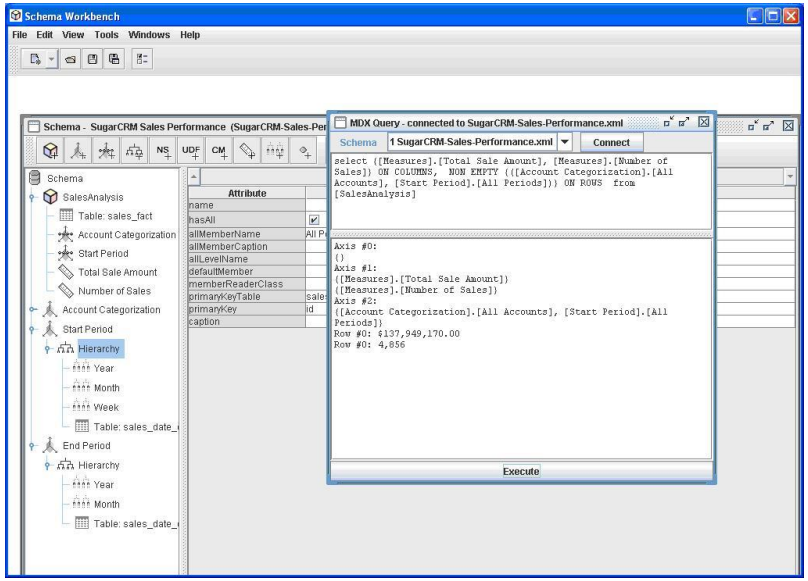


Região = Region
Produto = Product
Tempo = Time

OLAP tools

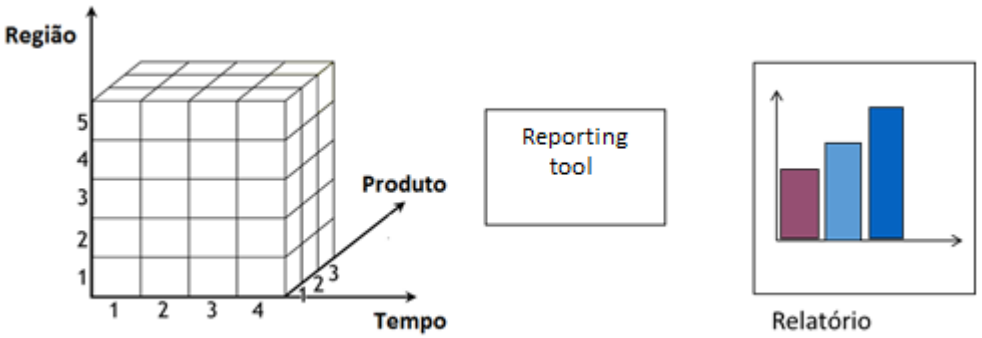


http://oracleolap.blogspot.com/2010/07/first-look-at-obiee-11g-with-oracle.html



https://mondrian.pentaho.com/documentation/workbench.php

Presentation



Região = Region
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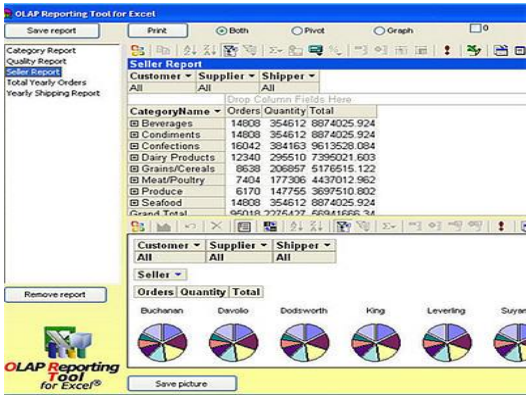
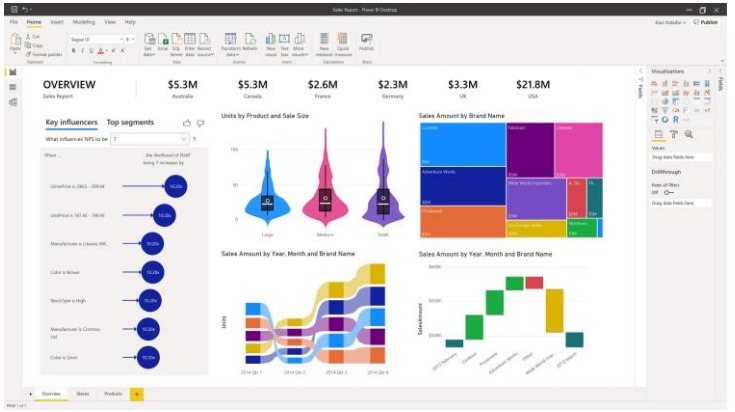


https://qpdownload.com/olap-reporting-tool-for-excel

https://www.ibm.com/support/pages/ibm-cognos-8-business-intelligence-841-supported-software-environments



https://powerbi.microsoft.com/

Business Intelligence example (1)

Business	I own a grocery store
What do I want to know?	How are my sales going?
What do I need to measure?	• Products sold • When? • How many? • For how much? • Where?
What data will I collect	For each sale: • Product • Quantity • Price • Store (region)

Business Intelligence exemple (2)

Business	I'm a youtuber
What do I want to know?	What type of content is more profitable?
What do I need to measure?	• Average nr. visualizations • Average viewing time • Nr. "likes"/"deslikes" • Nr. comments • Nr. "viral" shares • Nr. subscriptions • Viewers geographical distribution • Viewers age • …
What data will I collect	For each visit: • Like / dislike / nothing • Shared? • Commented? • How long? • Subscribed? • Viewers personal data

Business Intelligence example (exercise)

Business

What do I want to know?

What do I need to measure?

What data will I collect

Help

Real-world examples of business intelligence:
https://www.ccstechnologygroup.com/real-world-examples-of-business-intelligence/

Business Intelligence Applications: Considering the Application of BI:
https://www.selecthub.com/business-intelligence/4-key-bi-applications/

Business Intelligence Key Performance Indicators (KPIs) with Examples:
https://financesonline.com/business-intelligence-key-performance-indicators-kpis-with-examples/

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