Business Intelligence (BI)

An Introduction

Your Learning Objectives

- A short history on the emergence of business intelligence (BI).
- What business intelligence represents.
- Key technologies associated with business intelligence architectures.
- The difference between data, information and knowledge.
- The main user requirements for business intelligence (analytical) applications.

Business Intelligence - History

- Businesses have always sought ways to gain greater insight about their environment.

- Lack of computing resources to support the collection, storage, and analysis of data, meant that businesses often made decisions based primarily on intuition.

Business Intelligence - History

- As businesses began to automate more systems, more electronic data became available.
- However, integrating and analysing data created by different systems was difficult.
- Reports based on the data gathered sometimes took months to generate. Such reports allowed informed long-term strategic decision-making.

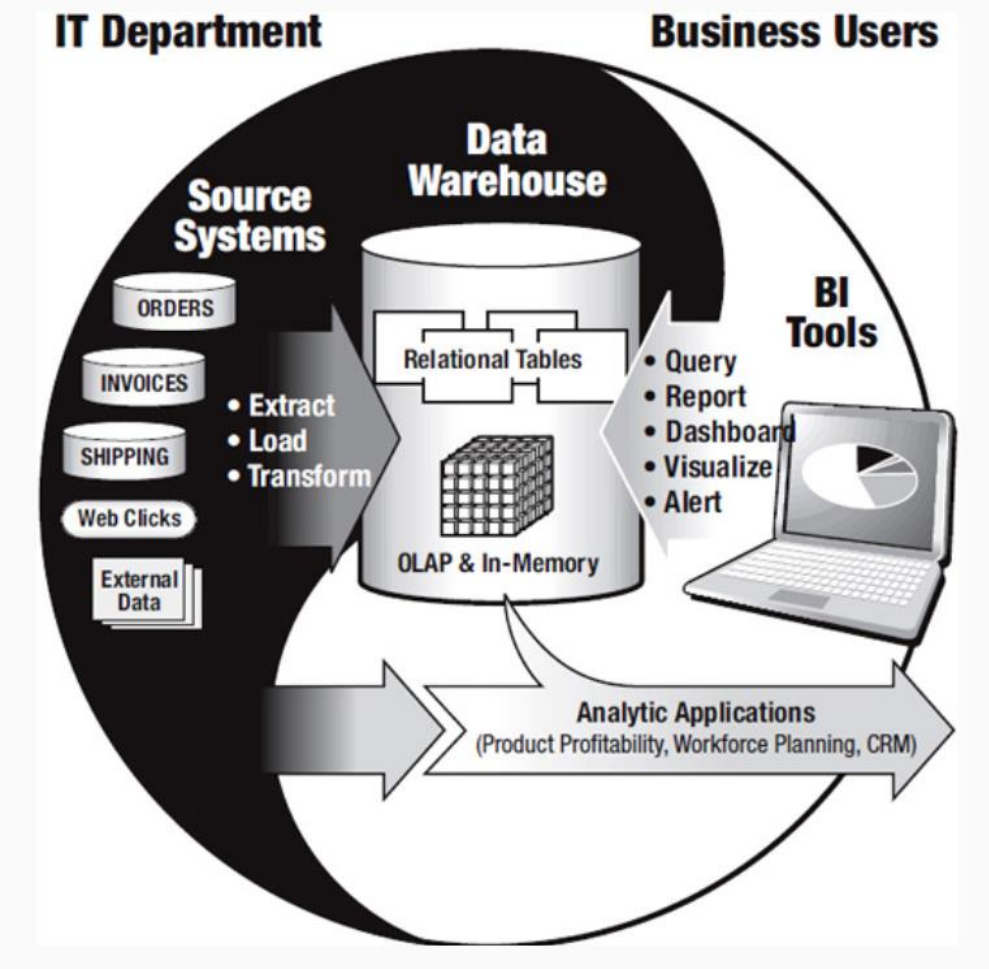
Business Intelligence - History

- Emergence of standards in computing, automation, and technologies have led to vast amounts of electronic data becoming available to businesses.
- These ‘mountains’ of data can contain valuable information about the business.
- The ability to extract and act on this information has led to improved decision-making (referred to as data-driven decision-making).

What is Business Intelligence?

- There are various definitions for what BI represents and this is because BI can refer to:
  - ***BI Processes*** for extracting, transforming, loading, preparing, distributing and analyzing data;
  - ***BI Technologies*** used to support these processes;
  - ***BI Output*** is the information produced by the processes supported by technologies with the purpose of facilitating data-driven decision-making.

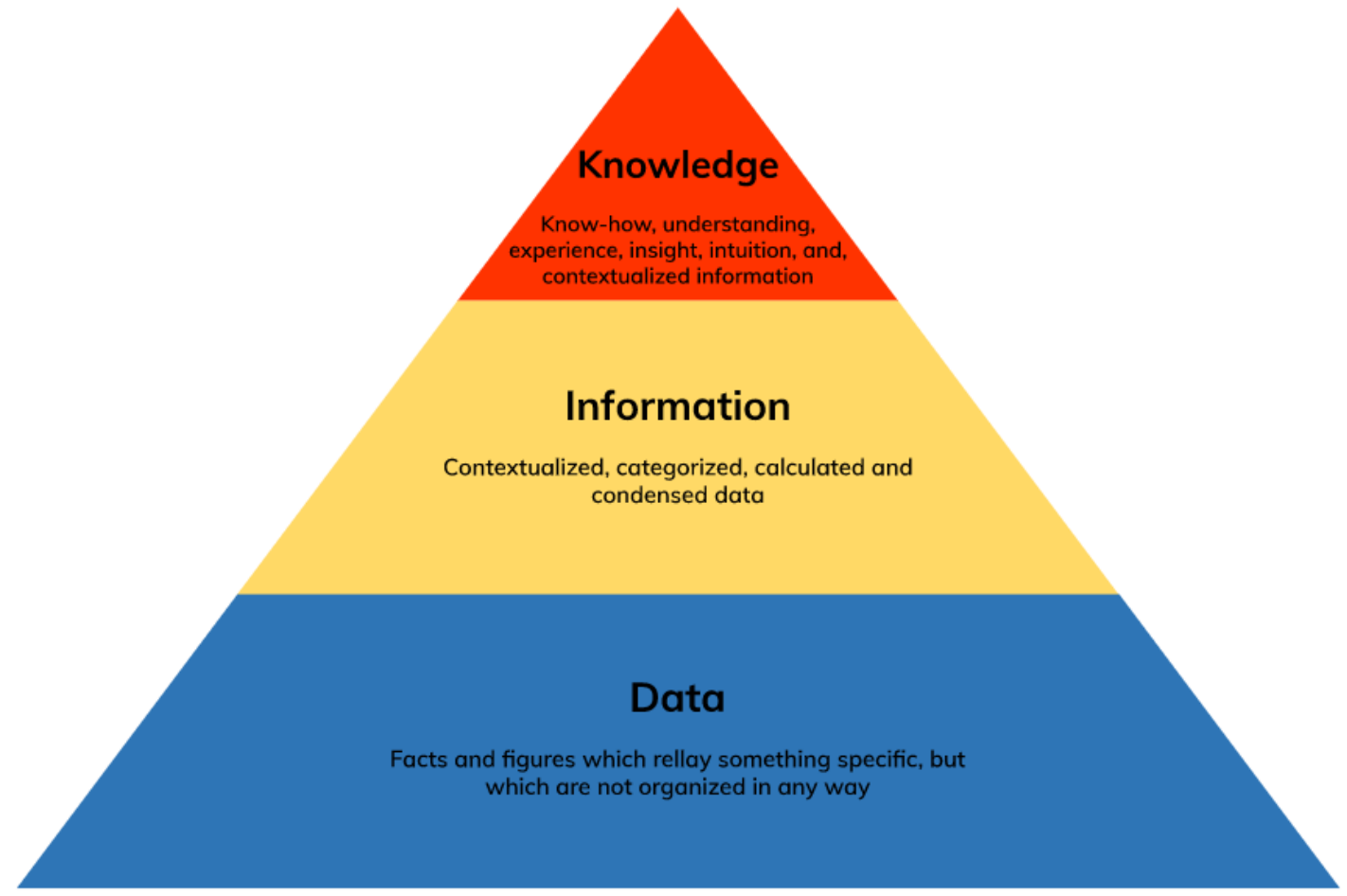
Business Intelligence Architecture



Business Intelligence Technologies

- Architectures for BI can include:
  - **Data source** systems
  - **Extraction, Transformation and Loading** (ETL) systems
  - **Data storage** (e.g. SQL Data warehouse, OLAP cubes, NoSQL databases, spreadsheets)
  - **Analytical tools** to create queries, reports, dashboards, visualizations, alerts
- BI/Analytical Applications integrate these technologies to enable the transformation of data into information.

Data-Information-Knowledge



Data-Information-Knowledge

- **Data**
  - Unprocessed facts and figures, not organized in any way and without any added interpretation or analysis.
- **Information**
  - For data to become information, it must be contextualized, categorized, calculated and/or condensed and has been interpreted so that it has meaning for the user.

Data-Information-Knowledge

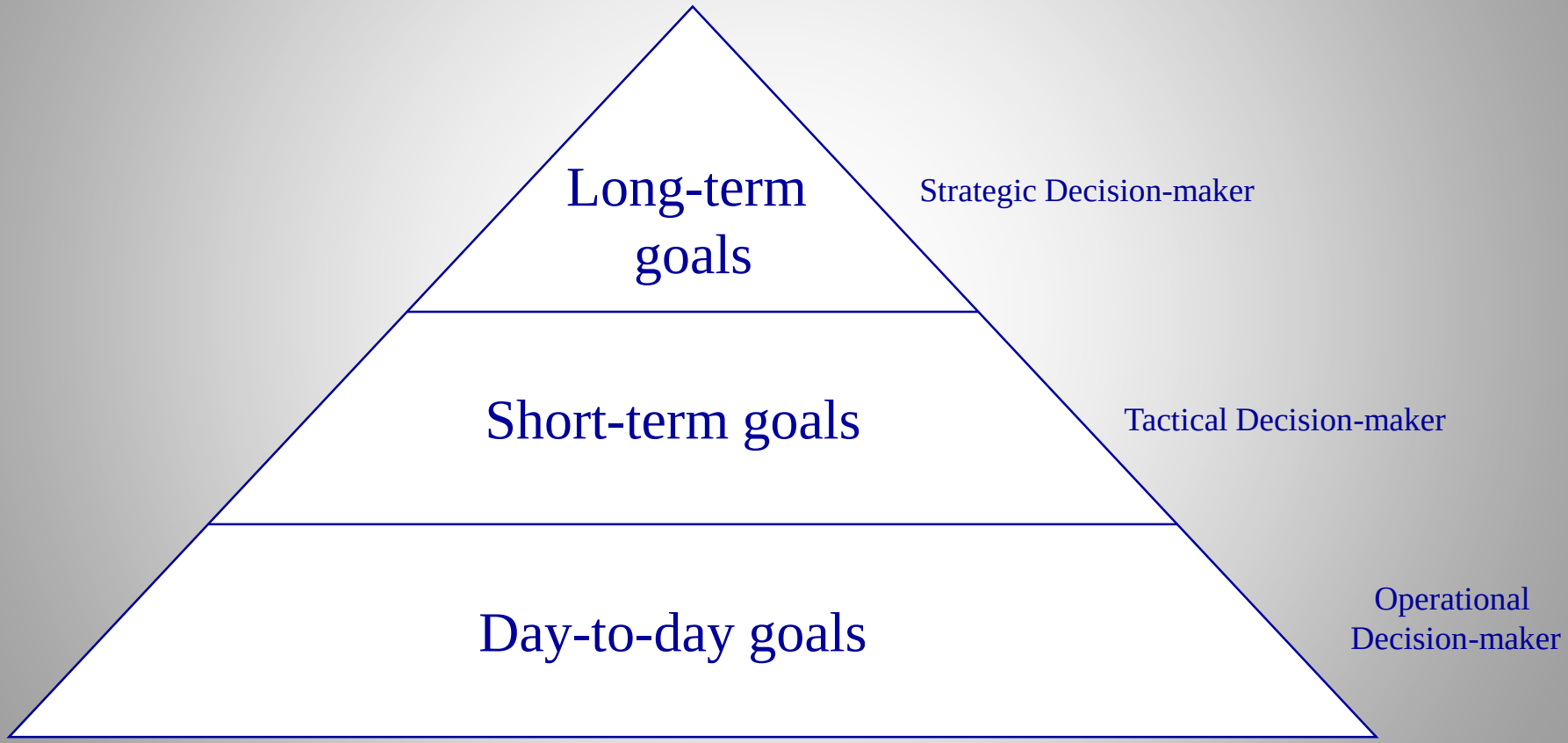
- **Knowledge**
  - A combination of information, experience and insight that may benefit the individual or the organization and implies know-how and understanding.

Business Intelligence (BI) Users

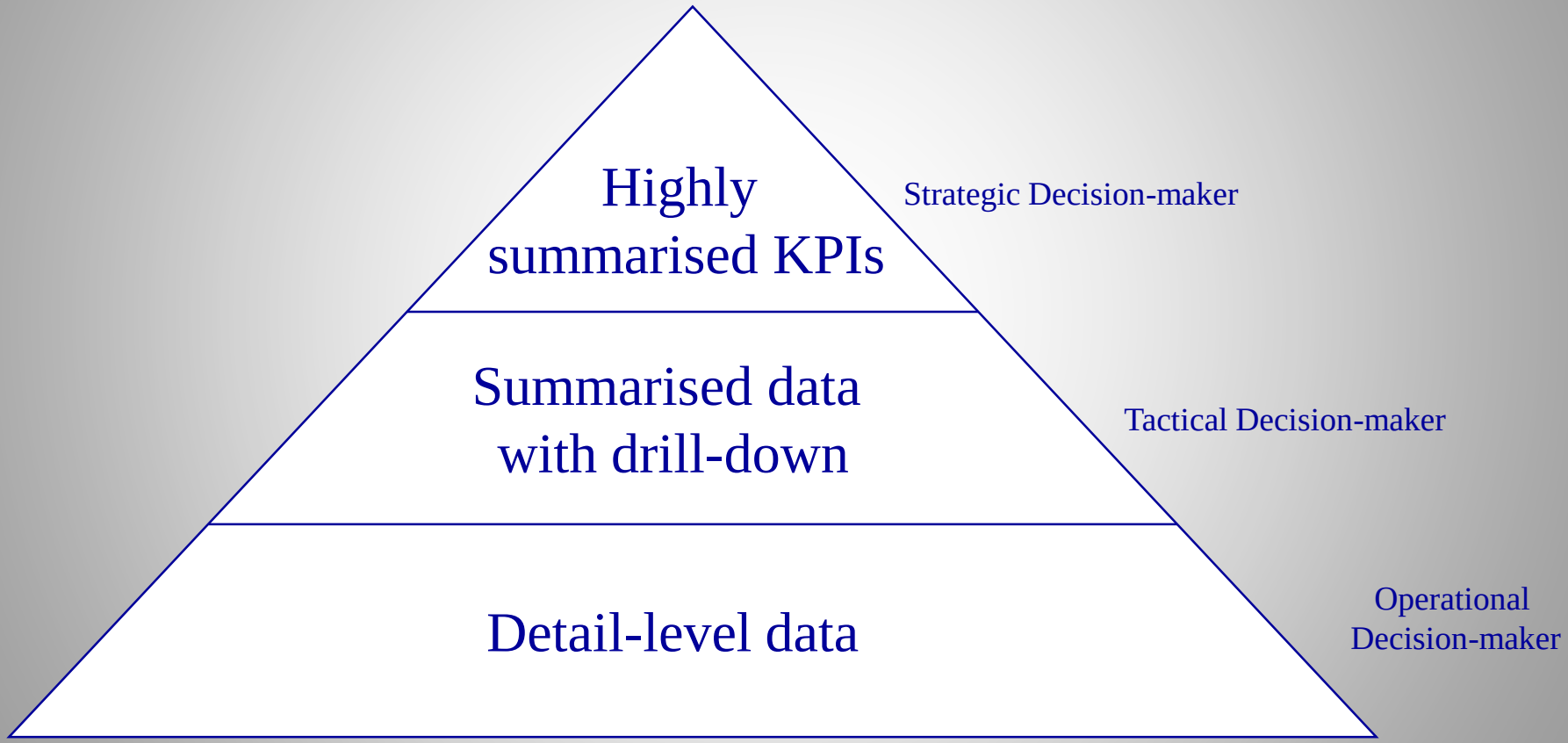
- Successful business intelligence systems support users by providing BI/analytical applications that meet users' requirements.

- Users' requirements for BI differs according to the following:
  - Level and frequency of decision-making (i.e. strategic, tactical or operational);
  - Level of detail in the output (data/information);
  - Level of latency in the output (data/information).

BI Users - Level of Decision-Making

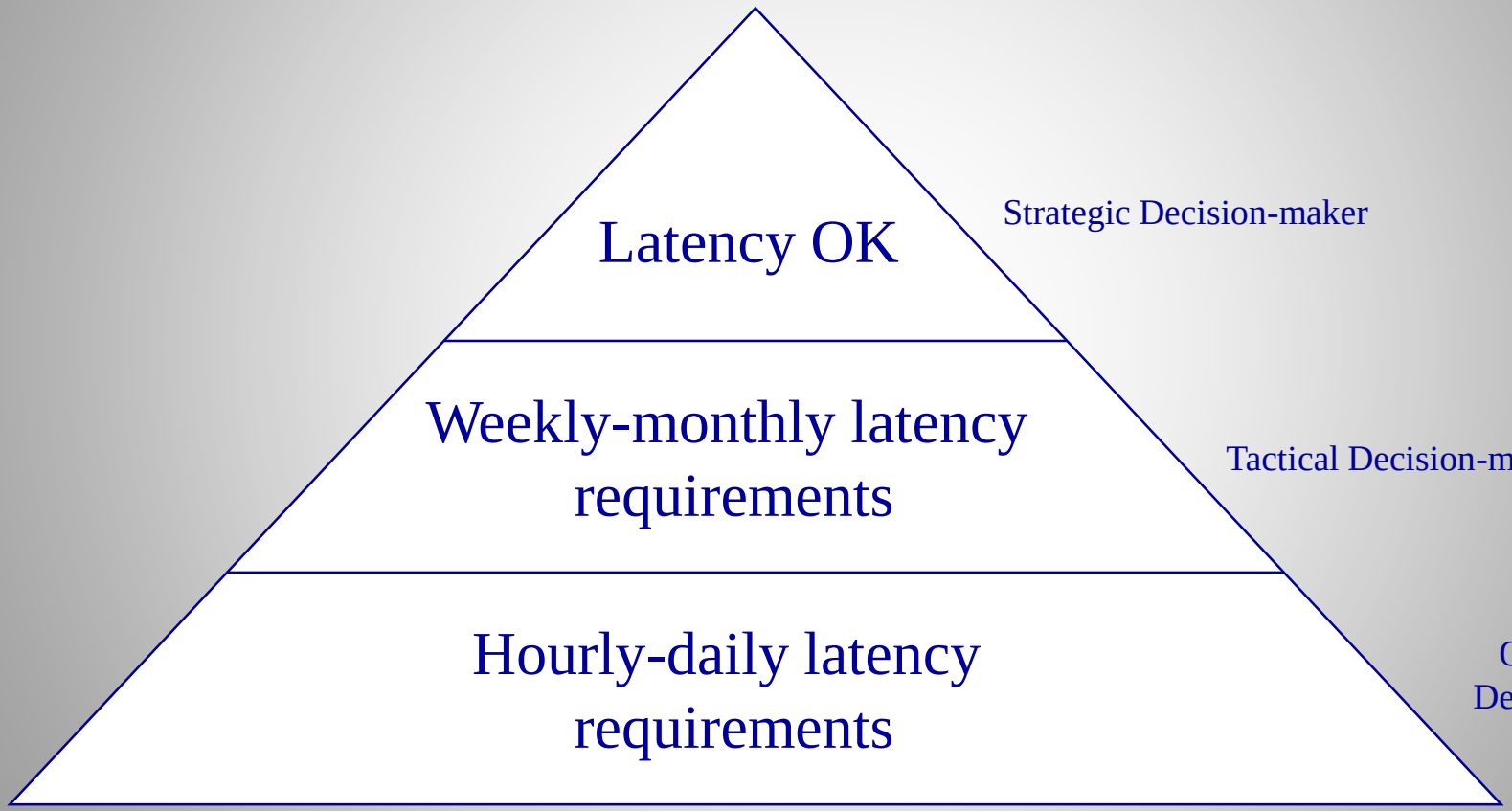


BI Users - Level of Data Detail



Key Performance Indicators (KPIs) are quantifiable measures that represent a critical success factor in an organisation.

BI Users - Level of Data Age



Latency is the amount of time between the occurrence of the original transaction and the loading of the transaction's data into a BI system.

What should You do Next?

- **Review** the learning outcomes for this presentation – see Slide 2.
- **Watch** the Intricity (animation) video explain what business intelligence represents.
- **Read** the BI scenario documents.
- **Follow** URL links to other websites to broaden your knowledge.