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How data analytics improve business decision-making processes

From the information economy chain to AI

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DATA ANALYTICS: THE KEY TO INFORMED BUSINESS DECISIONS

TRANSFORMING RAW DATA INTO
MEASURABLE BENEFITS



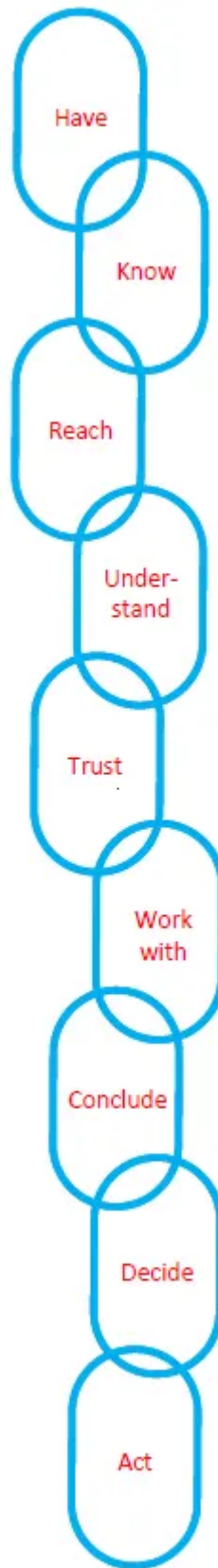
I provide a partial description of data analytics based on my experience as a data analytics practitioner. I'll provide the basis for a basic understanding of the field.

First, what is Data Analytics?

The idea of data analytics is to use the data you already have to generate insights that lead to decisions that create value.

The Information Chain

Consider the classic information chain, where each link is equally important to the value. If one link in the chain is broken, all value is lost.



Information Economy Chain

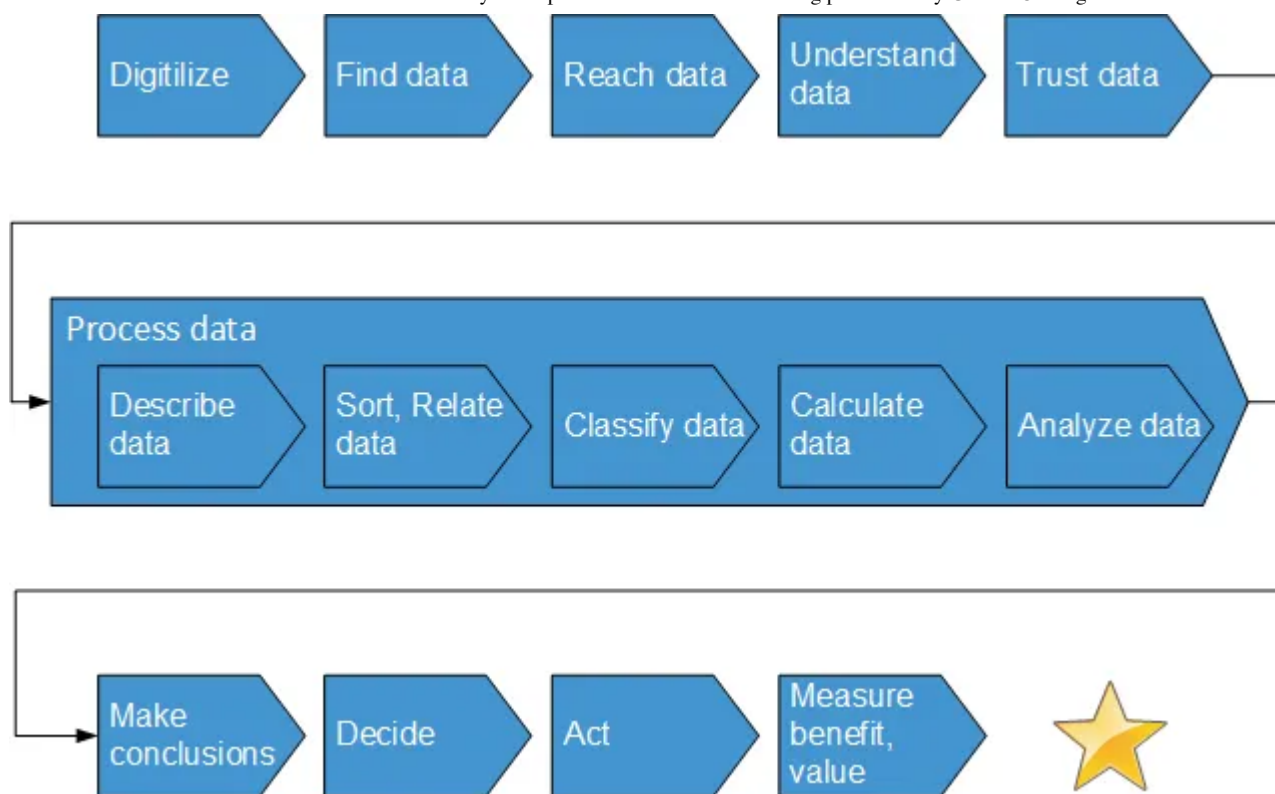
The information economy means that the benefits of corporate data can only be realized if several conditions are met:

- **Have** — somewhere, inside or outside the organization, there is the right data, relevant to the situation.
- **Know** — you know that the data exists and where to find it.
- **Reach** — you can access this information technically and/or manually.
- **Understand** — you understand the data, so you can interpret the meaning and purpose with your frame of reference: to create your information.
- **Trust** — you trust that the information you obtain is accurate.
- **Work with** — you can work with the data on your local equipment, and then create or extract more complex and valuable information.
- **Conclude** — draw correct conclusions based on the information you have created and the knowledge you have/learned in concluding.
- **Decide** — to decide on an alternative course of action based on insights, knowledge, intuition, decision-making style, time of day, and personal factors.
- **Act** — to move from decision to action, i.e., to execute and act — in reality, this is where the benefits of information are achieved.

This chain can be used for both information delivery and data analysis. For example, you can use it to build a website. Just because you've published a new web page and marketed it — so that people can reach it — doesn't mean that the target audience will get any value from it. It is the same with data analysis. If we misunderstand our data, we can't draw accurate conclusions.

The Data Flow

Here I have redrawn the classic information chain as a flow of activities, from individual data elements to measured benefits. As you can see in the image below, I have layered it into three levels.



This is just an illustration, it is not a correct process model

The first, top level is what is sometimes called **Data Engineering**. With data from multiple sources, Data Engineering often requires the most resources. What we get is reliable data and relevant information.

The middle level, sometimes called **Data Science**, is about processing data and information and creating new knowledge, using computer algorithms, statistical calculations, and machine learning models. The most common actions are sorting, relating, and classifying information.

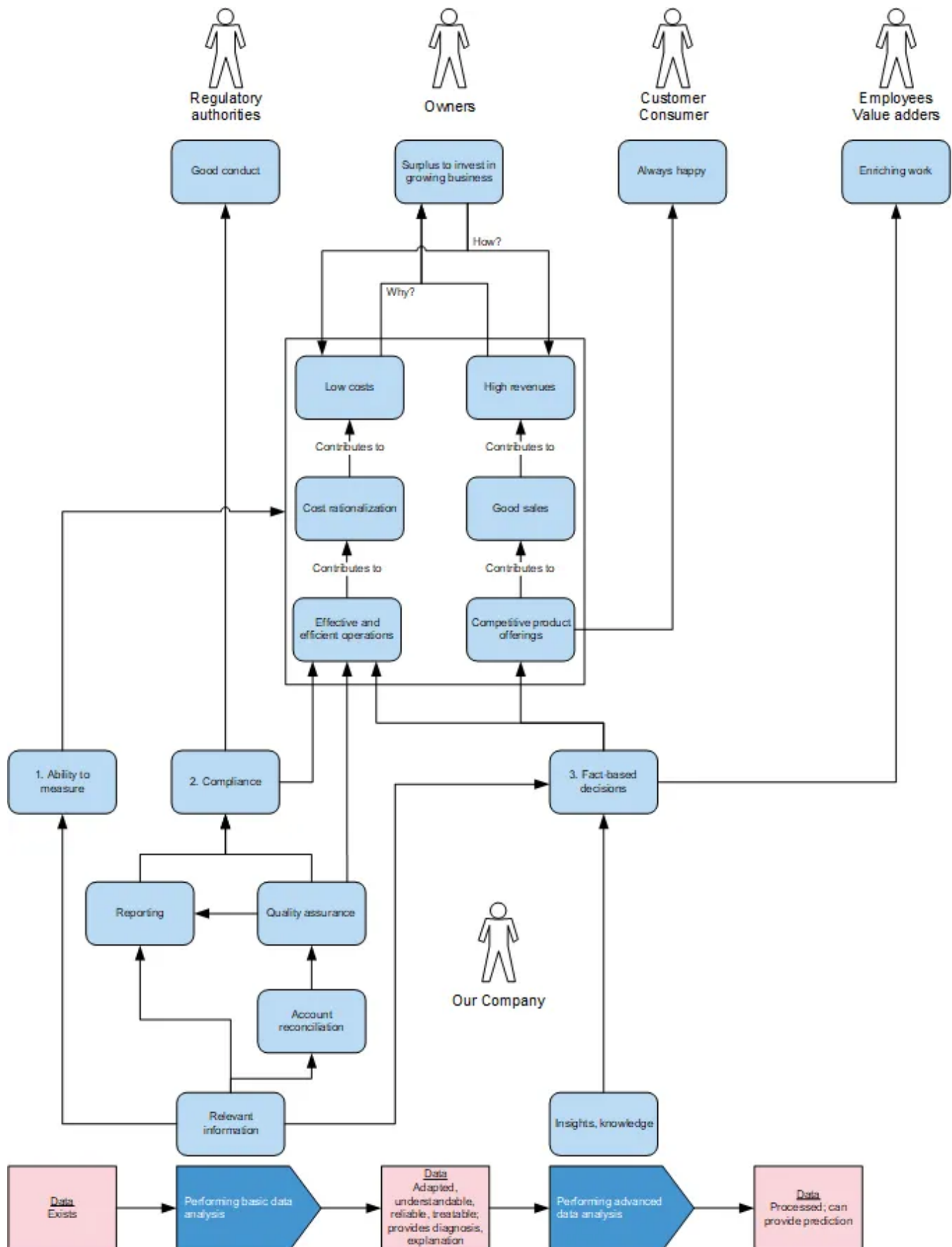
The final level is the **Decision Process**, where we use insights and new knowledge to draw conclusions and make decisions that create value in the right context and situation. Done right, we should be able to measure both the business value of the actions taken and the impact of the data analytics effort.

Combined Data

Data from different sources can be combined in a data warehouse or architectures with similar purposes. For example, data from a contract management system is combined with data from a CRM system, a case management system, an accounting system, and a customer web front system. This can provide additional insights and new knowledge about products and customer behavior that can be used to make business decisions, especially by examining dynamic data changes.

Context

Here is an example of a goal model with a simple process model.



The example above illustrates how data analytics can contribute to the goals of the company's key stakeholders.

Data Analytics,

- Provides data for business improvement. The ability to measure is a key to commercial and operational business development
- Ensures quality data for financial and compliance reporting
- Provides evidence for fact-based decisions.

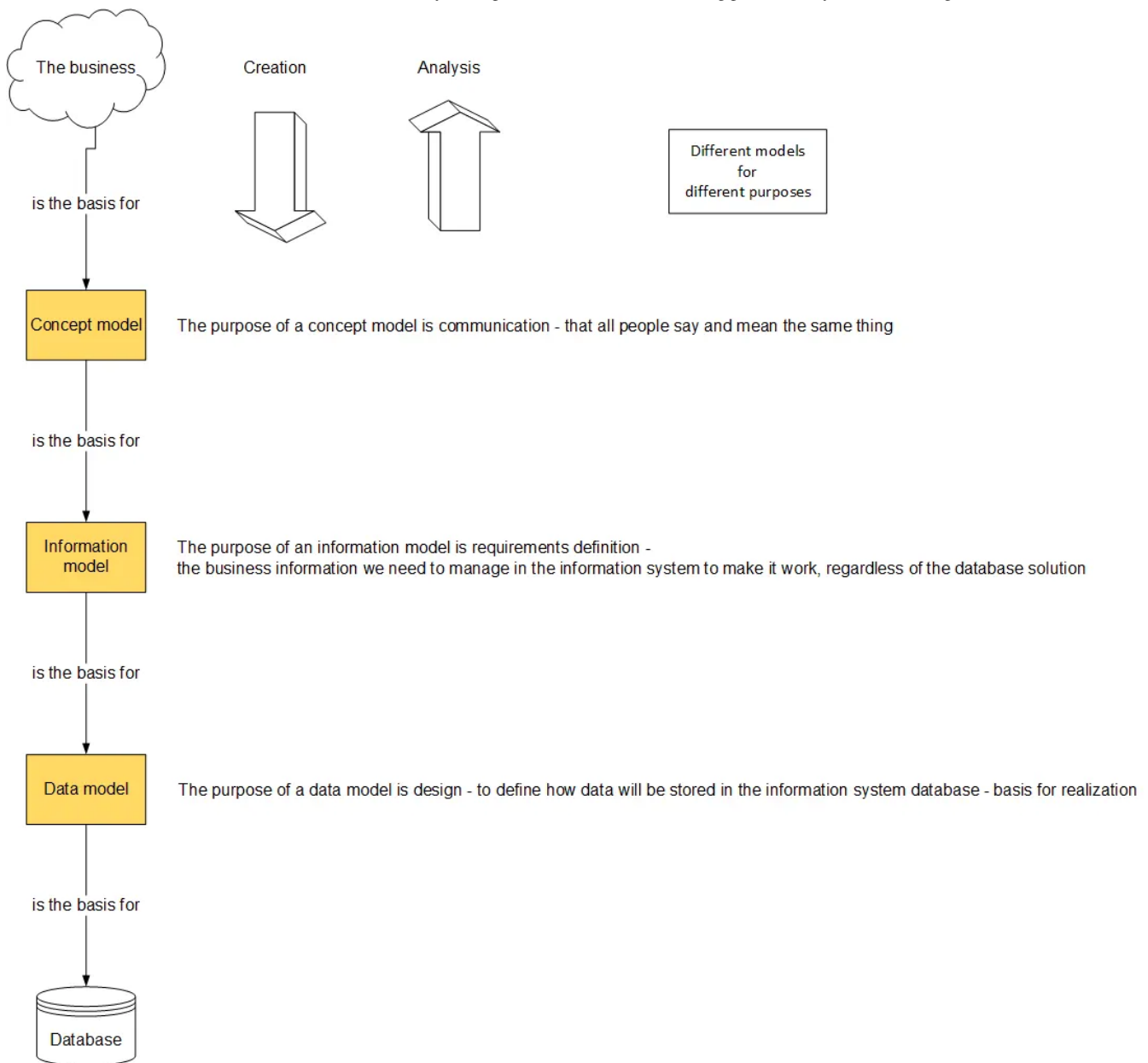
Business Development Decisions

The goal of product management and commercial business development is to maximize the value of the fit between product offerings and customer needs, thereby achieving the business objectives of the stakeholders. For a business developer, data analytics can help by revealing trends in inventory data across various dimensions, including product selection, channel, sales contract, and others. It can provide a basis for product pricing development, business modeling, and strategic planning.

Operational business development aims to increase efficiency by improving quality and process value, reducing costs, and shortening lead times. Metrics can inform product improvement, automation, work process simplification, and information system requirements. For example, data metrics useful for operational business development include cycle times and the number of cases or transactions per appropriate dimension. An operational business developer often wants to maximize the value-to-cost ratio of the process to increase efficiency and productivity. Lead times and latency need to be minimized, and again, data is needed.

Information Models

I will take this opportunity to clarify the concepts by explaining the differences between a Concept Model, an Information Model, and a Database Model.



When we talk about data models, we usually mean the database model, the model that describes the structure of a database. But sometimes we also mean an information model or a conceptual model!

The purpose of a concept model is communication between people, to understand each other. For example, words like *customer* can mean completely different things — the person who orders, pays, is the beneficiary or user, an internal organizational unit, the next actor in our internal process, etc. The purpose of the concept model is to clarify the concepts and unify the terminology so that people can communicate effectively.

The purpose of an information model is primarily to define requirements for IT.

The purpose of a database model is the design of the database — i.e., how the information model should be represented and realized in concrete terms. This can,

of course, be done at different levels of detail.

When creating an information system, you start with a concept model defined by business people, and then break it down into an information model and thereafter into a database model.

In data analytics, the entire process of managing data, you have to go the other way. For the business to make the right decisions, you need to use the concepts and terminology of the decision maker. Data from the database needs to be translated into information objects and business terms.

Maturity

There are other ways to look at data analytics.

Data analytics as a function is sometimes described in terms of different levels of maturity, sometimes in terms of five different levels, and sometimes in terms of seven levels of maturity, as you can see in this figure.



This refers to different levels of maturity of an organization, and how mature and capable it is to use data analytics. In most industries, maturity is limited, but data analytics knowledge and resources are growing. With the rapid development of AI, much will happen in the future.

AI and Machine Learning

Old-school machine learning can be feasible for complex processing of structured data to obtain classified, reliable, and relevant information for further analysis and decision-making.

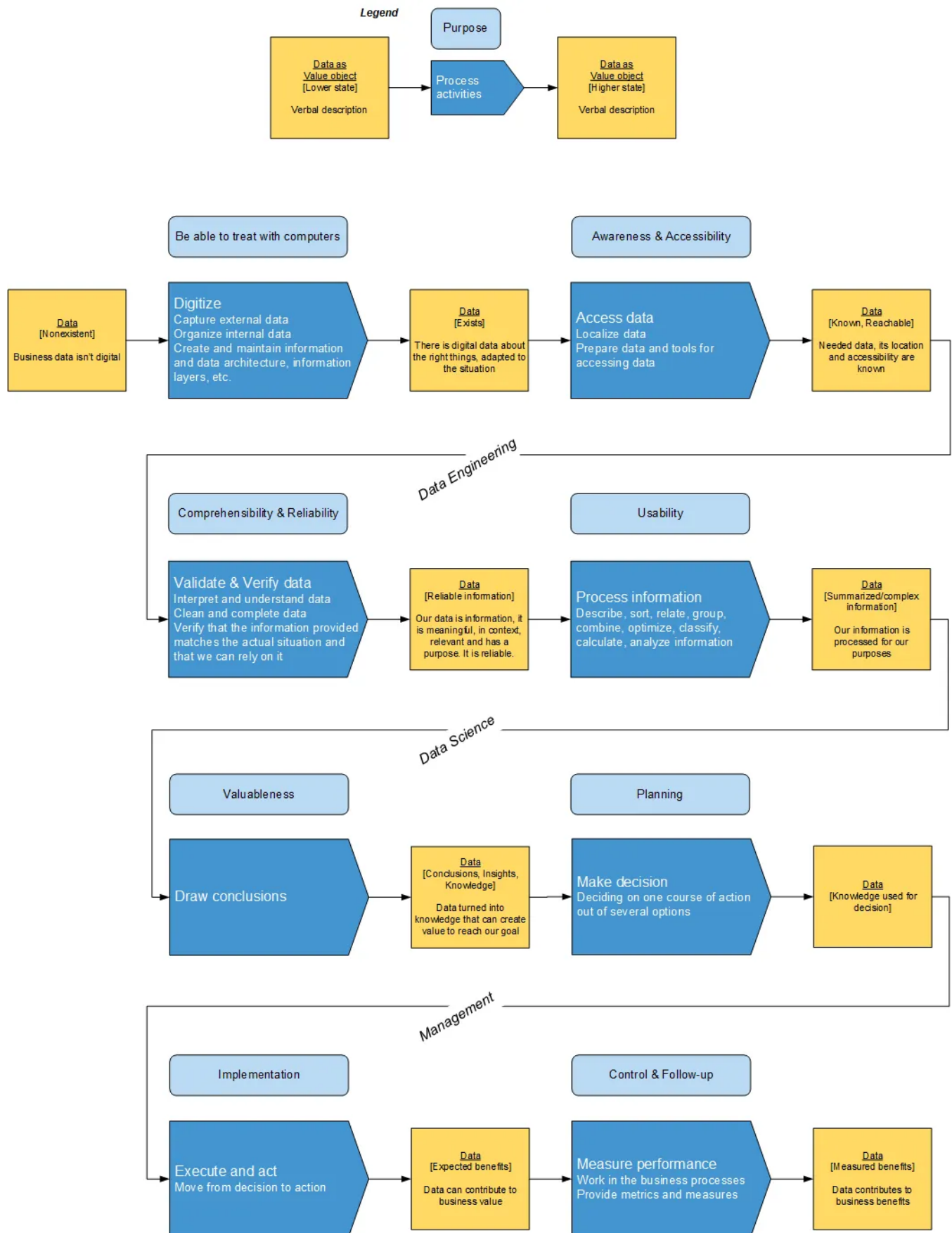
Deep learning can be applied to structured and unstructured big data.

LLMs can be increasingly useful for information processing and evaluation of decision alternatives.

It is good to know that all AI of the machine learning type is based on statistical methods, which means that accuracy can be an issue. Organized AI agents can ensure the efficiency and quality of information processing.

The Process Model

Below is a more accurate process model of the data analytics value stream, from digitization and data engineering to data science, decision-making, and management operations and control. It closes the circle.



Summary

Data analytics plays a critical role in improving business decisions by

- **Transforming raw data into actionable insights**

Through various techniques such as data engineering, data science, and machine learning, data analytics helps organizations extract valuable insights from their existing data.

- **Providing a data-driven foundation for decision-making**

Organizations can use these insights to move away from intuition-based decisions and rely on factual evidence to make informed decisions.

- **Improve product development and commercial business development decisions**

Helps identify trends, understand customer needs, and optimize product offerings for better customer fit

- **Improve operational business development decisions**

Analyzing data leads to process improvements, increased efficiency, cost reductions, and faster turnaround times.

- **Support stakeholder goals**

Data analytics enables organizations to measure progress, ensure data quality for compliance, and provide stakeholders with evidence-based information to make informed decisions.

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