

The background features a dark blue field filled with various sizes of semi-transparent blue gears. On the left side, there is a vertical strip with a colorful, abstract, and textured appearance, possibly representing a microscopic view or a complex material. The text "Understanding Knowledge" is centered in a bright yellow font.

# Understanding Knowledge

# Overview

- ✦ Definitions
- ✦ Cognition
- ✦ Expert Knowledge
- ✦ Human Thinking and Learning
- ✦ Implications for Management

# Definitions

- ★ Knowledge: Understanding gained through experience or study “know-how”
- ★ Intelligence: Capacity to acquire and apply knowledge; thinking and reasoning; ability to understand and use language
- ★ Memory: Ability to store and retrieve relevant experience at will; part of intelligence

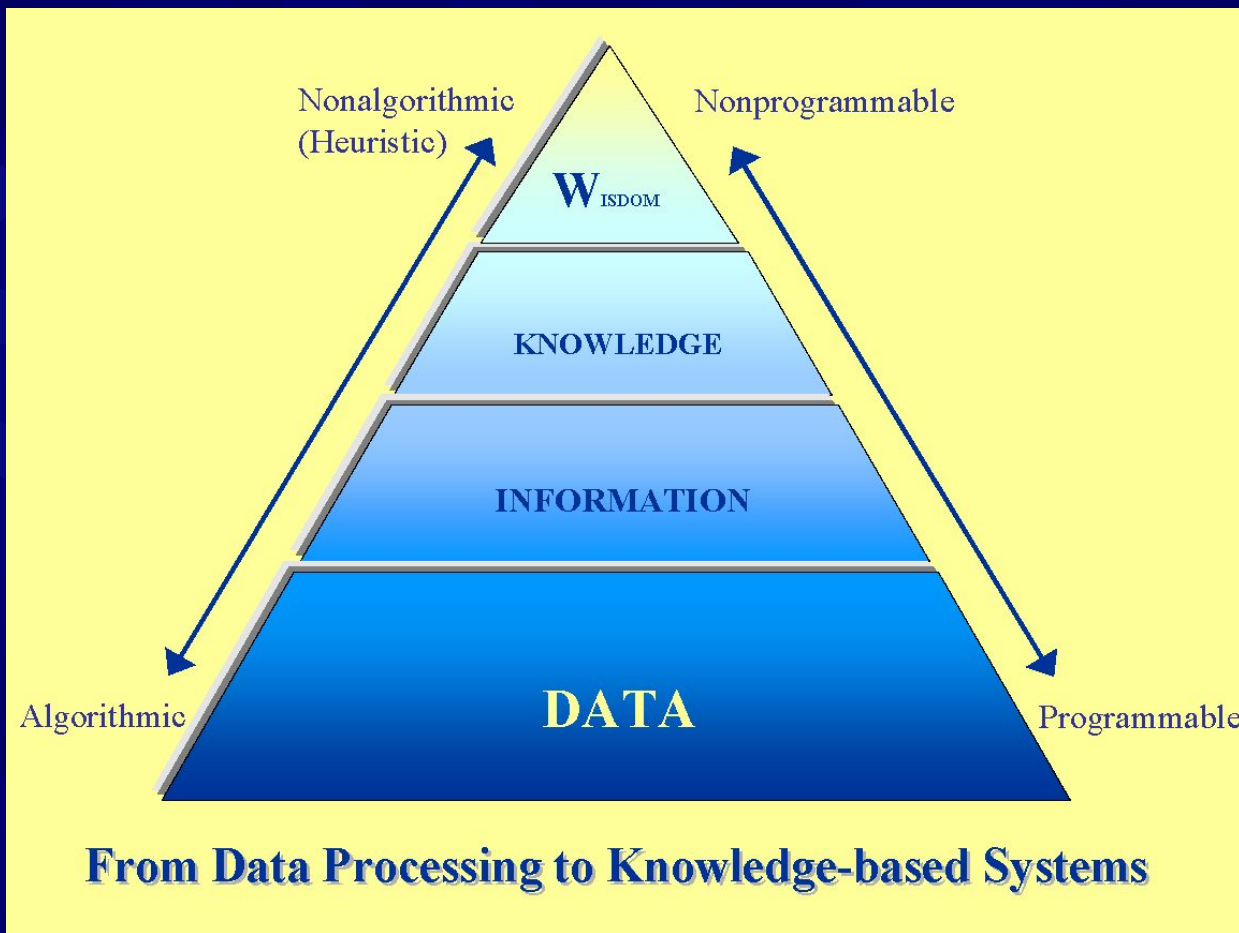
# Definitions

- ★ Learning: Knowledge acquired by instruction or study; consequence of intelligent problem solving
- ★ Experience: Relates to what we've done and to knowledge; experience leads to expertise
- ★ Common Sense: Unreflective opinions of ordinary people
- ★ Heuristic: A rule of thumb based on years of experience

# Data, Information, and Knowledge

- ★ Data: Unorganized and unprocessed facts; static; a set of discrete facts about events
- ★ Information: Aggregation of data that makes decision making easier
- ★ Knowledge is derived from information in the same way information is derived from data; it is a person's range of information





# Data, Information, and Knowledge

- ★ **Data** is a set of discrete facts about events
- ★ **Information** becomes knowledge with questions like “what implications does this information have for my final decision?”
- ★ **Knowledge** is understanding of information based on its perceived importance
- ★ **Knowledge**, not information, can lead to a competitive advantage in business

# Types of Knowledge

- ✦ Shallow (readily recalled) and deep (acquired through years of experience)
- ✦ Explicit (codified) and tacit (embedded in the mind)
- ✦ Procedural (psychomotor skills) versus episodic (chunked by episodes; autobiographical)
- ✦ Chunking knowledge



# Knowledge as Know-How

- ✦ Know-how distinguishes an expert from a novice
- ✦ Experts represent their know-how in terms of heuristics, based on experience
- ✦ Know-how is not book knowledge; it is practical experience

# Reasoning and Heuristics

Humans reason in a variety of ways:

- ★ *Reasoning by analogy*: relating one concept to another
- ★ *Formal reasoning*: using deductive or inductive methods
- ★ *Case-based reasoning*: reasoning from relevant past cases

# Deductive and inductive reasoning

- ★ *Deductive reasoning*: exact reasoning. It deals with exact facts and exact conclusions
- ★ *Inductive reasoning*: reasoning from a set of facts or individual cases to a general conclusion

# FROM PROCEDURAL TO EPISODIC KNOWLEDGE

Shallow Knowledge



Deep Knowledge

## Procedural Knowledge

Knowledge of how to do a task that is essentially motor in nature; the same knowledge is used over and over again.

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## Declarative Knowledge

Surface-type information that is available in short-term memory and easily verbalized; useful in early stages of knowledge capture but less so in later stages.

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## Semantic Knowledge

Hierarchically organized knowledge of concepts, facts, and relationships among facts.

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## Episodic Knowledge

Knowledge that is organized by temporal spatial means, not by concepts or relations; experiential information that is chunked by episodes. This knowledge is highly compiled and autobiographical and is not easy to extract or capture.

# EXPLICIT AND TACIT KNOWLEDGE

- ★ **Explicit** knowledge: knowledge codified and digitized in books, documents, reports, memos, etc.
- ★ **Tacit** knowledge: knowledge embedded in the human mind through experience and jobs
- ★ Tacit and explicit knowledge have been expressed in terms of knowing-how and knowing-that, respectively
- ★ Understanding what knowledge is makes it easier to understand that knowledge hoarding is basic to human nature.



# Knowledge As An Attribute of Expertise

- ✦ An expert in a specialized area masters the requisite knowledge
- ✦ The unique performance of a knowledgeable expert is clearly noticeable in decision-making quality
- ✦ Knowledgeable experts are more selective in the information they acquire
- ✦ Experts are beneficiaries of the knowledge that comes from experience
- ✦ See Figure 2.5 next: academic knowledge contributes to conceptual knowledge—a prerequisite for practical knowledge<sub>14</sub>

# Human Learning

Learning occurs in one of three ways:

- ★ Learning by experience: a function of time and talent
- ★ Learning by example: more efficient than learning by experience
- ★ Learning by discovery: undirected approach in which humans explore a problem area with no advance knowledge of what their objective is.