

# Knowledge Management

Dr Theekshana Suraweera

# Who are we?

*"I wish we knew what we  
know..."*

- a CEO -

# Knowledge Management: Module Outline

|             |         |              |                      |     |                |                    |
|-------------|---------|--------------|----------------------|-----|----------------|--------------------|
| Module Code | IS 4450 | Title        | Knowledge Management |     |                | Elective (GPA)     |
| Credits     | 2.5     | Hours / Week | Lectures             | 2   | Pre-requisites | IS 3110<br>IS 4110 |
|             |         |              | Lab / Tutorials      | 3/2 |                |                    |

## Learning Outcomes

On successful completion of this module, students will be able to ascertain concepts relating to knowledge and knowledge management including issues relating data, information, creation, acquisition, storage and hoarding.

## Outline Syllabus

- Data, Information, knowhow, and knowledge.
- Forms of knowledge
- Knowledge management vs data/information management
- Organisational knowledge creation, knowledge creation spiral
- Middle up-down management process for knowledge creation
- Organisational structure for knowledge creation
- Capturing and distribution of knowledge
- Storage decay and hoarding of knowledge
- Case studies



# Examples of Managing Knowledge...

- Java Expert

# What is Knowledge?



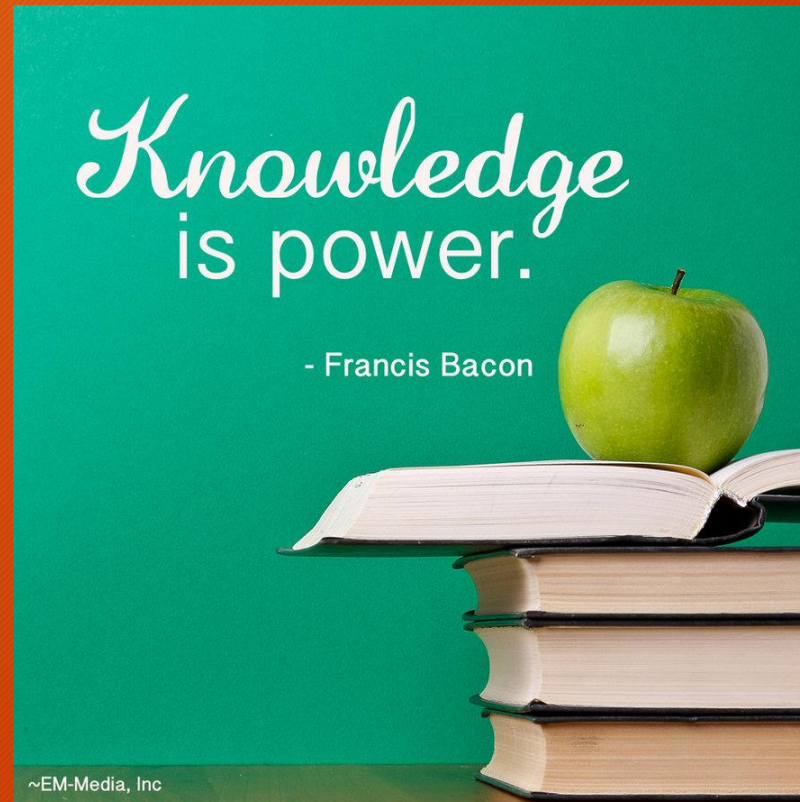
# What is Knowledge?

A ALWAYS  
S SEEK  
K KNOWLEDGE





# What is Knowledge?



# What is Knowledge?





# What is Knowledge?



**Knowledge** is  
having the right  
answer.  
**Intelligence** is  
asking the right  
question.

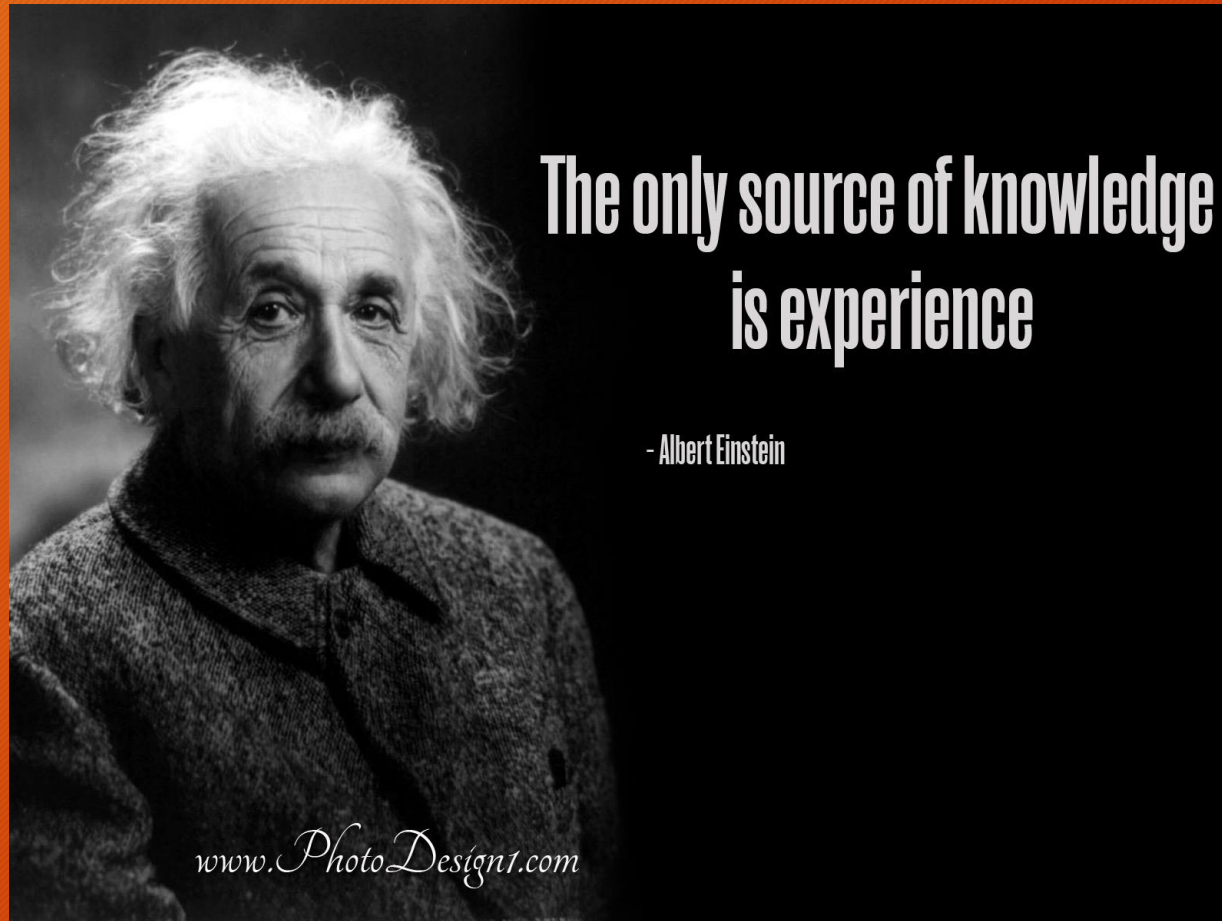
QuotesIdeas.com

# What is Knowledge?

Nothing is better than  
reading and gaining more  
and more knowledge.

Stephen Hawking

# What is Knowledge?





# What is Knowledge?

- What are your ideas?
- What have you read?
- What have you heard?
- What do you imagine?

# Knowledge Hierarchy

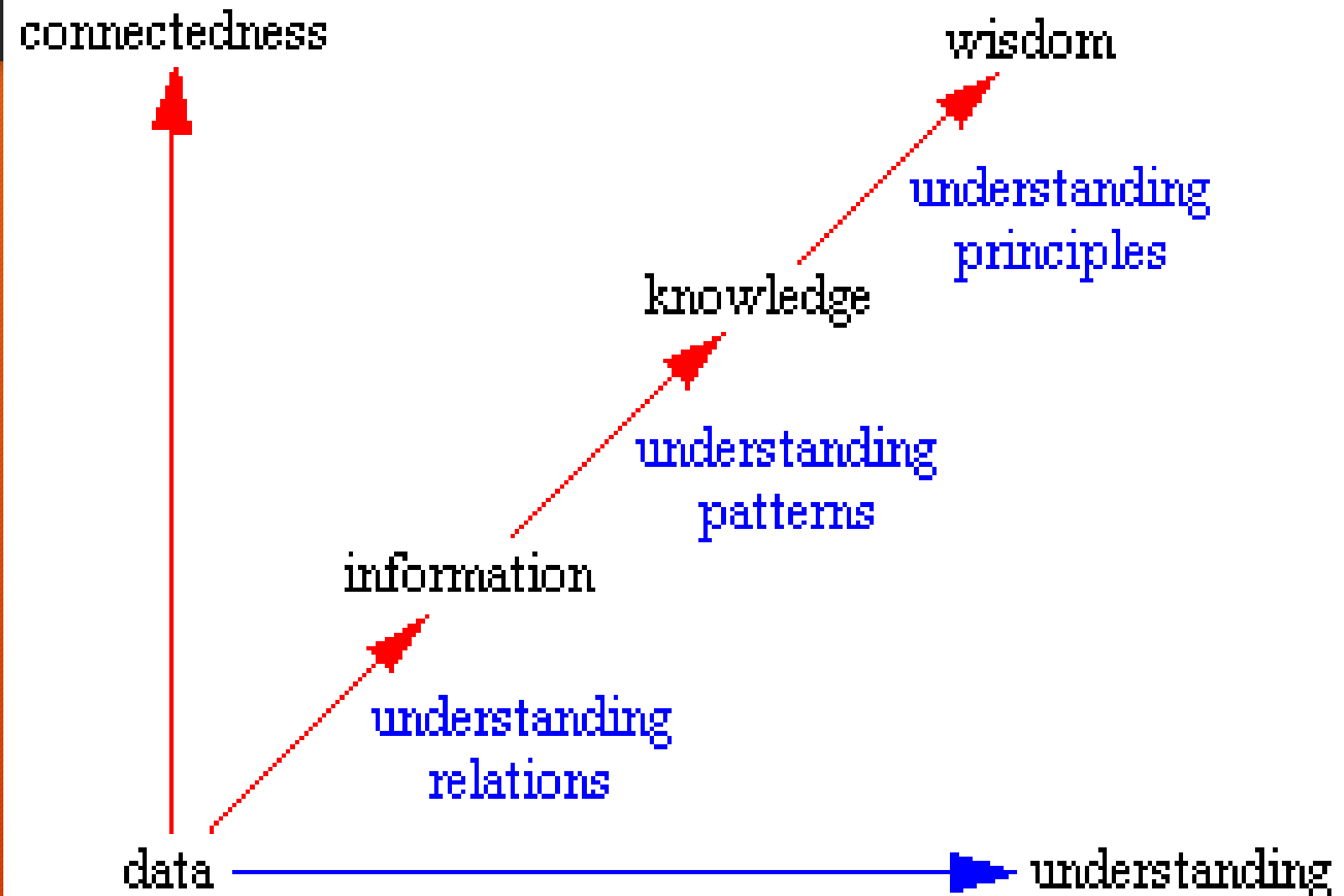
**Wisdom**

**Knowledge**

**Information**

**Data**

# Knowledge Hierarchy





# Data

- Data are raw facts and figures that on their own have no meaning
- These can be any alphanumeric characters i.e. text, numbers, symbols

Examples:

- Yes, Yes, No, Yes, No, Yes, No, Yes
- 42, 63, 96, 74, 56, 86
- 111192, 111234
- None of the above data sets have any meaning until they are given a **CONTEXT** and **PROCESSED** into a useable form

# Data Examples

- Yes, Yes, No, Yes, No, Yes, No, Yes
- 42, 63, 96, 74, 56, 86
- 111192, 111234
- None of the above data sets have any meaning until they are given a **CONTEXT** and **PROCESSED** into a useable form



# Information

- Information has meaning, relevance and purpose.
- Information is organized with purpose and it can potentially shape the receiver.
- Data becomes information when it's creator adds meaning. We transform data into information by adding value in various ways:
  - Contextualized: we know for what purpose the data was gathered
  - Categorized: we know the units of analysis or key components of the data
  - Calculated: the data may have been analyzed mathematically or statically
  - Corrected: errors have been removed from the data
  - Condensed: the data may have been summarized in a more concise form



# Knowledge

- Knowledge guides us in the process of analyzing data and utilizing information.
- Knowledge derives from information as information derives from data. This transformation happens through the following processes:
  - Comparison: how does information about the situation compare to other situations we have known?
  - Consequences: what implications does the information have for decisions and actions?
  - Connections: how does this bit of knowledge relate to others?
  - Conversation: what do other people think about this information?

# Wisdom Is...

- Unselfish
- Enlightening
- Insightful
- Uncommon common sense
- Creative interpretation of patterns or phenomenon
- Applying knowledge and information for the goodness of the world



# An example: data, information and knowledge

- This example uses a bank savings account to show how data, information and knowledge relate to the principal, interest rate and interest.
- Data. The numbers 100 or 5%, completely out of context, are just pieces of data. Interest, principal, and interest rate, out of context, are not much more than data as each has multiple meanings which are context dependent.
- Source: Bellinger, G., “Knowledge Management - Emerging Perspectives”, <<http://systems-thinking.org/kmgmt/kmgmt.htm>> (2004).



# An example: data, information and knowledge

- Information. If I establish a bank savings account as the basis for context, then interest, principal, and interest rate become meaningful in that context with specific interpretations. Principal is the amount of money, Rs. 100,000 in the savings account. Interest rate, 5%, is the factor used by the bank to compute interest on the principal.
- Source: Bellinger, G., “Knowledge Management - Emerging Perspectives”, <<http://systems-thinking.org/kmgmt/kmgmt.htm>> (2004).

# An example: data, information and knowledge

- This example uses a bank savings account to show how data, information and knowledge relate to the principal, interest rate and interest.
- Knowledge. If I put Rs. 100,000 in my savings account, and the bank pays 5% interest yearly, then at the end of one year the bank will compute the interest of \$5 and add it to my principal and I will have Rs. 105,000 in the bank. This pattern represents knowledge, which, when I understand it, allows me to understand how the pattern will evolve over time and the results it will produce. In understanding the pattern, I know and what I know is knowledge. If I deposit more money into my account, I know that I will earn more interest, while if I withdraw money from my account, I know that I will earn less interest.
- Source: Bellinger, G., “Knowledge Management - Emerging Perspectives”, <<http://systems-thinking.org/kmgmt/kmgmt.htm>> (2004).

| Data                                                                                                                                                                                                 | Information                                                                                                                                                                                                                           | Knowledge                                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Simple observations of the world:</p> <ul style="list-style-type: none"> <li>•Easily captured</li> <li>•Easily structured</li> <li>•Easily transferred</li> <li>•Compact, quantifiable</li> </ul> | <p>Data with relevance and purpose:</p> <ul style="list-style-type: none"> <li>•Requires unit of analysis</li> <li>•Needs consensus on meaning</li> <li>•Human mediation necessary</li> <li>•Often garbled in transmission</li> </ul> | <p>Valuable information from the human mind: includes reflection, synthesis, context</p> <ul style="list-style-type: none"> <li>•Hard to capture electronically</li> <li>•Hard to structure</li> <li>•Often tacit</li> <li>•Hard to transfer</li> <li>•Highly personal to the source</li> </ul> |

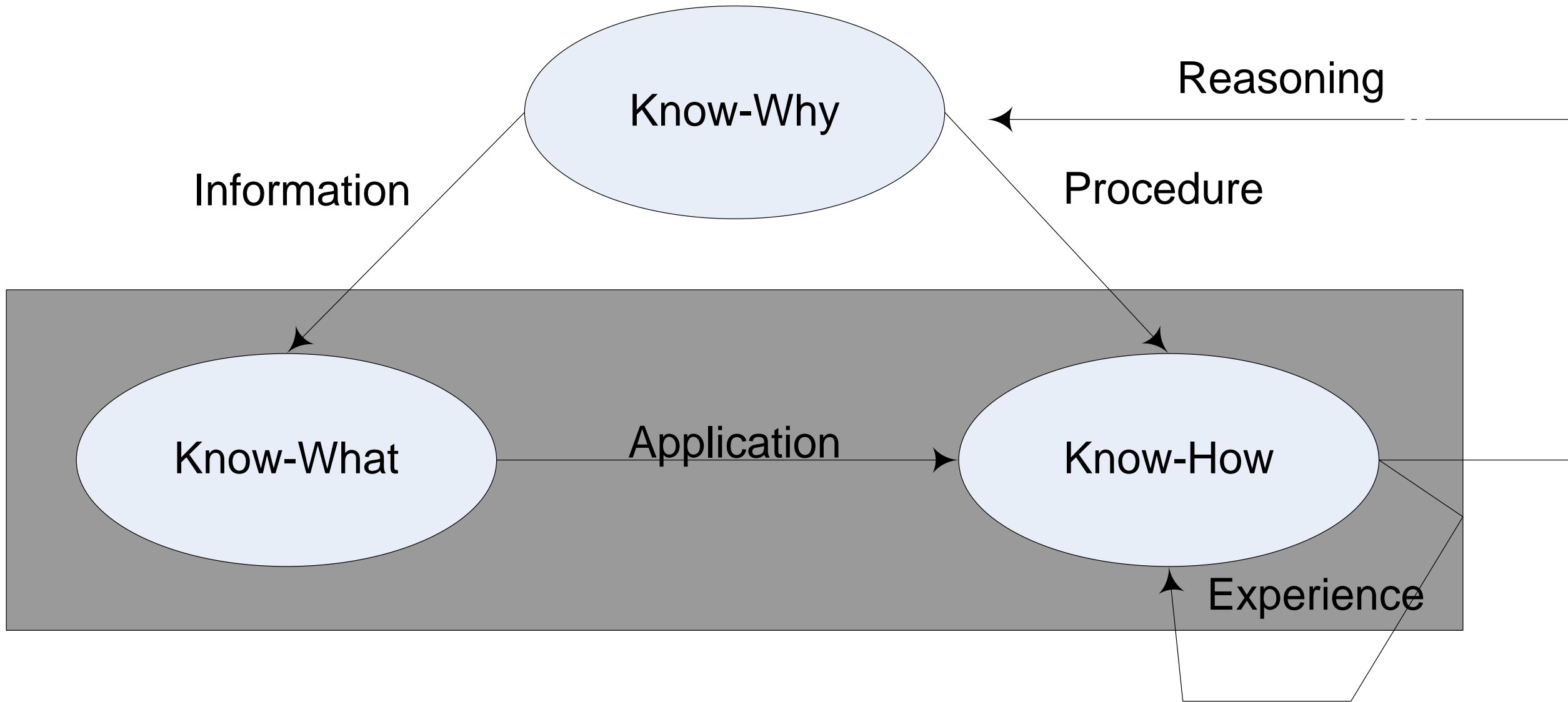
More human contribution →

Greater value →

**Relationship between Data, Information, and Knowledge.**

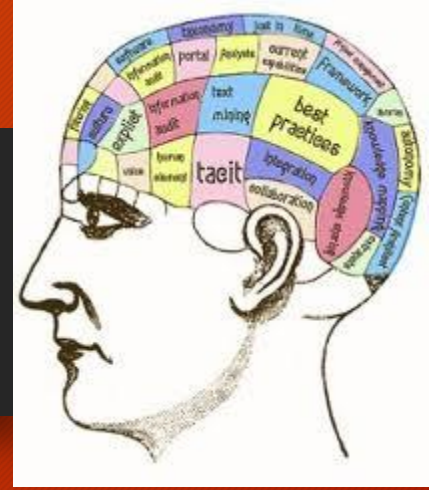


- Knowledge is a mix of contextual information, experiences, rules, and values.
- Richer, deeper, and more valuable.
- Consider knowing -
  - What? - based upon assembling information and eventually applying it.
  - How? - applying knowledge leads to learning how to do something.
  - Why? - casual knowledge of why something occurs.



Knowledge: What, Why and How

# Types of Knowledge:



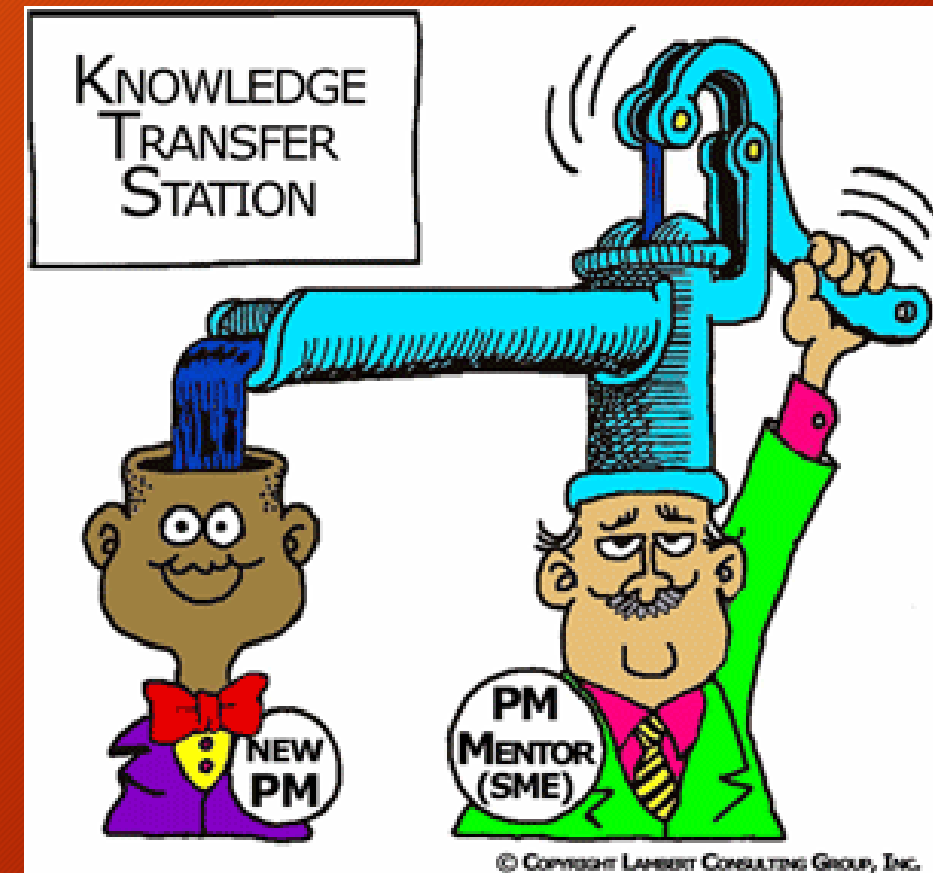
Personal  
Knowledge

Organisational  
Knowledge



- 
- SLIIT  
COMPUTING | BUSINESS | ENGINEERING  
Faculty of Business

# Personal Knowledge Transfer





# Types of Knowledge: Organisational Knowledge

Organizational knowledge is the type of company asset to which no value can be named. When individuals pool their knowledge within an organization, that knowledge can give the organization advantages over others in the same field.



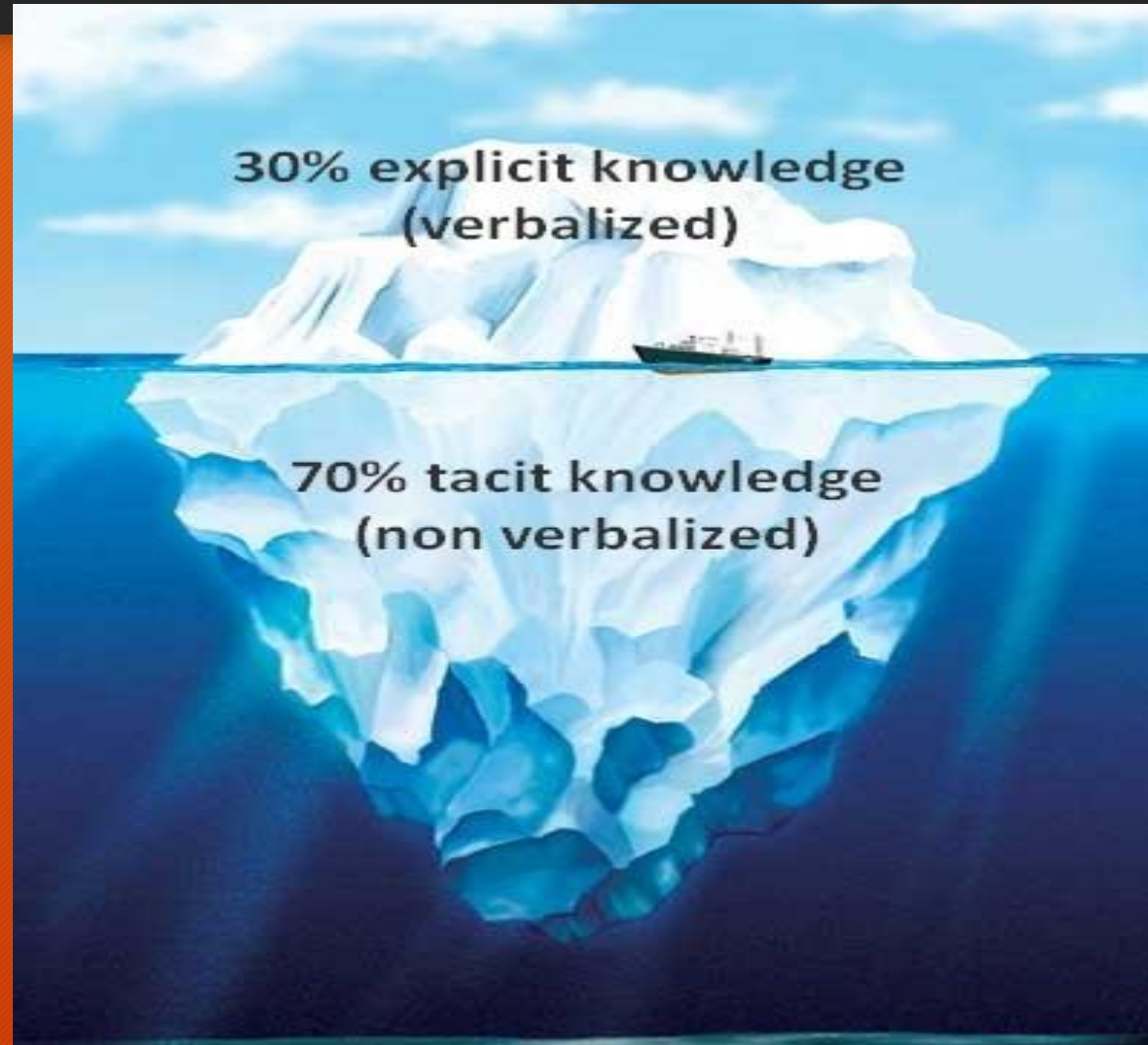
# Types of Knowledge: Organisational Knowledge

Organizational knowledge is the capability members of an organization have developed to draw distinctions in the process of carrying out their work, in particular concrete contexts, by enacting sets of generalizations whose application depends on historically evolved collective understandings.





# Explicit and Tacit Knowledge





## Explicit Knowledge:

- Data, Information
- Documents
- Records
- Files

5%

95%

## Tacit Knowledge:

- Experience
- Thinking
- Competence
- Commitment
- Deed

The "Iceberg" metaphor describes the relationship between Explicit & Tacit Knowledge

## **Tacit Knowledge**

- Knowing how to identify the key issues necessary to solve a problem
- Applying similar experiences from past situations
- Estimating work required based on intuition & experience
- Deciding on an appropriate course of action

## **Explicit Knowledge**

- Procedures listed in a manual
- Books and articles
- News reports and financial statements
- Information left over from past projects

|             |          | General                                                                                                                                   | Contextually Specific                                                                                                                                                                       | Technically Specific                                                                                                       |
|-------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Declarative | Explicit | A book describing factors to consider when deciding whether to buy a company's stock. This may include price to earnings ratio, dividends | A company document identifying the circumstances under which a consultant team's manager should consider replacing a team member who is having problems with the project.                   | A manual describing the factors to consider in configuring a computer so as to achieve performance specifications          |
|             | Tacit    | Knowledge of the major factors to consider when deciding whether to buy a company's stock.                                                | A human relations manager's knowledge of factors to consider in motivating an employee in a particular company.                                                                             | A technician's knowledge of symptoms to look for in trying to repair a faulty television set.                              |
| Procedural  | Explicit | A book describing steps to take in deciding whether to buy a company's stock.                                                             | A company document identifying the sequence of actions a consultant team's manager should take when requesting senior management to replace a team member having problems with the project. | A manual describing how to change the operating system setting on a computer so as to achieve desired performance changes. |
|             | Tacit    | Basic knowledge of the steps to take in deciding whether to buy a company's stock.                                                        | A human relations manager's knowledge of steps to take in motivating an employee in a particular company.                                                                                   | A technician's knowledge of the sequence of steps to perform in repairing a television set.                                |



---

# **The role of tacit and explicit knowledge in the workplace**

---

*Elizabeth A. Smith*

Table 1.1

## Comparison of properties of tacit versus explicit knowledge

| Properties of tacit knowledge                                                                 | Properties of explicit knowledge                                                                                 |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Ability to adapt, to deal with new and exceptional situations                                 | Ability to disseminate, to reproduce, to access and re-apply throughout the organization                         |
| Expertise, know-how, know-why, and care-why                                                   | Ability to teach, to train                                                                                       |
| Ability to collaborate, to share a vision, to transmit a culture                              | Ability to organize, to systematize, to translate a vision into a mission statement, into operational guidelines |
| Coaching and mentoring to transfer experiential knowledge on a one-to-one, face-to-face basis | Transfer knowledge via products, services, and documented processes                                              |

# Why Manage Knowledge?

- Information and knowledge have become the fields in which businesses compete.
- Several important factors include:
  - Sharing Best Practice
  - Globalization
  - Rapid Change
  - Downsizing
  - Managing Information and Communication Overload
  - Knowledge Embedded in Products
  - Sustainable Competitive Advantage



*Sustainable Competitive Advantage*

- Shorter life-cycle of innovation
- Knowledge as an infinite resource
- Direct bottom-line returns

*Managing Overload*

- Inability to assimilate knowledge
- Data organization and storage is needed

*Sharing Best Practices*

- Avoid “reinventing the wheel”
- Build on previous work

*Downsizing*

- Loss of knowledge
- Portability of workers
- Lack of time and resources for knowledge acquisition

*Globalization*

- Decreased cycle times
- Increased competitive pressures
- Global access to knowledge
- Adapting to local conditions

**Why Manage Knowledge?**

*Embedded Knowledge*

- Smart products
- Blurring of distinction between service and manufacturing firms
- Value-added through intangibles

*Rapid Change*

- Avoid obsolescence
- Build on previous work
- Streamline processes
- Sense and respond to change

# Sharing Best Practices

40

- Sharing best practices means leveraging the knowledge gained by a subset of the organization.
- Increasingly important in organizations who depend on applying their expertise such as accounting, consulting and training firms.
- KM systems capture best practices to disseminate their experience within the firm.
- Problems often arise from employees who may be reluctant to share their knowledge (managers must encourage and reward open sharing).

# Globalization

41

- Historically three factors, *land*, *labor* and *capital* were the key to economic success
- *Knowledge* has become a fourth factor.
- Knowledge-based businesses can grow without traditional land, labor, and capital requirements.
- Key competitive factor will be how well an organization acquires and applies knowledge.



# Other factors

- **Rapid change:** firms must be nimble and adaptive to compete
- **Downsizing:** sometimes the wrong people get fired when creating a leaner organization
- **Managing Info and Communication Overload:** data must be categorized in some manner if it is to be useful rather than overwhelming
- **Knowledge Embedded in Products:** the intangibles that add the most value to goods and services are becoming increasingly knowledge-based
- **Sustainable Competitive Advantage:** KM is the way to do this. Shorter innovation life cycles keep companies ahead of the competition.

