Guelma University, Algeria Computer Science Department 2<sup>ère</sup> Master STIC/ICST – UEF3

# Knowledge Engineering Course

### CHAPTER II KNOWLEDGE MANAGEMENT CYCLES/MODELS

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2023/2024

### Outline

- 1. Overview of existing KM cycles
- 2. Integrated KM Cycle
- 3. Knowledge Management models





- A KM cycle is a series of interconnected processes that help an organization to effectively manage its knowledge assets.
- A KM cycle is the route that knowledge often follows in order to become transformed into valuable strategic assets.
- Different KM cycles are proposed in the literature.



# Wiig KM Cycle (1993)



#### These processes are interdependent and can be performed in parallel

# Bukowitz and Williams KM Cycle (2000)





### Evans, Dalkir, and Bidian KM Cycle (2015)



## Integrated KM Cycle





development of new knowledge.

Update

Maintaining a link between the knowledge and those knowledgeable about the

content.

Contextualize

Knowledge acquisition and application

# 9 Knowledge Management Models

### KM Model

- A KM model serves as a conceptual framework within which the processes of the KM cycle can be effectively coordinated and executed, ultimately leading to the realization of anticipated KM benefits.
- Several KM models provide unique insights into the fundamental conceptual elements that constitute the foundation of Knowledge Management.

### Wiig Building and Using Knowledge Model (1993)

- □ Knowledge can be represented in a form of a semantic network :
  - Depicts how concepts are related to one another and illustrates how they interconnect.
  - Each node represents a concept, and each edge represents a relationship between concepts. Each node offers a different perspective on the overall knowledge.
  - The number of disconnected nodes should be minimized.
  - The more connected a knowledge base is, the more coherent the content and the greater its value.
  - There should be no logical inconsistencies, no internal conflicts, and no misunderstandings.

### Wiig Building and Using Knowledge Model (1993) Example of semantic network: Hannousse et al. (2021)



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### Wiig Building and Using Knowledge Model (1993)

- Define 5 degrees of internalization = explicit to tacit conversion of knowledge:
  - **Novice:** Barely aware or not aware of the knowledge and how it can be used.
  - Beginner: Knows that the knowledge exists and where to get it but cannot reason with it.
  - Competent: Knows about the knowledge, can use and reason with it if given external knowledge bases such as documents and people to help.
  - Expert: Knows the knowledge, holds it in memory, understands where it applies, reasons with it without any outside help.
  - Master: Internalizes the knowledge fully, has a deep understanding with full integration into values, judgments, and consequences of using that knowledge.

### Wiig Building and Using Knowledge Model (1993)

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□ Defines three forms of knowledge:



### Nonaka & Takeuchi Knowledge Creation Model (1995)



### Wang & Noe Knowledge Sharing Model (2010)

