

## Lecture 4: Knowledge Management Models

Md. Mahbubul Alam, PhD  
Associate Professor  
Dept. of AEIS  
Sher-e-Bangla Agricultural University

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## von Krogh & Roos KM Model

- Distinguish between ‘**individual knowledge**’ and ‘**social knowledge**’
- Adopted **epistemological** approach
  - **Cognitivist Vs. Connectionist approach**

Cognitivist approach (Varela, 1992)	Connectionist approach
Human brain or computer creates <b>representations (i.e., models) of reality</b> , and that learning occurs when these representations are manipulated.	Connectionist approach is <b>more holistic</b> than reductionist.
Brain is a machine based on logic & deduction that <b>does not allow any contradictory</b> propositions.	Brain is not assumed to sequentially process symbols BUT to perceive “ <b>wholeness</b> ”, global properties, patterns, synergies and gestalts.
Organization picks up information from its environment & processes it in a logical way.	Information is not only taken in from the environment but also generated internally. <b>Familiarity and practice lead to learning.</b>
<b>Knowledge resides in the minds of individuals.</b>	Knowledge not only resides in individuals’ minds but also in the connections among these individuals (i.e., “ <b>collective minds</b> ”).
Knowledge is an <b>abstract</b> entity.	Knowledge is “ <b>embodied</b> ” (everything known is known by somebody). <b>There is no knowledge without a knower.</b>

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## Factors of Successful KM in Organization

1. **Mind-set of individuals**
  - Individuals failure to recognize the importance of knowledge troubles organization developing knowledge-based competencies.
2. **Communication in organization**
  - Lack of legitimate language to express new knowledge in the individual, contributions will fail.
3. **Organization structure**
  - If organization doesn’t facilitate innovation, KM will fail.
4. **Relationship among members**
  - Individuals’ unwillingness to share their experiences impede the generation of social, collective knowledge within organization.
5. **Management of human resource**
  - Failure to evaluate and acknowledge knowledge-based contributions by top management, individuals will lose their motivation to innovate as well as share new knowledge for the firm.

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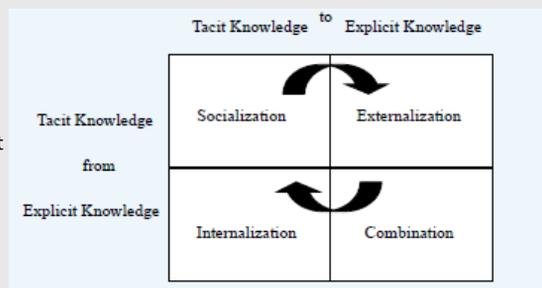
## Nonaka & Takeuchi Knowledge Spiral Model

- Proposed in 1995
- A holistic model of knowledge creation
- Organizational innovation often stemmed from **highly subjective insights** that described in the form of **metaphors, slogans or symbols**.
- **Dimensions:**
  - **Epistemological dimension:** Tacit/explicit spectrum of knowledge forms
  - **Ontological dimension:** three-tier (individual/group/organization) model of knowledge sharing and diffusion
- Successful knowledge creation stems from the **more tacit-driven approach** to knowledge management.
- Knowledge creation is a process of “**indwelling**”, individual’s involvement with objects through self-involvement and commitment.
- Knowledge is principally “**group knowledge**”, easily **converted & mobilized** (from **tacit to explicit, epistemological dimension**), and **easily transferred and shared** (**ontological dimension**)

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## Knowledge Conversion Model

- **Knowledge Creation Process**
  - An individual’s personal, private knowledge (predominately tacit in nature) is translated into valuable, public organizational knowledge.
  - Making personal knowledge available to others in the company is at the core of this KM model.
  - Knowledge creation is a **social process, not simply a unidirectional process** rather it is **interactive and spiral**.
- **Knowledge conversion**
  - Socialization: tacit to tacit
  - Externalization: tacit to explicit
  - Combination: explicit to explicit
  - Internalization: explicit to tacit



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## Socialization

- Tacit-to-tacit
- Sharing of knowledge in **face-to-face, natural and typically social interactions.**
- Easiest forms of knowledge exchange through **mutual understanding, brainstorming, apprenticeship or mentoring interactions.**
- **Disadvantage:**
  - Knowledge remain tacit,
  - **Rarely captured, noted or written down** anywhere.
  - **Remains in the minds** of the original participants.
  - **Difficult and time consuming to disseminate** all knowledge.
  - **Success** heavily depends on the **experience and ability to transmit & to share** the knowledge.
- However, it should not be confused with that of a simple transfer of information,
  - Socialization consists of sharing experiences through observation, imitation and practice.

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## Externalization

- Tacit-to-explicit
- A quintessential knowledge creation process in that tacit knowledge becomes explicit, taking the shapes of **metaphors, analogies, concepts, hypotheses, or models.**
- Individuals able to articulate the **knowledge, know-how, know-why & care-why.**
- **Process of externalizing**
  - Tacit knowledge are written down, taped, drawn or made tangible or concrete.
  - Often knowledgeable individuals are interviewed in order to extract, model, synthesize in a different way and increased its scope.
  - Once externalized, knowledge is tangible and permanent, and shared more easily with others.

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## Combination

- Explicit-to-explicit
- **Process of recombining discrete pieces of explicit knowledge** into a new form.
- Synthesis in a form of a **review report, a trend analysis**, a brief executive **summary or a new database** to organize content.
- **Categorizing and combining** the concepts.
- **NO new knowledge is created.** It is a combination or representation of existing or already explicit knowledge.
- e.g., developing a training course or curriculum.
  
- **Purpose of combination:**
  - Better understating
  - Efficient transferring of content.

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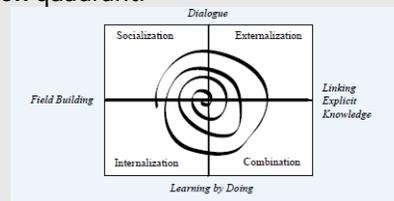
## Internalization

- Explicit-to-tacit
- **Converts or integrates** shared or individual experiences & knowledge into individual **mental models**.
- Once internalized, new knowledge is then used by employees who broaden it, extend it, reframe it within their own existing tacit knowledge bases.
- Linked to **‘learning by doing’**
- e.g., Query-based database.

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## Knowledge Spiral

- **Transferring individual's experiences & information** through observation, imitation, and practice → **socialization** quadrant.
- **Formalizing & converting tacit knowledge into explicit** knowledge, through use of analogy, metaphor, and model → **externalization** quadrant.
- **Synthesizing and recombining explicit knowledge** → **combination** quadrant.
- **Re-transferring the explicit into tacit knowledge and becoming the part of individual's experience** → **internalization** quadrant.



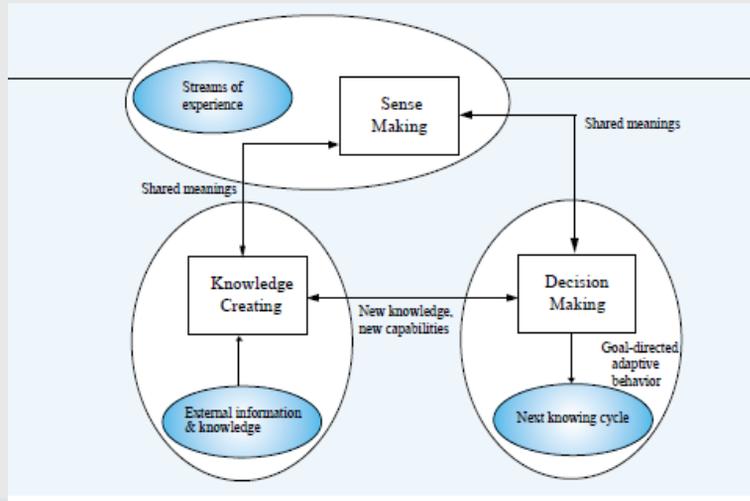
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## Choo Sense-making KM Model

- Proposed in 1998
- **3 dimensions:**
- **Sense making**
  - One attempts to make sense of the information streaming in from the external environment.
  - Constructing '**common interpretations**' from the exchange & negotiation of knowledge.
  - **Four processes:** ecological change, enactment, selection & retention.
- **Knowledge creation**
  - **Transformation of personal knowledge** between individuals through dialogue, discourse, sharing & storytelling.
- **Decision making** ("bounded rationality")
  - Maximizing the utility or satisficing behavior.
  - Often not fully optimized BUT good enough

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## Choo Sense-making KM Model (cont'd)

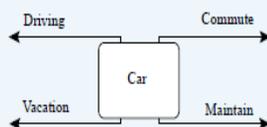


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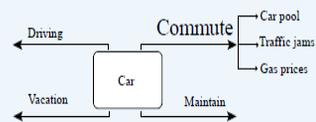
## Wiig Model

- Proposed in 1993
- **Principle:** Knowledge must be organized depending on what use will be made of the knowledge ('type/nature of use').
- **Dimensions:**
- **Completeness, connectedness** (*relations between different knowledge objects*), **congruence** (*no internal conflict or no logical inconsistencies*), **perspective & purpose**.

EXAMPLE OF A SEMANTIC NETWORK



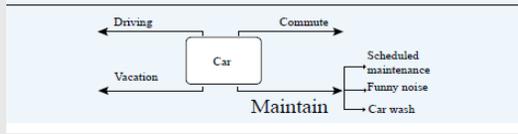
EXAMPLE OF A SEMANTIC NETWORK—"COMMUTE" VIEW



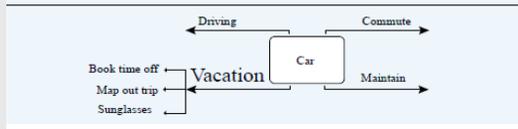
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## Semantic Networks, examples

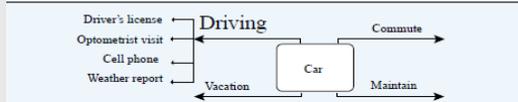
EXAMPLE OF A SEMANTIC NETWORK—"MAINTAIN" VIEW



EXAMPLE OF A SEMANTIC NETWORK—"VACATION" VIEW



EXAMPLE OF A SEMANTIC NETWORK—"DRIVING" VIEW



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## Wiig Model (cont'd)

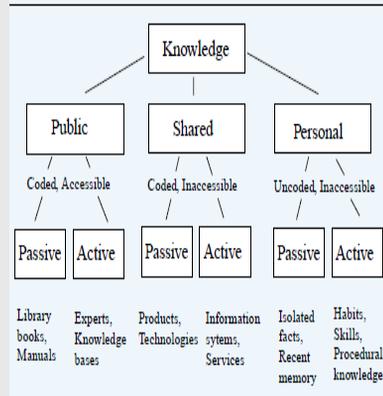
- **3 forms of knowledge**
  - a. **Public knowledge**
    - Explicit, taught, and routinely shared knowledge that is generally available in the public domain.
  - b. **Shared expertise**
    - Proprietary knowledge assets that are exclusively held by knowledge workers and shared in their work or embedded in technology.
  - c. **Personal Knowledge**
    - Least accessible but most complete form of knowledge (typically 'tacit' knowledge).
- **4 types of knowledge**
  - i. **Factual knowledge**, e.g., data, directly observable & verifiable content.
  - ii. **Conceptual knowledge**, e.g., concepts, perspectives.
  - iii. **Expectation knowledge**, e.g., judgments, hypotheses, expectations
  - iv. **Methodological knowledge**, e.g., reasoning, strategies, decision-making methods, techniques.

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## Wiig's KM Matrix

Form of Knowledge	Type of Knowledge			
	Factual	Conceptual	Expectational	Methodological
Public	Measurement, reading	Stability, balance	When supply exceeds demand, price drops	Look for temperatures outside the norm
Shared	Forecast analysis	"Market is hot"	A little water in the mix is okay	Check for past failures
Personal	The "right" color, texture	Company has a good track record	Hunch that the analyst has it wrong	What is the recent trend?

### WIIG HIERARCHY OF KNOWLEDGE FORMS



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## Boisot I-Space KM Model

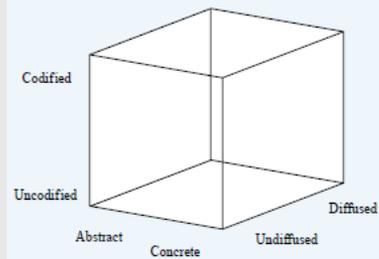
- **Concept: "information good"**, that differs from a physical asset.
- **Distinguishes information from data** by emphasizing that information is what an observer will extract from data as a function of individual's expectations or prior knowledge.
- The effective **movement of information goods is largely dependent on senders and receivers sharing the same coding scheme or language.**
- **Key points of Boisot I-space KM Model**
  - The more easily data can be structured and converted into information, the more diffusible it becomes.
  - The less data that has been so structured requires a shared context for its diffusion, the more diffusible it becomes.
- Data is structured and understood through the processes of codification and abstraction.
  - **Codification** → creation of content categories-the fewer the number of categories, the more abstract the codification scheme.
  - Well codified abstract content is much easier to understand and apply than the highly contextual content.

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## Boisot I-Space KM Model (cont'd)

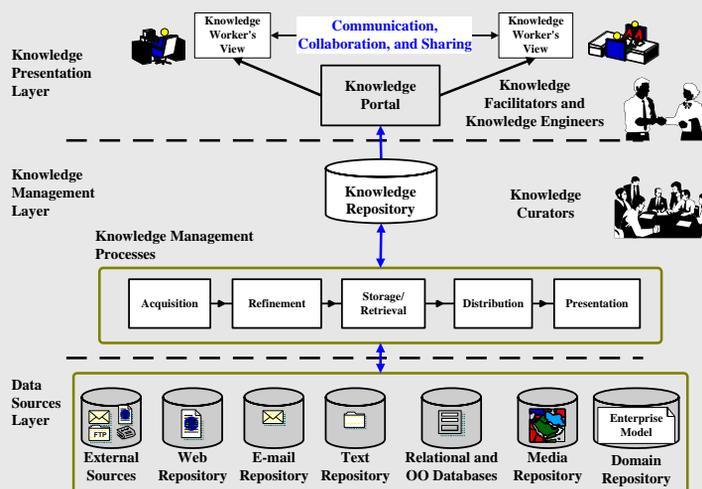
- Three-dimensional cube
  - i. **Codified-uncodified**, linked to categorization and classification
  - ii. **Abstract-concrete**, linked to knowledge creation through analysis & understanding
  - iii. **Diffused-undiffused**, linked to information access and transfer.

THE BOISOT I-SPACE KM MODEL



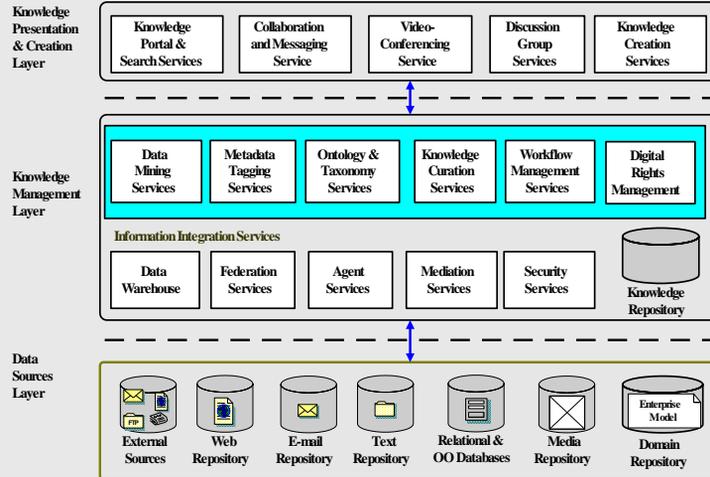
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## KM Architecture



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# Knowledge Management System



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Question  
Please  
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