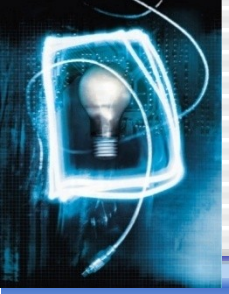
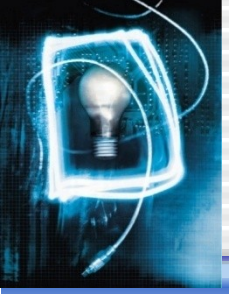
Week 5: Chapter 5

Factors Influencing Knowledge Management



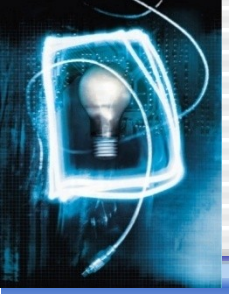
Chapter Objectives

- Examine why KM solutions might have different impacts on performance, depending on the circumstances
- Recognize some of the factors affecting the suitability of alternative KM solutions, and understand the nature of their impacts



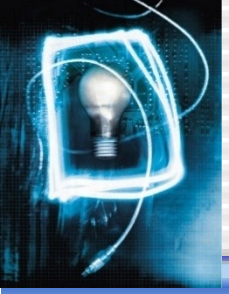
Views of KM

- Universalistic View
- Contingency View



Universalistic View of KM

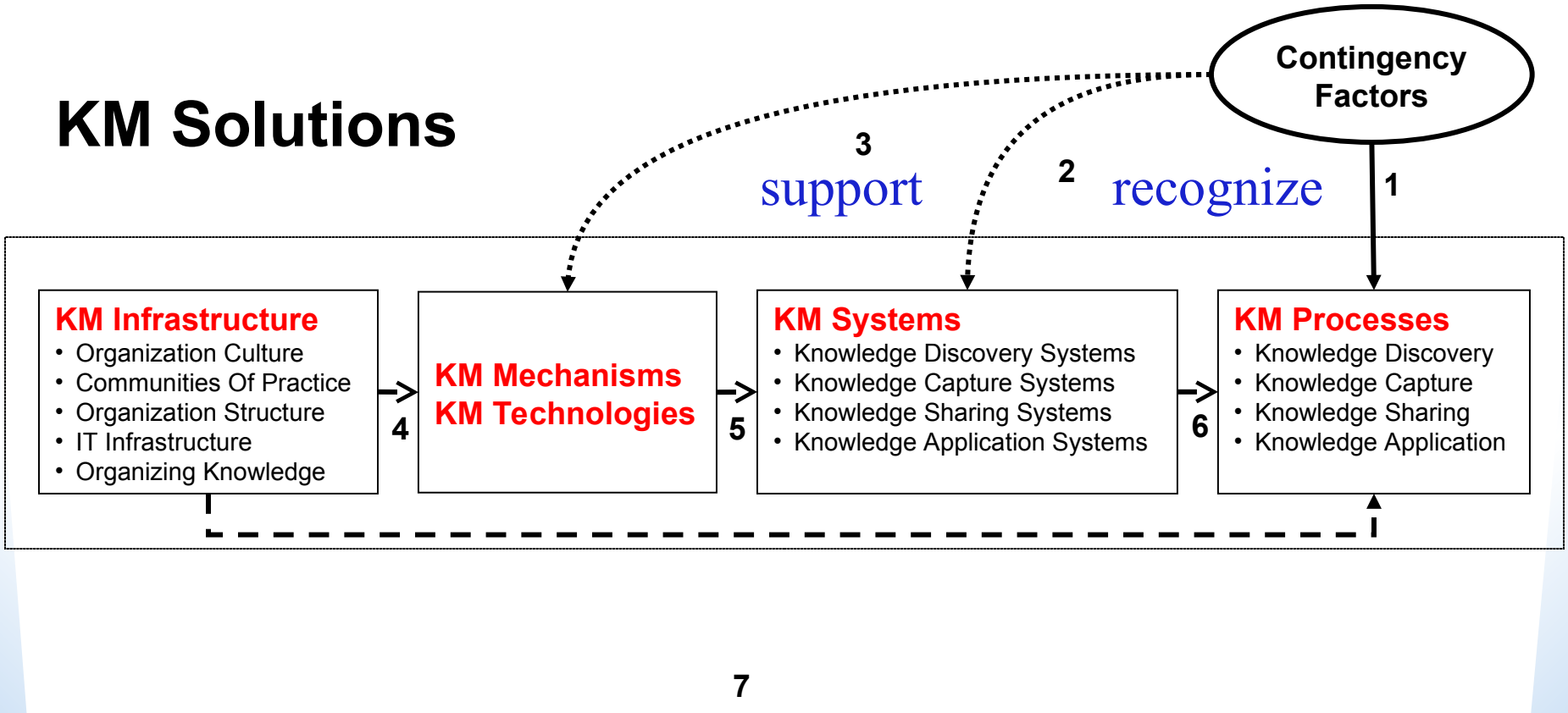
- Historically, much of the KM literature appears to implicitly assume a *universalistic* view:
  - There is a single best approach of managing knowledge, which should be adopted by all organizations in all circumstances
- E.g.:
  - Knowledge sharing is recommended as useful to all organizations, although we believe that direction may sometimes represent an equally effective but more efficient alternative.
- In reality, there is no “magic bullet”
  - No single universal KM solution works for all situations.

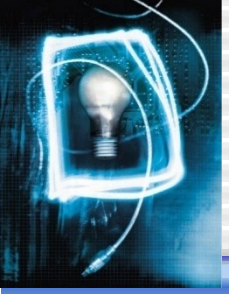


Contingency View of KM

- Contingency view suggests that no one approach is best under all circumstances
  - "It depends!"
  - *Contingency: an event or situation that might happen in the future, especially one that could cause problems*
- Contingency perspective considers the path to success to include multiple alternative paths, with success achieved only when the appropriate path is selected
- E.g., in organizational design,
  - an organization design with
    - few rules or procedures is appropriate for small organizations
    - extensive rules and procedures is appropriate for large organizations

Contingency Factors and KM Solutions



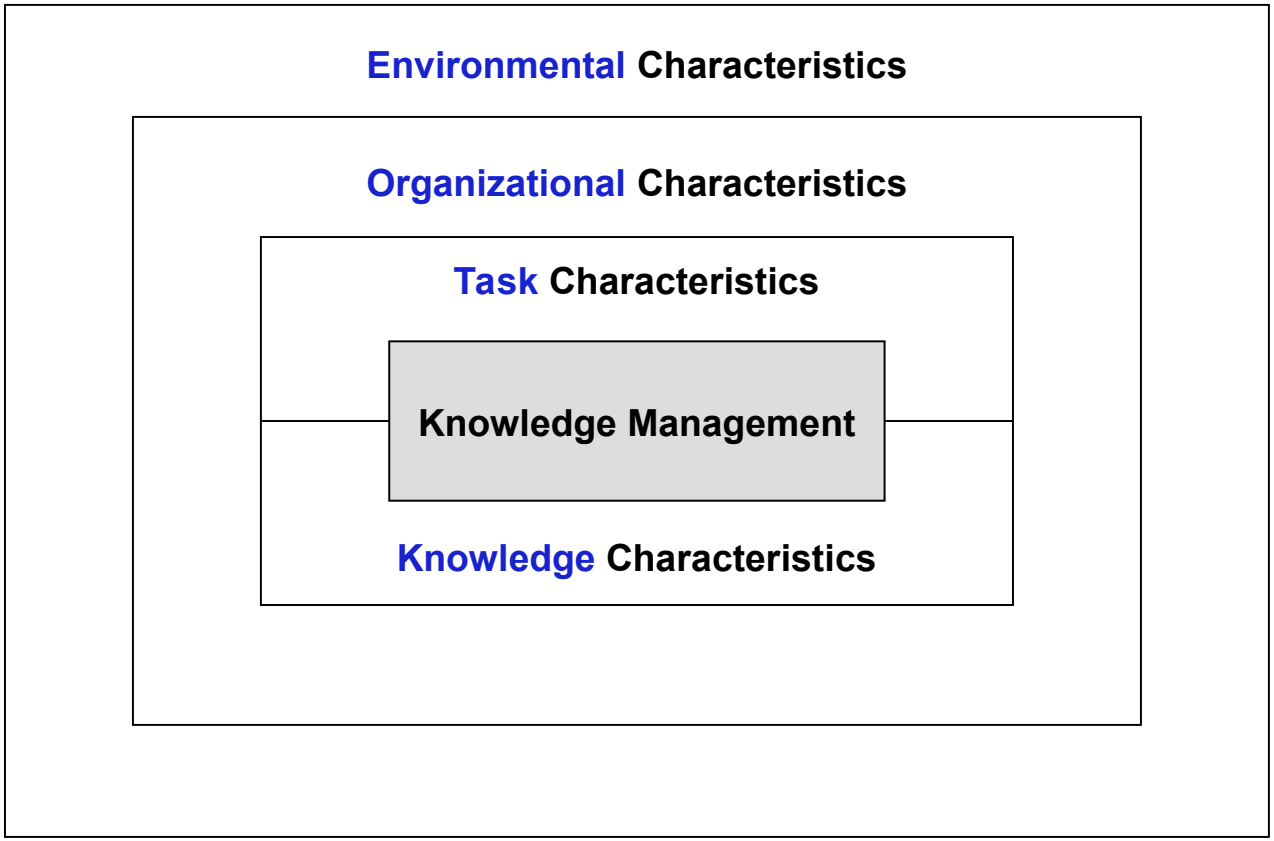


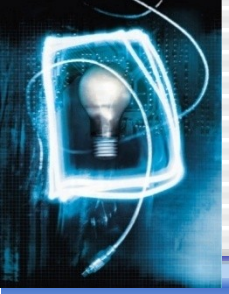
Contingency Factors and KM Solutions

- We focus on processes
- Once the appropriate KM (1) processes are recognized, (2) the KM systems, (3) mechanisms & technologies needed to support them are identified as well.
- KM infrastructure supports (4) KM mechanisms & technologies, which in turn affect (5) KM systems
- KM systems (6) support processes
- Thus, KM infrastructure indirectly affects (7) KM processes

- *NB. Numbers in this slides refers to numbers (labels on arrows) in the figure shown in the previous slide*

Categories of Contingency Factors affecting KM processes

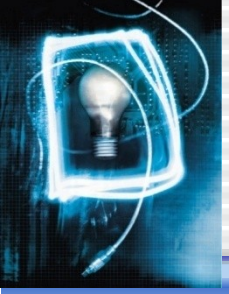




Task Characteristics

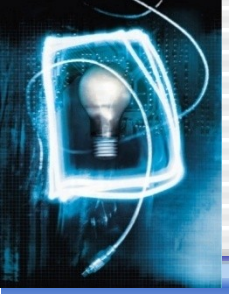
- KM processes that are appropriate for an organizational subunit depend on the nature of its tasks.

- Spender [1996]:
  - *Task uncertainty* high/low → certainty is low/high
  - *Task interdependence* high/low → independence is low/high



Task Uncertainty (1)

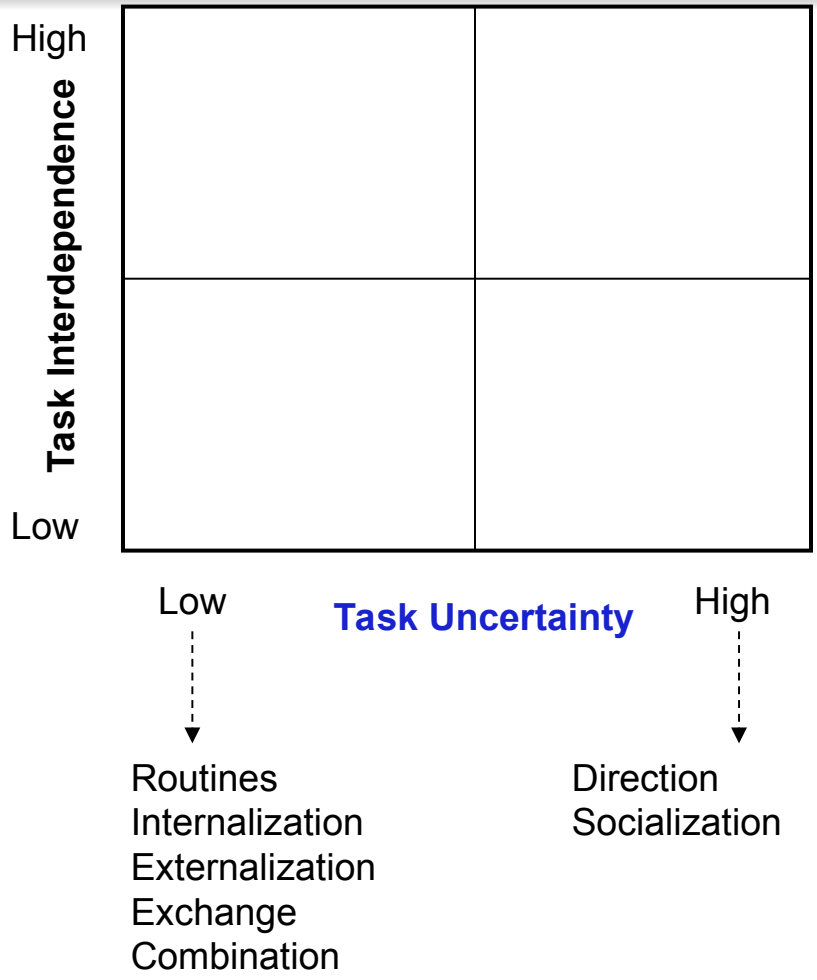
- Task **uncertainty** is argued to reduce the organization's ability to develop **routines**
  - hence knowledge application would depend on **direction**
- When task uncertainty is ***high***, **externalization** and **internalization** would be more costly due to changing problems and tasks.
  - Knowledge is more likely to remain tacit, thus inhibiting ability to use combination or exchange.
  - Hence, **direction** or **socialization** would be recommended (i.e. avoid **externalization** and **internalization).**
- Example:
  - Individuals responsible for product design when customer tastes are expected to change frequently would benefit most from socializing with, and receiving directions from, each other.

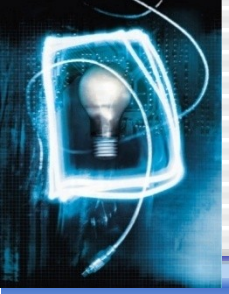


Task Uncertainty (2)

- When task uncertainty is ***low*** **routines** can be developed for the knowledge supporting them.
  - Benefits from externalizing or internalizing knowledge related to any particular task tends to accumulate through the greater occurrence of that task.
  - Hence, **routines**, **exchange**, **combination**, **internalization** or **externalization** would be recommended
- Example:
  - Individuals performing tasks in credit and accounts receivables, large benefits are obtained from
    - routines: e.g., credit-checking procedures
    - exchange: e.g., sharing of standards and policies
    - combination: e.g., integration of explicit knowledge that different credit analysts have generated from their individual experiences
    - externalization and internalization: e.g., training and learning of existing policies by new credit analysts

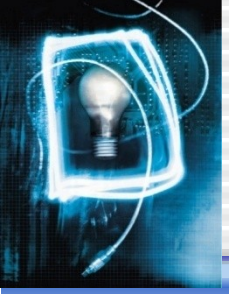
Effects of Task Characteristics on KM Processes- Task Uncertainty view





Interdependent Tasks

- *Task interdependence* Indicates the extent to which the subunit's achievement of its goals depends on the efforts of other subunits [Jarvenpaa & Staples 2001]
- For *interdependent tasks*, performance of interdependent tasks relies mainly on **dynamic interaction** in which individual units of knowledge are combined and transformed through communication and coordination across different functional groups

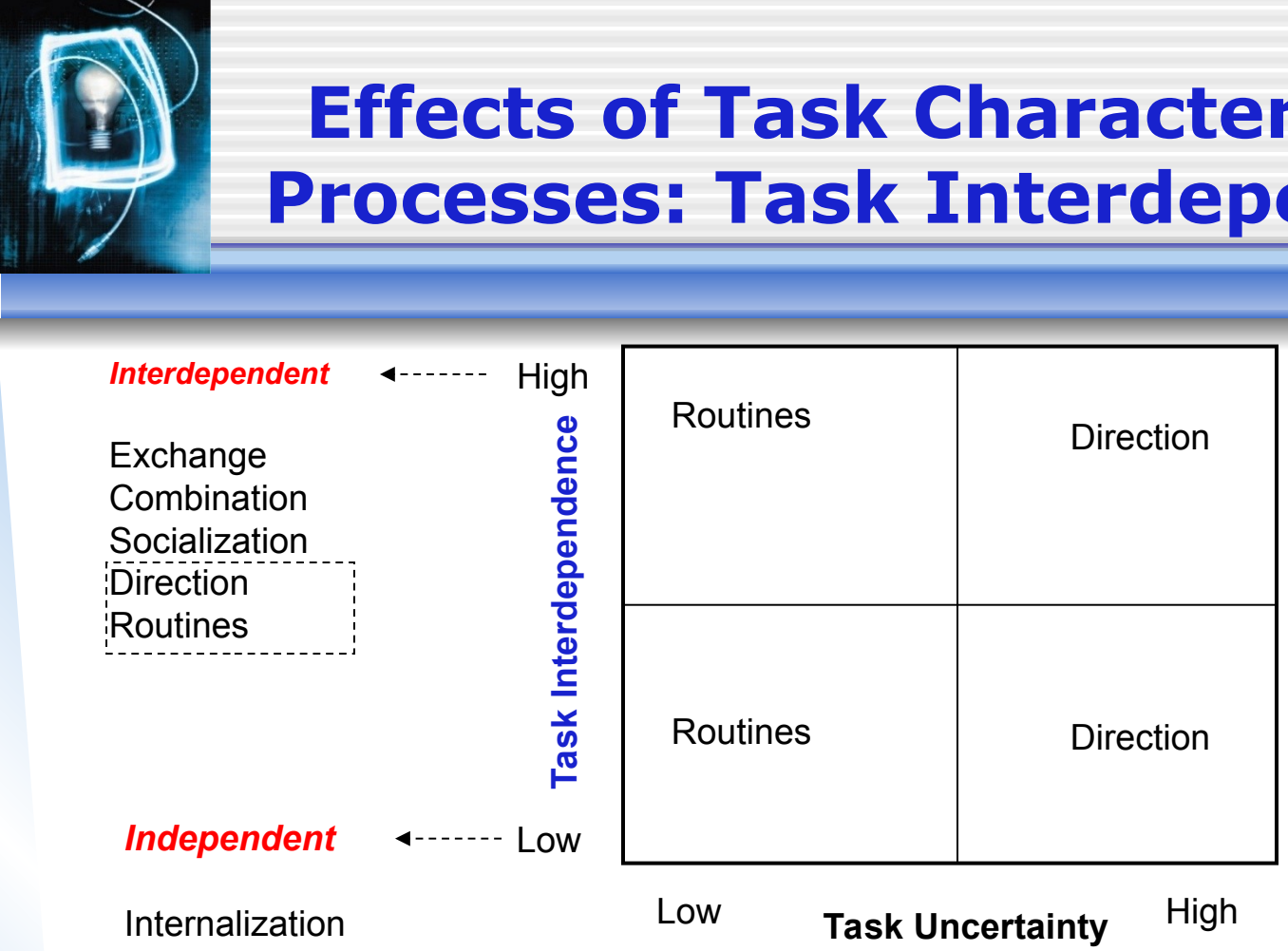


Independent Tasks

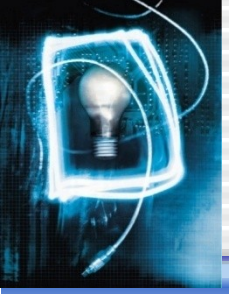
- For *independent tasks*, performance primarily requires only knowledge directly available to the individuals within the subunit
- Tasks often require deep knowledge in a particular area
- Learning processes tend to be personal and individualized (tacit)
- **Internalization** and **externalization** should be preferred for **independent** tasks.

- **Exchange**, **combination**, and **socialization** should be preferred for **interdependent** tasks.
- The suitability of **direction** and **socialization** depends on task uncertainty

Effects of Task Characteristics on KM Processes: Task Interdependence view



Effects of Task Characteristics on KM Processes



Interdependent ◄------- High

Exchange
Combination
Socialization
Direction
Routines

Task Interdependence

Independent ◄------- Low

Internalization
Externalization
Direction
Routines

Exchange Combination Routines	Direction Socialization
Internalization Externalization Routines	Direction

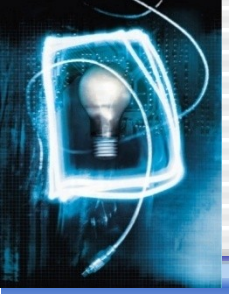
Low ⟵ **Task Uncertainty** ⟶ High

Certain

Routines
Internalization
Externalization
Exchange
Combination

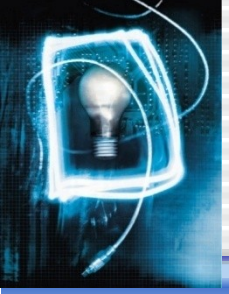
Uncertain

Direction
Socialization



Take home – Discussion next week

- **You are a KM consultant for BP-Amoco (http://www.bpamoco.com). BP-Amoco is one of the world's largest petroleum and petrochemicals groups. Its main activities are exploration and production of crude oil and natural gas; refining, marketing, supply and transportation; and manufacturing and marketing of petrochemicals. Because of the current political instability (e.g., war in Iraq) in Middle East, environmental uncertainty is said to be relatively high these days.**



Take home – Discussion next week

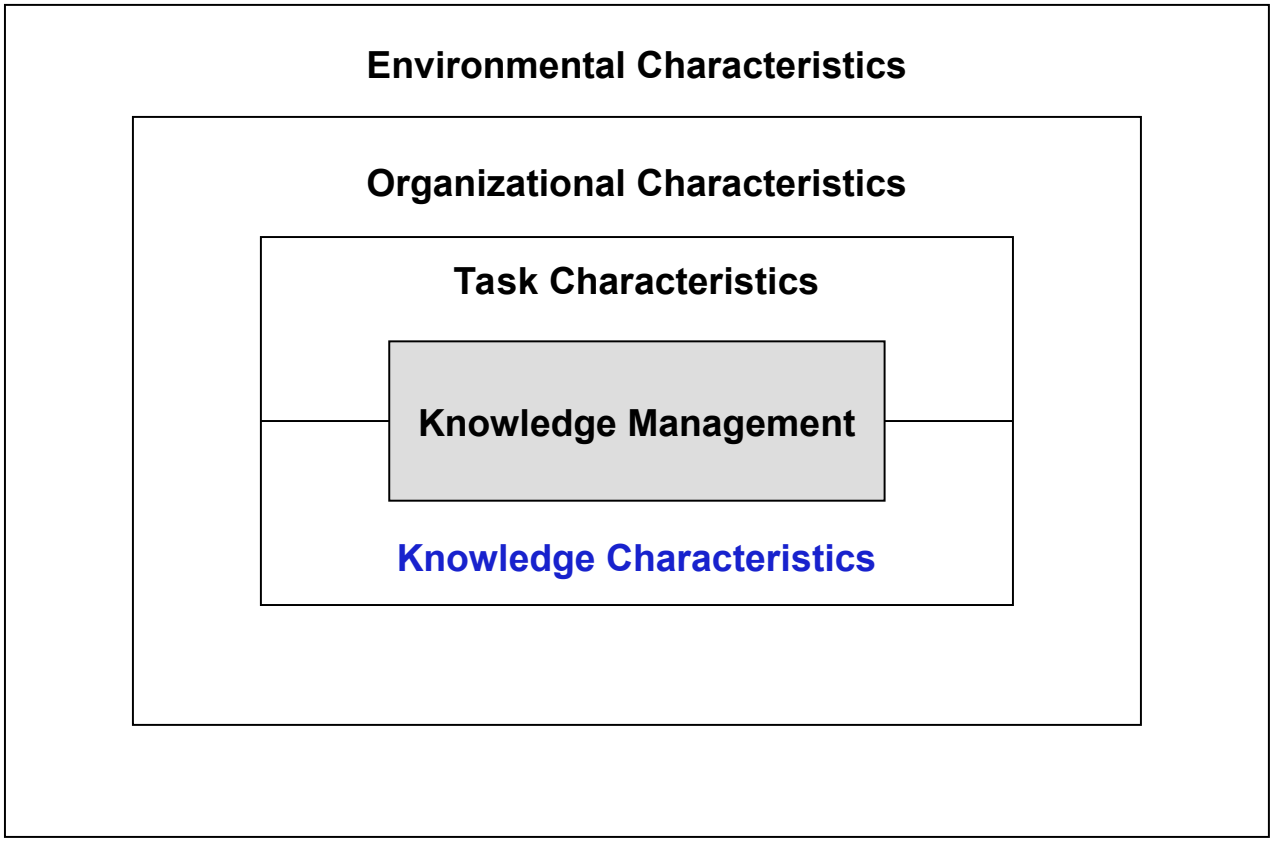
a) Gather information on BP-Amoco and decide whether its task uncertainty and task interdependence are high or low. Provide the reasons of your decision.

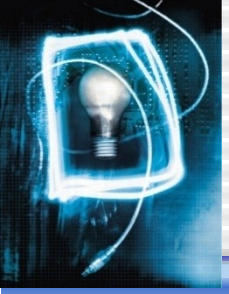
b) What types of knowledge does BP-Amoco use most and suggest as an appropriate KM process for the certain type of knowledge?

c) Assess (i) the organization size of BP-Amoco (small or large) (ii) business strategy (low cost or differentiation) (iii) environmental uncertainty (high or low).

d) Now, compute the "cumulate priority score" of each KM processes discussed in this chapter. Based on this analysis, what is your recommendation of appropriate KM solutions to BP-Amoco?

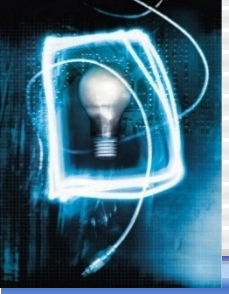
Categories of Contingency Factors affecting KM processes





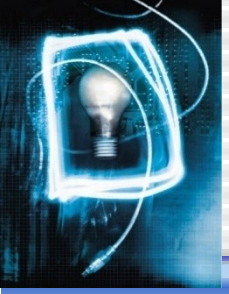
Knowledge Characteristics

- Explicit vs. tacit
- Procedural vs. declarative
- General vs. specific

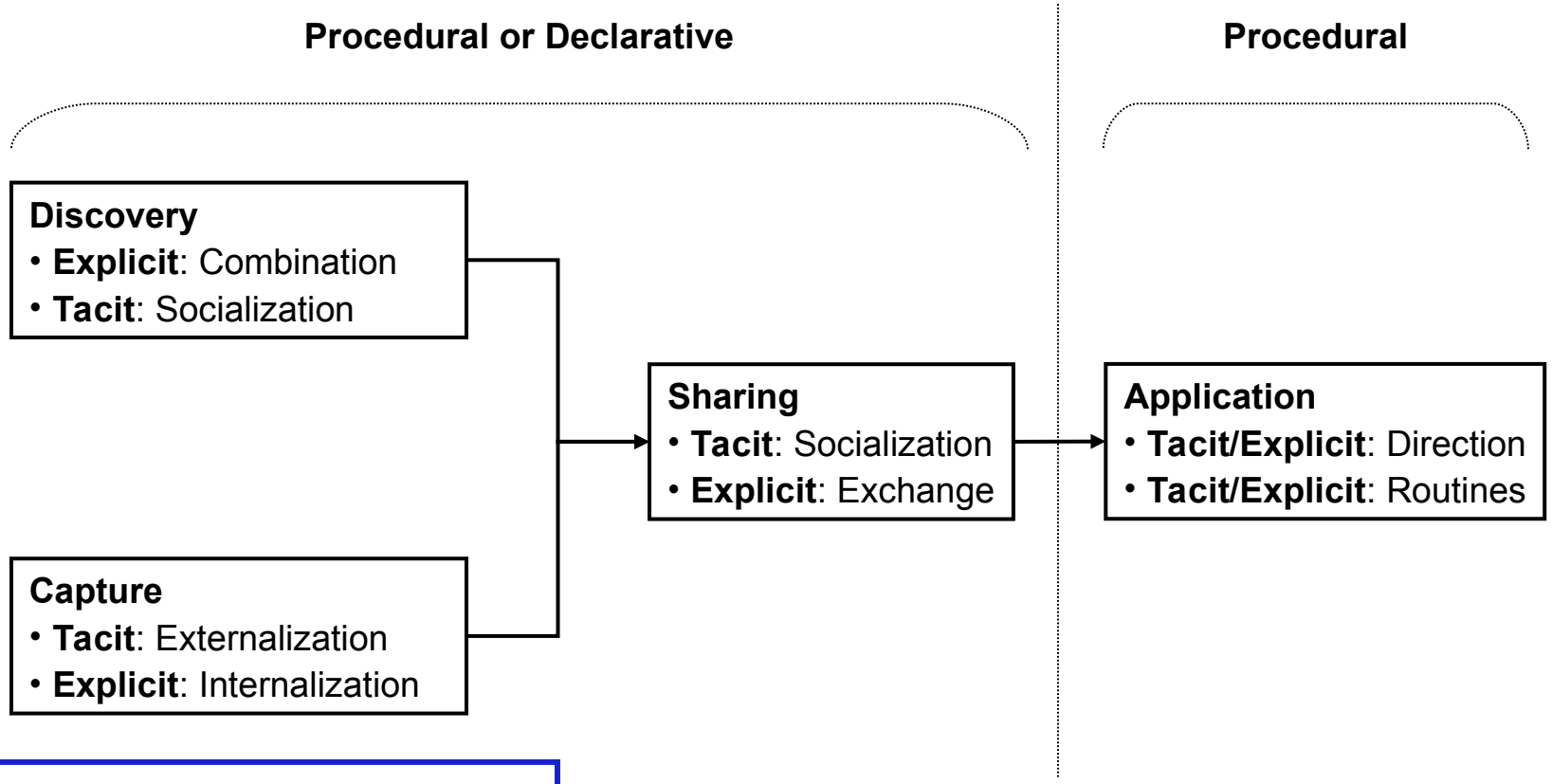


Procedural and Declarative Knowledge

- For knowledge discovery, capture, and sharing, *different* KM subprocesses are recommended for explicit and tacit knowledge.
  - But the same processes can be used for either declarative or procedural knowledge.
- For knowledge application process, no distinction is needed: direction and routines can be used to apply either explicit or tacit knowledge.
  - But these processes should be used mainly for procedural knowledge.
- Recall:
  - Procedural knowledge (know how) focuses on the processes or means that should be used to perform the required tasks, such as how to perform the processes needed to achieve the specific product design
  - Declarative knowledge (know what) focuses on beliefs about relationships among variables

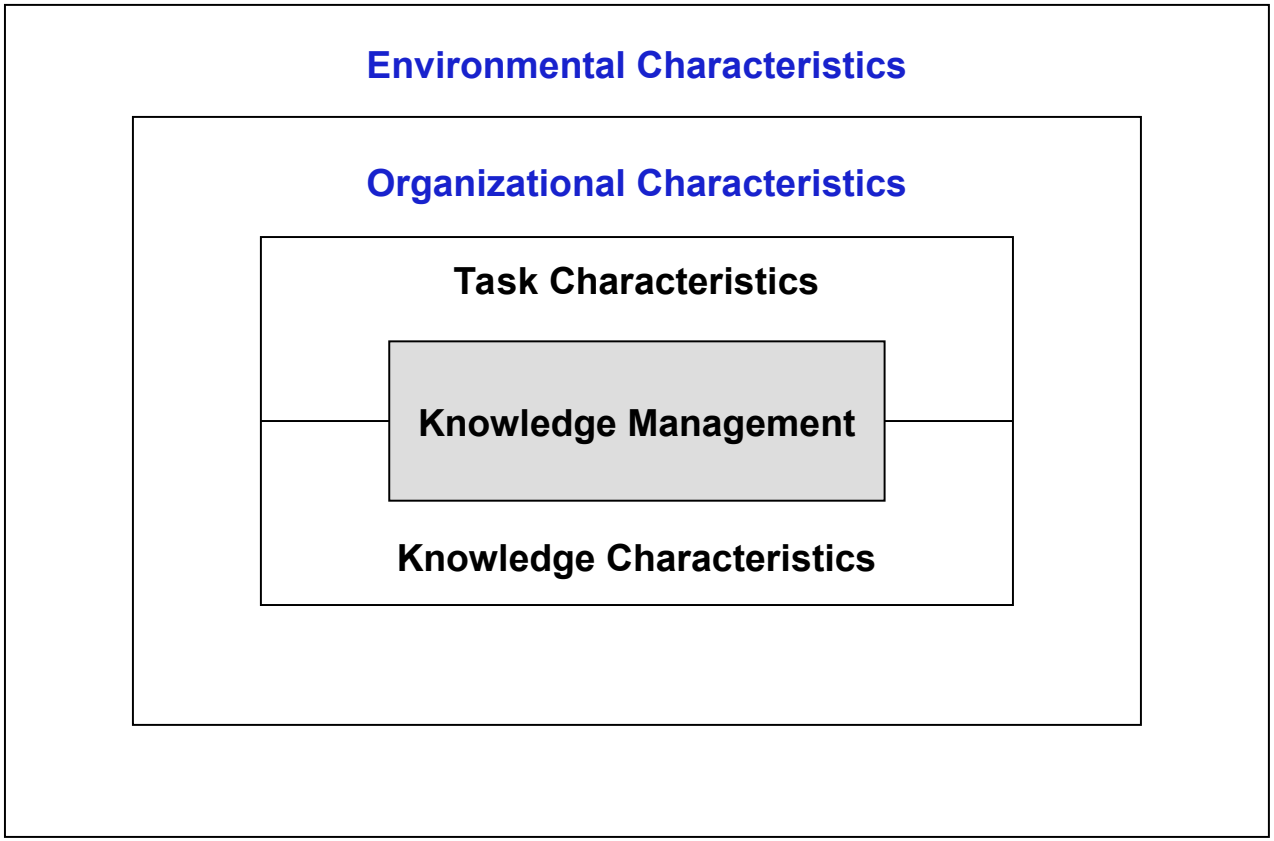


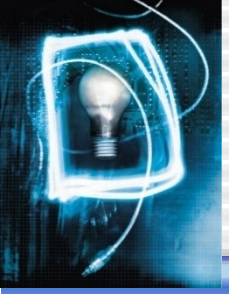
Effects of Knowledge Characteristics on KM Processes



Effect along two dimensions:
- Explicit vs. tacit
- Procedural vs. declarative

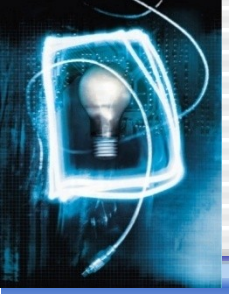
Categories of Contingency Factors affecting KM processes





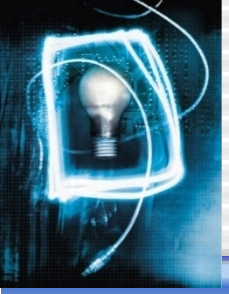
Effect of Environmental and Organizational Characteristics on KM Processes

Characteristic	Level/Type	Recommended KM Processes
Organization Size	Small	Knowledge sharing (socialization) Knowledge application (direction) Knowledge discovery (combination, socialization) Knowledge capture (externalization, internalization)
	Large	Knowledge sharing (exchange) Knowledge application (routines) Knowledge discovery (combination) Knowledge capture (externalization, internalization)
Business Strategy	Low cost	Knowledge application (direction, routines) Knowledge capture (externalization, internalization) Knowledge sharing (socialization, exchange)
	Differentiation	Knowledge discovery (combination, socialization) Knowledge capture (externalization, internalization) Knowledge sharing (socialization, exchange)
Environmental Uncertainty	Low	Knowledge sharing (socialization, exchange) Knowledge capture (externalization, internalization)
	High	Knowledge discovery (combination, socialization) Knowledge application (direction, routines)



Identification of Appropriate KM Solutions

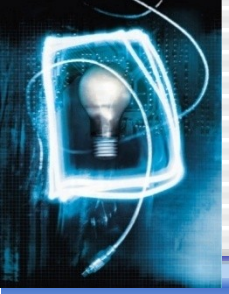
1. Assess the (7) contingency factors
   - How Contingency factor (tasks, knowledge, environment, and organization) contribute to uncertainty.
2. Identify the KM processes based on each contingency factor. (see +1 slide)
3. Prioritize the needed KM processes. (see +2 slide)
4. Identify the existing KM processes. (next chapter)
5. Identify the additional needed KM processes.
   - difference between needed processes and existing processes
6. Assess the KM infrastructure.
   - Supporting infrastructure for the need processes
7. Develop additional needed KM systems, mechanisms, and technologies.



Appropriate Circumstances for Various KM Processes

KM Processes	Contingency Factors						
	Task Uncertainty	Task Interdependence	Explicit (E) or Tacit (T) Knowledge	Procedural (P) or Declarative (D) Knowledge	Organizational Size	Business Strategy*	Environmental Uncertainty
Combination	Low	High	E	P/D	Small/Large	D	High
Socialization for Knowledge Discovery	High	High	T	P/D	Small	D	High
Socialization for Knowledge Sharing	High	High	T	P/D	Small	LC/D	Low
Exchange	Low	High	E	P/D	Large	LC/D	Low
Externalization	Low	Low	T	P/D	Small/Large	LC/D	Low
Internalization	Low	Low	E	P/D	Small/Large	LC/D	Low
Direction	High	High/ Low	T/E	P	Small	LC	High
Routines	Low	High/ Low	T/E	P	Large	LC	High

Low Cost – LC; Differentiation – D



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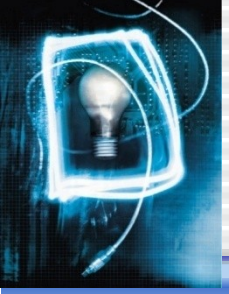
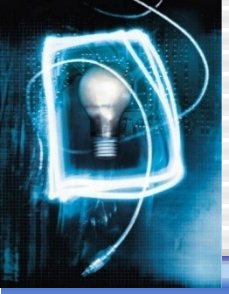


Prioritizing KM Processes for Doubtfire Computer Corporation

Contingency Factors KM Processes	Task Uncertainty = High	Task Inter-dependence = High	Tacit Knowledge	Procedural Knowledge	Organizat-ional Size = Small	Business Strategy = Low Cost	Environ-mental Uncertainty = High	Number of "Yes"	Number of "OK"	Number of "No"	Cumulative Priority Score*	
Combination	No	Yes	No	OK	OK	No	Yes	2	2	3	3.0	5
Socialization for Knowledge Discovery	Yes	Yes	Yes	OK	Yes	No	Yes	5	1	1	5.5	2
Socialization for Knowledge Sharing	Yes	Yes	Yes	OK	Yes	OK	No	4	2	1	5.0	3
Exchange	No	Yes	No	OK	No	OK	No	1	2	4	2.0	7
Externalization	No	No	Yes	OK	OK	OK	No	1	3	3	2.5	6
Internalization	No	No	No	OK	OK	OK	No	0	3	4	1.5	8
Direction	Yes	OK	OK	Yes	Yes	Yes	Yes	5	2	0	6.0	1
Routines	No	OK	OK	Yes	No	Yes	Yes	3	2	2	4.0	4

*: "Yes"=1; "OK" =0.5; "No"=0



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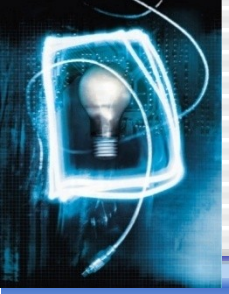

Conclusions

- Distinguished between universalistic and contingency views
- Examined a variety of contingency factors, and the effects they have on the suitability of alternative KM processes

Chapter 5

Factors Influencing Knowledge Management