

The background of the slide features a dark blue field filled with several interlocking gears of varying sizes, rendered in a lighter blue shade. On the far left, there is a vertical strip with a colorful, abstract, and textured appearance, resembling a close-up of a mechanical part or a microscopic view.

# **OTHER KNOWLEDGE CAPTURE TECHNIQUES**

# Other Techniques

- ★ On-site Observation (*Action Protocol*)
- ★ Brainstorming (*Conventional & Electronic*)
- ★ Consensus Decision Making
- ★ Nominal Group Technique
- ★ Delphi Method
- ★ Repertory Grid
- ★ Concept Mapping
- ★ Blackboarding

# On-Site Observation

- ✦ Process of observing, interpreting, and recording expert's problem-solving behaviour as it takes place
- ✦ Places the knowledge developer closer to the actual steps and procedures used by the experts
- ✦ **Problems:**
  - ✦ Some experts do not like to be observed
  - ✦ Accuracy or completeness of captured knowledge weakened by *time gap* between observation and recording



# Brainstorming

- ★ An unstructured, consensus-based approach to generating ideas about a problem
- ★ Suitable for multiple experts
- ★ All possible solutions considered equally
- ★ Emphasis is on the frequency of responses during the session
- ★ Conclude by idea evaluation



# Role of Knowledge Developer in Brainstorming Session

- ★ Introduce and coordinate the brainstorming session
- ★ Give experts a problem to consider
- ★ Prompt experts to generate ideas
- ★ Watch for signs of convergence
- ★ Call for a vote to reach agreement

# Electronic Brainstorming

- ★ **Computer-aided approach to brainstorming**
- ★ Promote instant exchange of ideas between experts
- ★ Require a pre-session plan to identify objectives and structures the agenda
- ★ Anonymity reduces effects of shyness, etc.
- ★ Shorter meeting with concise recommendations





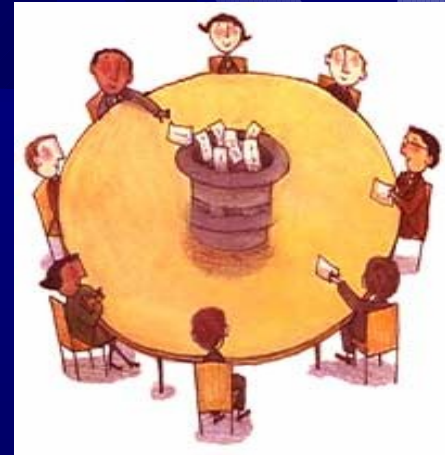
# Protocol Analysis

- ★ **Think-aloud approach**

- ★ Expert verbalizes while going through a problem solution
- ★ Protocols are collected and analyzed
- ★ Knowledge developer does not interfere in the solving process
- ★ Structuring of elicited information occurs when knowledge developer analyzes the protocols.

# Consensus Decision Making

- ★ **As a tool, it follows brainstorming**
- ★ Experts are asked to vote on the alternate solutions they generated
- ★ Procedure should ensure fairness and standardization in the way experts arrive at a consensus
- ★ Problems:
  - ★ Can be tedious and take hours
  - ★ Every solution carries the same weight (rigidity of the process)





# Nominal Group Technique (NGT)

- ★ An idea writing technique
- ★ A link between brainstorming and consensus decision making
- ★ A structured approach to clarify ideas and their meanings
- ★ The end result is a written report
- ★ Achieve group goals by writing rather than verbal discussion



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# NGT Steps

- ★ Given a problem and the alternate solutions, each expert is asked to list their pros and cons
- ★ A list of these pros and cons are compiled
- ★ Given the list, each expert is asked to rank them on basis of their priorities
- ★ Knowledge developer lead a discussion on the relative ranks in hope of achieving convergence
- ★ Choose the “best” solution from the alternatives

# NGT (Advantages)

- ★ Effective in minimizing differences in status among multiple experts
- ★ Each expert has an equal chance to express ideas in parallel with other experts in the group
- ★ With discussion proceeds in sequential order, it can be more efficient and productive than brainstorming

# NGT (Drawbacks)

- ★ Technique can be time consuming
- ★ Could promote impatience among experts who must listen to discussions with other experts
- ★ With multiple experts sharing expertise, a cause of difficulty in adopting the best solution

# Delphi Method

- ★ **A survey of experts**
- ★ A series of questionnaires developed to pool experts' responses in solving a difficult problem
- ★ Each expert's contributions shared with rest of experts by using results of one questionnaire to construct the next questionnaire



# Delphi Method (Pros and Cons)

## Pros

- ★ Anonymous response
- ★ Controlled feedback
- ★ Statistical group response

## Cons

- ★ Poorly designed questionnaire can be ineffective in capturing the complexity of the problem domain
- ★ Experts often lack complete knowledge to base their final judgment



# The Repertory Grid

- ✦ An expert conceptualizes the problem using his or her own model
- ✦ Grid used to facilitate the capture and evaluation of the expert's model
- ✦ A representation of the experts' reasoning about a particular problem
- ✦ A grid can be a scale or a bipolar construct on which elements are placed within gradations

# Job Interview Rating Repertory Grid (Example)

## Construct

	T1	T2	T3	T4	T5	T6
A. Inexperience	3	3	1	1	1	1
B. Academically Ill-qualified	2	1	2	1	1	3
C. Poor Appearance	3	2	1	2	1	3
D. Punctuality	2	3	2	3	1	1
E. Introverted	2	3	2	2	1	1

Scale: 1  
to 3

Dixie

John

Barry

Curt

Lester

Joanne

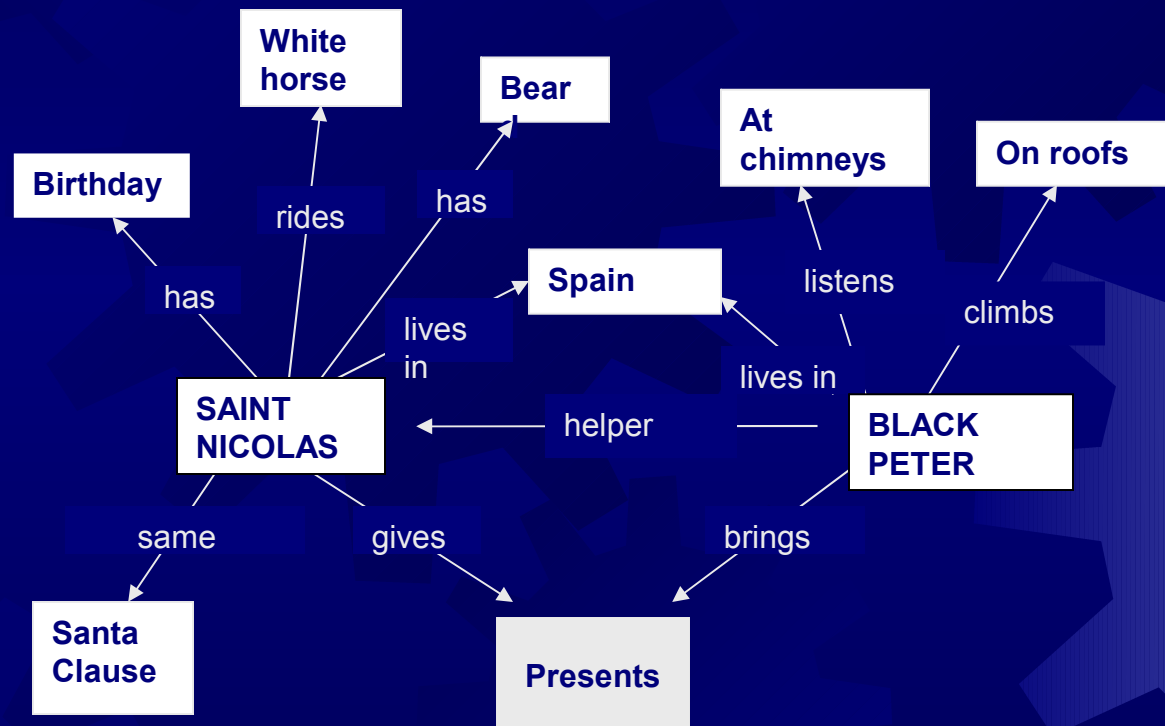
# The Repertory Grid (Pros and Cons)

- ★ **Benefit:** may prompt the expert to think more concretely about the problem and how to solve it.
- ★ **Drawback:** difficult to manage when large grids are accompanied by complex details
- ★ Because of complexity and manageability, the tool is **normally used in the early stages of knowledge capture**

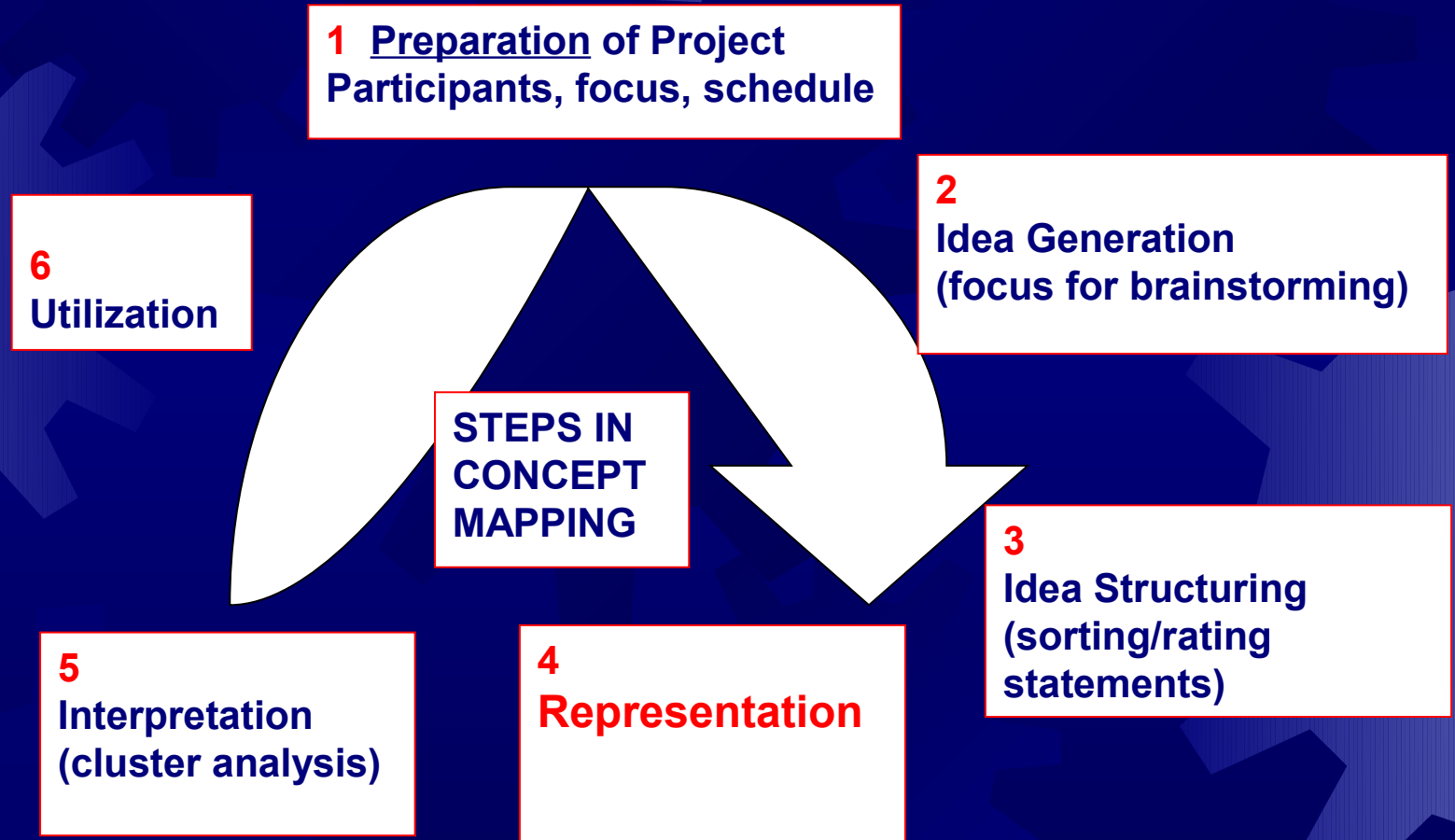
# Concept Mapping

- ★ A network of concepts, consisting of nodes and links
- ★ A node represents a concept and a link represents the relationship between concepts.
- ★ An effective approach for:
  - ★ design a complex structure (Web sites)
  - ★ generate or communicate ideas (e.g., during brainstorming)
  - ★ diagnose misunderstanding

# Concept Map—An Example



# Steps in Concept Mapping





# Blackboarding (Groupware)

- ★ Participants are assumed experts with unique experience
- ★ Each expert has equal chance to contribute to the solution via the blackboard
- ★ Process continues until the problem has been solved



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# Blackboarding (Characteristics)

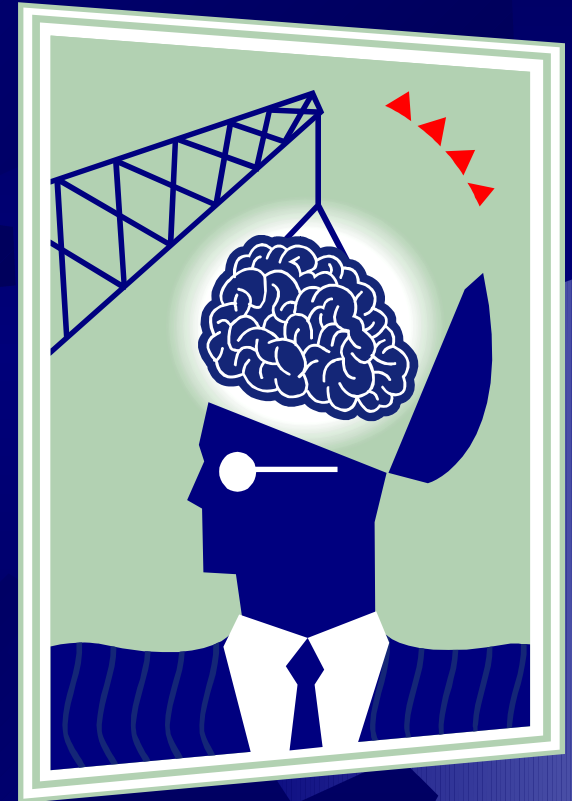
- ★ Participants share a common protocol for interaction
- ★ Organized participation
- ★ Iterative approach to problem solving
- ★ Flexible representation of information
- ★ Efficient storage and location of information

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# *End of Lecture Five*

# What Is Knowledge Capture ?

- ★ **A process by which the expert's thoughts and experiences are captured**
- ★ A knowledge developer collaborates with an expert to **convert expertise into a coded program**
- ★ Knowing how experts know what they know



# The Interview As a Tool

- ★ Commonly used in the early stages of tacit knowledge capture
- ★ The voluntary nature of the interview is important
- ★ Interviewing as a tool requires training and preparation
- ★ Convenient tool for evaluating the validity of information acquired

