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
- Blackboard
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
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)

<table>
<thead>
<tr>
<th>Construct</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
<th>T6</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Inexperience</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>B. Academically Ill-qualified</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>C. Poor Appearance</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>D. Punctuality</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>E. Introverted</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Scale: 1 to 3
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

**SAINT NICOLAS**
- has
- lives in
- same
- gives
- helper

**White horse**
- has
- rides

**Bear**
- has

**Spain**
- listens
- lives in

**At chimneys**
- listens
- lives in

**On roofs**
- climbs

**Presents**
- brings

**SAINT NICOLAS**
- helper

**BLACK PETER**
- brings

**Birthday**
- rides

**Santa Clause**
Steps in Concept Mapping

1. Preparation of Project Participants, focus, schedule

2. Idea Generation (focus for brainstorming)

3. Idea Structuring (sorting/rating statements)

4. Representation

5. Interpretation (cluster analysis)

6. Utilization
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
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
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