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**International Centre for Theoretical Physics**

  
United Nations  
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## ***SCHOOL OF NUCLEAR KNOWLEDGE MANAGEMENT***

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### **Knowledge preservation and transfer: issues and terminology**

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## Knowledge Preservation and Transfer: Issues and Terminology

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## Contents

- Knowledge: definition and implications for the preservation of knowledge
- Challenges to the transfer of knowledge
- knowledge preservation strategies: personalization versus codification
- Means of tacit knowledge preservation
- Conclusions

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## Practical Definitions

**Information** is data that has been organized within a context and translated into a form that has structure and meaning.

**Knowledge** is the capacity for effective action; acquiring, understanding and interpreting of information.

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## Practical Definitions

**Explicit knowledge** is embedded in documents, drawings, calculations, designs, databases, procedures or manuals.

**Tacit knowledge** is held in a person's mind and has typically not been captured or transferred in any formal way (if it was it would then be explicit knowledge).

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### Practical Definitions

**Knowledge preservation** is a process for maintaining knowledge important to an organization's mission that stores knowledge/information over time and provides the possibility of recall for the future.

**Knowledge transfer** The transfer of knowledge in a broad array of settings: between individuals, groups of individuals, communities, organizations, or industries.

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### Glossary of Knowledge Management Terms

**Draft provided in your materials. Your comments and suggestions are welcome!**

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### How much is Tacit Knowledge?

**Up to 42% of the knowledge that professionals need to do their jobs comes from other people's brains—in the form of advice, opinions, judgment or answers. (Source: Delphi Group).**

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### Some tacit knowledge can be articulated

- **It is important to distinguish between tacit knowledge that can be expressed/ articulated, and tacit knowledge that cannot be demonstrated and so is very difficult to transfer.**
- **Examples of each?**

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## Challenges to Knowledge Preservation and Transfer

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### Knowledge: An individual's perspective

- A person's capacity to act can be seen as the result of a five-fold integration process by which several kinds of knowledge are integrated:
  - technical expertise
  - methodological knowledge
  - social competence (getting along with others)
  - meta-knowledge (knowing where)
  - experience.

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### Experience as a major threat to knowledge transfer and preservation

- Experience in a certain activity means that a person develops routines that allow him/her to solve problems better than people without the corresponding experience.
- Based on experience we do things we cannot easily articulate (sometimes not at all).
- Such knowledge is tacit knowledge that is personal, hard to transfer and difficult to preserve.

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### Knowledge: An Individual's Perspective

- All knowledge an individual has is the result of a personal learning history.
- Learning is always shaped by the context in which a person's learning takes place.
- Learning and knowledge accumulated in a certain context may not be actionable in a different context.
- Thus, organizational context always has to be considered as a variable in knowledge transfer and preservation activities.

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The Loss of Experts Poses a Fivefold Challenge

- Preservation of technical expertise
- Preservation of methodological knowledge
- Preservation of social competence
- Preservation of experience
- Preservation of meta-knowledge

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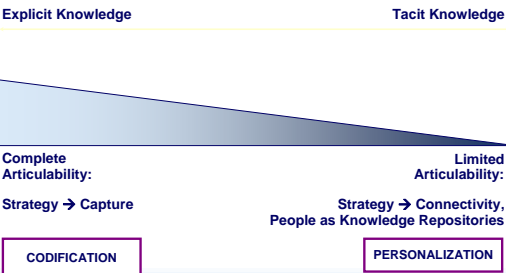
Knowledge Preservation and Transfer Strategies

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Knowledge Continuum

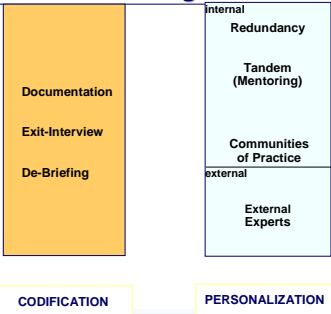


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Basic knowledge preservation and transfer strategies



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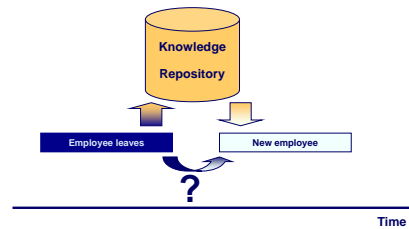
## Means of Knowledge Preservation and Transfer

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### Codification: Creating a Knowledge Repository



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### Documentation

- Often, employees declare not to have the time to document.
- Often enough, the lack of time is an excuse for not being interested in documenting.
- Documentation can be a good means to knowledge preservation for articulated knowledge.
- Documentation fails with tacit knowledge.
- Problem: documents are not always clear, they are interpreted by others (thus creating a source of errors)

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### Exit Interview

- In a relaxed atmosphere the employee discusses what is important to his/her job
- What are the important documents, manuals and where can they be found?
- What problems are likely to appear? What is to do when this or that happens?
- Limits: People remember only 20 percent of what they really know, and remembering takes place related to the context.

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### De-Briefing

- Very important for holders of critical knowledge.
- Objective: Make tacit knowledge explicit and available to other members of the organizations.
- De-briefing can take place in two modes: oral or video.
- High costs: several days of preparations for the debriefing team
- Duration of De-Briefing: depending of experts one to several days

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### Redundancy

- Best possible solution for knowledge preservation and transfer.
- Works in all situations of knowledge loss (even unexpected ones)
- Is based on availability and motivation of personnel.

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### Mentoring

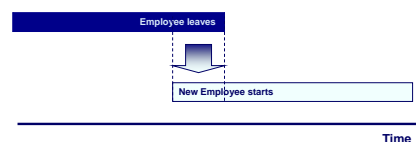
- Second-best solution.
- The new employee's learning curve is compressed by the help of the mentor.
- The mentor serves as a model and allows the new employee (apprentice) to quickly develop his/her capacity to act.
- Example: Swiss Nuclear Power Plants
- Needs: Availability of skilled mentors and apprentices

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### Mentoring (Tandem)

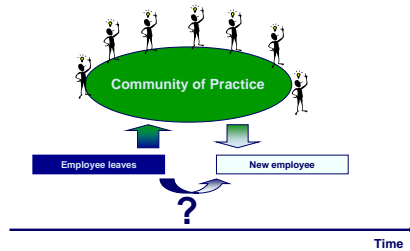


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### People-Based Knowledge Repository: Community of Practice



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### Community of Practice

- Multiple redundancy
- Needs:  
Organizational, national or even supra-national coordination.
- Examples( national , international professional organizations, international knowledge preservation initiatives...)

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## Conclusions

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### Conclusions

- Tacit knowledge preservation and transfer are more difficult than explicit knowledge preservation. However, they get less focus and attention.
- Tacit knowledge preservation and transfer activities require a large amount of work.
- Face-to-face tacit knowledge transfer is preferable although often not possible.

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