

## Methods for Sharing Tacit Nuclear Knowledge and Expertise

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There is a growing concern about the preservation of nuclear knowledge due to many concurrent development trends: the ageing of workforce, the lack of training programs and recruits, and the decline in R&D activities [1]. Internal training through enterprise universities, tutorage of young scientists by seniors, international mobility of workers [1], teamwork, meetings, on-the-job training, site visits, cross-training, shift changes and peer-to-peer communication [2] have been seen as potential solutions for preserving nuclear knowledge. Especially it has been viewed that “hard” knowledge can be captured relatively easily but challenges lie in “tacit learning” deeply embodied in the life-long experience of employees [3]. For example, it has been found that to share tacit “lessons learned”, the context in which lessons are learned must also be shared [4]. Knowledge management systems may not store sufficient context for a novice to understand and use the stored knowledge [5].

This paper presents results of a qualitative case study in the context of Finnish nuclear power plants. Based on 17 thematic interviews and group discussions the role of tacit knowledge and the challenges in transferring it [6] as well as methods for sharing it were examined. This paper presents preliminary results of seven interviews in terms of *the methods for sharing tacit knowledge and expertise*.

Overall, six methods were identified. Three methods were connected to sharing tacit knowledge in a tacit form. (1) *Mentoring* had been used to systematically socialize a novice worker to the work culture of the organization. New recruits had been assigned a mentor, who assisted in problematic situations. In order to share the expertise of employees about to retire, (2) *apprenticeship* was utilized. New employees had been recruited and given responsibility whilst the experts were still available to give guidance and answer to evoking questions. Moreover, if a more complex or rare procedure was to be carried out in the plant, (3) *team meetings* could be arranged. In such a meeting, the procedure was gone through step by step and the tacit expertise of one member of the team could be shared with the others.

In addition to methods by which tacit knowledge was shared in tacit form, there were also methods for sharing tacit knowledge by explicating it. (4) *Situation reports* were made in deviant work situations. In the reports, an employee described and explained the causes for the situation, thus explicating also the tacit knowledge that was embodied in the situation. Also, (5) *the writing of memos* was used. The employees about to retire wrote a memo, in which they gathered the most relevant and critical knowledge in terms of their work. Finally, (6) *training materials had been produced in co-operation* between an expert and a novice, with the expert knowing the content and the novice posing questions

and ideas. In compiling the material, causal relationships in work had been examined and the tacit knowledge of the expert had been shared with the novice and explicated in the training material.

Furthermore, two managerial tools were used to manage the expertise of individuals and the transfer of tacit knowledge. TAITO was a database into which the current skills, the desired skills and the methods for acquiring these skills were updated. Also an Excel-based tool was used for defining the responsibilities and the critical skills and expertise within a department in order to ensure that these skills were preserved despite of the retirement and employee turnover.

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