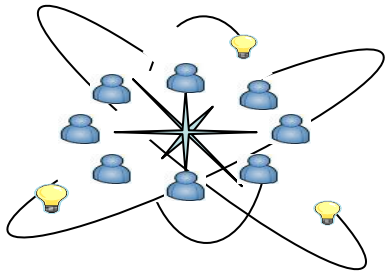

Supporting expertise in nuclear organizations:

Results from four-year project Expert work in a safety-critical environment (SafeExpertNet)

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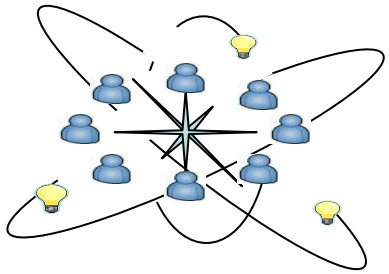
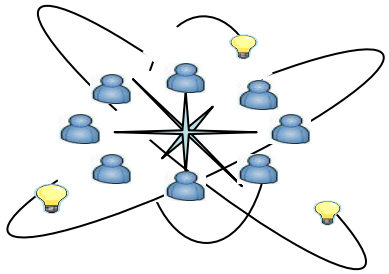
Introduction



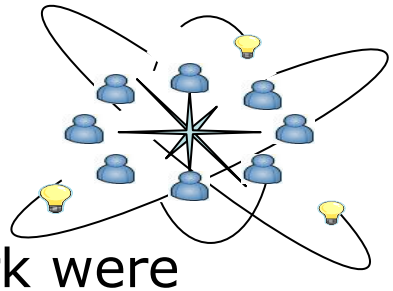
- Currently nuclear industry organizations worldwide are facing the challenge of preserving expertise, competence, and knowledge as their workforce ages
- The Finnish Institute of Occupational Health and Aalto University are collaborating in a four-year project called Expert work in a safety-critical environment (SafeExpertNet 2007-2010)
- The project is part of the Finnish research programme SAFIR2010 on nuclear power plant safety, which is funded by the Ministry of Employment and the Economy

Aim of the project



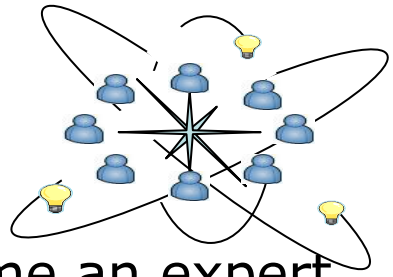
- Topic 1: Expert work
  - What kind of knowledge and competences the experts have?
  - What are the practices for preserving and developing expertise in nuclear power plants?
- Topic 2: Collaboration in the Finnish nuclear power community
  - How the collaboration is organized?
  - What factors **prevent** successful collaboration and knowledge sharing among the members of the Finnish nuclear power community?
  - What factors **facilitate** successful collaboration and knowledge sharing among the members of the Finnish nuclear power community?
  - How does the network of nuclear experts support the development of individuals' expertise?

Methods



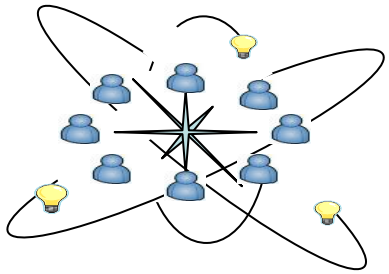
1. In 2007, 29 thematic interviews on expert work were conducted in two nuclear industry organizations
2. In 2008, 170 experts from three nuclear industry organizations answered to a questionnaire (response rate 59%) which included question e.g. on the organizational practises in the development of expertise, collaboration
3. In 2008, 13 thematic interviews on collaboration were conducted in seven different nuclear industry organizations
4. In 2009, 32 new employees (recruited <2 years) from one nuclear industry organization answered to a questionnaire on initiation practices of the company (response rate 71%)
5. In 2009, 12 persons from the nuclear industry organizations were interviewed on how the safety critical aspect of their work should be taken into account in management and team working
6. In 2010, 279 experts from five nuclear industry organizations answered to a questionnaire (68%), e.g. questions on the safety critical aspect of their work

Main findings (Expert work)



- It takes about 5 years for a new recruit to become an expert and there are numerous ways of gaining nuclear expertise: the best way is "*by doing the job*"
    - by reading and updating documents, engaging in discussions with experienced experts, taking part in meetings and work groups, projects etc.
- Examples of challenges & solutions:
  - *How to carry out efficient induction for new employees?*
  - The key issue on effective initiation practices is the effort (time and support) of the person responsible of the initiation, mainly the closest supervisor
  - Also the active role of the new employee was seen as crucial for the success of the process

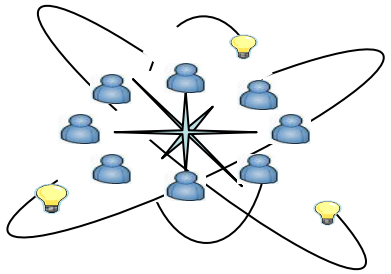
Main findings (Expert work)



- *How to motivate recruits to work for several years in a complex technical field that takes time and is difficult to master?*
- Assigning new recruits to meaningful and challenging projects
- By making a detailed risk management plan for expertise and knowledge to be carried out at the organizational unit level
- By doing systematic career planning and more transparent career paths for individuals

- Of different HR practices, the respondents were most satisfied with the internal and external training, and the utilization of operation events as a learning opportunity. Job rotation (inside their area of expertise) and knowledge risk management were seen as the weakest areas.

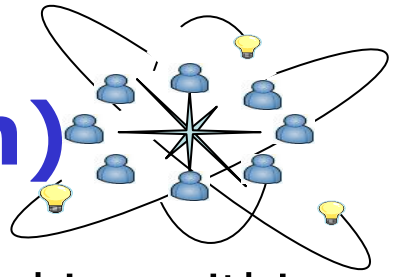
Main findings (Expert work)



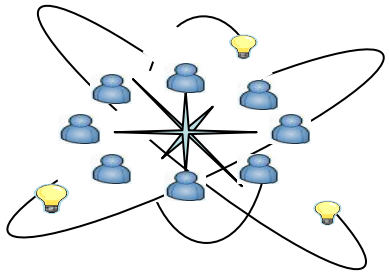
Development of individual expertise

- .627*** Content of work
- .619*** Actions of the closest superior
- .561*** Functionality of the work group
- .551*** The way a superior takes into account the safety-critical aspects of the work

Main findings (Collaboration)



- The importance of knowledge sharing and networking within the Finnish nuclear industry experts' networks, but also international contacts and collaboration, was recognized
- Individual experts are the key factor in forming, utilizing and developing networks
- Networked collaboration supports the development of expertise in both individual and nuclear power community levels
- Both preventing and facilitating factors of collaboration and knowledge sharing were identified
  - Examples of preventing factors: competition, lack of planning of networked collaboration, limited time resources, poor social competences
  - Examples of facilitating factors: shared projects, informal opportunities for communication, limited amount of specialized experts -> people know each other



Thank you!

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