Studying Collaboration in a virtual environment

Espen Nystad

Institutt for energiteknikk

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The extended teamwork study will be used to investigate what kind of problems people experience when working together in virtual environments for process operation.

The two field operators work in a VR model of the power plant.

Navigate in a number of virtual rooms.

Perform actions on virtual components (e.g. valves, switches)

Two main problems have been reported in studies of collaboration in VEs:

- Facial expression and body language are not present in the VE. This can lead to communication problems related to:
    - Initiate communication
    - Show that the message is understood
    - Coordinate turn-taking

- Problems with getting a mutual awareness – users of the CVE do not see what other users are occupied with and what objects they are referring to.
    - Partly due to narrow field of view
    - Partly due to lack of information in the virtual representation of the user (avatar) – e.g. gestures.

Shared view of the virtual environment
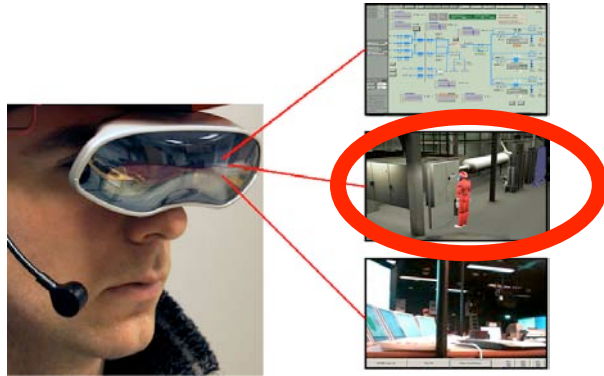
Each field operator has access to the other field operator's view of the VR model.
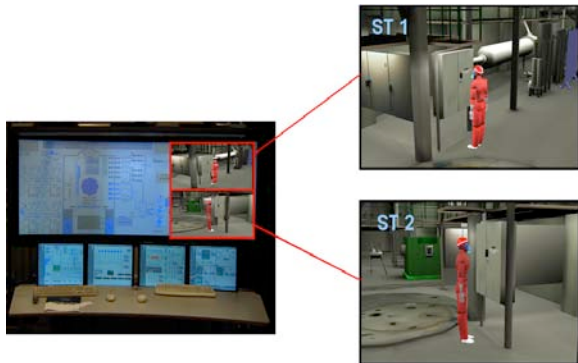
The control room operator has acces to both field operators' view of the VR model

- How does the shared view of the VR model influence collaboration?

Questionnaires:

Spatial presence – does the user feel present in the virtual environment?

Social presence – does interacting with people in the virtual environment feel like interacting with real people?

Navigation – how is the navigation quality?

Interviews:

What problems and advantages were experienced with collaboration in the virtual environmen?

Usability issues

Observation / video recordings:

Look at specific problems the operators had in the VE related to collaboration, and features that helped collaboration

Findings will be used to inform the design of future Collaborative virtual environments.

The study will be reported in an HWR.