

## Beyond Awareness: Boundary Objects as Reifications of Cooperation in a Papermill

Christopher Lueg<sup>1</sup> and Ralf Kohl<sup>2</sup>\*

<sup>1</sup> Department of Information Technology, University of Zurich, Switzerland

<sup>2</sup> Infineon Technologies, Munich, Germany

### 1 Awareness and Beyond

Awareness support is increasingly receiving attention within CSCW research. The idea of awareness support is that systems provide members of a group with information about the behavior of other group members in order to create a notion of awareness of what others are doing. As in natural settings, peripheral monitoring and explicit display can be valuable resources for collaboration (Dourish, 1999).

Many settings, however, require not only enhanced mutual perceptibility but also sustained visualisations of shared visions. In such settings, reifications involved exceed the expressiveness of the awareness vocabulary. In what follows, we discuss quality and energy management in a papermill to illustrate the point. Wenger's book on "communities of practice" (Wenger, 1998) provides the vocabulary to meet the complexity of the setting and to nail down lessons learned.

### 2 Communities of Practice in a Papermill

The context of the research reported are experiences collected during field studies in a Swiss papermill. The rather abstract goal of the underlying research project was to enhance product quality and, in particular, to lower the overall energy consumption as paper making is an enormously energy-consuming process (see Müller and Pfeifer (1997) for a detailed description of the setting). At the time of the project, papermill management faced the problem that low margins called for reducing pro-

\*With the Swiss Federal Institute of Technology, Zurich, Switzerland at the time of the project.

duction costs in order to ensure future survival of the papermill.

Two major causes of costly energy consumption peaks were paper breaks and production line start-ups after servicing and after unexpected breakdowns. In cooperation with local experts we found evidence that these peaks could be cut down significantly by enhancing mutual awareness among shifts involved, thus giving shifts more capacity to act in such critical situations. The shifts involved were those running the paper production line and those supervising the local energy station. The two locations (each hosting three shifts; morning, day, night) were physically distributed and at both locations, communities of practice (Wenger, 1998) have formed.

### 3 Boundary Objects as Reifications of Cooperation

We developed specific information visualization systems that provided the production line shift with —previously unavailable— information about their current energy consumption and the energy station shift with —previously unavailable— information concerning the current status of the production line. At first sight, it seems that we developed awareness support. However, awareness is only one side of the coin. The visualization systems were also reifications of the mutually shared vision to cut down energy consumption peaks, to lower production costs, and thus to keep the whole business alive. Moreover, the visualization systems served as boundary objects (Star, 1989) which are “objects that serve to coordinate the perspectives of various constituencies for some purpose” (Wenger, 1998, p. 106). In the case of the papermill, the visualization systems were boundary objects that linked two established communities of practice, enabling them to coordinate their locally established practices, and thus to cooperate in pursuing the mutually shared endeavor.

### References

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