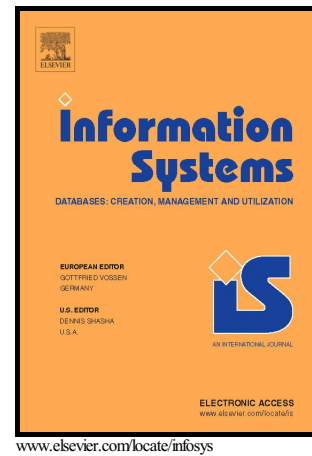


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# Design and Evaluation of Virtual Environments Mechanisms to Support Remote Collaboration on Complex Process Diagrams

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## Abstract:

Many organizational analysis tasks are solved by collaborating teams. In technology-mediated collaborations, enabling relevant visual cues is a core issue with existing technology. We explore whether avatars can provide relevant cues in collaborative virtual environments. To do so, we develop a research prototype for a collaborative virtual environment that utilises avatars to improve workspace awareness in collaborative tasks. We test this solution through two studies, qualitative and quantitative, in which participants have to collaborate to jointly validate and correct a diagrammatic model of operational procedures.

Our evaluations provide both positive and negative results about the proposed prototype. Collaboration patterns changed and became significantly easier, but, task performance was only slightly improved. Together, these findings inform both the ongoing development of collaborative 3D virtual environments and the role of technology-mediated collaboration for validating and fixing models of processes.

**Keywords:** Computer-Supported Collaborative Work; Collaborative Virtual Environments; BPMN; Design Research; Experiments, Process Validation

## Introduction

In face-to-face collaboration, participants usually share an understanding of what is happening in the shared work-space. For example, people working together around a table can tell what everyone else is looking at, whether they are currently performing an activity related to the task at hand and

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