Retrieving information from information bases is not obvious to users, because of the large number of records in the bases and the complexity of the users' activity. From a psychological and ergonomic viewpoint, information retrieval involves complex cognitive representations and processes. In hypertext navigation for example, it has been shown that the users' main difficulty is to keep representation goal stable during the navigation activity. Other problems are due to mismatches between system's and users' representations of information, and between the organization of the bases and the information needed by the users at different steps of their activity. We argue that to identify and solve users' information retrieval problems, it's necessary to have a design approach centred on the activity motivating information retrieval, and to analyse the activity and needs of potential users of the information bases to inform system design. This claim is supported and illustrated by an evaluation study aimed at facilitating information retrieval from WebCokace, a knowledge server designed in the Acacia project (Corby & Dieng, 1997).

WebCokace provides knowledge engineers with libraries of generic components (Corby & Dieng, 1997) – namely, the CommonKads expertise models that can be reused to model the expertise tasks of an application domain. The ergonomic analysis (Ros, 1997) of the WebCokace server user's activity and needs, provided us with a number of recommendations to make the server more useful and more usable. As a result, the main problem met by knowledge engineers in retrieving information from the libraries is essentially the mismatch between how models are organized in the libraries and how users would like to access the models relative to their activity. This activity can be seen as a modelling cycle based on different levels of abstraction and generic components selection and adaptation. WebCokace offers different types of access to components in the library, depending on different steps in the activity of the knowledge engineer (graphical as help in skeletal model definition, formal to guide model refinement, document and/or index to guide component selection, ...). In addition to the index, dedicated interfaces also help users to search for appropriate knowledge. To minimize users' orientation problems, we recommend a global presentation of the knowledge content. Users need a clear representation of the server: its structure, its search logic and the semantics of the links used.

Before designing information handling tools, we must take a cognitive approach to subtly analyse the complex humans' processes of information retrieval and especially their needs for information in their activity. Recently, some research has been done into hybrid activity domains focused on information retrieval and problem solving. We argue for a multidisciplinary approach to survey cognitive processes according to different perspectives.

References