A Situated Cognition Approach to Conceptual Modelling

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Conceptual modelling is an important task in the development of computer systems regardless of whether they are data based or knowledge based systems (KBS). Most approaches see conceptual modelling as a prerequisite to the capture of data or knowledge. These approaches implicitly assume that it is possible to capture and validate a "good" model. However, modelling is difficult, time-consuming and error-prone. The approach described in this paper is based on a situated view of cognition and the premise that it is not easy to capture or evaluate a conceptual model. The alternative offered is based on the use of cases, Ripple-Down Rules (RDR) and Formal Concept Analysis (FCA). Cases are used to motivate the capture of rules in a simple user-driven manner. RDR is used as the knowledge acquisition and representation technique. The propositional rules are then interpreted as a binary formal context and a complete lattice is automatically generated using FCA. In this way, contrary to mainstream approaches, we begin with an assertional KBS and later derive a terminological KBS. Cases ground the KBS in the real world and provide the context in which the knowledge applies. The ease with which the knowledge is acquired and maintained allows for the continual evolution of the KBS in keeping with the notion that knowledge is continually evolving and "made-up" to fit the situation.