

Abstract

This dissertation on *REALSpace*, elaborates on the context of learning-centered education (LCE) as the nexus to conceive analysis, design and prototyping of an electronic space for a Rich Environment for Active Learning (REAL) supporting elite undergraduate education. The discourse makes explicit the implicit contributions of a soft systems approach known as Soft Systems Methodology (SSM), in the systems architecting of *REALSpace*. The application of SSM is significant in software engineering (SE) through its intellectual modeling of various organizational human activity systems (HAS), expressed through respective root definitions (RDs) and conceptual models (CMs), exploring rationally both the cultural (social and political) and logic (computing) aspects to support an ongoing participatory inquiry for feasible and desirable organizational change. Together with scenario-based design (SBD), SSM, instrumental to upfront and continual organizational analysis and modeling, has demonstrated its flexibility to work with mature SE requirements analysis and design methods, such as use case modeling, to support systems development for *REALSpace* and its AKE (appreciative knowledge environment based on the philosophy of appreciative inquiry, AI) services in the LCE context. It is demonstrated in the thesis how different SSM-based HAS models could be turned into suitable design scenarios of real-world usage situations and how such scenarios

could be tailored into different interaction models for use-case modeling, resulting in various sets of analysis models deliberated into specific use case descriptions for timely AKE services prototyped based on the practice of user experience (UX) design, as an important connection of how SSM and SBD work together to support the modern practice of human-centered software engineering. Through user-centered research, the *REALSpace* context is further illustrated using a virtual organizing model for blended learning among community of inquiry (CoI), using such pedagogy as collaborative inquiry. The learning accrued in this thesis research indicates a need for a social paradigm of organizational software development as demonstrated in the college environment, combining the contributions from SSM and SBD with UX design especially over an interactive Web medium in the context of organizational modeling and systems architecting.