

# Empirical Evaluation of Software Architecture Knowledge Systems

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**Abstract:** A software architecture is typically used as an abstract description of the design of a software-intensive system. The historical context of the design and the decisions that led to that design are often only implicitly represented in the final design. An architecture knowledge system is a framework for supplementing the descriptive architecture with the historical, technical, and organizational rationale underlying the design. The importance of representing and managing architectural design knowledge is currently recognized by the research community. Moreover, the ongoing revision of IEEE-Std-1471-2000, “Recommended Practice for Architectural Description of Software-Intensive Systems,” is being expanded to include support for design decisions as first-class entities. Unfortunately, there are currently no empirical standards for evaluating the cost, utility, and effectiveness of such knowledge systems as applied to the design of software systems. As such, industry has no evidence supporting the value of adoption of architectural knowledge systems into their design process, and researchers have no basis for improving the current state of the art in software design knowledge systems. This talk will present an introduction to the theory of design knowledge and the experimental design of empirical studies for measuring and evaluating knowledge systems for software architectural design.