Diploma/Master Thesis

Semantic Wiki for Design Pattern Capturing

Beginning: WS 2012 or earlier
(Thesis may be written in English or German)

Background
Design Patterns are a well-established concept in computer science research and industry alike, to capture good solutions to reoccurring architectural challenges in human-readable documents. Existing patterns cover, for example, domains of object-oriented programming [1], enterprise application integration [2], or cloud computing [3, 4]. The approach is not limited to the domain of computer science. It originated from building architecture and has also been applied to learning techniques or business organizational structures. In each domain, patterns usually follow a certain document structure, to ease comprehensibility through the use of a common format. However, the creations, organization, and recommendation of patterns are largely performed without any IT tool support resulting in several shortcomings. The sources from which patterns are abstracted often remain undocumented making pattern research hard to trace. Pattern authors have to ensure a common pattern format manually. Readers often have to browse through large catalog until finding a pattern applicable to their problem at hand. Especially, there are similar problems in different domains that may benefit from a more structured and connected way to create, interrelate, search, and recommend patterns.

Tasks
The main objective of this thesis is to develop a pattern repository based on semantic wiki technologies that supports the guided creation, search, and recommendation of patterns. This objective includes the following tasks:

- Generation document templates for information sources and patterns.
- Semantic interrelation of sources and patterns in a catalog.
- Query techniques to search and recommend patterns organized in a catalog.
- Evaluation of the approach in a productive industry setting (industry partner).

Requirements
We assume a basic understanding of pattern-based approaches to document knowledge in computer science. Experience in semantic wiki technologies and Web-development would be beneficial.

Literature

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