KaitoroBase

Visual Exploration of Software Architecture Documents

Abstract

KaitoroBase is a software architecture documentation tool built within the Thinkbase Visual Wiki to provide support for non-linear navigation and visualization of Software Architecture Documents (SADs) produced using the Attribute-Driven Design (ADD) method. This involves constructing the meta-model for the SAD in Freebase which provides the foundation for the graph-based interactive visualization enabled by Thinkbase. KaitoroBase displays a graphical, high-level structure of SAD, allows for exploratory search, non-linear navigation, and at the same time connects to low-level details of SAD in a wiki.

Motivation

To provide support for non-linear navigation and visualization of Software Architecture Documents (SADs) by using a Visual Wiki [1].

Objective

As a proof-of-concept, KaitoroBase a software architecture documentation tool is developed "within" the Thinkbase Visual Wiki [8]. Thinkbase is built on top of the Semantic Wiki Freebase [9] and makes use of the Thinkmap visualization framework [10].

Implementation

KaitoroBase is built by modelling the SAD meta-model (extracted from the ADD method) as Freebase graph data structure which provides the foundation for the graph-based interactive visualization enabled by Thinkbase. Creating a specific SAD (for e.g. SAD for Garage Door System) in Thinkbase involves creating instances/topics of the SAD types and attaching them together based on the properties of the types.

Discussion

In comparison with existing SA documentation approaches, the added advantage of KaitoroBase is the graphical visualization of the structure of the entire SAD. The dynamic expansion and collapsing of each element of the SAD and graphically-grouped elements of the same type, reduce the cognitive load on the user.

Future work will look into improving the usability of the prototype, evaluating its usefulness and creating parsers to read architectural models described using specific ADL and display those architectural models in Thinkbase.

As the conclusion, KaitoroBase provides assistance in non-linear exploration and visualization of SAD by building upon the synergy produced by both a textual and a visual representation.

References


Features

• Non-linear exploratory navigation of SAD
• Graph-based interactive visualization of SAD
• Topic-centered view
• Relationships as typed edges
• Graphically-grouped elements
• On-demand expansion and collapsing
• Focus-plus-context view (visual high-level view linked to detailed documents)
• SADs based on Attribute-Driven Design (ADD) method [2]
• Non-ADL (Architectural Description Language) specific

Screenshot

The screenshot shows the user interface of KaitoroBase. The left side displays the interactive visualization of the Garage Door System SAD and the right side shows a detailed document.

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