WikiWhirl: Wiki Refactoring Made Easy

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Figure 1: The Onekin wiki depicted as a mind map (partial view).

Abstract

Wikis' organic growth inevitably leads to wiki degradation and the need for regular wiki refactoring. So far, wiki refactoring is a manual, time-consuming and error-prone activity since refactoring is conducted at the same level that editing: the article. This results in no performant wikis and the frequent abandon of wiki projects. We argue that refactoring requires a broader view of the wiki structure, where the impact of splitting, moving or merging extends beyond a single article. This demo shows *WikiWhirl*, a tool that visualizes and manipulates wikis via mind maps. Built on top of *FreeMind*, WikiWhirl (*i*) imports a wiki from *MediaWiki*, (*ii*) displays its structure as a mind map, (*iii*) supports refactoring operators as mind map node manipulation, and finally, (*iv*) saves those changes back to the wiki ensuring authorship and readership.

Author Keywords

Wiki, refactoring, DSL, mind maps, end-user

ACM Classification Keywords

H.5.3 [Information Interfaces and Presentation]: Group and Organization Interfaces—*Collaborative computing*; D.2.11 [Software Architectures]: Domain-specific architectures
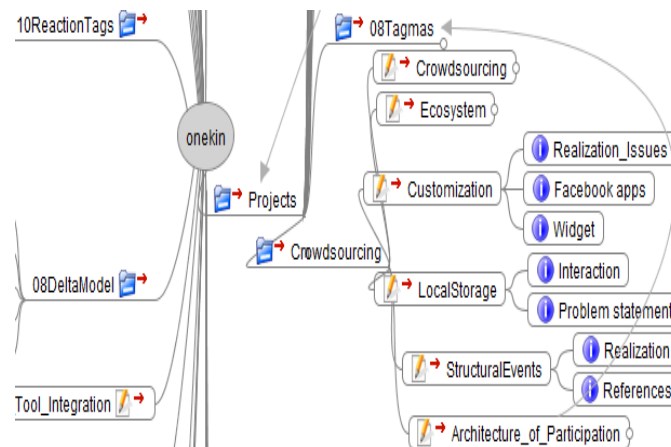
General Terms

Human factors, design, management

Introduction

Both the content and structure of wikis evolve with its supporting community. This ends up in large structures of articles and categories which constantly need manual refactoring. We envision wiki refactoring as the change of the wiki's internal structure for the sake of navigability, accessibility or comprehension, but where the content (and its authorship) should be kept immutable. Nevertheless, wiki refactoring is far from trivial. For instance, merging/splitting two wiki articles requires of at least five interactions in MediaWiki. In other words, *the semantics of refactoring are not natively supported by wiki engines.*

The implications are twofold. First, refactoring is left to the user interpretation. Different users can face the same refactoring problem with different strategies. Although best practices are textually documented [2], the wiki engine does not ensure coherence among the refactoring strategies used throughout the wiki lifespan. Second, the engine does not ensure refactoring reliability. Refactoring operations behave like database transactions in the sense that they comprise a sequence of wiki interactions that (i) should be performed in an all-or-nothing manner, and (ii) should move the wiki to a consistent state (i.e., wiki content must be preserved). This operational semantics is certainly not supported in current wiki engines but on the minds of the wiki users. Consequently, users are left unassisted with the cumbersome task of refactoring.

How to conduct wiki refactoring? The theoretical underpinnings can be found at [3]. Broadly, wiki refactoring should ensure readership and authorship independence, in the same way that databases ensure data independence.

Readership independence. Refactoring does not alter the content but how this content is distributed among articles or categories. Wiki readers should be informed of where content has been moved to.

Authorship independence. Acknowledging the authorship has been reported as a main motivator of contributions [1], and it is one of the directives of Wikipedia. Wiki refactoring must preserve authorship.

This demo aims at raising awareness about wiki refactoring, and the need for tools that assist end users in this challenge. WikiWhirl is one early attempt to abstract refactoring in terms of mind map manipulation and in so doing, engaging domain experts who finally are the ones that can make wikis performant.

Demo Description

This demo shows a refactoring session with WikiWhirl. A session starts with a mind map being imported from an existing wiki. Next, users account for refactoring operations by manipulating map nodes: splitting, merging, moving, etc. Finally, the session ends by exporting the final outcome back to the wiki.

Fig. 1 provides an example for the wiki of the Onekin research group as extracted by WikiWhirl. WikiWhirl depicts wikis as mind maps where nodes with the folder icon , the edit icon and the info icon denotes wiki categories, articles and sections, respectively.

This wiki documents ongoing research projects. Projects are reflected as wiki categories (e.g., *Crowdsourcing*) whereas project issues become wiki articles (e.g., *Ecosystem*).
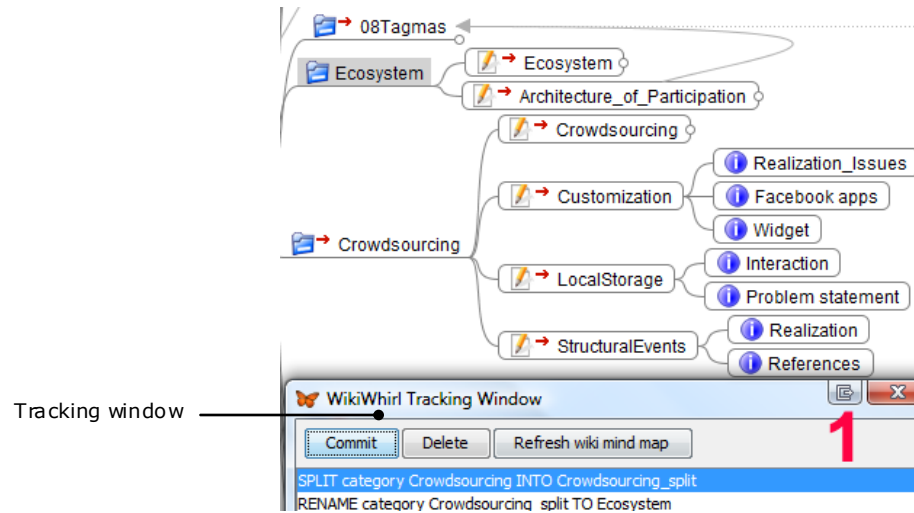

Figure 2. **Split operation** during a refactoring session.

Secondly, the user refactors the wiki structure by the rearranging of the mind map nodes. In this example, as users gain in understanding what *Crowdsourcing* is about, they rearrange this content as follows (Figs. 2, 3 and 4):

1. Splitting *Crowdsourcing*. Rationale: the issue of *Ecosystem* has evolved into a new matter on its own.

2. Merging articles *LocalStorage* & *StructureEvent* into a *Realization* article. Rationale: wide overlap between these issues.

3. Moving the section *Realization_Issues* from *Customization* to the *Realization* article. Rationale: *Realization* should frame all realization concerns no matter where they arise.
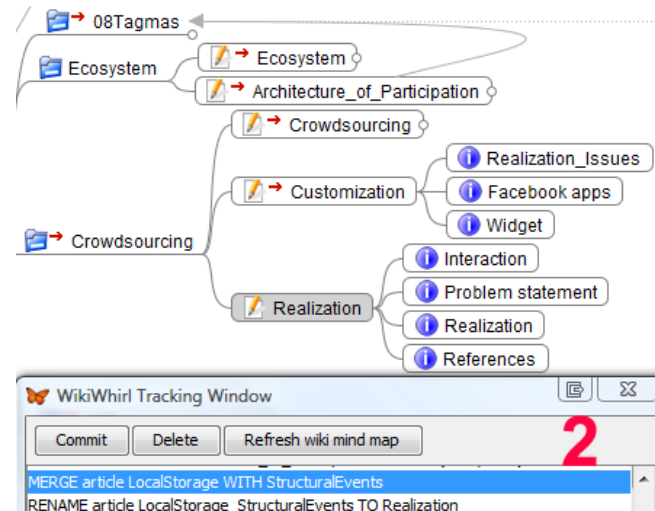

Figure 3. **Merge operation** during a refactoring session.

Let us see in more detail the split and merge operations.

Article Split
It is a refactoring process documented by Wikipedia. This operation, *split (sourceArticle, newArticle)*, categorizes newArticle along the lines of the sourceArticle.

Authorship independence. This is addressed by (i) preventing content deletion, and (ii) introducing in the associated talk pages a note such as "*Section*

sectionName from sourceArticle was copied into newArticle at timestamp". In addition, the recentChanges page of the newArticle is to include a summary, noting the origin of this article (e.g., "*split content from [[article name]]*"). Likewise, the recentChanges page of the sourceArticle should also include another note indicating that it has been subject to split (e.g., "*split content to [[article name]]*").

Readership independence. When an article is split from the sourceArticle, a summary section should be left in this article. At the top of the section, it should contain a link to the newly created page.
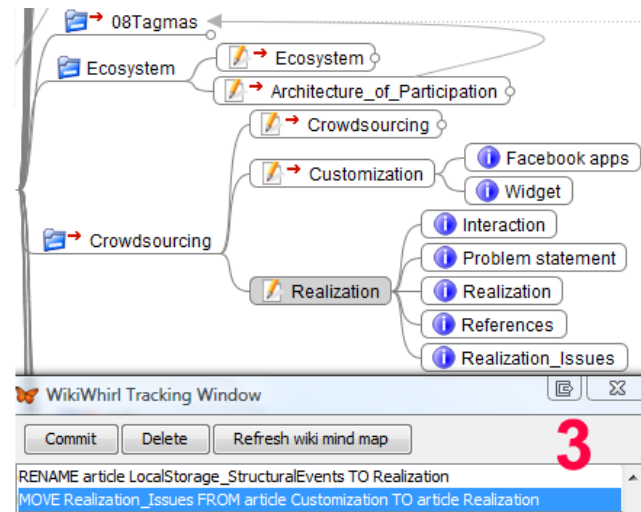

Figure 4. Move operation during a refactoring session.

Article Merge
Article merge is a refactoring process documented by Wikipedia. This operation, *merge (articleToMerge1,*

articleToMerge2), creates a new article whose content is that of the merged articles, and its title results from concatenating both titles i.e., "articleToMerge1_articleToMerge2".

Authorship independence. A comment in the edit summary must be made in the articles to merge as to where they have being merged to, and must be noted in the targetArticle 's edit summary where the content from other pages are being merged from.

Readership independence. Merging should always leave a redirect from the merged articles to the targetArticle.

Technical Requirements
WikiWhirl is a FreeMind plugin. FreeMind is a popular mind mapping tool. Basic configuration is needed to connect WikiWhirl with the wiki database. More info can be found in http://www.onekin.org/wikiwhirl.

References
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