EVALUATING WIKI MUTUAL SKIN TONE IN ONTOLOGY AUTHORING

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Abstract—— *In contrast of the past, firmly established that the creation of worth domain ontology's gained from the attachment in the carving process of more actors, possibly having unique task and ability. To be worthful, the cooperative between these actors has to be cultivated, enabling each of them to actively and promptly engage to the progress of the ontology, bearing in the direct connection of the domain experts in the authoring activities. Fresh works have present that ontology carving gadget based on wikis' serving model and technology could grant in summit these cooperative requirements. This paper evaluates, both at the theoretical and practical level, the value of wiki features for cooperative ontology authoring in carrying crew works composed of domain experts and knowledge engineers, as they knock on the continuous process of collective ontology carving and entity lifecycle.*

Keywords— *Wiki, Domain experts, Knowledge engineers, collaborative features*

INTRODUCTION

It is could contribute in meeting these collaborative requirements [5]. This paper investigates, both at the theoretical and empirical level, the effectiveness of wiki features for collaborative ontology authoring in supporting team works composed of domain experts and knowledge engineers, as well as their impact on the entire process of collaborative ontology[3],Modeling and entity lifecycle. Now a day's well-established that the construction of quality domain ontology's benefits from the involvement in the modeling process of more actors, possibly having different roles and skills [8]. To be effective, the collaboration between these actors has to be fostered, enabling each of them to actively and readily participate to the development of the ontology, favoring as much as possible the direct involvement of the domain experts in the authoring activities [2]. Recent works have shown that ontology modeling tools based on wikis' paradigm and technology.

WIKI COLLABRATIVE FEATURES

- For instant Storage provisioning as the time series problem. And we introduce an asymmetric measurement called (Owl) language result content of the wiki service to change text as owl evaluates secure results [7].

- All these are implemented with the help of ontology's. It is used for the conversion of the entire article in owl formats. And also helps to retrieve the Files Efficiently.

- Editing is possible in wiki collaborative by giving access to the article. And blocking of editing also possible in wiki collaborative

ONTOLOGY

Definition of ontology (computer science) that accounts in the literature before and after posting, with links to further readings

ONTOLOGY AUTHORING

Authors can up on a reason to 'check' their Ontology and Reorganize it according to the implications of the added axioms

MOKI

Moki is a collaborative Media Wiki-based tool for modeling ontological and procedural [8] .Knowledge in an integrated manner.

THE FULLY-STRUCTURED ACCESS MODE

This access mode allows the user to edit/ view the content of the structured part of a Moki page, allowing to view/edit formal statements (axioms) describing the ontology entity associated with the page.
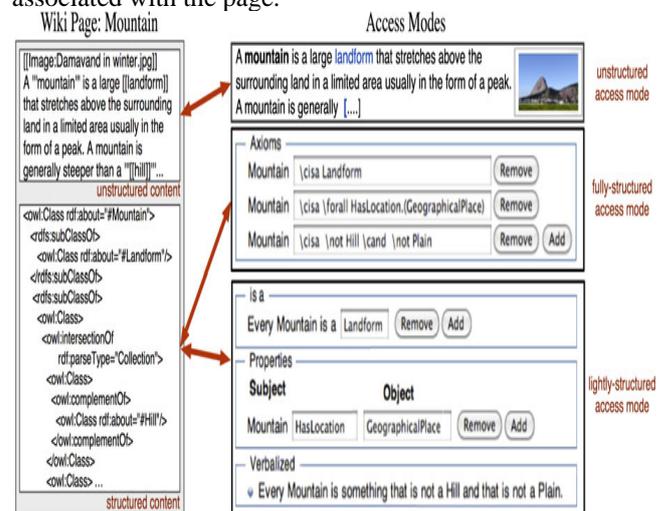

Figure 1: access mode

THE UNSTRUCTURED ACCESS MODE

In figure1, states that the access mode allows the user to edit/view the content of the unstructured part of the Moki page of an ontological entity

GOAL OF THE STUDY

- In this work investigate both at the theoretical and practical level, the powerful and knock of wiki features support collaborative ontology authoring.

- The practical evaluation performed with real DEs and KEs according to the methodology proposed.

- The aim of understanding more in detail whether wiki collaborative features are effective in making DEs more active in the authoring of ontology's supporting the collaboration during carving.

- This evaluation has been performed using moki, a wiki based ontology authoring tool employing several wiki collaborative features.

- For this purpose framework, recently proposed by Mendelian collaborative feature exploit as processed carving tool [9].

CONTEXT

The study involved 12 subjects (eight DEs and four KEs), Organized in four teams (TA, TB, TC and TD), each including two DEs and one KE [4]. In detail, the eight Des are pedagogists and psychologists employed in a publishing House8 specialized in educational books, while the four KEs are experts in knowledge engineering working at FBK. To match the background of the DEs, two domains from the pedagogical field were used for the experiment one related to two cognitive abilities, namely Attention and Concentration (AC)[10], and the other to motivational and emotional aspects of the learning process, namely. We remark here that our goal was not evaluating.

EXPERIMENT RESULTS

This result on one side highlights the support provided by wiki collaborative features in actively involving DEs in the (collaboratively) building of ontology's[4] on the other side, it encourages other collaborative non-wiki based tool to extend their functionalities adopting these simple but useful collaborative features. We plan to further investigate how the support provided by wiki authoring features can be improved for Specific interaction levels (e.g., decision making), as well as how users can be guided (e.g., by means of good practices) in the process of collaborative modeling so as to improve both the effectiveness is active collaboration and the resulting ontology[5].

COFACTORS ANALYSIS

Besides the level of use of the wiki collaborative functionalities [5], we also investigated other possible factors influencing the experiment results. In detail, we applied the ANOVA test [10] to analyze the influence of the laboratory, of the object (i.e., the domain to be formalized), as well as the
Experience of both DE and KE For each subject we analyzed the role-specific knowledge and experience (i.e.,

in the pedagogical domain and in formalizing ontology's, respectively), the technical experience (e.g., in using wiki pages and the latex2owl language, respectively), as well as the experience of working in teams and with KEs and DEs, Respectively on the number of produced axioms, on the total number of operations and on the number of switches among activity typologies. This can be explained with the increased experience of the teams in the second laboratory session. Nevertheless, we tried to limit the impact of such learning
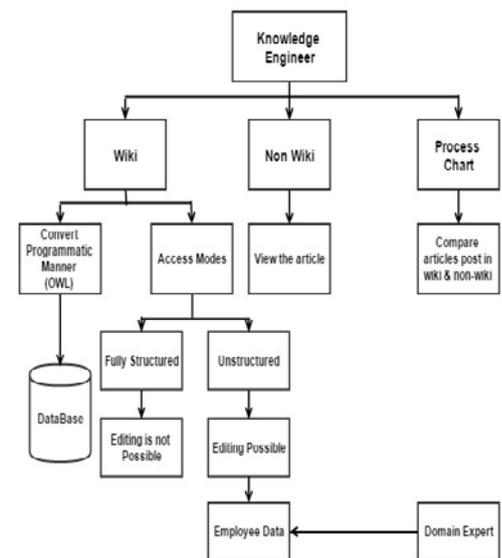
EXPERIMENT DESIGN:

Figure 2:Design

This figure 2 presents the design of the empirical study carried out to evaluate the support provided by the wiki collaborative features described to the process of ontology modeling. The study is conducted and reported according the methodology proposed by Wohlin for the evaluation of software engineering [10].

THREATS TO VALIDITY

We present the main threats to validity affecting the conducted study, grouped by category [10].Conclusion validity. Conclusion validity deals with the relation between the treatment and the outcome. In order to ensure such validity, since not all the preconditions required by parametric statistical tests held in our study, we used non-parametric tests (the Wilcoxon and Mann-Whitney tests) for our analysis of the main factor. ANOVA was instead used for the analysis of the cofactors. Though it is parametric and thus it would require the satisfaction of the requirements for the application of the parametric Statistical tests, it is a robust test and part of its results is also checked against the outcomes of the non-parametric Wilcoxon test. For the evaluation we chose to use both objective and subjective metrics. The first type, provides
a real and robust measurement of the performance of the two approaches. However, since our goal is to evaluate the support provided by the wiki collaborative features to the collaborative authoring [9], we believe that also the

subjective perception has to be taken into account. To this aim, we resorted to personal judgments about the effectiveness of the proposed features, their ease of use, their usefulness and, their support for each specific level of interaction. We used standard settings and scales to apply statistical tests to the collected data. Internal validity threats concern external factors that could affect the dependent variables. By performing an analysis of the possible cofactors (by means of ANOVA), we found that some of them have an influence on the dependent variables (e.g., the actual usage of the wiki collaborative features), as well as the laboratory session. Nevertheless, the adoption of the balanced design limited the influence of the laboratory on the obtained results. Construct validity. Construct validity concerns the relationship between theory and observation: possible threats, hence, mainly relate to the lack of (i) variable representativeness and (ii) measure reliability in the study operationalization. In our study, possible construct validity threats falling in the first group could be raised by the restrictions imposed by the need to guarantee reliable variable measures in both synchronous and asynchronous settings, while limiting invasiveness. Indeed, although in usual scenarios ontology modeling requires weeks of work and team modelers can remotely communicate through both written.

ADDITIONAL FINDINGS AND DISCUSSION

Besides the outcomes reported so far, the analysis of the collected data also provides additional interesting (though Non-statistically significant) findings, showing data trends, and further explaining the above results. The increase in the DEs authoring activities (RQ1) is also quantitatively confirmed [4] in detail, the percentage of activities related to the enrichment of the entities with axioms carried out by DEs (with respect to the total number of activities of the same type) increased from about 49 percent with NCM to 77 percent with CM. Such an increase in the authoring activity and in the amount of formalized knowledge carried out by DEs, is also confirmed at team level: the total number of axioms over all the axiom categories (AxTN) in the final NCM ontology is, on average, lower than the total number of axioms in the final CM ontology, though the number of editing operations follows the contrary pattern. In other terms, , while the number of axioms in the final ontology is on average 12.75 with NCM and 13.58 with CM, the average number of editing operations is higher for the NCM treatment: 24.75 with NCM versus 23.33 with CM. Although we did not perform a rigorous evaluation of the quality of the axioms, no big differences among them emerged from the manual verification performed. This result suggests that the operations carried out for the formalization with CM were more effective than those carried out with NCM. By better inspecting the log files of both NCM and CM, it comes out that the participation of DEs in the collaborative modeling with CM has not been limited to the axiomatization, but it also affected the renaming activities. In detail, the percentage of renaming carried out by DE was 25 percent with NCM and 81 percent with CM. A qualitative inspection at the collaborative modeling through the MoKi log files also reveals that, with CM, KEs did not use at all the unstructured editing as well as that they reduced the usage

of the structured editing and view. With respect to the NCM process, indeed, the number of operations for both structured editing and view is reduced of about one third. Moreover, an increase in the use of the lightly structured view by KEs can be observed. These results, on one side, confirm the role of the collaborative features [9].in in increasing the participation quantity and quality of DEs in the ontology construction (there is no need of refinements on entity descriptions by KEs with CM and a reduction of their effort in the axiomatization is observed); on the other side, the positive reaction of KEs to the use of the lightly-structured view can be mapped to the fact that, although the structured access mode provides them with the full expressive power, the lightly-structured view represents a useful means to get a global picture of the changes performed by DEs.
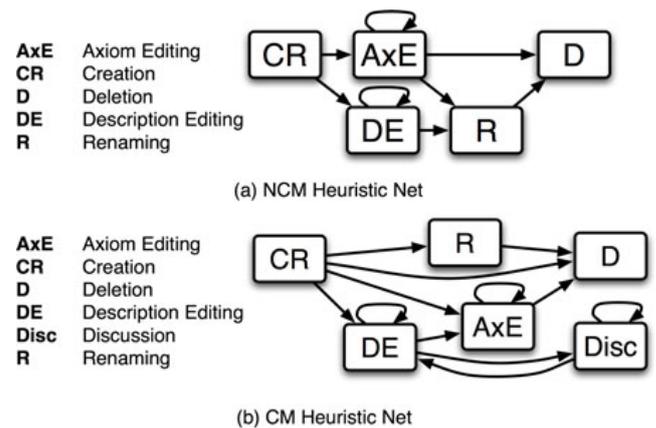

(a) NCM Heuristic Net

(b) CM Heuristic Net

Figure 3: heuristic net

Figure 3 states that decrease in terms of time spent in editing operations, however, does not imply a decrease in terms of ontology quality. , indeed, besides confirming the existence of a difference between the NCM and CM entity lifecycles (RQ5), also shows that the CM entities are overall built according to a process more structured than the one used for building NCM entities. In detail, the lifecycle of the entities built with NCM does not reveal the existence of any strict precedence relations between the description editing (DE) and the entity axiomatization (AxE), while, among the patterns characterizing the CM entity lifecycle, there exists one in which the entity creation (CR), is followed by a phase of description editing

(DE) and then by one of axiomatization (AxE), thus showing a gradual enrichment of the ontology entities first with the unstructured and then with the structured content. This result is not in contrast with the less rigid process of ontology construction characterizing the CM process (RQ4). In collaborative modeling settings,[2] it is reasonable that a structured entity editing process (as in case of CM entity lifecycle) is carried out in an environment in which team modelers are constantly aware of what other members of the team are doing and interact each other for collaboration purposes, i.e., in which modelers frequently interleave edit activities with view and interaction ones.

RELATED WORKS

To foster collaboration in ontology engineering were presented. [2] Presents a methodology and tool for collaborative ontology development.[1] introduces a

holistic approach to collaborative ontology development based on change management. In [3] a web based ontology editor (iCat) is applied to the collaborative revision and extension of version 11of the WHO International Classification of Diseases (ICD-11).Taking advantage of the wiki systems such as (e.g., semantic media wiki [10], Wiki [1],Onto wiki [7],Moki[8])were developed to support the collaborative authoring of structured content, including ontology's. To support Involvement of domain experts in ontology editing, one attempt were also made by exploiting controlled subsets of natural language (e.g., ROO [4], ACE Wiki [2]). For instance, in [4] and [3], the evaluation of the tools in supporting domain experts in the ontology authoring is done in non-collaborative settings. In [1], a preliminary analysis of the application of the proposed methodology and tool is reported. In [3], the iCat authors propose a work more in the flavor of empirical evaluation. They present a tool, iCat Analytics, for the exploration of the ontology engineering process. Further works analyze the collaborative aspects in ontology modeling. Schober et al. [12] describes an observation study with 13 users on the support provided by collaborative protégé to address requirements for collaborative ontology development. In [8], a set of indicators is proposed and applied to understand the social arrangements in community based ontology evaluation. Falconer et al. [9] investigate the implicit roles of authors in collaborative ontology modeling, and analyses the relationship between ontology changes and how users communicate. In this paper we substantially extend the work presented in [11] by providing a wider perspective of the findings and a finer-grained analysis of the support provided by the wiki collaborative features. We conclude by pointing out that, although the tools and approaches recalled at the beginning of this section may not exactly rely on the same wiki collaborative features that we considered in our work, the results and insights of the empirical and theoretical evaluation that we performed are relevant also for them, suggesting easy extensions for what concerns the collaboration support aspects.

CONCLUSION:

The rigorous theoretical analysis and empirical evaluation presented in this paper shows that wiki collaborative features for ontology authoring, by actively involving domain experts in the authoring process and supporting the interaction of modelers with other team members, effectively support and affect the process of collaborative ontology authoring, as well as the lifecycle of the built ontology entities. The result on one side highlights the support provided by wiki collaborative features in actively involving Des in building of ontology's on other side; it encourages other collaborative non-wiki based tool to extend their functionalities adopting these simple but useful collaborative features. The process of collaborative modeling so as to improve both the effective collaborative and the resulting ontology.

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