

Communities of Practice for Developers: HelpMe tool

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Abstract.

The term Web 2.0 focuses on: user, software development and content, which results from many users that share experiences and interests. Due to the fact that many people gather on web sites looking for a solution to their problem, communities of practice (CoPs) were developed. CoPs have become important places for people who seek and share experience. In CoPs area, Argumentative Collaboration is developing between users, so that users can help each other. This paper refers to CoPs and especially to the field that refers to computer programmers. We introduce HelpMe tool that receives questions about a subject that is tagged by the init (or start) user. The start user of a query process is the user that brings the initial question to the community. HelpMe tool automatically selects a group of people according to rules and metrics, in order to supply feedback to the community group who deals with the specific subject (according to label tagging). We introduce two new metrics ULQI (user label query importance) and ULCI (user label communication importance) that are responsible for selecting the appropriate group of people in the community and computing the reputation scores based on the received ratings. HelpMe tool visualizes conversations through graphs, text clouds and statistics.

Keywords: Collaboration, Web2.0, Communities of Practice (CoPs), argumentative collaboration, social media, recommender systems, expertise finding, forum, help, seeking, tools in CoPs

1 Introduction

1.1 Communities of Practice (CoPs)

Social media, wikis, blogs, forums are characteristic applications of web2.0, where interaction instructions such as search, tag, ranking, links and authoring enable users to refresh and modify articles. Web2.0 focuses on user actions, on software implementation, on content that is contribution result of many users. That is why the need of communities of practice, a gathering place of people with common interests, is created. CoPs have become important places for people that seek and

share experience and interests. CoPs are contribution places in which knowledge is offered to its members [8]. Basic characteristics of such a community are:

1. Interest field: in which all members of the community are bound.
2. The community itself: activities, meetings, exchange of views, mutual help among its members.
3. Practice: has to do with knowledge or skills obtained due to activities. “HelpMe” community tool provides dynamic creation of user groups, with common interests, whose target is to solve a problem.

Argumentation focuses on a particular kind of semantic structure for organizing elements. Of central interest, therefore, is the Web 2.0 emphasis away from predefined information organizing schemes, towards self-organized, community indexing (‘tagging’) of elements, resulting in so-called “folksonomies” that can be rendered as tag clouds and other visualizations. Persuading ‘normal people’ (in contrast to skilled information scientists or ontology engineers) to create structured, sometimes high quality, metadata was previously thought impossible, and the success and limits of this approach is now the subject of a new research field that studies collaborative tagging patterns, e.g. [7].

1.2 Problems

Due to CoPs, collaboration is developing through members whose goal is to support members as far as specific problems are concerned. In most of the cases, there is no obvious solution concerning a specific problem among different user opinions. First, we need to investigate the nature of information gathered by users. In CoPs, information is accumulated while time goes by. As a result of this, users often cannot follow the information through time. This is what is called *Information overload*. A second problem is that user info is widespread in many different places like emails, attached files, forums, wikis, social media etc. This is data interconnection. All these above mentioned problems *are* major to CoPs because intense effort is required in order to search and sort information and to find a user’s opinion about a subject through time.

Next paragraph demonstrates a few tools, the aim of which is to provide members of the communities the means to manage knowledge and work together in order to solve various issues. On this effort, some of the members evaluate questions and answers by using Web 2.0 characteristics while others do not. For example, reddit’s “down vote”, is not the same as a “Dislike”. Down vote, shows that a specific post does not deserve to be in the front page.

On the other hand, even tools with Web 2.0 characteristics, cannot get away from stack representation like forums we all know do. New ways of representation should be explored which will make it is easy for someone to: (a) visualize a conversation with the form of graph nodes or clouds or something else, (b) watch the conversation as it evolves or get involved in any stage (c) be able to find appropriate users that would like to get involved in a specific conversation.

1.3 The role of tools in CoPs

Tools in CoPs are very popular with everyone. Such tools are online asynchronous conversations (i.e. forums), user talks through video phones, chat rooms, on line conversations etc. These tools, help people find users to help them with their problem. This is what is called Expertise Finders. Expertise finders, or expertise location engines, are systems that help find others with the appropriate expertise to answer a question. These systems have been explored in a series of studies, including Streeter and Lochbaum [13], Krulwich and Burkey [11], McDonald and Ackerman [1] as well as the studies in Ackerman et al. [2]. Newer systems, which use a social network to help find people, have also been explored, most notably in Yenta [5], ReferralWeb [10], and most recently commercial systems from Tacit and Microsoft. These systems attempt to leverage the social network within an organization or community to help find the appropriate others. In reality, relatively few people will claim themselves as an expert, but many people agree that they have some measure of expertise in some area. These systems allow everyone to contribute as they can. Most current systems use modern information retrieval techniques to discover expertise from implicit or secondary electronic resources. A person's expertise is usually described as a term vector and is used later for matching expertise queries using standard IR techniques. The result usually is a list of related people with no intrinsic ranking order or ranks derived from term frequencies. It may reflect whether a person knows about a topic, but it is difficult to distinguish that person's relative expertise levels [2].

Due to argumentative collaboration, why do we keep using tools? The answer is simple: because users' needs cannot be covered by the use of only one tool. For example, a search engine does not take into consideration the experience of the user who submits the question and as a result, the received answers do not match the user's profile. In conclusion, we can say that communities of practice use these tools in order to solve the problem collectively.

1.4 Existing tools and Approaches in CoPs

1.4.1 CoPe_it!

In CoPe_it!, an incremental formalization approach facilitates the emergence of individual and loosely coupled resources into coherent knowledge structures and finally decisions. CoPe_it! is a Web-based tool to support argumentative collaboration (<http://copeit.cti.gr>) - attempts to bridge the aforementioned gap. In particular, CoPe_it! aims at reconsidering the notion of formality in argumentative collaboration systems. Within CoPe_it! formality is not considered a rigid property of the system, but rather an adaptable aspect of it. It builds on the assumption that argumentative collaboration environments are environments where understanding occurs through the emergence of the collaboration space. This emergence is characterized by small and incremental changes of the available items in the collaboration space that - although local in nature - when accumulated lead to global transformation of the collaboration space into something that is useful for the task at hand. In particular, CoPe_it! attempts to provide the framework to support the emergence of decisions in online collaborations. Within the CoPe_it! approach, the notion of emergence is conceived on two levels: emergence within a shared collaboration space where individual items are

transformed into prospective solutions and emergence between shared collaboration spaces where the collaboration is transformed into a decision. In CoPe_it! these two forms of emergence are considered as related as emergence between shared collaboration spaces is based on emergence within shared collaboration spaces [15].

1.4.2 Parmenides

Parmenides is designed to support web-based policy consultation with the public and incorporates a formal model of argumentation [11]. It provides a forms-based, questionnaire interface to elicit views from the user, populating an argumentation structure, which then reasons over to elicit further views. Parmenides enforces a particular argument ontology (it was not designed as a social web application) and does not appear to support any other Web 2.0 characteristics [3].

1.4.3 Cohere

Cohere [<http://cohereweb.net>], a web tool for social bookmarking, idea-linking, and argument visualization. It incorporates the Web 2.0 principles to create an environment called Cohere [cohereweb.net] which aims to be semantically and technically open, provide an engaging user experience and social network, but provide enough structure to support argument analysis and visualization. In here, connections are created through ideas [12].

1.4.4 Stackoverflow

Stackoverflow was created in 2008 by Atwood & Spolsky as an alternative view of a forum. Its basic characteristic is questions and answers given under a wide variety of subjects to the community of software developers. Users can ask, answer, vote and edit questions and answers like wiki or dig (social news website) style. Stackoverflow users, can earn reputation points and badges, depending on how other users judge them by the answers they have given. January 2012 stackoverflow has 1.000.000 enrolled users and there were more than 3.500.000 questions [16]. It is very well known that Stackoverflow is not just simply a revamp of a Q&A. It automatically suggests similar discussions and also, the community responses can be judged so that if a similar question was asked, the system can quickly get to the correct answer. HelpMe tool has also the ability to suggest similar discussions through labels.

1.4.5 Reddit

Reddit is a social news and entertainment website where registered users submit content in the form of either a link or a text ("self") post. Other users then vote the submission "up" or "down", which is used to rank the post and determine its position on the site's pages and front page. Content entries are organized by areas of interest called "subreddits". Reddit was founded by Steve Huffman and Alexis Ohanian. It was acquired by Condé Nast Publications in October 2006. In September 2011, Reddit was split from Condé Nast, and now operates as a subsidiary of Condé Nast's parent company, Advance Publications [17].

1.4.6 Summary table of the above mentioned tools according to Web 2.0 characteristics. Some basic Web 2.0 characteristics are examined here on the above mentioned tools, such as rating issues, user answers, karma, user reputation and comments.

- Rating issues: is the assessment of issues as listed by users of a community.
- Rating of user answers: is the evaluation of the responses as rated by the users.
- Rating of user evaluation: The answers provided by users, are evaluated by others. So, as time goes by, a user rating index is created according to the issues which it tackles.
- Karma or user reputation: Some tools like Reddit, encourage posts so that they don't show outside the community (i.e. self posts). Users are rated according to the self posts they make. Therefore a karma rating is created for the Links and another karma for user responses. Similarly, users of stackOverflow, make reputation, when doing specific actions in the community. Such actions are considered the re-tagging of queries or close a query.
- Comments: is the evaluation of the text answer given by users on a specific subject.

| | Rating issues | Rating of user answers | Rating of user evaluation | Karma or user reputation | Comments |
|-------------------------------|---------------|------------------------|---------------------------|--------------------------|----------|
| CopeIt! | YES | YES | NO | NO | YES |
| Parmenides | NO | NO | NO | NO | YES |
| Cohere | NO | NO | NO | NO | YES |
| Stackoverflow | YES | YES | YES | YES | YES |
| reddit | YES | YES | YES | YES | YES |

Table 1. comparison between CoPs tools

2 HelpMe Community tool

In this paper, we will introduce HelpMe which is a Web 2.0 tool that supports: (a) Users who want to find answers to their problem by finding other users of the community. (b) Labels (or tags) to characterize a conversation: The Labels become the key for the HelpMe tool in order to automatically suggest similar discussions. By clicking a tag, all similar conversations are displayed. (c) Visualization through node graph, tag clouds and statistic web pages. Node graphs can display the content tree of a conversation, user grades at any task etc. (d) Recording of conversations for future retrieval. All conversations are stored in a sql server database. (e) Evaluation system through metrics.

Anyone can be member of HelpMe tool through sending an email to helpme@westage.gr or login to http://150.140.15.114:8989/helpMe. It should be mentioned that HelpMe tool is constantly developing and therefore it is expectable that sometimes it is not functional due to upgrading procedures. It is obvious it is used for research purposes and it is currently at a preliminary development stage. It is not a commercial product ready to use and it is subject to further research and development.

2.1 A Scenario of HelpMe tool

A user seeks for a solution to his problem. He sends an email at helpme@westgate.gr and receives a link that leads him to a confirmation page. In this page he connects the initial question to an existing tag or set of tags, or creates a new tag (if no tag exists) to define the initial question. In this page, he also specifies the criteria or metrics that will be used by the system in order to find, in an automatic way, users capable of participating in a conversation whose goal is to find a solution to the initial question. These users will create an autonomous group in the community and may participate in as many conversations as the system decides. The conversation is represented as nodes to denote users and edges to denote an answer or like, dislike, Best Answer to an answer.

2.2 Start a new conversation

The HelpMe tool, receives a new query by the form of an email. Then, after user registration (if not registered), init user receives a link in his mailbox that sends him to the HelpMe confirmation page. In there, start user characterizes his question by using existing or new tags and specifies the way he wants HelpMe tool to find users, in order to answer his init question, so that a new conversation will start. At this stage, three main issues are considered:

- User initialization: the HelpMe tool is informed that a new user exists, so he/she may use HelpMe existing tags.
- Tag initialization: The HelpMe tool is informed that a new label exists, so it may be used by the existed users of the tool. In other words, all members of the community are initialized towards the new label.

User defines metrics association: Init user creates a relationship between ULQI and ULCI, in order for HelpMe tool to find users to start a conversation with him. ULQI is the average of all queries (questions) evaluated, concerning a user label. Query evaluation, concerns how community users rank the initial question. ULCI is the average of all answers evaluated, concerning a user label. Answer evaluation, concerns how community users rank the user label after the first stage of initial question. i.e the conversation that takes place between community users. Finally, init user may create his own model of choosing users to participate in his initial question, by using the score formula: $ULQI * perc1 + ULCI * perc2$. Score formula, is the resulting label score from the previous formula. It should be mentioned that, perc1 and perc2 are defined by init user and the sum should be 1 ($perc1+perc2=1$). For example, init user may give the formula $0.7*ULQI+0.3ULCI$, which means that he wants the system to find users whose average of questions evaluated, concerning the label stated by the initial user, is 70% more important in comparison with the average of all answers evaluated, concerning the same label, which is 30% less important to the init user.

The figure on the right, displays how the initial question is transformed into a conversation place.



Fig. 1. HelpMe expertise finder model

2.3 Messages received

When init user chooses the criteria in the confirmation page, a HelpMe tool function finds users that would like to participate and give answers by doing the following:

- Creating a dynamic query in such a way that users fulfill the criteria of the score formula.
- All selected users are recorded in database table. Every insert in that table fires a post insert trigger that sends a mail to the corresponding user.
- Then, the user node is created so that user may give an answer to a specific task of the conversation. This user node is stored in a database recursive structure that is explained in TheJit visualization section below.

Users chosen by HelpMe tool, receive an email that asks for their participation in order to solve the problem (i.e. label defines by init user at the confirmation page). HelpMe tool, records the users who receive the email and the corresponding link. The link creation is a very important procedure for HelpMe and gives the opportunity to any user who has received it, to participate at any time of the conversation. Important information that is carried through the link is the serial number of the conversation (i.e. Activity ID). Activity ID is created by an identity field in a database table, after HelpMe has received an email from init user. By knowing the Activity ID, HelpMe can display graphically all phases of the conversation (i.e. every phase is a TaskID).

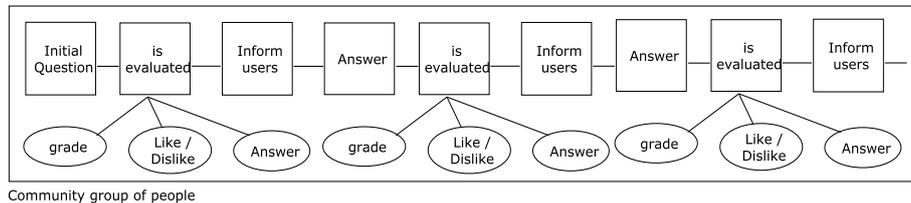


Fig. 2. Conversation model

A question is evaluated by the community users, see conversation model above, giving a grade or like dislike or text answer, that are related to the question through the tag that characterizes the question. The first user of the community that responds to a question (box Answer of the above figure), leads the discussion to the next level ($\text{TaskID} \leftarrow \text{TaskID} + 1$). Any user is free to evaluate any answer at any level of the conversation. The conversation never ends, just loses of interest at some time. Future work is to discover and exploit provenance of collective decisions of a conversation which took place at past time.

2.4 Visualization

2.4.1 TheJit

HelpMe represents users as nodes and answers as edges. This information is stored in a database table where a recursive structure is created between father node (field name: id) and children node (field name: children). In any step of the conversation

(taskID), the text answered, the grade given, Like / dislike / Best Answer, the average of the task, the average of the activity and the number of conversation views are saved in an appropriate database structure. HelpMe tool uses Javascript Infovis Toolkit (TheJit) to represent users (nodes) and answers (edges). Graph visualization is more flexible because it provides many different views to the community users such as content, user info and statistics like traffic at a node, label ranking, user ranking etc.



Fig. 3. TheJit visualization of user nodes: a user is displayed as a node with his id and email.

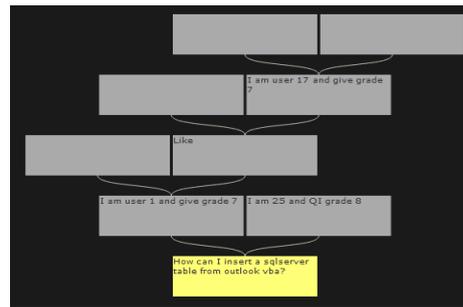


Fig. 4. TheJit Content visualization: Displays the answers given at all tasks. Blank means no answer.

2.4.2 Clouds

There are three types of clouds in the area of social software: (a) *Tag clouds*: when there is a tag for each frequency component, i.e. how many times a tag has been implemented on a particular element [4]. Tag clouds are usually represented by html elements. A tag may appear in alphabetical order, randomly or according to weights. (b) *Global tag clouds*: where info frequencies appear with accumulative manner against elements and users (c) The 3rd type of clouds contains sized categories that suggest the number of sub categories. [9]. Data clouds use color and size to denote arithmetic quantities. It is similar to the tag cloud, but instead of counting words, data appears as population. HelpMe tool uses Text clouds in order to represent the word frequency as a weighted list. In order to visualize the tags, appropriate structures exist. Every tag is saved separately and ranked. If we extend a text cloud, in a more focused perspective of text or corpus, we have a collocate cloud. So, collocate clouds contain the most frequent words combined with the search word.

2.4.3 Statistics

A user in HelpMe tool, can give a grade from 1 to 10 to a previous answer and write some text explaining the reasons of his grade as well as to justify his own opinion about the subject. Alternatively, he may like, dislike the previous answer. A like corresponds to grade 8 while a dislike corresponds to -1. Alternatively, if and only if he is the start users, he may give a BestAnswer which counts 10 points in HelpMe statistics. HelpMe tool, gives users the opportunity to display community queries: (a) In a descending/ascending order according to date and time (b) According to: views, likes, dislikes, best answer, ULQI, ULCI, label ranking, user ranking, traffic informa-

tion at any node (see figure: degrees of nodes). Each question takes the place of a row where is being displayed the ActvID, votes, answers, number of views, likes, dislikes, best answers, subject, label and init user. Statistics can be expanded on a specific user to see user questions, answers, labels used etc, or can be expanded on a specific label to see label ranking etc.

The screenshot shows the 'HelpMe Community Service' interface. On the left is a navigation menu with links: Questions(newest), Votes, Views, Likes, Dislikes, Best Answer, Start New, History, and About. The main content area is titled 'Questions' and displays a list of five questions. Each question row includes an ActvID, a 'cloud' icon, and a set of buttons for 'Votes', 'Answers', 'Views', 'Likes', 'Dislikes', and 'Best'. To the right of these buttons is the question text, its label, the date and time, and the user's email address.

| ActvID | cloud | Votes | Answers | Views | Likes | Dislikes | Best | Label | Date/Time | User |
|--------|-------|-------|---------|-------|-------|----------|------|---------------------------|---------------------|--------------------------|
| 292 | cloud | 9 | 1 | 1 | 1 | 0 | 0 | asp | Oct 25 2012 12:55PM | asimakop@westgate.gr |
| 291 | cloud | 24 | 3 | 7 | 2 | 0 | 0 | How can I call a asp code | Oct 16 2012 2:35PM | asimakop@westgate.gr |
| 290 | cloud | 22 | 4 | 10 | 1 | 0 | 0 | vbScript | Oct 16 2012 10:53AM | asimakop@ceid.upatras.gr |
| 289 | cloud | 31 | 4 | 10 | 1 | 0 | 0 | outlook vba | Oct 15 2012 6:34PM | asimakop@ceid.upatras.gr |
| 288 | cloud | 25 | 3 | 12 | 2 | 0 | 0 | vba import | Oct 9 2012 4:44PM | asimakop@upatras.gr |

Fig. 5. Statistics can display questions by label. By clicking each button, a specific page opens (i.e. Answers button, leads to a page that displays all conversation answers, label button leads to relative conversations, user button leads to community user involvement and so on.) By clicking ActvID, for example 290, the node graph opens. By clicking cloud, the tag cloud of the conversation opens

A conversation at HelpMe tool is a collection of messages concerning the same tags. That is why a search function was not implemented, because we interested in tag searching and relating and not in the searching of any other general terms of a conversation. HelpMe tool chooses users that would like to participate in the conversation using two metrics ULQI (user label query importance) and ULCI (user label communication importance) that will be defined later.

2.5 Workflow Algorithm

When a users in the community receives a link, by clicking it HelpMe tool makes a series of checks:

1. It checks if he is the first who gives an answer. It is easy to find if the is a TaskID greater than the current one for this conversation. The conversation, as mentioned previously, is represented by the Activity ID.
2. If there no greater TaskID for that ActvID, then he is the first who answers the question. In that case, $TaskID \leftarrow TaskID + 1$. The first users answers a previous question, assigns a new TaskID. On the same time he gives an answer or chooses between like, dislike or best answer.
3. If next TaskID exists, then someone else answered first. In that case, the TaskID do not change. Then he also gives an answer or chooses between like, dislike or best answer.

2.6 Workflow Procedure

A workflow procedure of a query stated by an initial user is presented at the figure on the bottom. The conversation with Activity ID 223 is first initiated by the start user (i.e. user1). He creates the first step of the conversation (TaskID=001) at 07/07/2011 18:30. The first user who responds to that question, is user3. User3 gives his own answer to the user1' label question, perhaps gives a good vote or likes the init question and then he takes the conversation to the next level (TaskID=002). The first user who answers at TaskID 002 is user7. User 7 has two options: to answer to the initial question of user1 or/and to answer to user2. By doing the first, the taskID will not change, while by doing the second one TaskID will become 003. It should be mentioned that he is able to do both options. Every user is able to evaluate a answer at any level (taskID). A conversation never ends it only loses its interest in time.

| Step | ActvID | TaskID | Mail From (out) | Mail To (in) | Answered to | Date |
|------|--------|--------|-----------------|--------------|-------------------|------------------|
| 1 | 223 | 001 | User1 | User3 | | 07/07/2011 18:30 |
| | 223 | 001 | | User6 | | 07/07/2011 18:30 |
| | 223 | 001 | | User7 | | 07/07/2011 18:30 |
| 2 | 223 | 002 | User3 | User1 | User1 (223-001-1) | 07/07/2011 19:90 |
| | 223 | 002 | | User6 | | 07/07/2011 19:90 |
| | 223 | 002 | | User7 | | 07/07/2011 19:90 |
| 3 | 223 | 003 | User7 | User1 | User1 (223-001-1) | 08/07/2011 10:15 |
| | 223 | 003 | | User3 | | 08/07/2011 10:15 |
| | 223 | 003 | | User6 | | 08/07/2011 10:15 |
| 4 | 223 | 004 | User6 | User1 | User7 (223-003-1) | 08/07/2011 13:31 |
| | 223 | 004 | | User3 | | 08/07/2011 13:31 |
| | 223 | 004 | | User7 | | 08/07/2011 13:31 |
| 5 | 223 | 005 | User3 | User1 | User6 (223-004-2) | 08/07/2011 14:40 |
| | 223 | 005 | | User6 | | 08/07/2011 14:40 |
| | 223 | 005 | | User7 | | 08/07/2011 14:40 |

Fig. 1. Workflow tasks of a conversation

In order for a conversation to get to the next level, someone needs to answer first to the question stated by the previous user. At any time, any other user may give his own answer but the taskID will not change. TaskID increases by one, only by the user that goes the conversation one step further.

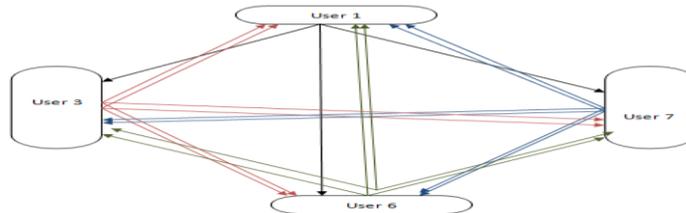


Fig. 2. Displays the traffic (answers) at any node. A node represents a user and directed edges represent traffic between users. So, at a glance, one may discover the active pairs of users

| User | graph node degree in (mail TO) | graph node degree out (mail FROM) |
|-------|--------------------------------|-----------------------------------|
| User1 | 6 | 3 |
| User3 | 5 | 6 |
| User6 | 5 | 6 |
| User7 | 5 | 6 |

Fig. 3. "Node in" is the number of times users replied to a user. For example, 6 users replied to user1. "Node out" is the number of times a user replied to a question. For example, user1 replied 3 times (to users: user3, user7, user6). These facts may help to build the profile of each user and are displayed in the statistics section.

2.7 Conclusions

HelpMe tool is an expertise finder that finds community users according to ULQI and ULCI metrics introduced here for the first time. The methodology behind the tool is expanding in 5 stages: (a) study of forum visualization so far (b) user needs about the content of a conversation in a forum (c) design of helpMe tool (d) implementation of the tool (e) testing and evaluation. Unfortunately, due to the page limitation is difficult to analyze the methodology in a separate chapter. It is a simple reputation system that computes and publishes reputation scores for a set of labels and users. The opinions are typically passed as ratings to the database and the tool uses a specific algorithm, using ULQI and ULCI to dynamically compute the reputation scores based on the received ratings. Two major things that make HelpMe tool to go beyond comparing to other tools is that (a) it uses content visualization of a conversation, rather than using stack representation like forums do and (b) uses two new metrics for expertise finding and computing the reputation scores based on the received ratings.

3 Future Work

Recommender systems or recommendation systems are a subclass of information filtering system that seek to predict the 'rating' or 'preference' that user would give to an item or social element (e.g. people) they had not yet considered, using a model built from the characteristics of an item (content-based approaches) or the user's social environment (collaborative filtering approaches) [6]. Collaborative filtering methods are based on collecting and analyzing a large amount of information on users' behaviors, activities or preferences and predicting what users will like based on their similarity to other users. Content-based filtering methods are based on information about and characteristics of the items that are going to be recommended. In other words, these algorithms try to recommend items that are similar to those that a user liked in the past. Approaches like collaborative filtering (e.g user rating, rank labels, user opinions, keep record of views of a conversation etc) or content-based filtering (like, dislike buttons) have been partially implemented at HelpMe tool. HelpMe tool can only recommend conversations through tags so far. Many times we need to remember the facts that guided us to a specific solution. Which were the facts that caused a team to get a decision in the past? Argumentative discussions assume the presence of at least two actors. In order to create a comprehensive view, it is important to know the actors and what are the means of the discussion. [14]. According to Groza et al.,[14] requirements of discovering and exploiting provenance is to provide a framework that consists of a model based on modularization, provenance information, identification and revision, support for domain knowledge, support for linguistic features and complementing argumentation with orthogonal models. Future work on HelpMe tool will include an analysis, our own model and implementation on how we can transpose the current model into a model that meet the above requirements.

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