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Expert Discovery and Interaction in Service-Oriented System

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ABSTRACT: Web-based collaborations and processes have become essential in today's business environments. Such processes typically span interactions between people and services across globally distributed companies. Web services and SOA are the de-facto technology to implement compositions of humans and services. The increasing complexity of compositions require adaptive and context-aware interaction models. To support complex interaction scenarios, we introduce a service-oriented system composed of both human and software-based services. Here people utilize their skills and capabilities as services over the web. However, finding the expert to get the service from service-oriented system is a very difficult task. For this we present a novel approach that is expert discovery by ExpertHITS algorithm which was introduced by DanialSchall. The algorithm is based on interactions between the experts. Trust between experts is a key factor for successful collaborations. Instead of following a security perspective on trust, we focus on dynamic trust in collaborative networks. Our project aims at discovering the right expert from service-oriented system and get qualitative service.

I. INTRODUCTION

Now a days in Business Environment, all firms used newly invented ideas and technology to sustained and become more powerful. In today's Business Environment the most important technologies used to reduce the complexity and increases the effectiveness is Web Collaboration and Processes. Due to use of this technology, we can easily provide interactions between people and services across globally distributed companies. Web and System service are the needed technology to implement compositions of humans and services. In the existing system, user unable to communicate at the time of need due to OFFLINE nature of the system. So there is a need of adaptive and context-aware interaction models to communicate effectively and make system more powerful. To support complex interaction scenarios, we introduce a mixed service-oriented system composed of both human-provided and software-based services interacting to perform joint activities or to solve emerging problems.

II. AIMS AND OBJECTIVES

The ultimate objective of the system is to increase the user satisfaction by providing the service 24x7 online and maintaining the trusted network between users and experts. This ultimately results in increasing the efficiency and flexibility of the system. This system also provides sufficient communication between globally distributed user and appropriate expert.

III. LITERATURE SURVEYED

Literature survey is carried out to gain information and knowledge. Before starting with the analysis and design of project, we referred many research papers, manuals, documents related to the concept of project.

Traditional approach of companies is to follow the process-centric model in which the process model may be composed



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of single tasks assigned to responsible persons, de- scribing the steps needed to produce a software module. After finishing a common requirements analysis, an engineer evaluates the re-usability of existing work, while a software architect designs the framework. Daniel identifies the drawbacks related to this approach. Flexibility in such composition models is limited since unexpected changes require remodeling of the process. Such changes may cause exceptions, disrupting the normal execution of the process. It is important to support adaptivity in collaborations and compositions. An important role toward adaptive processes is the ability to support the execution of ad hoc activities and flexibility in human interactions to react to unex- pected events. So there is a need of adaptive collaboration technique.

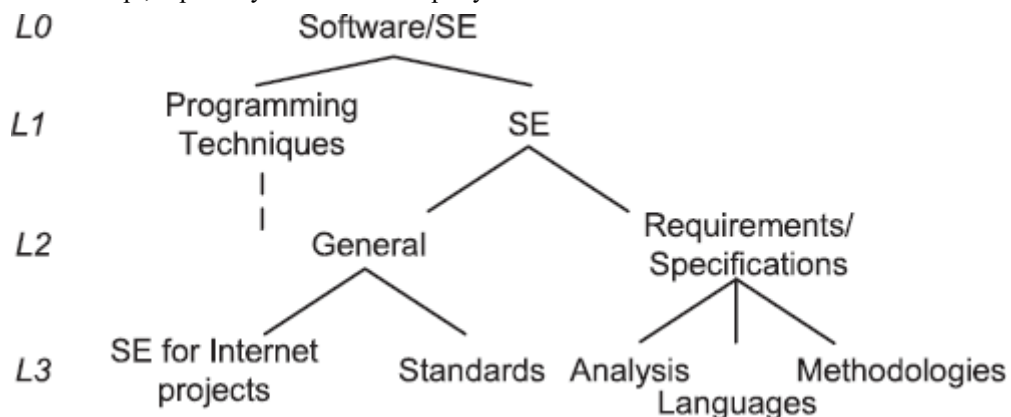
In virtual communities, where people dynamically interact to perform activities, reli- able and dependable behavior promotes the emergence of trust. As collaborations are increasingly performed online, supported by service-oriented technologies, such as com- munication, coordination and resource management services, interactions have become observable. By monitoring and analyzing interactions, trust can be automatically in- ferred. In contrast to manual rating approaches for mainly static communities, automatic inference is well suited for complex networks with short-running interactions between potentially thousands of rapidly changing network members.

Florian Skopik and SchahramDustdar also present the importance of trust factor in web-based collaboration technique. They thought that Trust and reputation mechanisms are keys to the success of open dynamic service-oriented environments. However, trust be- tween human and software services is emerging based on interactions. They distinguish between different kinds of trust relationships in a network of collaborating entities such as-

Direct Trust Relations These relations base on firsthand experiences and are inferred from the success and outcome of previous interactions between the trustor and the trustee.

Recommendations These relations, based on secondhand experiences, are inferred from the success and outcome of previous interactions between a well trusted entity and the trustee. This case is depicted in Figure 2.3.1(a), where the relation from a to b is derived by consider in the relations from a to c and from c to b, ultimately c recommends b to a.

Reputation is a concept where trust of the trustor to the trustee is completely inferred from third party relationships as depicted in Figure 1(b). By considering trust of d, e, and f in b, a may derive a notion of trust in b. Even though reputation is the most unreliable way to determine trust (compared to first-hand experiences or recommendations), it is nevertheless a useful concept, especially the more third-party relations to the trustee are considered.



Daniel Schall presents a lot of work on this topic. His paper entitled with Expert dis- covery and interaction in mixed service-oriented system acts as a base for the project. He introduces a term mixed service-oriented system which is composed of both humans and software based services and supports for flexible interaction. He presents a novel approach of discovering the right expert from expert web based on trust and reputation mechanisms. A context-sensitive trust-based algorithm called Expert HITS inspired by the concept of hubs and authorities in web-based environments is a basic idea behind the discovery process



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Existing System

The process model may be composed of single tasks assigned to responsible persons, describing the steps needed to produce a software module. After finishing a common requirements analysis, an engineer evaluates the re-usability of existing work, while a software architect designs the framework. Existing approaches in personalized expertise mining algorithm typically perform offline interaction analysis.

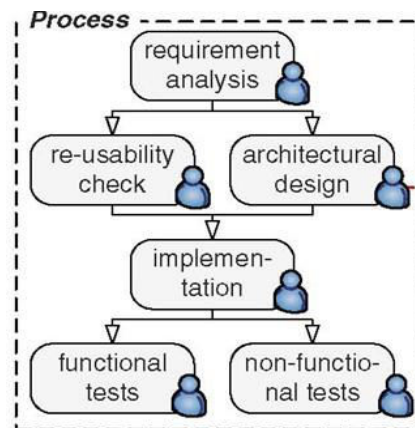


Figure 3.1 Process Model

The process model may be composed of single tasks assigned to responsible persons, describing the steps needed to produce a software module. After finishing a common requirements analysis, an engineer evaluates the reusability of existing work, while a software architect designs the framework. The implementation task is carried out by a software developer; and two software testers evaluate the prototype implementation with respect to functional properties and nonfunctional properties. We assume that the task owners in this process exchange only electronic files and interact by using communication tools.

Problem in Existing System

1. The major problem of this system is, it works OFFLINE.
2. The best Expert from number of Experts are not assign in this system because we cannot calculate HITS ONLINE.

Problem statement

Develop a platform where globally distributed users and appropriate experts easily communicate with each other, due to this user has to guaranty to get perfect solution of the query. The appropriate experts are decided on the basis of skill about topic by using HITS algorithm.



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Motivation

We got the idea to do this project, as most of the existing system available works offline due to this user unable to connect with the system at the time of need .So due the offline nature of system users not fully satisfied with the existing system.. So there is a need of adaptive and context-aware interaction models to communicate effectively and make system more powerful. To support complex interaction scenarios, we introduce a mixed service-oriented system composed of both human-provided and software-based services interacting to perform joint activities or to solve emerging problems.

IV. PROPOSED SYSTEM

In our System we will detail the basic concept enabling the discovery of experts. The basic idea of our system is the query containing set of relevant skills according to that we provide experts to satisfy demanding skill based on relevant skills. If we found the two experts having same skill they must able to delegate the query among them if any of the one is not able to answer because our system aim is not only to find appropriate experts but also effective and trust communication among the experts.

Skill Model

In our system we specify software as a domain, this domain is small and simple so we require simple model and there is no need complex and advanced model due to the limited specified domain. In our system we used weighing model for giving weights to the experts. Example of how to specify Expert skill profile

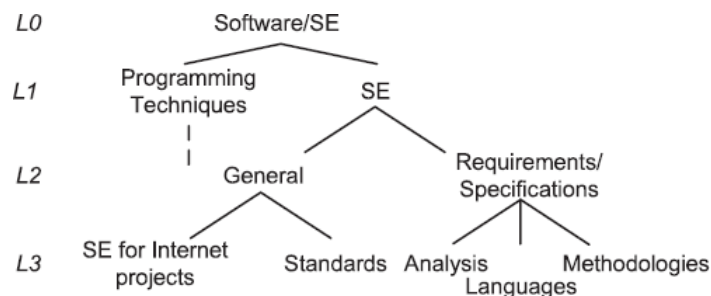


Figure 4.1 Software Engineering Domain Example

In the above figure the domain specified by the system is Software Engineering. In our system we generate topic tree. The basic idea of our approach is to define different weights for each level in tree. The top most level in the tree i.e. root node in the tree has the lowest weight. Since top level in the tree denote broad area of expertise. The weigh increases depending on the tree depth because lower level contains fine grained area or skills and expertise information.increases depending on the tree depth because lower level contains fine grained area or skills and expertise information.

Trust Emergence

In the existing system the rating and ranking of the expert are not consider immediately after getting the answer from expert. Due to this the existing system is not flexible enough to satisfy users requirements. In proposed system, the expert rank is immediately updated in the expert profile. Due to this the system becomes Dynamic and more flexible to satisfy users requirement. Because of the dynamic nature it helps in the global communication



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V. CONCLUSION

Unlike traditional models found in process-centric environments, we proposed the combination of preplanned process steps and ad-hoc activities to solve emergent problems in distributed collaboration environments. Our approach is based on the Human-Provided Services concept enabling knowledge workers to offer their skills and expertise in service-oriented systems. Expert discovery is greatly influenced by (behavioral) trust and reputation mechanisms. We demonstrated a novel approach for estimating expert reputation based on link structure and trust relations. Trust information is periodically updated to capture dynamically changing interaction preferences and trust relations. We have shown that ExpertHITS can be computed in an online manner, thereby enabling full personalization at runtime. Existing approaches in personalized expertise mining algorithm typically perform offline interaction analysis. Our empirical evaluations have shown that ExpertHITS exhibits the desired properties; trust and rating weights influence hub- and authority scores. These properties ensure that our algorithm discovers experts which are well-connected to other experts.

VI. FUTURE WORK

In Future work, we are trying to get the feedback from the user so that the expert is able to know the user is satisfied with answer or not. Secondly we work the auto delegation process if the expert is not giving the answer within 4-5 day's the query should be auto delegated to the another appropriate expert.

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