TaskNavigator – Supporting Agile Workflows in Collaborative Knowledge Work

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ABSTRACT

Knowledge-intensive activities like R&D or consulting are distinguished by their creativity, agility, intensive knowledge exchange and high degree of communication between process participants. The output of such activities are often not only ultimate artifacts like documents, computer systems or satisfied customers but also reusable process knowledge created or collected during the the task solving. In order to support knowledge intensive work, new tools has to be created that are capable of agile task management, bottom-up process know-how reuse, proactive information delivery and intelligent context-aware collaboration support. This paper presents the TaskNavigator system supporting both individual and group knowledge work. The system is being developed jointly by German Research Center for Artificial Intelligence and Ricoh and currently, it is in the phase of the research prototype.

Categories and Subject Descriptors

H.4 [**Information Systems Applications**]: Miscellaneous

General Terms

Collaborative knowledge work, agile workflows, task reuse

1. INTRODUCTION

Knowledge-intensive tasks and activities are those that deal extensively with acquisition, creation, packaging and application of knowledge in manifold forms. These tasks can not be accomplished automatically by a workflow management system, need human intervention and creativity, communication between people. The result and flow of knowledge-intensive processes is not always predictable and is difficult to model in advance. Typical examples of knowledge-intensive processes are scientific research, software development, or consulting activities. The participants of the agile

knowledge-intensive processes often need to interrupt their work and to perform information search in order to make the right decision, to find a solution made by others in similar situation or to find documents related to the current task. A special case of information aqcuisition is asking competent colleagues for information directly or via e-mail. This increases activity lag time and slows down the enterprise-wide process enactment. Another issue of manual information search is that necessary information is likely to be overlooked because of the large and insufficiently organized amount of information available in the enterprise and in the web (information overload).

2. ADVANCED TASK MANAGEMENT WITH TASKNAVIGATOR

The TaskNavigator system is a web-based working environment that allows users to keep track of their tasks in form of hierarchical break-down structures. Unlike conventional task management systems, TaskNavigator provides means for task-centred document organisation, so that all task-related information can be associated with the task and become directly available when a user chooses to work with the task. In order to overcome issues discovered in the section 1, namely: difficulty to model knowledge-intensive processes, necessity to find right information quickly in the right moment, distracting colleagues from their work for getting information, the system implements the following solutions:

1. In order to automate task-specific information search, TaskNavigator integrates the state-of-the-art document search and categorization system BrainFiler (http://www.brainbot.com). BrainFiler indexes various different information sources like corporate wikis and blogs, corporate documents, business-related documents, electronic journals, case bases etc., acting as a central access point to the enterprise information. TaskNavigator automatically creates keyword-based queries from the textual descriptions of the user's currently selected task, sends these queries to BrainFiler and delivers task-related document proactively (push-like).

2. In addition to proactivly suggesting documents, TaskNavigator also searches for similar tasks using BrainFiler's text similarity functions, and presents these similar tasks together with their former decomposition into
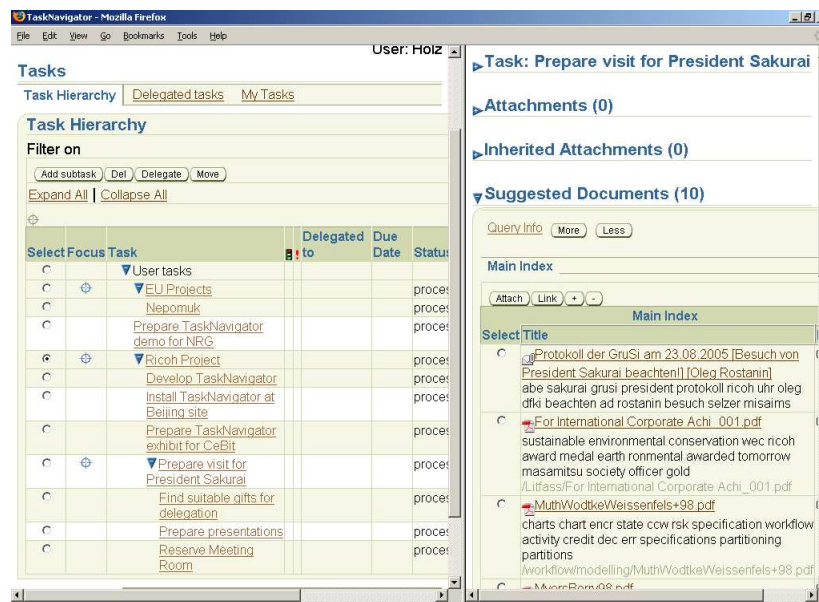
Figure 1: Similar Task Reuse in TaskNavigator

subtasks to the user. Users can reuse their colleagues' process know-how by requesting TaskNavigator to create corresponding copies of retrieved subtasks as subtasks of their current task (see Fig. 1). Although complete modelling of agile processes is not possible, TaskNavigator allows users to create process types - lightweight activity models describing general steps for performing typical activities.

3. KNOWLEDGE INTENSIVE COLLABO- RATION SUPPORT IN TASKNAVIGATOR

Since a lot of collaboration happens during the knowledge intensive work, the TaskNavigator system supports following aspekts of team collaboration:

Agile project management via task delegation: Among TaskNavigator users, tasks can be delegated each other, together with their subtasks and attached documents. Automatic email notifications are sent to delegatees who also find the delegated task on their task lists. TaskNavigator allows delegatees to either accept or reject a delegated task; in either case, the delegator is informed automatically via email and can track the tasks current state on his list of delegated tasks.

Virtual project space: TaskNavigator integrates a wiki plattform as virtual project space (VPS) for team members collaboration. The VPS serves as the entry point to the project related data, like user blogs, memos, interview minutes. By introducing specific wiki pluigins, the VPS can be used to support project document creation and review process. During the document creation in wiki, the author is supported by proactive information delivery functionality of the TaskNavigator.

Task-related discussions: TaskNavigator provides a functionality to semi-automatically create task-specific wiki pages in the integrated wiki collaboration plattform. The users use these wiki pages as a task scratch pads as well as a place for task-related discussions with other collagues.

Transparent process knowledge exchange: The distinguishing feature of TaskNavigator is a implicit knowledge exchange between system users. The process knowledge is captured by the system during the user's work with break-down task structures. This process knowledge is delivered by TaskNavigator to other team members if they have to cope with similar tasks. The documents added by system users to the central document repository are available directly to the others. Using the common document basis, the team members reach the shared understanding of the problems.

4. CONCLUSIONS

This work presents a novel intelligent task management system TaskNavigator aimed at supporting teams of knowledge workers. Although the system is also efficient in supporting individual knowledge workers, its full power is reached in distributed environments with many collaborating team members, exchanging their knowledge and contributing to the shared knowledge and information bases.