Web-Based System for Supporting Participation in International Conferences

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Abstract. To participate in an international conference, we must complete a series of tasks in accordance with the conference schedule. However, graduate students and researchers who have little or no experience of international conferences often have many difficulties in doing this. We propose a system to support their participation in international conferences. Our proposed system combines three functionalities, knowledge management, workflow management, and schedule management, and it takes advantages of several Web services. Our system associates knowledge, which is composed from the results and deliverables of performed tasks and related know-how, email messages sent by users, and their Web-search histories, with the tasks of conference workflows. In addition, when a workflow is created, the system adds important dates of the conference to the user's Web calendar. We built a prototype system and confirmed that it works properly.

Keywords: International conference, Participation support, Web, Knowledge sharing, Workflow.

1 Introduction

To participate in an international conference for presenting research and examining the latest research findings, participants must complete a series of tasks in accordance with the conference schedule. For example, they have to prepare and submit their paper by the deadline, make airline and hotel reservations, etc. They also receive many comments on their paper from teachers or co-authors and revise it accordingly. This means several people are involved in these tasks.

However, graduate students and researchers who have little or no experience of participating in international conferences often do not know how to fill out a paper submission form and what and when to perform, etc. In addition, if it is their first trip overseas for an international conference, they have the added responsibility of trip preparation as well as paper or presentation preparation. In such cases, they collect information by reading books, searching the Web, or asking someone questions. Through experience, we acquire a large amount of knowledge, such as documents including deliverables and know-how, about participating in an international conference. However, today, most of this knowledge is an individual's

J.D. Velásquez et al. (Eds.): KES 2009, Part II, LNAI 5712, pp. 631–638, 2009.

personal knowledge. Sharing it among the members of a research group or laboratory can help researchers and graduate students, especially who have little or no experience of international conferences, participate in these conferences.

We propose a knowledge sharing system to support graduate students and researchers who have little or no experience of international conferences by combining three functionalities, knowledge management, workflow management, and schedule management.

2 Related Work

Recently, a number of systems to help researchers participate in international conferences have been put on the Web [1][2]. They collect conference information from mailing lists or the Web and track updates; therefore, they support researchers in finding and catching up on conference information. There are also many books and Websites explaining a series of tasks and the typical schedule of conferences [3][4]. However, these systems and books do not provide an environment for continuously collecting knowledge about conference participation.

A great number of systems, such as Wikis (Wiki Wiki Web) and others using different information sharing platforms, have been developed [5][6]. They are useful for collaboratively building knowledge. However, to participate in an international conference, participants have to complete a series of unique tasks in accordance with the conference schedule. That is why existing information sharing systems are inadequate for supporting participation in an international conference.

Several studies have been made on work process-oriented knowledge management to support the reuse and sharing of processing know-how [6][7][8]. Their systems link the know-how to workflow activities or tasks. As mentioned above, participants usually ask the association or coordinator about the conference, paper submissions, etc. via email. They also search the Web to acquire necessary information. It might be helpful to share sent email messages and Web-search process or used keywords on the tasks necessary for conference participation.

The number of people who are using Web calendar services has been increasing. For example, Google Calendar and Yahoo! Calendar. They mainly use them to manage their to-do lists or schedule. Therefore, we designed our system by taking such services into account.

3 Our Proposed System

3.1 Analysis of Workflow to Participate in an International Conference

In this section, we discuss the process of participating in an international conference. There are two types of tasks that participants have to complete to participate in an international conference. One is related to presentations and the other is related to attendance. The latter type of tasks has to be performed whether or not you make a presentation. These two types of tasks are performed through much the same process [4].

We analyzed our experience based on the points mentioned above. As a result, we recognized the following characteristics of workflow for participating in an international conference:

- The tasks related to attendance include conference registration, arrangement and preparation of the trip, and office procedure at one's organization.
- Different tasks are needed according to researchers' affiliations, positions, etc.
- There are various roles, such as first author and second author.
- Multiple workflow can be in process at the same time.

3.2 Outline of Our System

Figure 1 shows the outline of our proposed system.

The system consists of a database, which stores knowledge, workflow information, conference information and user information, and three management functions to associate the knowledge and information with each other. In addition, it uses Web services such as an email server, Web calendar, and Web search engine. The outline of the functionalities is as follows:

Knowledge Management Function. This function associates knowledge and workflow information with each other and provides knowledge according to users' affiliations or their research groups. It also manages email messages sent by users and their Web-search history as knowledge.

Workflow Management Function. This function creates a workflow (a workflow instance to be more precise), by combining common and additional processes. These two types of processes will be explained in a later section. It changes

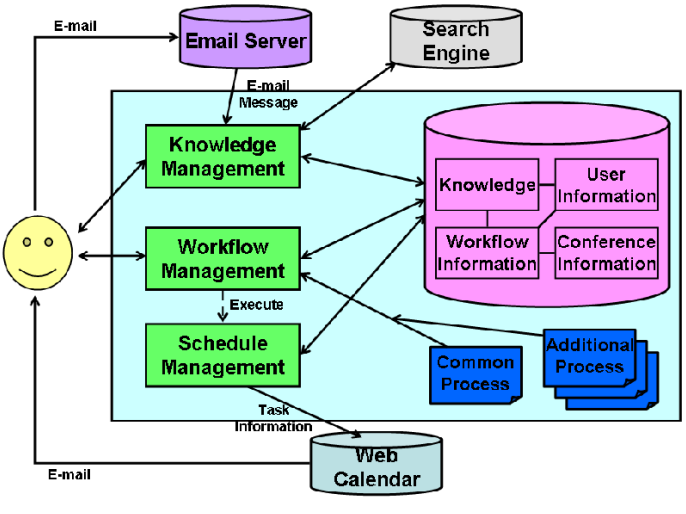

Fig. 1. Outline of our system

the status of the workflow when users input the results of performed tasks, for example a submitted paper or flight schedule, into our system.

Schedule Management Function. This function adds events and tasks to a user's daily Web calendar when he/she starts a workflow. To do this, it uses the conference information stored in the database.

3.3 How to Manage Knowledge

Our system manages the results and deliverables of performed tasks and related know-how, email messages sent by users, and their Web-search histories. The results and deliverables contain documents such as submitted papers, flight schedules, and presentation slides and they are created by completing each of the tasks. In our system, they are inputted on the form corresponding to each task. For example, the system provides the input form for a submitted paper. The know-how is stored by attaching it to a task. It might contain document files and URLs that are useful for successfully completing the task.

As mentioned in the previous section, email messages asking the association or coordinator of a conference, hotel, etc. are worth sharing among users. In our system, when a user sends an email to the system as well as a conference or hotel in his/her usual manner, the system receives the message from the email server, which is Web based, and makes the message available for all users. The message is associated to the workflow of the conference of which the user is going to participate in accordance with the day when it was sent. In addition, because Web-search processes or used keywords for acquiring information related to performed tasks are useful as well, our system manages used search keywords as Web-search histories. Like email messages, the keywords are associated with the workflow using the day when they were used.

3.4 Management of Workflow and Schedule

While a series of tasks for participating in an international conference is performed through much the same process, different tasks are needed according to researchers' affiliations, positions, etc. In our system, therefore, two types of processes are defined. One is common process and the other is additional process. While the former is used regardless of the users' affiliations or positions, the latter depends on them. The system creates a workflow by combining these two processes based on user information. In doing that, conference information is also used to associate the workflow with the corresponding international conference. The system provides the status of the workflow visually based on the conference schedule. The status is changed when users input the results of performed tasks in the manner explained above. In addition, when a user creates a new workflow, our system adds important dates of the conference, such as deadlines for submission and early registration, on his/her Web calendar, which we assume is used daily. By doing this, the system sets notifications by email using the reminder function of the calendar. This is because

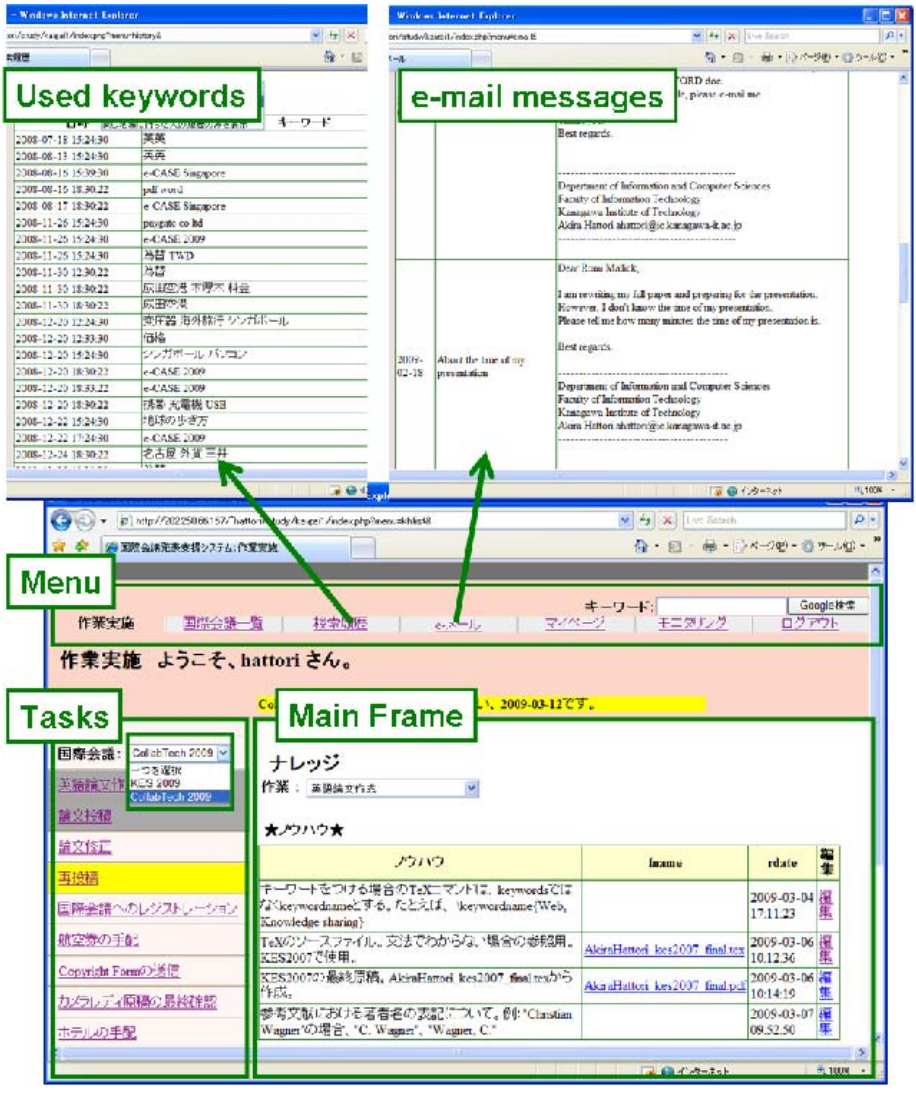

Fig. 2. User interface of our prototype

graduate students and researchers who have little or no experience of international conferences often do not know what and when to perform.

3.5 Prototype System

We developed a prototype of our proposed system. We used Yahoo!Mail, Google Web search, and Google Calendar as the email server, Web search engine, and Web calendar, respectively.

Figure 2 depicts the user interface of the prototype. It largely consists of a menu, a list of tasks, and a main frame. The tasks in the list correspond to the user-selected conference, which is the workflow. They are presented in accordance with the status of the workflow and the conference schedule. When users click a task on the list, the corresponding input form, knowledge related to the task, and a link to a form to attach know-how to the task. The link opens the form like Fig. 3.

Users receive email messages and Web-search histories, which are used keywords, by clicking the item on the menu. This enables our system to access the email server. The menu also contains a Web-search box, in which they can search the Web by inputting keywords. Then the keywords are added to the database as knowledge.

Besides the list of tasks, users can also see the status of the workflow along with the conference schedule in the main frame by clicking that item on the menu. If a user is a second author of a paper, he/she will be given a button to input what he/she has commented about the paper (see Fig. 4).

Fig. 3. Form to attach know-how

Fig. 4. Status of workflow

4 Discussion

In this section, we discuss the advantages of our proposed system and some improvements that should be made.

First of all, we will take up common situations in the process of paticipating in an international conference. In preparing a paper for an international conference, we often see one that we submitted to the previous conference. The purpose is, for example, to understand how to format the paper. Also, we frequently see a prepared document to complete the same task before. For example, the time when we describe the changes that we have made to satisfy the requirements of the reviewers, etc. Existing process-oriented knowledge management systems only link know-how and documents to workflow activities. Unlike them, our system not only links them to workflow activities, but also organize them by international conferences, that is workflow instances. Therefore, our system is more suitable for the situations than the existing systems.

In addition, when the official language of an international conference is different from the users' native languages, it is important to be able to share input

examples of various forms such as registration, inquiry email messages, and keywords used to find information related to performed tasks on a Web search engine, especially for researchers who have little or no experience in conferences. The existing systems manage know-how and documents, but they do not do email messages and Web-search histories. Thus, they are not inadequate for supporting participation in international conferences. On the contrast, our system makes it possible to share all of them.

Moreover, our system adds important dates of an international conference on a user's Web calendar when the workflow of the conferenct is created. As a consequence, the user can always see the dates. In addition, we made active use of the functionality of the calendar to implement our system. This made it possible for us to easily incorporate the reminder function into the system. Without this functionality, the system has to properly manage the settings for notifications and send emails to users at the right time, which is not easy to do. Therefore, there are benefits of using existing calendar services in our system.

We believe records for successfully performing the tasks, for example, the date when a user started a task, are also useful as task-related knowledge. However, our system does not provide the function for sharing such knowledge; therefore, we need to incorporate such a recording function into the system. In addition, it is also necessary to improve the management for sent email messages and used Web-search keywords. Our prototype associates them with the workflows of the conferences in which users are going to participate, but it stores them only in the order in which they were used. If they are associated with tasks based on the conference schedule and the date when they were used, they should be more useful. In that case, used keywords will help users with Web search as the navigation.

By the way, knowledge in our system is composed from the results and deliverables of performed tasks and related know-how, email messages sent by users, and their Web-search histories. However, they are not mutually associated. To make our system more useful, we need to add mechanisms to show the associations.

5 Conclusions

We proposed a system to support graduate students and researchers who have little or no experience of international conferences. Our system combines three functions, knowledge management, workflow, and scheduling. We built a prototype by making effective use of several Web services, and confirmed it works properly.

Future work includes the improvement of the function to manage knowledge. In addition, it is necessary to appropriately deal with different processes among conferences or schedule changes, such as deadline extension. Moreover, we need to carry out quantitative evaluation of our system based on a broad implementation test.

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