

Integrating Interpersonal Space and Shared Workspace for Translation Groupware Development

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ABSTRACT

Translation is a process that allows people to learn and comprehend others' ideas or cultures in their own language. A translation groupware, that allows two or more human translators to edit the output of machine translation at different times and different places, is developed in order to overcome the limitation of human translators and machine translation. However, translation groupware still not widely adopted by current human translators and the effectiveness is not known. An understanding of how multiple translators work and interact within a group is vital to develop a usable groupware. It is hypothesized that collaborative awareness can improve the translation groupware usability. Collaborative awareness components, such as interpersonal space and shared workspace, are identified as important characteristics to enhance the usability of translation groupware.

Categories and Subject Descriptors

H.5.3. Information interfaces and presentation (e.g., HCI): Group and Organization Interfaces – computer-supported cooperative work.

General Terms

Design, Human Factors, Languages.

Keywords

Translation groupware, collaborative awareness, interpersonal space, shared workspace.

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1. INTRODUCTION

Nearly 7,000 different languages are used in the world [12]. Translation is a process that allows people to learn and comprehend others' ideas or cultures in their own language. People can easily get various translated documentations ranging from religious text (such as Al-Quran and Bible) to technical reports (like training manual and contract). Such knowledge sharing would bring major advancement on society and the economy. However, human translators may not able to deliver translation services for large volume documents within short period of time and current machine translation systems were not able to produce high quality output as a human translator [15, 23].

As a result, various computer-aided translation tools were developed, namely terminology database, translation memory, and translation groupware. Recent surveys revealed that professional translators extensively used terminology database especially online dictionary to assist their works and only a small number of translators used translation memory and translation groupware [3, 13].

2. TRANSLATION GROUPWARE

Translation groupware refers to a computer application that allows two or more remote users to collaborate and edit the output of machine translation [6, 27]. Sometimes, it is also called as collaborative translation system [8]. There are several translation groupware available for human translators such as Yakushite.net, TRANSBey and Worldwide Lexicon Project.

2.1 Related Groupware

Yakushite.net is a web-based collaborative translation environment that allows expert users in particular subjects to collaborate in improving the specialized dictionaries for online machine translation, and thus resulting dictionaries with higher accuracy [18]. Beside the basic functions such as translation, post-editing, and dictionary management, Yakushite.net also has

community management, bulletin board system, question and answer (Q&A).

TRANSBey is an online collaborative translation environment that facilitates the management of documents and linguistic reference resources [2]. The system helped online volunteer translators to produce a quick translation with high quality in different languages. The Worldwide Lexicon is an experimental project to translate websites, blogs and real-time conversations easy and accurate, using a combination of human and machine translation. This project was created by Brian McConnell. Worldwide lexicon can be accessed online at <http://www.worldwidexicon.org/>

The adoption of these translation groupware is still relatively low among human translators [13] because these groupware were not developed on the basis of human translator needs, instead the development is often driven by technical requirements. Developers are more likely to design a system that required human translators to adapt themselves to the limitation of groupware functionalities. In other words, there is inadequate understanding of how human translators work and interact in a group.

2.2 Translation Team Scenario

[21] suggested that in a typical translation team scenario (see Figure 1), translator A translates the first half while translator B translates the second half. Then both translators exchange their original and translated documents to each other for further editing. Later, each translator makes changes based on the other's suggestions. In this scenario, the translator A and B can collaborate at different places and different times. They may meet up at the same time and same place if required. The output of their collaboration is further checked by a third person before it is delivered to the client.

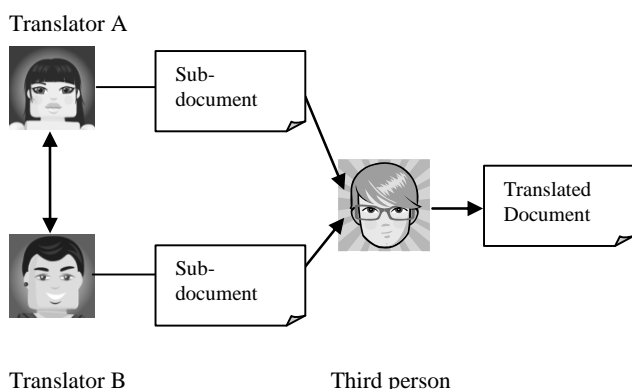


Figure 1. Horizontal division model (adapted from [24]).

This scenario is also referred as horizontal division model [24]. This model suggested that a team divides a large document into discrete units and each translator is responsible for a particular section of a document (see Figure 1). Thus, the translation work can be carried out in parallel and the final translated document can be delivered efficiently. The first cycle of horizontal division

involved the translators to prepare a translation draft of sub-document. The second cycle of horizontal division required the translators to review others work. A third person would compile both translators work and make sure the translated document is completed.

Based on the given scenario, a translation groupware should be designed to support the process of collaboration for a translation team. Thus, usability is an important characteristic in groupware development because the results of usability evaluation can show whether the intended users are able to perform a task effectively, efficiently and satisfactorily [20, 26]. The literature also showed that remote collaborators found it hard to work together using the groupware due to constraints of technology, unusable interface design, and poor integration with conventional software [7, 28]. Many researchers had demonstrated awareness as one of the important components to enhance the groupware usability [1, 17].

2.3 Awareness

Awareness means knowing who is around, what activities are occurring, and who is talking with whom. In face-to-face collaboration, awareness involves being aware of collaborators, their activities, object of discussion, shared tools, social communication norms, and task distribution. Collaborators take it for granted because they know the process too well as they do it every day [14]. They are able to align and integrate their activities because they are in a material environment which is infinitely rich in cues [22].

However, when remote collaborators use a groupware, their awareness of collaborative work is limited to the information represented by the groupware technology. In this case, the groupware acts as a solid wall between remote collaborators [11]. Many of the normal cues and information sources that collaborators use to maintain awareness are gone [14] and they become socially blind [11]. Therefore, a groupware should be designed as a window between remote collaborators, making the collaborative work more visible. The visual (and audio) representation provided by the groupware can affect the collaborators' awareness.

For example, if a groupware supports video images only, then remote collaborators are aware of other facial expressions and their activities. If a graphical workspace is added to the same groupware, then remote collaborators are aware of their object of discussion. The problem arises when a groupware supports normal cues partially; in this context, the remote collaborators find it difficult to understand the on-going collaborative work situation. As a result, they have to change their work or social norms and ask their remote collaborators for explicit information in order to maintain awareness.

[16] revealed that the basic components of collaborative awareness, such as interpersonal space and shared workspace, play significant role in groupware design. If groupware supported interpersonal space component only, the remote collaborators committed more task errors. If groupware supported shared workspace component alone, then remote collaborators felt uncomfortable because they could not communicate with each other. When both components were included in the groupware, remote collaborators were able to perform the task effectively and were satisfied in the collaborative work. Their findings also

showed that these components were frequently acquired during real-time collaboration.

3. COLLABORATIVE AWARENESS MODEL

For this research, collaborative awareness is defined as the ability to acquire basic cooperative data, and having knowledge of on-going activities in a joint cooperative effort. With this knowledge, collaborators are able to project future events and adjust their own individual actions accordingly. Previous study was successfully applied the collaborative awareness model in the development of a synchronous groupware to support home modification [16]. In synchronous setting, all changes made by a collaborator in the workspace are transmitted to the others as soon as they happen. This means remote collaborators are aware of the changes occurred at real time.

Given the nature that human translators work together at different times and different places, they can still track the changes made by scrutinizing carefully on the latest piece of work or ask for a summary from those are involved. So, collaborative awareness is still required in asynchronous setting, and time is the only difference when the human translators access the collaborative awareness. In other words, the changes made by a translator in the sub-document are transmitted to the others at different time [23].

For an asynchronous collaboration setting, a translation groupware is considered as a collaborative tool for human translators (see Figure 2). The translation groupware has three mediation functions that allow human translators (refer to the subject and collaborator member):

- to transform the object (such as document in source language) into an intended outcome (such as document in target language) by using modification device (for example, text editor),
- to achieve common ground by using communication rule, and
- to coordinate the work by delegating the tasks aptly among members.

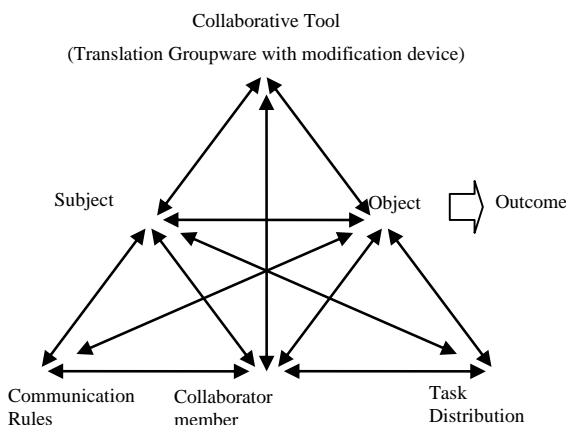


Figure 2. Collaborative awareness model (adapted from [10]).

In order to support these mediation functions, the translation groupware must equip with two main collaborative awareness components, namely interpersonal space and shared workspace. For example, if a human translator has been away from the workplace for a period of time, he/she should be able to gather up-to-date on what has happened at workplace after he/she returned. This up-to-date information may include changes that occurred since the human translator accessed the object. Then the human translator may probe more details on the specific changes of object, and who were involved, along with their relevant characteristics. Once the human translator understands the current status of collaboration situation, then he/she may take appropriate actions.

3.1 Interpersonal Space

Interpersonal space is akin to the concept of person space [4], social awareness [5], and presence awareness [9]. The interpersonal space allows remote translators to be aware of who were around (such as the total number of persons and their name), when they were here (such as the specific date and time), where they were (such as the specific part of workspace) and what they were doing (such as viewing, editing or leaving personal messages).

This interpersonal space can be designed and represented in the translation groupware using text. For example, login names or photos signify the presence of remote translators in the groupware (see Figure 3). Besides that, a simple text can be use to inform the time when he logon to the groupware, the amount of work assigned and the total work completed. Remote collaborators can also aware that Andrew003 would be at Singapore from 25 to 29 December 2009.



Online: 10 hours ago
Assigned: 3 docs
Completed: 1 doc

Andrew003

Message: At Singapore, 25-29 December 2009

Figure 3. Example of interpersonal space.

If remote translators are able to access the interpersonal space component, they are able to understand the availability and progress of human resources. For instance, when a project manager received a new assignment from the client, he/she may able to find suitable translators based on the following criteria:

- language skills,
- past experiences in related domain,
- current workload,
- quality of delivery,
- services rate for a page and others.

This component allows the project manager to take a better action and allocate the most appropriate translators to the new assignment.

3.2 Shared Workspace

Shared workspace is similar to the concept of task space [4]. The shared workspace allows the remote translators to be aware of which object is being changed and whether the object has achieved the desired outcome. In other words, remote translators should be able to view the shared workspace from any perspective (such as target language or both languages in alignment), and view the final changes on object properties (such as see other annotation or comments). For translation workspace, the source language is the initial problem state and the target language will be the outcome.

In translation groupware, text also can be used to represent shared workspace. For instance, a table is good way to display the list of objects available (such as using document name) for collaboration (see Figure 4). Remote collaborators can aware the number of uncompleted works, the number of revision for a particular document, and the last updated date for each document. An icon can be included to indicate whether a new object was created (such as star icon) and an old object was removed.

Name	Completion	Last Updated Date	Revision
tylim_1.doc	80%	3 Sep 2009	2
tylim_2.doc	0%	1 Sep 2009	0
☆ mary_1.doc	0%	5 Sep 2009	0

Figure 4. Example of shared workspace.

When a project manager uses this shared workspace component, he/she can get a quick understanding on the current progress of all translation works. The project manager can determine which documents are:

- overlooked and left out,
- completed and ready for next action,
- too many revision and complicated translation,
- annotated for fast delivery and others.

Then the project manager may decide to take appropriate actions so that a good quality translation works can be delivered.

4. DISCUSSION

This paper proposed that a translation groupware is expected to support remote translators at the perception level through the basic data comprising interpersonal space and shared workspace. Both interpersonal space and shared workspace may also refer as a collection of history which can help remote translators to get a quick idea on recent occurred events. Some researcher may represent the collaborative awareness components as an event text log, a graphical pattern, or even as a movie clip [19].

If a developer is able to identify the required basic data and represent these collaborative awareness components effectively in the translation groupware, then remote translators are able to

perform their works more effectively, efficiently and satisfying. If these data are represented poorly, then remote translators may face difficulty to acquire the collaborative awareness. At the end, they may not want to know further and abandon these collaborative awareness components.

The next step is to determine the details of data that are useful as interpersonal space and shared workspace. There is a need for more research on the use of translation groupware that supports online collaboration between remote translators. A case study on the real translation team on managing their collaboration is required to justify the useful of these collaborative awareness components. This can be done using interviews and indirect observation methods.

5. CONCLUSION

This research proposes to develop a translation groupware driven by user-centered approach. It is hypothesized that collaborative awareness (such as interpersonal space and shared workspace) can improve the translation groupware usability. The effectiveness of these collaborative awareness components for translation groupware should be further investigated.

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