Lessons Learned from Multilingual Collaboration in Global Virtual Teams

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Overview

• **Intercultural Collaboration Experiment 2002 (ICE2002)**
• **Discussion support facilities** on TransBBS
• **Observation and Lessons learned** from ICE2002
  – To find out the technical issues of multilingual and distributed collaboration support
• **Required features** for supporting multilingual collaboration
ICE2002 in summary

• Software development experiment in multilingual and distributed environment
  – in Asian four countries, China, Korea, Japan, and Malay, each has different language, character, and culture
  – to develop “intercultural collaboration support tools”
  – team consists of each country develops a module to be integrated into a single application
ICE2002

Tools

• **TransBBS**
  
  An multilingual BBS with machine translation (MT); enables members to discuss about the development

• **TransWeb**
  
  An document sharing tool for middle documents stored in WWW

  Simplest basement tools to find out technical issues with observing user activities
TransBBS and TransWeb
TransBBS

Translation problems

• MT systems do not satisfy the quality for exchanging messages
  – *Writers* cannot know whether the translation results are readable or not
  – *Readers* cannot tell to the the translation quality of translation results because the reply also requires MT
  – Also, readers cannot know the importance of the message with terrible translation
TransBBS

Required feature for supporting MT use

• **Readers** notify translation quality to the writer
  – Simple notification method from the readers like “terrible translation”, “translation is ok”

• **Writers** modify the original text for translatability
  – Modifying for adapting to MT increases the readability of MT result

• **Writers** annotate the message
  – Message’s importance, type, target readers etc
TransBBS Communication Support

- Translation rating
  - to notice the readability of the translation results

- Message Tags
  - type of the message as “Proposal”, “Response”, etc
  - target of the message

Readers rate translation results

Writers add semantics into messages
Observation
Users’ efforts for communication

Use of facilities on TransBBS

• #Translation / #Post rate
  Writers should modify original message for adapting to MT
  Whether writers overcome the time & effort consuming translation for the communication?

• #Translation rating
  Readers should point out the translation failure to the writer
  Whether readers say “terrible translation” before they give up the communication?
Observation: efforts for communication

#Translation / #Post rate

<table>
<thead>
<tr>
<th></th>
<th>post</th>
<th>translate</th>
<th>trans/post rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1</td>
<td>481</td>
<td>1,608</td>
<td>3.34</td>
</tr>
<tr>
<td>Phase 2</td>
<td>274</td>
<td>806</td>
<td>2.94</td>
</tr>
</tbody>
</table>

• Average 3.20 translations per post
• and not evidently decreased throughout the experiment
Observation: efforts for communication
Usage of communication support

<table>
<thead>
<tr>
<th></th>
<th>Rating</th>
<th>Post</th>
<th>Rating/Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1</td>
<td>321</td>
<td>481</td>
<td>.67</td>
</tr>
<tr>
<td>Phase 2</td>
<td>231</td>
<td>274</td>
<td>.84</td>
</tr>
</tbody>
</table>

- Translation rating is constantly (increasingly) used
- Writers receive good motivations to modify the original text for MT

“Receive a good motivation to edit original message”

“Feel close to the valuer”
Observation: efforts for communication

However, some negative situations observed

- Users dislike message tags although it costs little time and labor
- Translation turn around time affects the number of posts

Motivations are very fragile
Observation: efforts for communication Negative situations

• Multilingual discussions are mainly on overall design of software development
  – Detailed designs are held on each country’s local discussion rooms
  – Less translation tries in the local rooms (less mentions to other members)

<table>
<thead>
<tr>
<th></th>
<th>#translation / #post</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Local room</td>
</tr>
<tr>
<td>China</td>
<td>1.81</td>
</tr>
<tr>
<td>Japan</td>
<td>4.99</td>
</tr>
<tr>
<td>Korea</td>
<td>1.88</td>
</tr>
<tr>
<td>Malay</td>
<td>1.83</td>
</tr>
</tbody>
</table>
Lessons Learned
User’s efforts for communication

• Users **pay great efforts to communicate** with members of other languages
• However, the motivations are **very fragile**
• Detailed discussions are **difficult**

What are required in Intercultural Collaboration Support?
Required features of Intercultural Collaboration

User’s efforts for communication

- **Interactivity in Machine Translation** for supporting to keep the motivations to communicate with others
- **Sharing concept in the group / project** to supporting discussions on specific topics of the software development
Summary

• Observations of ICE2002 to find out the technical issues in multilingual collaboration

• Lessons Learned
  – MT can support communication with users efforts
  – Multilingual collaborations require more supports

• Future Issues
  – Interactive MT
  – Terminology or Ontology in the project
Thank you
Lessons Learned

• Users pay great efforts to communicate with members of other languages but the efforts are fragile
• Detailed design discussions are difficult on multilingual environment
  – Psychological locality in terminology exists
Observation

Users’ activities on

1. Multilingual Communication
   - MT has low quality in communication use
   - How much the users pay their efforts for the communication via MT?

2. Multilingual Collaboration
   - How easy or difficult is the collaboration in multilingual environment?

What is the Required features for Supporting Communication and Collaboration?
ICE2002 setting summary

• Track I  May – Jul 2002
  – Single action to translation and post
  – No discussion supports

• Track II  Oct – Dec 2002
  – Divide translation and post methods
  – Discussion supports methods
Observation 2: Software development

Discussion on design

- Discussions are mainly on overall design of the software
- They could not fix the detailed specifications of the integrated application
- Detailed discussions are held on each team’s local discussion room but it is closed for others
Observation 2: software development

Translate / post rate for discussion rooms

<table>
<thead>
<tr>
<th>Country</th>
<th>Own room</th>
<th>Other rooms</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>1.81</td>
<td>2.28</td>
</tr>
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<td>4.99</td>
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</tr>
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<td>1.88</td>
<td>2.60</td>
</tr>
<tr>
<td>Malay</td>
<td>1.83</td>
<td>1.79</td>
</tr>
</tbody>
</table>

- Most members check translations **less** in local discussion rooms other than Malay members, who use English.
- In local discussion rooms, they use **local terms** like “Lab 3”.

Translate and check, translate and check, ... and then post
This room is for our team only. Translate and slight check, then post
Lessons Learned 2

Software development via MT

• **Detailed design discussions are difficult** on multilingual (noisy channel) environment

• **There exists psychological locality**
  – Users **do not mention other team members** in their own discussion room
  – And use their **local terminology / ontology**