Using speech technology in the translation process workflow in international organizations: A quantitative and qualitative study

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Background

- Automatic speech recognition (ASR) systems: contribute to ergonomics, productivity and quality of many situations in our daily lives

- Improvements in Machine Translation (MT) quality and the increasing demand for translations, post-editing has become a popular practice in the translation industry
  - Larger volumes of translations while saving time and costs

- Not many experiments have been conducted on how an interplay between ASR and MT fields can be used to improve translation process workflows within international organizations

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Previous Work

Surveying the potential of using speech technologies for post-editing purposes in the context of international organizations: What do professional translators think?

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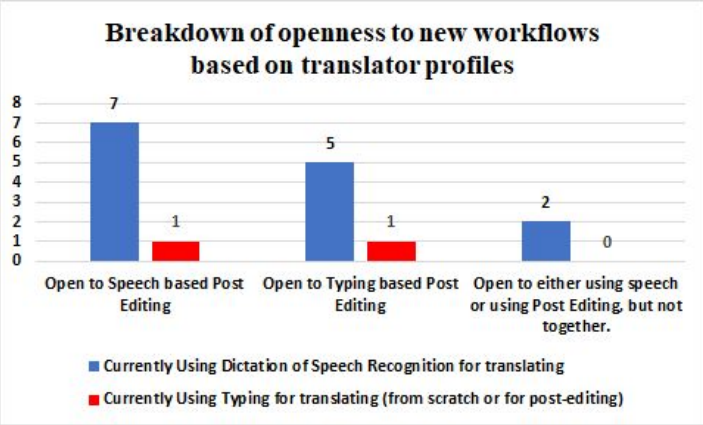
Attitude towards different methods of translation

- Research with 6 international organizations (5 in Geneva, 1 Luxembourg).



- **No previous quantitative experiments on speech based post-editing according to our knowledge**

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Objective

- **Quantitative** and **Qualitative** research on the usage of speech and post-editing in the trade domain, in an international organization.

- Analysis on how different methods affect translation process
  - Post-editing using typing or speech
  - Speaking out the entire translation (while using MT as an inspiration)

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Key areas explored in this research

- Post-Editing machine translation suggestions by typing ***(PE)***
- Speaking out the translation instead of typing (with MT as an inspiration) ***(RES)***
- Post-Editing using speech: (very!!) less explored ***(SPE)***

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Resources

- 3 professional translators from international organizations
- Trados Studio was used as the translation workbench

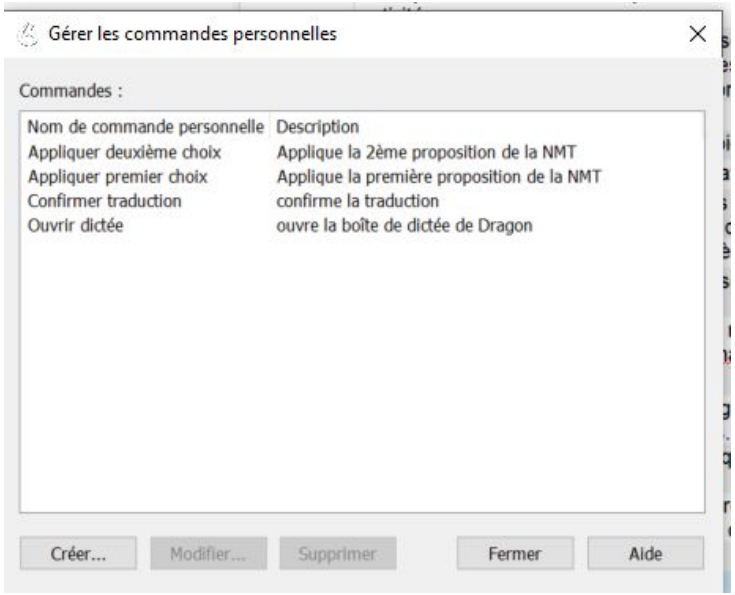
- Dragon Professional was integrated as the speech recognition support for the experiment

- Neural machine translation engines trained specifically using trade domain English and French parallel data were used as MT suggestions

Designing the experiment using Dragon and Trados

- ***Training translator profiles***, ***adding domain specific vocabulary***, ***using built-in commands*** as well as ***training new commands*** to navigate through Trados using Dragon speech

Action	commande vocale
sélectionner du texte	**sélectionner-ça**
désélectionner du texte	**désélectionner-ça**
annuler une action	**annuler-ça**
ouvrir la fenêtre de correction	**corriger-ça**
choisir une correction	**prendre -1|2|3…**
corriger soi-même	**épeler-ça**



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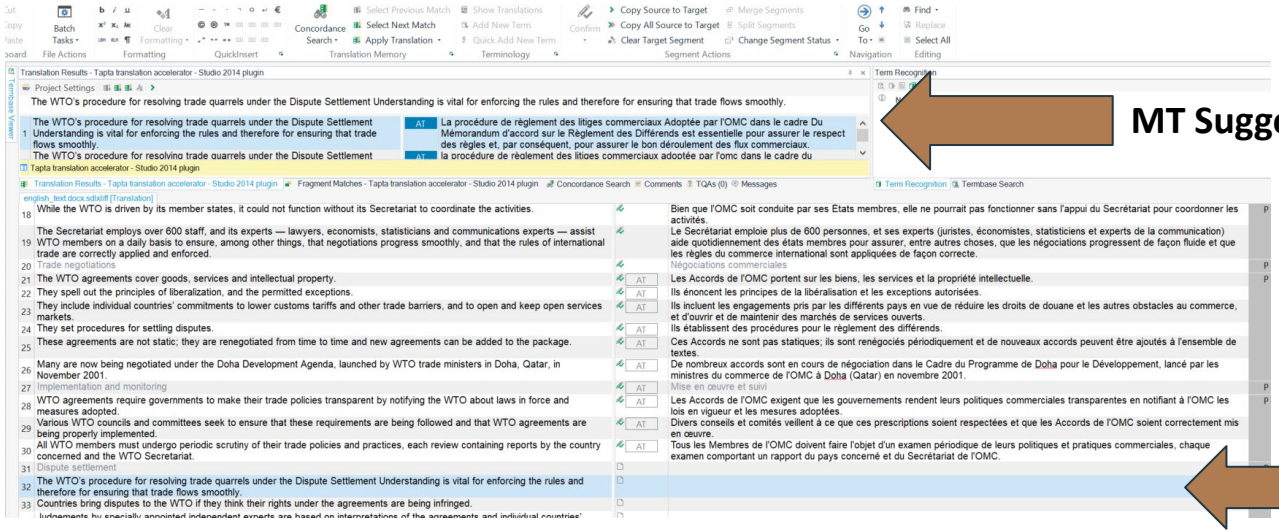
Trados setup

Speech Toolbar



Experiment

DRAGON NATURALLYSPEAKING

- Three professional translators were asked to translate three different texts (average length of 180 words) of the trade domain using:
  - post-editing the MT suggestions by typing (PE)
  - speaking the translation with MT as an inspiration (RES)
  - editing the MT suggestion using speech (SPE)

- Translation performances of each of the three methods were compared against using BLEU and Translation Error Rate (HTER) scores

SDL* Trados Studio

Results

Method Used	Average BLEU score	Average HTER score	Average Time taken
Post-editing via typing (PE)	36.55	0.48	28 mins
Speaking the entire translation (RES)	28.19	0.55	35 mins
Speech based post-editing (SPE)	48.74	0.375	20 mins

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Observations

- **Editing MT using speech (SPE) results in a better BLEU score with less edits made**, compared to the two other methods (**PE, RES**)

- **Respeaking the translation (RES) obtains the worst BLEU and TER scores**, suggesting that the changes do not improve the quality

- **Time used for translating is reduced when using speech based methods**, compared to typing

- Qualitative evaluation indicates that **translators prefer both methods using speech to typing**, since using speech allows them to translate longer segments faster and to think aloud while dictating

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Conclusion and Future work

- With high quality ASR and MT support, ASR has the potential to increase the quality of the translation by optimally intermingling with machine translation support
- To the best of our knowledge, this is the first quantitative study conducted on using post-editing and speech together in large scale international organizations
- Future work
  - experimenting with more participants with written/spoken post-editing
  - evaluating temporal/technical effort, translator satisfaction

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THANK YOU

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