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## Exploring different speech recognizers for post-editing translation outputs:

### A pilot study in an international organisation

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# Background of our research study



- Improvements in Machine Translation (MT) quality, increasing demand for translations, post-editing
  - Larger volumes of translations while saving time and costs
  - Speech technology integration is likely to contribute to further innovation

**How would a combination of Speech Recognition + MT help?**



## Question: What are the similarities and differences between written post-editing and spoken post-editing?

Q1) Does written post-editing of machine translation demand **more temporal and technical effort** (Krings, 2001) than spoken post-editing?

Q2) Is **spoken post-editing more satisfying than written post-editing** for the professional?

Q3) Are speech techniques better when used for **re-speaking the translation** or for **post-editing the machine translation suggestions**?

# Previous Work



**a) Surveying the potential of using speech technologies for post-editing purposes in the context of international organizations: What do professional translators think? (1,2,3)**

**b) Using speech technology in the translation process workflow in international organizations: A quantitative and qualitative study (1,2)**

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# Previous Work



**Translating and the Computer**

TC43 Online

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**c) Integrating post-editing with Dragon speech recognizer: a use case at international organizations (1,2)**

**d) Integrating Speech in Post-Editing (PE) - Comparison of two PE Interfaces (1,2)**

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**G R E E C E**  
• JULY 4-6 •  
**R H O D E S I S L A N D**

# Today's pilot study / starting point

Q4) How would different parameters affect the choice of using spoken based post-editing or written post-editing (based on translator satisfaction and effort)?

- **The type of speech recognition tool**
- **translator profile**

**We conducted a pilot study to start investigating on using different types of speech recognizers for post-editing (in an international organisation)**

Aim was to do a preliminary background check to identify potential tools/methods to perform an actual study

- With some preliminary results!

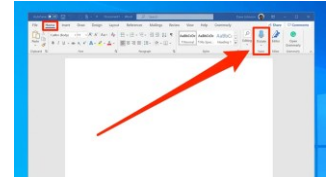
# Resources

SDL\* Trados Studio

Google  
VOICE  
TYPING



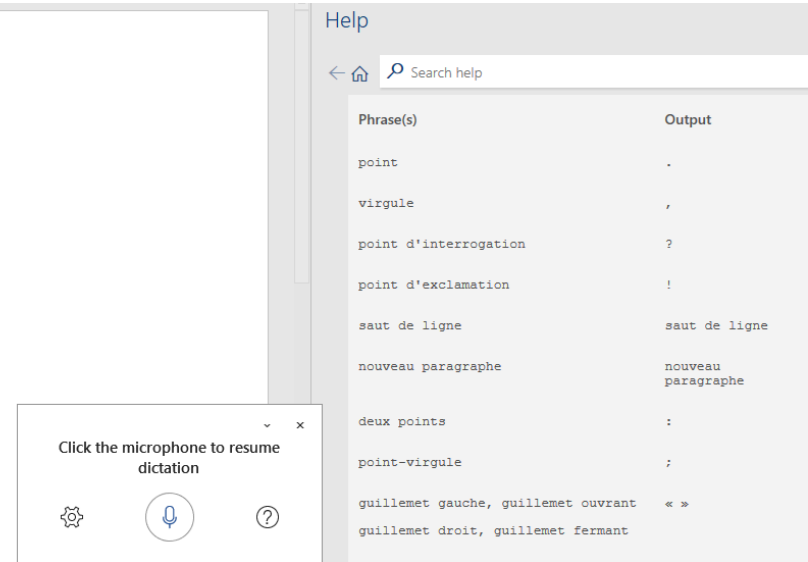
- MS Word, Google Docs
- **Dragon Professional , Google Speech and Microsoft Dictate**
- Neural machine translation engines trained specifically using trade domain English and French parallel data were used as MT suggestions



  
**DRAGON**  
NATURALLY SPEAKING

# 1) Setup using Speech Recognition: MS WORD + MS Dictate

- The user can train his or her voice on Windows OS and start using e.g. Word document to transcribe their speech.
- Less correction commands based on the language
- E.g. Way more commands for English, than for French

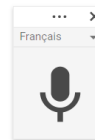




## 2) Setup using Speech Recognition: Google Docs + Google Voice

- The user does not have to train the voice
- Less correction commands based on the language
- E.g. Way more commands for English, than for French

pecl est un test



### 3) Setup using Speech Recognition: Dragon + MS Word

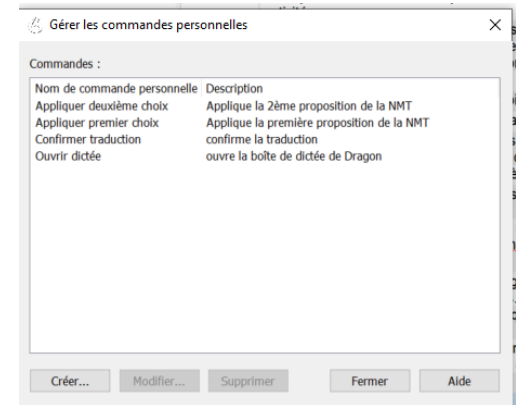
- **Training translator profiles, adding domain specific vocabulary, using built-in commands** as well as **training new commands** to navigate through Trados using Dragon speech

#### Action

sélectionner du texte  
désélectionner du texte  
annuler une action  
ouvrir la fenêtre de correction  
choisir une correction  
corriger soi-même

#### commande vocale

**sélectionner-ça**  
**désélectionner-ça**  
**annuler-ça**  
**corriger-ça**  
**prendre -1|2|3...**  
**épeler-ça**



- **Dragon can easily be used with MS Word**

# Experiment

- Four professional translators (EN-FR) were asked to translate four comparable texts (average length of 220 words) of the trade domain using:
  1. **Post-editing via typing (M1)**
  2. **Spoken Translation (MSD) + Revision by typing (M2 )**
  3. **Spoken Translation (GS) + Revision by typing (M3)**
  4. **Spoken Translation (DP) + Revision by speech/typing (M4)**
- Participants were given a short training and manuals on voice commands
- Pre and post-experiment questionnaires on user satisfaction (qualitative analysis),  
Screen recording software (quantitative analysis)

# Results ( BLEU and Term Error Rate)

Translation performances of each of the four methods were then compared against using BLEU and Translation Error Rate (TER: between post-edited translation and reference translation) scores.

	<u>Method</u>	<u>BLEU</u>	<u>TER</u>	<u>Average Minutes per segment</u>
		(PE-Ref)	(PE-Ref)	
<b>M1</b>	Post-editing via typing (PeT) only	51.55	0.34	2.44
<b>M2</b>	Spoken Translation (MSD) + Revision by typing	57.67	0.304	1.87
<b>M3</b>	Spoken Translation (GS) + Revision by typing	47.59	0.401	2.06
<b>M4</b>	Spoken translation/ Revision via Speech/typing (DP)	54.65	0.37	2.33

# Quantitative Observations



- Translating using MSD followed by revising via typing (M2) provides the best BLEU score with lesser edits while taking the least time compared to other methods.
- Post-editing via typing only (M1) took the longest time and translating using GS followed by post-editing via typing (M3) did not perform well in spite of a higher edit rate.
- Dragon Professional method (M4) performed second best in BLEU score

# Screen Recording, Keystroke analysis

- Screen recording showed participants using both voice commands and typing to revise the spoken translation in M4 (Dragon Professional )
- M3 (Google Voice + MS word ) requiring extensive post-editing using typing
  - demonstrating inadequate speech recognition support in GS





# Qualitative Observations

- All four participants were pro towards using speech recognition for drafting the translation and then to use the keyboard and mouse for post-editing.
- **Participants preferred to use Dragon Professional for speech recognition, stating “resourceful”, “grammatically better French phrases”, “better alternative suggestions” and “more voice commands for French”.**
- “Review” feature in MSWord has aided them in their task, Terminology supports in their tasks.

# Conclusion and Future work



- A starting point on how different speech recognizers would work when used for translation/post-editing purposes
  - Provides insight for a larger experiment.
- Commercial tools still are on the front (with additional support, resource integration)
  - Speech is deemed attractive for users when given with a mix-and-match choice with typing, performs well in accuracy and takes less time.

Free tools, while attractive, can appear with unexpected hiccups

- Future work
  - Configure the resource setup based on ideal parameters (language pair, translator profile ) to investigate speech based translation/ post editing.



thank  
you