

# Using Process Methods to Study Subtitling

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David ORREGO-CARMONA<sup>1</sup>,  
Łukasz Stanisław DUTKA<sup>2</sup>, Agnieszka SZARKOWSKA<sup>2</sup>

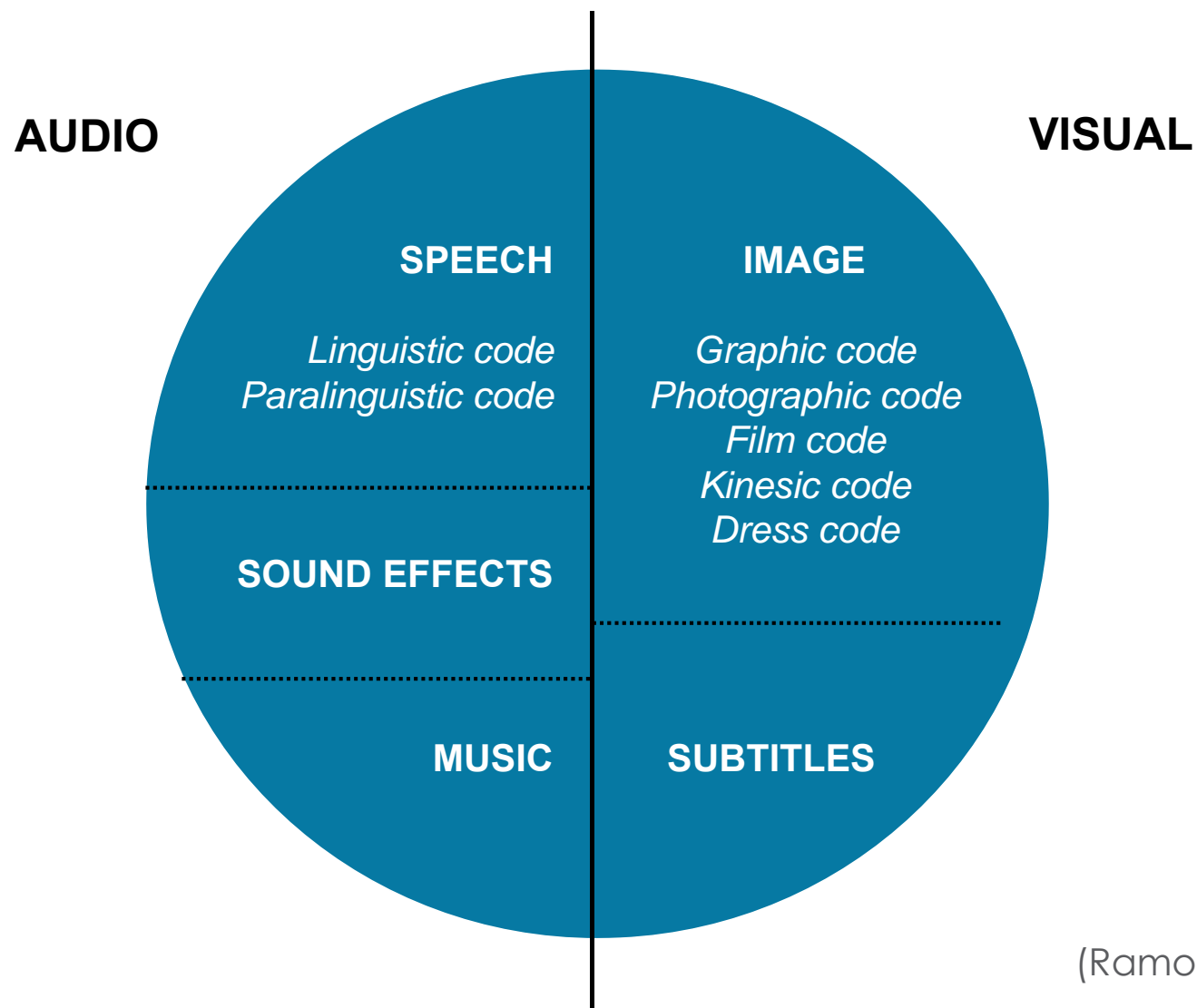
<sup>1</sup> University of the Free State, South Africa

<sup>2</sup> Institute of Applied Linguistics, University of Warsaw



# Subtitling

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(Ramos Pinto 2012)

# The subtitling process (1)

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- Main stages of interlingual subtitling
  - Transcription
  - Translation
  - Spotting
- Specialized software
- Documentation processes: consultation of dictionaries, websites

## The subtitling process (2)

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- Comprehension of the original and the production of the target text might be affected by the audio channel and the visual information, even if a transcription is provided
- Normally, it does not involve TM/MT
- Subtitle segmentation is defined by the subtitler

# Study on subtitlers

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# Experimental design (1)

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- An eyetracking study of the subtitling process research on a group of professional subtitlers and subtitling students
- Data collection
  - Screen recording
  - Keystroke logging
  - Eye tracking: SMI Red Mobile 250 Hz
  - Pre-experiment questionnaire
  - Post-experiment interview



## Experimental design (2)

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- Subtitling software
  - EZTitles
  - Edlist
- Interlingual subtitling task
- 18 participants
  - 12 professionals and 6 novices
  - 3 men and 15 women
  - Mean age: 31.66 (SD 10.93)



# Exploratory research questions

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- How do subtitlers structure their **subtitling process** depending on their expertise and the task?
- What are the areas of interest that require more **attention** from the subtitlers and how do they distribute their attention among the different areas of interest on the screen?
- What type of **resources** do subtitlers rely on to complete their task? Do they differ between groups?
- How is task completion affected by factors such as **experience** and the type of **software** used?



# Hypotheses

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1. Task completion time
  - Professionals will have a shorter task completion time
2. Text reduction
  - Professionals will have a higher text reduction ratio in the interlingual subtitling task
3. Workflow
  - Professionals will use more specialised online resources
  - Professionals and novices will have a different workflow

# Study materials

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- Interlingual subtitling
  - English to Polish
  - 1 min. 25 sec.
  - American TV series *The Newsroom*
  - English transcription was provided
  - Task: translation and spotting



# Experimental set-up

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# EZTitles®



The screenshot displays the EZTitles software interface. The main window shows a video preview area with subtitles. The video content includes a man and a woman in a conversation. The subtitles are as follows:

- 39: Skąd wiesz? Pracujesz w IT.
- 41: - Nie, piszę blog. - Żartujesz? Are you kidding?
- 43: I think we're in the first hours of a serious story.

The interface includes a timeline at the bottom with an audio waveform and video clips. A preview list on the right side shows a sequence of subtitle cards with their respective start and end times:

- 39: Skąd wiesz? Pracujesz w IT. (10:01:15:20 - 10:01:17:12)
- 41: - Nie, piszę blog. - Żartujesz? (10:01:17:16 - 10:01:19:05)
- 43: I think we're in the first hours of a serious story. (10:01:19:05 - 10:01:20:00)

The software window title is "EZTitles - P12\_Newroom.ezt" and it is in "Preview Mode". The bottom status bar shows "10:13 (204/1536) Modified Insert English (United States) Open Native Mode".





The screenshot displays two windows side-by-side. The left window is Microsoft Word, showing a document titled 'TheNewsroom.doc'. The text in the document is a transcript of a news broadcast, including the following text:

What?  
I'm sorry to interrupt  
Can I talk to Mac for just a second?  
Your guy here is a pain in the ass.  
An oil well exploded in the Gulf of Mexico.  
The Coast Guard's searching for missing crew members.  
It fill you in at the 6 00 rundown.  
There's more.  
He doesn't need to hear this right now.  
Let's go outside.  
No, if Don doesn't want me to hear it, I'd like to hear it.  
Oh, blow me  
I want you to not use that language in front of women and to forever not suggest that image to me.  
What's on your mind?  
Who are you?  
Jim Harper, my senior producer.  
Senior? Is he old enough to drive at night?  
What happened?  
Two calls within five minutes of each other.  
The first one was from a friend of mine at BP in London saying he's sitting in meetings where they don't know how to cap the well.  
Jesus  
The oil is still spilling?  
Yeah, at a pretty alarming rate. The first estimate was about 10,000 gallons an hour.  
My guy says it's closer to 100,000 and could get as high as a quarter of a million.  
Why is this well different from other wells?  
The depth. I need one of your staffers. He's... I don't know his name.  
He sits in the back. He's... he's the one with...  
Are you trying to say the Indian stereotype of an IT guy?  
Yes

The right window is the EdList software interface. It features a list of segments with columns for start and end times, and a central area for editing. The segments listed are:

- 00:10:14 - To nie wszystko. - xxx
- 00:12:05 - xxx
- 00:00:04 - 00:01:17 16.9 27 (18/5/0) 4
- 00:12:09 - Wydzmy stąd. xxx
- 00:14:22 - xxx
- 00:00:04 - 00:02:14 7.8 20 (15/3) 5
- 00:15:01 - Wal się.
- 00:19:14 - Nie mów tak przy kobietach i nie sugeruj
- 00:00:04 - 00:04:14 11.9 54 (10/42) 6
- 00:19:18 - xxx
- 00:00:00 - 00:19:17 0.0 7
- 00:00:00 - xxx
- 00:00:00 - 00:00:01 0.0 8

At the bottom of the EdList window, it says 'Pozostało 122 dni.' The interface also includes a video player on the right side showing a preview of the selected segment.

Science Sports Gaming Education  
Psychology Psychiatry Linguistics Training  
Human Factors Human Computer Interaction Usability

# Sample screenrecording (1)

The screenshot displays a video editing software interface with the following components:

- Top Bar:** Shows the file name "P09\_Newsroom.ezt", video title "Video2\_The Newsroom.avi - 25 fps", and "Edit Mode".
- Video Player:** Displays a scene with a man and a woman. Subtitles are visible: "in front of women and to forever not suggest that image to me." (at 10:00:16:00) and "What's on your mind? Who are you?" (at 10:00:21:10). A progress bar at the bottom of the player shows "13 of 43 subtitles" and "-8/19".
- Subtitle Editor:** A "Comment" box is open, and a "10:00:21:10" timecode is selected. A duration of "01:06" is shown.
- Preview List:** A list of subtitle segments with their timecodes and outlines:
  - Segment 13: 10:00:16:00 to 10:00:19:21. Outline: "I want you to not use that language in front of women and to forever".
  - Segment 14: 10:00:20:00 to 10:00:21:06. Outline: "What's on your mind? Who are you?".
  - Segment 16: 10:00:21:06 to 10:00:21:06. Outline: "Jim Harper, my senior producer.".
  - Segment 17: 10:00:21:06 to 10:00:21:06. Outline: "Jim Harper, my senior producer.".
- Timeline:** A multi-track timeline showing audio waveforms and video frames. The timecode at the bottom is "10: 1 (520/1536)".

# Sample screenrecording (2)

The screenshot displays a video editing software interface with the following components:

- Top Bar:** Shows the project name "P09\_Newsroom.ezt", the video file "Video2\_The Newsroom.avi - 25 fps", and the current mode "Edit Mode". The user profile is "Profile [Ola Gańko]".
- Menu Bar:** Includes "File", "Edit", "Format", "Subtitle", "View", "Video", "Titles", "Tools", and "Help".
- Timeline:** Located at the bottom, it shows a blue audio waveform and a video track with a red playhead. The timecode is 10:00:00:00.
- Video Preview Window:** Displays a man speaking with subtitles. The current subtitle is "Straż przybrzeżna szuka zaginionych członków The Coast Guard's searching for missing crew members." The subtitle bar shows "5 of 40 subtitles" and a progress indicator at "-58/28".
- Subtitle Editor:** A "Comment" window is open, and a "Edit" window shows the subtitle's start and end times, currently set to 10:00:09:05 and 01:21.
- Preview List:** A vertical list on the right shows a sequence of subtitle segments with their respective timecodes and preview thumbnails.

# Results

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# Task completion time (min)

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- Novices spent 39% more time

Subtitling (average time in minutes)		
	EZTitles	EDlist
Professionals	<b>55</b> (SD 18.38)	<b>67.33</b> (SD 26)
Novices	<b>77</b> (SD 10.07)	-

## Mouse clicks vs. key strokes

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Software	Group	Mouse clicks	Key presses	User events (TOTAL)	Mouse clicks /user events
Edlist	Professionals	1313	2486	3799	<b>35%</b>
EZTitles	Professionals	273	5411	5685	<b>4%</b>
EZTitles	Novices	489	4307	4796	<b>10%</b>

# Text reduction in the interlingual subtitling task

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- Professionals – 38%
- Novices – 36%

	Number of words	Number of characters
Source text	354	1178
Professionals (P)	218 (SD 11.45)	1231
Novices (N)	225 (SD 6.10)	1240

# Attention distribution

The screenshot displays the EZTitles IV software interface for editing subtitles in a video. The main window shows a video preview with a subtitle track overlaid. The subtitle text is: "The first one was from a friend of mine at BP in London saying he's sitting in meetings where they don't know how to cap the well." The subtitle is highlighted in blue, and a red box labeled "subtitles\_panel" is drawn around it. The video preview shows a man and a woman in a newsroom setting. The timeline at the bottom shows the audio waveform and the video frames. The subtitle track is labeled "15 of 40 subtitles" and "-34/70".

Key elements in the interface include:

- Toolbar:** Located at the top left, containing various editing tools.
- Preview Window:** Shows the video and the current subtitle. The subtitle text is "The first one was from a friend of mine at BP in London saying he's sitting in meetings where they don't know how to cap the well." The video preview shows a man and a woman in a newsroom setting.
- Timeline:** Located at the bottom, showing the audio waveform and the video frames. The subtitle track is labeled "15 of 40 subtitles" and "-34/70".
- Outline Panel:** Located on the right side, showing a list of subtitle segments. The segments are numbered 18, 20, 21, and 22. The text for segment 20 is "The first one was from a friend of mine at BP in London saying he's sitting in meetings where they don't know how to cap the well." The text for segment 21 is "Jesus." The text for segment 22 is "Jesus."
- Subtitles Panel:** A red box labeled "subtitles\_panel" is drawn around the subtitle text in the preview window.

The software interface also shows the file name "N01\_Newsroom.ezt", the video name "Video2\_The Newsroom.avi", and the profile name "Profile [Monika Laskowska]". The status bar at the bottom indicates "11:32 (743/1536) Modified Insert English (United States) Open Native Mode".

## Mean fixation duration (ms)

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Edlist (professionals = 4)

	Toolbar	Subtitles	Video	Transcription	Internet
<b>P</b>	219.95	<b>226.43</b>	205.43	<b>199.53</b>	209.33

EZTitles (professionals = 6, novices = 5)

	Toolbar	Audio wave	Subtitles panel	Subtitles	Video	Internet
<b>P</b>	215.02	184.40	178.53	<b>192.35</b>	183.17	192.12
<b>N</b>	175.62	175.66	169.1	<b>177.1</b>	207.58	183.84

# Mean fixation duration (1)

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- EZTitles
  - No significant differences between the fixations on the subtitles and the fixations on other AOs (Toolbar, **video**, Internet)
  - There was no significant difference between fixations on the subtitles of novices and professionals
  - Original and translation overlap in the software since the translation replaces the original

## Mean fixation duration (2)

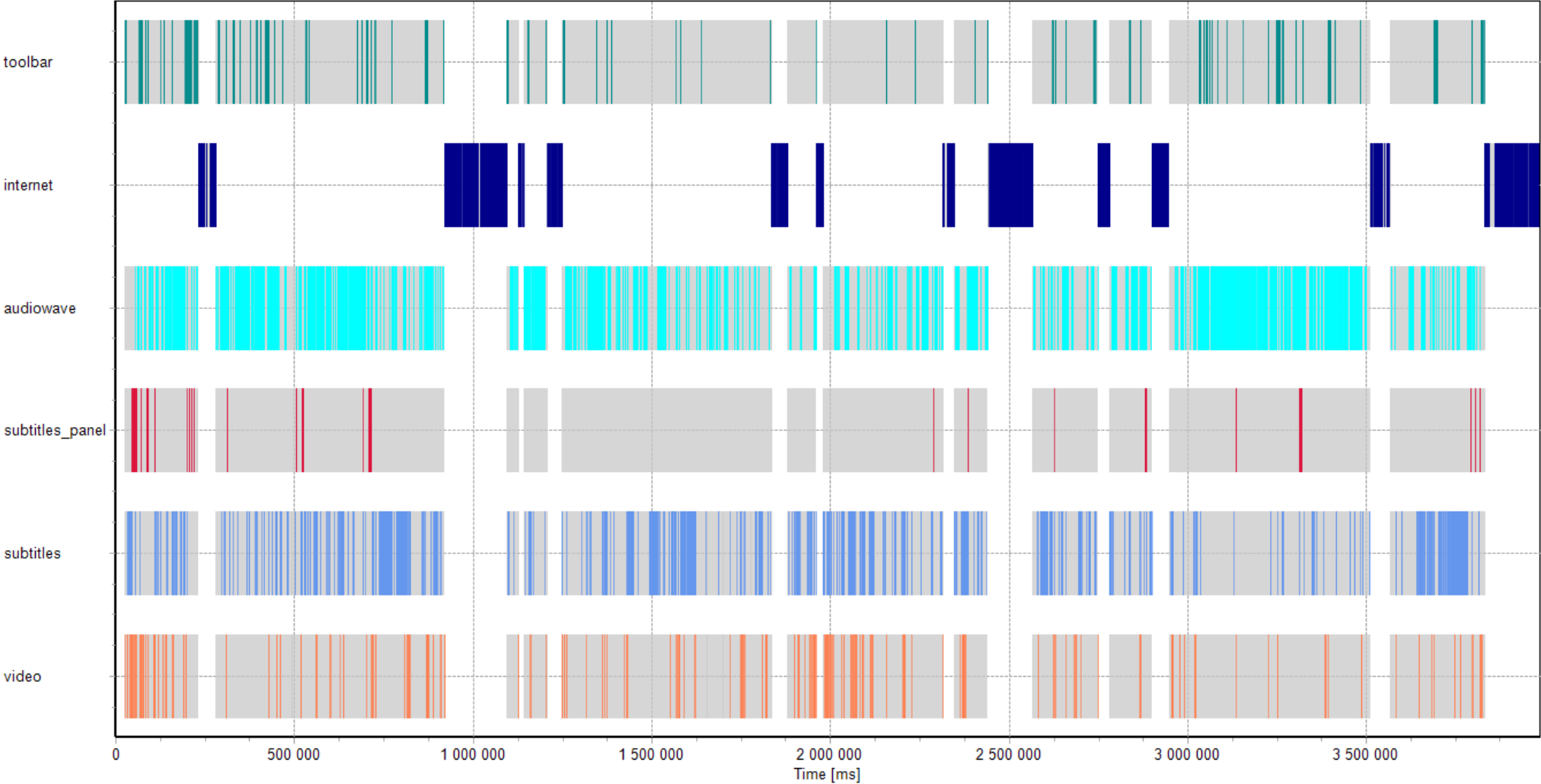
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- Edlist
  - Significant difference ( $p < 0.01$ ) between source text and target text:
    - Transcription: 199.53 ms
    - Subtitles: 226.43 ms
- Professionals comparison
  - No significant difference for the fixation on the subtitles

# Workflow



AOIs vs. Time





## Average dwell time (%)

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Group	Software	Internet use	Subtitles	Video
<b>Professionals</b>	EZTitles	20.67	22.16	4.15
<b>Novices</b>	EZTitles	11.98	27.3	4.86
<b>Professionals</b>	Edlist	5.25	36.825	13.775

# Workflow

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- Spotting and translation
  - Novices: independent **spotting** and **translation** stages in the workflow
  - Professionals: these tasks overlap
- Revision
  - Novices: several revision rounds
  - Professionals: only one round or the revision of specific parts of the clip
- Watching the clip before starting to translate
  - Novices: all
  - Professionals: only 3

## Use of resources

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- Awareness of the tool
  - Only two participants used EZTitles unit converter
  - A minority used EZTitles check function
- Online resources
  - Google as a corpus and to access other resources
  - Wikipedia was widely used by professionals and participants alike
  - Only one participant used ProZ

# Summary

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- Completion time
  - Professionals have a shorter task completion time owing to higher technological competence
  - Professionals are faster as they rely more on keystrokes rather than mouse clicks
- Workflow
  - Similar use of resources (Google, Wikipedia)
  - Novices – watching the whole clip first
- Text reduction
  - Similar in professionals and novices

# Methodological considerations

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- Issues defining a comparable unit
  - Subtitles
  - Text
  - Pauses
  - Original/translation overlap in EZTitles
- Using templates
- Deeper analysis of the influence of the software
  - Cognitive ergonomics
  - Usability

## Following steps

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- Linguistic analysis of the subtitles
- Identification of problematic areas/rich points
- Expansion of the sample of novices: January 2018

## Final Remarks

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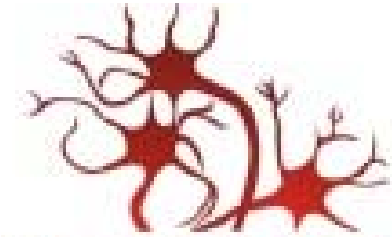
- The exploration of AVT using TPR requires further attention to fine-tune the methods
- The outcome of Subtitling Process Research projects will inform
  - the development of subtitling tools
  - the training of professionals

# Acknowledgements

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NEURO DEVICE

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# Contact

[davidorregocarmona@gmail.com](mailto:davidorregocarmona@gmail.com)

[lukasz.dutka@uw.edu.pl](mailto:lukasz.dutka@uw.edu.pl)

[a.szarkowska@uw.edu.pl](mailto:a.szarkowska@uw.edu.pl)

Department of Linguistics and Language  
Practice  
University of the Free State

University of Warsaw,  
Institute of Applied Linguistics

Audiovisual Translation Lab

[www.avt.ils.uw.edu.pl](http://www.avt.ils.uw.edu.pl)

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