

From assistive tools to full automation: what digital technologies mean for interpretation

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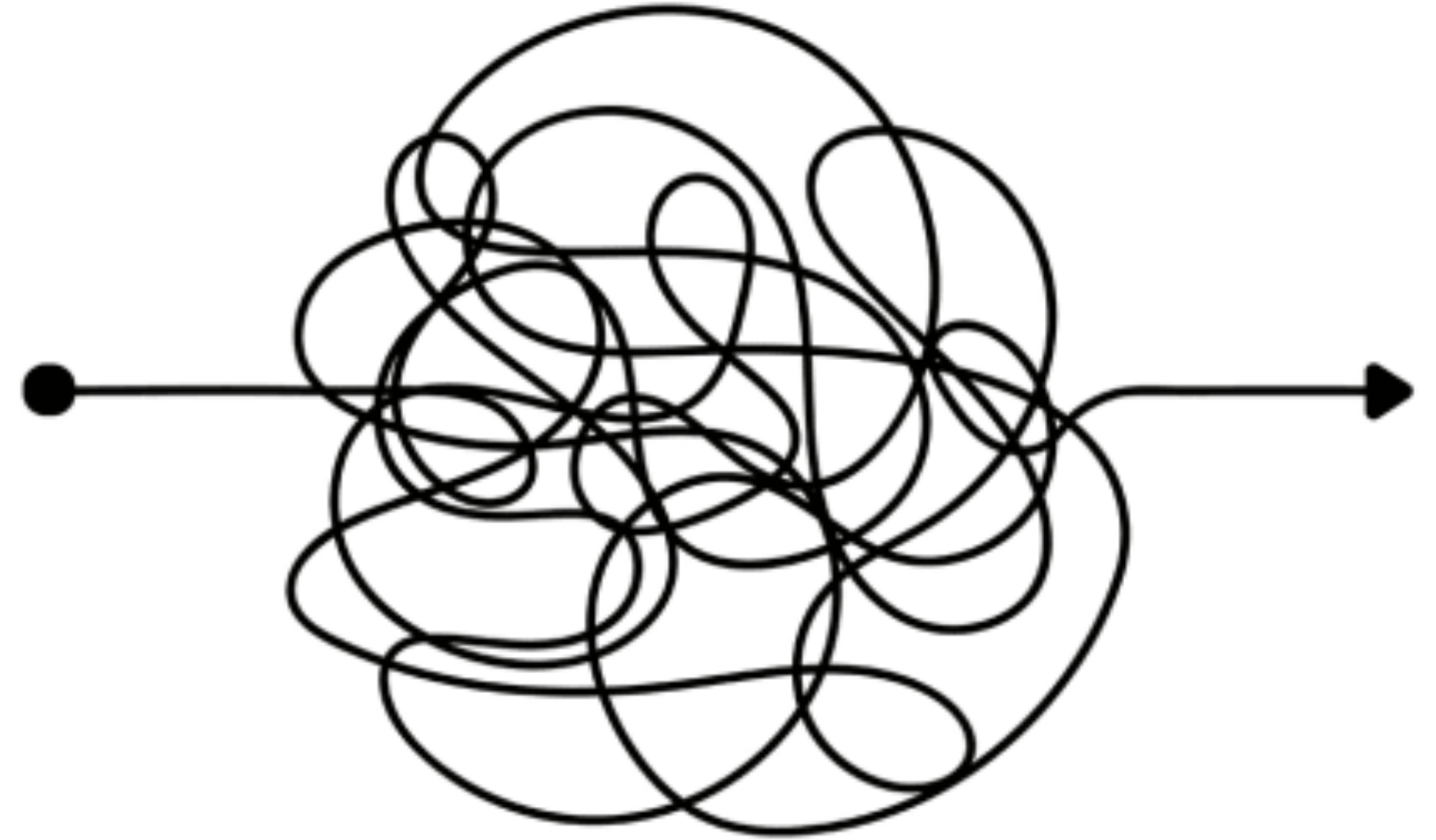
3 main takeaways

AI is making impressive and rapid strides in natural language processing

Multilingual communication and interpreting are heavily influenced by AI

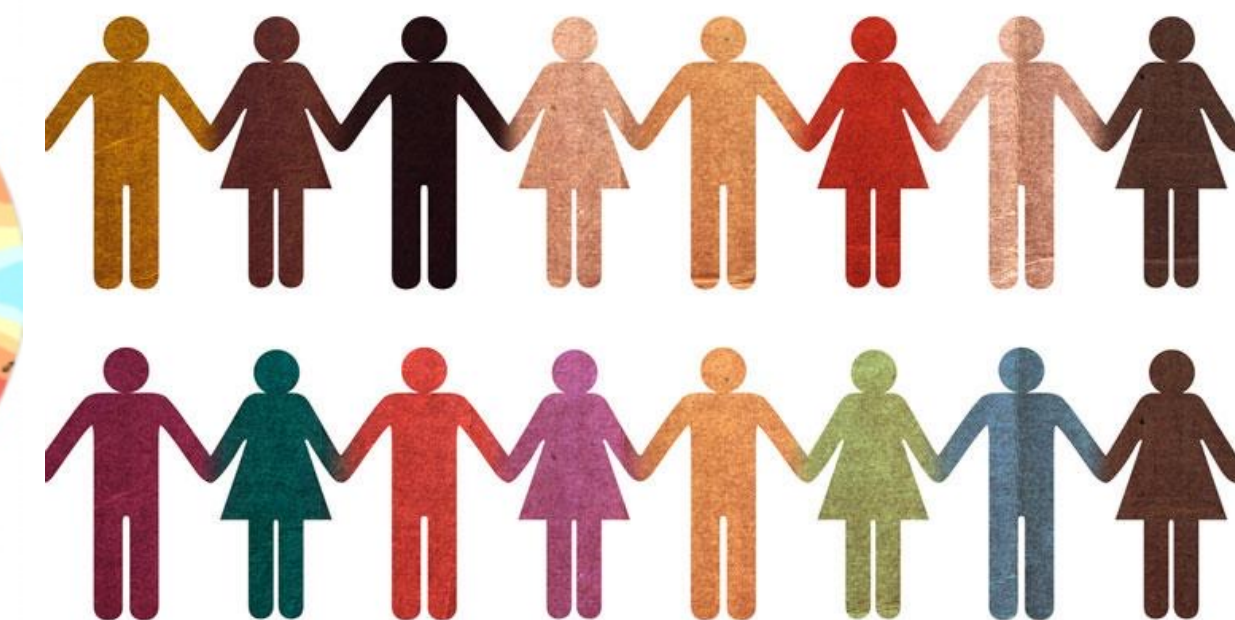
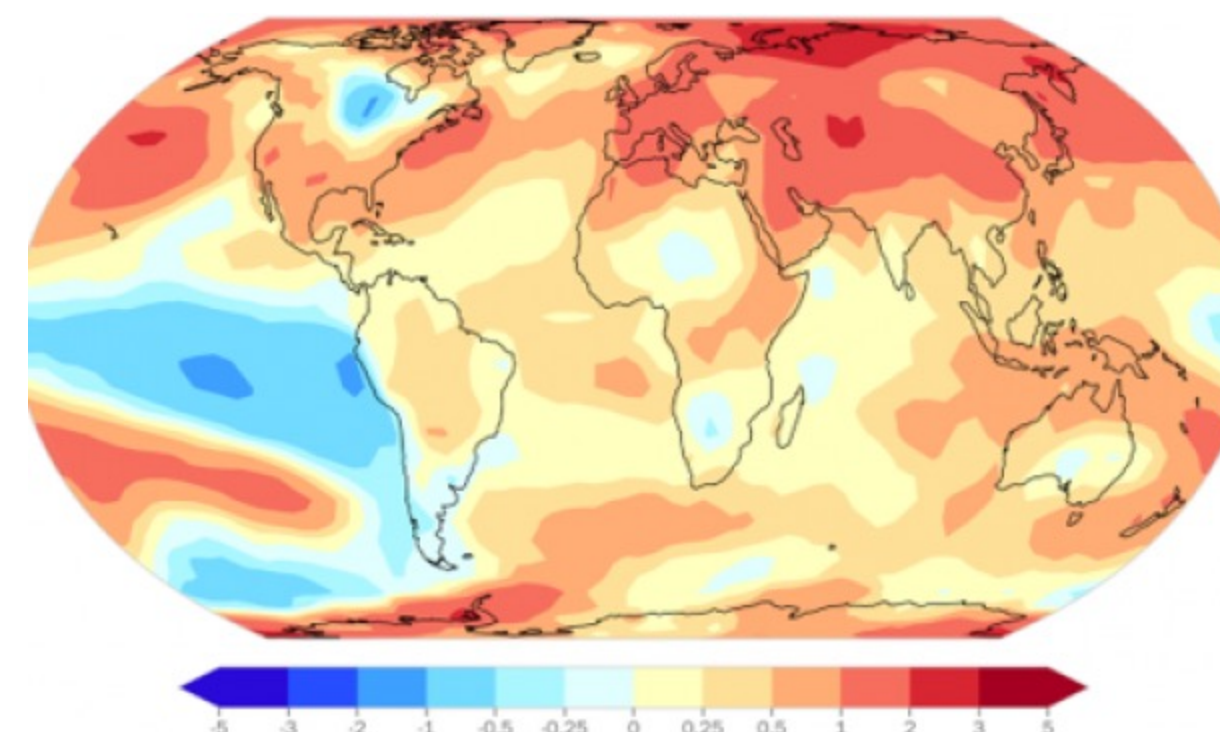
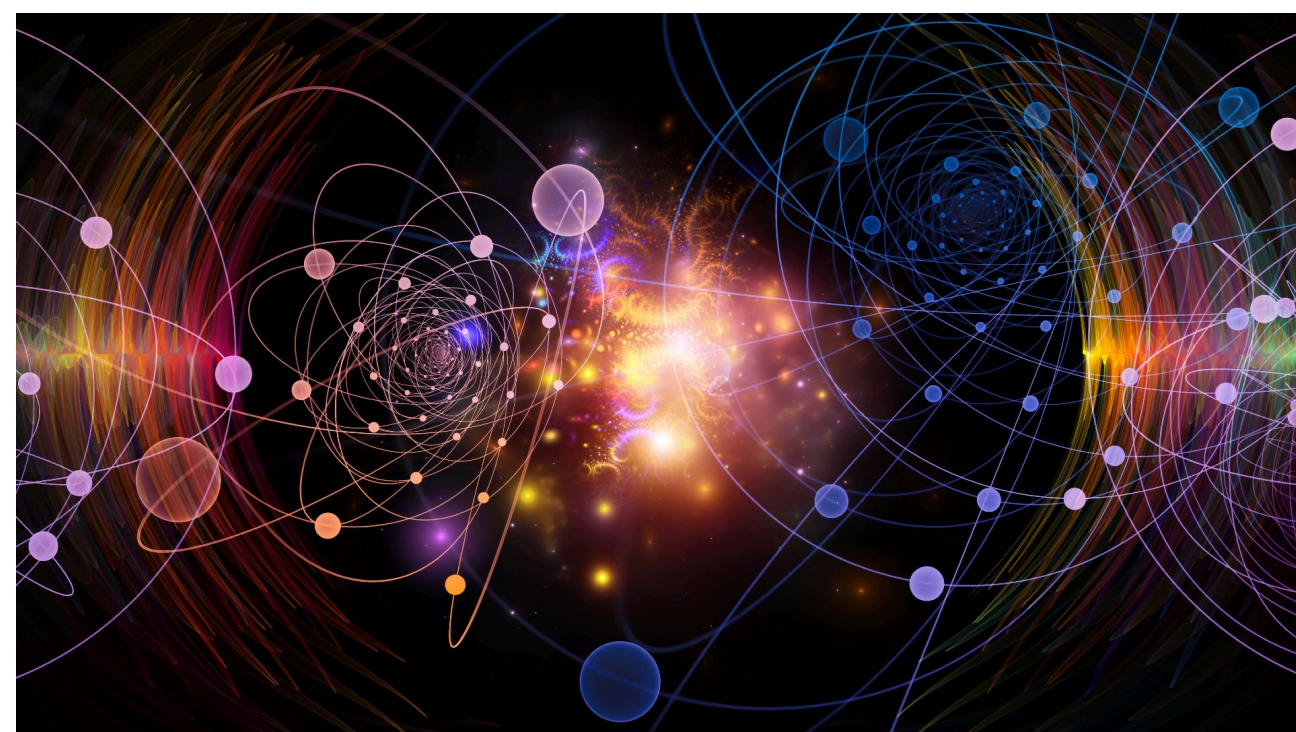
**There are many reasons why we should be optimistic about the opportunities that this presents
(but the risks are not negligible)**

COMPLEXITY



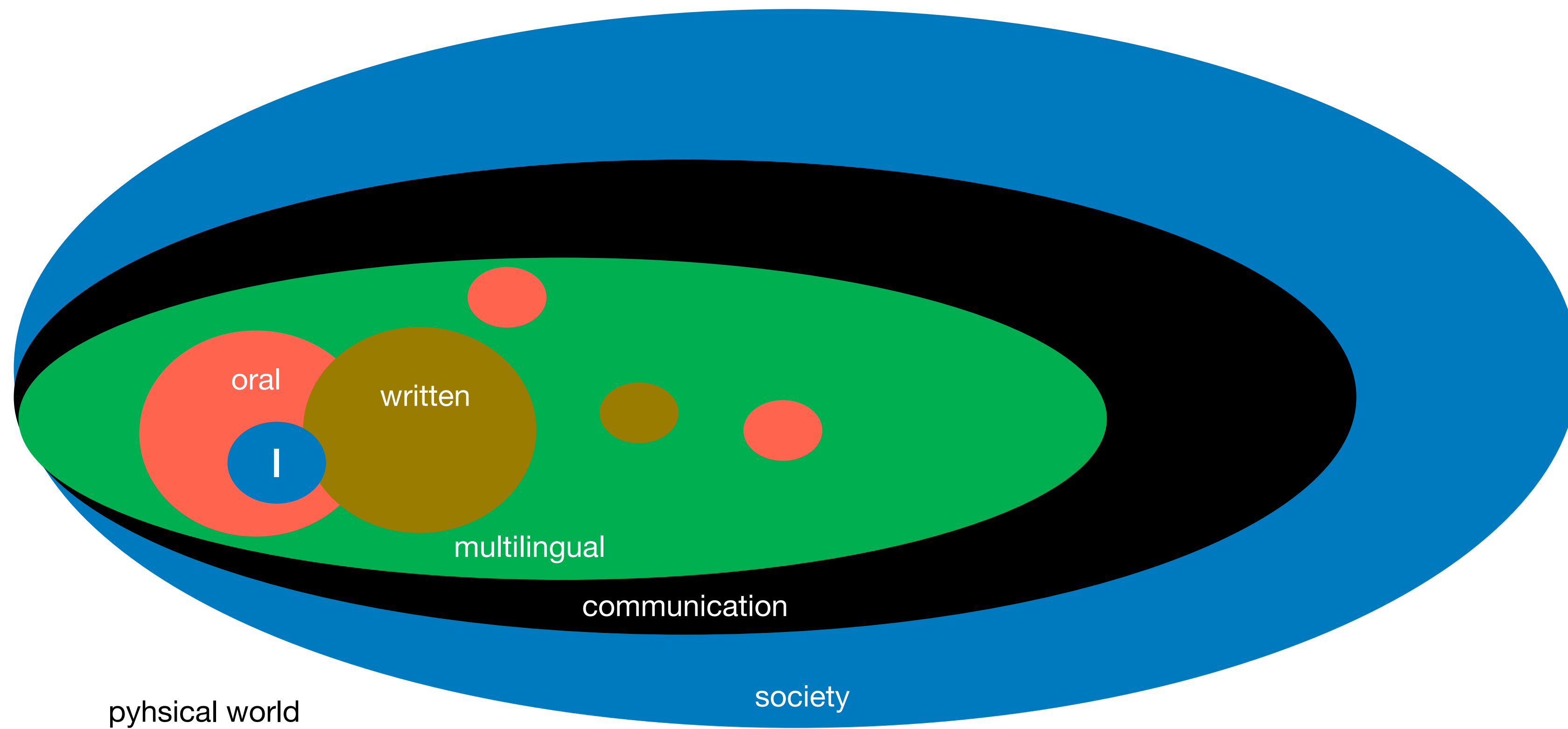
On complexity

- A system composed of many interacting components
- A system whose components (may) change over time
- To make sense of it and to govern it you require complex thinking
- Power forces between components are not symmetrical
- Examples are global climate, the human brain, the stock market ... interpreting



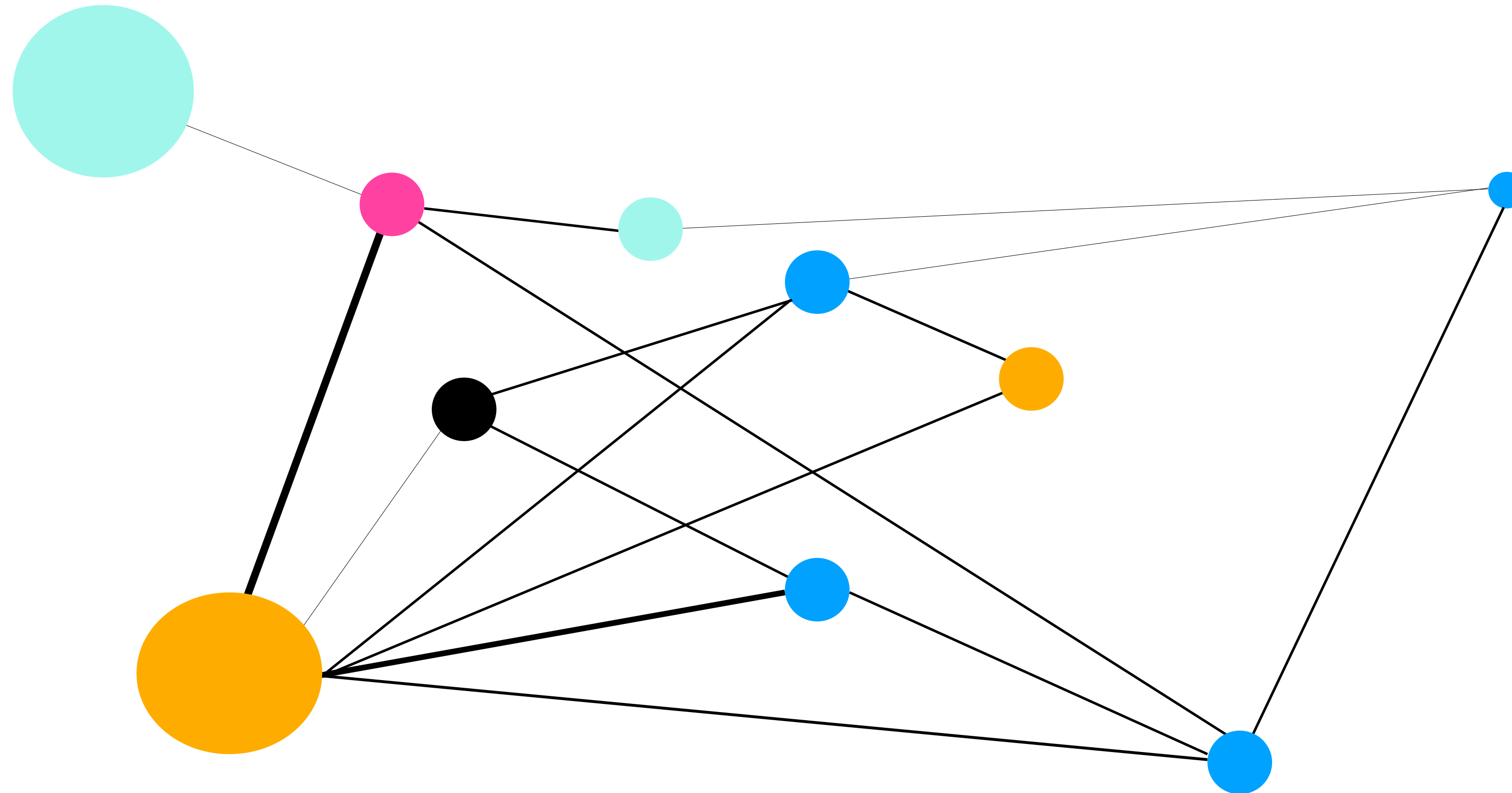
Interpretation IS PART of a complex system

Complexity



Interpretation IS a complex system itself...

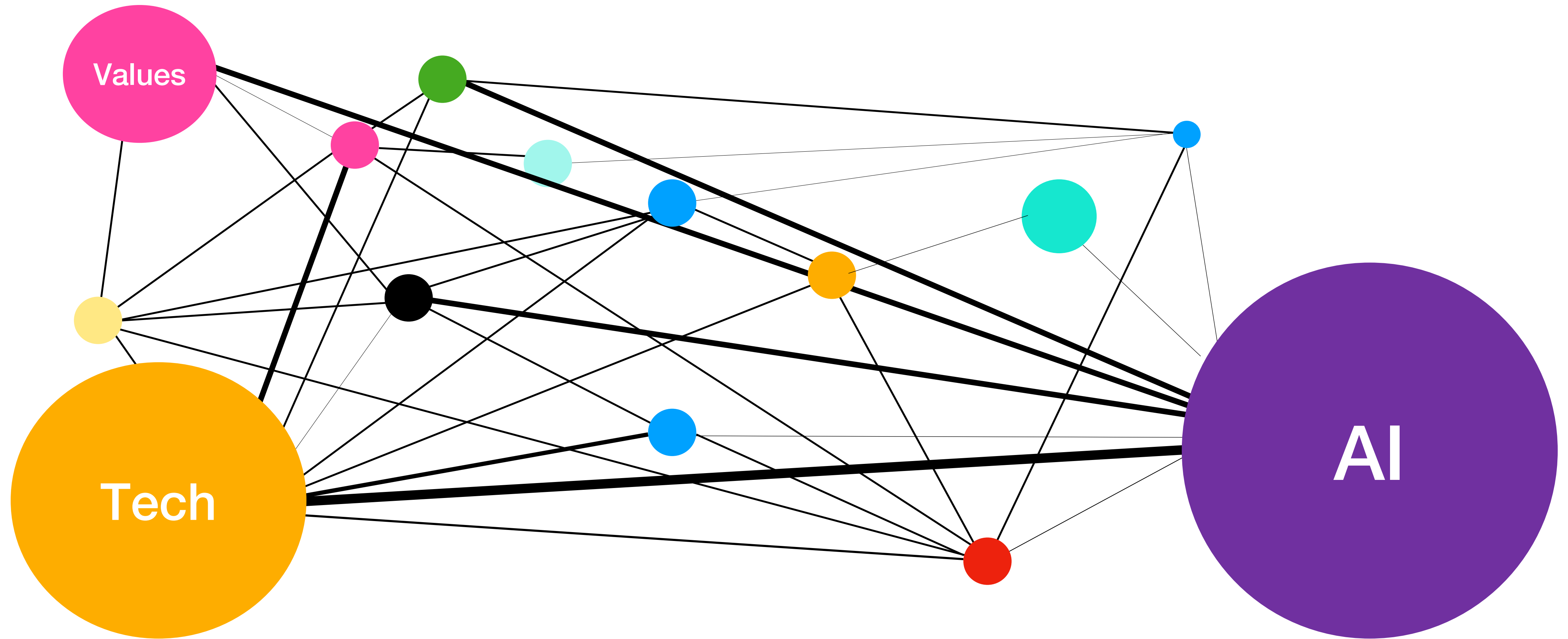
Complexity



● technology ● professionals ● industry ● academia ● process ● users ● economics ...and many others

... driving to a higher degree of complexity

Complexity



- technology
- professionals
- industry
- academia
- needs
- users
- AI
- economics
- AI ethics
- values ...and many others

Key drives to this higher degree of complexity

Technology & AI



New phenomena and values



- Pervasive
- Sophisticated
- Accessible
- Powerful
- ...

- Increase of speech content
- Accessibility
- Inclusivity
- Call for democratization of access
- ...

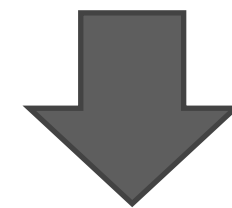
ARTIFICIAL INTELLIGENCE



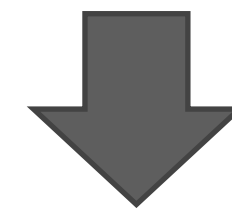
The trajectory of technological development



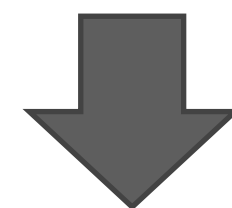
Humans without technology



Humans supported by technology



Technology supported by humans



Technology without humans

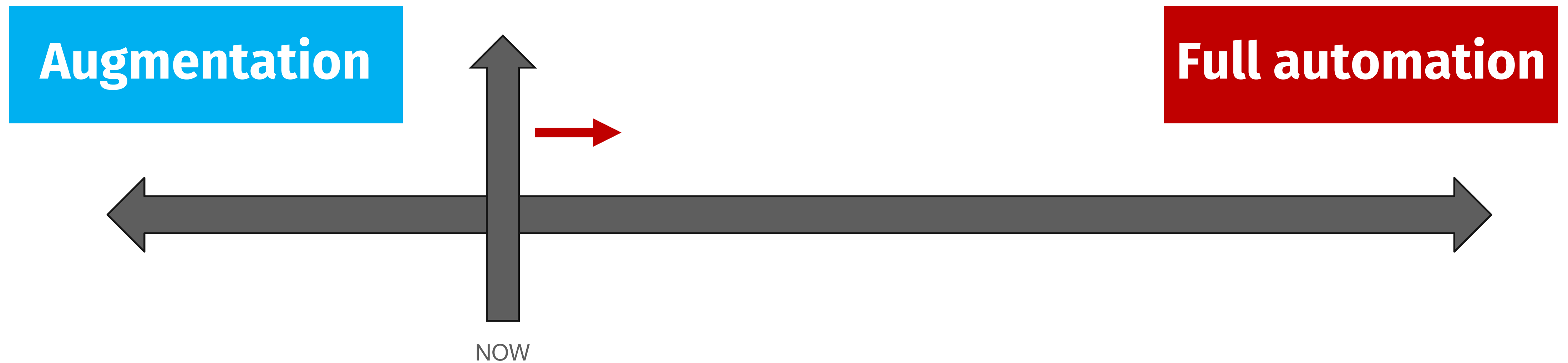


Augmentation



Full automation

Spoken language translation

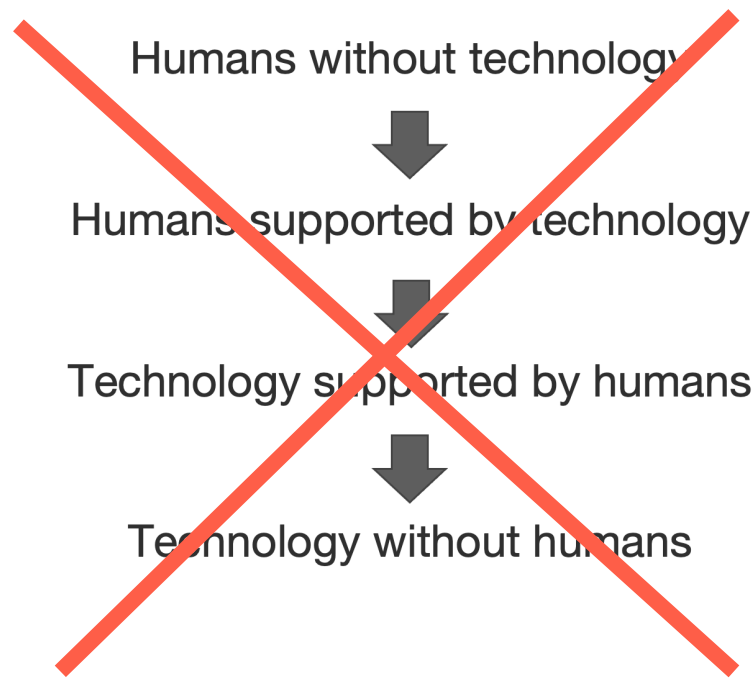


- Human-in-the-loop AI subtitling/dubbing
- Respekers for intralingual live subtitling
- CAI - Live support for interpreters
- Distance interpreting

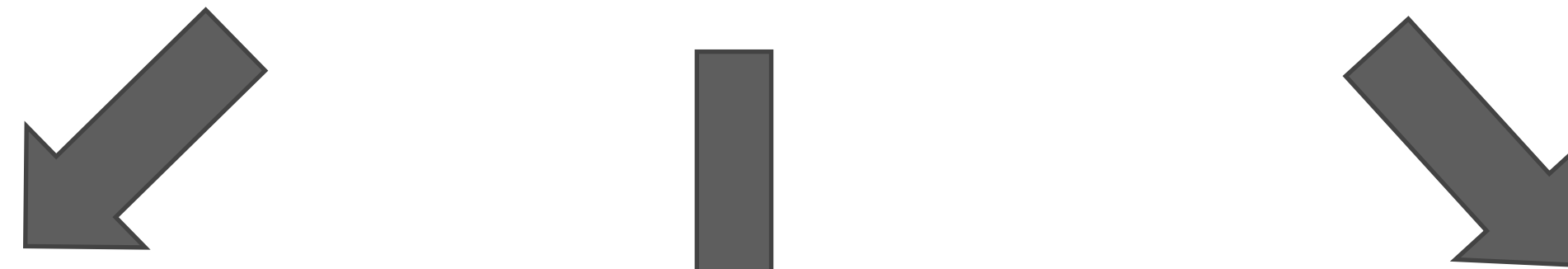
- Full-automatic dubbing/voiceover
- Live subtitling for accessibility (1to1 translation, easy language, etc.)
- Machine interpreting

Co-existence of both, depending on technology, use case, etc. but moving to the right

The new reality of interpretation



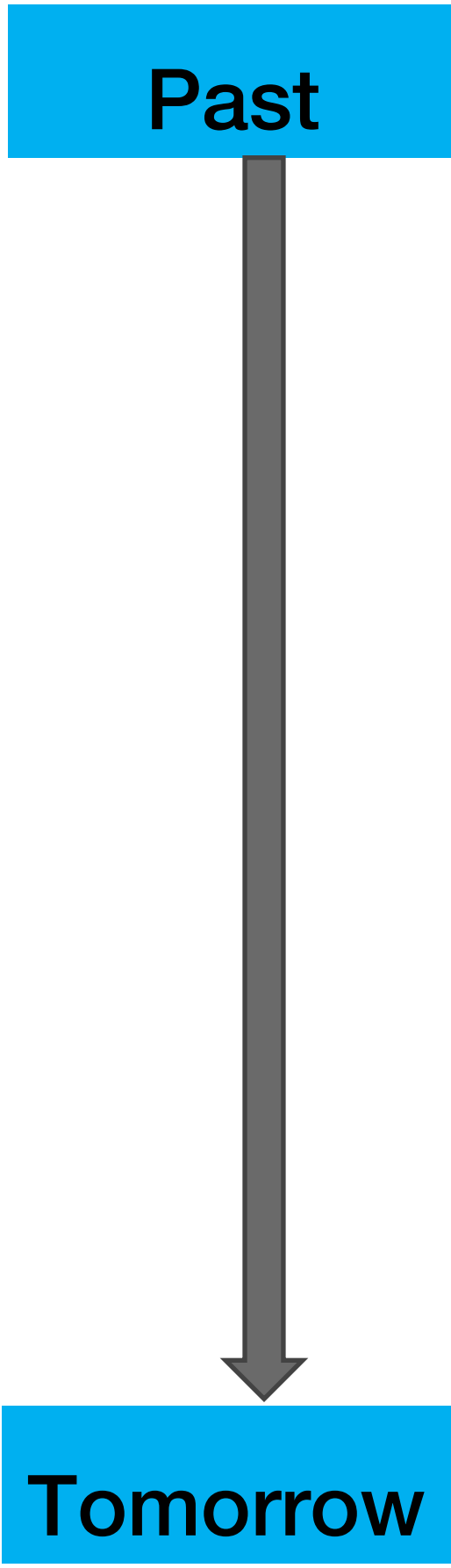
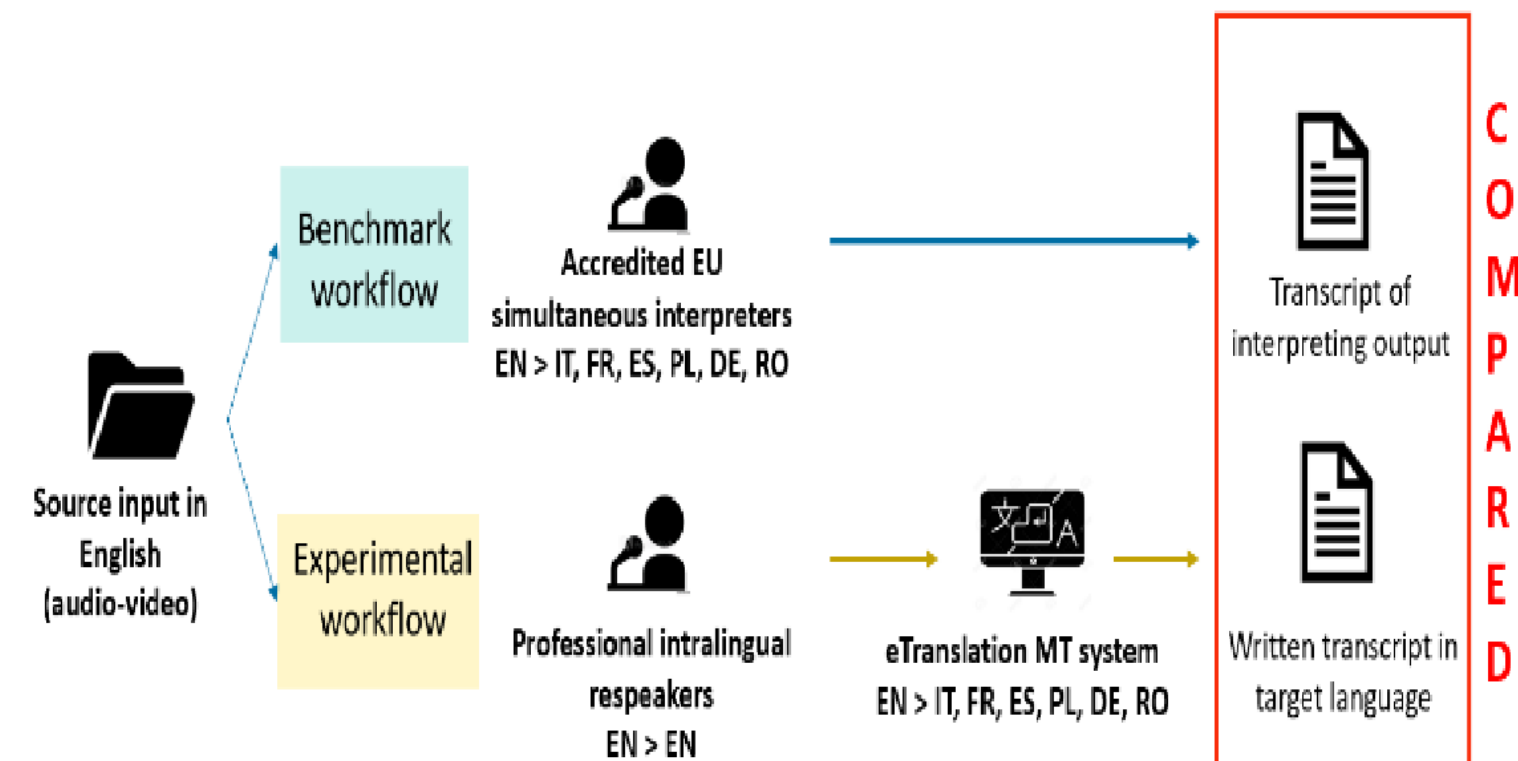
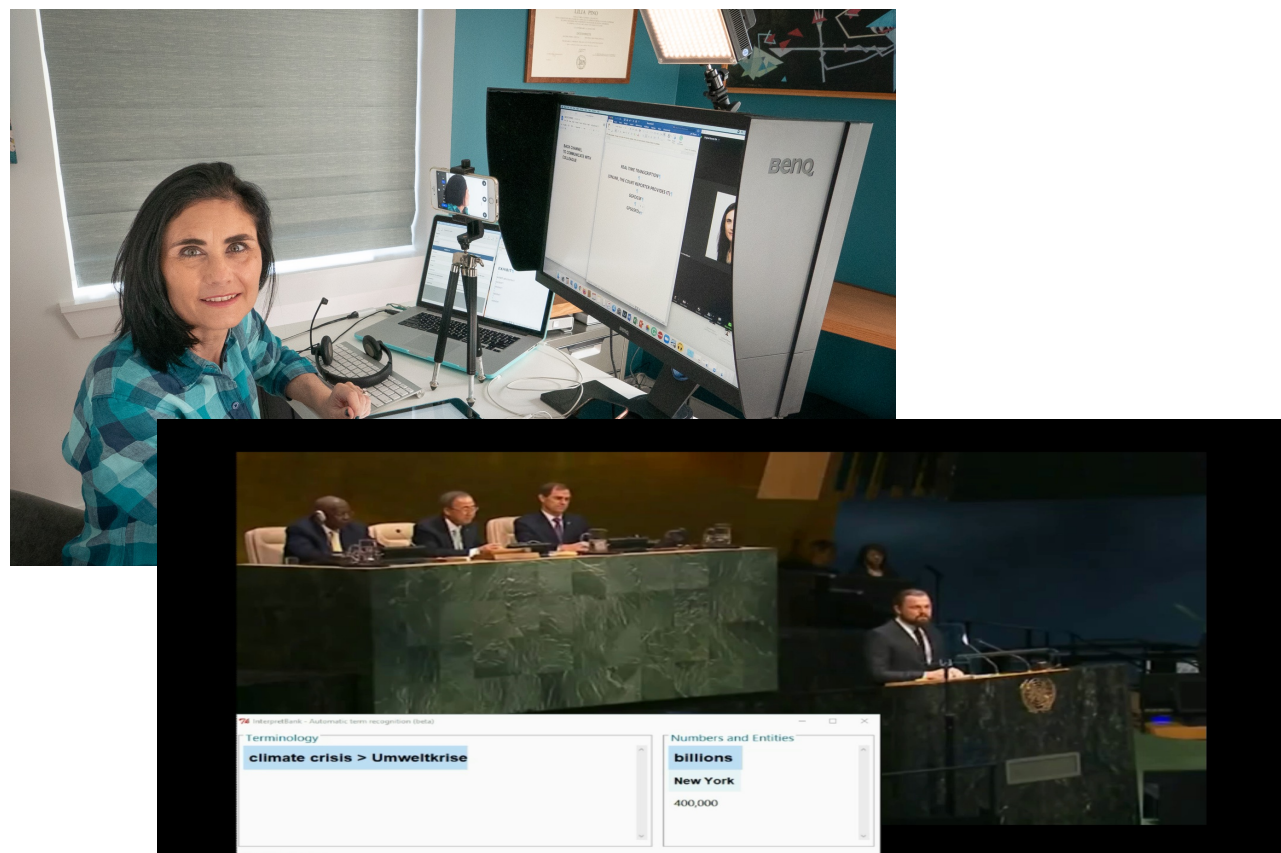
Humans without technology



Humans supported by technology

Technology supported by humans

Technology without humans



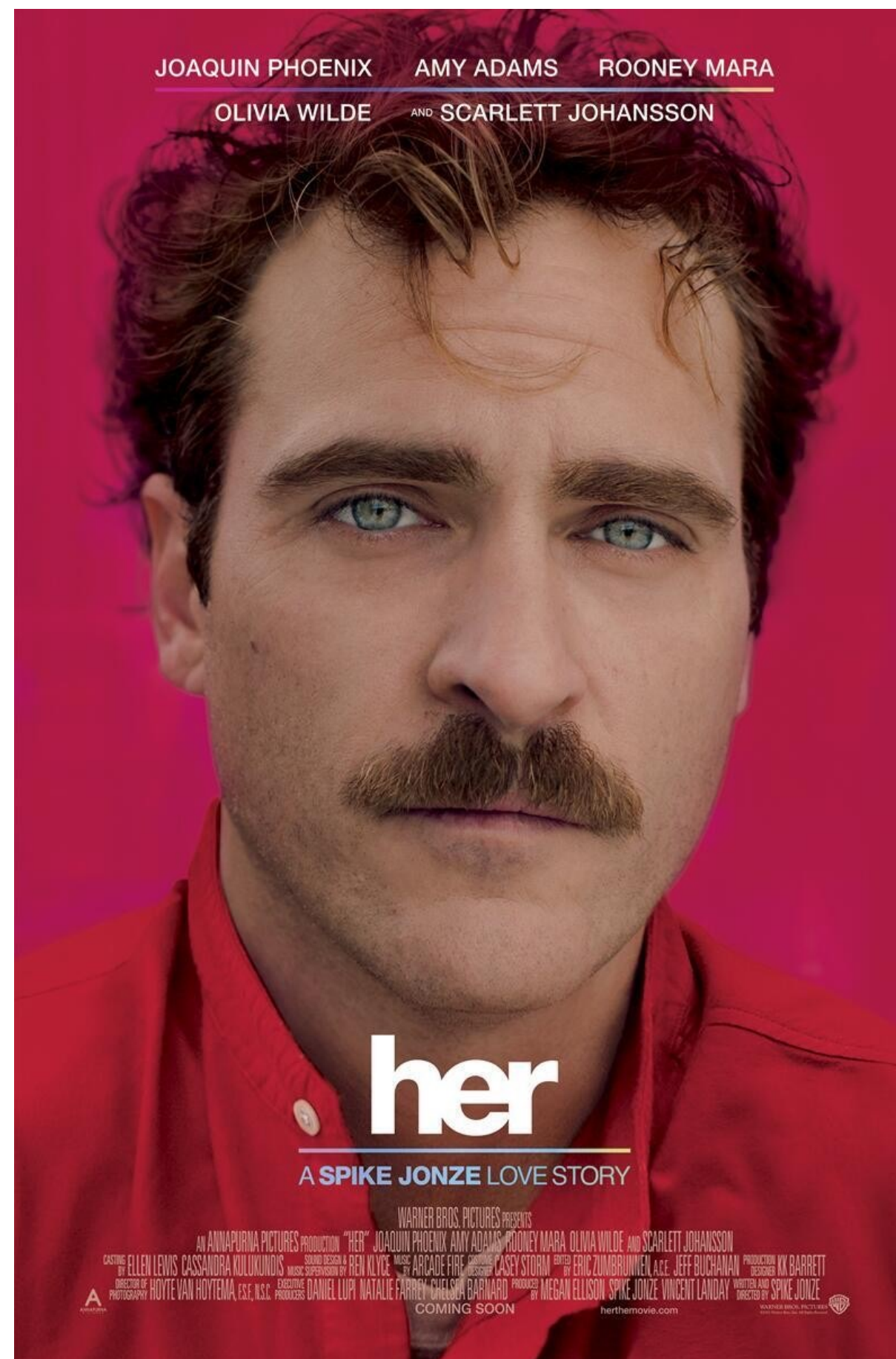
{ Is this a possible reality ? }

Yes, if we know what AI is, how it is evolving, what its limitations are and if we consider interpreting as a complex system

Misconceptions



Blade Runner



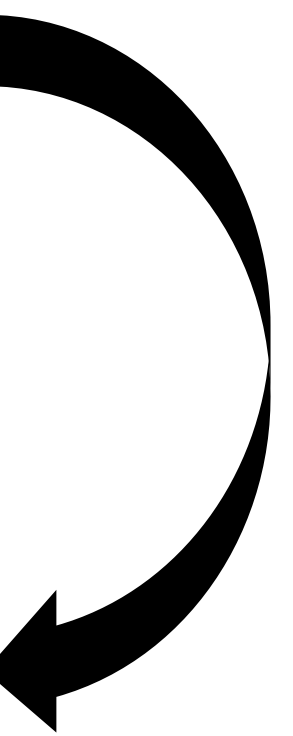
Ex-Machina

Artificial General Intelligence

vs.

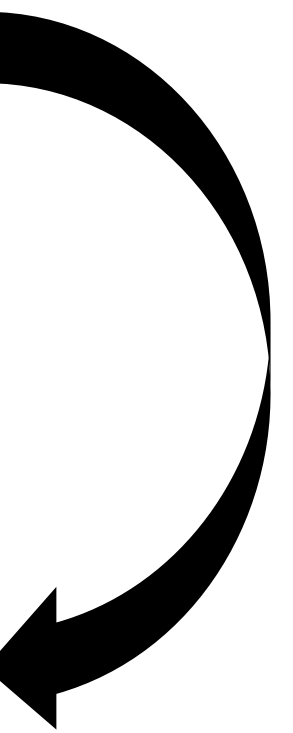
{ Artificial Narrow Intelligence }

Computers solve tasks, singularly, in a *somewhat* autonomous way, that would *normally* require some form of what we *generally* call intelligence.

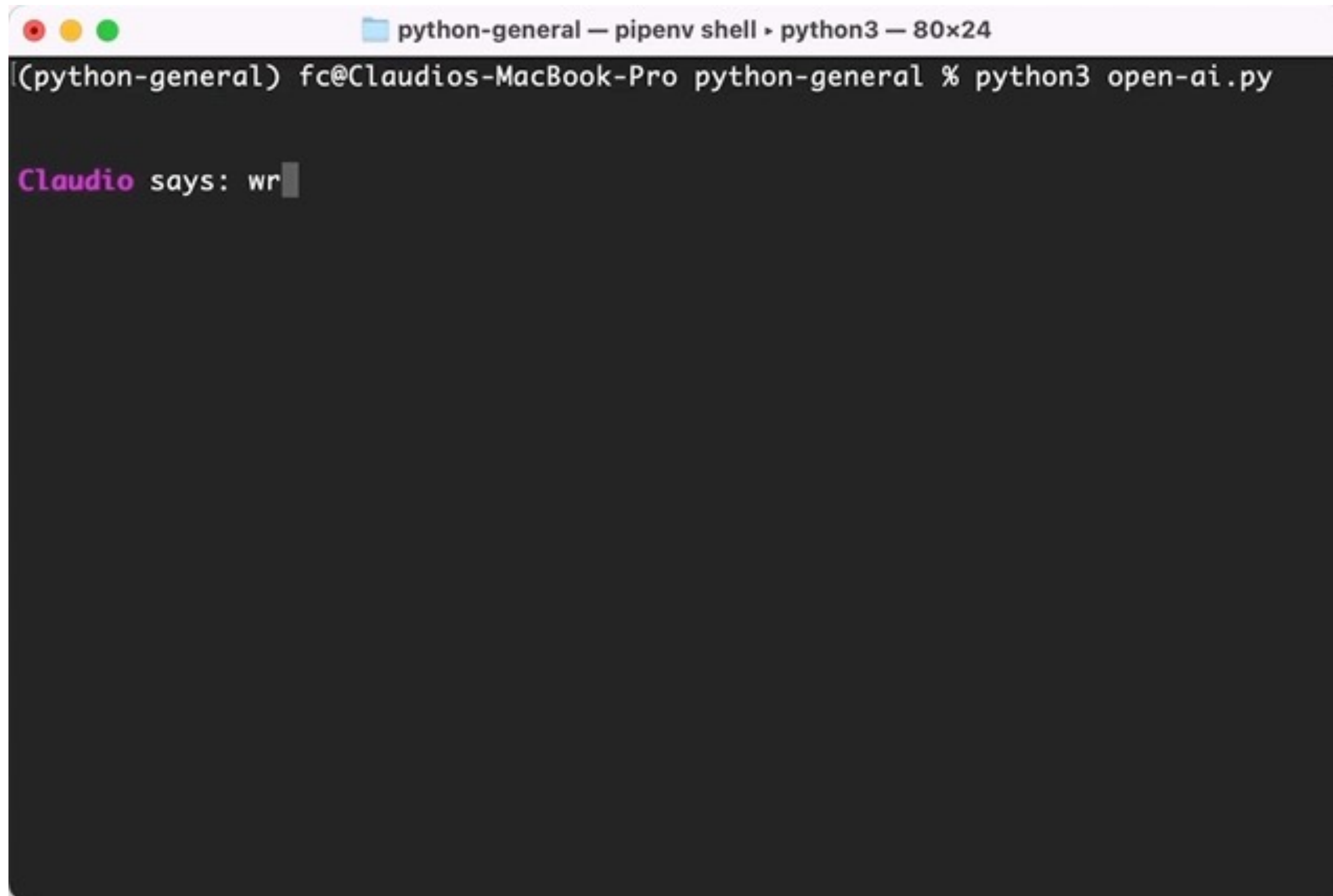


**We tend to overestimate
humans**

While humans are undoubtedly wonderful beings,
many of the skills that set them apart are less
sophisticated than our intuition would suggest



Misconceptions



```
python-general — pipenv shell » python3 — 80x24
(python-general) fc@Cludios-MacBook-Pro python-general % python3 open-ai.py

Claudio says: wr
```


agency \neq intelligence

“We have detached the ability to solve problems - agency - from the need of being intelligent”

(Floridi 2018)

AI
ML
NLP

A machine does not need to imitate humans to perform better than them

(Susskind 2021)

AI for spoken language translation

- Progress has been made in areas such as :
 - Automatic Speech Recognition
 - Machine Translation
 - Speech Synthesis
 - Generative text models
 - e2e speech-to-text translation
 - e2e speech-to-speech translation
 - Open-sourcing of technology
 - Simplicity of implementation
- Limitations are evident because:
 - Features of spoken language are complex
 - Interactive communication is very complex
 - Processing is happening at a very superficial level
 - Layers that are not codified in text are (still) not taken into consideration

Language ≠ Communication

AI in real-time speech translation

Simultaneous Interpreting

- **Live, low-latency, unedited** translation from one spoken language into another
- AI (NLP/ML) is at the core of:
 - **Computer-Assisted Interpreting:** augmentation of professionals in their workflows prior and during interpretation, with the goal to increase quality and productivity
 - **Machine Interpreting:** increasing accessibility to live events (ubiquity, affordability) by means of overcoming the exclusivity of the professions in delivering the service

Augmentation

Full automation

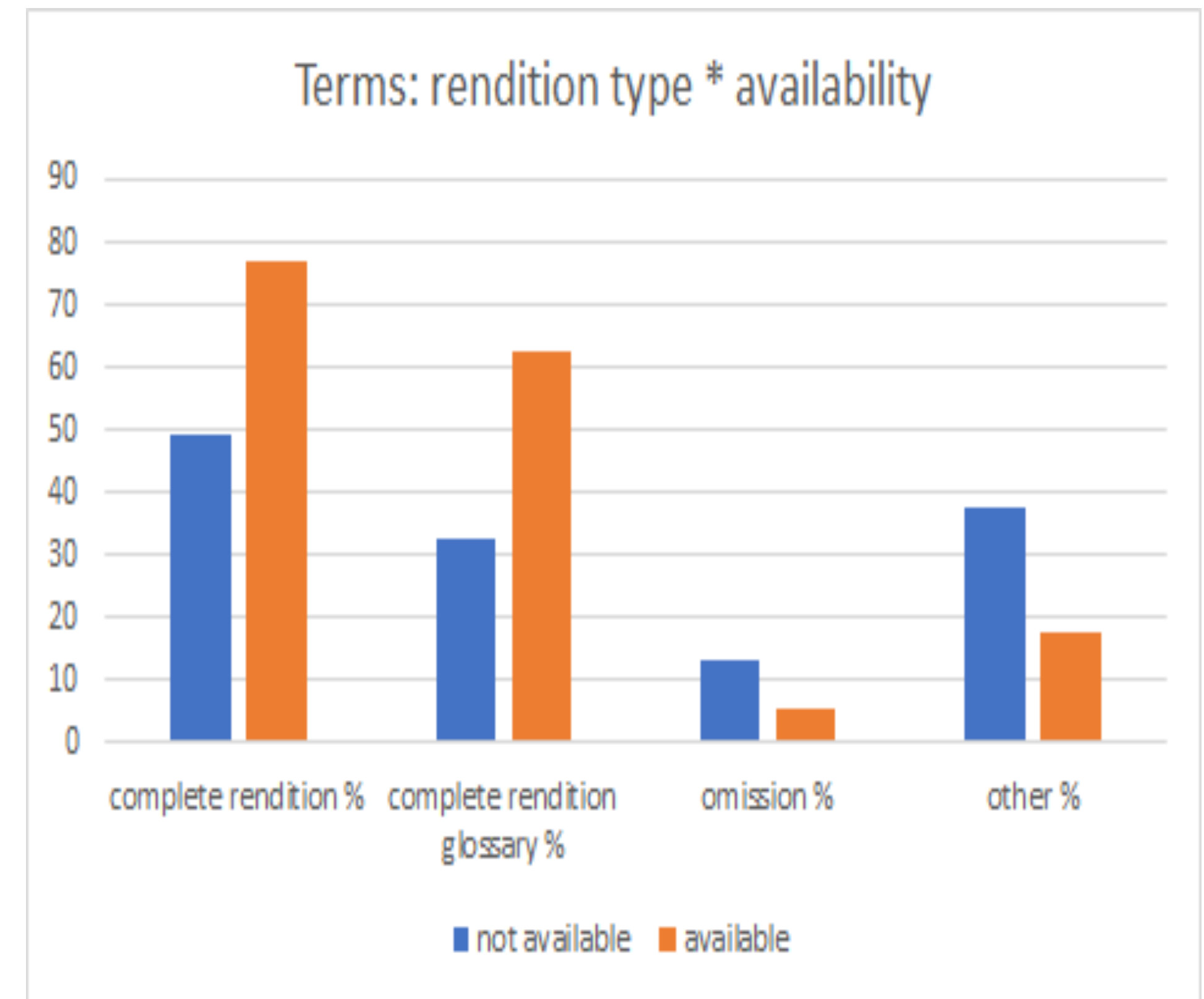
EXPERIMENTAL APPLICATIONS



Virtual Boothmate

Support for professional interpreters

- Improvements in rendition are measurable:
 - # correct: 60.2% > 85.2%
 - # omissions: 23% > 8%
 - Terms correct: 49% > 79%
 - Usefulness increases with increase of knowledge/proficiency gap between interpreter and speech
- (Fantinuoli/Montecchio 2022; Defrancq/Fantinuoli 2021; Pisani/Fantinuoli 2021)
- So many new insights at this conference and more to come in the next years!



Semi-Automated Live Interlingual Subtitles

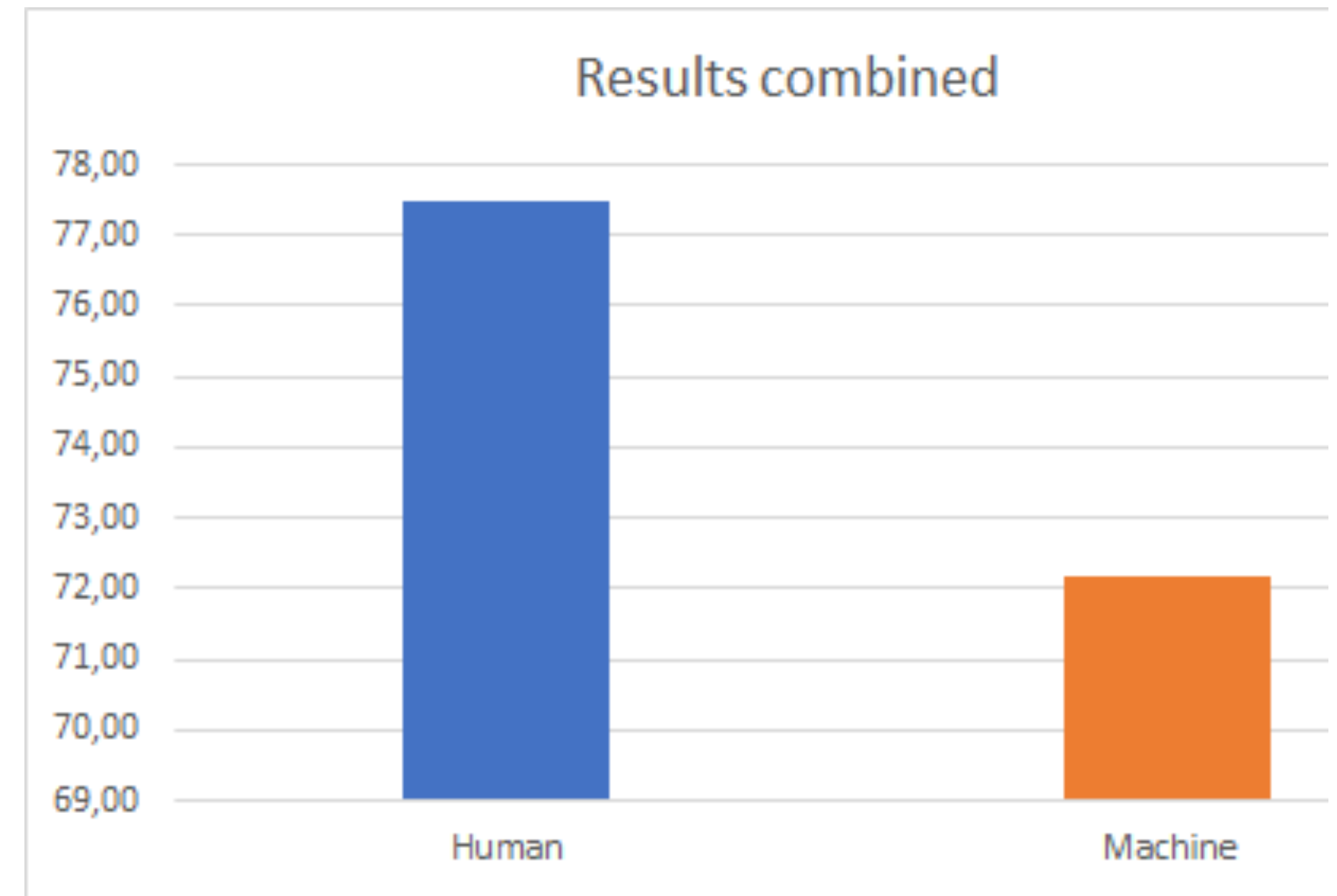
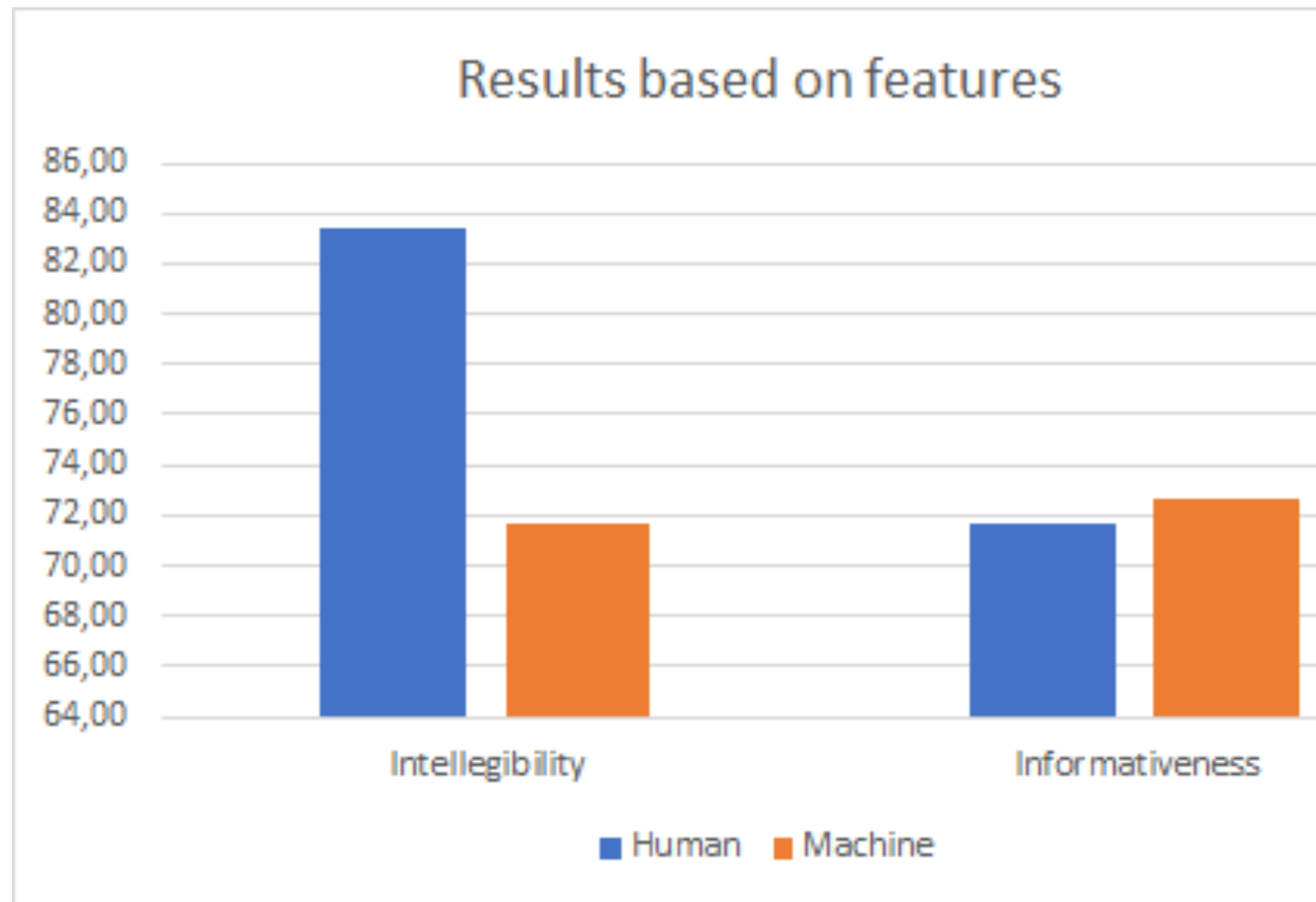
Human-in-the-loop speech-to-text

Languages	NTR average across speeches	NTR average across speeches	% Change when using the EXPERIMENTAL workflow
	Benchmark workflow	Experimental workflow	
Spanish	98.3%	98.9%	0.6% in favour of EXPERIMENTAL
Italian	98.9%	98.5%	0.4% in favour of BENCHMARK
French	99.5%	99.2%	0.3% in favour of BENCHMARK
Polish	98.7%	98.6%	0.1% in favour of BENCHMARK

(Korybski et al. 2022)

Speech-to-text translation

Full automated process



(Fantinuoli & Prandi 2021)

What does this (may) indicate

The trajectory seems clear:

It indicates that AI-tools are mature to support professionals and to extend accessibility when humans can not be involved/are not needed.

This notwithstanding the intrinsic and hardly to overcome limitations of current AI.

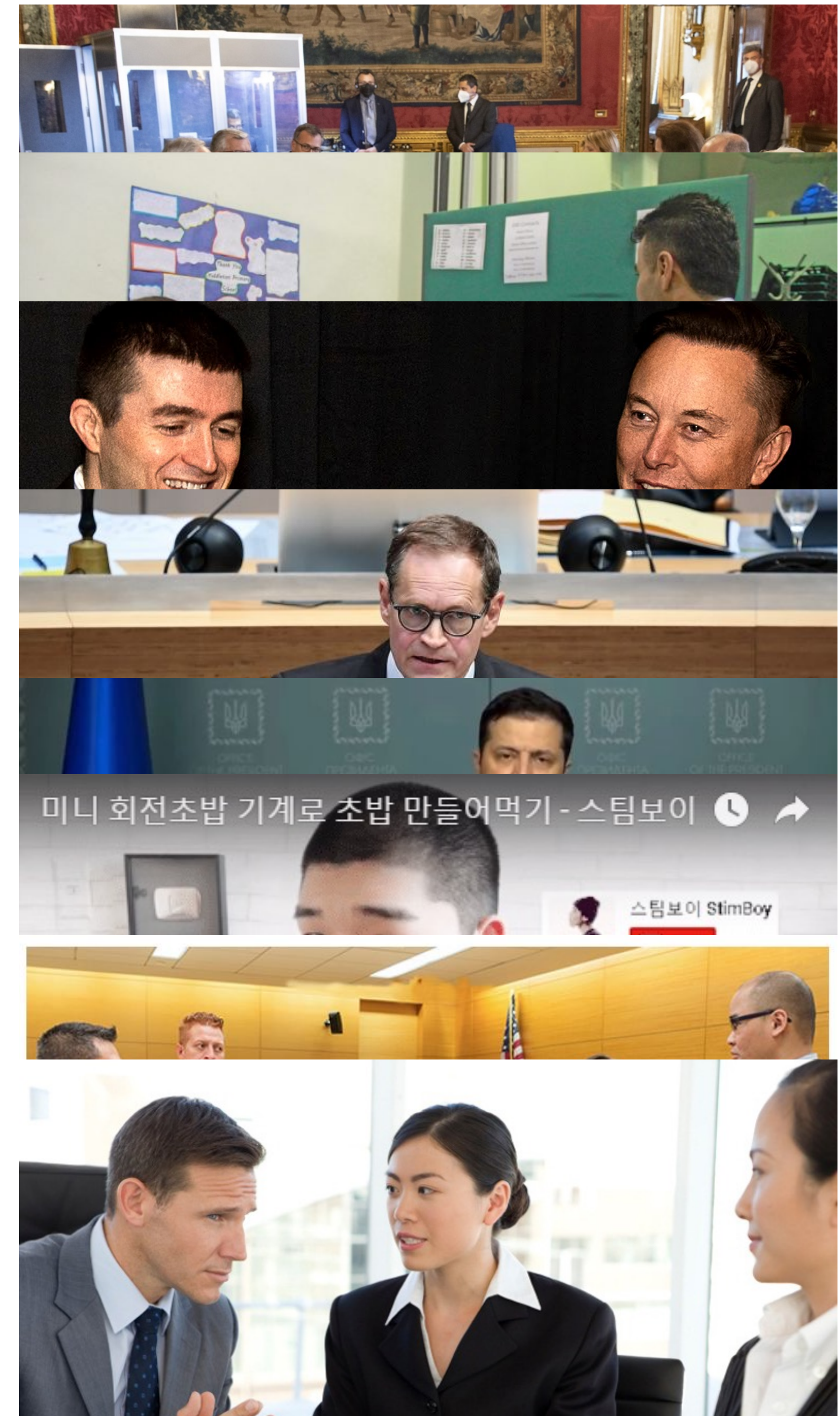
What does this (may) indicate

Where to use it and where not?

Who should use it and who not?

What about risks?

What about responsibility?



**LET'S BRAINSTORM ON
WHAT THE RISE OF AI
MAY MEAN FOR US**



Potential (positive) consequences

Human and AI/MI will co-exist

Quality push for humans

Diversification of the market

Democratisation of access

New professional profiles

AI creates more jobs for interpr.

More social recognition

Others ?

Potential (negative) consequences

Increase of digital divide

Disappearance of low segments

Misuse of MI

Concentration of power

Marginalization of professions

Obsolescence of old models

Others ?

What is needed (researchers/prof. assoc.)

AI/MI literacy

Discussions about AI/MI

User centric evaluation AI/MI

Use AI/MI for your own interests

Focus on knowledge not skills

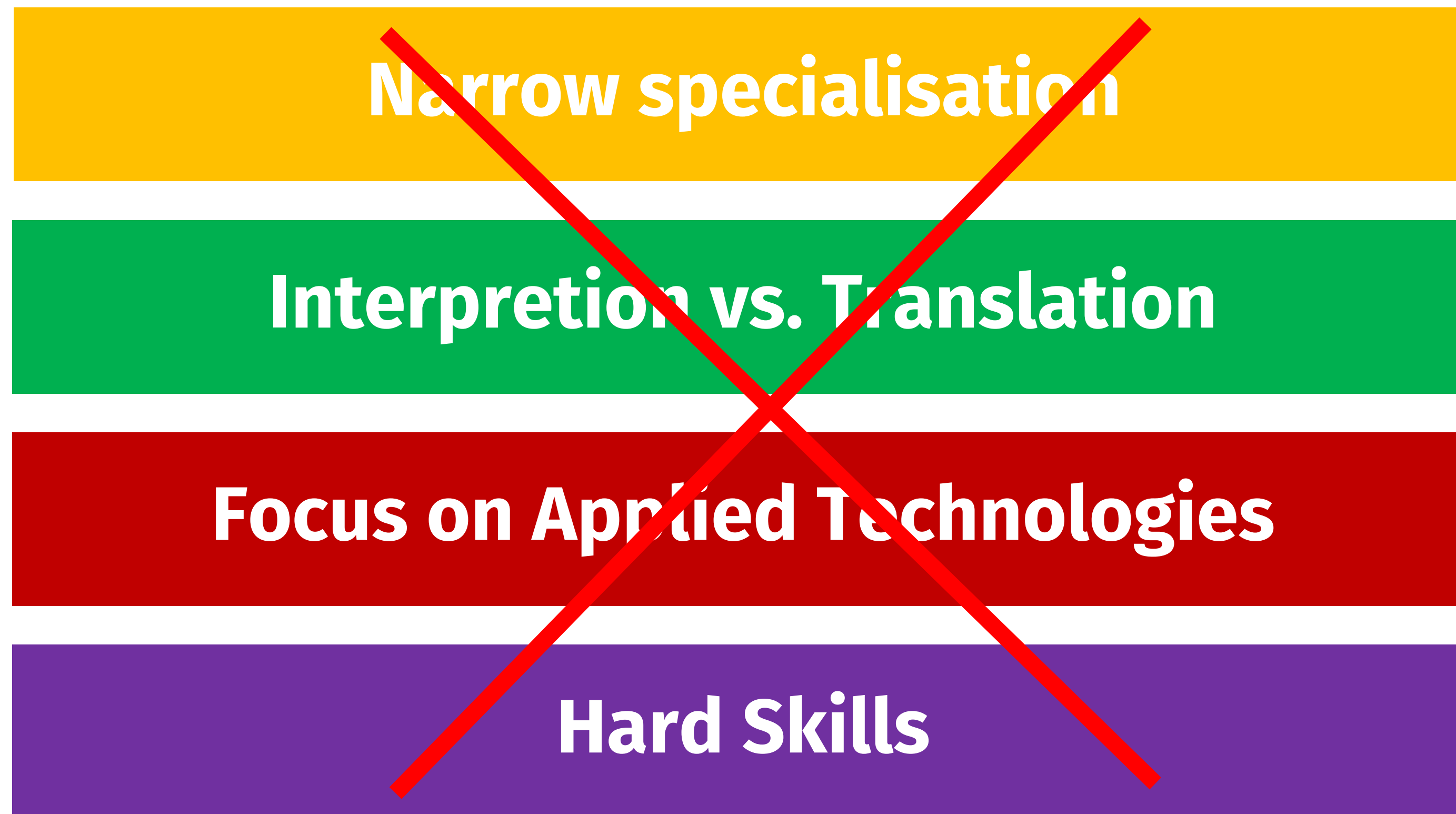
Focus on the value of human

Don't make humans to machines

Others ?

And what about education?

... in the age of AI?



*While some professional skills should be part of the curriculum, do not fear to move them to CPD

And what about education?

... in the age of AI?



*While some professional skills should be part of the curriculum, do not fear to move them to CPD

CONCLUSIONS



3 main takeaways

AI is making impressive and fast progress in the processing of natural languages

Multilingual communication and interpretation is going to be heavily influenced by AI

There are many reasons why we should be optimistic about the opportunities that arise from this

3 main takeaways

AI is making impressive and fast progress in the processing of natural language

Multilingual communication is going to be facilitated by AI

Reasons why we should be optimistic about the opportunities that arise from this

IT IS IN OUR HANDS TO MAKE THIS CHANGE TURN INTO SOMETHING POSITIVE FOR USERS AND FOR PROFESSIONAL INTERPRETERS

Grazie