

Research and innovate **on** and **with** AI



**GPT@JRC**

# GPT@JRC - Use of AI in science-for-policy by the European Commission's Joint Research Centre

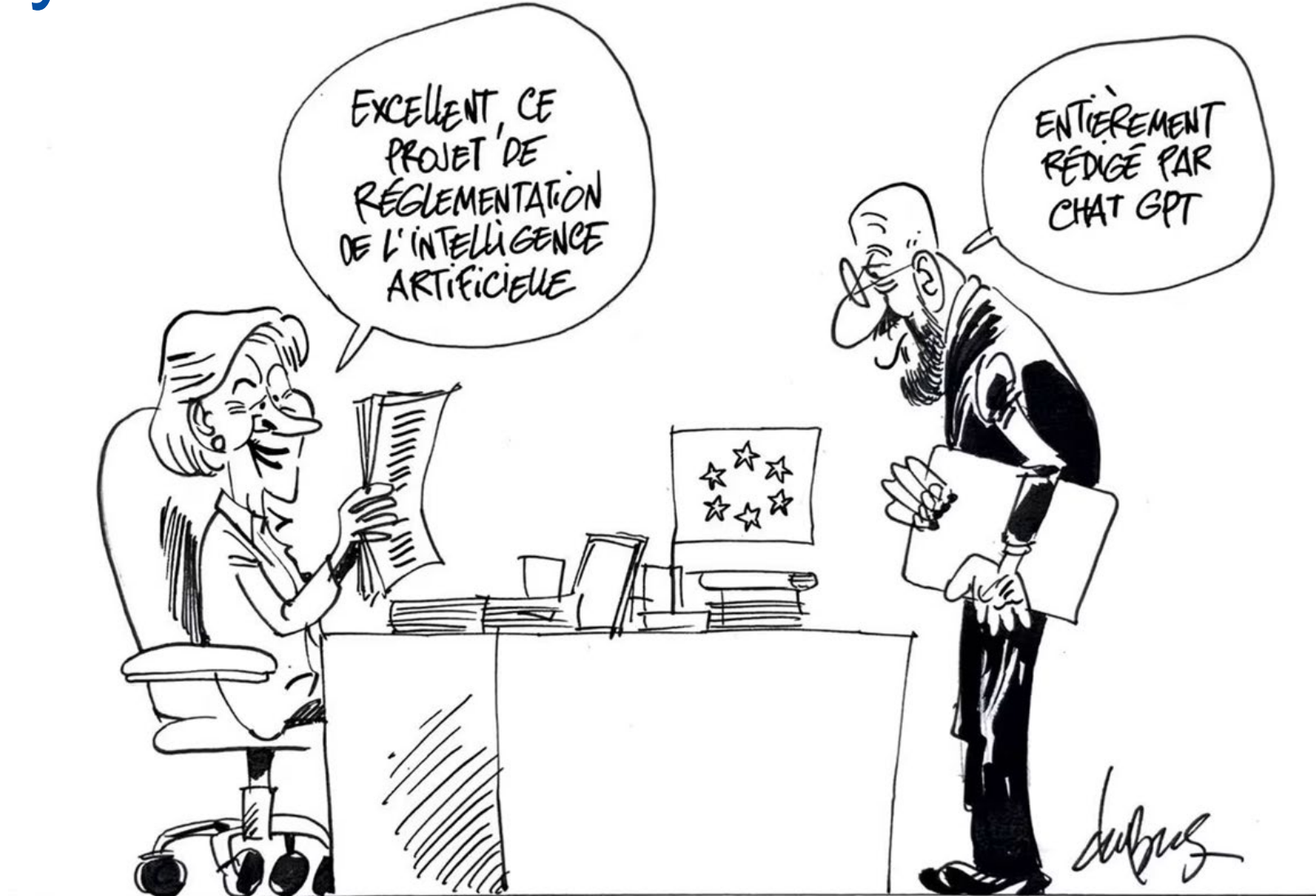
#StrongerTogether: SSAH and the future of evidence-informed policymaking

Brussels, 6 May 2024





# Policy and societal context

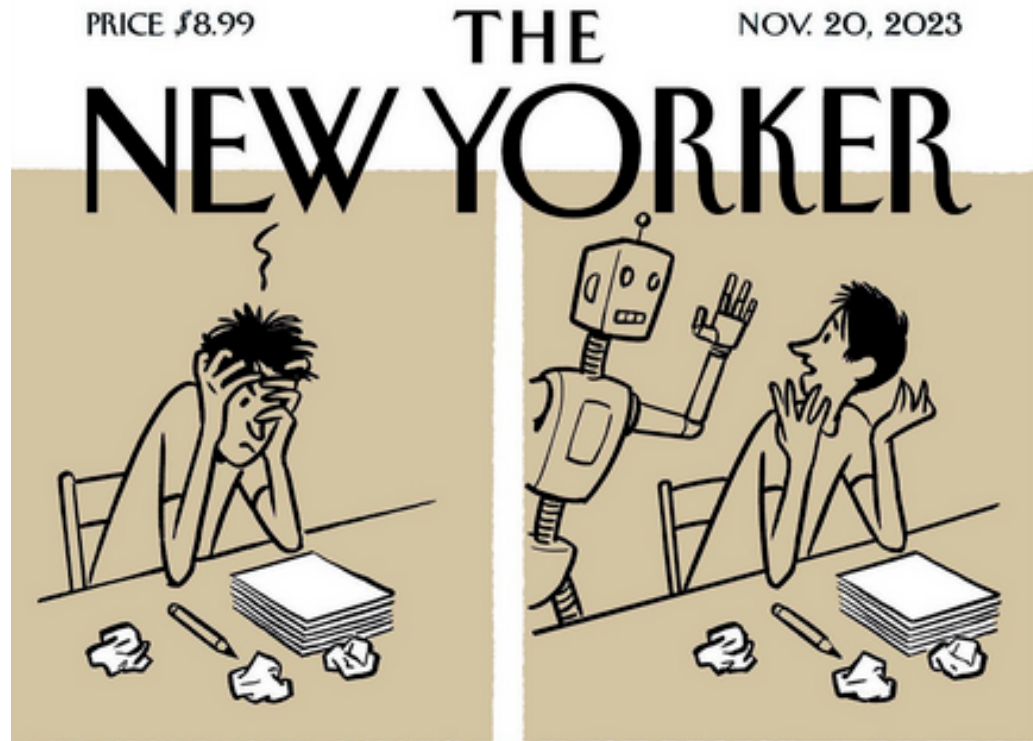




# Trustworthy AI

## Joint Research Centre

The JRC provides independent, evidence-based knowledge and science, supporting EU policies to positively impact society





# Outline

- 1** The hype: AI everywhere, for everything
- 2** From hype to Impact: the GPT@JRC project
- 3** Lessons learned: what's in for Science-for-Policy?

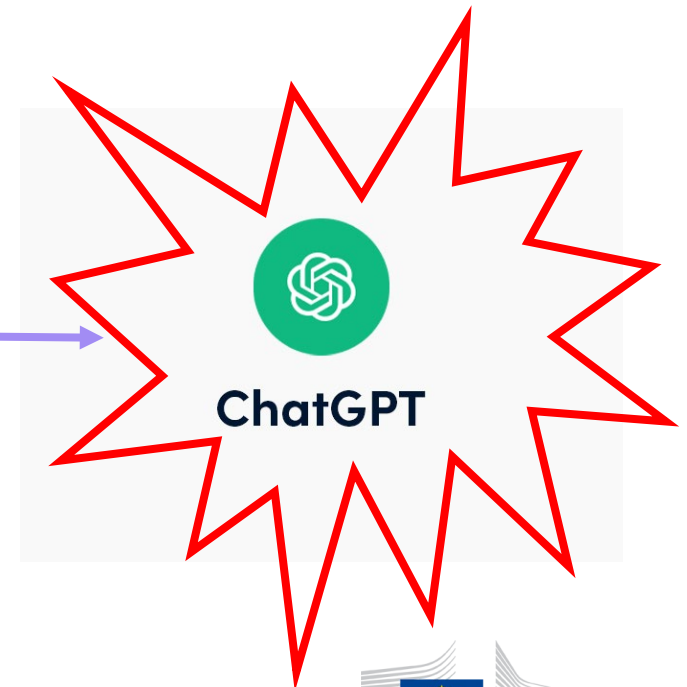
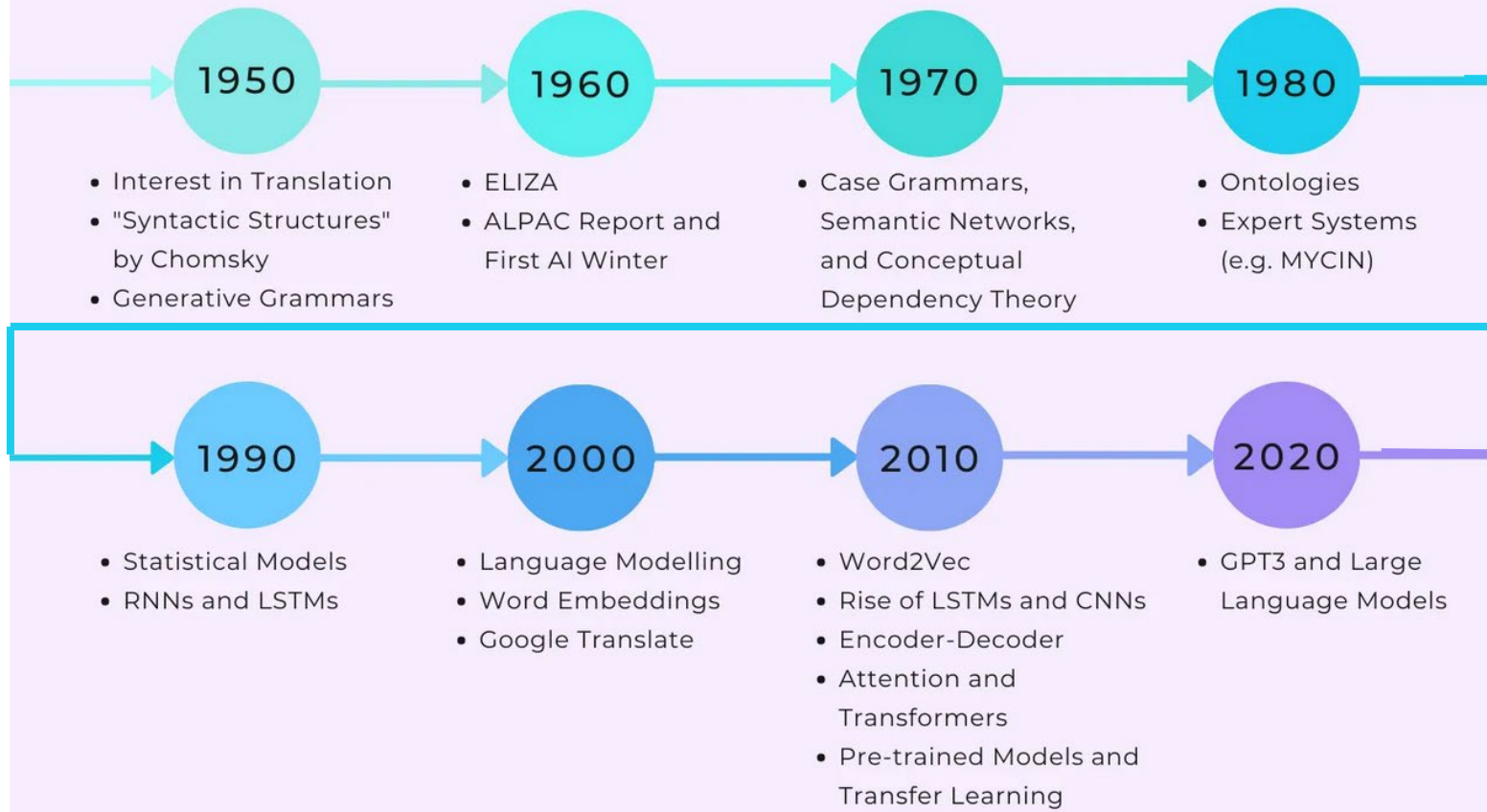


# The hype: AI everywhere, for everything

# ChatGPT & co. ... a big bang?



## A Brief Timeline of NLP



# What are Large Language Models ?



**Definition:** Large Language Models are “digital brain” computer programmes that have “seen” so many pieces of text, that they can infer relations between words, expressions, sentences, paragraphs in a way that mimics the human understanding/production of language. (and they can do that in 100+ languages at the same time!)

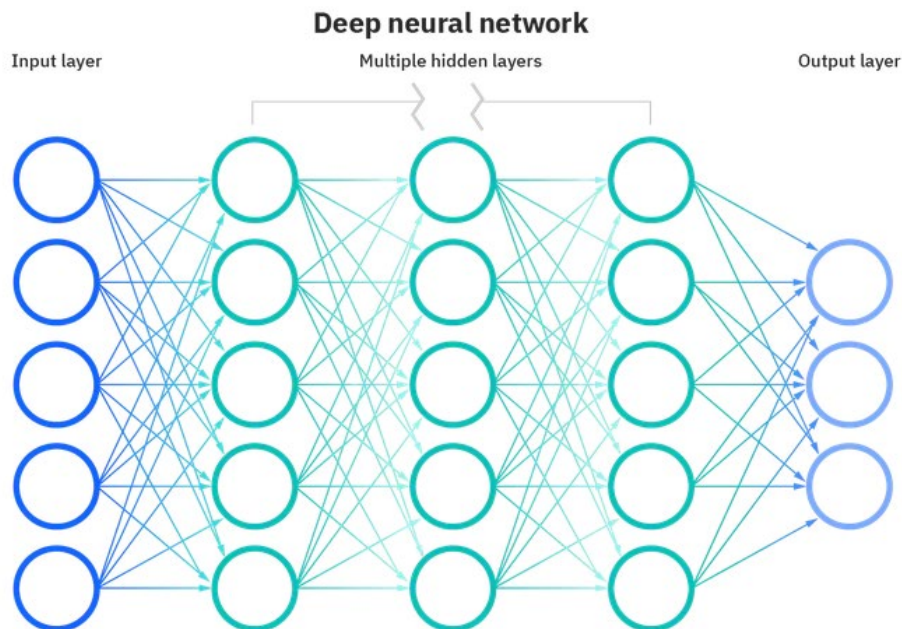
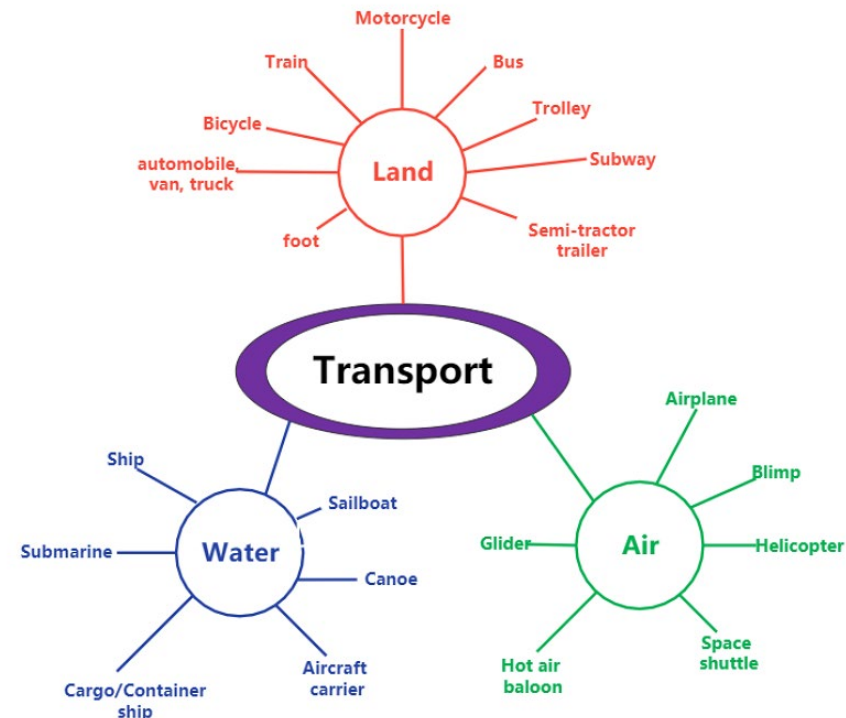


Image Credits : [IBM](#)



# A game changer

CHATHAM HOUSE  
Sign in or create account Search Support us  
Topics Regions Events Publications Become a member Leadership Academy About us  
Home > Publications > The World Today - April & May 2023 >  
**ChatGPT has opened a new front in the fake news wars**  
Search engines with the latest 'generative AI' obscure the sources for their responses. The result is a breeding ground for disinformation, writes Jessica Cecil.  
THE WORLD TODAY 21 MARCH 2023 - 4 MINUTE READ  
Jessica Cecil  
Founder, Trusted News Initiative  
Image - Illustration: Alexander Ecob  
Topics  
DISINFORMATION  
DIGITAL AND SOCIAL MEDIA  
On leaving the BBC in 2021, I didn't think we had won the war against 'fake news', but at least I believed we were capable of winning key battles. At last, fighting disinformation was

<https://www.chathamhouse.org/publications/the-world-today/2023-04/chatgpt-has-opened-new-front-fake-news-wars>

INSIDER  
Subscribe  
HOME > ECONOMY  
**ChatGPT may be coming for our jobs. Here are the 10 roles that AI is most likely to replace.**  
Aaron Mok and Jacob Zinkula  
Apr 9, 2023, 5:36 PM CEST  
Insider compiled a list of the 10 jobs that could be disrupted by AI tools like ChatGPT, according to experts. Jens Schlueter/Getty Images

<https://www.businessinsider.com/chatgpt-jobs-at-risk-replacement-artificial-intelligence-ai-labor-trends-2023-02>

nature  
Explore content About the journal Publish with us  
nature > news feature > article  
NEWS FEATURE | 03 May 2023  
**Is the world ready for ChatGPT therapists?**  
The current landscape of mobile mental-health apps is the result of a 70-year search to automate therapy. Now, advanced AIs pose fresh ethical questions.  
Ian Graber-Stiehl

<https://www.nature.com/articles/d41586-023-01473-4>

By Invitation | Artificial intelligence

## Yuval Noah Harari argues that AI has hacked the operating system of human civilisation

Storytelling computers will change the course of human history, says the historian and philosopher



<https://www.economist.com/by-invitation/2023/04/28/yuval-noah-harari-argues-that-ai-has-hacked-the-operating-system-of-human-civilisation>

CNN BUSINESS Markets Tech Media Calculators Videos  
**Snapchat's new AI chatbot is already raising alarms among teens and parents**  
By Samantha Murphy Kelly, CNN Business  
Published 11:43 AM EDT, Thu April 27, 2023

<https://edition.cnn.com/2023/04/27/tech/snapchat-my-ai-concerns-wellness/index.html>

WIRED BACKCHANNEL BUSINESS CULTURE GEAR IDEAS SCIENCE SECURITY SIGN IN SUBSCRIBE  
MATT BURGESS SECURITY APR 4, 2023 12:00 PM  
**ChatGPT Has a Big Privacy Problem**  
Italy's recent ban of Open AI's generative text tool may just be the beginning of ChatGPT's regulatory woes.

<https://www.wired.com/story/italy-ban-chatgpt-privacy-gdpr/>

An official EU website How do you know?  
European Commission  
IP Helpdesk  
Home > News & Events > News >  
Intellectual Property in ChatGPT  
NEWS ARTICLE | 20 February 2023  
**Intellectual Property in ChatGPT**

[https://intellectual-property-helpdesk.ec.europa.eu/news-events/news/intellectual-property-chatgpt-2023-02-20\\_en](https://intellectual-property-helpdesk.ec.europa.eu/news-events/news/intellectual-property-chatgpt-2023-02-20_en)








# From hype to Impact: the GPT@JRC project



# GPT@JRC – Purpose and goals

 **GPT@JRC** is a secure platform for staff to access and experiment with Large Language Models (LLMs)

**GPT@JRC**, is a **full Pilot Project** under **Commission ICT Governance Framework**

## Goals

- [Test Facility] Study the **risks and opportunities of using Generative AI**
- [Deliver Impact] Identify **key policy support use cases** and build user-driven guidance
- [Federate] Cooperate with **AI practitioners** (through API provision) on **scientific research** on/with AI
- [Synergise] Contribute to **AI@EC Network** and engage with **similar initiatives** at corporate level (eBriefing, GPT@EC, HR AI Literacy plan, ...)



# Web Interface

European Commission | Ignacio.SANCHEZ@ec.europa.eu

Chat | Guide | Settings | About

## GPT@JRC

Model in use: [GPT 3.5 - Nov 2023](#)

Used 0% (17/400000) of daily quota ⓘ

SNC mode:  ⓘ

+ New chat

History

### Welcome to GPT@JRC!

Choose an AI model from the menu on the left, and write a clear prompt in the box below.

See here for tips on writing prompts ⓘ

Feel free to give us your feedback on your experience or ask us questions by writing to us in the Teams General or Technical support channels, or to our Functional Mailbox [JRC-DIR-T-GPT@ec.europa.eu](mailto:JRC-DIR-T-GPT@ec.europa.eu).

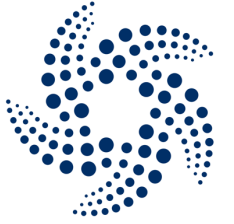
If you have other colleagues who would like to join GPT@JRC, they can register [here](#).

This site is managed by Joint Research Centre - GPT@JRC update 2.2.0 | [Privacy statement](#)



# AI models available

The screenshot shows the European Commission AI chat interface. At the top left is the European Commission logo. At the top right is the user email: Ignacio.SANCHEZ@ec.europa.eu. Below the header is a navigation bar with 'Chat', 'Guide', 'Settings', and 'About'. The main content area is titled 'New Chat' and is divided into three columns: 'AI Models', 'Best use', and 'Model info'. In the 'AI Models' column, there is a toggle for 'Enable advance view' which is checked. Below it is a dropdown menu with the following options: GPT 3.5 - Nov 2023 (selected), GPT 4 Turbo - Nov 2023, GPT 3.5 - Jun 2023, GPT 3.5 large - Jun 2023, GPT 4 - Jun 2023, GPT 4 32k - Jun 2023, GPT 3.5 - Mar 2023, Nous Hermes Mixtral, LLama 2 70b chat, MPT 30b chat, LLama 2 13b chat, MistralOrca 7b, Zephyr Alpha 7b, and Zephyr Beta 7b. The 'Best use' column describes the selected model as the latest version (November 2023) for various tasks like drafting and summarization. The 'Model info' column provides details about OpenAI's GPT-35-turbo, including its context length and model code: `gpt-35-turbo-1106`. A yellow 'New chat' button is located at the bottom right of the modal. The footer of the interface states: 'This site is managed by Joint Research Centre - GPT@JRC update 2.2.0 | Privacy statement'.



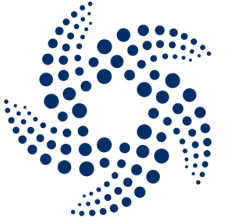
# GENESIS mission statement

Better understanding of the **potential benefits and risks of Generative AI.**




Act as an **enabler for the exploration** of Generative AI for the JRC, the European Commission and the EU Institutions by providing:



- **GPT@JRC Generative AI Platform** to enable EC staff to safely explore how to use the technology.
- Mapping and evaluation of **Generative AI Use Cases**, and support to impactful projects
- **Applied Scientific Research** on Trustworthy AI on Generative AI.



# GPT@JRC hierarchy of use cases

- **Level 1: Use of GPT@JRC in day-to-day tasks:** summarising, translating, drafting briefings, proof reading, classification, sentiment analysis, etc.  **GPT@JRC online tool**   
<https://gpt.jrc.ec.europa.eu/>
- **Level 2: Enhancing existing tools and processes:** integrating AI abilities to improve other systems (automatised access and processing)  **Ad hoc use of GPT@JRC API by partner projects** 
- **Level 3: Creating new, specialised AI tools:** user-specific chatbots, knowledge synthesis, foresight  **New projects requiring RAG engineers and AI evaluators** 

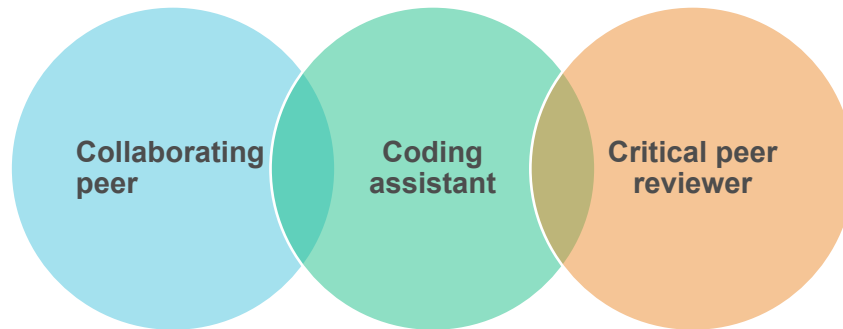


# Use-case examples



# Macro-economic assistant

GPT@JRC was used as an assistant assuming multiple identities:



1. Research question exploration – Collaborating peer
2. Choosing a research methodology/model – Collaborating peer
3. Implementing an econometric model – Coding Assistant
4. Interpreting analysis results and formulating a common narrative – Collaborating peer
5. Critically assessing the research findings and conclusions – Critical peer reviewer

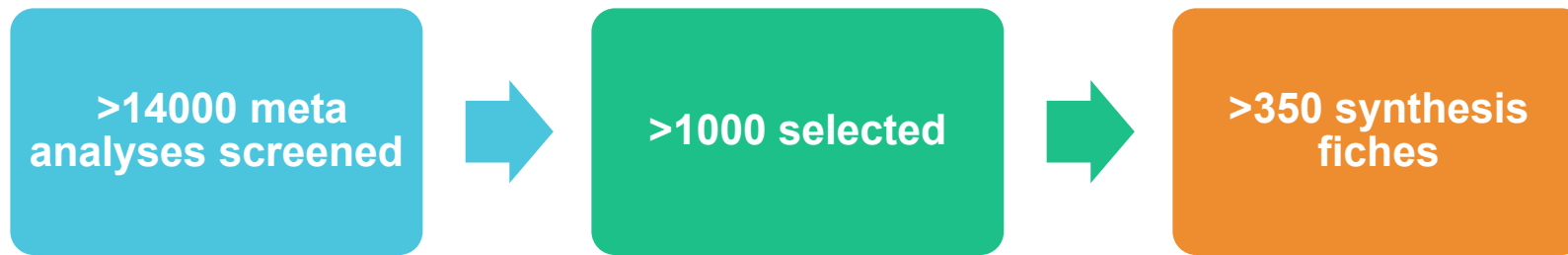






# Knowledge Synthesis

**Example:** Systematic review of meta-analyses on the impacts of 35 farming practices



- Used GPT@JRC to screen abstracts
- AI vs. human decisions (as benchmark)
- Comparison of several open-source LLMs
- Best model had 86% accuracy (Nous Hermes by Mistral)



# What's in for Science-for-Policy? Lessons from the battlefield

# GPT@JRC – S4P lessons learnt

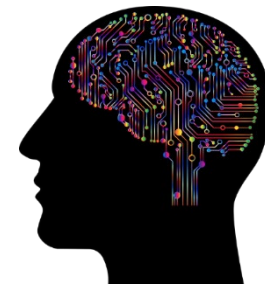


Image Credits : (cc) via Pixabay

“The answer is: **yes/no/maybe...**”

“There is no magic!”

“Knowledge is the new oil.”



Get familiar with AI's **capabilities AND limitations**  
**Define clear use cases** where AI makes the difference

# Thank you

Bertrand De Longueville  
JRC.T.5 – Text and Data Mining unit

Ignacio Sanchez  
JRC.T.2 – Cybersecurity and Digital Technologies unit