Inserm

La science pour la santé
From science to health

Recommendations on the Use of AI Systems at Inserm

Pôle IA & Numérique

SUMMARY

1 Importance of training and awareness

Users should receive training on Artificial Intelligence Systems (AIS) before using them in order to understand the associated risks and challenges.

2 Responsible and proportionate use

The use of AIS has a significant environmental impact. It should therefore remain proportionate, frugal and adapted to actual needs.

3 Sensitive data

Sensitive data include identifiable/pseudonymised data, unpublished scientific articles, anonymised data without prior authorisation, confidential information and data subject to intellectual property constraints.

4 Data sharing

No sensitive data must be shared with an AIS.

5 Paid subscriptions to external generative AI

Inserm will not fund paid subscriptions to non-sovereign external generative AI platforms.

6 Model development

AI models developed within Inserm must comply with the principles outlined in the Inserm Ethics Committee note, particularly the principles of Verification and Transparency.

7 Training data

Any training data used must strictly comply with applicable regulations.

CONTEXT AND KEY ISSUES

Since the emergence of ChatGPT and other AIS, the use of artificial intelligence tools has grown significantly. Today, only a few years later, it has become almost unthinkable not to use such tools in a professional context. Task automation, advanced research, data processing and analysis are all use cases that explain the progressive integration of AI into daily work practices. Inserm researchers are no exception, as demonstrated by the survey on researchers' uses and needs in artificial intelligence and digital technologies.

However, in a medical research context, constraints are specific, particularly regarding the handling of sensitive data, confidentiality and information sharing. In this context, this document provides the recommendations of the Inserm AI & Digital Unit regarding the use of AI tools.

As health data are considered sensitive, they require rigorous pre-processing, including appropriate pseudonymisation measures, as well as particular vigilance regarding data sharing. Furthermore, documents shared with an AI system (except in specific cases) may be collected and processed by the companies developing these solutions. In practical terms, asking ChatGPT to correct grammar of a draft scientific article means sharing, without real control, part of one's work with OpenAI.

In this context, two approaches can be considered:

- using an AI system that guarantees no collection of user interactions (such as the tool currently being developed by the IT Department and the AI & Digital Unit),
- or using a locally installed system on one's computer that does not communicate externally (for example via Ollama).

Additional aspects must also be considered. Since the release of ChatGPT in 2022, several studies have highlighted the emergence of dependency-related behaviours among certain AI system users. It is therefore necessary to address this issue and adopt a responsible approach, while remaining vigilant regarding the role of such tools in daily practices.

Finally, Inserm wishes to highlight the environmental impact of AI systems. From the manufacturing of computing hardware to electricity and water consumption, as well as associated CO_2 emissions, these technologies are far from environmentally neutral. Here again, the key is awareness and limiting usage whenever possible in order to reduce their environmental footprint.

RECOMMENDATIONS

Artificial Intelligence Systems (AIS), whether generative or not, will most likely enable the development of new tools to address certain challenges encountered by Inserm staff in their daily work (see definitions in Annex 1). However, the development of such systems and the use of public AI platforms involve a set of risks that must be taken into account.

Inserm is currently working on the progressive deployment of AI systems that can be used within a secure internal IT environment. The purpose of these recommendations is to clarify the framework for AIS use and to minimise associated risks, particularly those linked to external AI platforms.

1 Importance of training and awareness

The first recommendation concerns the need to be trained before using any AI system. For example, AI literacy requirements under the AI Act require, since February 2025, a minimum level of understanding before using such technologies.

Annex 2 of this document provides a list of free online training courses, as well as a link to the “Understanding AI” roadmap designed to address different levels of prerequisites and expertise. For certified training courses, users are encouraged to contact the training department of their regional delegation or the Inserm National Training Unit.

In addition, the Inserm Ethics Committee and the LORIER programme have issued a note on AI systems, summarised in Annex 3. All AIS users are encouraged to consult this note before engaging with these tools.

2 Responsible and proportionate use

As mentioned in the Context and Key Issues section, the environmental impact of generative AI systems is particularly significant, both during training and daily usage, including for a simple prompt. For further information, readers are referred to the Inserm Ethics Committee note.

It is therefore essential to adopt the most frugal use possible of AIS. This includes training to better understand the environmental costs associated with different types of systems and learning how to select the least resource-intensive AIS capable of meeting the expressed need.

The free and open-source EcoLogits tool allows the environmental impact of different models to be compared. An example comparison for summarising an article is provided below.

Modèle	ChatGPT 5	Claude Sonnet 4.0	Google Gemini 2.5	Mistral large
Consommation électrique (mWh)	434	455	426	144
Effet sur le réchauffement climatique (mgCO2eq)	181	184	169	8.13
Consommation en métaux et minéraux (µgSbeq)	0.864	0.608	0.406	0.186
Consommation en ressources naturelles (kJ)	4.38	4.52	4.2	0.716
Consommation d'eau (mL)	1.88	1.91	1.88	1.02

These figures are estimates and should be interpreted with caution. Nevertheless, the significantly lower consumption observed for the Mistral model may be explained by several factors, including a more compact architecture, advanced technical optimisation and the use of data centres largely powered by nuclear electricity.

In any case, many needs can be addressed by AI systems that are far more frugal than generative AIS. This may include lighter deep learning models (CNNs, U-Nets, transformers) or classical machine learning algorithms (random forests, gradient boosting, clustering, dimensionality reduction, etc.). These approaches should be considered first before using generative AI platforms.

Moreover, for the same task, models often exist in different sizes (nano, small, large, etc.). Even for text or image processing tasks (classification, summarisation, etc.), smaller models are often sufficient. For text processing, transformer-based models such as BERT, pre-trained on biomedical corpora (BioBERT, BioNLP, etc.), are relevant alternatives to explore.

Similarly, “small LLMs” or “SLMs” (models with fewer parameters, such as Llama3.2-1B, DistilBERT or Orca 2) can be considered depending on the use case.

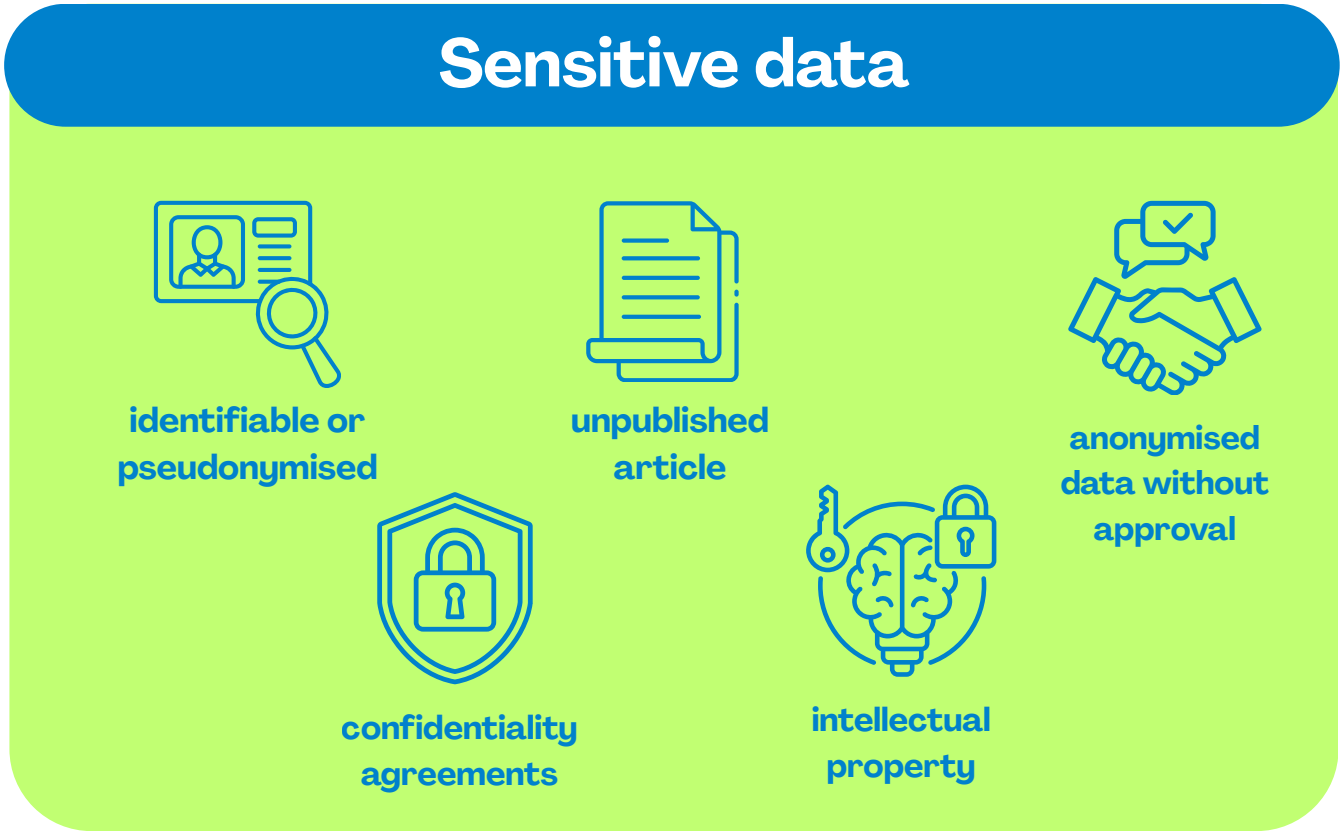
In general, environmental impact increases with model size and number of parameters: around 110 million parameters for BioBERT, 1 billion for Llama3.2-1B, 7 billion for BioMistral-7B and approximately 200 billion parameters for each of the eight models composing ChatGPT-4. In case of uncertainty, users are encouraged to contact the Inserm AI & Digital Unit.

3 Sensitive data

Any data whose public disclosure could have a significant negative impact on the user, Inserm, its staff, or research participants (patients or healthy volunteers) must be considered sensitive.

This includes in particular identifiable or pseudonymised health data, regardless of origin; unpublished article or clinical trial data; anonymised cohort data without explicit approval from the principal investigator; and any strategic information subject to confidentiality agreements. Data subject to intellectual property constraints must also be considered sensitive.

In case of doubt, users are encouraged to consult the ANSSI guidelines. If uncertainty remains, contact the Data Protection Officer (DPO), the Chief Data Officer (CDO), or the Inserm AI & Digital Unit.



4 Data sharing

Regardless of the model used, external AI platforms must never be used with sensitive data, whether uploaded as files or directly included in prompts.

This rule applies regardless of the access mode (free or paid) and regardless of the country where the platform is hosted (France, Europe, or outside Europe). It applies to all use cases: writing assistance, translation, document summarisation, information requests, image generation, etc.

Regarding code generation, these platforms may be used for most applications, provided that an expert systematically reviews the generated code. This verification is essential to assess code quality, robustness and security.

However, these platforms must never be used to generate code for highly sensitive applications, particularly those related to access rights management, cryptography or sensitive data processing.

Finally, the use of an external AI platform API within an automated process involving non-sensitive data may be considered, but must first be subject to a Data Protection Impact Assessment (DPIA) conducted with Inserm's Data Protection Officer (DPO). Once risks have been identified and assessed, a subcontracting agreement must define responsibilities and security measures ensuring confidentiality and data protection.

5 Paid subscriptions to external generative AI platforms

For sovereignty reasons, and to limit risks related to intellectual property and sensitive data, Inserm will not fund paid subscriptions to non-sovereign external generative AI platforms.

Inserm is currently working on the progressive deployment of internal AI systems offering comparable services within a secure IT environment.

Pending the effective deployment of these internal services, paid subscriptions to platforms hosted under sovereign infrastructure, compliant with French regulations (including GDPR), and offering strong confidentiality guarantees may be exceptionally authorised. This is notably the case for the current offer provided by MistralAI.

However, even in this context, the use of sensitive data remains strictly prohibited.

6 Model development

Some of the recommendations above specifically concern large generative language models hosted on external platforms. However, most of these recommendations apply to all AI systems, whether generative or not, including those developed internally within the Institute.

These principles are detailed in the Inserm Ethics Committee note summarised in Annex 3. Two major principles must be highlighted:

- Verification: users must verify the quality of AI-generated outputs and identify potential biases in training data. Biases must be documented and clearly explained.
- Transparency: the use of AI systems must be explicitly mentioned and described, regardless of the tool used.

7 Training data

In all cases, before using data to train an AI model (generative or not, neural network-based or classical machine learning), users must ensure that the use of such data complies with applicable regulations (French Data Protection Act, GDPR, European AI regulation).

Whether data are produced by Inserm or obtained from external sources, it is essential to verify that their use is lawful and compliant. In case of doubt, contact the Data Protection Officer (DPO), the Chief Data Officer (CDO) or the Inserm AI & Digital Unit.

Web scraping may be a useful practice when required data are not directly available. However, it raises major ethical, legal and commercial issues. It is therefore recommended to use an API whenever possible.

In all cases, web scraping must comply with the Terms and Conditions of the websites concerned, copyright law and GDPR. For further guidance, users are encouraged to consult CNIL recommendations and the INRAE note on the topic.

ANNEX

I. Definitions

- AIS (Artificial Intelligence System): broad definition of an AI model or statistical learning system based on its inference capability. According to the AI Act, an AIS is a process generating outputs such as predictions, content, recommendations or decisions that may influence physical or virtual environments, and refers to the system's ability to infer models or algorithms (or both) from inputs or data.
- Generative AI: an AI system designed to autonomously generate original content (text, images, audio, video, etc.) resembling human-created content.
- AI platform: a web platform providing an integrated set of models enabling the development, training or use of AI systems.
- Web scraping: a method used to extract data from websites and transform them into a usable format for learning or analysis.

II. Formations

Niveau débutant

- Objectif IA : Initiez-vous à l'intelligence artificielle, eformation accessible sur le site mentor.gouv.fr (6h), pour le grand public sans aucun prérequis en informatique ou mathématiques
- Découvrir les IA génératives, eformation accessible sur le site mentor.gouv.fr (1h), les bases des informations nécessaires pour utiliser une IA générative
- Utilisez ChatGPT pour améliorer votre productivité (2h) basé sur ChatGPT mais valide pour tous les autres plateformes d'IA générative
- Apprenez les bases du langage Python (6h)
- Initiez-vous à Python pour l'analyse de données (6h)
- Apprendre à coder avec Python, formation FUN-MOOC poussée (120 heures - 15 semaines à 8h/semaine environ)

Niveau Intermédiaire

- Optimisez votre apprentissage avec l'Intelligence Artificielle (6h)
- Découvrez les librairies Python pour la Data Science (8h)
- Initiez-vous au Machine Learning (10h)

Niveau Avancé

- Initiez-vous au Deep Learning (8h)
- Apprenez la programmation orientée objet avec Python (12h)
- Gérez du code avec Git et GitHub (6h)
- Machine learning in Python with scikit-learn, formation FUN-MOOC en anglais (36 heures, rythme au choix)
- Python : des fondamentaux aux concepts avancés du langage, formation FUN-MOOC poussée (9 semaines - 81 heures, 9h/semaine environ)

Pour aller encore plus loin

- Les tutorials de l'équipe Myriad du Creatis proposent une analyse approfondie des principaux modèles (auto-encodeurs, graph neural networks, modèles de diffusion…)

III. Key recommendations from the Inserm Ethics Committee and the LORIER Programme

1. Disclosure and Transparency

- Naïve disclosure: Researchers must remain vigilant regarding uncontrolled dissemination of data (loss of confidentiality), as well as the dissemination of unreliable information (hallucinations, unverified or non-sourced content), regardless of the digital tool used.
- Scientific publications: Researchers must explicitly indicate the use of Artificial Intelligence Systems (AIS) in their work (tools, algorithms, parameters) and clearly distinguish contributions generated through AIS from those resulting from their own creative activity. In scientific publications, a dedicated section entitled “Use of AIS” should describe the role of AIS, similarly to how statistical software is reported.
- Research administration and support functions: Transparency must also apply to all other uses of AIS within Inserm, particularly in administrative areas such as human resources (recruitment processes, career management, etc.).

2. Attribution and transparent models

Researchers should publish the key details of AIS models they create or use (training data, versions) and ensure long-term archiving in order to enable replication studies.

They should also favour models that support compliance with ethical best practices, particularly regarding proper citation of data sources, and encourage academic uses aligned with the principles of open science.

3. Use of synthetic data

Inserm researchers are encouraged to expand the use of synthetic data in order to reduce the risk of re-identification of research participants (anonymity as defined by CNIL/G29/EDPB), while ensuring data realism, relevance for secondary use, and diversity of the datasets, and while avoiding biases that could compromise research outcomes.

The use of high-quality anonymised synthetic data may also, in certain cases, enrich datasets, especially in fields where real-world data are scarce or highly sensitive.

4. Verification of AIS outputs

Responsibility for the accuracy of analyses generated using AIS lies with the users, and particularly with researchers, who must validate reliability and identify potential biases.

Staff are encouraged to test model reproducibility and robustness by:

1. comparing results across different datasets, and
2. comparing results obtained using different AI algorithms.

5. Documentation of AIS data

Data generated using AIS must be clearly identified to avoid confusion with real observations.

Researchers must ensure traceability of AIS-generated data used in scientific studies.

6. Integrity and fairness

Researchers should anticipate the social impacts of AIS.

They must be trained in relevant legal rules, particularly regarding data protection and intellectual property rights. Particular vigilance is required regarding under-represented or historically discriminated groups.

7. Control, alternative solutions and public engagement

The use of AIS in research has an environmental impact and should therefore remain limited to cases where there is a clear benefit.

AIS relying on smaller datasets and models with fewer parameters—such as Small Language Models (SLMs)—represent a more frugal and energy-efficient form of AI. Developing responsible AIS may also contribute to strengthening digital sovereignty.

IV. Further reading

- The 2025 conference organised by OFIS (French Office for Scientific Integrity), focusing on the scientific integrity challenges raised by the emerging uses of generative AI, is available online.
- The CNIL AI fact sheets are also available online, particularly those addressing AI system development and GDPR compliance.
- Similarly, ANSSI has published a set of security recommendations for generative AI systems.