National strategy for artificial intelligence:
a benchmark to measure and reduce impact environmental of AI

AFNOR publishes AFNOR Spec 2314*"General framework for frugal AI »*. An initiative of the Ministry of Ecological Transition and Territorial Cohesion, this free framework sets out calculation methodologies and good practices for measuring and reducing the environmental impact of AI and communicating with fair and verifiable claims. This work will be promoted at European and then international (ISO) levels to become a universal model. A valuable tool for making the double ecological and digital transition.

- AFNOR co-led the work with the Ministry of Ecological Transition (Ecolab / General Commission for Sustainable Development).
- The main contributors are the La Poste group, Hub France IA, ADEME and EcoInfo, with the support of around forty other organizations.
- The framework establishes a methodology for assessing environmental impacts, with a life cycle approach, 31 best practice sheets and recommendations for accurately communicating the frugal nature of an AI service.

- The document is as close as possible to field needs, and includes an operational toolbox designed by and for data/AI and CSR teams in companies.
- AFNOR Spec is aimed at all players using or developing an AI service and having to be accountable within the framework of their CSR policy.
- This document offers a methodological basis for integrating environmental criteria into the purchasing of services including an AI system, particularly for public procurement.

Frugal artificial intelligence: what is it?

[AI consumes energy and resources to function.](#) Designing AI that consumes as little as possible means taking the risk of suffering, for example**the rebound effect**: when the efficiency of an AI makes it less expensive and easier to implement, its use can increase... and its environmental impact with it! Thus, for the working group led by AFNOR, the notion of frugality involves the development of AI, but also through the redefinition**needs***(what is needed?)*And**uses***(how to better use AI?)*

A frugal AI service is therefore a service for which:

- the need to use an AI system rather than another less consuming solution to meet the same objective has been demonstrated;
- good practices are adopted by the producer, supplier and customer to reduce the environmental impacts of the service using an AI algorithm;

- uses and needs aim to remain within planetary limits and have been questioned beforehand.

It's all in the formula!

As is often the case in normative work, the most educational passages are... in the appendices! Appendix 3 gives an example of calculating environmental costs for the inference and training models of the Stable Diffusion generative AI service. To perform the calculation, the formula recommends taking into account an exhaustive list of parameters: **the equipment, the environmental footprint of the equipment (including the manufacturing stages, transport and end of life), the environmental impact of the electricity mix in the geographical area, the energy efficiency indicator of the center of data, allocation of equipment usage time throughout its lifespan,** etc. For an overall measure of the functional unit of the AI system, the calculation methodology includes the environmental cost of inference, the number of queries over a year, the environmental cost of training and other fixed costs, the environmental cost of retraining and the number of retrainings over a year.

Communicate without greenwashing

To stand out in a call for tenders or with its customers,**an AI supplier or AI producer may be required to publish environmental information on its AI system or service, while ordering parties will need benchmarks to assess the reliability of the declarations**. The framework therefore recommends that certain information be specified to provide credibility:
- a quantitative evaluation of environmental indicators over the life cycle (the supplier or producer will then specify the scope of the analysis)
- communication on the frugal nature of the AI (the supplier or producer will then be able to provide a qualitative list of potential second-order and higher-order negative effects that can be expected from the AI service and the countermeasures implemented in place, if applicable).
- a communication on the positive results for an impact category of a frugal AI service (the supplier or producer will then be able to inform on the potential transfers of impact of the service, for example, an effort on energy consumption linked to the service can lead to an increase in water consumption for cooling the servers..).

For further

- **We find you the expert in frugal AI for an interview**
- **Save the date: presentation webinar on July 3**