CENTRE DE DROIT
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Distinguishing concepts

AI systems and general-purpose AI model

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The European Regulation on Artificial Intelligence (AI Act) has been in force since 1 August 2024 (see cdbf.ch/1359/). It applies both to artificial intelligence systems (AIS) and to general-purpose AI model (art. 2 AI Act). This commentary focuses on the definitions of these two key concepts in the application of the AI Act and attempts to highlight their characteristics and specificities.

A. The concept of SIA

According to art. 3 ch. 1 AI Act, an AIS is "**machine-based system** that is designed to operate with **varying levels of autonomy** and that may **exhibit adaptiveness** after deployment, and that, for explicit or implicit objectives, **infers, from the input it receives**, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments". The various concepts highlighted require some clarification.

First of all, to define an AIS, the French version uses the formulation "système automatisé", whereas the English and German versions use "*machine-based system*" and "*maschinengestütztes System*". These formulations simply indicate that an AIS is a system operating with the help of a machine, such as a computer, an autonomous car or a mobile phone.

Next, the AIS must deduce from the *inputs* how to generate *outputs*, which may take the form of a prediction, content (e.g. text, image, video, etc.), a recommendation or a decision. The list of examples is not exhaustive. The output generated by the AIS must influence the physical or virtual environment. In our view, this clarification should be read in conjunction with the aims of the AI Act, which include guaranteeing a high level of protection for health, safety and fundamental rights (recital 1 AI Act). Many deterministic algorithms also generate outputs from inputs, so this characteristic does not distinguish an AIS from an *if-then* system.

The AIS must demonstrate a certain level of autonomy, which means that it is independent in its actions (recital 12 AI Act). However, the AI Act does not specify the degree of autonomy that a system must have in order to qualify as an AIS. In our opinion, systems designed using a *machine learning* approach have a sufficient degree of autonomy. This criterion of autonomy of an AIS makes it possible to distinguish an AIS from an ordinary computer application. For example, systems based on pure deterministic logic are excluded from the definition of AIS. It is worth noting that human supervision of an AIS does not mean that the system lacks autonomy,

as the AI Act explicitly requires human control for high-risk AIS (cf. art. 14 AI Act).

Finally, the definition includes a last characteristic, specifying that AIS can adapt after deployment. The use of the verb ‘can’ shows that this criterion is not essential for qualifying a system as an AIS, unlike the criterion of the degree of autonomy.

B. The concept of a general-purpose AI model

According to art. 3 ch. 63 AI Act, a general-purpose AI model is “an AI model, including where such an AI model is trained with **a large amount of data using self-supervision at scale**, that **displays significant generality** and is capable of competently performing a w**ide range of distinct tasks** regardless of the way the model is placed on the market and that can be **integrated into a variety of downstream systems or applications**, except AI models that are used for research, development or prototyping activities before they are placed on the market” (emphasis added). This concept was introduced during discussions in the European Parliament and reflects a desire to regulate AI such as ChatGPT or Gemini. However, its addition raises questions. Is a general-purpose AI model necessarily an AIS ? Are the definitions of AIS and general-purpose AI models mutually exclusive ?

A general-purpose AI model has four main characteristics. Firstly, the training of these models must be carried out on large and diversified data sets, based on self-supervision (e.g. *deep learning*). Secondly, the model must not be designed for a specific task but must be capable of performing a wide range of varied tasks, such as text translation, generation of textual, visual or audiovisual content, or document analysis. The generality of a model can also be determined by the number of parameters it can have (recital 98 AI Act). Finally, an AI model must be able to be integrated into various systems (e.g. smartphones, connected objects, etc.) or applications.

The notion of general-purpose AI models must be distinguished from that of AIS (recital 97 AI Act). A general-purpose AI model is not, in itself, an AIS, but may constitute an essential component of an AIS. In this case, we speak of a general-purpose AIS when this system is capable of responding to various uses (recital 100 AI Act). Let’s take ChatGPT as an example : it uses a large language model (LLM) to generate content. The LLM used is a general-purpose AI model in the AI Act sense. OpenAI then developed an interface enabling users to interact with the LLM. As a result, the LLM is an essential component of the interface, which we believe can be described as an AIS.

C. Conclusion

The scope of the AI Act is essentially based on the notion of an AIS and a general-purpose AI model. While an AIS is an machine-based system with a certain degree of autonomy, capable of generating outputs that influence physical or virtual environments, a general-purpose AI model focuses on the ability of an AI to perform a wide range of tasks. The important thing to remember is that an AI model is not in itself an AIS but can be an essential component of one. AI models are generally integrated using user interfaces or APIs, like OpenAI with ChatGPT or its API. The AI Bureau – which is responsible for implementing RIA at European level – will probably have to help companies navigate between these two fundamental concepts.