

An analysis on the definitions of “AI System”

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Why an “AI System” definition?

- create effective **regulations** for the development, the correct use and the publication in the market of AI Systems
- have a **legal** interpretation and enforcement
- specify which technologies fall within the scope of AI
- address **ethical concerns** associated with its use
- ensure the public has a **clear understanding** of what AI is
- understand which are the **advantages** and possible **risks**

Different definitions from different organizations

	AI EU GROUP	COMMISSION	COUNCIL	PALIAMENT	OECD	FLORIDI ¹
SOFTWARE	✓ ⁽²⁾	✓	✓	✓	✓	✓
HARDWARE			✓	✓	✓	✓
AUTONOMY			✓	"varying levels"	"varying levels"	✓
HUMAN DEFINED OBJECTIVES		✓	✓			✓
PREDICTIONS, DECISIONS, RECOMMENDATIONS IN OUTPUT		✓	✓	✓	✓	✓
CONTENT IN OUTPUT		✓	✓		✓	✓
REFERENCES TO AI TECHNIQUES		<i>Annex 1</i>	✓ ⁽³⁾			
PROCESS INFORMATION	✓		✓		✓	✓
INFLUENCE AND INTERACT WITH ENVIRONMENT	✓	✓	✓	✓	✓	✓

(1) Floridi, Luciano, *On the Brussels-Washington consensus about the legal definition of Artificial Intelligence* (December 3, 2023)

(2) Only human designed (3) Programming approaches that execute operations automatically

Definitions applied to real cases

	AI EU GROUP	COMMISSION	COUNCIL	PARLIAMENT	OECD	FLORIDI
MODEL-BASED ALGORITHM	maybe	maybe	X	maybe	maybe	X
SMARTWATCH	X	X	X	maybe	maybe	X
CHATGPT	X	✓	✓	X	✓	✓
AUTONOMOUS VEHICLES	X	X	✓	✓	✓	✓
GPAIS (General Purpose AIs)	X	X	✓	✓	✓	X
AI SYSTEM BY AI SYSTEMS	X	maybe	maybe	✓	✓	✓

- (1) Floridi, Luciano, *On the Brussels-Washington consensus about the legal definition of Artificial Intelligence* (December 3, 2023)

Which is the best?

“Artificial Intelligence (AI) refers to an engineered system that can, for a given set of human-defined objectives, generate outputs – such as content, predictions, recommendations, or decisions – learn from historical data, improve its own behaviour, and influence people and environments”

- Luciano Floridi¹

¹Floridi, Luciano, *On the Brussels-Washington consensus about the legal definition of Artificial Intelligence* (December 3, 2023)

Why is the best?

- **Great definition of “intelligence”** : *learn from historical data, improve its own behaviour, and influence people and environments*
- **Transformative** and **“Autonomy”** properties included
- Neither too broad, nor too specific
- Includes what we consider AI technologies, leaving out those that aren't for us

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²Floridi, Luciano, *On the Brussels-Washington consensus about the legal definition of Artificial Intelligence* (December 3, 2023)

Possible issues?

- “Human-defined objectives” concept **not really clear**
 - can objectives also be defined by the machine itself?
 - is “given a set of objectives for human” better?
 - “human-defined” means always human responsibility?
- **No** references to any AI techniques or approach
 - do we need it?

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Thanks for the attention

Appendix 1

EU Expert Group on AI

'artificial intelligence system' (AI system) means software systems designed by humans that, given a complex goal, act in the physical or digital dimension by perceiving their environment through data acquisition, interpreting the collected structured or unstructured data, reasoning on the knowledge, or processing the information, derived from this data and deciding the best action(s) to take to achieve the given goal.

Commission

'artificial intelligence system' (AI system) means software that is developed with one or more of the techniques and approaches listed in Annex I and can, for a given set of human-defined objectives, generate outputs such as content, predictions, recommendations, or decisions influencing the environments they interact with.

Council

'artificial intelligence system' (AI system) means a system that is designed to operate with elements of autonomy and that, based on machine and/or human provided data and inputs, infers how to achieve a given set of objectives using machine learning and/or logic- and knowledge based approaches, and produces system-generated outputs such as content (generative AI systems), predictions, recommendations or decisions, influencing the environments with which the AI system interacts.

Parliament

'artificial intelligence system' (AI system) means a machine-based system that is designed to operate with varying levels of autonomy and that can, for explicit or implicit objectives, generate outputs such as predictions, recommendations, or decisions, that influence physical or virtual environments.

OECD.AI

An AI system is a machine-based system 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. Different AI systems vary in their levels of autonomy and adaptiveness after deployment.

Luciano Floridi⁴

Artificial Intelligence (AI) refers to an engineered system that can, for a given set of human-defined objectives, generate outputs – such as content, predictions, recommendations, or decisions – learn from historical data, improve its own behaviour, and influence people and environments.

⁴Floridi, Luciano, *On the Brussels-Washington consensus about the legal definition of Artificial Intelligence* (December 3, 2023)