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30 November 2023
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Trust at the Nexus of Cybersecurity & AI

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Information Technologies Institute – ITI

Centre for Research and Technology Hellas – CERTH

Information Technologies Institute

CERTH
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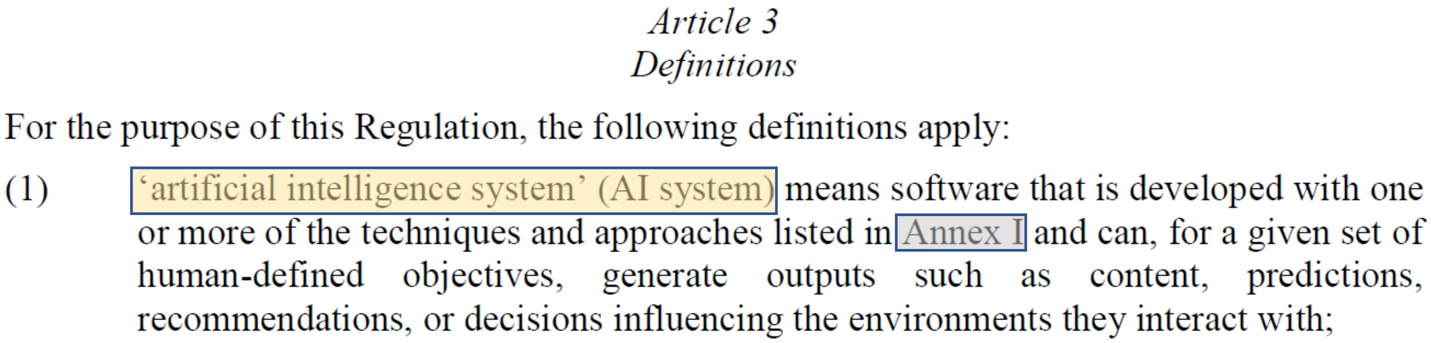
HELLAS

Supported by: IRIS

Draft AI Act

Proposal for a Regulation on Artificial Intelligence

Proposed in April 2021



Article 3
Definitions

For the purpose of this Regulation, the following definitions apply:

(1) ‘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;

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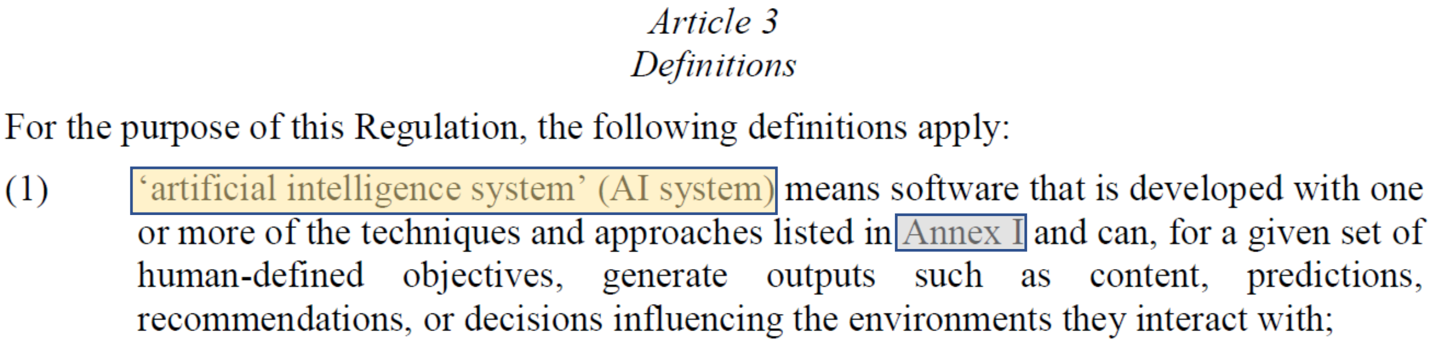

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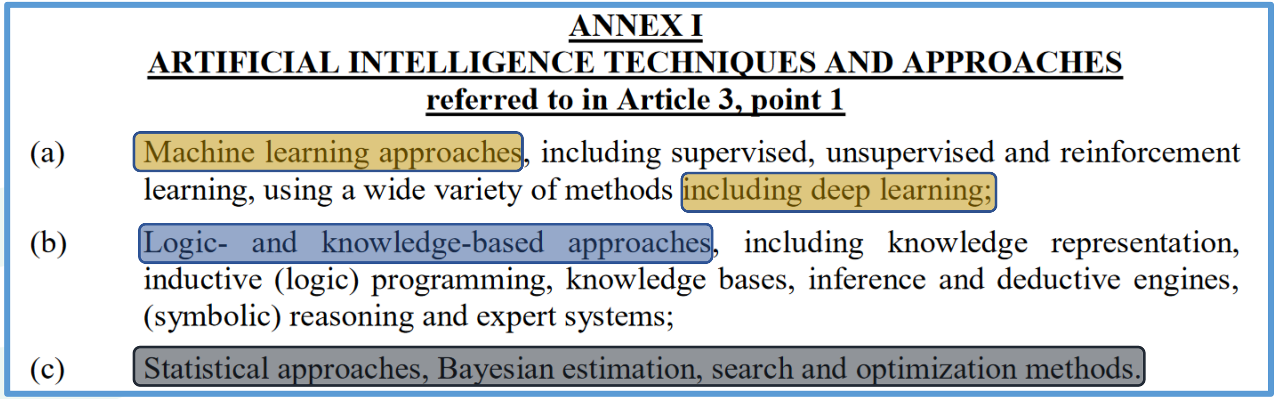

ANNEX I
ARTIFICIAL INTELLIGENCE TECHNIQUES AND APPROACHES
referred to in Article 3, point 1

(a) Machine learning approaches, including supervised, unsupervised and reinforcement learning, using a wide variety of methods including deep learning;

(b) Logic- and knowledge-based approaches, including knowledge representation, inductive (logic) programming, knowledge bases, inference and deductive engines, (symbolic) reasoning and expert systems;

(c) Statistical approaches, Bayesian estimation, search and optimization methods.

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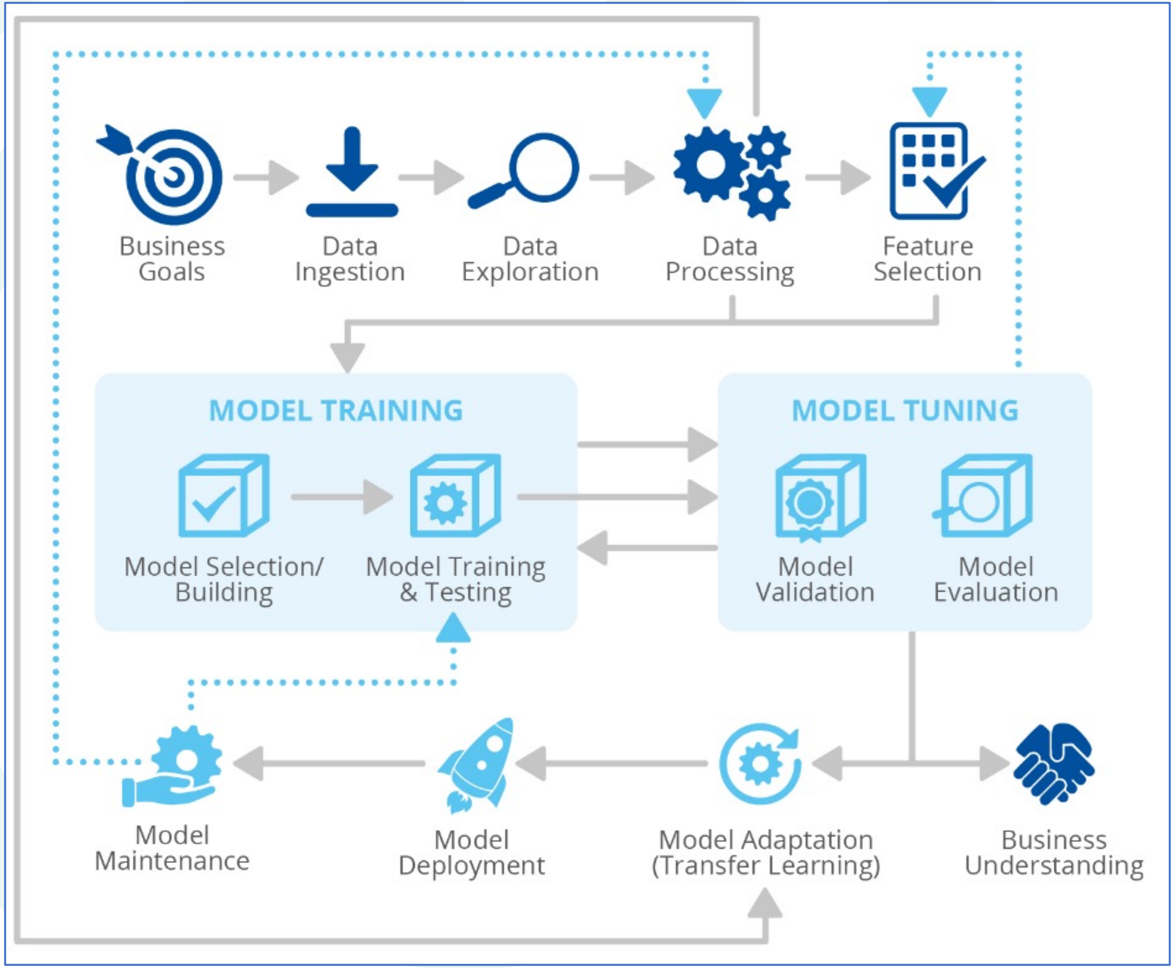
AI Lifecycle



Source: ENISA (December 2020) AI CYBERSECURITY CHALLENGES

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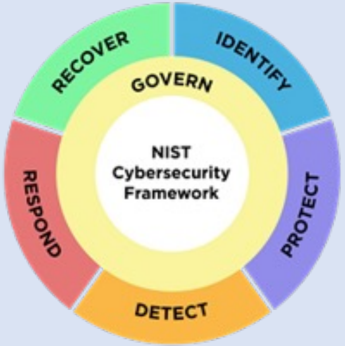
AI for Cybersecurity



AI-powered cybersecurity solutions

e.g.

- vulnerabilities & cyber risk assessment
- penetration testing
- anomaly detection / behavioural analysis
- intrusion/malware/phishing & identification
- spam filtering
- reporting
- forecasting
- etc.

* https://www.nist.gov/cyberframework

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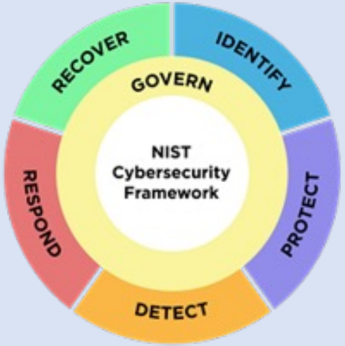

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AI vs Cybersecurity

AI-powered attacks

AI-powered cyberattacks

- improved efficiency, effectiveness, scale, adaptability, persistence, cost, etc.

AI-based deepfakes generation

Advanced spear-phishing emails

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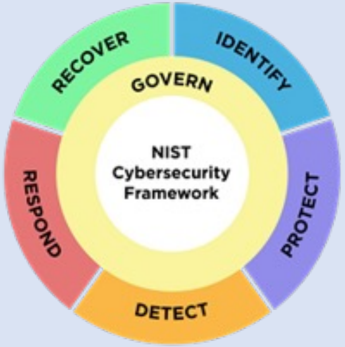

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Cybersecurity for AI

Defending AI-powered solutions against

Adversarial attacks

Training data poisoning attacks

Exploiting vulnerabilities in widely used (open source) libraries

Reverse engineering

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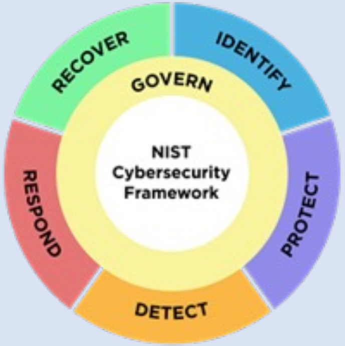

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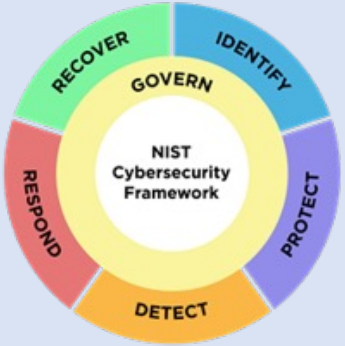

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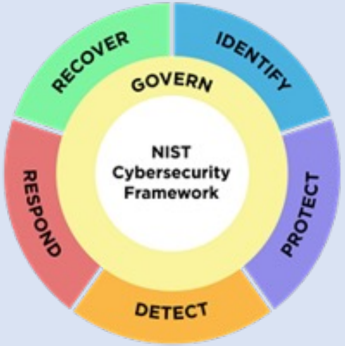

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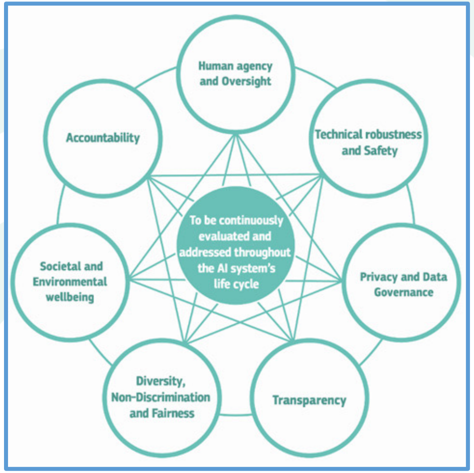
Trustworthy AI


Human agency and Oversight
Technical robustness and Safety
Privacy and Data Governance
Transparency
Diversity, Non-Discrimination and Fairness
Societal and Environmental wellbeing
Accountability
To be continuously evaluated and addressed throughout the AI system's life cycle

https://digital-strategy.ec.europa.eu/en/library/ethics-guidelines-trustworthy-ai

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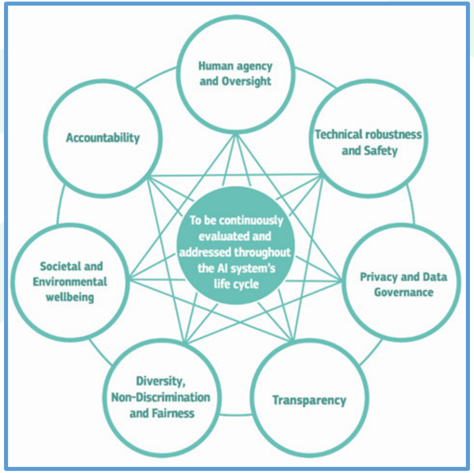
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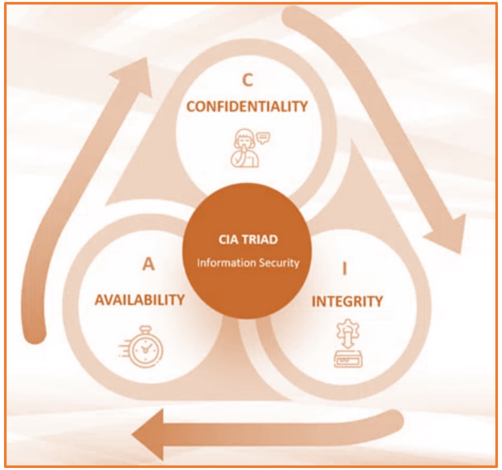
Trustworthy Cybersecurity



https://www.i-scoop.eu/cybersecurity/cia-confidentiality-integrity-availability-security/

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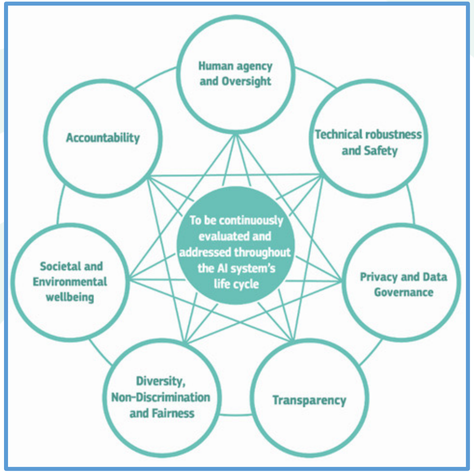

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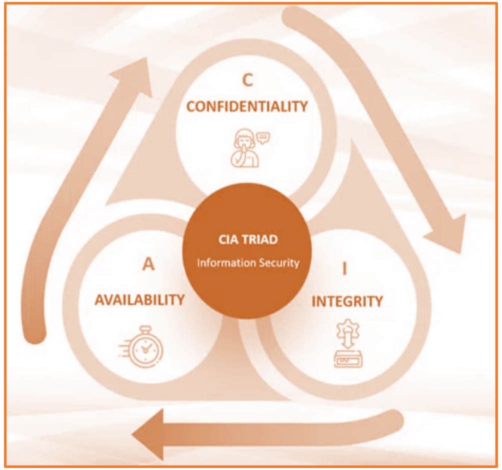

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Cybersecurity for AI Trustworthiness & Cybersecurity Trustworthiness for AI

Trustworthy Cybersecurity ➔ correct implementation of Trustworthy AI ➔ Trustworthy Cybersecurity

- Need for common understanding and what the trustworthiness characteristics are
- Need for coherence between the (draft) AI Act & the (draft) Cyber Resilience Act

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https://www.iris-h2020.eu/

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