

# IEEE & ETHICS

How can we address social responsibility in autonomous intelligent systems?

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# Overview

- ❖ Professional Ethics and the IEEE Code of Ethics
- ❖ Autonomous Intelligent Systems Ethics
  - ✓ Standards
  - ✓ Certification Criteria
  - ✓ Practitioner Certification



# IEEE Code of Ethics

We, the members of the IEEE, in recognition of the importance of our technologies in affecting the quality of life throughout the world, and in accepting a personal obligation to our profession, its members, and the communities we serve, do hereby commit ourselves to the highest ethical and professional conduct and agree:

## **I. To uphold the highest standards of integrity, responsible behavior, and ethical conduct in professional activities.**

1. to hold paramount, the safety, health, and welfare of the public, to strive to comply with ethical design and sustainable development practices, to protect the privacy of others, and to disclose promptly factors that might endanger the public or the environment;
2. to improve the understanding by individuals and society of the capabilities and societal implications of conventional and emerging technologies, including intelligent systems;
3. to avoid real or perceived conflicts of interest whenever possible, and to disclose them to affected parties when they do exist;
4. to avoid unlawful conduct in professional activities, and to reject bribery in all its forms;
5. to seek, accept, and offer honest criticism of technical work, to acknowledge and correct errors, to be honest, and realistic in stating claims or estimates based on available data, and to credit properly the contributions of others;
6. to maintain and improve our technical competence and to undertake technological tasks for others only if qualified by training or experience, or after full disclosure of pertinent limitations;

## **II. To treat all persons fairly and with respect, to avoid harassment or discrimination, and to avoid injuring others.**

7. to treat all persons fairly and with respect, and to not engage in discrimination based on characteristics such as race, religion, gender, disability, age, national origin, sexual orientation, gender identity, or gender expression;
8. to not engage in harassment of any kind, including sexual harassment or bullying behavior;
9. to avoid injuring others, their property, reputation, or employment by false or malicious actions, rumors, or any other verbal or physical abuses;

## **III. To strive to ensure this code is upheld by colleagues and co-workers.**

10. to support colleagues and co-workers in following this code of ethics, to strive to ensure the code is upheld, and to not retaliate against individuals reporting a violation.

***Adopted by the  
IEEE Board of Directors  
June 2020***

# IEEE SA IMPACT STANDARDS

- **IEEE 7000-2021™** - Standard for Model Process for Addressing Ethical Concerns During System Design
- **IEEE 7001-2021™** - Standards for Transparency of Autonomous Systems
- **IEEE 7002-2022™** - Standard for Data Privacy Process
- **IEEE P7003™** - Standard for Algorithmic Bias Considerations
- **IEEE P7004™** - Standard for Child and Student Data Governance
- **IEEE 7005-2021™** - Standard for Transparent Employer Data Governance
- **IEEE P7006™** - Standard for Personal Data Artificial Intelligence (AI) Agent
- **IEEE 7007-2021™** - Ontological Standard for Ethically Driven Robotics and Automation Systems
- **IEEE P7008™** - Standard for Ethically Driven Nudging for Robotic, Intelligent and Autonomous Systems
- **IEEE P7009™** - Standard for Fail-Safe Design of Autonomous and Semi-Autonomous Systems
- **IEEE 7010-2020™** - IEEE Recommended Practice for Assessing the Impact of Autonomous and Intelligent Systems on Human Well-being
- **IEEE 7010.1™** - IEEE Recommended Practice for Environmental Social Governance (ESG) and Social Development Goal (SDG) Action Implementation and Advancing Corporate Social Responsibility
- **IEEE P7011™** - Standard for the Process of Identifying and Rating the Trustworthiness of News Sources
- **IEEE P7012™** - Standard for Machine Readable Personal Privacy Terms
- **IEEE P7014™** - Standard for Ethical considerations in Emulated Empathy in Autonomous and Intelligent Systems

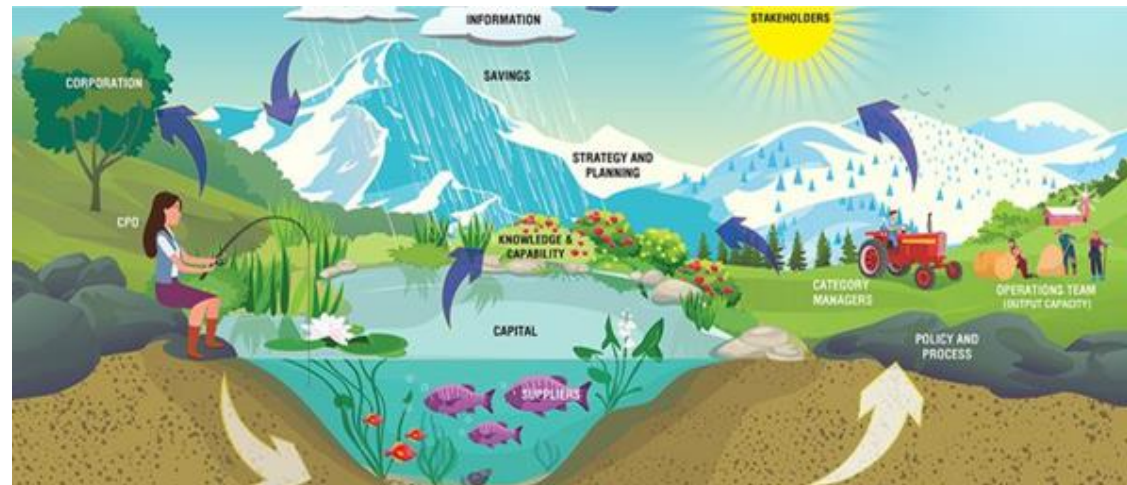
*Red font indicates approved standard.*

# Ethical Assurance Requires A Global Ecosystem

To thrive, an ecosystem regulates its constituents symbiotically

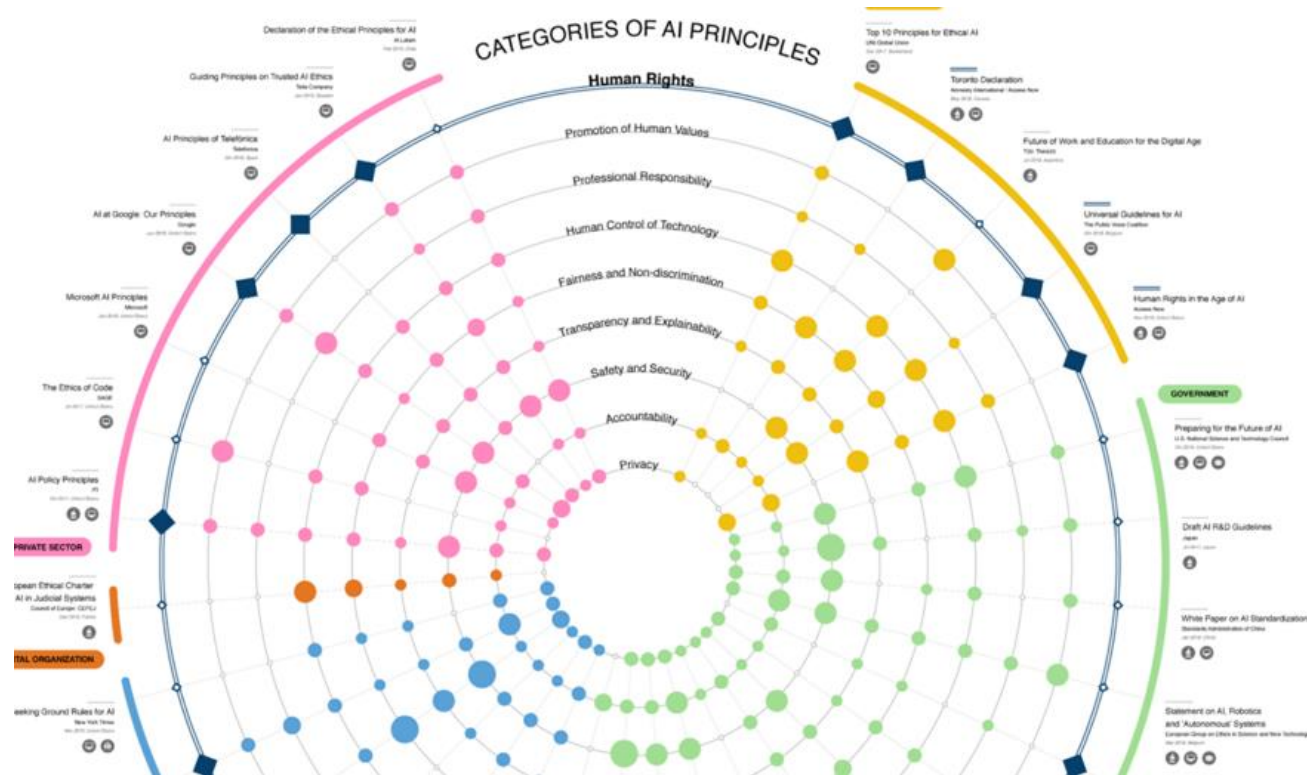
Human Centered AI Ethics Global Ecosystem comprises

- Principles and Criteria Developers & Publishers
- Training and Information Entities
- Oversight, Advisory and Assessment Entities
- Certification Entities
- Regulatory Entities
- Civil Society Entities
- Public and Private Enterprises
- Product, System Developers and Service Providers
- User Communities



# Technology Ethics

Largely focused on these categories of emergent ethical properties:



source: [Harvard Berkman Klein](#)

- Algorithmic Bias & Fairness
- Transparency & Explainability
- Accountability
- Privacy
- Responsible Governance
- Safety & Security



# IEEE CertifAIEd™ Ontological Specifications - Ethical Privacy

A contextual set of values pertaining to privacy and satisfaction of a framework of expectations

## Principal Drivers & Inhibitors

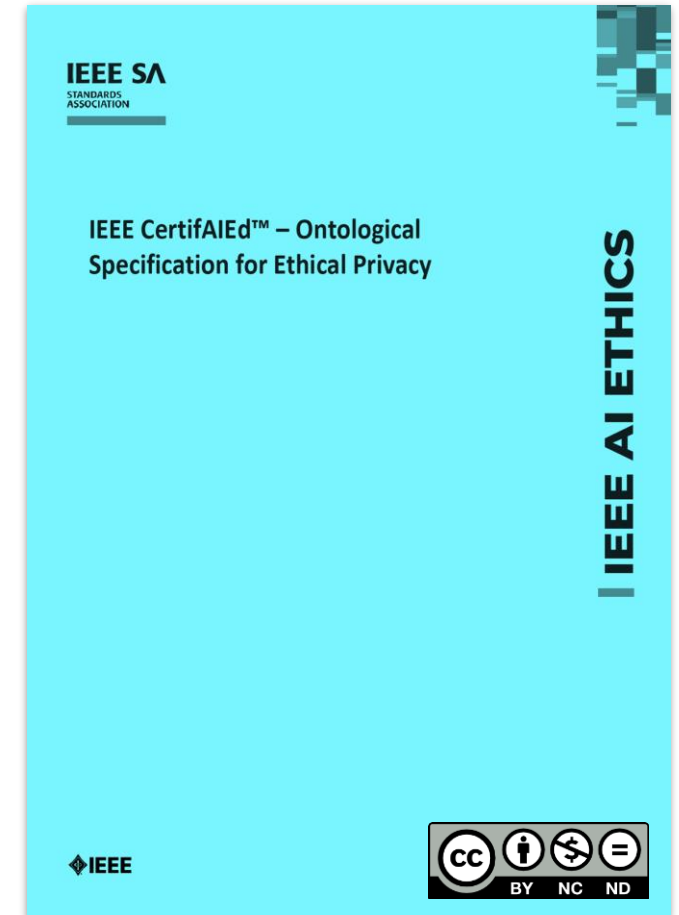
### Driver Influences

- Organizational Governance, Capabilities & Maturity
- Clarity and Consistency of AIS Operations
- Ethical Architecture, Design and Dev. Of AIS
- Human Oversight and Enforcement in AIS
- End user Awareness of AIS & Empowerment
- Maintaining Ethical Privacy Integrity
- (Ethical) Decommissioning

### Inhibitory Influences

- Overreaching and Overfitting
- Authoritarian and Compulsory Pressures
- Accidental/Incidental Exposure
- Malicious Exposure
- Systemic Vulnerability

The IEEE Ontological Specifications for Ethical Privacy is being released using a Creative Commons license  
<https://engagestandards.ieee.org/ieeecertifaiied.html>



# IEEE CertifAIEd™ Ontological Specifications - Algorithmic Bias

Automated recommendations and predictions that disproportionately favour a stakeholder entity over another.

## Principal Drivers & Inhibitors

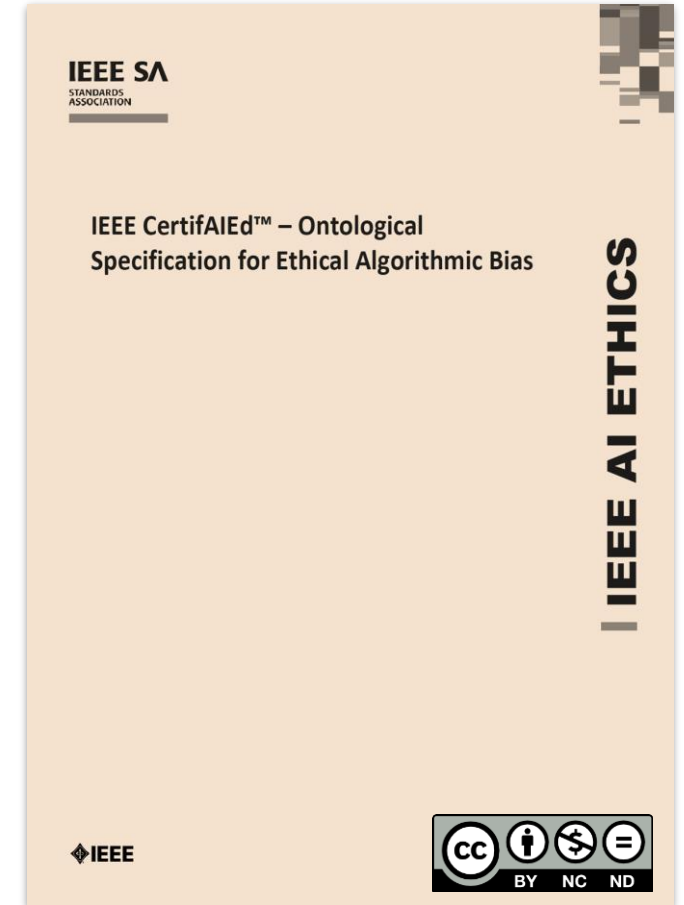
### Driver Influences

- Organizational Governance, Capabilities & Maturity
- Clarity of AIS Operations
- Context Alignment
- Justified Use of Protected Characteristics
- System Behavior Monitoring
- Maintaining (Acceptable) Bias Profile

### Inhibitory Influence

- Lack of Process Transparency

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# IEEE CertifAIEd Ontological Specifications - Ethical Transparency

A contextual set of values pertaining to transparency and the satisfaction of a framework of expectations

## Principal Drivers & Inhibitors

### Driver Influences

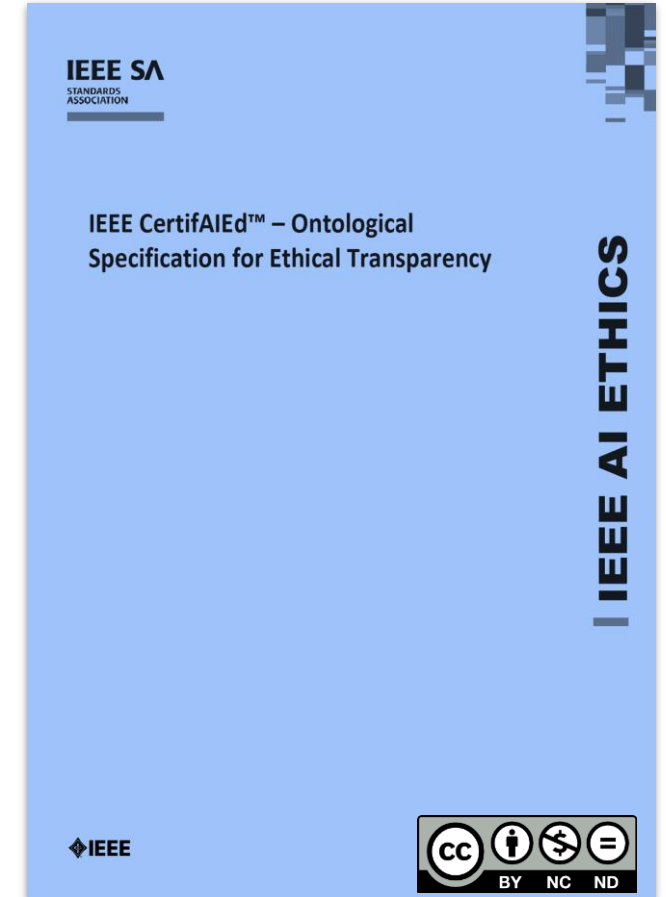
- Organizational Governance, Capabilities & Maturity
- Clarity and Consistency of AIS Operations
- Awareness of AIS Interaction
- Confidence in System Behaviour
- Accessible and Fair Control & Feedback
- Upholding Ethical Transparency Integrity

### Inhibitory Influences

- Behavioural Obfuscation
- Concern with Liability
- Protection of Trade Secrets

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# IEEE CertifAIEd Ontological Specifications-Ethical Accountability

A contextual set of values pertaining to accountability and the satisfaction of a framework of expectations concerning responsibility taking for actions, omissions and ethical outcomes

## Principal Drivers & Inhibitors

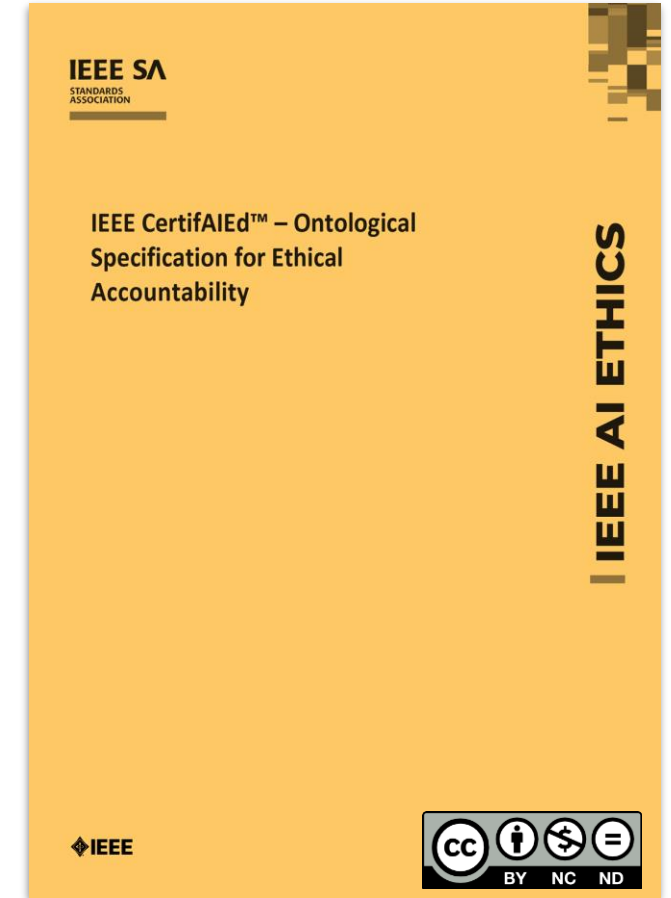
### Driver Influences

- Organizational Governance, Capabilities & Maturity
- Clarity and Consistency of AIS Operations
- Human Oversight
- User Interactions
- Upholding Ethical (Accountability) Profile

### Inhibitory Influences

- Random and Systematic Errors
- Rubber Stamping
- Inadequate or Non-Existent Records

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# IEEE CertifAIEd

The Mark of AI Ethics

## IEEE CertifAIEd

- Affirms an organization's commitment to upholding human values, dignity, and well-being, and to respecting, protecting and preserving fundamental human rights.
- Conveys an organization's capability to fulfill applicable transparency, accountability, reduction of algorithmic bias and privacy requirements stipulated in the appropriate criteria to foster trust and facilitate the adoption and use of AI products and services.
- Enhances confidence in public and private enterprises that wish to realize the benefits of AI ethics certification in the absence of or as a complement to broadly accepted and enforced regulations for AI, while mitigating risks, liabilities and adverse impacts on their reputation and market share.

## CERTIFICATION STAKEHOLDERS

AIS SOLUTION  
PROVIDERS

- End clients / stakeholders seeking evaluation and certification services for their AIS.

CERTIFIED  
ECOSYSTEM

- Authorized collaborators offering IEEE CertifAIEd Services.
- Competence based Certification for key Roles
- IEEE Authorised Practitioners, Assessor, Auditor etc.



## ICAP

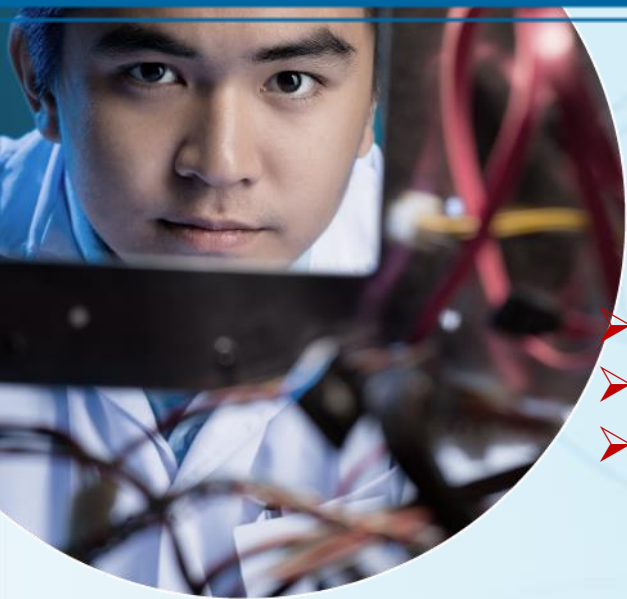
- IEEE Conformity Assessment Program owns and operates the CertifAIEd scheme



# Participating to IEEE CertifAIEd

- If you are interested in joining the IEEE CertifAIEd ecosystem in your capacity as an assessor, a certification organization, a training institute, or otherwise, please reach out to us by filling the form at <https://engagestandards.ieee.org/ieeecertifaied.html>
- If you are interested in learning about CertifAIEd, please contact us at [certifaied@ieee.org](mailto:certifaied@ieee.org)
- To demonstrate your commitment to AI Ethics, you can go to <https://engagestandards.ieee.org/IEEE-AI-Ethics-Support-Badge.html>
- A.G.Hessami@IEEE.org





# Thank you!

- <https://ethicsinaction.ieee.org/>
- <https://engagestandards.ieee.org/ieeecertifiaied.html>
- <https://beyondstandards.ieee.org/new-creative-commons-paper-addresses-ethical-hurdles-to-contact-tracing-adoption/>
- <https://engagestandards.ieee.org/ieee-7000-2021-for-systems-design-ethical-concerns.html>
- <https://standards.ieee.org/ieee/7000/6781/>
- <https://beyondstandards.ieee.org/the-ieee-certifiaied-framework-for-ai-ethics-applied-to-the-city-of-vienna/>
- <https://standards.ieee.org/initiatives/artificial-intelligence-systems/>

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