

IEEE EPPC & IEEE-SA Joint Response to the European Commission AI White Paper

A collaboration between the
IEEE European Public Policy Committee (EPPC) and
IEEE Standards Association (IEEE-SA)

The IEEE European Public Policy Committee (EPPC) and IEEE Standards Association (IEEE-SA) are pleased to submit the following information in response to the European Commission's public consultation on the White Paper on AI, which was launched on 19 February 2020. Below is input that we hope will help provide strong guidance to the European Union to inform the development of regulatory and non-regulatory approaches for Artificial intelligence (AI).

Section 1: Introduction

A series of AI Ethics Principles by governments and intergovernmental institutions such as the European Commission High Level Expert Group on AI Guidelines on Trustworthy AI, the OECD Principles for Ethical AI and the G20 endorsement of those Principles were developed in 2019.

The AI White Paper and its accompanying documents represent the next step by the European Commission towards setting out policy options based on a combined regulatory and investment-oriented approach with the twin objectives of promoting AI and addressing the risks associated with certain uses of the technology. This work is part of the European Commission's priority agenda on "A Europe fit for the digital age".

Timeline of AI legislative agenda:

19-02-2020	Publication and start of consultation period on the AI White Paper and European Data Strategy
14-06-2020	Close of public consultation on AI White Paper and European Data Strategy
End 2020	After public consultation on the White Paper, the Commission will propose a revision of the Coordinated Plan to be adopted by the Member States.

Aims of the policy framework:

- **Ecosystem of Excellence:**
 - *Partnership between the private and public sector* to mobilise resources and investment along the entire value chain from *research and innovation* to accelerate adoption of solutions based on AI, including by SMEs.
- **Ecosystem of Trust:**
 - A regulatory framework that ensures compliance with EU rules, protection of fundamental rights and consumers' rights, in particular for *high-risk AI systems*. This will *give companies and public organisations the legal certainty* to innovate using AI.
- **Approach:**
 - Based on the "Communication on Building Trust in Human-Centric AI" and taking into account the input obtained during the piloting phase of the Ethics Guidelines prepared by the High-Level Expert Group on AI.

Section 2: Ecosystem of Excellence

The Commission proposes an ambitious and dedicated amount of funding to support world reference testing centres in Europe under the Digital Europe Programme complemented where appropriate by research and innovation actions of the forthcoming Horizon Europe programme (part of the Multiannual Financial Framework for 2021 to 2027). The Commission will work with Member States to develop Digital Innovation Hubs, Equity finance for Innovation in AI and attract the best professors and scientists.

A new public private partnership focused on AI, data and robotics is proposed to combine efforts, ensure coordination of research and innovation in AI, collaborate with other public-private partnerships in Horizon Europe and work together with the testing facilities and the Digital Innovation Hubs.

Sector dialogues will be used to prepare a specific 'Adopt AI programme' to support public procurement of AI systems, and transform public procurement processes.

Context from European Commission AI White Paper

Set up a new public private partnership focused on AI, data and robotics to combine efforts, ensure coordination of research and innovation in AI, collaborate with other public-private partnerships in Horizon Europe and work together with the testing facilities and the Digital Innovation Hubs mentioned above.

IEEE EPPC and IEEE-SA Comments for feedback to European Commission

- [P-01] The European Commission needs to ensure that any new Public Private Partnership includes the broadest consortium of stakeholders possible (Start-Ups, SMEs, Government Agencies, Standardization Bodies, Non-Governmental Organisations).
- [P-02] The IEEE EPPC and SA recommend that the European Commission launches appropriate AI standardization initiatives.
- [P-03] Standardization is the interoperability glue of the European AI Ecosystem and the European Commission has an opportunity through its Digital Hubs strategy and the proposed Centre of Excellence to prioritise the use of AI standards and promote participation in AI standardization activities.
- [P-04] IEEE EPPC and SA recommends that the European Commission continues to raise ongoing public awareness and education. The IEEE EPPC and IEEE-SA suggest that the Centre of Excellences and Digital Hubs need to be engaged in this process and become evangelists of embedding AI standardization in the design process.

Section3: Ecosystem of Trust: Regulatory framework for AI

Context from European Commission AI White Paper

The working assumption is that the regulatory framework would apply to products and services relying on AI. In any forthcoming legal instrument, the definition of AI will need to be sufficiently flexible to accommodate technical innovation while being precise enough to provide the necessary legal certainty. The main elements underlying AI are “data” and “algorithms”.

IEEE EPPC and IEEE-SA Comments for feedback to European Commission

- [P-05] Standards bodies, including IEEE, ISO/IEC and CEN-CENELEC are developing definitions of AI for the purpose of Standards. A review of the work so-far suggests that for the wide-ranging nature of the technologies and methods commonly captured under the umbrella term of “AI”, this term is too broad to serve as a meaningful delimiter for the scope of legal instruments.
- [P-06] Future legal instruments related to AI need to be formulated with a defined focus on specific AI modalities, for example “systems that employ machine learning” and “systems that categorize sensory information based on training from examples”.
- [P-07] The IEEE EPPC and SA recommend that the European Commission constructs all legal instruments applying to applications of AI, first and fundamentally, from the perspective of existing Human Rights Law as embodied in instruments such as the UN Declaration of Human Rights and European Charter of Fundamental Rights. Tools like the Ruggie Principles¹ already provide a way to apply Human Rights to business audiences. The UN Sustainable Development Goals provide a similar general framework to focus on holistic views beyond addressing issues of risk and growth alone.
- [P-08] Aspects that are already addressed by existing horizontal or sectoral legislation (e.g. on medical devices, in transport systems) should be identified by the European Commission and enforced.

¹ Ruggie Principles: <https://www.business-humanrights.org/en/un-guiding-principles>

Section 4: Criteria to differentiate whether or not an AI application is “high-risk”

Context from European Commission AI White Paper

The Commission concludes that – in addition to the possible adjustments to existing legislation – new legislation specifically on AI may be needed in order to make the EU legal framework fit for current and anticipated technological and commercial developments.

IEEE EPPC and IEEE-SA Comments for feedback to European Commission

- [P-09] The European Commission should develop a clear list of AI uses/properties that are likely to raise a high-risk flag and the focus of this list should be on properties of AI applications which might trigger irreversible or catastrophic actions. This would be necessary for providers to self-assess their applications.
- [P-10] Development of the list by the European Commission should include a multi-stakeholder High Level Expert Group and build on work coming out of standards bodies. Any list of uses/properties that are likely to flag high-risk will need to be periodically revised by the European Commission High Level Expert Group.
- [P-11] The IEEE EPPC and IEEE-SA recommend having more granularity in levels but extended in a top down taxonomy of risk with clear separation of the distinct categories of risk.²
- [P-12] The European Commission should address sector specific properties of “high-risk” i.e. use of biometric information in surveillance vs. medical context.
- [P-13] The IEEE EPPC and IEEE-SA recommend that the European Commission considers compliance audits and a simple reporting procedure. This will help to motivate AI-based solution providers to perform a proper self-assessment.

The European Commission should consider that regulatory oversight may need to be complemented by “soft-law” approaches to manage risks associated with AI applications. These approaches are more adaptable to the demands of rapidly evolving technology, as well as conformity assessment programs provided by independent organizations, e.g. The Ethics Certification Program for Autonomous and Intelligent Systems (ECPAIS)³

² (a) “high and low risk” as recommended by the Autonomous Vehicles industry would be very useful to know.

(b) A child’s toy where Artificial Intelligence may only be used to track purchase via a Customer Relationship Management is low risk as the toy does not utilize sensors. A toy enabled with affective computing and linked to the cloud, however, is high risk by definition due to the high levels of influence it has on both a child and the child’s family/community (school, daycare, etc.)

³The Ethics Certification Program for Autonomous and Intelligent Systems (ECPAIS)

<https://standards.ieee.org/industry-connections/ecpais.html>

Section 5: Requirements for high-risk AI applications

Context from European Commission AI White Paper

Based on the guidelines of the High-Level Expert Group on AI, the key features are:

- Training data;
- Data and record-keeping;
- Information to be provided;
- Robustness and accuracy;
- Human oversight;

Specific requirements for certain particular AI applications, such as those used for purposes of remote biometric identification

IEEE EPPC and IEEE-SA Comments for feedback to European Commission

- [P-14] IEEE EPPC and IEEE-SA would like the European Commission to provide more clarity on how the six requirements for high-risk AI applications incorporate the High Level Expert Group requirements of diversity, non-discrimination and fairness, societal and environmental wellbeing, and accountability.
- [P-15] The IEEE EPPC and IEEE-SA suggest that any measurement of “success” of AI applications includes societal and environmental concerns.
- [P-16] To minimise cases of discriminatory bias in AI applications, IEEE EPPC and IEEE-SA consider it important to identify and engage with the greatest diversity of stakeholders possible for fairness, societal wellbeing and accountability.

Section 6: Requirements relating to *Data-sets* used to train AI systems

Context from European Commission AI White Paper

Assurances that the product/service enabled by the AI system is safe, i.e. meets standards set by applicable EU safety rules (existing as well as possible complementary ones).

Reasonable measures to ensure that use of AI systems does not lead to discrimination, e.g. obligations to use data sets that are sufficiently representative and free of historical bias.

Adequate protection of privacy and personal data during the use of AI-enabled products and services (e.g. General Data Protection Regulation and the Law Enforcement Directive).

IEEE EPPC and IEEE-SA Comments for feedback to European Commission

- [P-17] The IEEE EPPC and IEEE-SA recommend consideration of assurances about AI products and services from the perspective of technical, physical, ethical, personal, public, cybersecurity and privacy standards .
- [P-18] The European Commission requirements related to safety of AI applications and avoiding discrimination should be formulated/positioned in relation to the cultural and larger contexts of where systems reside and the entire value chain they influence not just the data-sets used for training.
- [P-19] IEEE accepts that problems with data-sets can contribute to safety and discrimination issues, but are not the only source of such problems (e.g. prohibited discrimination may be embedded in the way that accuracy of system performance is formulated). The European Commission needs to consider that this is especially the case when considering AI applications that are not (fully) based on Machine Learning, such as symbolic and hybrid systems that were listed among the strengths of AI in Europe (see Annex II Ecosystem of Excellence). IEEE EPPC and IEEE-SA recommends the screening of data-sets against bias.

Section 7: Keeping of records and data to facilitate supervision and enforcement of regulations

Context from European Commission AI White Paper

- Accurate records regarding the data set used to train and test the AI systems, including a description of the main characteristics and how the data set was selected;
- in certain justified cases, the data sets themselves;
- documentation on the programming and training methodologies, processes and techniques used to build, test and validate the AI systems, including where relevant in respect of safety and avoiding bias that could lead to prohibited discrimination.

IEEE EPPC and IEEE-SA Comments for feedback to European Commission

- [P-20] IEEE recommends that the European Commission includes a reference to Record Keeping ISO/IEC/IEEE 12207 Systems and software engineering – Software life cycle processes
- [P-21] The European Commission should fund a review of existing software development standards to identify if there are additional requirements that are not yet included in those standards. The IEEE EPPC and IEEE-SA suggests that reviewing these standards will also help with operationalizing the requirements.
- [P-22] Additionally the European Commission should facilitate a review to assess if these record keeping requirements should be applied more generally to all “high-risk” systems and software (including those not using AI).

Section 8: Information provision / Transparency

Context from European Commission AI White Paper

To promote the responsible use of AI, building trust and facilitating redress, it is important that adequate information is provided in a proactive manner about the use of high-risk AI systems.

The following requirements could be considered:

Clear information incorporating recognition of cultural and contextual values and norms as to the AI system's capabilities and limitations, e.g. the purpose for which the systems are intended; conditions under which they can be expected to function as intended; expected level of accuracy in achieving the specified purpose.

Clear information to citizens if they are interacting with an AI system and not a human being.

IEEE EPPC and IEEE-SA Comments for feedback to European Commission

- [P-23] IEEE EPPC and IEEE-SA recommend that the European Commission develops guidelines in relation to the use of high risk AI applications.⁴
- [P-24] With respect to the provision of information to citizens when interacting with an AI system, the IEEE EPPC and IEEE-SA believe that individuals require policies and practices that make them explicitly aware of consequences resulting from the aggregation and use of their personal data captured by the AI system. (Source: IEEE Ethically Aligned Design, First Edition)

⁴ e.g. UK's ICO and Alan Turing Institute's guidance on Explaining AI Decisions as part of "Project Explain". (see linked documents at <https://ico.org.uk/about-the-ico/ico-and-stakeholder-consultations/ico-and-the-turing-consultation-on-explaining-ai-decisions-guidance/>).

Section 9: Robustness and accuracy

Context from European Commission AI White Paper

Ensure that AI systems maintain robust and accurate performance during all life cycle phases, or at least correctly reflect their level of accuracy;
Ensure that outcomes are reproducible;
Ensure that AI systems adequately deal with errors or inconsistencies during all life cycle phases.
Ensure that AI systems are resilient against both overt attacks and attempts to manipulate data or algorithms themselves, and that mitigating measures are taken in such cases.

IEEE EPPC and IEEE-SA Comments for feedback to European Commission

- [P-25] IEEE EPPC and IEEE-SA recognize that to help operationalise the tracking and comparison of robustness and accuracy of AI applications it will be important to establish standardized metrics⁵ and establish benchmarking methods (e.g. <http://ai-benchmark.com/>). IEEE EPPC and IEEE-SA recommend that the European Commission supports projects in this space as part of the Ecosystem of Excellence activities.

Section 10: Human oversight

Context from European Commission AI White Paper

The appropriate type and degree of human oversight may vary from one case to another, depending on the intended use of the systems and the effects that the use could have for affected citizens and legal entities.
While human oversight is an important element for maintaining capacity to correct the use of AI applications when human situational understanding is required, it is important not to rely on this approach as a catch-all solution, especially regarding ethical concerns. There is a danger of replicating the problems that have arisen in the data privacy domain over the reliance on “consent”.

IEEE EPPC and IEEE-SA Comments for feedback to European Commission

- [P-26] The IEEE EPPC and IEEE-SA contend that European Commission policy including human-in-the-Loop should not be used as a mechanism to avoid compliance with other regulatory requirements such as explainability, e.g. human supervisors being held accountable for failures of the AI applications.

⁵ ISO/IEC/IEEE 15026-1:2019 "Systems and software engineering — Systems and software assurance" or ISO/IEC/IEEE 15289:2019(en)

"Systems and software engineering — Content of life-cycle information items"

Section 11: Specific requirements for remote biometric identification (e.g. face recognition)

Context from European Commission AI White Paper

Fundamental rights implications of using remote biometric identification AI systems can vary considerably depending on the purpose, context and scope of use.

In accordance with the current EU data protection rules and the Charter of Fundamental Rights, AI can only be used for remote biometric identification purposes where such use is duly justified, proportionate and subject to adequate safeguards.

In order to address possible societal concerns relating to the use of AI for such purposes in public places, and to avoid fragmentation in the internal market, the Commission will launch a broad European debate on the specific circumstances, if any, which might justify such use, and on common safeguards.

IEEE EPPC and IEEE-SA Comments for feedback to European Commission

- [P-27] IEEE EPPC and IEEE-SA would ask the European Commission to expand the debate on the circumstances of use for biometric identification to applications beyond public spaces. The IEEE EPPC and IEEE-SA believe that European citizens and industry would benefit from expanding the debate to include use in private spaces such as the workplace and smart homes. IEEE believes that the clarity about public acceptability that should be gained from the debate will help to provide confidence for deploying biometric systems in those areas, public and private, where they yield benefits without infringing on European values.

Section 12: Addressees of legal requirements for high-risk AI applications

Context from European Commission AI White Paper

Each obligation should be addressed to the actor(s) who is (are) best placed to address any potential risks (e.g. developers of AI to address risks arising from the development phase, deployer for risks during the use phase). This is without prejudice to the question which party should be liable for any damage caused.

The geographic scope of the legislative intervention should make the requirements applicable to all relevant economic operators, providing AI-enabled products or services in the EU, regardless of whether they are established in the EU or not.

IEEE EPPC and IEEE-SA Comments for feedback to European Commission

- [P-28] IEEE EPPC and IEEE-SA recommends that the European Commission ensure that high-risk AI products and services provided in the EU are safe and fit-for-purpose by careful utilization of standardization, certification, regulation and legislation.

Section 13: Compliance and Enforcement

Context from European Commission AI White Paper

Standards as well as dedicated online tools could facilitate compliance.

Any prior conformity assessment should be without prejudice to monitoring compliance and “*ex post*” enforcement by competent national authorities.

IEEE EPPC and IEEE-SA Comments for feedback to European Commission

- [P-29] The IEEE EPPC and IEEE-SA recommend that the European Commission strives to include standardization in the development process by default by encouraging developers of EU products and services to participate in the development of, and then integrates standards and regulatory requirements..

Section 14: Voluntary Labelling for No-high Risk AI Applications

Context from European Commission AI White Paper

The voluntary label would allow economic operators, who are not covered by the mandatory requirements, to signal that their AI-enabled products and services are trustworthy. It would allow users to easily recognise that the products and services in question are in compliance with certain objective and standardised EU-wide benchmarks, going beyond the normally applicable legal obligations. This would help enhance the trust of users in AI systems and promote the overall uptake of the technology.

IEEE EPPC and IEEE-SA Comments for feedback to European Commission

- [P-30] IEEE EPPC and IEEE-SA accepts that the development of a voluntary labelling framework has the potential to help industry, especially scale-up SMEs, to establish and test their “high-risk” compliance procedures on lower risk AI applications to help them prepare for entry into “high-risk” market segments.
- [P-31] The IEEE EPPC and IEEE-SA would like to bring European Commission attention to work on developing voluntary certification schemes that are already underway at various organizations (e.g. IEEE’s Ethics Conformity Assessment Program for Autonomous and Intelligent Systems initiative). IEEE suggests that it is important to provide clarity about which certification schemes are recognized/accredited as compliant with the intended labelling framework.
- [P-32] IEEE EPPC and IEEE-SA recommend that the establishment of a voluntary labelling scheme should also be recognized and funded as part of the Ecosystem of Excellence activities since it has the potential to promote the export of the EU Trustworthy AI “brand” to other countries. IEEE EPPC and IEEE-SA encourage the development of global standards and certification processes.
- [P-33] The IEEE EPPC and IEEE-SA recommend the establishment of a strong Trustworthy AI brand around a voluntary labelling scheme and facilitating work on AI benchmarking to achieve this.

Section 15: A European Governance structure for AI

Context from European Commission AI White Paper

It should rely on a network of national authorities, as well as sectorial networks and regulatory authorities, at national and EU level.

A committee of experts could provide assistance to the Commission.

Stakeholders (consumer organisations and social partners, businesses, researchers, and civil society organisations) should be consulted on the implementation and the further development of the framework.

IEEE EPPC and IEEE-SA Comments for feedback to European Commission

- [P-34] The IEEE EPPC and IEEE-SA would like the European Commission to provide clarity on how the committee of experts is appointed.
- [P-35] IEEE EPPC and IEEE-SA recommends that stakeholder participation should be more than only consultations on the development of the framework, and the stakeholders should continue to be included in the monitoring of the framework, and also be part of the Committee of Experts. IEEE recommends that the European Commission considers how the “balance of power” between stakeholder groups can be maintained.
- [P-36] The IEEE EPPC and IEEE-SA recommends inclusion of stakeholders that are not typically at the table in AI development. This includes young people/students, people of all cultural, ethnic and gender, and economic backgrounds.

This statement was developed by the IEEE European Public Policy Committee (EPPC) working in partnership with the IEEE Standards Association. It represents the considered judgment of a broad group of European IEEE members with expertise in the subject field. IEEE has nearly 60,000 members in Europe. The positions taken in this statement do not necessarily reflect the views of IEEE or its other organizational units.

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