EasyChair Preprint

№ 15179

Governing Through Standards: Artificial Intelligence and Values

Ana Paula Gonzalez Torres and Timo Ali-Vehmas

October 2, 2024

Governing through Standards: Artificial Intelligence and Values

Ana Paula Gonzalez Torres[1], Timo Ali-Vehmas[1]*

Aalto University, Espoo, Finland[1]

[first names].[lastnames]@aalto.fi

Abstract: *The upcoming European Union's regulation on Artificial Intelligence (AI), known as the AI Act, has opened the door for the European Commission to request the development of supporting AI harmonised standards by European Standardisation Organisations (ESOs). The standardisation request will identify the areas in which ESOs are to develop standards based on the essential requirements in the AI Act. The current draft standardisation request establishes that deliverables are to take into account the policy objectives of the commission, such as ensuring that AI systems are in respect of Union values. For ESOs, this task is complicated by the diversified world-wide network of standards-developing organisations and working groups in AI. We examine the state of the art in AI standardisation, analyse how standards embed values and identify an approach that accommodates different sets of values. While currently, there is no harmonised approach to embed value consideration in AI standardisation, there is potential for an approach geared toward flexibility with space for different configurations. In the EU, the value of freedom as movement builds the basis and the need for flexible standards that enhance interoperability between regulatory contexts with different sets of values. In global terms, there is a need for a minimum threshold of agreed-upon values within AI standards that allow different configurations based on specific regulatory contexts.*

1 Introduction

Artificial Intelligence (AI) is considered one of the most significant drivers for better productivity and service quality. For instance, AI is broadly used in many domain-specific applications, ranging from autonomous driving to managing technical and industrial processes and operations. Hence, AI-based systems are increasingly being developed and deployed ubiquitously, leading to emerging regulatory measures and evolving AI governance (Gonzalez Torres *et al.*, 2023). Governance of AI includes various frameworks, processes, and tools designed to maintain and promote cooperative possibilities to formulate shared *values* for AI, as well as to make and implement decisions regarding desirable direction in the development and use of AI (Sigfrids *et al*., 2023).

Currently, by mid-2024, European Union (EU) institutions are expected to adopt an updated version of the European Commission's (EC) proposed regulation "Laying Down Harmonised Rules on Artificial Intelligence" or "AI Act" (AIA) (EC, 2021), which will bring AI governance to the forefront of research, development and beyond. Although the regulation acknowledges the impacts of AI in society and the importance of preserving EU-specific values, there is a concomitant sentiment that "'hard' governance mechanisms (such as legislation and other regulatory frameworks, e.g., ISO requirements) alone provide

*Presented at the 28th EURAS Annual Standardisation Conference – Comprehensive Standardisation for Societal Challenges, Delft University of Technology, Delft, Netherlands.

insufficient protection to individuals, groups, society, and the environment" (Morley *et al*., 2021). That seems to be *partially* sustained by the opening recital of the AI Act, which states a combination of market values and EU values. In this sense, it is established that the purpose of the regulation "is to improve the functioning of the internal market by laying down a uniform legal framework in particular for the development, placing on the market, putting into service and the use of artificial intelligence systems in the Union" as well as to uphold the "conformity with *Union values* to promote the uptake of human-centric and trustworthy artificial intelligence […]" (CE, 2024).

The market values *rationale* is reflected by the fact that the AI Act is a *harmonised legislation*. This type of legislation mainly aims at eliminating barriers and facilitating the free movement of goods in the EU single market. Therefore, regulatory intervention is limited to only essential requirements (e.g., requiring an appropriate level of accuracy, robustness and cybersecurity for high-risk AI systems, as seen in Article 15 of the AI Act) deemed sufficient to pursue the public interest and be applied according to the hazard inherent to a given product (EC, 2022). In this sense, the legislation's essential requirements define the results to be attained or the risks to be dealt with but do not specify the technical means to fulfil it. The determination of technical solutions is guided by the *New Approach* legislative technique, which delegates to harmonised standards the duty to establish the technical means to comply with essential requirements. This legislative technique is implemented according to the *New Legislative Framework*. Therein, it is the duty of a manufacturer to undertake pre-market assessments to ensure conformity to legislation's essential requirements. If the manufacturer proceeds according to harmonised standards, they benefit from a presumption of conformity to applicable legislation, leading to CE marking and subsequent commercialisation in the EU single market (Tartaro, 2023). In this regulatory structure, the market *rationale* is aided by a presumption of conformity deriving from harmonised standards since industry players are directly involved in their development, leading to a co-regulation that fosters close cooperation between public authorities and market operators.

Meanwhile, the Union values *rationale* can be seen reiterated in the EC's draft request to develop harmonised standards in support of the AI Act. It states the need to follow the policy objectives of the Commission when drafting deliverables "that AI systems placed on the market or put into service in the Union are […] used in compliance with fundamental rights and in full respect *Union values* […]"[1]. As enshrined in Article 2 of the Treaty on European Union, "[t]he Union is founded on the values of respect for human dignity, freedom, democracy, equality, the rule of law and respect for human rights, including the rights of persons belonging to minorities […]" (TEU, 2012). Thus, we can see an overarching drive to technically support AI legislation by means of harmonised standards and for those standards to also consider EU values when specifying how AI systems can technically conform to the AI Act's essential requirements (EC, 2023).

This dichotomy seems to result from the AI Act's underlying product driven legislative structure and the parallel acknowledged societal impact of AI-based systems. Hence, while there is a broad recognition in the need to uphold specific values (HLEG, 2019), there is a parallel recognition that the regulation of AI systems must take a risk-based approach comparable to that of EU's products legislation which relies on standards for technical support (Mazzini & Scalzo, 2022; Veale & Borgesius, 2021). As stated in the 2022 European standardisation strategy, Europe's competitiveness, technological sovereignty, ability to

[1] European Commission, "Draft Standardisation Request to the European Standardisation Organisations in Support of Safe and Trustworthy Artificial Intelligence", accessed 6th May 2024, https://ec.europa.eu/docsroom/documents/52376

*Presented at the 28th EURAS Annual Standardisation Conference – Comprehensive Standardisation for Societal Challenges, Delft University of Technology, Delft, Netherlands.

reduce dependencies and protection of *EU values* will depend on the role of European actors at an international level and require European standardisation to become more agile, *flexible* and focused on anticipating the standardisation needs[2].

In this narrative, it is important to be warry of the risk to be prompt to consider that EU values are to be widespread as the ultimate values that should be imposed in other cultures using standards. We are aware of the risk that this approach could build tensions in the global standardisation process. We do not attempt to advance narratives of European values' superiority as such. Thus, we narrow the scope of analysis to how standards can further values, given their highly technical nature, by considering the situation in the EU and Union-specific values. This leaves the option for other regions to do the same in *flexible* and interoperable manner. Following this stance, we will examine standards and values because, while different regulatory contexts have different values, standards are inherently *value carriers*, which, if *flexible*, can help harmonise an ever more polarising technological environment. In this examination we stand by the believe that standards can help organise societies and markets by including values and worldviews in innovation (Meijer *et al.*, 2023). In the following, we will discuss AI governance, the state of the art in AI standardisation and European values in an effort to understand how values are to be embedded in upcoming AI harmonised standards. The work was conducted by means of a literature review, analysis of the state of the art in AI standards and a comparison between different regulatory context values as stated in the available literature.

2 AI Governance: Regulation & Standardisation

Governance of artificial intelligence (AI) has been defined as "a system of rules, practices, processes, and technological tools that are employed to ensure an organisation's use of AI technologies aligns with the organisation's strategies, objectives, and *values*; fulfils legal requirements; and meets principles of ethical AI followed by the organisation" (Mäntymäki *et al.*, 2022). In a broad sense, the term is meant to encompass legal and regulatory viewpoints while combining them with technical standpoints (Doneda & Almeida, 2016). The AI Act establishes various governance mechanisms, from hard law (binding legislation) to soft governance approaches, including *standards*, certificates, and audits. We will focus on standards as a soft law governance mechanism meant to guide organisations, from a legal and technical standpoint, alignment to the AI Act and EU-specific values. From a technical standpoint, standards will present "a widely agreed way of doing something" (Abdelkaf *et al.*, 2021), and from a legal standpoint, they will play a key role in facilitating compliance to the AI regulation (CE, 2024). Nonetheless, there is a tension with values since translating socially defined requirements into organisationally and technically implemented means of governing AI systems remains a central challenge (Birkstedt *et al.*, 2023).

According to Regulation 1025/2012 on European standardisation, "'standard' means a technical specification, adopted by a recognised standardisation body, for repeated or continuous application, with which compliance is *not compulsory*, and which is one of the following: […] (b) 'European standard' means a standard adopted by a European standardisation organisation; (c) 'harmonised standard' means a European standard adopted on the basis of a request made by the Commission for the application of Union harmonisation legislation." Once the AI Act enters into force, compliance is expected to be supported by

[2] Eur-Lex, "Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. An EU Strategy on Standardisation. Setting global standards in support of a resilient, green and digital EU single market", accessed 6th May 2024, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022DC0031

*Presented at the 28th EURAS Annual Standardisation Conference – Comprehensive Standardisation for Societal Challenges, Delft University of Technology, Delft, Netherlands.

harmonised standards developed by the three European Standards Organisations (ESOs), the European Committee for Standardisation (CEN) and the European Committee for Electrotechnical Standardisation (CENELEC) in consultation with the European Telecommunications Standards Institute (ETSI). This effort could adopt standards developed at an international level based on the Vienna agreement between CEN and the International Organisation for Standardisation (ISO)[3] or the Frankfurt agreement between CENELEC and the International Electrotechnical Commission (IEC).[4] Gathering inspiration from already established efforts could aid avoiding duplication of work and maintaining a coherent international framework (ETSI, 2022).

The relationship between EU legislators and Standard Development Organisations (SDOs) is part of creating laws and requirements according to *harmonised legislation*. Under regulation No 1025/2012, the European Commission (EC) invites ESOs to produce harmonised standards through standardisation requests. Following such a procedure, in 2022, the EC produced the previously mentioned draft standardisation request, its message on market and union values is similar to the AI Act article 40 on "harmonised standards and standardisation deliverables". It states that "[t]he actors involved in the standardisation process shall seek to promote investment and innovation in AI, including through increasing legal certainty, as well as competitiveness and growth of the Union market, and contribute to strengthening global cooperation on standardisation and taking into account existing international standards in the field of AI that are consistent with *Union values* […]" (CE, 2024).

In the overall legislative structure regulating AI, it is important to stress that Union harmonisation legislation for products does *not usually* impose the use of harmonised standards. Only essential requirements are legally binding; manufacturers may apply other standards and technical specifications. However, only harmonised standards, which references are published in the Official Journal of the European Union (OJEU), provide a presumption of conformity (EC, 2022). This is the importance of harmonised standards; they facilitate compliance processes, providing a presumption that allows entry into the EU market and streamlining conformity assessment processes (Tartaro, 2023). Nonetheless, as they are voluntary, manufacturers can choose whether or not to adhere and refer to harmonised standards. However, if manufacturers choose not to adhere to harmonised standards, they must demonstrate that their products conform with essential requirements by other means of their own choice that provide the same level of safety or protection as required by applicable legislation. These can be other national, international or European standards without references in the OJEU, other technical specifications (e.g., European standardisation deliverables other than European standards developed by the ESOs), or the manufacturer's specifications. In these cases, the manufacturers do not benefit from the presumption of conformity and instead must demonstrate themselves the conformity, establishing in a detailed manner how their selected alternative provides conformity with applicable legislation essential requirements (EC, 2022). For example, by carrying out an individual more in-depth risk assessment of the product to conform to AI Act article 9 on "risk management system". Thus, while harmonised standards are voluntary, they are important because they simplify assessment tasks. To national authorities, products manufactured in conformity with harmonised standards are presumed to be in conformity with the essential requirements established by the corresponding legislation (Tartaro, 2023).

---

[3] CEN, "The Vienna Agreement. CEN Cooperation with ISO", accessed 6th May 2024, https://www.cencenelec.eu/about-cen/cen-and-iso-cooperation/

[4] CENELEC, "The Frankfurt Agreement. CENELEC cooperation with IEC", accessed 6th May 2024, https://www.cencenelec.eu/about-cenelec/cenelec-and-iec-cooperation/

*Presented at the 28th EURAS Annual Standardisation Conference – Comprehensive Standardisation for Societal Challenges, Delft University of Technology, Delft, Netherlands.

On a cautionary note, it is worth mentioning that there is a possibility that the EC will reject the harmonised standards delivered by the ESOs and instead propose "common specifications" (article 40 AIA). This could happen if the ESOs fail to align their deliverables with the standardisation request. The possibility of having common specifications, instead of harmonised standards, would potentially jeopardise the goal of having a harmonised and globally aligned approach to AI standardisation while preserving EU values. In this regard, "'if the standards are not ready in time, the Commission can look around at what already exists somewhere in the world, be it a standard or a framework, and decide to use it for now'" (Baeva *et al*., 2023). Hence, there is a high expectation for standardisation deliverables by 2025 and for them to be according to the standardisation request indications. Meeting this expectation will require leveraging existing standards and technical specifications based on cooperation agreements and adapting them to pursue EU values. The emerging questions are: a) how do currently available standards address values? and b) to what degree are they already aligned with EU values?

3 State of the Art: AI Standardisation & Values

From a value-driven perspective, standards are a mix common good, expected to have a positive ethical impact on business and industry practice as well as reduce interoperability barriers to commerce and shared best practices (Lewis *et al.*, 2020). The difficulty is that technical details in standards are concrete, while values are abstract. Standards are expected to demonstrate that it is practically possible to design and perform tests to check conformity. Their descriptions have to be appropriately worded according to their scope and provide all the information needed to implement relevant tests (Abdelkaf *et al.*, 2021). Thus, while the AI Act establishes requirements for AI systems, its instance on maintaining respect for EU values requires understanding how standards can embody values while accurately stating the possible conditions (if any) of applicability and specifying the terms of compliance. Hence, we will examine the current landscape in AI standardisation. First, ISO, IEC, and ITU because of their global relevance in the standardisation landscape. Second, CEN, CENELEC and ETSI because of their place as European Standardisation organisations. Third, IEEE SA because of its relevance as the largest technical professional organisation.

3.1 ISO, IEC & ITU

The International Organisation for Standardisation (ISO) is an independent, international organisation with a membership of 170 national standards bodies[5]. It aims to "develop voluntary, consensus-based, market relevant international standards that support innovation and provide solutions to global challenges"[6], which means they develop standards in almost all aspects of technology and manufacturing without focusing on a specific domain. On the other hand, IEC is a global not-for-profit membership organisation with more than 170 countries as members[7]. It aims to prepare and publish international standards for all electrical, electronic, and related technologies[8]. They work together in the joint ISO and IEC technical subcommittee for AI (JTC SC 42), established in 2017, developing AI standards[9]. ISO

[5] ISO, "Structure and governance", accessed 6th May 2024, https://www.iso.org/structure.html

[6] ISO, "About ISO", accessed 6th May 2024, https://www.iso.org/about-us.html

[7] IEC, "About us", accessed 6th May 2024, https://www.iec.ch/about-us

[8] IEC, "Who we are", accessed 6th May 2024, https://www.iec.ch/who-we-are

[9] IEC, "Standardization work of joint IEC and ISO committee highly relevant to EU AI Act", accessed 6th May 2024, https://www.iec.ch/blog/standardisation-work-joint-iec-and-iso-committee-highly-relevant-eu-ai-act

*Presented at the 28th EURAS Annual Standardisation Conference – Comprehensive Standardisation for Societal Challenges, Delft University of Technology, Delft, Netherlands.

develops standards in technical and non-technical fields, while IEC handles electrical and electronic engineering.

ISO/IEC have 20 AI-related standards, with the most relevant for EU values consideration being the technical reports (TR) 24028:2020 and 24368:2022, and the 38507:2022 standard. TR 24368 is an "overview of ethical and societal concerns" of AI, which does not advocate for any specific set of values. It does include a mention regarding the promotion of human values as "included (but not limited to): improving health and healthcare; improving living situations; improving working conditions; environmental and sustainability efforts". Regarding operationalisation, it provides questions meant to address the practical "promotion of human values". On the other hand, TR 24028 is an "overview of trustworthiness of artificial intelligence" which leans on values as related to the relevant stakeholders for a specific AI-based system, meaning that values are not limited to the organisation but include the beliefs to which stakeholders adhere to and seeks to observe. Finally, the 38507:2022 standard relates to "Governance of IT. Governance implications of the use of artificial intelligence by organisations", which targets the governance done at the upper management level. Accordingly, the governing body is responsible for setting an organisation's goals, including culture, values and ethical outcomes. This standard's governance is centred around the role of governing bodies and managers in operating and decommissioning the AI system and its data based on the consideration of ethics, compliance with legal requirements, standards and best practices, accountability, risk management and fiduciary duty. ISO/IEC efforts, in terms of values, focus on implementing questionnaires, rely on stakeholders' views and are based on upper management governance but lack considerations for AI value embedment, for instance, by means of *configurability* as we will further explore.

Meanwhile, the International Telecommunication Union (ITU) is the United Nations' (UN) specialised agency for information and communication technologies (ICTs), with 193 Member States and more than 1000 companies, universities, and international and regional organisations[10]. Within AI, ITU's mandate is to provide a "neutral platform for all stakeholders"[11]. In particular, it is co-leading the 2020 established Inter-Agency Working Group on AI (IAWG-AI) at the UN[12], which has the objective of providing support to current and future efforts on AI regarding respect for human rights and accelerating progress on the Sustainable Development Goals (SDGs) as well as bring together UN system expertise on artificial intelligence in support of workstreams on AI, integrating both normative and programmatic dimensions. The IAWG-AI, and therefore ITU, is meant to be involved in the work of the newly established January 2024 Task Force, which aims to "develop guidance that aligns with existing UN principles and *standards on ethical AI use*" in an effort to facilitate the responsible adoption of AI technologies across UN entities and emphasise *adaptability to dynamic future needs*[13]. They are currently working on describing methods to evaluate, direct, and monitor the use of AI to assist entities in adopting adequate processes to

[10] ITU, "About International Telecommunication Union (ITU)", accessed 6th May 2024, https://www.itu.int/en/about/Pages/default.aspx

[11] ITU, "Artificial Intelligence", accessed 6th May 2024, https://www.itu.int/en/action/ai/Pages/default.aspx

[12] UN System Chief Executive Board for Coordination, accessed 6th May 2024, "Inter-Agency Working Group on Artificial Intelligence: Terms of Reference (Draft) (prepared by the Inter-Agency Working Group on Artificial Intelligence (IAWG))", accessed 6th May 2024, https://unsceb.org/sites/default/files/2021-07/IAWG-AI%20ToR.pdf

[13] UN System Chief Executive Board for Coordination, "High-level Committee on Management. Task Force to Develop a System-wide Normative and Operational Framework on the use of AI in the UN System", accessed 6th May 2024, https://unsceb.org/sites/default/files/2024-02/ToR%20-HLCM%20AI%20Task%20Force%20-%20final%2011%20Jan%202024%20%281%29.pdf

*Presented at the 28th EURAS Annual Standardisation Conference – Comprehensive Standardisation for Societal Challenges, Delft University of Technology, Delft, Netherlands.

maximise reusability, standardisation and reliability. This is meant to uphold the *values* and principles of the UN. Hence, while the work is just beginning, the need to understand how to develop specific value carrier standards is palpable, and it will benefit from an alignment with a coherent global approach to values, as we will explore in the remainder of our analysis.

3.2 CEN, CENELEC & ETSI

The European Committee for Standardisation (CEN), European Committee for Electrotechnical Standardisation (CENELEC) and European Telecommunications Standards Institute (ETSI) are the European Standardisation Organisations (ESOs). "CEN and CENELEC's National Members work together to develop [European Standards (ENs)] in various sectors to help build the European internal market in goods and services, removing barriers to trade and strengthening Europe's position in the global economy"[14]. ENs are implemented by the 34 national CEN and CENELEC Members as national standards. Meanwhile, ETSI is mainly concerned with "globally applicable standards for ICT-enabled systems, applications and services"[15] by addressing telecommunications, broadcasting and other electronic communications networks and services. CEN is the officially recognised standardisation representative for sectors other than electrotechnical, which is the domain of CENELEC, while telecommunications is under ETSI. In the spring of 2021, CEN and CENELEC reported their technical competence to the European Commission and established a joint technical committee (JTC 21).

The EC standardisation request is intended to be addressed by JTC21. Hence, AI standardisation in CEN/CENELEC is at an emerging stage; given the 2022 EC draft request for standardisation, they are currently developing AI standards to support compliance with the upcoming AI Act. In the future, ESO's task will be to ensure that work already performed by other standardisation organisations is not duplicated in the AI harmonised standards development efforts by identifying which existing standards can be adopted or adapted and which cannot. For instance, by working in close collaboration with ISO/IEC and ETSI in order to achieve a coherent approach worldwide. For ETSI, the future will be determined by a coordinated approach with CEN and CENELEC on how AI-specific standards could adopt or adapt ETSI's related work and expertise, in particular in the area of AI security as per their expertise and newly established technical committee related to cybersecurity (ETSI, 2022). A recent study has pointed out that experts do not consider all existing standards suitable for effectively implementing the goals of the AI Act (Baeva *et al*., 2023). Thus, the ultimate goal will be to identify and develop standards in light of the EU and AI Act specificities, which could be satisfactorily referenced to facilitate compliance.

3.3 IEEE: AI Ethics and Governance Standards Outside the EU

The Institute of Electrical and Electronics Engineers Standards Association[16] (IEEE SA) is a United States-based voluntary standardisation organisation under the IEEE, an organisation of professional information and communications technology (ICT) engineers. IEEE SA's standards are typically recognised and accredited by the American National Standardisation Institute[17] (ANSI) but do not have a recognised role in the EU landscape. Nonetheless, the

[14] *See* CENELEC, "European Standards", accessed 6th May 2024, https://www.cencenelec.eu/european-standardisation/european-standards/

[15] *See* ETSI, "About ETSI", accessed 6th May 2024, https://www.etsi.org/about

[16] IEEE Standard Association, accessed 6th May 2024, https://standards.ieee.org/

[17] American National Standards, accessed 6th May 2024, https://www.ansi.org/

*Presented at the 28th EURAS Annual Standardisation Conference – Comprehensive Standardisation for Societal Challenges, Delft University of Technology, Delft, Netherlands.

European Commission has a relevant process to recognise international standards for the use in public procurement in the Union (Multi-Stakeholder Platform)[18].

We will examine the "IEEE Get Program for AI Ethics and Governance Standards"[19], specifically the IEEE P7000 Standard Series, which addresses "specific issues at the intersection of technological and ethical considerations", "empowers innovation across borders and enables societal benefit"[20]. Our analysis will only cover the IEEE 7000-2021 standard, "IEEE Standard Model Process for Addressing Ethical Concerns during System Design"[21], as other standards in the series touch upon AI and specific subjects which deserve a targeted analysis that goes beyond the scope of this paper.

The IEEE 7000-2021 standard establishes a "set of processes by which engineers and technologists can include consideration of ethical values throughout the stages of concept exploration and development, which encompass system initiation, analysis and, design". Thus, differently from taking a stance on values it is an "implementable process" that "does not give specific guidance on the design of algorithms to apply ethical values such as fairness and privacy", but instead is meant to "*enable design that takes explicit consideration of individual and societal ethical values*". It is not an implementation of ethics. Instead, it supports a "value-based system design methodology" for the "identification of stakeholder values", "value-based system or service development", supports "reiteration of value-based analysis" in the event of ethical challenges. The operationalisation of values comes in a formulaic and hierarchical manner: 1) understanding and anticipating value implications and consequences of their systems and taking investment decisions based on them; 2) identifying ethical value requirements (EVR) and priorities for system design to integrate into system requirements; 3) choosing system design alternatives according to value priorities while avoiding or mitigating value harms or ethical pitfalls; 4) keeping control of the long-term value-based sustainability of a system through ongoing supervision and information management; 5) creating transparency and responsibility for the choices made and the system's resulting functionality.

The first distinct aspect of the standard is that there is no suggestion to select specific ethical values. Instead, there is a recognition of gathered values, issues, and potentials. Core values are identified and described in value clusters, including ethical issues, values, and potential risks in the form of value demonstrators. Thus, ethical alignment can be traced to value dispositions in the EVRs and value-based system requirements. This traceability leans on a transparency management process that aims to provide information on short-term and long-term impact as well as how the developer has addressed ethical concerns during design according to stakeholders' input on values.

Second, this operationalisation of ethical values takes a lifecycle approach from conception and design to uncover, address and monitor the value concerns arising from the AI system's given context. The process aims to support an initial identification of values and feasibility analysis, aiming at refining an organisation's assumptions and intent in their AI operations as well as anticipating value-based system requirements. It relies on context-dependency,

[18] European Commission, "European Multi-Stakeholder Platform on ICT Standardisation", accessed 6th May 2024, https://digital-strategy.ec.europa.eu/en/policies/multi-stakeholder-platform-ict-standardisation

[19] IEEE, "GET Program for AI Ethics and Governance Standards", accessed 6th May 2024, https://ieeexplore.ieee.org/browse/standards/get-program/page/series?id=93

[20] IEEE, "The IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems", accessed 6th May 2024, https://standards.ieee.org/industry-connections/ec/autonomous-systems/

[21] IEEE, "7000-2021 – IEEE Standard Model Process for Addressing Ethical Concerns during System Design, accessed 6th May 2024, https://ieeexplore.ieee.org/document/9536679

*Presented at the 28th EURAS Annual Standardisation Conference – Comprehensive Standardisation for Societal Challenges, Delft University of Technology, Delft, Netherlands.

according to which a system supports values relevant to a context of use while considering the constraints of "social, legal and environmental feasibility" for the relevant system. It derives from the understanding that "with the different contexts […] come different subject matters and, hence, different [...] subject domains with different ethical import. This standard assumes that systems can undermine and foster values relevant in certain use contexts". Thus, the IEEE 7000-2021 standard promotes a *flexible* approach.

4 European Values

Standards could be considered ethical under the understanding that they embody values based on virtues. According to Winfield (2019), "all standards embody a principle or value, explicitly ethical standards address clearly articulated ethical concerns and - through their application - seek to remove, reduce or highlight the potential for unethical impacts or their consequences". Standards are inherent value carriers as "[v]alues illustrate both the consensual and conflictual dimension of social life, while they unite members of a social group in the sharing of common ideas they also divide through divergent implementations" (Foret & Calligaro, 2018; Heinich, 2017). Value carrier standards enhance virtues; for instance, under Aristotelian ethics, virtues are practices or ways of acting that enable their possessors to excel consistently in their functioning (Lähteenoja & Karhu, 2023). An example of standards' role is the enhancement of "responsibility as a virtue", it refers to an individual's inclination to assume or take responsibilities and an awareness of relevant normative demands (Gonzalez Torres, 2023). Standards will have to possess all these different layers when delivering EU value-guided AI standards. Nonetheless, this endeavour will have to address the tension between standards and values.

Regarding values, the "ethical values of the Europeans" is a complicated question. The European Union comprises 27 member states with different cultural histories, making it challenging to agree on what constitutes such values (Foret & Calligaro, 2018). It is wise to discern that ethics operate by considering "what ought and ought not to be done over and above the existing regulation—not against it, or despite its scope, or to change it" (Floridi, 2018). In this respect, a recent study stated an expert's opinion on the task of CEN/CENELEC to deliver AI harmonised standards: "[w]e cannot write into a standard what is good and what is bad. What we can write into it, however, is a description of the ethically relevant properties of the system, i.e., the degree of transparency, the degree of fairness, the degree of privacy, the degree of robustness, and the methods for measuring them. That I can standardise, I can also obtain a European or even global consensus for it." (Baeva *et al*., 2023). This opinion matches the *flexible* approach as sustained by the IEEE 7000-2021 standard.

In practical terms, EU values are established in one of the EU's primary treaties, the Treaty on European Union (TEU) which states that "[t]he Union is founded on the values of respect for human dignity, freedom, democracy, equality, the rule of law and respect for human rights, including the rights of persons belonging to minorities." (TEU, 2012). Even if explicitly identified, their content remains open, and up to court rulings to define them according to the specificities of court cases. Future flexible EU AI standards could benefit from the same logic. Standards could leave values as open signifiers given the pluralism even within the different member states while upholding the need to consider EU values as the baseline for value determinations. Therefore, in terms of value identification, there is a baseline (Weatherill, 2016) rather than individualised top management organisation-specific identifications. For example, a future AI system related to voting must prioritise respect for the value of democracy; even if the implementation would depend on the context and the

*Presented at the 28th EURAS Annual Standardisation Conference – Comprehensive Standardisation for Societal Challenges, Delft University of Technology, Delft, Netherlands.

relevant stakeholders' input, meanwhile the value-based design would nevertheless need to uphold the people's rights to elect and elected, in line with the conception of EU values.

Notwithstanding EU AI efforts, current AI systems tend to reflect different cultural ideologies either because of large United States of America (USA) technology companies or China's strong position in global AI development (Mäntymäki *et al*., 2022). Thus, in terms of achieving a global consensus, it has been acknowledged that "'[y]ou have mostly private companies and big corporations in the working groups of CEN/CENELEC. There tends to also be a big proportion of international companies, such as USA and Chinese companies. So it's as if we are talking about implementing European values on the one side but asking [non-EU companies] to draft the standards on the other.'" (Baeva *et al.*, 2023).

Table 1 shows identified values from our literature analysis on America and China (Hine & Floridi, 2022; Miao, 2020), which we compared to European Union values established in the TEU (TEU, 2012). These values can be considered "deeply cultural" as they are "mental representations" of what is worthy of appreciation without being facts of nature, and they are "collective representations" that go beyond individual opinions (Foret & Calligaro, 2018). Nonetheless, from our table representation of examined regulatory contexts, it is evident that while there are differences in values, there are also commonalities. While we focus on EU values, it is evident that values are important in all regulatory contexts. Even if the contents of the values are different, they are, *per se*, driving forces behind AI innovation and policy.

USA	European Union	China
• Freedom • Guarantees of human rights • Rule of Law • Stability in our institutions • Rights to privacy • Respect for intellectual property • Opportunities to all to pursue their dreams • Civil rights • Civil liberties	• Human dignity • Freedom • Democracy • Equality • Rule of Law • Human rights	Socialist core values: • National values of prosperity, democracy, civility and harmony • Social values of freedom, equality, justice and the rule of law • Individual values of patriotism, dedication, integrity and friendship

Table 1: Comparison of different regulatory context values

This examination of regulatory context values highlights the need for *flexibility*. In this sense, while there are several ways in which the EU can ensure the protection of Union values in international standards, the goal should be broader than advancing specific regulatory context values but establishing minimum shared value. For instance, as seen in *Table 1*, a starting point for a minimum threshold of agreed-upon values could encompass freedom, the rule of law and democracy. It has been said that "attempting to develop standards that require consensus on values and moral outlook is likely to be curtailed by the variation in value systems encountered across the globe" (Lewis *et al.*, 2020). However, embedding flexibility in value-driven standards could allow different configurations of AI-based systems according to the regulatory context-specific stances on values. In this sense, flexibility is "flexibility in the pattern of use" (Hanseth *et al*., 1996).

*Presented at the 28th EURAS Annual Standardisation Conference – Comprehensive Standardisation for Societal Challenges, Delft University of Technology, Delft, Netherlands.

In supporting the governance of AI, standards could leverage their ability to facilitate trade based on common approaches among countries. As research has shown, in highly fragmented markets, standardisation's purpose is to bring some order (Swann, 2000). Therefore, holding an inflexible stance on values could threaten the establishment of a common approach. Instead, standards could further a minimum threshold of values agreed upon as pursuing globally respected values (Winfield, 2019).

For example, hypnotising that freedom is a global value could open the door for interoperability between different regulatory contexts. In the European Union, freedom "gives citizens the right to move and reside freely within the Union"[22]. *Freedom as movement* could be the basis for standards pursuing an enhancement in compatible information, where the boundaries of traditional sectors are removed and the general use of information and communication technologies is expanded to the entire society (Ali-Vehmas *et al.*, 2020). In this regard, there is no requirement in the current AI standardisation draft AI request to support mobility or international roaming for the users of AI-based services, similar to mobile phone use, even though such requirement could advance the value of *freedom as movement* and therefore interoperability. In this sense, while outside the scope of this paper, it is worth mentioning that roaming and data/ID portability are all relevant for AI-based systems and the EU value of freedom as *movement of information*. Moreover, when upholding freedom as the movement of information, future research and AI standards will have to address cybersecurity breaches risks that could lead to the misuse of personal or sensitive personal data to damage an individual (refusal of insurance, profiling, discrimination or biased actions) against EU values.

5 A Way Forward: On the Future AI Standards

Standardisation scholars have emphasised the importance and possibility for standards to be flexible and anticipatory in the face of radical changes, especially regarding information infrastructure standards (Hanseth *et al.*, 1996). A recent study (Meijer *et al*., 2023) suggested that responsiveness towards values and changing circumstances is an important quality of standardisation for meeting end-users' expectations (Botzem & Dobusch, 2012). Responsiveness is, therefore, important for the creation of shared value in standards that can adapt to changing user requirements in a successful manner (van de Kaa & de Vries, 2015). Nonetheless, the same study showed that while there is a need to be responsive (having a proactive attitude in *ex ante* alignment of societal needs and values), there is opposition to reflexivity (understanding and challenging values, beliefs and assumptions) as it is a moral grey area that contrasts the critical value neutrality "inherent" to standardisation since standard developing organisations merely play a facilitating role. As highlighted in the research, "these results prompt the question of whether SDOs are able to encourage and contribute to socially desirable standards while maintaining their neural facilitative role".

Even though we have previously recognised the tension between values and standards in the view that standards are objective while values are subjective. The failure to be responsive and reflexive to the needs and values embedded in AI has the potential to create inefficient market fragmentation. AI-based systems need a coordinated global approach to realise their full potential (e.g., in access to supply chains or data flows). To some extent, diverse regulatory context approaches can complement each other to drive innovation. However, if the ability to learn and incorporate diversity by flexibility is overlooked, then innovation may be diminished. "Techno-nationalism, protectionism, and dysfunctional fragmentation are all

[22] See European Union, "Aims and values", accessed 6th May 2024, https://european-union.europa.eu/principles-countries-history/principles-and-values/aims-and-values_en

*Presented at the 28th EURAS Annual Standardisation Conference – Comprehensive Standardisation for Societal Challenges, Delft University of Technology, Delft, Netherlands.

scenarios that can potentially undermine innovation dynamics and threaten the realisation of full benefits of AI" (Feijóo *et al*., 2020). It will be essential to prevent fragmentation to the extent that complementary innovation slows while maintaining some degree of diversity and fragmentation that supports innovation by different configurability. For instance, Chinese internet users see different applications-and-services interfaces or pictures than those in the EU and United States.

In the face of uncertain options, such as the rapid changes in the AI-based technology landscape, it is crucial to have reflexivity to one's understanding of the (implicit) values, beliefs, and assumptions that drive innovation (Meijer *et al*., 2023; Larson, 2000). Understanding the impact of values, beliefs, and assumptions can help standardisation experts understand the underlying interests of participants in case of structural uncertainty. For instance, while standards deriving from the AI Act are expected to maintain respect for EU values, there is a concomitant challenge in aligning it with the recognition that different cultures have different values (Awad *et al*., 2018). In reference to *Table 1*, one can think of a scenario in which an entity from the European Union uses AI cloud services outside of the EU, in China or the USA, and there is no alignment between the regulatory context's values (e.g., human dignity). Then, one could question what happens to such EU values, whether they will follow when visiting other countries or which value regime will apply when roaming. These open-ended questions require high levels of reflexibility and leaning towards flexibility by AI experts involved in standardisation efforts.

Future AI standards can share the goal of enhancing predetermined values. For instance, aligned with the IEEE 7000-2021 standard approach, a conformity examination can be achieved either by a) conformance to outcomes or b) conformance to tasks. This standardisation process would have a set of required outcomes consistent with their purpose, high-level activities and more detailed tasks representing ways to achieve the outcomes. In the context of the EU AI Act, outcomes could depend on the relevant EU value(s). As an example of future "outcomes" for AI systems could be a) enhancing respect for human dignity, b) if related to EU citizens, enhancing freedom of movement and residence, enhancing political rights to elect and to be elected in the European Parliament, c) equality before the law or d) if related to European countries and institutions, to uphold and enhance the respect of law and justice. Meanwhile, "tasks" could be to register the context of use, stakeholders, controls, access, social-legal-environmental information, assumptions and outcomes in the value-based choices, or risks regarding EU value benefits and harms leading to revaluations. An additional and last remark regarding IEEE 7000-2021 is that it builds on stakeholder elicitation for value determinations. The approach of ethics operationalisation as a value-based guided design allows for considerations of EU values according to stakeholder inputs. Values are to be considered when designing an AI system by instating dynamic processes. It could mean that AI standards do not take a stance on specific implementations or interpretations of values but delegate it to the involved stakeholders based on the particular context of the involved AI system.

In concrete terms, our recommendations for future AI harmonised standards are:

First, the opportunity to lean on *interoperability* between different contexts, which can help build a better ecosystem for EU and global AI. Mainly because AI is in continuous development without commonly agreed processes for embedding value considerations. Hence, a *flexible* approach which allows for different configurations could enable AI-based systems to be interoperable despite differences in values. This would mean that values underlying standards are set according to a minimum overall accepted threshold. At the same time, differences are allowed based on the agreement reached during or even after the

*Presented at the 28th EURAS Annual Standardisation Conference – Comprehensive Standardisation for Societal Challenges, Delft University of Technology, Delft, Netherlands.

standards development process (e.g., different subsets are used in different countries, possibly including roaming users, while indicating to the user what subset is in use at any given time). The positive side of compatibility/interface standards is that they have network effects and avoid lock-in (Ali-Vehmas *et al.*, 2020). However, lock-in is possible in case of powerful network effects.

Second, an element for flexibility in value-embedded standardisation is the accompanying Annexes. When monitoring to what extent a harmonised standard covers essential requirements of EU legislation, they frequently include an informative annex ZA, ZB or ZZ[23]. It is ZA for CEN hEN, ZZ for CENELEC hEN, and when hEN covers the requirements of several legal acts, ZA/ZB (CEN) or ZZA/ZZB (CENELEC). The EU system to evaluate whether a standard is in line with EU regulation that a standard is intended to support relies on AI harmonised standards (HAS) consultants who assess whether the standards drafted by ESOs comply with the EC request and to which extent they deal with and support relevant issues. One of these elements could be whether or not ESOs have considered European values. If HAS consultants reject all the proposed versions of the standard, it will not be published in the OJEU, and it will not become the harmonised standard that the EU requested. For this reason, *flexibility* in standards could be moulded in these Annexes to meet the criteria of the HAS consultants. In this sense, using the annexes in a *harmonised standard* could help in reference to the AI Act and in circumscribing which EU value is enhanced in a developed standard and how other countries can make their determinations and utilise different configurations of the same standard on regards to their regulatory context specificities.

In our recommendations, *flexibility* allows for different implementations when operationalising the agreed minimum threshold of common values. Meanwhile, *configurability* is an aspect of flexible standards. In this sense, standards can include frameworks that allow technology to be configured and reconfigured unlimitedly. For example, standards' technical specifications that establish the possibility of taking into account Annexes Z even after the AI-based systems have already been put into service or placed in the market have built-in configurability.

6 Conclusion

Regulation and standards go hand in hand in upholding the future governance of AI. On one hand, the upcoming AI Act has led to questions related to their reliance on standards for technical guidance on compliance with essential requirements (Veale & Borgesius, 2021) or alignment with EU values. On the other hand, EU-specific standards can aid in increasing trade as they provide information on specific market conditions and values, even more so for exports if they can be globally harmonised to a certain extent (Swann, 2010). Outside of the EU, we cannot expect that standards can secure EU values outside of Europe. Hence, we must consider a flexible approach that provides space for different configurations based on specific regulatory contexts.

From the standards analysis, we have recognised that when it comes to the operationalisation of values in AI standards, neither ISO, IEC, nor ITU have detailed technical standards for value embedment but address values in AI standards in relation to governance, principles, targeted questions, and stakeholders' contexts. Meanwhile, CEN, CENELEC and ETSI are currently working on standards that directly support the need for technical specifications

[23] IBF, "Essential requirements of directives and standards: the meaning of annex ZA, ZB or ZZ in harmonised standards", accessed 6th May 2024, https://www.ibf-solutions.com/en/seminars-and-news/news/meaning-of-annex-za-zb-or-zz-in-harmonised-standards

*Presented at the 28th EURAS Annual Standardisation Conference – Comprehensive Standardisation for Societal Challenges, Delft University of Technology, Delft, Netherlands.

concerning the AI Act's essential requirements. Therefore, regarding detailed specifications on the operationalisation of values, IEEE provides an initial workable approach. The IEEE 7000-2021 standard analysis shows how the operationalisation of ethical consideration can be framed as a standard using a process for value-based design. The backdrop of the standard is an ethical risk-based design process that realises ethical values and requires value-based functionality in the system or software design. If future AI standards are to progress on this matter, they will likely need to be reasonably dynamic to synchronise with the rapidly changing status of AI systems.

As a first concluding consideration, it is important to note that the IEEE 7000-2021 standard warns that issues of ethics and subsequent values are varied depending on the context. "IEEE Standards cannot guarantee or ensure ethical system design, and conformance with the provisions of this standard does not imply conformance with any particular ethical principles or value system, which may vary from community to community, or over time". Thus, it falls on the users of the standard to be responsible for adhering and referring to appropriate, applicable regulatory context values during system design. Hence, there is space for standards to provide interpretative frameworks to guide different configurations for AI-based systems in an effort to address and consider the differences in cultural and regulatory context stances. For example, standards could formalise values into a structure which could be used either to evaluate the level of compliance or, for value-based standards, to provide guidelines for designers on how to reduce the likelihood of negative impact on values arising from relevant AI systems.

In the EU context, future AI standards could specify value-guided processes for AI systems to ensure they meet specific outcomes and tasks related to EU values according to requirements established in regulation (e.g., annexes Z). While standards are seen as a practical implementation of regulatory requirements, particularly the AI Act, the need for future-proof standards can be addressed by allowing *flexibility* in implementation. In contrast, the need to maintain respect for EU values is addressed by having a baseline of values (e.g., human dignity, freedom, democracy, equality, the rule of law and respect for human rights) that define the value clusters to be considered by organisations based on the relevant AI system context and in their engagement with relevant stakeholders. In this sense, there is potential to build on the *interoperability* effect of standards to create an environment for collaboration and innovation. In the search for EU values-driven governance of AI, compatibility and interface standards could help to expand market opportunities as they help increase network externalities (Swann, 2000). Whether network externalities are significant to buyers will depend on the effectiveness of EU AI standards in providing AI which is aligned with societal needs and values.

A concern is that the standardisation process within a technology lifecycle can be irreversible (Tassey, 2000), especially when they rise early in technology development when organisations still intend to achieve market penetration, constraining innovation. This could be lessened by having a minimum threshold of common values that guide policy and innovation, while national and regional deviations are managed within core specifications. While we have focused on the EU with highlights on the USA and China, future endeavours will have to be broader and wary of advancing geography-based value superiority narratives. As established by ANSI "[w]hether our ethical practices are Western (Aristotelian, Kantian), Eastern (Shinto, Confucian), African (Ubuntu), or from a different tradition, by creating autonomous and intelligent systems that explicitly honor inalienable human rights and the

*Presented at the 28th EURAS Annual Standardisation Conference – Comprehensive Standardisation for Societal Challenges, Delft University of Technology, Delft, Netherlands.

beneficial values of their users, we can prioritise the increase of human well-being as our metric for progress in the algorithmic age."[24]

Future AI standards are to be *flexible,* allowing different configurations to adapt to new developments. In support of this, we see the example of the IEEE 7000-2021 standard, which circumscribes its usefulness to single-purpose AI systems with no regard for the current ever more available general-purpose AI system. One can speculate that upcoming AI standards remaining abstract as open signifiers instead of detailed descriptions of practical compliance with the law could be a suitable fit for general-purpose AI systems. This scenario highlights that a key characteristic of future standards will be their ability to sustain certain values while embracing change and incorporating new technologies to ensure their continued relevance and effectiveness. For instance, considering how to sustain values in "smart standards", meaning machine-readable standards that could be automatically evaluated and verified (Baeva *et al*., 2023).

As AI governance moves forward by means of regulation and standards, it is crucial to consider that just as standards can foster innovation, they can also result in large economic inefficiency. For instance, if poorly structured, they can cause economic losses, or if multiple standards exist for prolonged periods of time, they can limit economies of scale or cause network externalities with negative consequences for market growth. While one can hope for market growth to increase in the long term as superior technology eventually dominates, the dynamics of the standardisation process are key policy variables for future AI standards. The emergence of evolving technologies requires building on the ability to dynamically adapt standards as well as an understanding that different degrees of standardisation are needed at different stages in the technology's and the industry's evolution. Finally, standards rely on and interact with each other, which means that the standardisation process must be managed holistically as a system of its own but connected to the bigger picture of regulations, international standardisation efforts and context-specific values. While the EU can consider the IEEE efforts as a reference, ESOs (CEN, CENELEC and ETSI) will need to undergo their own processes to provide *flexible* standards that are competitive for the global markets. In this task, ESOs must also identify the minimum EU-agreeable values to be established in standards in coordination with other like-minded countries without closing the access to other markets with other sets of values.

7 References

1. Abdelkaf, N., Bekkers, R., Bolla, R., Rodriguez-Ascaso, A., & Wetterwald, M. (2021). *Understanding ICT Standardisation. Principles and Practice*. (2nd ed.). ETSI.
2. Ali-Vehmas, T., Heikkilä, J., Rissanen, J. (2020). Näkökulmia standardisoinnin taloustieteeseen. *Kansantaloudellinen aikakauskirja* – 116(1), 46-72. https://www.taloustieteellinenyhdistys.fi/wp-content/uploads/2020/02/KAK_1_2020_WEB-48-74.pdf.
3. Awad, E., Dsouza, S., Kim, R., Schulz, J., Henrich, J., Shariff, A., Bonnefon, J.-F., & Rahwan, I. (2018). The Moral Machine experiment. *Nature*, 563(7729), 59–64. https://doi.org/10.1038/s41586-018-0637-6.
4. Baeva, G., Puntschuch, M., & Binder, M. (2023). Power to the standards. Expert consultation on the role of norms and standards in the European regulation of artificial intelligence [White paper]. Retrieved February 28, 2024 from Zentrum für vertrauenswürdige Künstliche Intelligenz (ZVKI)

[24] ANSI, "Considering Cultural Values in Autonomous and Intelligent Systems (Artificial Intelligence), accessed 15th May 2024, https://blog.ansi.org/2019/02/cultural-values-autonomous-intelligent-ieee/#gref

https://www.zvki.de/storage/publications/2023-12/Fohsi7Yzn7/ZVKI-Whitepaper-Standards-EN-2023_v2.pdf.
5. Birkstedt, T., Minkkinen, M., Tandon, A., & Mäntymäki, M. (2023). AI governance: themes, knowledge gaps and future agendas. *Internet Research*, *33*(7), 133–167. https://doi.org/10.1108/INTR-01-2022-0042.
6. Botzem, S., & Dobusch, L. (2012). Standardization Cycles: A Process Perspective on the Formation and Diffusion of Transnational Standards. *Organisation Studies, 33*(5–6), 737–762. https://doi.org/10.1177/0170840612443626.
7. Consolidated Version of The Treaty on European Union (TEU). (2012). C 326/13. Official Journal of the European Union.
8. Council of the European Union. (CE). (2024). Proposal for a regulation of the European Parliament and of the Council. Laying down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts – Analysis of the final compromise text with a view to agreement. 5662/24.
9. Doneda, D., & Almeida, V. A. F. (2016). What Is Algorithm Governance? *IEEE Internet Computing*, 20(4), 60-63. https://doi.org/10.1109/MIC.2016.79.
10. European Commission (EC). (2021). Proposal for a regulation of the European Parliament and of the Council. Laying down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts. No. COM (2021) 206 final (2021).
11. European Commission. (EC). (2022). Commission Notice. The 'Blue Guide' on the implementation of EU product rules 2022. Information From European Union Institutions, Bodies, Offices, and Agencies. Official Journal of the European Union. (2022/C 247/01).
12. European Commission. Joint Research Centre. (EC). (2023). *AI Watch: artificial intelligence standardisation landscape update*. Publications Office. https://data.europa.eu/doi/10.2760/131984.
13. European Telecommunications Standards Institute (ETSI). (2022). *ETSI Activities in the field of Artificial Intelligence. Preparing the implementation of the European AI Act* [White Paper No. #52].1st ed. ISBN No. 979108262073. Retrieved February 28, 2024 from https://standict.eu/sites/default/files/2022-12/ETSI-WP52-ETSI-activities-in-the-field-of-AI.pdf.
14. Feijóo, C., Kwon, Y., Bauer, J. M., Bohlin, E., Howell, B., Jain, R., Potgieter, P., Vu, K., Whalley, J., & Xia, J. (2020). Harnessing artificial intelligence (AI) to increase wellbeing for all: The case for a new technology diplomacy. *Telecommunications Policy*, *44*(6), 101988. https://doi.org/10.1016/j.telpol.2020.101988.
15. Floridi, L. (2018). Soft Ethics and the Governance of the Digital. *Philosophy & Technology, 31*(1), 1–8. https://doi.org/10.1007/s13347-018-0303-9.
16. Foret, F., & Calligaro, O. (Eds.). (2018). *European Values: Challenges and Opportunities for EU Governance*. (1st ed.). Routledge. https://doi.org/10.4324/9781351037426.
17. Gonzalez Torres, A. P. (2023). Responsible AI: Law and Advancing Moral Responsibilization. *6th Proceedings Conference on Technology Ethics*, Turku. https://ceur-ws.org/Vol-3582/FP_12.pdf.
18. Gonzalez Torres, A. P., Kajava, K., & Sawhney, N. (2023). Emerging AI Discourses and Policies in the EU: Implications for Evolving AI Governance. In A. Pillay, E. Jembere, & A. J. Gerber (Eds.), *Artificial Intelligence Research* (pp. 3–17). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-49002-6_1.
19. Hanseth, O., Monteiro, E., & Hatling, M. (1996). Developing Information Infrastructure: The Tension Between Standardization and Flexibility. *Science,*

Technology, & Human Values, 21(4), 407–426. https://doi.org/10.1177/016224399602100402.
20. Heinich, N. (2017). Des valeurs. Une approche sociologique. *Communication*, *vol. 34/2*. https://doi.org/10.4000/communication.7127.
21. High-Level Expert Group on Artificial Intelligence (HLEGAI). (2019). Ethics guidelines for trustworthy AI. Retrieved February 28, 2024 from https://digital-strategy.ec.europa.eu/en/library/ethics-guidelines-trustworthy-ai.
22. Hine, E., & Floridi, L. (2022). Artificial intelligence with American values and Chinese characteristics: a comparative analysis of American and Chinese governmental AI policies. *AI & Society*. https://doi.org/10.1007/s00146-022-01499-8.
23. ISO/IEC 38507:2022, Information technology — Governance of IT — Governance implications of the use of artificial intelligence by organisations.
24. Lähteenoja, V., & Karhu, K. (2023). The virtuous smart city: Bridging the gap between ethical principles and practices of data-driven innovation. Data & Policy, 5, e15. https://doi.org/10.1017/dap.2023.9.
25. Larson, A. L. (2000). Sustainable innovation through an entrepreneurship lens. *Business Strategy and the Environment, 9*(5), 304–317. https://doi.org/10.1002/1099-0836(200009/10)9:5<304::AID-BSE255>3.0.CO;2-O.
26. Lewis, D., Hogan, L., Filip, D., & Wall, P. J. (2020). Global Challenges in the Standardization of Ethics for Trustworthy AI. *Journal of ICT Standardization*. https://doi.org/10.13052/jicts2245-800X.823.
27. Lewis, D., Hogan, L., Filip, D., & Wall, P. J. (2020). Global Challenges in the Standardization of Ethics for Trustworthy AI. *Journal of ICT Standardization*. https://doi.org/10.13052/jicts2245-800X.823
28. Mäntymäki, M., Minkkinen, M., Birkstedt, T., & Viljanen, M. (2022). Defining organizational AI governance. *AI and Ethics*, *2*(4), 603–609. https://doi.org/10.1007/s43681-022-00143-x.
29. Mazzini, Scalzo S. (2023) The Proposal for the Artificial Intelligence Act: Considerations around Some Key Concepts. In *Camardi* (a cura di), La via europea per l'Intelligenza artificiale. Retrieved February 28, 2024 from https://ssrn.com/abstract=4098809.
30. Meijer, A., Wiarda, M., Doorn, N., & Van De Kaa, G. (2023). Towards responsible standardisation: investigating the importance of responsible innovation for standards development. *Technology Analysis & Strategic Management*, 1–15. https://doi.org/10.1080/09537325.2023.2225108.
31. Miao, Y. (2020). Romanticising the Past: Core Socialist Values and the China Dream as Legitimisation Strategy. *Journal of Current Chinese Affairs*, 49(2), 162–184. https://doi.org/10.1177/1868102620981963.
32. Morley, J., Elhalal, A., Garcia, F., Kinsey, L., Mökander, J., & Floridi, L. (2021). Ethics as a Service: A Pragmatic Operationalization of AI Ethics. *Minds and Machines*, 31(2), 239–256. https://doi.org/10.1007/s11023-021-09563-w.
33. Regulation (EU) No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation, amending Council Directives 89/686/EEC and 93/15/EEC and Directives 94/9/EC, 94/25/EC, 95/16/EC, 97/23/EC, 98/34/EC, 2004/22/EC, 2007/23/EC, 2009/23/EC and 2009/105/EC of the European Parliament and of the Council and repealing Council Decision 87/95/EEC and Decision No 1673/2006/EC of the European Parliament and of the Council. Official Journal of the European Union.

*Presented at the 28th EURAS Annual Standardisation Conference – Comprehensive Standardisation for Societal Challenges, Delft University of Technology, Delft, Netherlands.

34. Sigfrids, A., Leikas, J., Salo-Pöntinen, H., & Koskimies, E. (2023). Human-centricity in AI governance: A systemic approach. *Frontiers in Artificial Intelligence*, 6, 976887. https://doi.org/10.3389/frai.2023.976887.
35. Swann, G. M. P. (2000). *The Economics of Standardisation*. Final Report for Standards and Technical Regulations Directorate Department of Trade and Industry. Manchester Business School. Retrieved 28th February 2024, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/32444/10-1135-economics-of-standardization-update.pdf.
36. Swann, G. M. P. (2010). *International Standards and Trade: A Review of the Empirical Literature*. OECD. https://doi.org/10.1787/5kmdbg9xktwg-en.
37. Tartaro, A. (2023). Regulating by standards: current progress and main challenges in the standardisation of Artificial Intelligence in support of the AI Act. Regolare con gli standard: gli attuali progressi e le sfide principali nella standardizzazione dell'intelligenza artificiale a sostegno dell'AI Act. *European Journal of Privacy Law & Technologies*, 1. Retrieved February 28, 2024 from https://universitypress.unisob.na.it/ojs/index.php/ejplt/article/view/1792.
38. Tassey, G. (2000). Standardisation in technology-based markets. *Research Policy, 29*(4–5), 587–602. https://doi.org/10.1016/S0048-7333(99)00091-8.
39. Van De Kaa, G., & De Vries, H. J. (2015). Factors for winning format battles: A comparative case study. *Technological Forecasting and Social Change, 91*, 222–235. https://doi.org/10.1016/j.techfore.2014.02.019.
40. Veale M, & Borgesius, F. Z. (2021). Demystifying the Draft EU Artificial Intelligence Act. *Computer Law Review International*. 22(4): 97- 112. https://doi.org/10.48550/arXiv.2107.03721.
41. Weatherill, S. (2016). *Law and Values in the European Union*. Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199557264.001.000.
42. Winfield, A. (2019). Ethical standards in robotics and AI. *Nature Electronics*, 2(2), 46–48. https://doi.org/10.1038/s41928-019-0213-6.

*Presented at the 28th EURAS Annual Standardisation Conference – Comprehensive Standardisation for Societal Challenges, Delft University of Technology, Delft, Netherlands.