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# AI Governance through Political Fora and Standards Developing Organizations

Mapping the actors relevant to  
AI governance



Think Tank at the Intersection of Technology and Society

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## Introduction

Shaping international norms around the ethics of Artificial Intelligence (AI) is perceived as a new responsibility by foreign policy makers. This responsibility is accompanied by a desire to play an active role in the most important international fora. Given the limited resources in terms of time and budget, foreign ministries need to set priorities for their involvement in the governance of AI. First and foremost, this requires an understanding of the entire AI governance landscape and the actors involved. The intention of this paper is to take a step back and familiarize foreign policy makers with the internal structures of the individual AI governance initiatives and the relationships between the involved actors. A basic understanding of the landscape also makes it easier to classify thematic developments and emerging actors, their agendas, and strategies.

This paper provides foreign policy practitioners with a mapping that can serve as a compass to navigate the complex web of stakeholders that shape the international debate on AI ethics. It plots political fora that serve as a platform for actors to agree upon ethical principles and pursue binding regulation. The mapping supplements the political purview with key actors who create technical standards on the ethics of AI. Furthermore, it describes the dynamic relationships between actors from these two domains. International governance addresses AI ethics through two different dimensions: political fora and Standards Developing Organizations (SDOs). Although it may be tempting to only engage on the diplomatic stage, this would be insufficient to help shape AI policy. Foreign policy makers must tend to both dimensions. While both governance worlds share the same topics and themes (in this case, AI ethics), they differ in their stakeholders, goals, outputs, and reach.

Key political and economic organizations such as the United Nations (UN), the Organisation for Economic Co-operation and Development (OECD), and the European Commission (EC) address ethical concerns raised by AI technologies. But so do SDOs such as the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC), and the IEEE Standards Association (IEEE SA). Although actors from the latter category are typically concerned with the development of standards that address terminology, ontology, and technical benchmarks that facilitate product interoperability and market access, they, too, address AI ethics.

But these discussions on AI ethics will be useless if they do not inform the development of concrete policies for how to govern the technology.



At international political fora, on the one hand, states shape the outputs that are often limited to non-binding, soft AI principles. SDOs, on the other hand, tend to the private sector. They are characterized by consensus-based decision-making processes<sup>1</sup> that facilitate the adoption of industry standards. These fora are generally not accessible to (foreign) policy makers. Either because they exclusively cater to private sector and bar policy makers from joining, or because active participation requires in-depth technical expertise as well as industry knowledge which may surpass diplomats' skill sets. Nonetheless, as prominent standard setting bodies such as ISO, IEC, and IEEE SA pursue industry standards in AI ethics, foreign policy makers need to take notice, as this will likely have consequences for their negotiations at international political fora.

The precondition for active engagement is to gain an overview of the AI Governance environment. Foreign policy practitioners need to understand the landscape of stakeholders, identify key actors, and start to strategically engage with questions relevant to AI governance. This is necessary to determine whether a given initiative on AI ethics is aligned with one's own foreign policy goals and, therefore, worth engaging with. It is also helpful to assess industry dynamics that might affect geo-economic deliberations. Lastly, all of this is vital information to report back to government headquarters to inform policy making, as AI policy is a matter of domestic *and* foreign policy.



## Mapping the International AI Governance Fora Concerned with AI Ethics

This chapter includes a mapping of political fora and SDOs that are involved in the governance of AI ethics. The mapping is supplemented by a detailed account of these fora based upon four dimensions of comparison: category, topics, goals, and members. Foreign policy makers can use this information to monitor the different institutions' activities and future outputs or take it as a starting point for political engagement.

### International AI Governance Fora

The mapping depicts international AI governance fora working on AI ethics. It is divided into two distinct levels of AI governance and puts the spotlight on the working groups within the specific fora responsible for output creation.

Two major stakeholders are involved in the governance of AI ethics: political fora (in blue) and SDOs (in green). In this regard, as a not-for-profit organization (dark purple), the Partnership on Artificial Intelligence (PAI) is the only exception. Including it in the map, however, is necessary as there are several synergies with the other actors involved in this mapping: they share a focal point of AI ethics and they produce output by means of working groups. Furthermore, the sheer number of its member organizations<sup>2</sup> makes it necessary to incorporate this (multi-stakeholder) initiative into the mapping.

Political fora and SDOs are characterized by distinct structural similarities. First, they both use expert working groups to generate their outputs. Second, many of the depicted fora have committees as a common feature. For instance, the GPAI's steering committee (StC), the Council of Europe's (CoE) Ad Hoc Committee on Artificial Intelligence (CAHAI), and the Joint Technical Committee 1 (JTC1), shared by ISO and IEC. Although working groups are central to creating policy or standards, the committee level oversees their work. Working groups are tasked by their respective committee to take on certain topics, or to issue concrete deliverables. For example, at the OECD, the AI Group of Experts (AIGO) was tasked by the Committee on Digital Economy Policy (CDEP) to develop AI policy principles. At the IEEE SA, the standards committee "VT/ITS – Intelligent Transportation Systems"(C2) oversees the working group "Autonomous Systems Validation"(WG2) to develop the IEEE P7001 standard on the "Transparency of Autonomous Systems". Other fora do not rely on committees, such as the UN CCW, the UNESCO, and



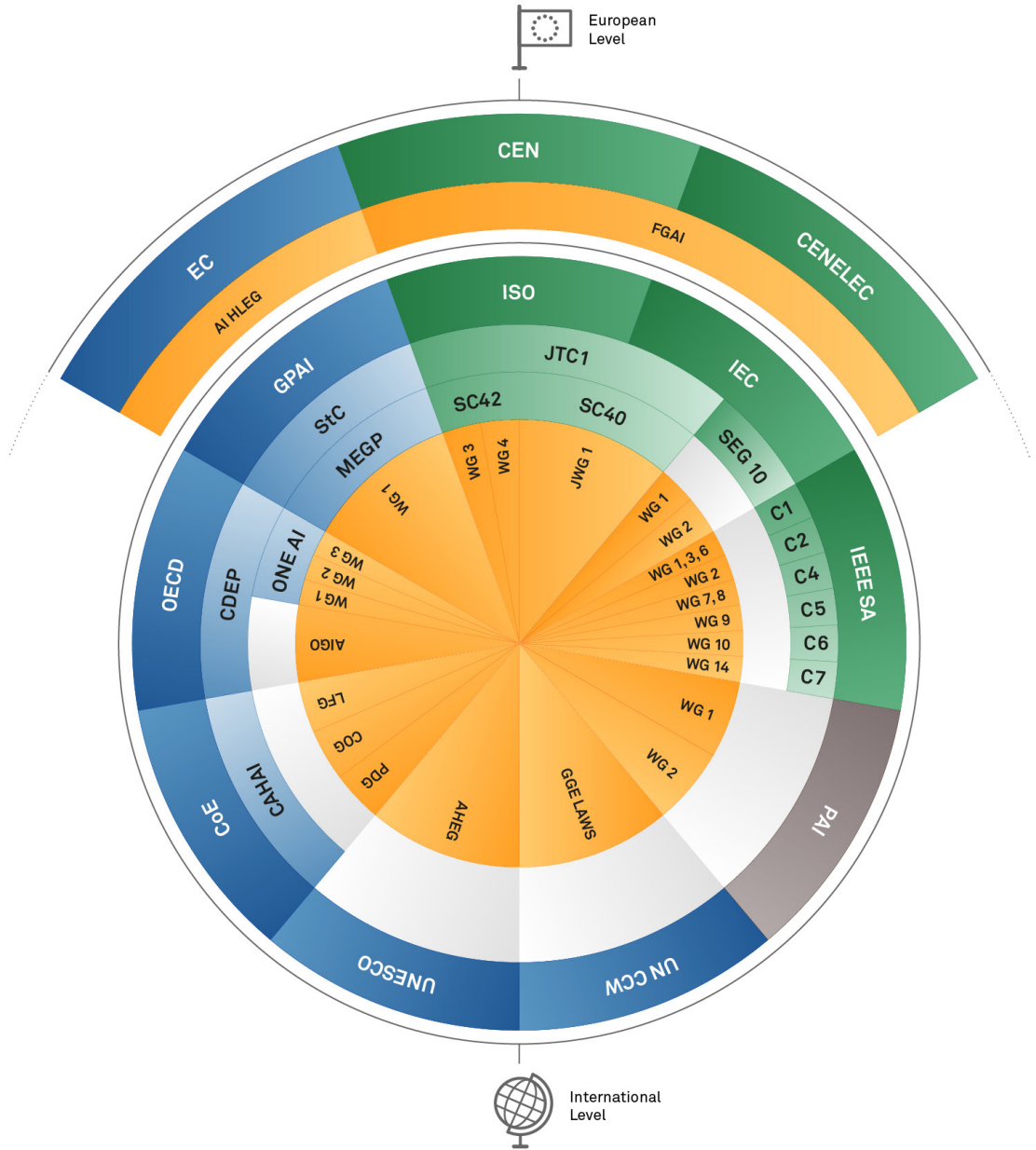
the PAI. The visualization excludes committees and working groups that are not directly concerned with AI ethics. For example, at ISO/IEC JTC1/SC42, working groups 1, 2, and 5 are concerned with foundational standards, Big Data, and computational approaches and computational characteristics of AI systems.<sup>3</sup> This is also the case for a committee at IEEE SA that oversees a working group on child and student data governance.<sup>4</sup> So, while there may be other working groups and committees working on topics tangential to AI, the visualization in this paper deals only with those working specifically on AI ethics.

Additionally, the visualization depicts two distinct levels of governance: the international level, and the European level. Actors included on the international level are related in that they share outputs with a global reach, while their European counterparts' outputs are limited to the EU's jurisdiction. Although the international and the European governance levels seem separate, they are interrelated through direct connections. For example, the Frankfurt Agreement<sup>5</sup> assures the cooperation between IEC and CENELEC. Political organizations are also linked. The EU, for instance, is one of the founding members of the Global Partnership on Artificial Intelligence (GPAI), and the OECD provides a secretariat to the GPAI, located in Paris.

There are additional actors involved in the governance of AI, for instance the European Telecommunications Standards Institute (ETSI) and the International Telecommunication Union (ITU). But neither SDO pursues standardization work related to the ethics of AI and are, therefore, outside the scope of this mapping.

This paper exclusively focuses on two distinct levels of AI governance: political fora as the principal venues for foreign policy makers to engage, and SDOs because they address political questions of AI ethics through standardization. In order to keep these two levels of governance central in this paper, other stakeholders who may be engaged in AI ethics, such as think tanks, academia, as well as NGOs, are excluded from the analysis.

Stakeholders Engaged in the  
 Governance of AI Ethics



Key

- Political Fora
- Standards Developing Organizations (SDOs)
- Not-for-Profit Organization
- Working Groups
- Stiftung
- Neue
- Verantwortung





## Description of International AI Governance Fora

This section includes a description of stakeholders at international AI governance fora involved in AI ethics.

The description of stakeholders follows the logic of the stakeholder map. It starts by presenting the political fora on the international level (their outputs having global reach), beginning with the United Nations (UN CCW, UNESCO) and from there moving clockwise towards the SDOs (ISO, IEC and IEEE SA). The PAI is the international level's actor described last.

Next comes the description of actors on the European level. It starts by presenting the High-Level Expert Group on AI (HLEG) at the European Commission, and it finishes by describing the work conducted at the Focus Group on AI, a working group shared between the European Standards Organizations (ESOs) CEN and CENELEC.

### The United Nations

The UN pursues several activities that have a direct impact on international AI governance. This section focuses on the Group of Governmental Experts on Lethal Autonomous Weapons Systems, the working group responsible for ethical considerations in the context of the Convention on Certain Conventional Weapons (CCW), and the work pursued by the Ad Hoc Expert Group for the Recommendation on the Ethics of AI (AHEG) at the United Nations Educational, Scientific and Cultural Organisation (UNESCO).

#### **CCW – The Convention on Certain Conventional Weapons**

The UN CCW also known as the “Inhumane Weapons Convention”, is an instrument of international humanitarian law. The CCW consists of a chapeau convention and five annexed Protocols that include prohibitions or restrictions on the use of specific weapons or weapon systems – mines and blinding laser weapons, among others. The CCW has been addressing questions at the intersection of emerging technologies and lethal autonomous weapons (LAWS) since 2014. Three informal meetings were held between 2014 and 2016.

#### **Category**

Political forum.

### **Topics**

In 2016, the High Contracting Parties agreed to establish a Group of Governmental Experts at the UN CCW on Lethal Autonomous Weapons Systems (GGE LAWS). The GGE LAWS was mandated to assess these questions in detail and to meet again in 2017. Since then, the GGE LAWS has met on a yearly basis. Ethical considerations about the use of LAWS have been central to the debates at the GGE LAWS.

### **Goals**

International convention.<sup>6</sup>

The CCW seeks to ban or restrict the use of certain conventional weapons which may cause unnecessary or unjustifiable suffering to combatants or affect civilians indiscriminately.<sup>7</sup> The international community is divided with regards to the treatment of LAWS. 125 states have agreed upon guidelines for dealing with LAWS in November of 2019.<sup>8</sup> The guidelines include political standards for key ethical principles such as human accountability and responsibility.<sup>9</sup>

### **Members**

120 states are signatories to the CCW. The GGE LAWS is open-ended in nature and is open to all High Contracting Parties and non-state Parties to the CCW, international organizations, and non-governmental organizations.<sup>10</sup>

### **AHEG – Ad Hoc Expert Group for the Recommendation on the Ethics of AI at the UNESCO**

In November 2019, UNESCO launched a two-year process that aims to establish a global standard-setting instrument on the ethics of AI in the form of a Recommendation.<sup>11</sup>

### **Category**

Political forum.

### **Topics**

The AHEG focusses on AI ethics with a special emphasis on the broader ethical implications of AI in relation to the central domains of UNESCO: education, science, culture, and communication and information.<sup>12</sup> The draft Recommendation lists many AI principles categorized into two groups. Group 1 principles cover characteristics associated with the human-technology interface: principle one is termed “for human and flourishing”, the remaining principles address proportionality, human oversight and determination, sustainability, diversity and inclusiveness, privacy, awareness and literacy,



and multi-stakeholder and adaptive governance. Group 2 principles consist of characteristics associated with properties of AI systems: fairness, transparency and explainability, safety and security, responsibility and accountability.<sup>13</sup> Apart from defining AI principles, the draft Recommendation includes an extensive list of policy actions, two of which specifically address AI ethics: promoting AI ethics in education and awareness (policy action 5), and promoting AI ethics in research (policy action 6).<sup>14</sup>

### **Goals**

International Recommendation.

In May 2020, the AHEG published the draft text of the Recommendation<sup>15</sup>. The draft text is based upon a preliminary study<sup>16</sup> on the ethics of AI, published in February 2019 by UNESCO's World Commission on the Ethics of Scientific Knowledge and Technology (COMEST). It concluded that "currently no global instrument covers all the fields that guide the development and application of AI in a human-centered approach"<sup>17</sup> which is why it advised UNESCO to consider a Recommendation as the appropriate normative tool to correct for this void.<sup>18</sup> A multidisciplinary consultation<sup>19</sup> on the draft Recommendation with cross-sectoral stakeholders took place in July 2020.<sup>20</sup> In 2021, the draft Recommendation will be subject to negotiation through an intergovernmental process. The Recommendation is scheduled for possible adoption by UNESCO's General Conference at its 41st session at the end of 2021.<sup>21</sup>

### **Members**

The AHEG is composed of 24 international experts from academia, think tanks, and NGOs.<sup>22</sup>

## **CoE – The Council of Europe**

The Council of Europe has been dealing with matters of AI ethics since 2019. During its 1,353<sup>rd</sup> meeting on September 11, 2019, its Committee of Ministers established an Ad Hoc Committee on Artificial Intelligence (CAHAI).<sup>23</sup>

### **CAHAI – Ad Hoc Committee on AI**

The CAHAI is tasked with creating a legal framework for the development, design and application of artificial intelligence rooted in the Council of Europe's standards on human rights, democracy and the rule of law.<sup>24</sup>

### **Category**

Political forum.



### **Topics**

The CAHAI has established three working groups:

- the Policy Development Group (CAHAI-PDG)
- the Consultations and Outreach Group (CAHAI-COG)
- the Legal Frameworks Group (CAHAI-LFG).

WG 1 (CAHAI-PDG) will contribute to the development of a feasibility study for a legal framework on AI applications and develop proposals for engaging with and consulting the relevant external stakeholders.<sup>25</sup> Four issues are of special interest to WG 1:<sup>26</sup>

- Identify and analyze how states and private actors apply AI technologies in ways that influence human rights, rule of law and democracy,
- Prepare key findings and proposals to ensure that international standards and international legal instruments in this area are up-to-date and effective, and prepare proposals for a specific legal instrument to regulate AI,
- Identify high-risk and high-opportunity AI applications, consider and develop policy and other measures to address risks posed by them, and ensure the protection of human rights, rule of law and democracy,
- Prepare proposals to facilitate the enforcement of relevant international and European human rights obligations, and to respond to significant new and emerging opportunities, threats and risks.

WG 1 started its work on AI policy development in June 2020.

WG 2 (CAHAI-COG) will take stock of the results of the online consultations and prepare a stakeholder analysis and mapping (due in September 2020).<sup>27</sup> WG 2 started its work on consultations and outreach in June 2020.

WG 3 (CAHAI-LFG) will prepare key findings and proposals on possible elements and provisions of a legal framework. WG3 will also develop specific regulatory proposals for the development, design and application of AI in the areas identified as risky by member states and other stakeholders, considering member states' regulatory approaches. WG 3 will start its work on the legal framework in January 2021.<sup>28</sup>

### **Goal**

Multi-stakeholder consultations, feasibility study, legal framework.<sup>29</sup>



### **Members**

Engagement as a representative is possible for members (with voting rights), participants, and observers (both without voting rights). Governments of member states (members) can designate representatives “of the highest possible rank with recognized expertise in the field of digital governance and the legal implications of the functioning of different forms of AI relevant to the Council of Europe mandate”.<sup>30</sup> Certain institutions or bodies with close links to the CoE (participants) can send representatives, for example the European Court of Human Rights. So can the EU, Observer States of the CoE, Organisation for Security and Co-operation in Europe (OSCE), World Health Organization, UNESCO and other UN agencies and international organizations. Lastly, the European Network of National Human Rights Institutions, CoE partner internet companies, civil society organizations, and other private sector and academic actors can send representatives (observers), as long as they are relevant to the work of the CAHAI.<sup>31</sup>

Each of the three working groups is composed of a maximum of 20 experts designated by member states, and of additional participants and observers that have expressed interest in contributing to its work.<sup>32</sup>

### **OECD – The Organisation for Economic Co-operation and Development**

The OECD set out to explore AI in a technology foresight process conducted in November 2016.<sup>33</sup> Other milestones include the OECD conference on AI in November 2017, the creation of the AI Group of Experts (AIGO) in September 2018, the adoption of the Principles on AI in May 2019, the creation of the OECD Network of Experts on AI in July 2019 (One AI), and the launch of the OECD.AI Policy Observatory (OECD.AI) in February 2020.<sup>34</sup>

#### **AIGO – AI Group of Experts at the OECD**

In September 2018, the Committee on Digital Economy Policy (CDEP)<sup>35</sup> established AIGO, an expert group at the OECD tasked with developing AI policy principles.

#### **Category**

Political forum.



### Topics

AI (ethics) principles that focus on AI, which is innovative, trustworthy, and that respects human rights and democratic values. In its final proposal to CDEP, AIGO proposed five value-based principles<sup>36</sup> that AI should promote:

- Inclusive and sustainable growth and well-being,
- Human-centered values and fairness,
- Transparency and explainability,
- Robustness and safety,
- Accountability.

Furthermore, it included four recommendations for national AI policies:

- Investing in responsible AI research and development,
- Fostering and enabling a digital ecosystem for AI,
- Providing an agile [and controlled] policy environment for AI,
- Building human capacity and preparing for job transformation.<sup>37</sup>

And it urged governments to foster international cooperation for trustworthy AI.<sup>38</sup>

### Goals

A Recommendation on AI (OECD AI Principles for responsible stewardship of trustworthy AI) to the OECD Council.

OECD Recommendations are not legally binding, but they are influential regarding their standard setting capabilities, and they can help governments design national legislation. The Recommendation was adopted by the OECD Council at the Ministerial level on May 22, 2019 (OECD/LEGAL/0449<sup>39</sup>). Adherents to the Recommendation on AI are the OECD members and seven non-members.<sup>40</sup> In June 2019, at the Osaka Summit, the G20 adopted “human-centered AI principles”<sup>41</sup> which draw from the OECD Principles on AI.<sup>42</sup> Apart from principles on AI, the Recommendation expressed the need to establish a policy observatory on AI, tasked with developing metrics to measure AI research, development and deployment benchmarks, and to gather an evidence base to assess progress in its implementation.<sup>43</sup> The AI Policy Observatory<sup>44</sup> (OECD.AI) launched in February 2020.

### Members

AIGO consists of more than 50 international experts, including representatives of 20 governments, experts from business, labor, civil society, academic and scientific communities, think tanks, other international organizations, and SDOs.<sup>45</sup>



### **ONE AI – OECD Network of Experts on AI**

ONE AI is an informal, multi-stakeholder advisory expert group the CDEP created in July 2019.<sup>46</sup>

#### **Category**

Political forum.

#### **Topics**

ONE AI will focus on priority areas of the CDEP 2020 agenda. For this purpose, it has created three working groups:

- WG 1: Proposing an approach for the classification of AI systems.<sup>47</sup>
- WG 2: Providing implementation guidance focusing on values-based AI principles. WG 2 will help detect challenges and identify and develop promising ideas and good practices for implementing the five values-based OECD AI principles.<sup>48</sup>
- WG 3: Providing implementation guidance on national policies. WG 3 will focus on the five recommendations to policy makers contained in the AI Principles and help develop good practices for implementing these recommendations.<sup>49</sup>

#### **Goals**

Providing AI-specific expertise as well as policy-, technical-, and business-advice related to the CDEP work flows and agenda.

ONE AI is tasked with identifying possible trends or new issues for consideration and responding to any specific questions raised by CDEP. The network provides expert input into all four pillars of the OECD.AI and facilitates information exchange and collaboration between the OECD and other international initiatives and organizations focusing on AI. It also helps to raise awareness of research and policy initiatives within and beyond the OECD, as well as identify synergies and avenues for cooperation.<sup>50</sup>

#### **Members**

ONE AI is a multi-stakeholder and multi-disciplinary expert group.<sup>51</sup> Invitations to join ONE AI are issued annually, for the current year. In 2020, ONE AI includes over 70 members. 47 from government, 3 from the EU, 21 from business, 3 from trade unions, 16 from civil society and academia, 6 from inter-governmental organizations, and 7 from the technical community. The group also includes representatives from UNESCO, the CoE, the World Bank, the Inter-American Development Bank, and SDOs such as ISO, IEC, and IEEE SA.<sup>52</sup>



## GPAl – The Global Partnership on AI

The Global Partnership on Artificial Intelligence (GPAl or “Gee-Pay”) developed prior to the 2018 G7 Summit through a coordinated French-Canadian initiative on AI started by Emmanuel Macron, President of the French Republic, and Justin Trudeau, Prime Minister of Canada.<sup>53</sup> The idea was to create an International Panel on Artificial Intelligence (IPAI) – in the form of an international study group that seeks to understand and anticipate the diverse impacts of AI technologies. This was agreed upon between the Canadian and French Governments in the Canada-France Statement on AI from June 2018.<sup>54</sup>

During the G7 Summit in Biarritz in August 2019, the initiative took a big leap forward when heads of states and governments acknowledged the GPAl proposed by France and Canada.<sup>55</sup> Two months later, President Macron announced that the GPAl will receive scientific support from two Centers of Expertise<sup>56</sup>, and organizational support from a secretariat<sup>57</sup> hosted at the OECD.<sup>58</sup>

The GPAl was officially launched on June 15, 2020 in a Joint Statement<sup>59</sup> by its 15 founding members.

### Category

Political forum.

### Topics

Support cutting-edge research and applied activities on AI-related priorities. GPAl will serve as a forum for leading experts from industry, civil society, governments, and academics with multidisciplinary backgrounds. One of the four working groups of GPAl pursues topics directly related to AI ethics:

- Responsible AI (WG 1, supported by the International Centre of Expertise in Montréal for the Advancement of Artificial Intelligence, ICEMAI<sup>60</sup>).

Three committees oversee the working groups: the ruling council that includes government ministers; the steering committee (StC) that includes representatives from states, industry, academia, and civil society; and the Multi-stakeholder Experts Group Plenary (MEGP).<sup>61</sup> The Plenary will meet annually, starting in December 2020.<sup>62</sup> It is tasked with implementing GPAl’s work plan, providing specific international AI expertise, and producing annual reports.<sup>63</sup>





### **Goals**

International multi-stakeholder initiative that guides the responsible development and use of AI, grounded in human rights, inclusion, diversity, innovation, and economic growth.<sup>64</sup>

### **Members**

Founding members include Australia, Canada, France, Germany, India, Italy, Japan, Mexico, New Zealand, the Republic of Korea, Singapore, Slovenia, the United Kingdom, the United States of America, and the European Union<sup>65</sup>. Each country is currently nominating expert representatives to join the four multidisciplinary and multi-stakeholder working groups.<sup>66</sup>

## **ISO and IEC – The International Organization for Standardization and the International Electrotechnical Commission**

The ISO is a quasi-governmental international organization<sup>67</sup> engaged in developing international standards.

The IEC is a not-for-profit, quasi-governmental international organization<sup>68</sup> devoted to international standard setting for technologies collectively known as “electrotechnology”.<sup>69</sup>

ISO and the IEC join forces to develop international standards relevant to the entire AI ecosystem.

### **ISO/IEC JTC 1/SC 42 Artificial Intelligence**

ISO/IEC JTC 1/SC 42 is the international standards committee responsible for standardization of AI.<sup>70</sup> It is under the joint technical committee (JTC 1) of ISO and IEC. JTC 1 decided to create a Subcommittee on AI in October 2017 at the 32nd Meeting of ISO/IEC JTC 1. ISO’s Technical Management Board<sup>71</sup> and IEC’s Standardization Management Board<sup>72</sup> officially established SC 42 Artificial Intelligence in May 2018.<sup>73</sup>

### **Category**

Standards Developing Organization.

### **Topics**

The topics are represented by the scope of the 5 individual working groups that define SC 42’s work agenda. At SC 42, two of five working groups (WGs) and one joint working group (JWG) pursue standardization in themes relevant to AI ethics: trustworthiness (WG 3), use cases and applications (WG 4), and governance implications of AI (JWG 1).



Ethical and societal concerns are considered across SC 42's entire work,<sup>74</sup> but have a special emphasis in WG 3, WG 4, and JWG 1.

The standards currently under development in WG 3 (trustworthiness) address AI ethics across several themes:

- Trustworthiness
  - ISO/IEC TR 24027: Information technology – Artificial Intelligence (AI) – Bias in AI systems and AI-aided decision-making<sup>75</sup>
  - ISO/IEC TR 24029-1: Artificial Intelligence (AI) – Assessment of the robustness of neural networks – Part 1: Overview<sup>76</sup>
  - ISO/IEC AWI 24029-2 Artificial Intelligence (AI) – Assessment of the robustness of neural networks – Part 2: Formal methods methodology<sup>77</sup>
- Safety
  - ISO/IEC AWI TR 5469: Artificial intelligence – Functional safety and AI systems<sup>78</sup>
- Risk management
  - ISO/IEC 23894: Information technology – Artificial Intelligence – Risk Management<sup>79</sup>
- AI ethical and societal concerns
  - ISO/IEC 24368: Information technology – Artificial Intelligence – Overview of Ethical and Societal Concerns<sup>80</sup>

In May 2020, ISO/IEC JTC 1/SC 42 published its first standard<sup>81</sup>: ISO/IEC TR 24028:2020: “Information technology – Artificial Intelligence (AI) – Overview of trustworthiness in artificial intelligence”.<sup>82</sup> It surveys topics related to trustworthiness in AI systems, approaches to establish trust in AI systems through transparency, explainability and controllability. It addresses engineering pitfalls and typical associated threats and risks to AI systems. It highlights possible mitigation techniques and methods, and it provides approaches to assess and achieve availability, resiliency, reliability, accuracy, safety, security and privacy of AI systems.<sup>83</sup>

WG 4 (use cases and applications) addresses AI ethics in its current standard under development: ISO/IEC CD TR 24030 – Information technology – Artificial Intelligence (AI) – Use cases.<sup>84</sup>

JWG 1 (governance implications of AI) involves subcommittees SC 42 (Artificial Intelligence) and SC 40 (IT Service Management and IT Governance). JWG 1 is managed by SC 42. It addresses AI ethics in its current standard under development: ISO/IEC CD 38507: Information technology – Governance of IT – Governance implications of the use of artificial intelligence by organizations.<sup>85</sup>

### Goals

ISO/IEC JTC 1/SC 42 Artificial Intelligence pursues standardization in AI.

SC 42 is the focal point of, and proponent for JTC 1's standardization program on AI. Additionally, it provides guidance to JTC 1, IEC, and ISO committees that address AI applications with international standards.<sup>86</sup>

### Members

The ISO is a global network of national standard setting bodies. Decisions are made within the ISO based on votes cast by ISO member bodies, applying the principle of one country, one vote.<sup>87</sup> The same principle applies to votes cast when ISO and IEC cooperate in joint technical committees.<sup>88</sup> Individuals or companies are not eligible to become ISO members.<sup>89</sup> Although they can participate as experts through their national standards body.<sup>90</sup> The ISO offers three degrees of membership:

- Full members (member bodies). They participate and vote in ISO technical and policy meetings.<sup>91</sup>
- Correspondent members. They attend ISO technical and policy meetings as observers and have no voting rights.<sup>92</sup>
- Subscriber members. They take notice of the ISO's work but do not participate in it.

The IEC is composed of National Committees<sup>93</sup> (one per country) that appoint experts and delegates from industry, government bodies, associations, and academia to participate in the work of the IEC.<sup>94</sup>

The Directives of the ISO/IEC, Part 1 allows organizations to enter a liaison relationship with the ISO/IEC.<sup>95</sup> To this date, seven organizations have made use of this possibility in relation to ISO/IEC JTC 1/SC 42: the EC, OECD, and the Partnership on AI (PAI), among others.<sup>96</sup> They are approved as Category A external liaisons.<sup>97</sup> According to clause 1.17.2 of the Directives, Category A external liaisons are given access to all relevant documentation and are invited to meetings. Additionally, they may nominate experts to participate in a WG.<sup>98</sup> Category A liaisons are not allowed to vote but can comment and propose new work items.<sup>99</sup>

In total, SC 42 Artificial Intelligence has 31 participating members, 16 observing members<sup>100</sup>, and 7 external liaisons.

## IEC – The International Electrotechnical Commission

Apart from the standardization efforts the IEC assumes with the ISO, it also addresses ethical concerns of autonomous and AI applications (AAA) in its Standardization Evaluation Group 10 (SEG 10).

### SEG 10 – Standardization Evaluation Group 10

In October 2018, the IEC's Standardization Management Board confirmed the recommendation of its ad hoc advisory group (AHG 79) to set-up a group at the IEC that considers issues in the ethics of autonomous and AI applications (AAA).<sup>101</sup> In March 2019, the IEC's SEG 10 held its first meeting.<sup>102</sup> The SEG 10 prepares recommendations to the IEC Standardization Management Board on ethical aspects related to AAA.<sup>103</sup>

### Category

Standards Developing Organization.

### Topics

SEG 10 explores ethical issues and societal concerns related to AAA through two working groups:

- AAA Societal and Ethical Foundations (WG 1). This working group develops a framework/process/approach for applying ethics in different contexts and domains for standardization work.<sup>104</sup>
- AAA Specific Ethical Requirements (WG 2). This working group identifies and prioritizes specific ethical requirements of IEC technical activities related to AAA.<sup>105</sup>

Both working groups provide a forum for relevant actors and have academics participate in their considerations on the ethics of AAA.<sup>106</sup>

In addition to its own activities, the IEC cooperates with the ISO under JTC 1 Subcommittee 42 Artificial Intelligence in the standardization of AI.

### Goals

Provide recommendations to the IEC Standardization Management Board on ethical aspects related to AAA.

Furthermore, SEG 10 will develop guidelines for IEC committees on ethical aspects related to AAA.



### Members

The IEC has 62 full members<sup>107</sup> (includes voting rights in Council), and 27 associate members<sup>108</sup> (limited voting rights in the technical work).

Individuals engage in the IEC's work through their National Committees (NC) either as experts (individuals with specialist knowledge in a technical field<sup>109</sup>) or as delegates. While delegates are representatives of their respective NC, experts are appointed by an NC to take part in specific technical work of the IEC, for example as part of a working group. Experts participate in a personal capacity and do not represent their company, organization, or NC.<sup>110</sup>

The SEG 10 consists of a total of 115 members.<sup>111</sup>

12 NCs take part in WG 1 (AAA Societal and Ethical Foundations). It consists of 42 members: 10 in the capacity of experts, and 32 in the capacity of delegates.<sup>112</sup>

11 NCs take part in WG 2 (AAA Specific Ethical Requirements). It consists of 34 members: 3 in the capacity of experts, and 31 in the capacity of delegates.

## IEEE SA – The IEEE Standards Association

The Institute of Electrical and Electronics Engineers (IEEE – “Eye-triple-E”) is a non-profit, technical professional association for electronic and electrical engineering.<sup>113</sup> The IEEE SA is a standards-setting body within the IEEE. It develops consensus standards through a process that engages industry and brings together a broad stakeholder community. IEEE has nearly 900 active standards with 700 under development.<sup>114</sup>

### Category

Standards Developing Organization.

### Topics

In April 2016, the IEEE SA launched the IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems, an industry-connections program that was part of a broader IEEE program on ethics (tech ethics).<sup>115</sup> Its first objective was to ensure every stakeholder involved in the design and development of autonomous and intelligent systems is educated, trained, and empowered to prioritize ethical considerations so that these technologies are for the benefit of humanity.<sup>116</sup> Its second objective was to use existing AI principles to develop concrete AI standards.



For this purpose, IEEE released two successive versions of Ethically Aligned Design (EAD): A Vision for Prioritizing Human Wellbeing with Artificial Intelligence and Autonomous Systems.<sup>117</sup> The papers' aims were threefold: enable a public discussion of how intelligent and autonomous technologies can be aligned with moral values and ethical principles that prioritize human wellbeing,<sup>118</sup> facilitate the emergence of national and global policies that align with these principles, and to inspire the creation of standards.<sup>119</sup>

This last item represents the link between the IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems and IEEE SA's ongoing standardization activities at the intersection of technological and ethical considerations (IEEE P7000).

IEEE SA currently pursues 13 standards projects in its P7000 series. At IEEE SA, standards committees oversee working groups tasked with developing the standards. Nine standards are of special relevance to the purpose of this paper and will therefore be described in brief.<sup>120</sup>

#### *Unpublished standards*

- IEEE P7000: Model Process for Addressing Ethical Concerns During System Design (C1; WG1)

This standard establishes a process model by which engineers and technologists can address ethical considerations throughout the various stages of system initiation, analysis and design.<sup>121</sup>

- IEEE P7001: Transparency of Autonomous Systems (C2; WG2)

This standard describes measurable, testable levels of transparency, so that autonomous systems can be objectively assessed, and their levels of compliance can be determined.<sup>122</sup>

- IEEE P7003: Algorithmic Bias Considerations (C1; WG3)

This standard describes specific methodologies to help users certify how they work to address and eliminate issues of negative bias in the creation of their algorithms (e.g. scrutinizing the usage of overly subjective or unformed datasets or information known to be inconsistent with legislation concerning certain protected characteristics such as race, gender, sexuality).<sup>123</sup>

- IEEE P7006: Standard on Personal Data AI Agent (C1; WG6)

This standard describes the technical elements required to create and grant access to a personalized Artificial Intelligence (AI) that will comprise inputs, learning, ethics, rules and values controlled by individuals.<sup>124</sup>



- IEEE P7007: Ontological Standard for Ethically driven Robotics and Automation Systems (C4; WG7)

This standard establishes a set of ontologies with different abstraction levels that contain concepts, definitions and axioms which are necessary to establish ethically driven methodologies for the design of Robots and Automation Systems.<sup>125</sup>

- IEEE P7008: Standard for Ethically Driven Nudging for Robotic, Intelligent and Autonomous Systems (C4; WG8)

This standard contains concepts, functions and benefits necessary to establish and ensure ethically driven methodologies for designing the robotic, intelligent and autonomous systems that incorporate “nudges” (overt or hidden suggestions or manipulations designed to influence the behavior or emotions of a user).<sup>126</sup>

- IEEE P7009: Standard for Fail-Safe Design of Autonomous and Semi-Autonomous Systems (C5; WG9)

This standard establishes a practical, technical baseline of specific methodologies and tools for the development, implementation, and use of effective fail-safe mechanisms in autonomous and semi-autonomous systems.<sup>127</sup>

- IEEE P7014: Standard for Ethical Considerations in Emulated Empathy in Autonomous and Intelligent Systems (C7; WG14)

This standard defines a model for ethical considerations and practices in the design, creation and use of empathic technology, incorporating systems that have the capacity to identify, quantify, respond to, or simulate affective states, such as emotions and cognitive states.<sup>128</sup>

#### *Published standards*

- IEEE 7010-2020: IEEE Recommended Practice for Assessing the Impact of Autonomous and Intelligent Systems on Human Well-Being<sup>129</sup> (C6; WG10)

This recommended practice provides specific and contextual well-being metrics that facilitate the use of a Well-Being Impact Assessment (WIA) process to proactively increase and help safeguard human well-being throughout the lifecycle of autonomous and intelligent systems (A/IS). This recommended practice provides A/IS creators (designers, developers, engineers, programmers, and others) with impact-related insights that should be taken into account throughout the lifecycle of any A/IS to increase and help safeguard human well-being at the individual, population, and societal levels.<sup>130</sup>



### Goals

A theoretical and conceptual framework that addresses AI ethics (IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems, and Ethically Aligned Design) and the creation of concrete standards at the intersection of technological and ethical considerations (IEEE P7000 standards series).

### Members

Working groups are comprised of individuals for individual standards projects, while corporate standards projects are comprised of representatives from corporations, government agencies or academic institutions.<sup>131</sup> Working groups at IEEE SA are open groups.<sup>132</sup> Although anyone can join, payment of an IEEE or IEEE SA membership fee or of a per-ballot fee is required to vote on standards.<sup>133</sup>

## PAI – The Partnership on AI

The PAI was established in 2016 by a group of AI researchers from Apple, Amazon, DeepMind and Google, Facebook, IBM, and Microsoft. In 2017, six representatives from non-profit organizations joined the board.

The PAI and the GPAI have no affiliation with one another even though the names imply otherwise.

### Category

Not-for-profit organization.

### Topics

Safety of AI technologies, fairness and transparency of AI systems, intentional as well as inadvertent influences of AI on people and society, impacts on privacy, criminal justice, and human rights.

Two working groups leverage expert input from the PAI's member organizations covering aspects of AI ethics: Fair, Transparent, and Accountable AI (FTA) (WG 1),<sup>134</sup> and Safety-Critical AI (WG 2).<sup>135</sup>

### Goals

The PAI pursues four goals: developing and sharing best-practice methods and approaches in research, development, testing, and fielding of AI technologies; advancing the public understanding of AI; providing an open and inclusive platform for discussion and engagement on the future of AI; and identifying and fostering efforts in AI for socially benevolent applications.<sup>136</sup>





The working groups' charters convey additional goals and deliverables.

The FTA working group (WG 1) is concerned with creating a practical toolkit that assists developers to engage in responsible behavior. It addresses the need to engage in consultations with stakeholders “to ensure that important interests and viewpoints are represented especially with groups that have historically been victims of discrimination”.<sup>137</sup> Further outputs mentioned in the FTA's charter are briefing papers, case studies, and codes of best practice or procedural recommendations related to FTA.<sup>138</sup>

The Safety-Critical AI working group (WG 2) envisions a toolkit for engineers who design safety-critical systems, an assessment of current safety-critical systems, and more open source collaboration.<sup>139</sup> Its charter addresses best practices and recommendations for researchers and practitioners who engage in AI-systems design, development, and deployment but also with regards to datasets, benchmarks, testbed-environments, and platforms.<sup>140</sup>

### **Members**

The PAI has 100 member organizations of which 61 are nonprofit, 20 come from industry, and 19 from academia.<sup>141</sup> Representatives of member organizations engage in various PAI activities, such as working groups, research projects, research papers, and other events.

## **EC – The European Commission**

Chronologically, the EU Declaration on Cooperation on AI,<sup>142</sup> signed by 25 European Member States on April 10, 2018, marked the starting point of a coordinated European AI policy approach. However, it was the European Commission's Communication “Artificial Intelligence for Europe”,<sup>143</sup> launched shortly thereafter on April 25, 2018, that provided substance to this approach. It was based on three pillars: be ahead of technological developments and encouraging uptake by the public and private sectors; prepare for socio-economic changes brought about by AI; and ensure an appropriate ethical and legal framework.<sup>144</sup> To this day, this European AI strategy has guided many other important European AI policy tools: the establishment of the High-Level Expert Group on Artificial Intelligence (AI HLEG), its Ethics Guidelines for Trustworthy AI,<sup>145</sup> the EC's Communication on Building Trust in Human-Centric AI<sup>146</sup>, launched on April 8, 2019, and finally the EC's White Paper on AI<sup>147</sup>, published on February 19, 2020.



While the European AI strategy set the foundations for political deliberations on AI, the cornerstone for concrete AI policy is the work being done at the AI HLEG.

### **AI HLEG – High-Level Expert Group on AI**

The AI HLEG was created in June 2018 through the appointment of experts by the European Commission's Directorate General for Communications Networks, Content and Technology (DG CONNECT). It was tasked with four deliverables:

1. Advise the Commission on next steps addressing AI-related, mid- to long-term challenges and opportunities through recommendations which will feed into the policy development process, the legislative evaluation process and the development of a next-generation digital strategy.
2. Support the Commission on further engagement and outreach mechanisms to interact with a broader set of stakeholders in the context of the AI Alliance, share information and gather their input on the Group's and the Commission's work.
3. Propose AI ethics guidelines to the Commission, covering issues such as fairness, safety, transparency, the future of work, democracy and, more broadly, the impact on the application of the Charter of Fundamental Rights, including privacy and personal data protection, dignity, consumer protection and non-discrimination.
4. Assist the Commission in the preparation of legislative proposals and policy initiatives.<sup>148</sup>

### **Category**

Political forum.

### **Topics**

To this date, the AI HLEG has produced three outputs that shape the international debate on AI ethics: The Ethics Guidelines for Trustworthy Artificial Intelligence (April 8, 2019), the Policy and Investment Recommendations for Trustworthy Artificial Intelligence (June 26, 2019), and the Assessment List for Trustworthy Artificial Intelligence (ALTAI) (July 17, 2020).

The experts were split-up into two working groups: WG 1 was tasked with the AI Ethics Guidelines, WG 2 was tasked with the Policy and Investment Recommendations.

The proposed Guidelines include a set of seven key requirements that AI systems should meet in order to be deemed trustworthy: (1) human agency and



oversight, (2) technical robustness and safety, (3) privacy and data governance, (4) transparency, (5) diversity, non-discrimination and fairness, (6) societal and environmental well-being, and (7) accountability.<sup>149</sup>

The Policy and Investment Recommendations put forward 33 recommendations. They aim to guide Trustworthy AI towards sustainability, growth and competitiveness, as well as inclusion – while empowering, benefiting and protecting human beings.<sup>150</sup> The recommendations focus on four areas: humans and society at large; private sector; the public sector; and Europe's research and academia. Lastly, the recommendations address a set of enablers: availability of data and infrastructure, skills and education, governance and regulation, funding, and investment.<sup>151</sup>

The ALTAI<sup>152</sup> is the result of a prototype prepared by the HLEG and a public consultation process that ran from June to December 2019. The ALTAI translates the Ethics Guidelines on AI into a checklist which can guide developers and deployers of AI in implementing such principles in practice.<sup>153</sup> The ALTAI is available as a web-based tool<sup>154</sup>. This underlines its purpose: supporting private sector adoption of the Trustworthy AI concept.

In the recent past, the AI HLEG has turned its attention to the healthcare, manufacturing, and public sectors.<sup>155</sup>

In addition, the AI HLEG acts as the steering group for the European AI Alliance, a multi-stakeholder forum for engaging in a broad and open discussion of all aspects of AI development and its impact on the economy and society.<sup>156</sup>

### **Goals**

The AI HLEG's objective is to support the implementation of the European Strategy on Artificial Intelligence.<sup>157</sup> This includes the elaboration of recommendations on future-related policy development and on ethical, legal, and societal issues related to AI, including socio-economic challenges.<sup>158</sup>

### **Members**

Following an open selection process, the AI HLEG was initially composed of 52 experts, (23 from companies, 19 from academia, 10 from civil society).<sup>159</sup> To date of this paper, the AI HLEG has 49 active members and 21 observers.<sup>160</sup>

The Register of Commission Expert Groups organizes experts by 5 types<sup>161</sup>:

- Type A: individuals appointed in a personal capacity, acting independently and expressing their own personal views.
  - Type A members in the HLEG: 17; observers: 1.



- Type B<sup>162</sup>: individuals appointed to represent a common interest shared by stakeholder organizations in one particular policy area. They do not represent individual stakeholders, but rather a policy orientation common to different stakeholder organizations. They may be proposed by stakeholder organizations.
  - Type B members in the HLEG: 1; observers: 0.
- Type C<sup>163</sup>: organizations in the broad sense of the word including companies, associations, NGOs, trade unions, universities, research institutes, law firms and consultancies.
  - Type C members in the AI HLEG: 29; observers: 1.
- Type D: Member States' authorities – national, regional or local). Currently no Type D members or observers are active in the AI HLEG.
- Type E<sup>164</sup>: other public entities, such as authorities from non-EU countries (including candidate countries), EU bodies, offices or agencies, and international organizations.
  - Type E members in the AI HLEG: 2; observers: 19.

### CEN and CENELEC – The European Committee for Standardization and the European Committee for Electrotechnical Standardization

The European Union has a unique standardization system. Once a European Standard (EN) has been published, national standards bodies are obliged to withdraw any national standard which conflicts with the EN. Thus, ENs become national standards in all member countries of European standardization organizations.<sup>165</sup> This further consolidates the European Single Market. Secondly, approximately 30% of standards are mandated by the European Commission in the framework of EU legislation.<sup>166</sup> Hence, European standardization corresponds with EU legislation.<sup>167</sup> Thirdly, the European Standardization Organizations (ESOs) collaborate with international standardization organizations.<sup>168</sup>

Three standardization organizations are competent in voluntary technical standard setting for the EU: the European Committee for Standardization (CEN), the European Committee for Electrotechnical Standardization (CENELEC), and the European Telecommunications Standards Institute (ETSI)<sup>169</sup>. They are designated as ESOs by the European Commission.<sup>170</sup> And together, they mirror their international counterparts: ISO, IEC, and ITU-T (the International Telecommunication Union Telecommunication Standardization Sector<sup>171</sup>).<sup>172</sup>

CEN is a European non-profit association for the standardization of products, services, processes and systems across a wide range of sectors.<sup>173</sup>



CENELEC is a non-profit technical organization and responsible for standardization in the electrotechnical engineering field.<sup>174</sup>

In the domain of AI ethics, the joint<sup>175</sup> activities of CEN and CENELEC are of importance to the purpose of this paper.

### **CEN-CLC FGAI – The Focus Group on Artificial Intelligence of the European Committee for Standardization and the European Committee for Electrotechnical Standardization**

CEN-CENELEC's joint Focus Group on AI (FGAI) was established in December 2018 by its respective Technical Boards (BT), after both organizations held a stakeholder's engagement workshop on "Trustworthy AI" in September 2018.<sup>175</sup> Its first meeting took place in April 2019.

#### **Category**

European standards organizations (ESOs).

#### **Topics**

CEN-CENELEC is aware of the EC's AI agenda: deployment, interoperability, scalability, societal acceptability, safety and liability of AI<sup>176</sup> – and from this, derives the playing field for European standardization in AI. Thus, the FGAI supports the identification of specific European standardization needs in AI.<sup>177</sup>

#### **Goals**

Develop an AI standardization roadmap for Europe, which is expected to be finalized in September 2020.<sup>178</sup> Develop a technical roadmap on AI standardization.<sup>179</sup> Mirror the standardization work at the global level.

#### **Members**

CEN-CENELEC's members are comprised of the national standardization bodies and national electrotechnical committees of 34 European countries. This comprises the 27 EU Member States, the UK, the Republic of North Macedonia, Serbia, Turkey, and three countries of the European Free Trade Association (EFTA), Iceland, Norway and Switzerland.<sup>180</sup>

Only one standardization body per country can be member of CEN. Only one electrotechnical committee per country can be member of CENELEC.

Participation of civil society in European standardization is reserved to acknowledged<sup>181</sup> European associations that represent consumers (ANEC – the European consumer voice in standardization<sup>182</sup>), employees and workers



(ETUC – European Trade Union Confederation<sup>183</sup>), and environmental interests (ECOS – the European Environmental Citizens Organisation for Standardisation<sup>184</sup>).<sup>185</sup>

Overall, 70 experts engage in the CEN-CENELEC FGAI.<sup>186</sup>

## Conclusion

This paper maps and describes political and technical AI governance fora committed to AI ethics. Four conclusions can be drawn from this assessment:

1. International AI governance at the intersection of AI and ethics is largely determined by political fora and by standards developing organizations (SDOs).
2. Political fora and SDOs share structural similarities. They leverage multidisciplinary and multi-stakeholder expert working groups to achieve their goals.
3. Expert working groups at political fora and at SDOs shape their topics and define their policy or standardization outputs.
4. The stakeholder map reveals an international and a European AI governance level. Although the international and the European governance levels seem separate, they are interconnected; either because they share the same topics (e.g. the AIGO at the OECD and the AI HLEG at the EC are both responsible for developing key recommendations on ethical AI principles), because they mirror each other's activities (e.g. CEN-CENELEC mirroring ISO-IEC), or because they participate in correlated fora through membership commitments (e.g. the EU as a founding member of GPAI, although it pursues its own AI governance agenda).

Foreign policy makers can use this information to navigate the confusing landscape of actors involved in these policy or standardization activities. Furthermore, they can compare their countries' political agendas on AI ethics to the ones of specific actors on display here. Beyond that, foreign policy practitioners can build on this information and start to engage with AI ethics initiatives and actors who they perceive to be a good fit. And yet it is important to note that the governance of AI ethics involves many different actors. From policy practitioners that engage at political fora, industry representatives and delegates from national standard setting bodies that convene at international SDOs, to civil society actors, researchers at think tanks and academia. Actors in the latter group contribute significantly to the debate on AI ethics, but they lie outside the scope of this paper.



Participation in the governance of AI at the nexus of AI and ethics requires foreign policy makers to understand the relevant actors, their interconnections, and the topics discussed. This is the first step. The second step requires them to assess the relevance of particularly powerful actors in this space in terms of their ability to shape policies and to develop standards that address AI ethics. Though beyond the scope of this paper, from the mapping and description of actors comes a set of open questions that are adjacent to questions related to power and relevance. These questions also provide further research avenues to explore.

The following list of open questions arises from the mapping and description of actors conducted in part two of this paper:

- How to assess the relationship between political fora and SDOs?  
How to evaluate their relationship and interactions? How can their relationship be made more transparent? In what ways do decisions taken at SDOs complement, or preclude decisions taken at political fora and vice versa? Things to consider are the participation of organizations and individual subject matter experts at working groups across several political fora and SDOs, and an assessment of individuals that exert multiple leadership roles across political fora or SDOs (e.g. as individual experts, chairs, or convenors).
- How to measure the relevance of outputs from AI governance fora?  
Which outputs are produced? Outputs with or without enforcement mechanisms? Can they help resolve issues at the intersection of AI and human rights (e.g. legally binding outputs vs. political agreements)? Which standards categories are applied to questions of AI ethics (e.g. international standards, technical reports, or specifications), and why? How can standards that address AI ethics be measured in their performance? How to measure if/ to what extent they are adopted by industry?
- How to measure the importance of working groups for the outputs of AI governance fora?  
Multidisciplinary, multi-stakeholder expert groups form the backbone of the outputs published by political fora and SDOs that address AI ethics. This paper already emphasized the internal structure of working groups by pointing out the composition of the engaged experts in the category “members”. But how can one assess the influence that subject matter experts have on the specific outputs? Things to consider are the workflow and the decision-making processes within individual working groups, their recruiting criteria, the processes that determine the interactions between the working groups and their respective committee level, voting behavior, alliances, or rivalries with-





in working groups. This information could reveal if they really meet multi-disciplinary and cross-sectoral criteria.

- How to select the AI governance fora most relevant for European foreign policy makers?

How to measure the reach of select political fora and SDOs? How to determine their agenda-setting capability? How to determine their ability to group states into multilateral alliances, and their prospects to contain rivals? How can foreign ministries coordinate their participation in working groups with other government ministries to follow a harmonized or coordinated national plan? And how can their political views be represented by other ministries if they are not considered for participation in the respective forum? How can foreign policy makers participate in the outcome of SDOs if their status does not permit direct participation?

To determine the most important international AI governance fora which address AI ethics, and their most powerful actors, a set of indicators needs to be developed that helps define what importance and power mean in this context. This way, certain fora can then be measured against these indicators to determine their individual value for AI policy, or for standard setting. This power mapping will be the topic of the AI & Foreign Policy Team's next publication. We invite fellow researchers, policy makers, representatives from civil society and from industry to provide feedback and join us in this process.





## **About The Stiftung Neue Verantwortung**

The Stiftung Neue Verantwortung (SNV) is an independent, non-profit think tank working at the intersection of technology and society. The core method of SNV is collaborative policy development, involving experts from government, tech companies, civil society and academia to test and develop analyses with the aim of generating ideas on how governments can positively shape the technological transformation. To guarantee the independence of its work, the organization has adopted a concept of mixed funding sources that include foundations, public funds and corporate donations.

## **About the Author**

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## Endnotes

- 1 According to IEEE rules, for instance, consensus is defined as a minimum 75% return of ballots from the balloting group, and a 75% approval rate from that 75% return group. If this is reached, then consensus has been achieved. <https://standards.ieee.org/develop/balloting-standard/balloting.html>.
- 2 <https://www.partnershiponai.org/partners/>.
- 3 <https://www.iso.org/committee/6794475.html>.
- 4 [https://standards.ieee.org/project/7004.html?utm\\_medium=undefined&utm\\_source=undefined&utm\\_campaign=undefined&utm\\_content=undefined&utm\\_term=undefined](https://standards.ieee.org/project/7004.html?utm_medium=undefined&utm_source=undefined&utm_campaign=undefined&utm_content=undefined&utm_term=undefined).
- 5 [https://www.iec.ch/about/globalreach/partners/pdf/IEC-CENELEC\\_Frankfurt\\_Agreement%7B2016%7D.pdf-](https://www.iec.ch/about/globalreach/partners/pdf/IEC-CENELEC_Frankfurt_Agreement%7B2016%7D.pdf-)
- 6 “International Conventions are subject to ratification, acceptance or accession by States. They define rules with which the States undertake to comply.” [http://portal.unesco.org/en/ev.php-URL\\_ID=23772&URL\\_DO=DO\\_TOPIC&URL\\_SECTION=201.html](http://portal.unesco.org/en/ev.php-URL_ID=23772&URL_DO=DO_TOPIC&URL_SECTION=201.html).
- 7 [https://unog.ch/80256EE600585943/\(httpPages\)/4F0DEF093B4860B4C1257180004B1B30?OpenDocument](https://unog.ch/80256EE600585943/(httpPages)/4F0DEF093B4860B4C1257180004B1B30?OpenDocument).
- 8 <https://www.diplomatie.gouv.fr/en/french-foreign-policy/united-nations/multilateralism-a-principle-of-action-for-france/alliance-for-multilateralism-63158/article/11-principles-on-lethal-autonomous-weapons-systems-laws>.
- 9 <https://www.auswaertiges-amt.de/en/aussenpolitik/themen/abruestung/killer-robots/2277026>. <https://www.diplomatie.gouv.fr/en/french-foreign-policy/united-nations/multilateralism-a-principle-of-action-for-france/alliance-for-multilateralism-63158/article/11-principles-on-lethal-autonomous-weapons-systems-laws>.
- 10 <https://dig.watch/events/group-governmental-experts-lethal-autonomous-weapons-systems-gge-laws>, [https://www.unog.ch/\\_80256ee600585943.nsf/\(httpPages\)/5535b644c2ae8f-28c1258433002bbf14?OpenDocument&ExpandSection=2#\\_Section2](https://www.unog.ch/_80256ee600585943.nsf/(httpPages)/5535b644c2ae8f-28c1258433002bbf14?OpenDocument&ExpandSection=2#_Section2).
- 11 “Recommendations are “norms which are not subject to ratification, but which Member States are invited to apply” (...) recommendations are instruments in which “the General Conference formulates principles and norms for the international regulation of any particular question and invites Member States to take whatever legislative or other steps may be required in conformity with the constitutional practice of each State and the nature of the question under consideration to apply the principles and norms aforesaid within their respective territories” (Article 1 (b) of the UNESCO’s Constitution).” These are therefore norms which are not subject to ratification but which Member States are invited to apply.” [http://portal.unesco.org/en/ev.php-URL\\_ID=23772&URL\\_DO=DO\\_TOPIC&URL\\_SECTION=201.html](http://portal.unesco.org/en/ev.php-URL_ID=23772&URL_DO=DO_TOPIC&URL_SECTION=201.html).
- 12 <https://unesdoc.unesco.org/ark:/48223/pf0000373434/PDF/373434eng.pdf.multi>.
- 13 <https://unesdoc.unesco.org/ark:/48223/pf0000373434/PDF/373434eng.pdf.multi>.
- 14 <https://unesdoc.unesco.org/ark:/48223/pf0000373434/PDF/373434eng.pdf.multi>.
- 15 <https://unesdoc.unesco.org/ark:/48223/pf0000373434/PDF/373434eng.pdf.multi>.
- 16 <https://unesdoc.unesco.org/ark:/48223/pf0000367823>.
- 17 <https://en.unesco.org/artificial-intelligence/ethics>.
- 18 <https://unesdoc.unesco.org/ark:/48223/pf0000367823>.
- 19 <https://survey.unesco.org/2020/index.php?r=survey/index&sid=661611&lang=en>. Includes 190 questions on the draft Recommendation prepared by the AHEG.
- 20 <https://en.unesco.org/news/unesco-launches-worldwide-online-public-consultation-ethics-artificial-intelligence>.
- 21 <https://en.unesco.org/artificial-intelligence/ethics>.
- 22 From Uruguay, Ghana, Saudi Arabia, United Arab Emirates, Russia Federation, Mexico, United States of America, Poland, Argentina, Latvia, Rwanda, Slovenia, Cameroon, Brazil, Egypt, Morocco, South Africa, India, Japan, France, The Netherlands, United Kingdom, Republic of Korea, China, <https://unesdoc.unesco.org/ark:/48223/pf0000372991>.



- 23 [https://search.coe.int/cm/Pages/result\\_details.aspx?ObjectId=09000016809737a1](https://search.coe.int/cm/Pages/result_details.aspx?ObjectId=09000016809737a1).
- 24 [https://search.coe.int/cm/Pages/result\\_details.aspx?ObjectId=09000016809737a1](https://search.coe.int/cm/Pages/result_details.aspx?ObjectId=09000016809737a1).
- 25 <https://rm.coe.int/cahai-2020-10-add-rev1-en/16809ee918>.
- 26 For all, see Annex 1, 1) Policy Development Group (CAHAI-PDG): <https://rm.coe.int/cahai-2020-10-add-rev1-en/16809ee918>.
- 27 For all, see Annex 1, 2) The Consultations and Outreach Group (CAHAI-COG): <https://rm.coe.int/cahai-2020-10-add-rev1-en/16809ee918>.
- 28 For all, see Annex 1, 3) Legal Frameworks Group (CAHAI-LFG): <https://rm.coe.int/cahai-2020-10-add-rev1-en/16809ee918>.
- 29 For all, see: [https://search.coe.int/cm/Pages/result\\_details.aspx?ObjectId=09000016809737a1](https://search.coe.int/cm/Pages/result_details.aspx?ObjectId=09000016809737a1).
- 30 [https://search.coe.int/cm/Pages/result\\_details.aspx?ObjectId=09000016809737a1](https://search.coe.int/cm/Pages/result_details.aspx?ObjectId=09000016809737a1).
- 31 For all, see [https://search.coe.int/cm/Pages/result\\_details.aspx?ObjectId=09000016809737a1](https://search.coe.int/cm/Pages/result_details.aspx?ObjectId=09000016809737a1).
- 32 <https://rm.coe.int/cahai-2020-10-add-rev1-en/16809ee918>.
- 33 <https://www.oecd.org/going-digital/ai/technology-foresight-forum-2016.htm>.
- 34 For all, see: <https://www.oecd.org/going-digital/ai/>.
- 35 The CDEP is responsible for developing evidence-based policies through multi-stakeholder processes. It aims to strengthen cooperation in these areas among OECD Members and with partners. <https://www.oecd.org/going-digital/ai/oecd-moves-forward-on-developing-guidelines-for-artificial-intelligence.htm>. The CDEP is open to all OECD member countries. Non-member countries can participate. International Organizations can observe. For all, see <https://oecdgroups.oecd.org/Bodies/Show-BodyView.aspx?BodyID=1837&Lang=en>.
- 36 <https://www.ospi.es/export/sites/ospi/documents/documentos/Tecnologias-habilitantes/OECD-Artificial-Intelligence.pdf>.
- 37 <https://www.ospi.es/export/sites/ospi/documents/documentos/Tecnologias-habilitantes/OECD-Artificial-Intelligence.pdf>. Annex A. Scoping principles to foster trust in and adoption of AI.
- 38 <https://www.ospi.es/export/sites/ospi/documents/documentos/Tecnologias-habilitantes/OECD-Artificial-Intelligence.pdf>. Annex A. Scoping principles to foster trust in and adoption of AI.
- 39 <https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449>.
- 40 <https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449>.
- 41 <https://www.mofa.go.jp/files/000486596.pdf>, see Annex, p.11.
- 42 <https://www.oecd.org/going-digital/ai/principles/>.
- 43 <https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449>.
- 44 <https://oecd.ai/>.
- 45 <http://www.oecd.org/going-digital/ai/oecd-aigo-membership-list.pdf>.
- 46 <https://oecd.ai/assets/files/one-ai-objectives-and-membership.pdf>.
- 47 <https://oecd.ai/assets/files/one-ai-objectives-and-membership.pdf>.
- 48 <https://oecd.ai/assets/files/one-ai-objectives-and-membership.pdf>.
- 49 <https://oecd.ai/assets/files/one-ai-objectives-and-membership.pdf>.
- 50 For all, see <https://oecd.ai/assets/files/one-ai-objectives-and-membership.pdf>.
- 51 <https://oecd.ai/assets/files/one-ai-bio-book.pdf>.
- 52 <https://oecd.ai/assets/files/one-ai-objectives-and-membership.pdf>.
- 53 <https://www.diplomatie.gouv.fr/en/french-foreign-policy/digital-diplomacy/news/article/launch-of-the-global-partnership-on-artificial-intelligence-by-15-founding>.
- 54 [https://www.diplomatie.gouv.fr/IMG/pdf/declaration\\_franco-canadienne\\_sur\\_l\\_intelligence\\_artificielle\\_cle4a12cb.pdf](https://www.diplomatie.gouv.fr/IMG/pdf/declaration_franco-canadienne_sur_l_intelligence_artificielle_cle4a12cb.pdf) (in French).
- 55 <https://www.elysee.fr/admin/upload/default/0001/05/62a9221e66987d4e0d6ffcb058f3d2c649f-c6d9d.pdf>.



- 56 The first in Paris, led by the National Institute for Research in Digital Science and Technology, INRIA, the second in Montréal, led by International Centre of Expertise in Montréal for the Advancement of Artificial Intelligence, ICEMAI. <https://www.montrealinternational.com/en/news/the-global-partnership-on-artificial-intelligence-officially-launched/>.
- 57 <http://www.oecd.org/going-digital/ai/oecd-to-host-secretariat-of-new-global-partnership-on-artificial-intelligence.htm>.
- 58 <https://www.diplomatie.gouv.fr/en/french-foreign-policy/digital-diplomacy/news/article/launch-of-the-global-partnership-on-artificial-intelligence-by-15-founding>.
- 59 [https://www.diplomatie.gouv.fr/spip.php?page=pdfjs&id\\_document=173119](https://www.diplomatie.gouv.fr/spip.php?page=pdfjs&id_document=173119).
- 60 <https://www.montrealinternational.com/en/news/the-global-partnership-on-artificial-intelligence-officially-launched/>.
- 61 <https://sciencebusiness.net/international-news/us-joins-global-ai-group-citing-technology-threat-china>.
- 62 <https://www.diplomatie.gouv.fr/en/french-foreign-policy/digital-diplomacy/news/article/launch-of-the-global-partnership-on-artificial-intelligence-by-15-founding>.
- 63 That is, if the governance structure envisioned for the IPAI still holds true for the GPAI, which is very likely: <https://www.canada.ca/en/innovation-science-economic-development/news/2019/05/international-panel-on-artificial-intelligence.html>, <https://sciencebusiness.net/international-news/us-joins-global-ai-group-citing-technology-threat-china>.
- 64 [https://www.diplomatie.gouv.fr/spip.php?page=pdfjs&id\\_document=173119](https://www.diplomatie.gouv.fr/spip.php?page=pdfjs&id_document=173119).
- 65 The formal accession process is still ongoing, [https://www.diplomatie.gouv.fr/spip.php?page=pdfjs&id\\_document=173119](https://www.diplomatie.gouv.fr/spip.php?page=pdfjs&id_document=173119).
- 66 See for example Slovenia: <https://www.ipi.si/en/introductory-meeting-of-slovenian-gpai-experts/>, <https://www.hertie-school.org/en/news/detail/content/joanna-bryson-joins-global-initiative-as-expert-on-responsible-use-of-ai>.
- 67 [https://www.eda.admin.ch/dam/mission-onu-omc-aele-geneve/en/documents/GI--en-chiffres\\_EN.pdf](https://www.eda.admin.ch/dam/mission-onu-omc-aele-geneve/en/documents/GI--en-chiffres_EN.pdf).
- 68 [https://www.eda.admin.ch/dam/mission-onu-omc-aele-geneve/en/documents/GI--en-chiffres\\_EN.pdf](https://www.eda.admin.ch/dam/mission-onu-omc-aele-geneve/en/documents/GI--en-chiffres_EN.pdf).
- 69 <https://www.iec.ch/about/>.
- 70 <https://jtc1info.org/sd-2-history/jtc1-subcommittees/sc-42/>.
- 71 <https://www.iso.org/committee/4882545.html>.
- 72 [https://www.iec.ch/dyn/www/f?p=103:47:0:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:3228,25](https://www.iec.ch/dyn/www/f?p=103:47:0:::FSP_ORG_ID,FSP_LANG_ID:3228,25).
- 73 <https://jtc1info.org/sd-2-history/jtc1-subcommittees/sc-42/>.
- 74 See slide 15: [https://prd-webrepository.firabarcelona.com/wp-content/uploads/sites/9/2019/11/08102607/ai-06-artificial\\_intelligence\\_industry\\_ecosystem\\_and\\_standards\\_landscape.pdf](https://prd-webrepository.firabarcelona.com/wp-content/uploads/sites/9/2019/11/08102607/ai-06-artificial_intelligence_industry_ecosystem_and_standards_landscape.pdf).
- 75 <https://www.iso.org/standard/77607.html?browse=tc>.
- 76 <https://www.iso.org/standard/77609.html?browse=tc>.
- 77 <https://www.iso.org/standard/79804.html?browse=tc>.
- 78 <https://www.iso.org/standard/81283.html?browse=tc>.
- 79 <https://www.iso.org/standard/77304.html?browse=tc>.
- 80 <https://www.iso.org/standard/78507.html?browse=tc>.
- 81 In the form of Technical Report. See clause 3.3.1 of the ISO/IEC Directives, Part 1: “When a technical committee or subcommittee has collected data of a different kind from that which is normally published as an International Standard (...), the technical committee or subcommittee may decide, (...), to request the Chief Executive Officer to publish such data in the form of a Technical Report.” <https://www.iso.org/sites/directives/current/part1/index.xhtml>.
- 82 <https://www.iso.org/standard/77608.html?browse=tc>.



- 83 <https://www.iso.org/obp/ui/#iso:std:iso-iec:tr:24028:ed-1:v1:en>.
- 84 <https://www.iso.org/standard/77610.html?browse=tc>.
- 85 <https://www.iso.org/standard/56641.html?browse=tc>.
- 86 See for all: <https://jtc1info.org/sd-2-history/jtc1-subcommittees/sc-42/>. For more detail consult the membership manual: <https://www.iso.org/files/live/sites/isoorg/files/store/en/PUB100399.pdf>.
- 87 [https://www.iso.org/sites/ConsumersStandards/voting\\_iso.html](https://www.iso.org/sites/ConsumersStandards/voting_iso.html).
- 88 See clause 1.3.2.2 of the ISO/IEC Directives, Part 1.
- 89 <https://www.iso.org/members.html>.
- 90 For more detail consult the membership manual: <https://www.iso.org/files/live/sites/isoorg/files/store/en/PUB100399.pdf>.
- 91 They sell and adopt ISO International Standards nationally. For all, see: <https://www.iso.org/members.html>.
- 92 <https://www.iso.org/members.html>.
- 93 <https://www.iec.ch/dyn/www/f?p=103:5:0>.
- 94 <https://www.iec.ch/about/profile/>.
- 95 [https://www.iso.org/sites/directives/current/part1/index.xhtml#\\_idTextAnchor093](https://www.iso.org/sites/directives/current/part1/index.xhtml#_idTextAnchor093).
- 96 <https://www.iso.org/committee/6794475.html>.
- 97 [https://www.iso.org/sites/directives/current/part1/index.xhtml#\\_idTextAnchor099](https://www.iso.org/sites/directives/current/part1/index.xhtml#_idTextAnchor099).
- 98 [https://www.iso.org/sites/directives/current/part1/index.xhtml#\\_idTextAnchor093](https://www.iso.org/sites/directives/current/part1/index.xhtml#_idTextAnchor093).
- 99 For details, see table – liaisons categories: [https://www.iso.org/sites/directives/current/part1/index.xhtml#\\_idTextAnchor093](https://www.iso.org/sites/directives/current/part1/index.xhtml#_idTextAnchor093).
- 100 <https://www.iso.org/committee/6794475.html?view=participation>.
- 101 Decision 163/8, SMB/6519/R [https://www.iec.ch/dyn/www/f?p=103:79:3781306954443:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:3228,25](https://www.iec.ch/dyn/www/f?p=103:79:3781306954443:::FSP_ORG_ID,FSP_LANG_ID:3228,25), [https://www.iec.ch/dyn/www/f?p=103:104:0:::FSP\\_SEARCH\\_ORG\\_ID,FSP\\_SEARCH\\_AND,FSP\\_SEARCH\\_QUOTE,FSP\\_SEARCH\\_OR,FSP\\_SEARCH\\_NONE,FSP\\_SEARCH\\_DOCREF,FSP\\_SEARCH\\_STAGECODE,FSP\\_SEARCH\\_HEAD,FSP\\_SEARCH\\_TYPE,FSP\\_SEARCH\\_PUBPROJREF,FSP\\_SEARCH\\_DATERANGE,FSP\\_SEARCH\\_DATEFROM,FSP\\_SEARCH\\_DATETO,FSP\\_REQUEST:3228,,,,,22,,,0,,,1](https://www.iec.ch/dyn/www/f?p=103:104:0:::FSP_SEARCH_ORG_ID,FSP_SEARCH_AND,FSP_SEARCH_QUOTE,FSP_SEARCH_OR,FSP_SEARCH_NONE,FSP_SEARCH_DOCREF,FSP_SEARCH_STAGECODE,FSP_SEARCH_HEAD,FSP_SEARCH_TYPE,FSP_SEARCH_PUBPROJREF,FSP_SEARCH_DATERANGE,FSP_SEARCH_DATEFROM,FSP_SEARCH_DATETO,FSP_REQUEST:3228,,,,,22,,,0,,,1).
- 102 <https://blog.iec.ch/2019/04/iec-standardization-evaluation-group-for-autonomous-and-artificial-intelligence-applications-establishes-new-work-programme/>.
- 103 [https://www.iec.ch/dyn/www/f?p=103:186:3781306954443:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:22827,25](https://www.iec.ch/dyn/www/f?p=103:186:3781306954443:::FSP_ORG_ID,FSP_LANG_ID:22827,25).
- 104 [https://www.iec.ch/dyn/www/f?p=103:14:3781306954443:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:23222,25](https://www.iec.ch/dyn/www/f?p=103:14:3781306954443:::FSP_ORG_ID,FSP_LANG_ID:23222,25).
- 105 [https://www.iec.ch/dyn/www/f?p=103:14:3781306954443:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:23223,25](https://www.iec.ch/dyn/www/f?p=103:14:3781306954443:::FSP_ORG_ID,FSP_LANG_ID:23223,25).
- 106 See for all: [https://www.iec.ch/dyn/www/f?p=103:186:3781306954443:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:22827,25](https://www.iec.ch/dyn/www/f?p=103:186:3781306954443:::FSP_ORG_ID,FSP_LANG_ID:22827,25).
- 107 NC has access to all technical and managerial activities and functions, at all levels of the IEC, including voting rights in Council. See: <https://www.iec.ch/about/profile/members.htm>.
- 108 NC has full access to all working documents but limited voting rights in the technical work and no eligibility to managerial functions within the IEC. See: <https://www.iec.ch/about/profile/members.htm>.
- 109 <https://www.iec.ch/about/profile/experts.htm>.
- 110 For all see: <https://www.iec.ch/about/profile/experts.htm>.
- 111 [https://www.iec.ch/dyn/www/f?p=103:187:3781306954443:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:22827,25#2](https://www.iec.ch/dyn/www/f?p=103:187:3781306954443:::FSP_ORG_ID,FSP_LANG_ID:22827,25#2).
- 112 [https://www.iec.ch/dyn/www/f?p=103:14:3781306954443:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:23222,25](https://www.iec.ch/dyn/www/f?p=103:14:3781306954443:::FSP_ORG_ID,FSP_LANG_ID:23222,25).
- 113 <https://www.standardsuniversity.org/article/standards-glossary/#1>.
- 114 <https://www.standardsuniversity.org/article/standards-glossary/#1>.



- 115 <https://spectrum.ieee.org/automaton/artificial-intelligence/machine-learning/ieee-global-initiative-ethical-design-ai-and-autonomous-systems>.
- 116 <https://standards.ieee.org/industry-connections/ec/autonomous-systems.html>.
- 117 Version 1 in December 2016: [https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/ead\\_v1.pdf](https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/ead_v1.pdf). Version 2 in December 2017: [https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/ead\\_v2.pdf](https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/ead_v2.pdf).
- 118 [https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/ead\\_v2.pdf](https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/ead_v2.pdf).
- 119 [https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/ead\\_v1.pdf](https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/ead_v1.pdf), [https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/ead\\_v2.pdf](https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/ead_v2.pdf).
- 120 Big Data Standards are omitted for the purpose of this paper.
- 121 Standards committee: C/S2ESC – Software & Systems Engineering (C1). Working group: EMELC-WG – Engineering Methodologies for Ethical Life-Cycle Concerns (WG1). <https://standards.ieee.org/project/7000.html>.
- 122 Standards committee: VT/ITS – Intelligent Transportation Systems (C2). Working group: ASV WG\_P7001 – Autonomous Systems Validation (WG2) [https://standards.ieee.org/project/7001.html?utm\\_medium=undefined&utm\\_source=undefined&utm\\_campaign=undefined&utm\\_content=undefined&utm\\_term=undefined](https://standards.ieee.org/project/7001.html?utm_medium=undefined&utm_source=undefined&utm_campaign=undefined&utm_content=undefined&utm_term=undefined).
- 123 Standards committee: C/S2ESC – Software & Systems Engineering (C1). Working group: ALGB-WG – Algorithmic Bias (WG3). [https://standards.ieee.org/project/7003.html?utm\\_medium=undefined&utm\\_source=undefined&utm\\_campaign=undefined&utm\\_content=undefined&utm\\_term=undefined](https://standards.ieee.org/project/7003.html?utm_medium=undefined&utm_source=undefined&utm_campaign=undefined&utm_content=undefined&utm_term=undefined).
- 124 Standards committee: C/S2ESC – Software & Systems Engineering (C1). Working group: WG-PDAI – Personal Data AI Agent (WG6). [https://standards.ieee.org/project/7006.html?utm\\_medium=undefined&utm\\_source=undefined&utm\\_campaign=undefined&utm\\_content=undefined&utm\\_term=undefined](https://standards.ieee.org/project/7006.html?utm_medium=undefined&utm_source=undefined&utm_campaign=undefined&utm_content=undefined&utm_term=undefined).
- 125 Standards committee: RAS/SC – Standing Committee for Standards (C4). Working group: EDRA – Ontologies for Ethically Driven Robotics and Automation (WG7). [https://standards.ieee.org/project/7007.html?utm\\_medium=undefined&utm\\_source=undefined&utm\\_campaign=undefined&utm\\_content=undefined&utm\\_term=undefined](https://standards.ieee.org/project/7007.html?utm_medium=undefined&utm_source=undefined&utm_campaign=undefined&utm_content=undefined&utm_term=undefined).
- 126 Standards committee: RAS/SC – Standing Committee for Standards (C4). Working group: Ethical Nudging – Ethically Driven Nudging for Robotic, Intelligent and Autonomous Systems (WG8). [https://standards.ieee.org/project/7008.html?utm\\_medium=undefined&utm\\_source=undefined&utm\\_campaign=undefined&utm\\_content=undefined&utm\\_term=undefined](https://standards.ieee.org/project/7008.html?utm_medium=undefined&utm_source=undefined&utm_campaign=undefined&utm_content=undefined&utm_term=undefined).
- 127 Standards committee: RS/SC – IEEE Reliability (C5). Working group: Fail-Safe Design – Standard for Fail-Safe Design of Autonomous and Semi-Autonomous Systems (WG9). [https://standards.ieee.org/project/7009.html?utm\\_medium=undefined&utm\\_source=undefined&utm\\_campaign=undefined&utm\\_content=undefined&utm\\_term=undefined](https://standards.ieee.org/project/7009.html?utm_medium=undefined&utm_source=undefined&utm_campaign=undefined&utm_content=undefined&utm_term=undefined).
- 128 Standards committee: SSIT/SC – Social Implications of Technology (C7). Working group: ET-WG – Empathic Technology Working Group (WG14). [https://standards.ieee.org/project/7014.html?utm\\_medium=undefined&utm\\_source=undefined&utm\\_campaign=undefined&utm\\_content=undefined&utm\\_term=undefined](https://standards.ieee.org/project/7014.html?utm_medium=undefined&utm_source=undefined&utm_campaign=undefined&utm_content=undefined&utm_term=undefined).
- 129 [https://standards.ieee.org/standard/7010-2020.html?utm\\_medium=undefined&utm\\_source=undefined&utm\\_campaign=undefined&utm\\_content=undefined&utm\\_term=undefined](https://standards.ieee.org/standard/7010-2020.html?utm_medium=undefined&utm_source=undefined&utm_campaign=undefined&utm_content=undefined&utm_term=undefined).
- 130 Standards committee: SMC/SC – Standards Committee (C6). Working group: Wellbeing A/IS – Well-being Metric for Autonomous and Intelligent Systems (A/IS) (WG10). [https://www.techstreet.com/ieee/standards/ieee-7010-2020?gateway\\_code=ieee&vendor\\_id=7718&product\\_id=2095699](https://www.techstreet.com/ieee/standards/ieee-7010-2020?gateway_code=ieee&vendor_id=7718&product_id=2095699)
- 131 <https://standards.ieee.org/develop/mobilizing-working-group/participate.html>.
- 132 <https://standards.ieee.org/develop/mobilizing-working-group/wg.html>.
- 133 <https://standards.ieee.org/develop/balloting-standard/balloting.html>.
- 134 <https://www.partnershiponai.org/working-group-charters-guiding-our-exploration-of-ais-hard-questions/>.



- 135 <https://www.partnershiponai.org/working-group-charters-guiding-our-exploration-of-ais-hard-questions/>.
- 136 <https://www.partnershiponai.org/about/>.
- 137 [https://www.partnershiponai.org/wp-content/uploads/2018/07/Fair-Transparent-and-Accountable-AI-\\_-Charter.pdf](https://www.partnershiponai.org/wp-content/uploads/2018/07/Fair-Transparent-and-Accountable-AI-_-Charter.pdf).
- 138 [https://www.partnershiponai.org/wp-content/uploads/2018/07/Fair-Transparent-and-Accountable-AI-\\_-Charter.pdf](https://www.partnershiponai.org/wp-content/uploads/2018/07/Fair-Transparent-and-Accountable-AI-_-Charter.pdf).
- 139 <https://www.partnershiponai.org/sc-wg-launch>.
- 140 [https://www.partnershiponai.org/wp-content/uploads/2018/07/Safety-Critical-AI-\\_-Charter.pdf](https://www.partnershiponai.org/wp-content/uploads/2018/07/Safety-Critical-AI-_-Charter.pdf).
- 141 <https://www.partnershiponai.org/>
- 142 <https://ec.europa.eu/digital-single-market/en/news/eu-member-states-sign-cooperate-artificial-intelligence>.
- 143 COM(2018) 237 final: <https://ec.europa.eu/transparency/regdoc/rep/1/2018/EN/COM-2018-237-F1-EN-MAIN-PART-1.PDF>.
- 144 COM(2018) 237 final: <https://ec.europa.eu/transparency/regdoc/rep/1/2018/EN/COM-2018-237-F1-EN-MAIN-PART-1.PDF>.
- 145 [https://ec.europa.eu/newsroom/dae/document.cfm?doc\\_id=57112](https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=57112).
- 146 [https://ec.europa.eu/newsroom/dae/document.cfm?doc\\_id=58496](https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=58496).
- 147 [https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificial-intelligence-feb2020\\_en.pdf](https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificial-intelligence-feb2020_en.pdf).
- 148 See for all: <https://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupId=3591&NewSearch=1&NewSearch=1>.
- 149 [https://ec.europa.eu/newsroom/dae/document.cfm?doc\\_id=60419](https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=60419).
- 150 [https://ec.europa.eu/newsroom/dae/document.cfm?doc\\_id=60343](https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=60343).
- 151 [https://ec.europa.eu/newsroom/dae/document.cfm?doc\\_id=60343](https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=60343).
- 152 [https://ec.europa.eu/newsroom/dae/document.cfm?doc\\_id=68342](https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=68342).
- 153 <https://ec.europa.eu/digital-single-market/en/news/assessment-list-trustworthy-artificial-intelligence-altai-self-assessment>.
- 154 <https://futurium.ec.europa.eu/en/european-ai-alliance/pages/altai-assessment-list-trustworthy-artificial-intelligence>.
- 155 <https://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupMeetingDoc&docid=41350>; <https://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupMeeting&meetingId=21436>; <https://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupMeeting&meetingId=17837>.
- 156 <https://ec.europa.eu/digital-single-market/en/high-level-expert-group-artificial-intelligence>.
- 157 <https://ec.europa.eu/digital-single-market/en/high-level-expert-group-artificial-intelligence>.
- 158 <https://ec.europa.eu/digital-single-market/en/high-level-expert-group-artificial-intelligence>.
- 159 <https://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetailDoc&id=37749&no=1>, p. 2.
- 160 <https://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetailDoc&id=37749&no=1>. Observers shall ensure close cooperation with certain public bodies [European or international] that are not represented in the AI HLEG.
- 161 <https://ec.europa.eu/transparency/regexpert/index.cfm?do=faq.faq&aide=2>.
- 162 May be appointed only if they are registered in the Transparency Register, <https://ec.europa.eu/transparency/regexpert/index.cfm?do=faq.faq&aide=2>.
- 163 May be appointed only if they are registered in the Transparency Register, <https://ec.europa.eu/transparency/regexpert/index.cfm?do=faq.faq&aide=2>. Type C members nominate their permanent representatives or appoint representatives on an ad hoc basis, depending on the meeting agenda of the group.





- 164 Type E members nominate their permanent representatives or appoint representatives on an ad hoc basis, depending on the meeting agenda of the group. <https://ec.europa.eu/transparency/regexpert/index.cfm?do=faq.faq&aide=2>.
- 165 See 1D: CEN and CENELEC Membership Requirements, 5. Coherence, [https://boss.cen.eu/ref/IR1\\_E.pdf](https://boss.cen.eu/ref/IR1_E.pdf).
- 166 <https://www.cencenelec.eu/standards/Pages/default.aspx>.
- 167 For additional detail of the relationship between the EU Commission and the three European Standardization Organizations, see the Regulation (EU) No 1025/2012 of the European Parliament and of the Council from October 25, 2012, on “European Standardisation”.
- 168 The Vienna Agreement lays out the details for cooperation between CEN and ISO, [https://isotc.iso.org/livelink/livelink/fetch/2000/2122/3146825/4229629/4230450/4230458/01\\_Agreement\\_on\\_Technical\\_Cooperation\\_between\\_ISO\\_and\\_CEN\\_\(Vienna\\_Agreement\).pdf?nodeid=4230688&vernum=-2](https://isotc.iso.org/livelink/livelink/fetch/2000/2122/3146825/4229629/4230450/4230458/01_Agreement_on_Technical_Cooperation_between_ISO_and_CEN_(Vienna_Agreement).pdf?nodeid=4230688&vernum=-2). The Frankfurt Agreement specifies the details of cooperation between CENELEC and IEC, [https://www.iec.ch/about/globalreach/partners/pdf/IEC-CENELEC\\_Frankfurt\\_Agreement%7B2016%7D.pdf](https://www.iec.ch/about/globalreach/partners/pdf/IEC-CENELEC_Frankfurt_Agreement%7B2016%7D.pdf). A Memorandum of Understanding between ETSI and ITU, aimed at strengthening the information exchange and cooperation on technical standardization activities, has been renewed in May 2016, <https://www.itu.int/en/ITU-T/extcoop/Documents/mou/MoU-ETSI-ITU-201605.pdf>.
- 169 ETSI's standards address the European telecommunications industry. AI topics at ETSI focus on applications standards for future networks and security concerns. Therefore, ETSI is omitted in the mapping.
- 170 <https://www.cenelec.eu/aboutcenelec/whoweare/europeanstandardsorganizations/index.html>.
- 171 <https://www.itu.int/en/ITU-T/about/Pages/default.aspx>.
- 172 <https://www.cenelec.eu/aboutcenelec/whoweare/europeanstandardsorganizations/index.html>.
- 173 <https://www.cen.eu/work/areas/Pages/default.aspx>.
- 174 <https://www.cenelec.eu/aboutcenelec/whoweare/index.html>.
- 175 [https://www.cencenelec.eu/news/brief\\_news/Pages/TN-2019-018.aspx](https://www.cencenelec.eu/news/brief_news/Pages/TN-2019-018.aspx), <ftp://ftp.cencenelec.eu/EN/News/PR/PR-2018-09-21.pdf>.
- 176 As reflected in its Communication COM(2018) 237 final: <https://ec.europa.eu/transparency/regdoc/rep/1/2018/EN/COM-2018-237-F1-EN-MAIN-PART-1.PDF>.
- 177 <https://www.cencenelec.eu/news/articles/Pages/AR-2019-001.aspx>.
- 178 [ftp://ftp.cencenelec.eu/EN/News/SectorNews/2019/AI-Focus-Group/CEN-CLC\\_AI\\_FG%20N004\\_Roadmap.pdf](ftp://ftp.cencenelec.eu/EN/News/SectorNews/2019/AI-Focus-Group/CEN-CLC_AI_FG%20N004_Roadmap.pdf), [https://www.cencenelec.eu/standards/Topics/Documents/CEN-CLC%20AI%20FG\\_White%20Paper%20Response\\_Final%20Version\\_June%202020.pdf](https://www.cencenelec.eu/standards/Topics/Documents/CEN-CLC%20AI%20FG_White%20Paper%20Response_Final%20Version_June%202020.pdf).
- 179 [ftp://ftp.cencenelec.eu/EN/News/SectorNews/2019/AI-Focus-Group/CEN-CLC\\_AI\\_FG%20N004\\_Roadmap.pdf](ftp://ftp.cencenelec.eu/EN/News/SectorNews/2019/AI-Focus-Group/CEN-CLC_AI_FG%20N004_Roadmap.pdf).
- 180 The 27 EU countries, the UK, the Republic of North Macedonia, Serbia, Turkey and three countries of the European Free Trade Association (Iceland, Norway and Switzerland). There is one member per country. <https://standards.cen.eu/dyn/www/f?p=CENWEB:5>. <https://www.cenelec.eu/dyn/www/f?p=104:5:2679353914542101>. [ftp://ftp.cencenelec.eu/EN/EuropeanStandardization/Guides/22\\_CENCLCGuide22-2018.pdf](ftp://ftp.cencenelec.eu/EN/EuropeanStandardization/Guides/22_CENCLCGuide22-2018.pdf).
- 181 <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:316:0012:0033:EN:PDF>.
- 182 <https://www.anec.eu/>.
- 183 <https://www.etuc.org/en>.
- 184 <https://ecostandard.org/>.
- 185 <https://www.cencenelec.eu/societal/Pages/default.aspx>.
- 186 [https://www.cencenelec.eu/standards/Topics/Documents/CEN-CLC%20AI%20FG\\_White%20Paper%20Response\\_Final%20Version\\_June%202020.pdf](https://www.cencenelec.eu/standards/Topics/Documents/CEN-CLC%20AI%20FG_White%20Paper%20Response_Final%20Version_June%202020.pdf).





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