ICC Paper on AI and standards

**FIRST DRAFT (27 March 2025)**

**GUIDANCE FOR MEMBERS:** The ICC Paper on AI and standards aims to address the urgent need for cohesive AI governance in light of diverse global, regional, and national regulations that risk fragmentation.

The paper will focus on providing high-level policy messages and recommendations on the role of standards in bringing consistency to global AI governance.

Please provide your input and comments in track changes below. Please note that the paper is intended to be concise and focus on providing high-level recommendations.

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1. **The role of standards – why we need them and what they help us achieve**

From companies developing algorithms to those deploying AI services or systems for their end-users, each participant in the AI supply chain needs clear, consistent guidelines. International standards are a vital tool for establishing these shared expectations and providing guidance on the responsible development and use of AI technologies.

**What are standards?**

Standards are documents specifying requirements, guidelines, or characteristics of a product, service, process, or system. They are developed in rules-based, voluntary, multistakeholder organizations that can be horizontal or sectoral, and can be national, regional, or international. Examples of prominent information technology international standards bodies include the International Organisation for Standardisation (ISO), the International Electrotechnical Commission (IEC), the International Telecommunications Union (ITU), the Institute of Electrical and Electronics Engineers (IEEE), and the Internet Engineering Task Force (IETF). Standards development organizations tend to have mature governance systems that take the time needed to elicit contributions from a broad set of stakeholders and establish consensus among them. The process is intended to produce high quality results that reflect the best available technical solutions or guidance. Regulation can benefit from this deliberative process by generally or specifically citing standards to frame a regulatory approach or set more specific requirements to carry out the regulation.

**How are standards and other soft law mechanisms used in relation to AI technologies?**

There are a variety of “soft law” mechanisms available that can be used to govern information technology: standards, open source software (OSS), high-level expert group findings, requirements mandated through the supply chain (i.e. requirements imposed through procurement), codes of conduct, and guidelines.

Standards contribute to the vital objective of assuring responsible AI systems and solutions by fostering technical and regulatory interoperability. In the field of AI, some standards are developed with the goal of harmonizing foundational concepts or to promote responsible AI management practices. Standards can also provide the means to address broad principles including principles that are defined in laws and regulation. Risk management and AI governance are two areas where standards provide consistency of concepts and approach to risk management and system assurance, as discussed in the case studies below.

Other soft law mechanisms also play valuable roles and are sometimes conflated with standards. In Information Technology (IT), technical interoperability is often supported by the use of open source software (OSS), which serves as the preferred methodology for collaborative software development. OSS is widely used to define application programming interfaces (APIs) and protocols. Technology-specific principles, Codes of conduct, and guidelines can be developed to outline the, values, norms of behaviour, and/or best practice expected from a certain group of actors or experts, including to define how to comply with laws and regulations. For example, the Organization for Economic Cooperation and Development (OECD) developed groundbreaking AI Principles almost 10 years ago. Another prominent example is the set of codes of practice developed to guide compliance with the European Union’s AI Act.

Many organisations struggle to adopt AI standards due to a lack of awareness, technical expertise, or regulatory clarity. Regarding the second factor (technical expertise), while there is a growing body of guidelines and frameworks, there is still a need for detailed practical information to guide implementation of standards. These kinds of guides/practical information are best developed through community-driven initiatives that can develop resources (e.g. specific use case guidance, open source tools) outside of the more formal process used to determine where/how stakeholders can agree to requirements in standards.

**What are the benefits of standards for AI, what are the challenges, and how can these be overcome?**

Standards are the cornerstone of AI governance by bringing consistency in the practical implementation of global, regional, and national AI policies and laws. They can support policy-makers by operationalizing policy goals and values. For example, specifications for AI safety, security, and trust can support policy development and implementation by bringing together state-of-the-art practices and guardrails based on operational experience.

International standards can play a key role in **fostering globally interoperable AI governance and drive interoperability.** This is important for making it easier for organisations and companies to collaborate across borders, access the best products and tools, and enable the benefits of AI to be spread as broadly as possible. Duplicative standards and compliance schemes, however, raise the costs of doing business in an increasingly globalized world, undermining this potential for interoperability.

The growing development of global, regional, and national AI policies and laws risks creating divergent governance approaches and creating a complex regulatory landscape which hinders the potential to spread the technologies across borders. In addition, there can be inconsistencies between policies and technical standards, given that standards often emerge from the needs of technology developers and deployers and not from regulatory needs. However, more often, **standards provide a common approach, even where legal and regulatory approaches differ between countries and regions.** Referencing standards in regulations can explain how to meet the requirements of, or facilitate the implementation of a regulation, but they cannot extend regulation. Said another way, they are not a substitute for the role of governments. One way to address these issues is therefore for policymakers to consider referring to international standards when designing laws and drafting regulations. Standards can thus support regulation and policy-makers can benefit from taking them into account.

It is important to understand the relevance of **timing** to different types of standards. Some emerging technologies need standards to precede the marketplace, sometimes known as “leading edge” standards. For example, in telecommunications 6G standards must be agreed before any company builds 6G technology. Other emerging technologies - including AI - do not need standards to create a market - in AI, academic papers have been the most influential for the training of AI models and OSS projects have enabled interoperability. However, AI does need standards to define assurance practices, known as “trailing edge” standards - risk management and AI governance are two examples of such areas, as explained in the case studies below.

As well as referencing standards in laws and regulations, **it is important for standards to be incorporated into procurement processes**, whether managed by governments or large companies. This is a tool for driving interoperability and avoiding fragmentation, as it can help guide smaller companies, often not involved in or aware of the standards development process, to use a common approach. As trust mechanisms, governance standards can also facilitate commercial contracting and demonstrate conformity to regulations.

Finally, there is a spectrum of standards. In its [final report](https://www.un.org/sites/un2.un.org/files/governing_ai_for_humanity_final_report_en.pdf), the UN High-Level Advisory Body on Artificial Intelligence noted both a proliferation of AI standards and that there can be “a disjunction between those standards that were adopted for narrow technical or internal validation purposes, and those that are intended to incorporate broader ethical principles. Computer scientists and social scientists often advance different interpretations of the same concept, and a joined-up paradigm of sociotechnical standards is promising but remains aspirational”. The [Global Digital Compact (GDC)](https://www.un.org/global-digital-compact/sites/default/files/2024-09/Global%20Digital%20Compact%20-%20English_0.pdf), adopted in September 2024, called on Standards Developing Organizations (SDOs) “to collaborate to promote the development and adoption of interoperable AI standards that uphold safety, reliability, sustainability and human rights”. Such **collaboration and coordination around AI standards are important to promote interoperability.**

**Case study – risk management**

AI risk management forms a cornerstone of AI governance. It refers to frameworks that define policies, procedures, roles, and responsibilities across the AI lifecycle that organizations can adopt in order to develop, deploy and maintain AI systems in a way that minimizes risks and attains ongoing regulatory compliance. Implementation of such risk management practices has been mandated under several AI regulations. One example is the EU AI Act, which requires high-risk AI system providers to implement quality and risk management systems also after a product is placed on the market. European harmonized standards will be crucial to fulfilling these requirements and, in May 2023, the European Commission tasked European Committee for Standardization (CEN) and European Committee for Electrotechnical Standardization (CENELEC) with developing standards for the Act’s high-risk provisions, including risk management. Similar requirements for risk management are expected to surface in future legislation across jurisdictions, which underscores the need for interoperable standards in this area that can adapt to evolving policy landscapes.

Leveraging existing best practice reference points can help not only drive interoperability among domestic AI policy and regulation but also help accelerate governments’ effective implementation of risk management frameworks. ISO/IEC 23894:2023 AI Risk Management, published in December 2023, is an international standard that provides guidance on how organizations that develop, produce, deploy or use products, systems and services that utilize AI, can manage risk specifically related to AI. It is applicable for organizations of any size and across sectors, including public and private sector organizations. In addition, the National Institute of Standards and Technology (NIST) [AI Risk Management Framework](https://www.nist.gov/itl/ai-risk-management-framework) (AI RMF), version 1.0 of which was published in January 2023, supports responsible development, use, and evaluation of AI products and services and is publicly available at no cost.

Although approaches to detailed requirements such as risk assessment and management may vary across organizations, **adopting** **voluntary consensus-based standards** (for example, the extensive work of ISO/IEC JTC 1 SC42, including ISO/IEC 42001, ISO/IEC 23894, ISO/IEC 42005, ISO/IEC 38507) **can serve as a solid foundation for managing AI risks throughout the AI system’s lifecycle, and ensure an internationally consistent approach to implementation of AI laws.**

**Case study – AI governance**

International standards play a crucial role in AI governance by establishing common expectations across the global AI supply chain. The cornerstone of these standards is ISO/IEC 42001, which creates a structured approach for organizations working with AI technologies. Organizations adopting this standard must demonstrate their ability to evaluate and mitigate risks, maintain high-quality data practices, and sustain clear lines of communication with partners and customers. To verify compliance, independent auditors can assess these organizations against the standard's requirements, providing stakeholders with confidence in their AI governance practices.

The broader set of AI governance standards includes specialized guidelines that help organizations implement specific aspects of good governance. These supporting standards complement ISO/IEC 42001, including frameworks for assessing and managing risks (ISO/IEC 23894), evaluating potential impacts on the organization and individuals (ISO/IEC 42005), and ensuring data quality throughout the AI development process (ISO/IEC 5259-2). This comprehensive approach to standardization serves multiple audiences - from technology companies seeking to build trustworthy AI systems to government agencies developing policies and organizations looking to procure AI solutions. Additionally, since AI systems are fundamentally IT systems, they must be secured with established information security practices, such as ISO/IEC 27001 and 27002. However, AI-specific threats also need to be considered. A forthcoming standard (ISO/IEC 27090) will provide AI-specific security guidance.

Industry can demonstrate their commitment to responsible AI by adopting international standards, while government entities and purchasers can reference them in legislation, policy development, and procurement processes to meet established trust and security requirements benchmarks.

1. **Analysis of the current standards-setting landscape**

Worldwide, there are hundreds of private-sector organizations developing IT standards. Among those, there are a relatively small number of organizations developing AI standards. Most of these organizations have many standards projects under development.

Standards development may be anticipatory or reactionary (or somewhere in between) with respect to products and services entering the marketplace. One of the strengths of the AI standards-setting ‘system’ has been its ability to act upon global recognition of the need for harmonized, interoperable standards.

In fact, AI-specific standards started well over five years ago, and the development of AI standards is progressing rapidly across a range of national, regional, and international bodies. Various organisations, including the ISO, IEC, IEEE, and other smaller industry-led consortia (e.g. Coalition for Content Provenance and authenticity (C2PA)), are actively working on standards to guide the responsible development and deployment of AI.

Additionally, intergovernmental initiatives such as those led by the OECD, UNESCO, or the Council of Europe are contributing to the conversation by establishing terminology and principles that contribute to the development of technical and regulatory standards. In Europe, the CEN and the CENELEC are playing a crucial role in aligning AI standards with the European Union’s regulatory framework, particularly in relation to the EU AI Act.

Many initiatives emphasize transparency, fairness, safety, and accountability in AI systems, helping to align efforts toward trustworthy AI. Collaboration between standardization bodies and industry stakeholders has also been a positive development, ensuring that technical requirements reflect real-world needs.

However, challenges persist. A potential significant issue is the fragmentation of AI requirements across different organisations, jurisdictions, and industry sectors. The emerging proliferation of diverse approaches, often with overlapping or conflicting guidelines, will make it difficult for businesses and regulators to navigate the landscape efficiently. Moreover, differences in policy priorities between regions further complicate standardization efforts.

There are several areas where overlaps, duplications, and divergences exist in the current AI standards-setting landscape:

1. Overlaps and Duplications:

* While international bodies like ISO and IEC are developing broader AI governance frameworks, CEN-CENELEC standards are expected to align with the EU AI Act, potentially fragmenting markets and/or creating overlapping but slightly differing technical requirements.
* Standards organizations are compelled to start new projects to address new trends in AI, when limited or no changes to existing standards are sufficient.
  + Some participants attempt to address their specific public policy or trade interests and issues through standards projects. These parties see opportunities in the drafting process to encourage the adoption of policies that reflect their particular agendas. ISO and IEC have re-stated their commitment to develop international standards that are market relevant, meeting the needs and concerns of all relevant stakeholders including public authorities where appropriate, without seeking to establish, drive or motivate public policy, regulations, or social and political agendas.

1. Divergences:

* Regulatory vs. Voluntary Standards: Harmonized European AI standards, meaning those standards that are officially aligned with the EU AI Act, provide a clear path for the presumption of conformity. Unless ISO, IEEE, and other international efforts are recognized through the European standardization bodies, they remain voluntary in the European context.
* Terminology and Scope Differences: Various bodies use different terminologies and methodologies to define AI risks, transparency, and robustness, and it is unclear if such inconsistencies might lead to significant differences in implementations across sectors and jurisdictions.

Furthermore, standards-setting efforts are often slow compared to the fast-paced evolution of AI technologies, which could lead to a gap between emerging AI applications and the regulatory or technical guidance needed to ensure their responsible use. However, it is important to note:

* Groundbreaking or anticipatory standards (in any field) often require more time to develop, but can still be more responsive than regulation.
* Too often standards organizations are compelled to start new projects to address new trends, when existing standards are sufficient or limited changes to existing standards would address questions that may appear new (but don’t present completely new technical or policy challenges).

Efforts to create mutual recognition mechanisms, streamline standards where possible, and ensure alignment with broader digital governance frameworks will be key to fostering a more coherent and effective AI standards ecosystem.

1. **Recommendations**

To ensure that AI standards effectively support responsible AI governance globally, policymakers should consider the following recommendations:

* **Encourage domestic/local businesses and experts to participate in AI standards development:** Policymakers should ensure that AI standards development includes meaningful participation from businesses that design, develop, and deploy AI systems. Industry expertise is crucial for creating practical, implementable standards that align with technological advancements, and local expertise is crucial for shaping standards with your market realities.
* **Leverage existing standards:** AI governance initiatives should reference published standards, such as ISO/IEC 23894 (based on the widely accepted standard ISO 31000) ISO/IEC 42001 on AI risk management (analogous to ISO/IEC 27001 for information security), and ISO/IEC 42005 (AI system impact assessment) and encourage voluntary adoption on a wider scale and as a means of demonstrating responsible business practices and providing assurance to consumers and citizens. In addition, many existing industry-driven standards already provide guidance on AI governance, risk management, and security considerations. Policymakers should recognize and incorporate these standards into governance frameworks to avoid duplication of efforts and ensure regulatory coherence.
* **Use standards in public sector procurement:** Governments should incorporate widely supported AI standards into public procurement requirements to drive industry-wide adoption of best practices. By recognizing compliance with recognized AI governance standards, public sector entities can lead by example and encourage broader industry uptake.
* **Encourage global interoperability of AI standards:** AI is a global technology, and regulatory fragmentation can hinder innovation and cross-border collaboration. At the same time, fragmentation can also impose complexity at compliance level, and costs, especially for small and medium enterprises (SMEs). Policymakers should prioritize international cooperation on AI standards, including across standardization bodies, industry stakeholders, and governments, to foster global interoperability, ensuring that standards support seamless AI adoption across jurisdictions.
* **Ensure AI standards support innovation and compliance:** Promote the use of AI standards that support responsible innovation that are adaptable to any regulatory environment. This requires a balanced approach that avoids overly prescriptive rules that could stifle AI development while providing regulatory coherence regardless of the regulatory approach across economies. AI standards should also incorporate mechanisms that allow for continuous monitoring and revisions, ensuring their flexibility and adaptability to innovation.
* **Champion multistakeholder collaboration in AI standardization:** AI standards should be developed through inclusive, multistakeholder processes that involve industry leaders, academia, civil society, and policymakers. This ensures that standards are robust, balanced, and reflective of diverse perspectives, enhancing their legitimacy and adoption.
* **Ensure ethical, secure and risk management-driven standards by design:** AI standards should be designed to maximize positive societal impact and contribute towards the Sustainable Development Goals (SDGs), embedding ethical principles, security measures, and risk management frameworks to ensure responsible AI development, deployment, and use across industries and jurisdictions.