eit Community Artificial Intelligence

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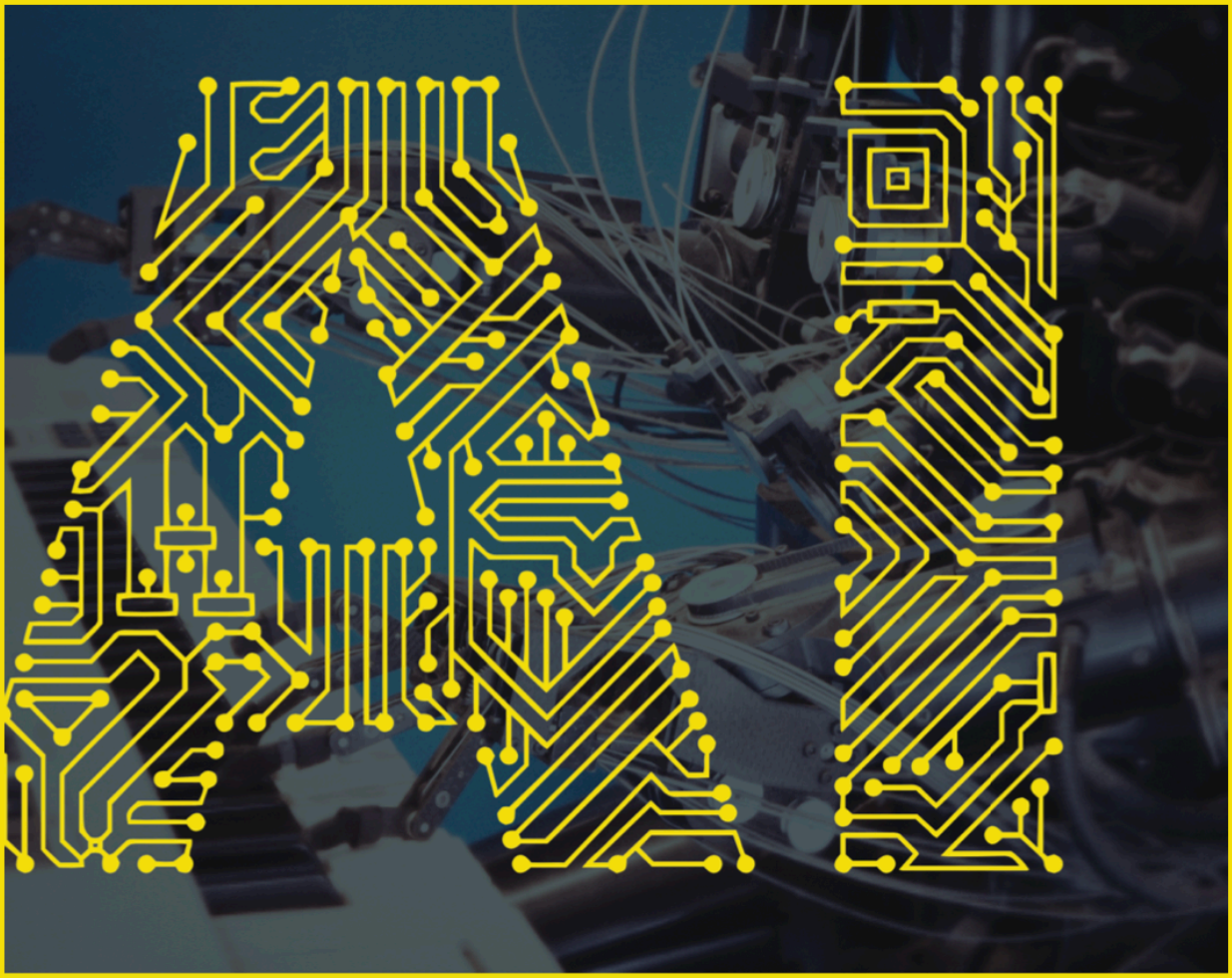
OPPORTUNITIES AND CONCERNS FOR THE FURTHER DEPLOYMENT OF ARTIFICIAL INTELLIGENCE IN EUROPE

A report of EIT AI Community



CONTENT

1 Executive Summary

Undoubtedly, Artificial Intelligence (AI) technologies have brought a tremendous change in many processes regarding everyday life. Several tasks have been automated or are assisted by advanced algorithms. Due to the wide adoption of AI-enabled algorithms and the importance of the risk at stake related to safeguarding of data, as well as prioritizing, human rights, the European Commission has proposed an Act, the first of its kind globally, to establish a legal operational framework for all the AI deployments with critical impact.

This legislative initiative is certainly a step forwards towards the right direction, yet some significant concerns are still present. With this report, we aim to contribute to the public discussion and highlight the positive elements of the AI Act. It is of the outmost importance for the European market, its organizations and above all its citizens, to address these issues at an early stage. To that end, EIT AI Community aims to point out some improvements, aiding in the process to ameliorate this pioneering regulatory effort and the future deployment of AI.

This report features in the European Institute of Innovation and Technology (EIT) AI Community report series and is the result of a combined effort from five EIT Knowledge Innovation Communities (KICs) (EIT Climate-KIC, EIT Manufacturing, EIT Innoenergy, EIT Health, EIT Food and EIT Digital as coordinator). The EIT Knowledge and Innovation Communities represent the largest innovation ecosystem in Europe with more than 1,500 organisations from business, research, innovation, and higher education from all across Europe. By tapping into the vast innovation, education and application knowledge, the report opportunities and concerns for the further deployment of AI in Europe.

The report is part of a preliminary analysis on European Union's (EU) Artificial Intelligence Act (AIA) that EIT AI Community initiate in order to better design an action plan to support companies and research/educational organizations adapt the new EU AI regulation. For that reason, next to the generic opportunities and concerns shared by all application domains, the report also identifies the key concerns and opportunities regarding AI in the innovation and society& education sector. This together with the proposals to mitigate the concerns and embark on the opportunities. The key insights are:

- The legislative initiative although is certainly towards a positive direction, seems to penalize AI systems excluding any other software systems that have similar effect to humans' life
- EU is crucial to establish transparency, accountabilityand explainability regarding AI systems.
- EU should support exercising advocacy rights and further strengthening diversity & inclusion values, for AI systems and the data sets.
- EU should balance the costly compliance and regulatory barriers that hamper innovation and particularly SMEs sustainability.

2 Methodology

The report is part of an ongoing preparatory work of EIT AI Community on designing the future support of AI focused companies based on the proposal of the EU AIA issued in 2021. For that reason, a team of experts combined their knowledge and leveraged the versatile backgrounds, in a preliminary process to best analyze the AIA in order to identify issues arising for innovation and education.

As a first step the AIA proposal (issued on 21.04.2021) document was shared among the group of experts and each of them provided feedback on a per article basis, and as a whole. This feedback was enriched by literature review carried out by EIT Staff. On a first level, the experts' remarks were segmented into three basic categories: 1) General governance, 2) Innovation, 3) Society & Education. On a second level, each category was summarized into three groups: 1) Positive feedback, 2) Concerns and 3) Actions/Proposals.

After thorough analysis and careful consideration of all the potential issues arising from the AIA, the group of experts identified the most critical matters regarding the real-world implications, and EU's position in the global marketplace, as a technological innovation leader and a pioneer in forward-thinking legislation. Lastly, a meeting with all the contributors was organized for further deliberation and to reach a consensus on any controversial issue. The outcomes of this process are highlighted in the section entitled Discussion.

3 Discussion

3.1 GENERAL GOVERNANCE

The way we approach AI will define our future way of living. To support building a resilient Europe, people and businesses should be able to enjoy the benefits of AI while being safe and protected. Thus, EU has set a goal to develop human-centric and trustworthy AI through concrete rules and actions. In this section, remarks regarding the general AIA framework are demonstrated.

3.1.1 POSITIVE FEEDBACK:

1. This is a welcomed initiative as a stable regulatory framework being crucial to ensure legal certainty and predictability for investors, undertakings and citizens alike. Regulatory stability is needed to ensure trust, growth and to enable the development and deployment of AI technology within the Union, at all levels.
2. A harmonized European approach can allow for a common market for the development of this strategic technology. AI Act proposes a regulation that is directly and uniformly applicable in its 27 EU member states. It puts forth a "risk-based approach", providing for a taxonomy of risks for management and supervision, grouping AI applications into different categories qualified by risk level: forbidden uses, high-risk, AI with limited risk and AI with no or minimal risk.
3. The EU's vision for ethical AI and strengthening user choice and control is aligned with EU's core values and has the potential to become a competitive advantage in the world stage.
4. Global Pioneering initiative - this is the world's first attempt to globally legislate on the emerging technology, paving the way for global standards in AI.
5. The EU can have a leading position in the field of AI regulations and standardization, allowing the Union law to become the regulatory framework of choice, inspiring other jurisdictions to follow its example, having a similar effect to the GDPR, when it was introduced. Hence, the AIA acquires lawful extraterritorial power and applicability, which only strengthens the EU's position in the global arena.
6. The AI act is designed not to impede experimentation and innovation but to ensure that specific conditions of risk and uncertainty are factored in, so that individuals and society as a whole are protected from potential negative side effects.
7. It's a positive effort to provide a definition of what an AI system is.

3.1.2 CONCERNS:

1. Regulatory Governance: The burden of the AI Act conformity and monitoring is expected to be significant. Regulatory officials across the Member States and jurisdictions may not be well-versed in the technology and its emerging business applications, so the linkage between AI Board and the national supervisory authorities will potentially lead to a substantial delay and difficulty in the Act's application and its incorporation into each Member State regulatory framework.
2. AI should be thought of, and treated, as a dynamic process which involves multiple actors rather than a one-off product or service. The AI systems learn and evolve through time and data access.

3. Inherently all AI based systems have a certain degree of risk, making the current classification inadequate. There is a lack of clear criteria describing the different levels of risk. The high-risk AI systems are defined in a static and almost inflexible manner, which directly opposes the AI nature . The mechanism that allows the expansion of the high risk AI systems list (article 7)_ is considered very limited.
4. Additionally, the current AIA proposal does not contemplate any provision for consulting the end-users- EU citizens, during the required certification period, nor during the decision-making process about the high-risk standards. Moreover, in case a high-risk AI "deploys subliminal techniques beyond a person's consciousness" only national supervisory authorities can act excluding the victim of a complaint process. The implications of this may be stark. This should have been a lesson learned from GDPR implementation.
5. The implications of AI systems are often becoming apparent after they are placed on the market. Currently the AI Act (article 62) proposes the accidents to be reported to the national supervisory authorities. However, an overview at European level will provide clear analysis and recommendations for improvements across EU market.
6. **Risk management:** What is to happen in the cases were algorithms were trained with unlawfully collected personal data? Does it remain a GDPR problem?
7. **High-risk systems: Who is to verify if the high-risk systems have achieved** an appropriate level of accuracy, sensitivity, robustness and cybersecurity?
8. In Article 5, there is no mention of certain problematic use cases: social scoring, statistical representation of the population, biometric identification systems, military purpose AI, AI system for research, AI in insurance.
9. A major concern involves the lack of clarity as to who is liable for damages related to high-risk AI systems and their applications, which falls under the umbrella of concerns regarding accountability issues and AI algorithmic systems.
10. **Issues with the DSA:** Several questions were raised concerning the relation of the AIA to the DSA, specifically the following: will the deployment of a large-scale algorithm moderation system entail de facto general monitoring? If the algorithm fails to detect illegal/inappropriate behavior, does it trigger the duty to react and result in liability?
11. **Issues with the GDPR:** Regarding the juxtaposition of the GDPR and the AIA we highlight the following concerns: High-risk AI system classification triggers the same high-risk classification per GDPR? Relying only on general provisions of the GDPR and ePrivacy Regulation might not be enough for AI systems. The data controllers (under GDPR obligations) in many AI systems are the users and not the providers under the AI Act. Does Article 22 cover AI-driven systems (automated decision).

3.1.3 OPPORTUNITIES:

1. The regulation should take under consideration that the AI systems are self-learners and are in constant evolution. Their purpose can change. Hence, provisions tackling or incorporating the nature of general-purpose AI systems are a welcome amendment and/or addition to the proposed regulation.
2. The European Commission should give the right to EU citizens to challenge/ complain about AI systems in use ensuring effective enforcement, inclusion and protection of democratic rights

and values. Ensuring that those who are the end-users and are impacted by AI can participate in the regulation process.

3. There should be an explicit mention in the proposal about the fact that when "subliminal techniques" are not used for harming people but for helping people, they should not be a prohibited AI practice. For example, people that cannot speak or move can communicate by utilizing an AI system, which can convey words into artificially produced speech, or commands to control their bed, room, TV, etc.
4. Knowledge graphs, linked open data ontologies, should be the functions that need to be explicitly mentioned within the regulation. If the above are biased by their developer, then all subsequent querying/reasoning tasks based on them will be biased by design (Article 4).
5. Although the definition needs to be more concrete the proposal should ensure an inclusive definition of AI systems considering the well-stablished definition of intelligence. The definition should be 'technology neutral' and 'future proof', avoid unnecessary compliance vigilance on behalf of AI system developers and undertakings in the field generally and increase the global impact of AIA (Brussels effect).
6. High-risk systems: The use of AI to self-assess should also be explicitly considered as high-risk system. Decision-making systems capable of accessing any kind of services and information on the Internet or able to post on the Internet, leading to highly probable inferences about individuals and even unlawful automatic profiling, without their knowledge, should be considered a high-risk system.
7. Risk management: The proposal should explicitly and clearly define what happens in case a biased system is detected.
8. The high-risk applications database is recommended to be enriched by the safety incidents. In that way the AI Board will be further empowered to propose and potentially implement changes to the Act Annexes.
9. Data governance policy: The AIA should state explicitly and clearly an iterative strategy/process to include new data instances and how they are balanced to avoid bias, i.e. how new data is added in the training/validation/testing pipeline.
10. The AI Act should put forward a list of clear future proofed criteria to determine why a system should be under a specific category. According to the feedback received by the national supervisory boards and the analysis of the enriched EU AI database EC should include new emerging High risk AI applications and ensure uniform standards across EU.
11. Any AI regulatory sandboxing, future or ongoing, should be better coordinated. There is a need to update the Product Liability Directive to address AI-powered products and services. Moreover, it is necessary to harmonize EU legislation on algorithmic transparency. More specifically, harmonization is needed concerning article 22 GDPR & AI Act transparency provisions & P2B Regulation provisions on ranking & provisions on recommender systems for very large platforms in the DSA.

3.2 INNOVATION

Artificial Intelligence innovation trends are creating massive breakthroughs in multiple industries with cutting-edge technologies. Moreover AI holds potential to change the innovation process (data driven & responsive) and directly influence both the creation and optimization of a wide range of products and services, with critical implications for organizations. This section focuses on the impact of the AIA on business creation, research and growth (SMEs, Corporates, and the Startups community).

3.2.1 POSITIVE FEEDBACK

The positive elements have been already mentioned in the General Governance section.

3.2.2 CONCERNS

1. Given the broad definition and use case applications of AI, caution should be exercised to regulate the business use case/application rather than the technology. A too broad prohibition would place existing practices and AI-empowered business applications outside the rule of law.
2. A complex and costly conformity assessment process might push innovative solutions out of the market and seriously undermine the viability of SMEs and start-up companies
3. Heavily regulated space for critical AI implementations requires to be balanced, not to impose barriers to SMEs/Startups which are to develop AI products/services. There is also a risk of creating a need for "AI outside council" raising again the costs for SMEs, which should also be mitigated.
4. Costs are amounting to approximately EUR € 6000 to EUR € 7000. For AI users, there would also be the annual cost for the time spent on ensuring human oversight at approximately EUR € 5000 to EUR € 8000 per year. Verification costs could amount to another EUR € 3000 to EUR € 7500 for suppliers of high-risk AI businesses.
5. The complexity of the needed information will discourage companies (especially small ones) from developing AI solutions. This will only strengthen the position of large undertakings and already established big corporations, leading them to dominate the market.
6. Regarding the text in article 43, if there is no involvement of a notified body, what are the guarantees that a provider will undergo a conformity assessment. What is the meaning of a “substantially modified” high-risk AI system? Does the provider become liable if not aware of changes?
7. Regarding the text in article 64, the granting of access to the source code of the AI system without the detailed documentation, would be futile and would pose a risk to the IP rights of providers, likely to avoid declaring and AI software to avoid this issue.

3.2.3 OPPORTUNITIES:

1. Issues and questions of liability (responsibility between “producer”, “developer”, “user” of AI) should be addressed explicitly, as SMEs often rely on open-source tools, algorithms and data to build their solutions (i.e. Will a person making available an algorithm for everyone’s use already be considered the developer of AI and thus be made responsible for it?)
2. In relation to the text in Article 20 there should be a clarification regarding how long the providers of high-risk systems should keep the automatically generated logs.

3. Concerning the text in Article 55, the EU should centrally undertake measures for small-scale providers and establish provisions for the costs of using the sandbox for SMEs and startups and research bodies (universities, research institutes), nonprofit organizations.
4. European Commission should additionally consider offsetting some of the regulatory burden introduced through AIA by providing technical recourses -i.e. data, computing infrastructure- as well as legal services (pan-European enhanced regulatory sandbox, conformity assessment tools) accessible through a single online AI platform to SMEs, start-ups, and research bodies. This action will benefit and incentivize the early-stage commercial innovation but more importantly the noncommercial and basic AI research which is critical to the long-term competitiveness of EU innovation ecosystem.

3.3 SOCIETY&EDUCATION

As AI becomes a general-purpose technology is transforming societies and economies. It promises to generate productivity gains, improve well-being and help address complex social challenges. Leveraging AI requires complementary investments in awareness, data, skills and digital transforming organizational and workflows. This section is dedicated to raising and elaborating on our remarks regarding the impact of AIA in education, and general social issues.

3.3.1 POSITIVE FEEDBACK:

The positive elements have been already mentioned in the General Governance section. The team, it is prompting new methods for data gathering and selection, as well as new algorithms for privacy and security protection assisting unbiased decision making.

3.3.2 CONCERNS:

1. A risk-based approach can stifle emerging innovation, particularly since the technology is still in early stages of maturity in terms of business applications and impair the competitiveness of European companies.
2. Monitoring and managing the implementation of AI requires a deep understanding of the latest technological trends from the public sector, which is not always the case.
3. AI systems may cause harm at the societal level even if the impact at the individual level is considered negligible. Disinformation or public manipulation may not directly violate fundamental rights of individuals, but they may have huge impact collectively.

3.3.3 OPPORTUNITIES:

1. Europe needs to balance its normative approach with the need to promote AI innovation and adoption of AI use cases that create value and employment opportunities. AIA should be developed and implemented in the light of the importance of the positive impacts of technology.
2. The AI Act should reflect the values of EU- diversity and inclusion. Hence, it is necessary to include all stakeholders, especially SMEs and researchers in the standardization process for AI systems.
3. Inclusivity is key when it comes to the various monitoring committees (in terms of the qualitative characteristics of the board members, ensure the existence of not only technical

skills but also that all stakeholders, from various fields are represented. For example, in the case of a medical app, patients' organizations should clearly mention that the subjects of the AI analysis should be represented in the various bodies, emphasizing the ethical aspect of the process).

4. Regarding to AI training data, it must be representative and inclusive – Statistical representation of all population. To this end, AI datasets should be well-balanced across race, gender, socioeconomic status, and disability status to promote fairness, and democracy.
5. EU institutions and Member states should invest in strengthening the public sector capacity to ensure a smooth implementation of the AI Act that will quickly benefit the companies and to address the transformative impact of AI on societies and the public sector itself.
   In addition to the current AI systems assessment process (especially for the high-risk applications) an ex-ante impact assessment could be considered to enrich the requirements of Annex IV.

4 Conclusion

In conclusion, this legislative initiative proves one more time how human rights are in the front line of EUs core values. However, this should be expanded to the evaluation of any critical decision taken by any algorithm, AI or not.

More specifically, it is within the team's views that the AIA may be indeed a fair starting point for exploring the regulatory side of AI systems, one that particularly distinguishes the EU as a pioneer in the field. Nevertheless, we believe that there are several critical points that the legislative initiative should reconsider and potentially amend.

Starting from the definition of what constitutes an AI algorithmic system and the overall scope of the regulation, which should be considering AI as a process, not as a product or service, and one that is constantly evolving as it develops, making it extremely difficult to define at an initial point for monitoring purposes.

Hence, the regulatory and motoring framework adopted must be flexible, balanced and evolutive, allowing innovators to experiment and build sustainable business models with the technology while encouraging investors and citizens the legal certainty to foment trust in the budding systems. It should avoid the pitfall of setting too stringent and costly requirements that may become impossible barriers to overcome for companies in the sector, particularly in the case of SMEs. SMEs stand at a disadvantage when it comes to compliance costs compared to already established in the field, large enterprises. Hence, they could profit from a higher level of legal certainty, which the current version of the AI Act does not provide, and the minimum legal barriers at a small cost relative to their financial capabilities.

Finnally, transparency, accountability (with an emphasis on liability rules) and explainability when it comes to AI systems, is crucial in order for the regulation to have a truly meaningful impact. The same approach applies also to highlighting diversity and inclusion, concerning data sets, as well as allowing access and room for exercising advocacy rights to citizens, thus encouraging a system based on democratic values.

5 ACKNOWLEDGMENTS

The strong involvement of the six EIT KICs in addition to team of external experts formed the basis for a profound assessment of the different dimensions of AI implementation. The team, issuing the following report, is composed of esteemed, renowned experts, skilled and knowledgeable, each in their respective fields related to new emerging technologies, including (AI). Their expertise spreads across a variety of sectors as they come from various backgrounds, from business and entrepreneurship, technological know-how and academic scholarship, to legal and regulatory specialization.

The EIT AI Community is particularly grateful to the team of experts for giving their time for interviews and discussions that helped to better understand the complexity of the issues involved and to formulate the insights presented here.

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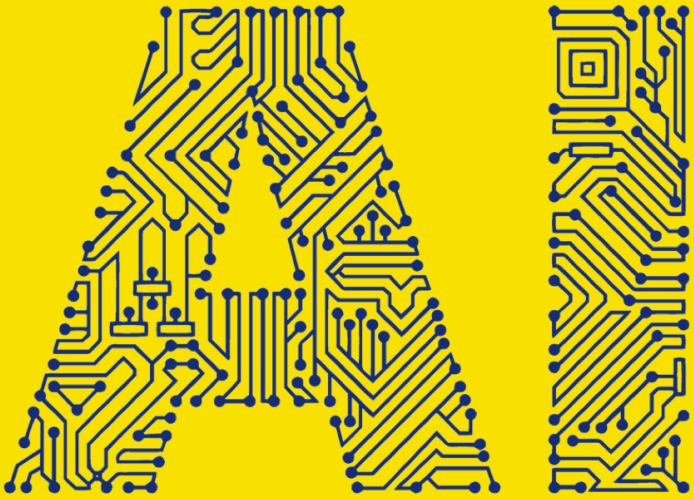

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