



Nine-Point Plan on Regulating Artificial Intelligence in the EU

Executive Summary - Part I

1. AI is one of the key-technologies for future innovation, economic growth, and welfare. In a globalized economy, Europe must take on a leading position in AI-research, infrastructure (chip sets, cloud services, data) and development of AI applications to stay competitive and become digitally sovereign.

2. AI enables new forms of applications and use cases that create new challenges in some areas and raise questions about quality standards and the underlying ethical implications.

3. To avoid creating uncertainty about how these technologies can be used, stakeholders in research, industry politics and society need a clear and easily comprehensible legislative framework that regulates the use of AI where needed.

4. AI is always part of a comprehensive technical system and/or software application and can be applied to a wide variety of use cases across all industries. The quality, ethical implications, and regulation of an AI-application must be considered in the context of their specific use case.

5. A general AI regulation is not feasible as it is difficult to determine whether a software is using AI-algorithms and the concept of AI is complex and hard to define legally.



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Executive Summary - Part 2

6. Existing regulation in critical areas such as automotive, healthcare, aviation, energy, transportation should be applied wherever possible. These regulations should be reviewed and – if necessary – updated to include recent technological advancements.

7. New use cases that are not covered by existing regulations should be classified by their potential risk, based on a clear and transparent framework. Only AI systems that bear high risk shall be topic for a potential regulation.

8. Decisions made by AI systems only come with a certain, measurable accuracy but rarely reach 100 %. The accuracy of human performance should be used as a benchmark to assess the quality of an AI system.

9. Conclusion: A European AI regulatory framework must focus on new areas of applications that clearly bear potential risks to humans, society and environment. This framework must enable a secure, stable and competitive environment for research and development of AI applications for it to drive innovation and economic growth in Europe.



Introductory Remarks

The European Union (EU) and several of its member states have repeatedly emphasized Artificial Intelligence (AI) as a crucial driver for innovation and an essential technology for economic growth. And indeed, it is vital for the competitiveness and digital sovereignty of the EU that we not only use but also develop AI-technology “made in Europe”.

As German AI Association, we strive for an active, successful, and sustainable AI ecosystem in Germany and Europe. We represent 250 companies which focus on the development and application of AI-technology. As mainly young technology companies, our members see it as their mission to actively contribute to building a European AI-ecosystem.

Thus, the ongoing discussion on the European Commission's “Whitepaper on Artificial Intelligence” and the objective of several member-states to define their own regulatory frameworks and legislation for a responsible application of AI in the European Single Market has sparked our interest.

Based on our industry experience, we are deeply convinced that a political discussion on how AI should and should not be applied in our society and economy is needed. AI is enabling many new forms of applications and use cases. In some areas this is leading to new challenges regarding quality standards or the underlying ethical implications. It is especially in these areas that developers of AI-technology are facing great legal uncertainty. To prosper and attract funding, companies are lacking a clearly defined legal framework in which they can navigate and build their product or service.

We thus endorse the EU's plan to adapt existing regulations and to accommodate for both recent and future technological developments. With the right legal framework – specific enough to address general issues, at the same time allowing the necessary flexibility to be applied to each individual use case – **AI-regulation can support companies in creating AI-products that incorporate European values by design and give direction to innovation.**

Even today, without such regulation in place, AI-companies in the EU are committed to ensure that AI-technology is applied in accordance with European laws, values, and democratic understanding. In early 2019, our members developed a quality seal¹ which provides companies with guidelines to ensure a human-centered and human-compatible use of AI. What this shows is that for many AI-companies, value by design is a clear unique selling proposition and one of the main reasons why their clients decide to work with them and not their non-European competitors.

However, as it is in the nature of AI-technology to continuously enhance itself, it is essential that the respective regulation of AI allows for innovation and further development. Any regulation must be flexible enough to not over-regulate and therefore slow down the current and future progress in AI – especially in areas with very little risk of negative impact: **The regulation of AI has to be proportional to the risk it is aiming to reduce!**

In this position paper, we would like to lay out our recommendations for a regulation of AI-technology on a European level.

¹KI Bundesverband e.V. (2019) „KI Gütesiegel“ ([Online in German](#))

Key Recommendations

1. Proportionality is key

AI-Algorithms (i.e. the set of rules given to an AI-programme) cannot generally be classified as being “good” or “bad”. Instead, the implications of using AI-algorithms are dependent on the individual context. We refer to this context as “use case”. **The ethical implications of an AI-algorithm – so whether the algorithm inflicts potential harm – must be evaluated on a specific respectively individual case-by-case basis.**

There are some use cases that can present a risk to humans, animals, or to society and its democratic values. These use cases should be regulated more strictly than those which do not seem to pose a threat. Consequently, the risk of inflicting harm can be minimized to the most possible extent, while use cases which do not carry a potential risk are not disadvantaged in global competition by facing over-regulation.

Proportionality is thus key! The potential risk of a use case must be reflected in the regulation of AI.



2. AI use cases should be regulated by adapting existing regulation

When it comes to determining the potential risk of an AI use case, we should rely on the existing regulatory frameworks wherever possible. Each industry is already subject to multiple use case specific regulations depending on the impact an individual use case has on society. In areas such as automotive, health, or aviation there are already several proven and established mechanisms for quality assurance and testing of technical systems in place that minimize the potential risks of critical use cases.

We are convinced that every industry can and will benefit from AI-technologies. But the characteristics and risks of each use case are vastly different. If we want these use case specifics to be reflected, our regulation of AI-technology must be tailored to the use case it is used in.

A one-size-fits-all AI-regulation, however, cannot accommodate the specifics of each use case. **Therefore, AI should be regulated in the context of existing use-case-regulation which already accounts for many risks.**

Existing use-case-specific regulation including any quality tests and certification procedures should be reviewed and – if necessary – updated to account for AI-applications.

3. Classification of use cases

AI-technology also enables new areas of application where use case specific regulation might not (yet) exist or is insufficient. Examples are the use cases of autonomous driving or face recognition.

In these circumstances, use cases will have to be newly evaluated and classified individually according to their potential risk.

Following, we provide criteria for a risk evaluation framework for new use cases:

A: Training Data

1. Static vs. dynamic: Is the model trained once based on a fixed and clearly defined data set (static). Or is the model continuously fed with data (dynamic - reinforcement learning)? A dynamically changing data set can create additional uncertainty about the stability of the recommendation.

2. Under control vs. open: Is the data and the data generating process fully within one's control or is it open and can be manipulated? Open processes are easy targets for hackers and can be used to manipulate the AI.

3. Personal data vs. machine data: Does the data contain personal information or is it neutral data (e.g. machine data)? Personal data is particularly sensitive and needs extra protection. When working with personal data, the provisions of the GDPR apply.



B: Machine Learning Algorithm

1. Static vs. dynamic: Is the model trained once before being manufactured or is the model continuously retrained and/or following a reinforcement learning approach?
2. Transparent vs. Black Box: To what extent is the trained algorithm explainable (e.g. decision tree) or untransparent (e.g. complex neural networks)? Explainable AI helps to understand the conclusions that are made. However, even though there is a vast amount of research towards explainable AI, complex models cannot always be transparent.

C: Inference Data

1. Volatility: Does the data show a lot of dispersion over time and can extreme outliers be expected? Outliers in a dataset can skew and mislead the training process of algorithms resulting in longer training times, less accurate models, and ultimately worse results.
2. Under control vs. open: Is the data under control or not under control? If Inference data is open special measures must be taken to avoid misinterpretations and manipulation (e.g. adversarial attacks).
3. Personal data vs. machine data: Does the data contain personal information or is it non-person-related data (e.g. machine data)? If using personal data, existing regulation regarding data privacy and data security must be applied.



D: Prediction

1. Recommendation vs. decision: Is the result of the inference process merely a recommendation that is checked by a person before an action or decision follows? Or does the overall system automatically enforce the decision? Recommendations enable a user to decide whether he wants to act upon them. While in the context of an automated decision the AI carries out the action without giving the user the possibility to reconsider. The risk is thus higher.

2. Data vs. physical impact: Does the process result in an output of data? Or is the process followed by a physical action (e.g. control of a vehicle)? What is the impact and risk of the physical action (e.g. autonomous weapon systems)?

3. Affects people vs. affects machines or processes: To what extent are people affected by the evaluation and decision of the overall process (e.g. credit worthiness)? Decisions that affect the life and well-being of people must be monitored more closely than decisions that only affect machines or processes (e.g. sales recommendations, quality control).

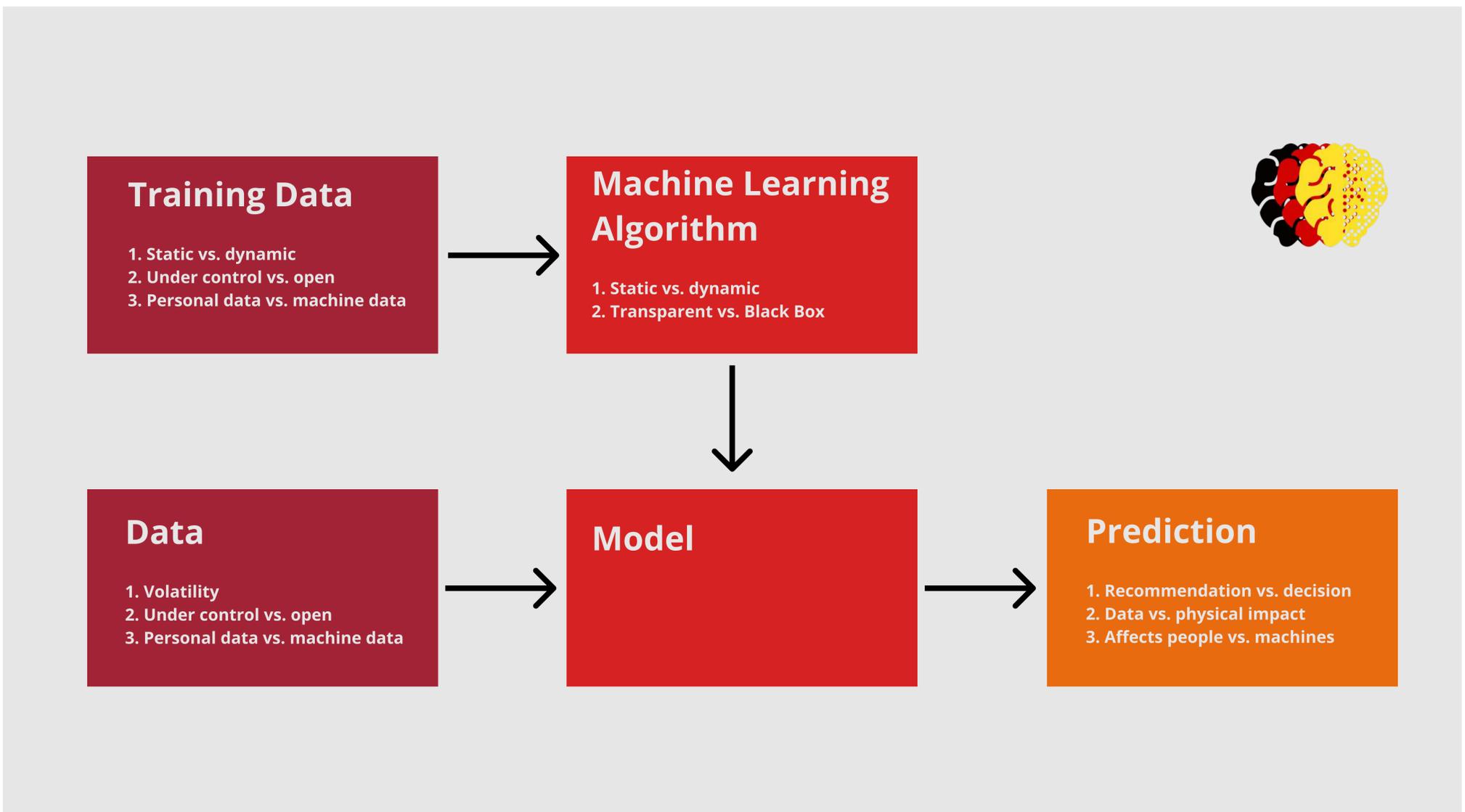


Figure 1: Criteria to evaluate the impact of an AI use case

We recommend that a uniform, objective evaluation scheme be established on the basis of these criteria.

Each of these eleven criteria should be evaluated individually to classify the risk of an AI-application.



4. A general AI-regulation is not feasible

We understand that several stakeholders have come forward with the idea of an AI-specific regulation. Yet, beside the fact that for the outlined reasons we believe an use case specific regulation to be the more appropriate and sensible solution, we do not believe it will be possible to legally determine the use of AI in every digitized application. In the coming years, AI will become a commodity and more and more software applications will use AI functionality in various ways and intensities.

Any AI-specific regulation will force courts to ascertain which technology or algorithm falls under the term of “Artificial Intelligence”. A clear definition of the term that allows us to differentiate AI from already existing algorithms is missing.

Additionally, developers rarely label their software as an AI-based software. Without looking at the code, it is therefore difficult to tell if a software is based on AI-algorithms. To generally regulate AI-software, legislators would therefore have to review the code of any software algorithm to determine whether it uses AI-algorithms. A scenario that is just not feasible. **Any legislation targeting AI will thus apply without bounds to every digital process.**

We are therefore convinced that a general AI-regulation will only slow down the European economy's digitalization, while the courts will struggle to define clear boundaries for the application of any AI-regulation.

5. AI-applications should be measured against human performance

In real world scenarios, AI applications are not perfect. Even though their predictions come with a certain, measurable accuracy, a 100 % accuracy cannot be expected. Yet, still, AI applications often show fewer errors than humans carrying out the same task.

A good example is autonomous driving, where around 94 % of serious crashes are due to human error². Here automated vehicles have the potential to remove human error from the crash equation and save many lives. The ethic commission on autonomous driving assigned by the Federal Minister of Transport and Digital Infrastructure thus finds that the introduction of higher automated driving systems can be socially and ethically imperative if it allows existing potentials for damage reduction to be used³. Even if it might not be able to eliminate car accidents in their entirety.

We thus propose a regulation principle that takes human performance as its benchmark. A regulation may not demand higher standards than what a human can achieve when presented with the same task. A regulation should not require a higher burden of proof, efficiency, or freedom from bias than the one required if the business process is implemented with a handbook and a human worker.

This principle will send a clear message to European companies that they shall invest in innovation to ensure that European workers are the highest-paid and most productive workers in the world.

²National Highway Traffic Safety Administration (2020) "Automated Vehicles for Safety" ([online](#))

³Bundesministerium für Verkehr und digitale Infrastruktur (2017) „Ethik-Kommission automatisiertes und vernetztes Fahren“ ([online](#))



6. Regulation must not place an extra burden on SMEs and startups

Startups and SMEs are one of the main drivers of AI-innovation. We thus urge policymakers to reflect the proportionality of their regulatory demands and ensure that any regulation of AI does not slow down or discourage innovation in (young) companies. Especially since this would give large corporations a competitive advantage as for them it would be easier to adapt to any comprehensive regulatory demands.

The consequences might be similar to the General Data Protection Regulation (GDPR). While the GDPR affected all companies in the advertising market, larger ones were affected relatively less than smaller companies. Eventually, leading to an increased market share for Google and Facebook⁴. An effect that was only increased by the lack of clear guidelines on how companies should adopt GDPR – leaving SME's and startups with much legal uncertainty and, relative to their size, significantly higher costs on a GDPR complaint.

We thus ask policymakers to keep in mind that even an overall stringent regulatory burden per company is relatively easier and cheaper for large companies to comply with, than for small and medium sized companies. And that concrete examples can help SME's adopt any regulation to their individual use case without major legal expertise.

⁴Peukert, Christian et al. (2020) "European Privacy Law and Global Markets for Data" ([online](#))



Closing Remarks

We believe that AI creates a huge potential for the European economy. AI-experts have made great progress when it comes to research. Today, the EU ranks second on a global scale when it comes to publishing research-papers in the field of AI, only closely following China. However, too few of these research findings are transferred into products and services.

To stay competitive, the EU must become an attractive location for entrepreneurs, where willingness to take risks is appreciated and innovative spirit meets the best conditions and a supportive ecosystem. After all, innovation cannot be applied top-down to our industry but must be sparked in our businesses.

We thus urge European legislators to encourage the development and application of AI-technology with their regulation, only explicitly regulating use cases that present a risk. Our regulation must support companies in the EU to be creative in their innovation and appeal to established businesses to build up the courage to discover new technologies. This way, we will be able to build an active, successful, and sustainable AI-ecosystem in the EU. An AI-ecosystem that can set global standards!



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About the German AI Association

The German AI Association (KI Bundesverband e.V.) represents more than 250 innovative SMEs, startups and entrepreneurs that focus on the development and application of Artificial Intelligence.

We support AI entrepreneurs by representing their interests in politics, business, and the media. Our goal is an active, successful, and sustainable AI ecosystem in Germany and Europe. Because only if the brightest minds and forward thinkers decide to find, research, and teach in the European Union, we can stand up to global competition.

Our members are committed to ensuring that AI-technology is applied in accordance with European and democratic values and that Europe achieves digital sovereignty. To achieve this, the European Union must become an attractive business location for entrepreneurs, where their willingness to take risks is appreciated and innovative spirit meets the best conditions.

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