THE RIGHT TO EXPLANATION IN THE PROCESSING OF PERSONAL DATA WITH THE USE OF AI SYSTEMS

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ABSTRACT

Transparency is one of the basic principles enshrined in the General Data Protection Regulation (GDRP). Achieving transparency in automated decision-making processing especially when artificial intelligence (AI) is involved is a challenging task on many aspects. The opaqueness of AI systems that usually is referred as the "black-box" phenomenon is the main problem in having explainable and accountable AI. Computer scientists are working on explainable AI (XAI) technics in order to make AI more trustworthy. On the same vein, thus from a different perspective, the European legislator provides in the GDPR with a right to information when automated decision-making processing takes place. The data subject has the right to be informed on the logic involved and to challenge the automated decision-making. GDPR introduces, therefore, *sui generis* right to explanation in automated decision-making process. Under this light, the paper analyzes the legal basis of this right and the technical barriers involved.

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1. INTRODUCTION

One of the main principles provided by the General Data Protection Regulation (hereinafter GDRP)[1] is the principle of transparency. The latter's role is to provide to data subjects with a fair and transparent processing of their personal data. Transparency, however, is an element that is largely absent in AI systems. By and large, algorithms used in AI systems, are not fully understood, even by the same people who developed them. This is mostly the case when machine learning is employed, where the program analyzes large volumes of data and "self-learns" during this process. This means that the rationale of decision-making escapes, in the above case, the programmer's control. The characterization of these systems as "black boxes" is indicative of the opacity that describes them.

The GDPR aiming, however, to ensure transparency in automated decision-making, provides data subjects with the right to obtain information regarding the logic followed, to know exactly what this means and what are the consequences of this processing (articles 13 par. 2 par. f', 14 par. 2 par. g' and 15 par. 1 par. h' GDPR). Moreover, in the case of automated individual decision-making, it provides data subjects with the right to human intervention, the right to express their opinion and to challenge the decision, which was taken via automated processing of personal data (Article 22 of the GDPR).

The GDPR (both in its' preamble and in the main body) does not refer to algorithmic processing of personal data per se. The European legislator mainly took under consideration the cases of automated processing, which include "profiling", such as the case of the automated assessment of the creditworthiness of borrowers or the assessment of the work performance of employees. Nevertheless, what happens in the case where automated processing with or without the purpose of "profiling" takes place with the use of more complex technological means, such as artificial intelligence systems, which, as mentioned above, are characterized as the opaquest?

The central research question that this paper shall attempt to address refers to the emergence and the legal basis of a new, independent, sui generis right to explanation that data subjects are afforded when automated decision-making processing takes place. Have data subjects a right to explanation when automated decision-making processing takes place? If the answer to the above central question proves to be affirmative, which provision could be the legal basis for the establishment of this new right? Is the legal

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[1] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation), OJ L 119, 4.5.2016, p. 1–88, ELI: http://data.europa.eu/eli/reg/2016/679/oj.

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basis the right to information, the right to access, the right to non-automated decision-making or none of the above? If new sui generis right to explanation is indeed established, what is the minimum content of this right, what kind of protection are data subjects afforded and how are data controllers' obligations shaped accordingly?

Given the fact that breaches of the GDPR's provisions related to data subjects' rights are subject to a higher administrative fine than breaches of other provisions of the GDPR, the answer to the above questions is of crucial practical importance. Especially, in the case of personal data processing via AI systems, the relevant issues should be effectively resolved before or during the AI systems' development phase in order to have a GDPR compliant AI system.

2. THE RIGHT TO INFORMATION IN AUTOMATED DECISION-MAKING

Providing information to data subjects can take many forms in the context of the GDPR. When decisions are solely based on automated processing of personal data and this processing produces legal effects or similarly significantly legal effects for data subjects, the latter have a right to be informed as well. In article 22 of the GDPR, data subjects are provided with the right to non-automated decision making when this takes place under certain circumstances. Based on that right, data subjects have the right to obtain human intervention, to express their point of view and contest the decision[2]. However, the exercise of these rights on behalf of data subjects presupposes that relevant information has been provided to them. Article 22 of the GDPR raises first and foremost two important issues: when the decision-making processing is "solely" automated and what are the "legal effects" and subsequently the "similarly significant" effects that render this processing prohibited or require safeguard measures to be taken when the exceptions of art. 22 par. 1 a-c apply.

A controller cannot avoid article's 22 prohibition merely by invoking some kind of human involvement in the decision-making processing. On the contrary, this human involvement has to be meaningful (not just a token gesture) carried out by someone that has both the authority and the competence to change the decision[3]. "Meaningful" has the notion of a human intervention capable of changing the outcome of the decision. Therefore, a mere review of the decision by a human, which is more

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[2] Art. 22 par. 3 GDPR.
[3] See Guidelines on Automated individual decision-making and Profiling for the purposes of Regulation 2016/679 (wp251rev.01) p. 20-21.

or less of a typical nature, does not qualify as a meaningful human involvement. Subsequently, this kind of decision-making processing equals to a solely automated data processing.

It has been proposed by authors turning in favor of the existence of a right to explanation, four types of information that could be provided as "meaningful information". This information should be on a) the input data that were used for the automated decision, b) the factors that influence the decision, c) the importance of these factors and d) textual information explaining reasonably the grounds for reaching a certain decision [1].

Other authors focus more on the kind of explanations provided with respect to their content and their timing in relation to the decision-making processing. According to this approach, there are explanations that refer to system functionality (general functionality of an automated decision-making system such as decision trees, pre-defined models etc.) and explanations referring to specific decisions (the rationale of specific decisions, such as machine - defined decision rules on specific cases etc.) [11] [12] With respect to the timing of the explanation in relation to the decision-making processing, two types of explanations can be distinguished a) ex ante explanation, that is explanation offered before the decision-making processing takes place and b) ex post explanation that is after the decision-making processing takes place [11] [12].

When it comes to the wording "legal effects" or "similarly significant" effects a further explanation is needed. GDPR does not provide any clarification on this wording. In the GDPR's preamble, recital 71 refers only to indicative situations that may stand as legal effects, such as a refusal of an online credit application or an e-recruiting practice[4]. A legal effect, however, may also be something that affects the legal status of a person or his/her right under a contract such when the automated-decision making processing results to an entitlement or cancellation of a contract (bank loan, lease contract) or to a refusal of a right (citizenship right, social benefits)[5]. It could also result to a severe restriction or even denial of a fundament right such as the access to justice right.

The "similarly significant" affects wording, is open, thus, to broader interpretations. What falls within this category can only be examined on a case-by-case basis, as there is not a specific right that is affected in these cases. Generally, it could be accepted that the data subject is significantly affected by an

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[4] Rec. 71 GDPR.
[5] See Guidelines on Automated individual decision-making and Profiling for the purposes of Regulation 2016/679 (wp251rev.01) p. 21.

automated decision-making processing when the latter affects his/her choices or behavior, have a prolonged or permanent impact on the data subject or even leads to the exclusion or discrimination of an individual[6]. The "significant" threshold is met when the decision may affect someone's financial circumstances (eligibility to credit), access to health services, access to education (a university or college admission), or access to employment[7].

An exception to article's 22 prohibition may apply in three cases a) when the automated decision is necessary for the preparation or the performance of a contract between the data controller and the data subject, b) when the Member State allows such decision-making or c) when the data subject provides explicit consent[8]. In the first case, the controller has to provide adequate reasoning for choosing this type of privacy-intrusive processing instead of a less intrusive, such as when there is automated processing of applications for a work position due to the high volume of the applicants[9]. On the other hand, a Member State should be allowed to authorize such processing especially for fraud and tax evasion monitoring and prevention purposes[10]. The third exception based on data subject's explicit consent may prove in practice to be the riskiest for the data subjects' privacy and respectively the most challenging exception for data controllers to apply, especially when AI applications are used in the processing. Last, but not least, automated decision-making processing of special categories of personal data is prohibited unless two conditions are met cumulatively, that is a Member State's exception is in place and the data subject explicitly consents to this processing or the processing is necessary for reasons of substantial public interest[11]. All the above exceptions, however, go hand in hand with suitable safeguards that need to apply in order controllers to ensure fair and transparent personal data processing[12].

3. THE RISE OF A SUI GENERIS RIGHT TO EXPLANATION?

There is an ongoing debate among legal scholars on the existence and the possible legal basis of a right to explanation in the algorithmic processing of personal data. There are views supporting the non-

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[6] See Guidelines on Automated individual decision-making and Profiling for the purposes of Regulation 2016/679 (wp251rev.01) p. 21.
[7] See Guidelines on Automated individual decision-making and Profiling for the purposes of Regulation 2016/679 (wp251rev.01) p. 22.
[8] Art. 22 par. 1 a-c.
[9] See Guidelines on Automated individual decision-making and Profiling for the purposes of Regulation 2016/679 (wp251rev.01) p. 23.
[10] Rec. 71 GDPR.
[11] Art. 22 par. 4 and art. 9 par. 2 a and g GDPR.
[12] Rec. 71 GDPR.

existence of a right to explanation under the GDPR and views that acknowledge the legal existence of such a right, thus under different legal bases.

Wachter, Mittelstadt and Floridi are turning down all possible legal bases for the existence of a right to explanation, namely articles 22, 13(2)f, 14(2)g and 15(2)h of the GDPR. According to their approach, article 22 of the GDPR does not explicitly mention a right to explanation as Recital 71 does, thus with no binding effect [12]. Articles 13 and 14 of the GDPR on the other hand, cannot, in the authors' opinion, support article 22 of the GDPR and the claim for an ex-post explanation duty of the controller, as they require only an ex-ante explanation of system functionality that precedes decision-making [12]. Finally, when it comes to article 15(2)h of the GDPR, the authors reach the same conclusion but on different grounds. In their opinion, article 15(2)h of the GDPR seems not facing the "timeline problem", however, the wording "envisaged" refers again to an ex-ante explanation of system functionality, thus not applicable to an ex-post explanation right [12].

Edwards and Veale do not find article 22 of the GDPR useful in getting a transparent explanation of a machine learning system, rather they deem article 15 more appropriate, even though is not specifically related to automated decision-making processing [6]. They argue that article's 15 access rights come after the processing and therefore ex post knowledge on the *"logic or rationale, reasons and individual circumstances of a specific automated decision can be offered to data subjects"* [6]. Mendoza and Bygrave are not turning down a right to explanation that may have its' legal basis on articles 22 and 15 of the GDPR. According to their view, the wording of article 15 does not necessarily excludes the possibility of an ex-post explanation right of automated decisions, while article's 22(3) term "contest" means more than "object to" or "oppose", rather it is akin to an appeal right [7].

Brkan, on the other hand, provides with an interesting approach. She proposes a combined interpretation of the provisions of the GDPR, that is a combination of articles 22 (red in the light of recital 71), 13(2)f, 14(2)g and 15(2)h, in order to provide data subjects with a right to ex post explanation of the automated decision [1]. Goodman and Flaxman may not provide for a specific legal basis for a right to explanation under the GDPR, however they acknowledge the need for such a right, especially when the processing is related to sensitive data, along with the need to overcome technical barriers that may be connected to such a right [5].

Kaminski's approach on the right to explanation differentiates substantially. Kaminski does not focus on a specific provision of GDPR as a legal basis for a right to explanation. Nevertheless, she is in

favor of "systematic transparency" that goes deeper than an individualized transparency regime. In the author's view, this "systematic transparency" regime should include data protection impact assessments for automated processing, access to information about algorithms by regulators and adoption of internal accountability and disclosure regimes by the companies [9].

Article 22 of the GDPR indeed does not explicitly refer to a right to explanation. However, the latter is presupposed in article 22(3) of the GDPR. How the data subject can be, truly, in position to contest the decision without any information on the rationale of the specific decision? What would amount as "suitable measures" for the rights and freedoms of the data subject if information on how the specific decision was reached is not provided? Subsequently, it is obvious that a stricto sensu grammatical interpretation of article 22(3) of the GDPR narrows down, unjustifiably, the data subject's protection under the GDPR. To the contrary, a teleological interpretation of the provision seems, in this case, more appropriate. This approach is supported, also, by article's 22(3) wording itself as the data controller has to "implement suitable measures to safeguard the data subject's rights and freedoms and legitimate interests, *at least* (emphasis added) the right to obtain human intervention on the part of the controller, to express his or her point of view and to contest the decision". The indicative and the minimum threshold of protection the data subject is afforded, advocate in favor of the existence and legal justification of the right to explanation in automated decision-making processing of personal data.

Article 13(2)f and 14(2)g indeed impose informational obligations to the controllers before a specific decision is reached. In automated decision-making processing, the controller is required to provide the data subject with meaningful information about the logic involved and information with regard to the significance and the envisaged consequences of such processing for the data subject. However, in the case of the abovementioned articles, this information should be available to the data subject at the time when personal data are obtained[13]. Therefore, articles 13(2)f and 14(2)g cannot support the argument in favor of an ex-post explanation duty for the controller as this is established in article 22(3). Nevertheless, how could we accept the fact that the GDPR establishes an ex-ante explanation right but not an ex-post explanation right when the processing has already taken place and the specific decision has legal implication on the data subject? It would not be rational to reach such a conclusion interpreting the GDPR, especially in light of its Recitals. Therefore, the said provisions act complimentary one to another and

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[13] See article 13(1) and 14(3)a of the GDPR.

enhance the protection of data subjects' rights and freedoms providing data subjects both with an ex-ante and an ex-post explanation right respectively.

Article 15(2)h on the other hand, shares the same wording with articles 13(2)f and 14(2)g, thus, it is provided under the established right of access that can be exercised by the data subject at any time of the processing. Therefore, the explanation required by the controller due to the nature of the access right and of the fact that is not defined in the wording of article 15, can be both ex ante and ex post[14]. Article 15(2)h may not be the legal basis for the ex-post right to explanation in automated decision-making processing as serving different legal purposes, however supports the existence of such a right in the meaning that a post explanation should always provide to the data subject.

All in all, in the author's opinion, the GDPR in article 22(3) establishes sui generis right to an ex-post explanation that the data subject is afforded when algorithmic decision-making processing takes place. The legal basis for this right to explanation is article 22(3) of the GDPR and not the non-binding Recital 71, thus the latter supports article's 22(3) teleological interpretation.

4. EXPLAINABILITY IN AI SYSTEMS

The legal establishment of a right to explanation is inherently connected with the problem of algorithmic explainability. As mentioned above, AI systems may be extremely opaque not only to third parties, but to their creators as well. How much transparent can a "black-box" be and subsequently how much GDPR compliant in terms of transparency can it be? The explainability and therefore the transparency of algorithmic decision-making goes beyond data protection and GDPR provisions. It affects data subjects' rights and freedoms as well. Algorithmic decision-making may discriminate against data subjects or even deprive them from certain fundamental rights, such as the right to access to justice, the right to access to healthcare etc. The key question, therefore, is why explainability in AI has become a problem and how we can overcome it.

Algorithmic transparency may face three types of obstacles, mainly technical obstacles, secondly intellectual property obstacles and finally secrets and confidential information of state authorities. Other authors add to the above taxonomy a fourth category which is legal barriers stemming of the arguing that a right to explanation does not exist under the GDRP [11] [12]. The latter, should not be perceived as obstacle as presupposes that the right to explanation does not legally exist and that this is widely

acceptable, while, on the contrary, this is highly debatable at the moment[15]. When it comes to privacy obstacles relating to personal data, freedoms and rights of third people, the existence of such obstacles in practice is also arguable [11] [12]. Article 22(3) of the GDPR interpreted in the light of Recital 71 and articles 13, 14 and 15 of the GDPR requires the disclosure on behalf of the controller of information about the "logic involved" into the automated decision-making and not the disclosure of specific data. Therefore, the danger of revealing personal data of individuals that were used as training data seems not presumable. However, the revealing of trade secrets is highly probable. This may in fact deter controllers from disclosing "too many" information about the logic involved in their algorithms as reverse engineering is always a possible scenario.

Wachter, Mittelstadt and Russell propose counterfactual explanations as an approach to provide insight to the internal logic of algorithms without opening the "black-box" [12]. The proposal of the counterfactual explanations model seems interesting. Especially the fact that explanation based on counterfactuals may be both understandable and useful for data subjects. However, counterfactual explanations may bring about more problems than the ones attempting to solve. Do counterfactual explanations actually provide "meaningful" information about the logic involved in an algorithmic decision-making processing? Can counterfactual explanations offer to data subjects the information required about the logic involved in an AI system in order to challenge the decision and to ask for human intervention in the decision-making processing?

Edwards and Veale on the other hand propose two types of explanation. The Model-Centric Explanations (MCE's) which includes setup information, training metadata, performance metrics, estimated global logics and process information, while the Subject-Centric Explanations (SCE's) include sensitive-based, case-based, demographic-based and performance-based subject centric explanations [6].

The fact is that any model selected to serve algorithmic explainability should be carefully designed to offer as much transparency as necessary for the data subject to exercise the rights provided under the GDPR, whether this is the right to information, the right to access or the right to explanation when automated decision-making processing takes place. Already AI computer scientists are working on different explainable AI (XAI) technics, such as Local Interpretable Model-agnostic Explanations (LIME)

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[15] All the debate currently is based on the GDPR's wording. However, European case law and especially the case law of the European Court of Justice shall shed more light on the legal existence of the right to explanation. It will not be a surprise to see in the future case law of ECJ a right to explanation as was the case with the right to be forgotten.

and Shapley Additive exPlanations (SHAP), in order to enhance the interpretability of AI, which is particular useful to auditing practitioners and researchers [13].

In most cases, automated decision-making involves AI technology in the decision-making processing. Explainability of AI systems, that is humans to be able to understand the inner logic of AI systems, is definitely pivotal in promoting human trust into AI [4]. Especially when the processing is related with fundamental rights, such when AI is employed in the justice or the medical domain. In the latter, system explainability would be extremely important and useful not only to patients but to health professionals as well. Understanding the medical predictions of a neural network system, indeed, would facilitate a more effective and not just an accurate decision-making.

The above example opens up a different perspective on the issue of algorithmic explainability. Can a ML system be explainable to all stakeholders involved, namely data subjects, data scientists, companies and regulators? Can that system provide explainability, be accurate and technical feasible in terms of development at the same time? Explainability in AI may be indeed a challenging task for AI developers, thus not impossible. Already, computer scientist in the AI domain is developing explainable ML models that provide for understandable and accurate sets of explanations [2].

Finally, Desai and Kroll provide with a different perspective on the evidence problem in private systems, especially when these systems are used within a regulated industry such as the auto industry [3]. In networked auto systems (e.g. Tesla's cars), almost any functionality is connected with a PC or a browser for regular, even daily sometimes, system update. Providing ongoing verification in these cases may face hurdles, thus, it is not impossible to be achieved.

All in all, transparency of the source code of algorithmic decision-making processing, along with the relevant inputs and outputs of the system, does not necessarily satisfy the transparency criterion for many reasons, that being randomness involved in the process, regular changes in the decision-making processing and system incompatibility with evaluation and accountability [10]. Last, but not least, full transparency of the decision-making processing may not be optimal for all cases, as maintaining the secrecy of certain aspects of a decision policy can prevent manipulation of the decision-making process.

5. CONCLUSIONS

Acknowledging a right to explanation under the GDPR is not just a matter of a mere theoretical importance. To the contrary, a right to explanation may prove in practice to be more important than any other right a data subject is entitled under the GDPR. This stems from the fact that the right to explanation is connected with legal consequences that can be contested and overturned by the data subject. The latter is given actually the opportunity to challenge an automated decision that was taken against her/him and not to just the opportunity to get informed or access to a certain type of information.

Striking a balance between algorithmic transparency and third-party rights such as protected IP rights or trade secrets, while taking into consideration the possible technical barriers is not an easy task to achieve. This may be, also, one possible reasoning behind the adoption by the European Commission of article 22(3) of the GDPR at its' final wording without the explicit reference to the right to explanation "described" in Recital 71 of the GDPR.

In any case, transparency may in practice face technical barriers indeed. Privacy by design in solving the explainability problem in AI system seems the most appropriate approach, as a future embedment of XAI technics into an AI system does not seem to be viable or at least effective. Computer scientists have paved the way for explainability in AI systems by developing XAI technics. Explainable neural networks may be the answer to AI's explainability problem, thus, may not be plausible in all kinds of AI systems [8]. ML systems for instance, may prove more "resistant" to explainability or interpretability models. However, since explainability is becoming part of the AI system's technical requirements, technical barriers to the right to explanation may not be the point we want to focus on. On the contrary, more light should be shed on the content of this right to explanation from a legal point of view. Maybe, AI systems are not so much of "black-boxes" as someone would want to believe. At the end, the opaqueness of AI systems and of any kind of system rests on their creators. Acknowledging a right to explanation to data subjects under the GDPR, would be a positive step towards a more transparent regime in AI systems for all stakeholders.

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