alGOVrithms 2.0

THE STATE OF PLAY

Automated Decision Making in
Czechia, Hungary, Kosovo,
North Macedonia, and Poland

alGOVrithms 2.0: The State Of Play

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1. EXECUTIVE SUMMARY

The second edition of "alGOVrithms. The State of Play" is taking an in-depth look at the usage of Automated Decision Making in government-citizens relations in Czechia, Hungary, Kosovo, North Macedonia, and Poland. Research done were examining the existence of relevant legal frameworks, the practice of creating, implementing, and using of Automated Decision-Making processes on different levels of government, focusing on their transparency, accountability, and potential risks of discrimination. During this research, the authors of the report were also particularly interested in understanding how alGOVrithms (the term created by the research team to describe ADM systems used by central and local authorities) are being procured and who is involved in the process of their implementation.

The examples of alGOVrithms presented in the report are sorted by the purpose of their usage. We have identified the tools which support the process of allocating judges and other public officials to specific cases; to detect frauds and misuse of public funds; facilitating the administrative and procurement processes and granting allowances and other social benefits. We have also detected the examples of alGOVrithms especially designed to respond to the challenges connected with the COVID-19 pandemic. Among others, the reader will find descriptions of tools supporting authorities in controlling the observance of the quarantine, accuracy of spending of state aid by selected companies, or detecting risks of spreading contamination.

As in 2019, we have not identified the existence of comprehensive legal frameworks regulating the process of alGOVrithm implementation and usage and their transparency.

Apart from modest examples, we have also not encountered the practice of engaging CSOs', academia, or other independent experts in the process of elaborating policies and regulations, as well as working on the specific technological solutions. As in previous years we found it difficult to gather the necessary knowledge on alGOVrithms due to the general lack of transparency which is particularly visible in the case of applying IT solutions in the public sector. We have also identified the significant problem of the lack of competencies of public officials who are directly responsible for using alGOVrithms. Very often they have to rely on the expertise of external companies who are delivering tools and there are no comprehensive internal processes that mitigate risks of negative impacts generated by Automated Decision-Making processes.

It does not mean that authorities are completely indifferent to these challenges. Some countries have prepared in recent months quite complex strategies on Artificial Intelligence development in which they are signaling the need of preparing regulatory frameworks, ethical guidelines, or concrete mechanisms as Algorithmic Impact Assessments. In these documents, we can also find the promise of creating multi-stakeholders' bodies that will oversight the process of Automated Decision-Making implementation and other mechanisms that will increase the transparency and accountability of alGOVrithms. Still, most of the concrete work is ahead of governments in countries that were the subject of the research, and there is little reflection among the public officials on the need to create similar strategies around the simpler examples of algorithms, which are not using AI but still have a significant impact on rights and obligations of citizens.

For these reasons, we are urging governments to follow our policy recommendations which are the following:

1 Establish a regulatory government body that overlooks the development, implementation, and usage of alGOVrithms;

2 Train civil servants with the necessary skills to monitor and audit alGOVrithms;

3 Develop a legal framework to guide the development of trustworthy alGOVrithms and strengthen their transparency;

4 Create the necessary legal framework and incentivize CSOs and academia to engage in monitoring and regulating alGOVrithms;

5 Initiate public debates between policy-makers, CSOs, media, businesses, and citizens to co-create lawful alGOVrithms that guarantee good governance, human rights, and democracy principle;

6 Create a national, high-level expert group on alGOVrithm and AI, comprised of legislative, CSO, business, and academia representatives, which will act as counsel to government bodies attempting to utilize ADMs;

7 Incentivize the share of knowledge and exchange of good practices between government agencies on the responsible use of alGOVrithms;

8 Develop national standards for procuring, supervising, and auditing alGOVrithms

2. INTRODUCTION

The use of algorithms in governance is hardly a new domain. For many years now, public organizations across the world have been investing in different technologies using algorithms to improve service delivery processes and public practices. However, during the Covid-19 outbreak, the notion of algorithms and automated public decision-making came to the spotlight. Using pandemic mitigation as an excuse, governments around the world started experimenting with different algorithm-based tools and automated public practices that pose a great risk to produce discriminating decisions, foster institutional bias, violate basic human rights and have negative implications in the daily life of the citizens. As an example, the Council of Europe issued a **list of recommendations** to its member states and requested to responsibly develop, use, and ensure that these technologies do not violate human rights.

Though the formal line of reasoning associates the adoption of algorithms in governance with increased internal efficiency and accurate decisions, countries are taking different approaches when it comes to designing, adopting, and functioning of algorithms. Hence, given the uncertainty and complexity of their governance operations, algorithms have become a crucial tool for navigation and enjoy unconditional support from civil servants. This excessive faith in governing through algorithms led the Dutch government to resign after a scandal unfolded in January 2021. For a period of nine years, over 26,000 families of lower socio-economic backgrounds were falsely targeted and accused of fraudulent behavior in the **childcare benefits system**. Though algorithms were not explicitly blamed in this context, many families were forced to repay thousands of euros - as they were deemed to commit fraud for minor mistakes in their application documents, problems as small as missing a

signature, or even being tagged suspicious because of their dual citizenship. Despite the concerns that were raised for having to repay significant amounts of money, the affected parties never understood the actual reasons, nor processes, that led to such a decision.

Therefore, one of **the main claims in this study is that the lack of transparency, accountability, and knowledge about algorithms in governance, combined with an organizational culture that ignores individual needs, can lead to terrible discrimination, foster bias, and have negative implications on citizen's lives.**

Moreover, the benefits and convenience that algorithms offer to govern with large and complex systems should not be used as a sufficient argument to legitimize and overlook controversies that these technologies give rise to. Altogether, we need a broad discussion on the use of algorithms in the context of everyday life, types of tasks that are to be automated, affected social groups/aspects, future values, and principles that these systems should nurture in governance, and society in general.

So far, one of the main expected contributors in this debate, CSOs', have remained silent. This can be attributed to a variety of reasons, including the lack of technical expertise to review algorithms, novelty of the field, limited human and financial resources, and even the sense of responsibility to comment on "technical" trends. The seriousness of the issues also requires the involvement of academia. As the adoption of algorithms is increasing year by year, it is crucial to know more about

their long-term implications in governing systems, socio-economic impact, changes in values, ethical trade-offs, and the general threats that these technologies may pose. To this end, this study urges national governments to do more in this domain as well.

> It is crucial that all EEA and non-EEA states participate in this debate and engage their tech-communities in creating the much-needed legislative frameworks, ethical guidelines, and strategies to develop responsible algorithms and AI.

In the context of this evolving situation, this report presents findings from an exploratory study- conducted to identify and explore the use of algorithms, functions where these technologies are implemented, regulations in place, transparency of the implementation processes, and procurement procedures in the Czechia, Hungary, Kosovo, North Macedonia, and Poland.

In each country, a set of research methods were used (i.e., desk research, interviews, phone-calls, request for information, and emails) to identify algorithms and collect more information about their use. Moreover, as the field is yet struggling to establish a comprehensive definition, we used the technical interpretation suggested by our colleagues who produced the first version of this report and refer to algorithms used by governments and public agencies as "alGOVrithms".

The remaining part of this report is organized as follows. Chapter 2 provides an overview of the methodology and methods that are used to conduct this study. Chapter 3 informs readers more about the country and context where alGOVrithms are implemented. Chapter 4 presents a list of different alGOVrithms that were identified as part of this research. Chapter 5 summarizes the main research conclusions and proposes a set of policy recommendations for national and local governments.

We define alGOVrithms as automated selection or filtering processes, used by government authorities in decision making, whose output directly or indirectly influences the citizens' well-being.

3. STUDY METHODOLOGY

The methodology of the report was based on the one elaborated during the first edition of "alGOVrithms. State of Play" report and was adjusted during the online workshop which was held among the partners in October 2020. While working on the report researchers used mainly three ways to collect necessary information:

1. Desk research

2. Freedom of Information requests

3. Interviews with identified experts and decision-makers.

Because of different situations in the researched countries, it was researchers' independent decision to choose institutions FOI requests should be submitted to and whom to interview. Often interviews were held before sending FOI requests to familiarize with the topic and to understand the knowledge on the topic among decision-makers and other stakeholders. Researchers from Czechia, Hungary, and Poland while working on the report were also referring to experiences and knowledge gained during the first edition and, when needed to update some information from the previous reports. It is worth noting that the research made in Kosovo and Northern Macedonia was the very first such extended activity conducted on the topic.

Based on their findings they have prepared draft country reports which were compiled into this final paper overviewing the state of play of alGOVrithms in Czechia, Hungary, Kosovo, Northern Macedonia, and Poland. It should be noted that due to the COVID-19 pandemics, we have encountered slight problems with timely receiving responses for FOI requests, but in such cases, researchers were able to gather information informally.

Also, at least in one case, researchers have decided to submit a complaint to the court for refusing access to the requested information and awaits the court seating.

The outcome of the above-mentioned works was a detailed questionnaire consisting of topics to explore during the research in the relevant countries. The whole questionnaire can be found in **Appendix I** of the report. We have focused on the following topics:

1. Do authorities implement algorithms in software? Name identified examples and describe how they work or might work by answering the questions below (also indicate which state sectors are using algorithms).
2. How does alGOVrithm work? This question served as a place to describe the "content" of the alGOVrithm.
3. How is the alGOVrithm regulated? This question was aimed at gathering information about whether alGOVrithms are regulated by the law (and describe if the answer is yes) and if not - whether there are any other documents (i.e., internal regulation) in place.
4. Who has created the alGOVrithm? Here we were referring to at least two groups of people. If the alGOVrithm and software which uses it was created by a public institution or outsourced to an external company and if the latter - on what legal grounds (i.e., public tender). If there is a public tender, then how does the product description in the tender notice look? Does it mention any transparency requirements?
5. Is it open to the public and who has access to the alGOVrithm? Is the software using the alGOVrithm open source? Is the alGOVrithm code open source? Is it possible to access alGOVrithm using freedom of information request, or is it restricted only to select groups?
6. Who controls the alGOVrithm's accuracy/fairness? Is there a system to perceive if there is doubt about the alGOVrithm's accuracy/fairness? Is there a system of remedies? Can individuals or organizations appeal to the alGOVrithm's prediction? If yes, on what grounds?

4. THE CONTEXT: COUNTRY INTRODUCTION

4.1 Poland

This is the second time when the ePaństwo Foundation is conducting the research on the usage of automated decision-making in Poland. In the framework of a **research conducted 2018-2019**, the Foundation has identified a number of challenges, such as the lack of overall state's policy on implementation,oversight and audit of alGOVrithms, the lack ethical and legal frameworks and low transparency.ethical frameworks were introduced.

However, for the past years, the Polish government (namely the Ministry of Digital Affairs) worked on the **AI Development Policy**, which was finally **accepted in January 2021**.

By elaborating the AI Development Policy, Poland has introduced a policy on alGOVrithms implementation, but it is important to underline that the Policy refers only to solutions based on Artificial Intelligence. While most contemporary examples of usage of alGOVrithm decision-making is based on much simpler algorithms, some of the problems connected with the lack of transparency and impact measurement may not be solved.

As the "AI Development Policy in Poland" is, now, the most important document determining the future of alGOVrithms, it is worth presenting it in detail.

According to its authors "AI Development Policy in Poland" is a "document that supports and complements other policies, including the Responsible Development Strategy, the European Commission's Coordinated Plan for the Development of Artificial Intelligence in the European Union, as well as the work of international organizations, including the OECD". The Policy envisages supporting research on AI ethics and preparing regulations related to this issue.

The document defines actions and goals for Poland in the short term (until 2023), medium term (until 2027) and long term (after 2027). They are divided into six areas: as:

- AI and society - actions to make Poland a beneficiary of the data-driven economy, and   to make Poles aware of the need to constantly improve digital competencies.

- AI and innovative companies - support for Polish AI companies, including the creation of financing mechanisms for their development, cooperation of start-ups with the government.

- AI and science - support for the Polish scientific and research community in designing interdisciplinary challenges or solutions in the field of AI, including activities aimed at preparing a cadre of AI experts.

- AI and education - activities from primary education to university level - programs of courses for people threatened with losing their jobs because of new technology development, educational grants.

- AI and international cooperation - activities to support Polish business in the field of   AI and the development of technology in the international arena.

- AI and the public sector - support for the public sector in the implementation of contracts for AI, better coordination of activities and further development of programs such as GovTech Poland.

Already, at the beginning of the document, we can find the assurance that it is "crucial that the AI solutions created always serve human beings, putting their dignity and rights first. Therefore, it is so important for the Polish voice to continue to be heard in the global debate on the ethics of artificial intelligence and the way intelligent or autonomous agents (e.g., alGOVrithms that select access to public services, surveillance robots(...))".

The most important commitments are placed in two of the document chapters: AI and society and AI and the public sector. According to the authors of the Policy, AI solutions should be implemented "in line with the European approach to trustworthy and human-centered artificial intelligence, which is to provide an ethical framework and recommendations for AI policy and investment that allows, in a globally competitive environment, to make the most of AI opportunities and to mitigate the social, political and economic risks that AI applications potentially present.". The Polish government has committed to conduct up to the end of 2023 following specific activities to fulfill its goal to prepare the analysis of the ethical implications of AI implementation and the impact of AI systems on the realm of human rights:

1. Supporting research on the ethics of AI through grants, competitions, and other forms of funding;

2. Assessing, in a predetermined manner and scope, the social impact of systems that use AI (in particular, the impact on human rights and freedoms) and developing methods for their independent auditing;

3. Supporting, preparing and consulting on future regulations related to this scope - national and (where possible) developed at the EU level and within other international bodies, as well as monitoring the emerging recommendations and regulations of the OECD, UN, EU and Council of Europe on AI ethics;

4. Supporting, as part of the work on AI regulation, the principles of personal data processing stemming from GDPR) (in particular the principle of data minimization), sound risk assessment for AI systems and prevention of errors in their design (e.g. algorithmic bias), transparency, accountability and explainability of AI systems, especially those that perform tasks in the public sphere or affect the sphere of human rights and freedoms;

5. Monitoring and moderating emerging recommendations or regulations from the OECD, UN, EU and Council of Europe on AI ethics and accountability in the AI lifecycle;

6. Initiate a research grant track for research on transparency and accountability of applications of AI algorithms, in particular for public tasks and commercial purposes that involve significant human impact.

It also aims at supporting independent risk assessment tools for AI-enabled systems, including through business-targeted campaigns, incentive schemes and research grants; supporting education of consumers (users) of AI-enabled systems aimed at understanding their principles of operation, critical assessment of possible consequences and the ability to estimate individual risks and increasing the competence of officials in the use of AI tools in state-citizen relations, including counteracting the risk of discrimination. The latter is of high importance, as our interviewers were emphasizing that there is a significant problem with lack of knowledge and competencies among public officials.

There are also some interesting propositions when it comes to the mid-term goals (up to 2027), including: preparation of new types of licenses for alGOVrithms and ICT solutions enabling open use of AI technologies (created with public funds) by the public sector.

The last goal presented in the AI and Society chapter, is almost identical with our recommendation to introduce the review and remedy system, that is, "that Poles exposed to AI-based systems, especially in the public sphere, are aware of their rights and have access to mechanisms that protect them from system errors or other violations of their rights and freedoms."

According to the authors of the Policy laid down in the chapter on "AI and Public Sector", "the task of public administration should be to set standards for the implementation of AI solutions, to ensure respect for AI ethics, protect citizens' rights and improve the quality of public services offered". It is particularly important that one of short-term goals in this context is to develop by the end of 2023 rules for transparency, auditing, and accountability for the use of alGOVrithms by public administration. It will be explicitly achieved by:

1. Introduction of a mandatory ex-ante self-assessment, defining the problem, the distribution of responsibility for the operation of the system, potential errors (including algorithmic bias) and countermeasures taken.

2. Development of a model explanation of AI-assisted decision-making and the possibility of appealing such decisions, especially if they have a direct impact on civil rights and freedoms.

The document was consulted with Civil Society Organizations including ePaństwo Foundation and some of the remarks that arose from the 2019 report were incorporated – or more realistically: some of the recommendations were committed to be implemented.[1]

The Policy partially responds to the recommendation of setting up a coordination body within the government. So far, it is only a commitment to implement a clear and possibly complex legal framework on automated decisions making and ethical guidelines. The activities set up in the Policy include one of the other recommendations which was engaging civil society representatives and external experts during the whole process of creating alGOVrithms. Still, no such practice was detected - but with a clear commitment set up in the policy, one should be optimistic that this idea will be implemented. Although now, there is still no practice or regulation on introducing Algorithmic Impact Assessments, the Policy and the EC's White Paper on Artificial Intelligence are setting a commitment to do so.

Also, ePaństwo Foundation together with Jagiellonian Club have **prepared the template for AIAs**' ready to be tested in the public sector. It is still unclear whether the recommendation on introducing transparency clauses in contracts with companies delivering the software and open access to the source code, but there are such discussions visible in the content of the Policy. The same goes with the recommendation on issuing guidelines explaining the operation of alGOVrithms and elaborating the review and remedy system.

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1 Note that the ePaństwo Foundation also took part in the consultations with the European Commission regarding its proposal on the regulation of Artificial Intelligence usage.

4.2 Czechia

Czechia was included in the 2019 alGOVrithms report, and there has been little progress since. No comprehensive legislation is in place, and there is no central coordination of implementation or oversight of alGOVrithms.

alGOVrithms are not very widespread in the Czech government. While many online activities sky-rocketed in the last year because of the Covid-19 pandemic - like home-office, on-line meetings - even within the government, alGOVrithmic decision making did not improve much.

So far, the most visible cases of the alGOVrithm used in the governmental sector concern the complex systems of automatic road surveillance connected with automatic fine collection by municipalities and their municipal police with help of the state police. There are several such systems in place, the biggest ones are speed control and parking control. Apart from this, a few governmental decision-supporting alGOVrithms could be identified.

Research was hindered by the reluctance of the government and public administration agencies to provide information on alGOVrithms.

4.3. Hungary

Hungary has also participated in the last edition of the alGOVrithms study. Since 2018-2019, we have once again seen a boom in the use of ICT means in public administration.

While authorities have been using various electronic decision support systems for more than a decade, their number and quality have been constantly expanding in the recent period, and the tasks performed by each alGOVrithm have become more and more complicated year by year - now they play a role in law enforcement, infringement detection, and disaster management without the citizens necessarily knowing about it.

Meanwhile, there was a growing demand from citizens to arrange their affairs without bureaucracy and unnecessary paperwork, which also coincided with the government's will to (1) simplify matters without wasting unnecessary human resources; (2) to eliminate intentional and unintentional human errors and opportunities for corruption. The General Administrative Procedure Act introduced the concept of an automatic decision-making procedure back in 2016, which created the possibility of a decision-making procedure without human intervention in the simplest judgments. While now the automatic procedure is only available for a few types of cases, there are a growing number of cases where only the final step of the administration is under human supervision.

Recent developments in government IT have also primarily served to reduce paper-based administration (and even paper-based data), which is obviously a step 0 for creating more complex alGOVrithms. Our personal data, photographs, medical records, social security, and income data are now available online and can be linked.

We can conclude from several sources that in the future e-administration and automatic decision-making will be significantly expanding. An EU-financed project launched in December 2020 deals directly with automated administrative decisions: the goal of the project is to create an adaptable platform model for the decision-making process. The project plans to launch 10 new pilot projects in which automatic decision-making can be implemented (possibly with MI tools).

Also, in 2020, Hungary has adopted its new AI strategy, which - in line with the above -- sets the goal of digitizing 60% of government administration by 2030, even with the possibility of self-service administration through KIOSKs and physical robots. Furthermore, the artificial intelligence strategy sets out very ambitious projects in relation to the labor market (competence-based job placement), health care, border control, traffic management, law enforcement, and crime investigation. Enhancing the effectiveness of prefiltering and preselection of the supervision processes of the tax authority and the State Audit Office is also between the priorities of the strategy.

Refreshingly enough, the AI strategy which has been developed with the help of non-governmental stakeholders, shows a strong commitment to deal with the ethical side of using artificial intelligence -- an Ethical Board is to be installed to create an ethical code. Unfortunately, though, the most prominent focus of the strategy is the industrial and economic profitability of using AI technologies.

While most of the governmental agencies that were contacted for the purpose of this study were reluctant to provide information, some organizations expressed interest in the research, and it was a pleasure to find out that – independently from this research –, in February 2021, the State Audit Office has held a workshop on the use of public administration alGOVrithms and AI tools in governance.
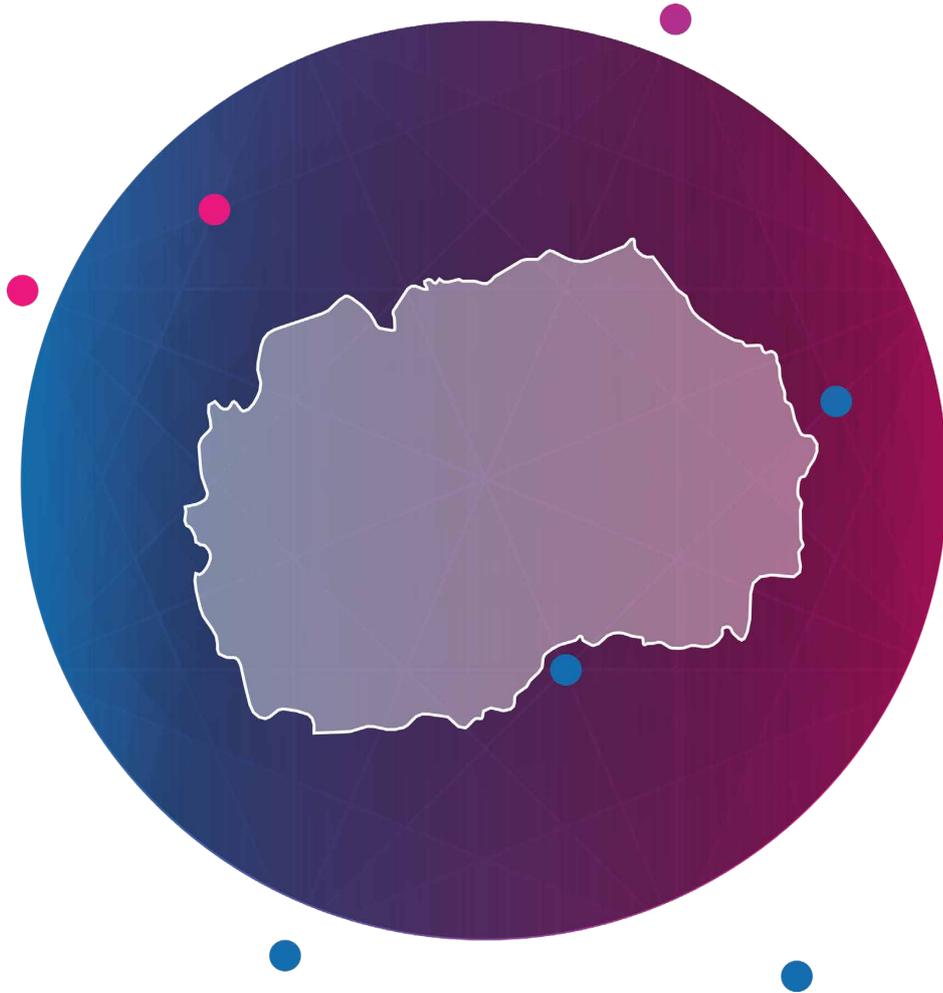
4.4. Kosovo

The use of new emerging technologies to support administrative reforms and digitize public services is coming to the spotlight in Kosovo too. The strategic drivers behind these initiatives are generally associated with improving internal efficiencies and supporting good-governance principles. So far, this is the first study to identify and explore the use of alGOVrithms in Kosovo. As a result, this report reveals that the current state of knowledge regarding alGOVrithms remains obscured and fragmented. There are no specific government bodies or legal entities assigned to guide and monitor their development, implementation, and usage. Existing cases are developed individually by public organizations and primarily used to support their operational needs. Moreover, we did not identify any established national guideline or legal frameworks. For the near future, it remains crucial to clarify the legal rights and responsibilities of all involved parties in services/processes performed by alGOVrithms and avoid the current extempore practices.

Information describing the existence and usage of alGOVrithms is largely missing in the institutional websites as well. It was only for one case that we could access available information remotely. Yet, the information was mainly presented for outreach purposes and in the format of media releases. For example, we could not find reports/ statements offering information about possible alGOVrithm auditing or reviewing practices. After initiating several discussions with civil servants and relevant government bodies, it was revealed that the most common alGOVrithms adopted in Kosovo are used for allocation purposes. Meaning that they are developed to reduce human interference in public processes and allocate tasks/cases to the civil servants. These are usually alGOVrithm that are integrated in larger information systems and used to administer organizational processes.

4.5. North Macedonia

The Digital Agenda (European Digital Agenda, n.d.) is an initiative developed by the European Union, which was also extended and adopted for the six Western Balkan countries (Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia).By committing to the Digital Agenda, the governments in the region have committed to ensuring that citizens have the skills to match the demands of the new economy and that there will be an advanced modernization of public administrations, strengthening of cyber security, an increased connectivity, and an improvement of the business climate.

According to a recent Digital Agenda Observatory research (Metamorphosis Foundation, 2020) done by the ICEDA network (ICEDA, n.d.), there are efforts in the region in accelerating the digital transformation, but the level of knowledge about the institutional processes in that direction or the initiative itself is very low among the key stakeholders. In line with this, the research recommends that countries should focus on implementing an ambitious campaign of raising citizens' awareness about the benefits of digitalization. While there is noteworthy progress in bringing the broadband internet to all the citizens in the region, the research recommends that the countries need to be more diligent in updating their strategic and regulatory documents, as well as in putting efforts in harmonizing their legal acts with the EU standards. The delay with the implementation of innovations in the region is also very noticeable, and the research warns that unless the digitalization is aligned with the demands from the market, the same will become outdated and expensive.

When it comes to the digitalization of services provided by the institutions in the region, governments should be urged to define their criteria for introducing e-government services (e-services) based on the citizens' needs, and in parallel to that, to vastly invest in the digital literacy of its citizens. The digitalization directly influences the efficiency of public administration and budget savings, and it is imperative that governments invest all their efforts into interoperability of all databases handled by various government institutions. Currently, the governments offer partial solutions, with parts of the procedure still relying on the traditional public administration. Resistance to digitalization from the public servants remains as an obstacle and there is a generational gap in being accustomed to e-technologies, requiring a reform of the long-term routine and capacity building of the public administration. Nevertheless, the implementation of the Digital Agenda remains to be monitored, as the Western Balkan countries remain as aspiring potential members of the EU.

As is the case with many countries around the world, the regulators in North Macedonia are most often playing catch-up with the latest developments in the ICT sphere. This is to be expected and will probably continue soon as well, as the rapid improvements and iterations that happen on an almost daily basis in the world of tech, rarely (if ever) have their effects, unintended consequences, and impact properly assessed. The nature of regulation and law-making is such that, it almost always requires careful and deliberate discussion and assessment to bring upon regulation that is both, not stifling towards (economic) progress, but also protects the guaranteed human rights of citizens, and is in harmony with other existing regulation.

At the time of writing this report there is a bare minimum standard of control and oversight, at best. The delegated responsibility, with minimal knowledge of the matter – and resorting to setting up sub-contractors (private companies) as a point of information, but also a potential point of accountability, is a dangerous exercise in good governing.

There are no innate issues for the technical interventions to be undertaken by sub-contractors, and in fact, this practice could prove much more efficient in terms of the quality of the final product. Such practice creates a demand in the market and potentially a new market sub segment for offering such solutions in the private sector, i.e., it could encourage growth in this narrow field of ICT.

But the problem arises when there is weak transparency in the administration, maintenance, patches, access logs, and several other areas that are ex post-facto of the public procurement process.

This, combined with the relatively low digital skills in public administration, creates room for potential manipulation of third-party systems. These risks do not always bring with them malicious intent, or intent to harm an institution, group of citizens or individual. However, the potential breach of a software maintenance company that enjoys access to the system will certainly jeopardize data security in the institution-client as well and will disrupt the integrity of the process.

Another issue which is largely unaddressed is the regulators' responsibility to basic human rights and dignities, when discussing ADMs and AI. The Constitution, and other established laws, as well as the Declarations where signatory is North Macedonia, guarantee certain rights and freedoms, all of which were envisioned in a time before the existence of such systems. The content of these laws most often does not reflect reality today, and simply put, are out of date.

Regulating ADMs and paving the way for large-scale implementation of AI solutions in the future must rest on solid legal frameworks of checks and balances, accountability, complaint mechanism and so on.

As of today, no such regulation is in effect, or are any plans to begin the design of one are being made public.

That is why, it is extremely difficult to pinpoint all the legislation that contains some sort of alGOVrithm management, procurement, supervision, or auditing. This is largely in part because of the absence of a higher-level authority that oversees alGOVrithms or AI use in different governmental sectors and agencies. There are of course examples where, under the jurisdiction of a certain ministry, an agency procedures alGOVrithm and employs in its daily use – but still, these lax regulations which most often pertain to the procurement process itself, open more questions regarding oversight, corrections, updates, complaints mechanisms, just to name a few.

As there is no central legal document that oversees and provides guidelines to the employment of alGOVrithms, such provisions must be made in every sectoral law and directives, where such systems are in use, or their use is envisioned in the near future.

In February 2020, new Law on Personal Data Protection was adopted in North Macedonia. The new law is fully compliant to the GDPR, which from a normative aspect shows our awareness and readiness to follow and respect EU regulations on a national level.

General rule for automated individual decision making (including profiling) is that – with exceptions defined in the law - the data subject shall have the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning him or her or similarly significantly affects him or her.

Given the current state of alGOVrithms in North Macedonia (their minimal use-case) and the general legal framework that the GDPR (and domestic laws) provide, one could conclude that the provisions in place are sufficient. However, this does not mean the regulator should continue to be lax regarding these issues. The lack of clear, strategic, and systematic approach in regulating all aspects of alGOVrithm employment (justification, procurement, maintenance, supervision, and so on) provides serious space for interpretation and possible misuse.

The capacity in each institution is of extremely varying quality (both in human and financial resources), and such factors, like the specialized knowledge and skills needed, could make some institutions "race-ahead" with alGOVrithm implementation, while others, regardless of actual societal need, could fall behind.

5. alGOVrithms 2.0 IN PRACTICE

As part of this study, we identified the following list of alGOVrithms (see Table 1).

Table 1. Summary of identified alGOVrithms by country

CZECHIA	HUNGARY	KOSOVO	NORTH MACEDONIA	POLAND
Speed Measurement by Municipal Police	Decision on the Maternity Benefit TÉBA - The Family Support Scheme of the Hungarian State Treasury- Hungary	SMIL (Information System for Case Management)	E-Procurement Bureau alGOVrithm	Fraud Detection alGOVrithm
Quality Control alGOVrithm	The Véda-KAFIR-RO-BOTZSARU ('Robocop') System Operated by the Police	Kosovo Customs alGOVrithm: ASYCU-DA	Ministry of Interior- Mass biometric surveillance – Skopje Safe City (intelligent monitoring/surveillance	Home Quarantine (Covid-19) alGOVrithm
	alGOVrithms of the National Tax Authority	Busulla.com alGOVrithm	Customs Administration	Crowd Recognition System in Gdynia
	IRIS - A Data Collecting and Pre-Screening alGOVrithm of the National Media and Communication Authority	Tax Administration of Kosovo alGOVrithm	Automated Court Case Management Information System (AC-CMIS)	Rubbish collection in Świdnik and other cities)
	Home Quarantine App			
	Selection alGOVrithm of the Directorate General for Audit of European Funds (EUTAF)			
	Ranking of OTKA (Hungarian Scientific Research Fund) researches			
	alGOVrithms 'Supporting' Carrier-Choices by the Education Office			
	Automatic Electronic Auction in Procurements- Hungary			

5.1 Allocation alGOVrithms:

5.1.1 SMIL (Information System for Case Management) - Kosovo

In 2013, the Kosovo Judicial Council (KJC) started to develop SMIL- which is an informative system for case management. This program was supported by foreign donors and is considered one of the most successfully adopted alGOVrithms in Kosovo. SMIL is used to register new cases, monitor, and mediate different processes, measure staff performance, and automatically assign cases to available judges. In the long run, this system is expected to reduce the time required to process cases, improve HR management, improve internal efficiencies, and ensure timely and qualitative statistics. To this report, we only focused on the alGOVrithm that SMIL uses to allocate cases to the judges.

SMIL was developed to address the need for quick, reliable, and efficient digital tools in the juridical administration. That is why, as soon as new cases are registered, they are automatically assigned to one of the available judges. This process happens on equal probability principles. Hence, SMIL presses cases, considers judge availability and their corresponding department. This implies that i.e., cases concerning penal code are allotted to the relevant department and the judges dealing with such matters. The main goal of this alGOVrithm is to ensure that the distribution of cases is random, minimizes human influences and ensures that all judges have an equal and fair workload. However, in exceptional cases, where changes are necessary (for whatever reason), the presiding judge has spare authority and can reallocate cases. However, providing justification for such decisions is mandatory.

The use of SMIL is mandatory for all administrative and non-administrative processes that are planned to shift in this system. Therefore, the access to the system is granted and regulated in accordance with the KJC internal plans and policies. The latter are made available for the broad public. However, we did not find any example of regulations that are designated to the use and functioning of the alGOVrithm itself. Instead, this is arranged through the guidelines on the use and management of the SMIL system and the responsibility to monitor the alGOVrithm is delegated to the relevant KJC entity- in this case ICT division.

This alGOVrithm is part of a system that is owned by the KYC. For its development, one local and to foreign companies were contracted. However, developers were located at the KYC premises while developing the program and they collaborated closely with staff using this system. Until 2017, up to 400 employees were trained to use and operate with the SMIL system.

The maintenance and monitoring of KYC are done in-house. Hence, data is stored at the KYC servers as well. The source-code of the KYC is closed and can be accessed only by relevant authorities. Hence, this study did not identify any case where the decisions of the alGOVrithm were questioned. However, if that is the case, the presiding judge can remake the decision, but this happens without reviewing the internal system operations and the reasons behind the allocation. The functioning of the alGOVrithm is taken for granted.

In closing, the development of SMIL was financially supported by external donors. Therefore, they carried our procurement procedures and contracted the developing companies. For this reason, we could not find the contract between the relevant authorities and the contracted parties to develop this platform, which are commonly published in the national e-procurement portal.

5.1.2. Automated Court Case Management Information System (ACCMIS)- North Macedonia

In this section, we present the history, development, and public backlash of the notorious ACCMIS system in North Macedonia. This alGOVrithm is the most obvious and well-documented case in the country. Among others, the media turmoil, the mis-usage controversy, and the lack of public trust in the judicial system led to its suspension, even to this day.

At present, the judiciary is considered one of the weakest domains in North Macedonia's democratic landscape. This is generally indicated by national and international reports, but also by citizens themselves- who according to pools, have extremely low trust in the judiciary.

This occurs because of negligence, lack of transparency and lack of professionalism demonstrated over the years. Citizens could not trust the judiciary after everything they heard in the illegal wiretapping scandal is the chief of the secret police and the Minister of Interior supposedly preparing the list with the names of the judges and the partners of the ruling coalition negotiation for appointing their own judges.

The peak was reached when the former special prosecutor, from whom the citizens experienced a "cold shower", while they enthusiastically trusted a representative of justice as never before and waited for her to clear up the crime scandal.

The weak judicial system is demonstrated also in the manipulations that took place with the ACCMIS system- whose main goal was to prevent abuses and manipulations. The main challenge was to prevent the influence of judges to schedule certain court proceedings and faster registration, and faster separation and completion of court cases.

Since 2010, ACCMIS was operating in all 34 courts in the North Macedonia, replacing the manual distribution of cases.

The ACCMIS database is located at the Supreme Court and can be accessed by members of the Judicial Council and the presidents of the Basic Courts, though they cannot intervene or make changes.

The need to control the ACCMIS system came after one of Priebe's reports stated that "there is a perception that court cases are not shared through the ACCMIS system". The rumors that the system was manipulated became even more apparent when the Special Prosecutor's Office cases were "accidentally" assigned to judges who had close ties to the ruling VMRO-DPMNE party. At the same, these cases involved high officials who were to be tried for serious crimes. When distributed in the hands of judges close to the party, they blocked or dragged them, putting prosecutors in procedural and bureaucratic chaos to avoid the administration of justice.

The manipulation of the system was also highlighted in the annual report released by the US State Department in 2018. There, the presidents of the Basic Court in Skopje and the Supreme Court were mentioned by name as involved persons in the scandal with the ACCMIS system. After the changes that occurred in the North Macedonia government in 2016, the Ministry of Justice initiated controls in the three most powerful courts of North Macedonia. The objective of this initiative was to understand how much the protocol of using ACCMIS is respected by the Criminal Court in Skopje, the Court of Appeals, and the Supreme Court.

The team that conducted the audit came up with interesting results. According to their findings, three courts dealing with the most serious justice cases did not follow the procedures of the ACCMIS. Instead of handling cases through an automated system, the procedures were done manually by court presidents themselves. This report was as shocking as it was expected. Especially, given that the judiciary was repeatedly criticized for being selective.

On the other hand, the Prosecution which was silent for years and closed its eyes to this incident, decided to wake up and act. It opened an investigation, while the Judicial Council started the procedure for possible dismissal of the people involved in this event.

If we look at this occurrence from the perspective of who was responsible for misusing the ACCMIS, though the same abuse was evident in the three courts, the Prosecution field charges only against the former president of the Skopje Criminal Court for manually distributing about 50 cases. Initially, he was dismissed from the judge position and later sentenced three years and six months in prison. In fact, he is the only person in North Macedonia who was sentenced for abusing the ACCMIS system. Another interesting fact is that while he was suspected of this case, the opposition VMRO-DPMNE party nominated him as a candidate for state prosecutor.

The prosecution did not consider evidence in the report of the Commission of the Ministry of Justice for Abuse of ACCMIS as serious. In 2019, the Judicial Council dismissed the President of the Supreme Court for unprofessional and negligent performance. However, this was not about the abuse of the ACCMIS, but for failing to detain a local businessman in the case "Trust" of the former SPO.

Judge and former acting president of the Skopje Criminal Court, who was dismissed from the position of judge in January 2021, is also responsible for the abuse of ACCMIS. So far there is no information that the Prosecution has opened any proceedings against her.

The Ministry of Justice continues with the controls of the ACCMIS system. Since the reported irregularities in 2017, there is no information, nor evidence, of additional abuse. In 2019, former Minister Renata Deskoska said that they made controls in 7 courts and the results showed that the automatic distribution of cases is being

done by the ACCMIS. However, this does not mean that monitorization should stop, especially due to past experiences. But also, to return the citizens' trust in the judicial system.

In the 2020 Report by the European Commission, it is stated that one of the main recommendations for the Judiciary and fundamental rights (Chapter 23) in 2021 should be to finalize and implement the human resources strategies for the judiciary and prosecution. Hence, improve the automated court case information system (ACCMIS) to ensure it is fully functional and reliable (European Commission, 2020, p. 17).

5.1.3. Customs Administration- North Macedonia

Another system that is used is called ASYCUDA. This is an even older system, and not as sophisticated as CDEPS. Still, EXIM is primarily utilized for various approvals, but can be used in harmony with the other systems.

„The Customs Administration is developing a new Customs Declarations and Excise Documents Processing System (CDEPS), which will ensure uninterrupted flow of information among all participants in the customs and excise procedures by interconnecting the national, external and common EU domain and the domain of other state agencies. The CDEPS can connect and communicate with the companies in two ways: directly through the web portal or via G2B communication by using web services. The first version of the system that is used for "system-to-system" communication with the CDEPS has been published. (Customs Administration, n.d.)

> **The human factor, for us, is a sort of a brake in the whole process. In the EU, the human factor in the customs decision-making is all but excluded.**

A major benefit of using alGOVrithms in this system is that cargos (vehicles) are not required to stop for customs procedures anymore. They continue to the loading/ unloading premises directly. Though certain businesses will gain automated approvals, custom officials have the authority to conduct additional investigations if needed. Besides certain economic entities gaining various automated approvals, the customs administration has the authority, always, to decide to investigate. In the past, the custom officer used to examine documents, then visually inspect vehicles, etc. This offered a lot of room for taking advantages out of the system, especially during the early '90s.

Harmonizing cross-border functions, especially with the EU, enables faster flow of goods and greater economic benefits for businesses. At the same, the goal is to avoid delays, embezzlement, misuse possibilities etc. Another major benefit is the increased access to documents for all state executive and regulatory bodies- if needed. This accelerates the processing of various approvals and supports the shift towards digitalization of different inspecting services. The physical control is performed by the competent inspectorate (Inspectorate for food safety, etc.) and approved by EXIM. Customs is still obliged to keep paper as evidence for the PRO (Public Revenue Office).

5.1.4. Kosovo Customs alGOVrithm: ASYCUDA- Kosovo

ASYCUDA is a digital management system used by Kosovo Customs to manage internal processes and procedures. This program is developed by UNCTAD and is used to handle import, export, and transit activities.

As part of ASYCUDA, Kosovo Customs uses an alGOVrithm to allocate incoming cases to the custom officers. This is done based on the workload of officers and the number of pending cases. Initially, the alGOVrithm was developed to minimize the likelihood for corruption and misuse practices. As soon as new arriving goods are registered, the system automatically examines the workload of each custom officer and allocates new tasks based on their availability. As most cases are finished within a matter of hour/s after registration, allocation is a dynamic process and alGOVrithm decisions cannot be easily anticipated.

Since implementation, this system was used to measure the Customs staff performance as well. This is because ASYCUDA increases internal process transparency and enables management to monitor case progress in real-time. It also offers the opportunity to create staff reports and evaluate the performance of each officer.

As of now, this study did not find any internal legislation or guideline regulating this alGOVrithm. Also, there are no designated bodies where affected parties can file complaints regarding unfair or biased alGOVrithmic decisions. The accuracy of the alGOVrithm is taken for granted. However, ASYCUDA complies with internationally accepted standards developed by UN and ISO. Hence, there are initial discussions at the Kosovo Customs to start developing an internal guideline to regulate such systems soon.

ASYCUDA is a border platform offered by UNCTAD to countries around the world. The alGOVrithm used to allocate cases to the custom officers existed before but was adopted in-house by the ICT division. Hence, UNCTAD allows countries around the world to share e-solutions and successful practices in the customs domain.

Data-ownership and system maintenance remain a responsibility of the local authorities. They supervise the system on a technical and legal level as well. In the case of Kosovo Customs, they can make different changes and adjust the alGOVrithm according to their needs. However,

5.2 Fraud Detection alGOVrithms

5.2.1 alGOVrithms of the National Tax Authority- Hungary

We have approached the National Tax Authority via freedom of information requests. Unfortunately, their answer was rather concise, and our efforts to conduct desk research in order to obtain supplementary information on their alGOVrithm ran into a dead end.

However, we learned from the answer of the tax authority that they have been using various alGOVrithms for selecting inspections or other measures, or as a pre-screening (risk analysis) in case of:

- Tax and custom declarations for 10 years

- Declarations related to Electronic Trade and Transport Control System, or the movement of   excisable products for 5 years.

- Taxpayer data services (in case of online invoicing data services) for 2 years.

The laconic answer of the tax authority states that there have been both external and internal IT-developments (they have not precisely set which of the above-mentioned alGOVrithms were created by internal or external developers), but they reassured us that there had been internal quality controls, audit and more. According to them, the procurement documents are classified for national security reasons.

Though it is evident from procurement documents which companies have supplied the electronic deceleration and online invoicing system, it remains

unclear how these data are forwarded, managed, and connected to each other. Some documents also suggested that the authority also requested the procurement of an integrated network analysis - data-mining software to increase anti-money laundering capacities.

5.2.2. Tax Administration of Kosovo alGOVrithm- Kosovo

Since 2015, the Tax Administration of Kosovo (TAK) has used an alGOVrithm to conduct the Analysis of Risk and identify cases for inspection. This system is used by one unit at the TAK, where the inspection plan for all regions of Kosovo is prepared. Once the system identifies cases that pose a higher risk for tax-fraud, it then allocates the inspecting responsibility to the regional TAK units. For now, over 70% of the inspection cases are identified and organized in this way. In addition, TAK also uses complementary alGOVrithm to allocate specific cases to inspectors as well. However, the latter is still under development and not fully functional yet.

The current alGOVrithm used by TAK to conduct Risk Analysis is developed in-house and has been upgraded twice so far. This approach to developing ICT systems is considered more effective by TAK authorities, as it avoids difficulties they faced in the past with software developed from third parties. Moreover, given the sensitive nature of their work, TAK maintains ICT systems on their own and stores data at TAK servers as well.

Even so, external donors played a role in developing this alGOVrithm too. USAID supported TAK with tax experts, who engaged in developing the necessary parameters and methodology to conduct Risk Analysis in the first version of the alGOVrithm. Since then, these parameters have been evaluated and complemented every year and their number increased from 20-30 parameters, to approximately 150+ now.

This study did not find any specific law or auditing procedure to regulate and measure the accuracy of the alGOVrithm. For now, there are standard operating procedures in use at TAK, but they are not developed particularly for systems using alGOVrithms.

Before the adoption of the ICT systems, it is a common practice at TAK to ask for authorization from relevant managerial levels. Once this approval is granted, systems are put in use and institutionalized within the relevant department. In the case of the alGOVrithm used to conduct Risk Analysis, its use is closed and restricted to the one department in charge for planning the inspections.

The alGOVrithm used to conduct Risk Analysis is not open-source and cannot be accessed by external actors. This happens under the justification that TAK work is sensitive and their operations cannot always be open to the public. However, the alGOVrithm itself has been transferred to another country in the Western Balkans and adopted as a successful practice by organizations like TAK.

Lastly, this study did not find any public information about the implications of this alGOVrithm on its target groups- namely businesses. Even so, fraud is predominantly forecasted automatically and based on different financial risks and tax-payers behavior. Therefore, neither citizens nor TAK personnel using this alGOVrithm does not have insights or influence in these operations.

5.2.3. Fraud Detection alGOVrithm (Covid-19 Support) - Poland

alGOVrithm of fraud prevention (antifraud), consists in automatic verification of statements submitted in applications, mainly financial data from National Tax Administration and The Social Insurance Institution databases. Additionally, some irregularities are analyzed, e.g. too high amounts in relation to the number of employees. Among

other things the alGOVrithm analyzes the criterion of a decline in turnover. It must be directly related to the pandemic and not, for example, to a failed business plan or a failed investment.

The alGOVrithm will also examine what the subsidy money was spent on. - The rule is that financial subsidy money can only be used to pay for business expenses. The above mentioned information are the only available sources **describing the system and were shared with the press** by the Polish Development Fund which is responsible for granting subsidies.

The more detailed information about the system remains secret. We have submitted the FOI request to the Central Anticorruption Bureau with following questions:

1. Who are the contractors for the fraud prevention alGOVrithms?

2. Who was the main contractor of the system?

3. If the contractor was an entity external to the institutions mentioned in the article (PFR, KAS, CBA), in what mode was it selected and by which of these entities?

4. If the contractor was an external entity, please make available the content of the contract for development of the system.

5. Please provide the costs of developing the system.

6. If yes, who and how does he/she check the correct operation of the system?

In response, the authority issued a decision refusing access to all the information, citing as the legal basis the relevant provisions of the Acts on Access to Public Information, on the Central Anti-Corruption Bureau and on the Protection of Classified Information. In the opinion of the authority, it is impossible to provide access to the requested information due to the fact that it constitutes classified information, and providing access to it will: hinder the performance of operational

and exploratory activities carried out in order to ensure national security or prosecution of perpetrators of crimes by services or institutions entitled to do so; significantly interfere with the functioning of law enforcement authorities and the administration of justice; hinder the performance of tasks by services or institutions responsible for protecting the security or fundamental interests of the Republic of Poland; hinder the performance of tasks by services or institutions responsible for protecting public order, security of citizens or prosecution of perpetrators of crimes and fiscal offences, as well as administration of justice. ePaństwo Foundation does not agree with such a decision and has submitted the complaint to the Regional Administrative Court in Warsaw and awaits the date of the hearing.

5.2.4. Anti-fraud System. Rubbish Collection in Świdnik and Other Cities-Poland

The alGOVrithm, which is supposed to search for irregularities in garbage declarations, was created as part of the government's **GovTech program**. In November 2018, the ordering parties announced their needs in the form of challenges, and already in December the participants admitted to the program started working on solutions. Swidnik selected RapidSoft in February this year. The city awarded a public contract to it in a sole-source procedure, which was a prize in the competition. Świdnik joined it as the only local government in the country. The application was designed to help find people who, although living in Świdnik, were not included in the waste declaration.

The system compares data of inhabitants, which come from databases maintained by various institutions. The application compiles information obtained from units subordinate to the Town Hall, such as the Registry Office, Municipal Social Assistance Center, nurseries, schools, kindergartens.

In 2019 the officials used the application for the first time and managed to find over 1300 people who hadn't been in the system before. Authorities have decided to share the software with other towns in the region. There are already few (including the city of Łęczna) which will implement the tool.

5.2.5. Selection alGOVrithm of the Directorate General for Audit of European Funds (EUTAF)- Hungary

We have approached the Directorate General for Audit of European Funds (Európai Támogatásokat Auditáló Főigazgatóság (EUTAF) through freedom of information requests. This is the main authority responsible to perform ex-post checks on EU funded grants and programs. Since this activity commonly involves processing huge amounts of financial and other types of data, we assumed that they have implemented pre-screening or red-flagging analytics. In their answer they provided a detailed answer and they have reported that they use a selection and evaluation alGOVrithm defined in the EU-Guidance EGESIF-16-0014-01. In most cases, they use the monetary unit sampling (MUS) method, which is a randomized statistical method; meaning that the DG does not use pre-screening or pre-selecting or analytics. Statistical sampling is carried out with the Caseware IDEA software, which has been in use for more than a decade.

5.3. Home Quarantine (Covid-19) alGOVrithms

5.3.1. Home Quarantine app- Hungary

In early May 2020, a Government Decree has allowed the use of electronic control for home quarantine. The application was already at the disposal of the Hungarian State. The story of the development is slightly different from the normal way of planning and procuring alGOVrithms. According to a very detailed article[2] on this subject, it was in fact the developer company, Asura Technologies, who approached the government with the idea of the Home Quarantine App. Asura is a Hungarian company with experience facial recognition and GPS-location technologies. Just after the first introduction of the quarantine in March, they came up with a proposal to the Operational Group (OG)- the main body responsible to manage the covid-19 pandemic. As OG seemed open about this idea, Asura Technologies also collaborated with other relevant organizations and gained access to the necessary databases- (IdomSoft, a major database-managing state IT-enterprise, the National Infocommunications Service Provider (NISZ), which operates the server infrastructure, and the State Health Care Center (ÁEEK), which contributes to health developments) and started to develop the app, which took no more than 5 weeks from the very first idea to the product. The National Institute for Cyber Defense executed a security audit of the app. Though all personal data remains with the state and Asura has no access to them (they just establish a connection between them), the app itself is operated by the developer company.

The company has offered the license to this product free of charge for the Hungarian State. Most probably, this was the main reason behind their selection for developing this app. In the interviews we had, we learned that there were other competing companies also interested in developing the same app for the government.

The app is indeed quite complex- it does not track GPS-location continuously, but users are required to upload pictures/selfies of themselves upon request, in randomized intervals. The app is also connected to the electronic health service database.

The use of the app is voluntary; however, the relevant decree encourages its use as the fines for infringement of quarantine rules are lower if one agrees to use the app.

Through the second wave of the coronavirus pandemic there has been a steady delay in the issuance of quarantine decisions, which meant that people were often officially informed about the decision after they had been released, this, together with the fact that the app was only available for adult Hungarian citizens (regardless of the fact if one had permanent residency in Hungary) who owned Hungarian mobile numbers, the app probably didn't become as prevalent as it was planned be - and, some people were reluctant to send selfies to the government.

[Note that the government has also ordered a contact-research app, Virus Radar, which was developed and donated by the North Macedonian company, Nextsense.

5.3.2. Home Quarantine- Poland

The solution, which was created by a startup TakeTask and the Ministry of Digital Affairs enables, using face and location coordinate verification technology, to remotely confirm the presence of a person in a declared quarantine facility. Additionally, the application contains other in-built applications:

- Service of sending a form with a request to a social assistance center (meal, groceries, psychological help, contact),

- A service for accessing messages informing about the current situation regarding the SARS-CoV-2 coronavirus,

- A direct contact service to quarantined users,

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2   https://index.hu/techtud/2020/06/03/koronavirus_jarvany_hazi_karanten_rendszer_hkr_app_alkalmazas_asura/

- A telephone number correction service available to users whose telephone number is also assigned to others in quarantine.

The application is compulsory for a certain category of citizens and has **legal grounds in the Act on special solutions related to preventing, counteracting and combating COVID-19, other infectious diseases and crisis situations caused by them**.

A person who is subject to mandatory quarantine due to suspected infection with the SARS-CoV-2 virus shall install software made available by the minister responsible for information technology (namely Ministry of Digital Affairs, since November 2020 is operating as a department in the Chancellery of the Prime Minister) on his or her mobile device for confirming compliance with the quarantine obligation and use it to confirm compliance with the obligation. The obligation to install and use the software does not apply to a visually impaired person (blind or visually impaired), a person who has declared that he or she is not a subscriber or user of the telecommunications network or does not have a mobile device that enables the installation of this software. The declaration shall be made under the pain of criminal liability for making a false declaration.

According to the terms of use in order to properly and fully use the Application, the user should have at his/her disposal a mobile device with Android 6.0 or higher with access to the Google Play store or iOS version no less than 10.3 with access to the AppStore, a GPS module and with access to the Internet, equipped with a camera with a minimum resolution of 5Mpix and with video recording capabilities.

In order for the Application to function correctly, the initial task "Quarantine full information" must be performed at the location which the User indicated as the quarantine facility. The cyclical verification of the quarantine period consists of the following actions:

1. Confirmation of staying in the declared location. During this task the GPS location is automatically checked,

2. Taking a "selfie" photo at the declared location,

3. completing the task.

4. The service referred to in clause 3 should be completed within 20 minutes of receiving a notification with information that a new task has appeared in the Application.

The scope of personal data processed in the performance of the Services available in the Application regarding quarantined persons: 1)Citizen ID - the technical identifier of the Citizen; 2)First Name; 3) Last Name; 4)Phone Number; 5)Declared Residence Address; 6)Photo; 7)Location of the Citizen (including the declared location of quarantine and the location determined by the system at the time of the verification task); 8)End Date of Quarantine;

According to the **information from the media** "For three days, the National Security Agency and TakeTask, were adjusting and testing it for security."

5.3.3. Crowd Recognition System in Gdynia- Poland

Using alGOVrithms for analyzing different factors is quite popular worldwide. Yet another example is the city of Gdynia, which - according to the information **in the media**, has used self-learning alGOVrithms as part of city monitoring to detect clusters of people and check whether the residents obey the ban on assembly. The system was created by the Polish company Toolpoox which placed some of the **information on a github** and describes the system as an application detecting gatherings of people on images. It's goal is to help fight against COVID-19 by pinpointing the most crowded spots. It was created while participating in **https://www.hackcrisis.com/** hackathon. According to the information on the **official city portal**, in total, there are 138 city surveillance cameras in Gdynia, 18 of which are currently used for detecting

gatherings of people. The cameras transmit images to computers equipped with image analysis software, i.e. crowd detection trigger, which is responsible for generating alarm when a group of people appears in a designated place. The alarm allows for quick intervention in case of a threat.

The monitoring program has preloaded scenarios that additionally analyze traffic and places where there are concentrations of people. According to the official information, some special places are eliminated due to their function, e.g. bus stops. The collected information allows to make decisions concerning clusters and to send appropriate forces and resources to make sound announcements. Due to the use of machine learning alGOVrithms, the system allows to determine the most important clusters in a unit of time.

However it seems that the system was not finally implemented in the city. In the response for a FOI request, the city of Gdynia representatives has replied that "In the monitoring system we do not use Visual Crowd Detector application. This is the domain of mounted FullHD cameras from Bosch, which have built-in video analytics."

5.4. Intelligent Monitoring/Surveillance alGOVrithms

5.4.1. Speed Measurement by Municipal Police- Czechia

Although there are several towns using alGOVrithms to measure the speed of cars, we focus on the case of Municipal police in Prague, which is the greatest user of this method. Other cities use similar practices, although not necessarily the same method (e.g., Brno, the second biggest city in the Czech Republic, does not use such alGOVrithms to measure speed).

The automatic system of speed measurement in Prague consists of over 60 devices measuring the speed. More than 40 of the devices are section measurements (calculating the speed of cars between

two points - using induction loops on the road) and the other 20 devices measure the speed directly (radar-based cameras). In two systems, photos and plate recognition are done automatically.

There are around 300,000 fines taken every year using the data perceived. The vehicle owners get a 600 CZK (25 €) fine if the speed exceeds the limit for less than 20 km/h and a fine of 1000 CZK (40 €) if the speed is between 20 to 40 km/h over the limit. For cases when the speed is more than 40 km/h over the limit, decision is made on individual bases. All decisions regarding fines are reviewed by humans (namely, a member of the Municipal police).

The state police are allowed by law to measure the speed (Road Traffic Act (361/2000). They also hold the authority to permit the speed measurement devices for the local police. The latter identifies the locations and publishes information about the place where the speed measurement devices will take place. The devices are owned by the city of Prague and managed by the Technical Management of Roads - a state-owned company by the city of Prague.

The speed measurement devices are supplied by a company called Camera and they are verified by a body state-licenced body to do such verifications. The alGOVrithms are also produced by the same company that provides the speed measuring devices. This process went through regular procurement procedures. However, alGOVrithms were not mentioned in the contract. New additions or supplements were ordered directly from the same company (Camera). The contracts are publicly available (just as required by law) and the servers for this system are owned by the Technical Management of Roads.

The alGOVrithms used in this program do not do random selection as speed is measured for all the vehicles. This system is described on the webpage, but there are not many details provided. The description of similar systems by other municipalities are more comprehensive. The external producer of the system, Camera, is responsible

to maintain the system as well, though through additional contracts. Hence, this company also offers training to the staff operating the system.

Code is owned by the producer and is not open or online. Changes in the system are not possible without cooperation between the user and producer of the system. The trustworthiness of the system for the Municipal police and the people affected relies on the verification of the devices as required by the law. However, we did not identify established ethical standards in place. Also, there are no explanations for citizens/drivers about the process through which the alGOVrithm makes the decisions.

In general, there are no verified problems with the fairness of the system. However, there were a couple of media reports laying claims that some local politicians were whitelisted in the system and are immune to the measuring devices. However, the system itself was challenged several times at court. The latter concluded that, among others, municipal police cannot measure the speed in the territory of different municipalities and measurements cannot be done by the staff of any external company. Moreover, there were several particular decisions regarding concrete measures that led to dropping the cases in the court (e.g. more cars on the photo, cars hidden by a tree, etc.).

5.4.2. The Véda-KAFIR-ROBOTZSARU ('Robocop') System Operated by the Police- Hungary

Véda is an intelligent road traffic camera system, which provides data to KAFIR (Közlekedésbiztonsági Automatizált Feldolgozó és Információs Rendszer - Traffic Safety Automated Processing and Information System). Together with the solutions provided by Robotzsaru ('Robocop'), an integrated administration, case processing and electronic records management system, basically the main software of the police, fines for road traffic violations are almost automatic.

The system was set up under an EU program between 2012-2015 and it consists of 365 fixed and 160 mobile intelligent cameras. The cameras record the registration number, speed of the vehicle, the coordinates of the location, the date and time of the event. This data is transferred to the KAFIR, which cross-checks data with the traffic registry (e.g., if the vehicle is stolen) and uploads everything together in the Robotzsaru IT system. The generated files are then classified and transmitted to the responsible authority. Up to this point, there is no possibility for human interference. Possible infringements are punishable under no-fault liability and the data is unquestionable, even if the decision is made automatically. However, there is an ex-post check by the administrator.

On car-related websites, there are several reported cases where drivers were fined for violations that are physically impossible to commit. In most of these cases, drivers paid their fines and did not complain further.

Unfortunately, as the system handles violations where human decision is also required, the Police interpreted the FOI we sent as if it was for the cases where decisions are fully automatic. In this context, we were told that this system is supported by automatization and it does not fall within the scope of our research.
While procurement documents and excerpts of the contracts are available, little can we learn from them about troubleshooting and auditing.

5.4.3. Ministry of Interior- North Macedonia

Monitoring citizens, busy intersections, public spaces, highways etc. is a common practice by the police. There are various cases where public officials misused their authority and access to these technologies. Yet, these actions are commonly justified under the excuse that this is the price that we must all pay for greater safety and security.

Therefore, introducing alGOVrithms in law enforcement, despite many proven benefits, also has adverse effects as well. One of the most evident cases is when software replaces traditional police officers and alGOVrithms decide when, how and for whom the fines will be imposed.

Though the notion of separating human subjectivity (avoiding possible bribing, lack of attention, human errors etc.) from decision making is very convenient and has its merit, it is also necessary to consider opposing arguments as well.

As with most institutions falling within our scope, the Ministry of Interior, which is responsible for all matters of law-enforcement, did not respond to the queries sent as part of this report. One can speculate as to the reasons behind the lack of response, but one thing that this silence cements is the lack of transparency and openness among public institutions and law enforcement officials in North Macedonia. For decades, police and the ministry in general have been steeped in different scandals, abuse of power, bribes, and excessive use of force. Therefore, media, journalists and even CSOs have had their fair-share of police-at-work stories to tell.

Yet, it would be nonchalant to not suspect fair use of certain alGOVrithms by the law enforcement. Regardless of their silent treatment, they are included in the following section of this report.

**Mass Biometric Surveillance –
Skopje Safe City**

In February 2020, a new Law on Personal Data Protection was adopted in North Macedonia. This law is in full compliance with the GDPR. From a normative point of view, this shows that the EU is an example to follow and its standards are adopted at a national level. However, there are several sectoral laws which are not fully compliant to the data protection regulations, nor to the GDPR. Laws regulating public safety and police proceedings are among them. As part of this study, we highlight the need

for further modifications and compliance with the GDPR and Police Directive.

Announced in May 2012, Skopje Safe City project aims to increase traffic and public safety in some of the most frequent streets, boulevards, bridges, entrance and exit of the City of Skopje. To meet the minimum legal requirements, this law was amended, and new provision was introduced defining that video systems will be used. This, of course, created a legal basis for introducing the method but did not answer several technical questions, such as what exactly will be part of the recordings, how the materials will be distributed to the person who committed violation and who can access biometric data. Bearing in mind that a part of this data will be processed for criminal proceedings, Police Directive will have to be transposed in the national legislation in a timely manner.

Controversies arise from unclear information that circulates. Back in 2012, it was announced that 100 cameras will be installed in some of the most frequent streets, boulevards, bridges, entrances and exits of the City of Skopje. Few years later, without any analysis or justification presented, it was announced that 652 cameras are actively used in Skopje and Tetovo. At first, it was planned that the system will be managed by the Surveillance Center within the Ministry of Interior. As of this moment, this center supervises 600 cameras, while the other 52 cameras are supervised by the Center for Traffic Management. This leads to one debate- based on what legal grounds are other institutions, other than the Ministry of Interior, put in charge of this complex process. Apart from the cameras installed on the above-mentioned places, video surveillance can be performed by special police vehicles equipped with cameras.

The great concern derives from Article 13 of the GDPR- regarding the information to be provided when data is collected from the subjects. On that note, we highlight the need to urgently address the following questions:

- What exactly is being recorded and how the recorded materials are distributed to the violator/s?

- Who has access to the biometric data, on what legal bases and which institution/s are in charge to manage the system?

- How and where can citizens get their information and how can they exercise their legal rights?

- Apart from the traffic safety, what are other crimes that are to be detected though this system?

- How are the cameras going to be marked (especially those in the special vehicles)?

Resistance against biometric mass surveillance in European public spaces is growing fast. We can either make Orwellian fiction reality or continue to advocate for improvements.

5.5. Professional and Career Advising alGOVrithms

5.5.1. alGOVrithms 'Supporting' Carrier Choices by the Education Office- Hungary

In October 2020, we learnt of another alGOVrithm from the news, that an online measuring tool had been compiled by the Education Office to support career choices. In 2020 all eighth graders (approx. 14 years old) were required by law to answer and complete the online questionnaire, by using their personalized educational identification number.

According to the description of the website, test responses and their evaluation is only visible by the student, but the Education Office (together with previous result of competence measuring tests) might use results for statistical purposes. In this sense the system -- now -- is not yet suitable for automated decision-making, but this area may gain significance as supporting personalized career choices is also highlighted in Hungary's AI Strategy. According to news reports the online career choice test directs eight-graders to vocational training -- in line with the

government's industrial development strategy.

That is why we have approached the Education Office, and we have obtained the parameter table of the questionnaire -- after its examination it turned out that the biases were hardly systematic, they rather stemmed from the simplicity of the alGOVrithm. Though, according to the Education Office's answer they will re-evaluate the table each year.

5.5.2. Busulla.com alGOVrithm- Kosovo

Busulla.com is a platform that offers personalized and digital career advice for students in Kosovo. Using a framework of five modules, Busulla.com identifies student's main interests, values, skills, and preferences, suggests costumed career paths, offers information on corresponding education institutions, connects students with different occupational opportunities and offers remote counselling. This cycle of services is offered through an interactive process of questions and answers, where students undergo personality and potential examinations. Based on their response, the platform offers tailored career guidance and additional tools for educators and policymakers to align curriculum with labor market demand.

Per se, Busulla.com is developed because of a public-private partnership, is embraced by the Ministry of Education, Science and Technology, and integrated within the national learning curricula. A private firm designed, developed, updates and sustains the platform, while students and educators can use it. All the services offered by Busulla.com are free for students and educators, as schools pay an annual subscription fee. The role of Busulla.com increases when students have career choices before them, and they need to decide the path they want to pursue. That is why, the developing firm also offers training to educators regarding different aspects and functions of the platform, career guiding, existing theories in the field etc.

Though the platform was created with the support of an external donor and embraced by relevant public authorities, the firm that developed Busulla.com enjoys full ownership rights. That is why, they have reserved access to the source-code, to oversee the system on functional and technical level and to adjust the alGOVrithm according to the needs. At the same, the source-code and the processes behind the five platform modules are considered an important business secret, given that this is something that distinguishes Busulla. com from its potential competitors. Hence, the data generated within the platform is locally stored at the organization's servers. Nevertheless, they have introduced strict privacy rules and non-commercial policies as most of the users are young persons.

At present, this study did not identify any relevant national law or regulation that oversees the functionality and operations of similar alGOVrithms in Kosovo. Hence, there is no legislation in place to urge private firms to publish the source-code for alGOVrithms that serve as official platforms for public institutions as well.

The firm that developed Busulla.com performs auditing inspections for quality-assurance and internal purposes- to ensure that the platform functions appropriately and standards required by educational institutions are updated accordingly. Yet, besides directly contacting the developing firm there are no independent bodies or public entities where users can make a complaint if they want to contest the accuracy/correctness of such alGOVrithms.

5.6. Other Cases of alGOVrithms

5.6.1. Quality Control- Czechia

There are many areas where quality control is required by law in Czechia. These include industries (food processing, automotive industry, nuclear industry, high-pressure cylinders, explosives, etc.), laboratories (health, chemistry), construction, presidential elections, as well as others.

Statistical quality control, in short, requires random sampling and if the given conditions are met, the results from the samples may be used for the whole "population" (a batch, etc.). The conditions depend on industry or a particular product. They may be stricter in the nuclear industry compared to, for example, oil production.

There is a special case of presidential elections, where there is non-standard quality control defined by the law.

The presidential candidates may choose two ways to qualify for the race. They either need to get the support of parliament members (20 representatives or 10 senators) or collect 50,000 signatures of eligible voters. In the second case, a statistical control conducted by the Ministry of Interior is essential to ensure that the signatures are provided by eligible voters. This method is like standard statistical quality control, even if it is not well designed to ensure the required results. However, an algorithm is used to randomly select two batches of 8,500 signatures.

The target of these alGOVrithms are presidential candidates and their supporters. Thanks to extensive analyses of the 2013 elections, two candidates were excluded because of this quality control. The third candidate was also excluded by the Ministry of Interior, but then she successfully challenged the decision in a court. The use of this alGOVrithm is overviewed by a public body, which is in charge to control the use of these methods.

The Law of Presidential Election (275/2012) describes the law on the alGOVrithms discussed in this section. While the developer and owner of the procedures and processes that are automatized through this alGOVrithm is the Ministry of Interior, the developer of the alGOVrithm is unknown. Moreover, the procedure is supervised by the employees of the Ministry of Interior, but the code of the alGOVrithm is not made publicly available. In this regard, this study did not identify any established ethical standards in place.

Hence, the decisions of the alGOVrithm are published and kept indefinitely by the Ministry of Interior and Czech Statistical Office (which is responsible for the data from the elections).

There were huge concerns during the 2013 elections, following the procedure applied by the Ministry of Interior about the randomness of selection of signatures to check. Independent research concluded that the procedure was not random. And that it most likely affected which candidates were able to run for presidency. The problem was that the Ministry of Interior first selected random sheets with signatures as the first step and took all the signatures from the selected sheet. Which does not lead to a proper random selection. However, the last resort, the court, decided that the procedure was good enough.

5.6.2. Decision on the Maternity Benefit TÉBA - The Family Support Scheme of the Hungarian State Treasury- Hungary

Only a few months before the change in government in 2010, the implementation of a major EU-funded IT development had started in the Ministry of Finance: the goal of the TÉBA - (Modernisation of Family Assistance Disbursement) system was to integrate or guarantee access to different databases to unify the management of individual family and disability allowances paid by the Hungarian State Treasury to the citizens. The main beneficiary of the project was the Governmental Agency for IT Development - and it was closed in 2013. We have approached the State Treasury about the automated decision supporting system, and while they interpreted our question narrowly, we learned that a 2017 amendment of the Govt. Decree 223/1998 provided that in case of electronically submitted maternity benefits requests, the Treasury should use automated decision-making procedures. We were told that the new alGOVrithm was implemented through the framework of a newer EU-grant supported larger IT-project started to extend the TÉBA System. The alGOVrithm (and the other

software developments) was procured in an open procedure, there were no bidders other than the winners. The alGOVrithm was approved professionally by the Family Support Department of the Hungarian State Treasury. As the solution is part of the TÉBA system, its operations are supervised and managed by the IT Department of the Treasury in terms of both application operation and development.

According to our desk research, the Treasury operates some other complex alGOVrithms, such as an ASP-system for local governments that aims to:

- Support local governments in the performance of their tasks and internal operation, the development and electronic development of organizations and processes, the improvement of efficiency, and the reduction of their costs,

- Monitor the management of local governments with modern tools and methods.

- Monitor the financing mechanisms of the local government subsystem.

- Provide access to electronic administration services for the population and businesses living in the affected areas on a single platform in certain municipal administration processes.

Another example is the KIRA system, which provides centralized payroll accounting for employees of state and municipal budget bodies (government officials, civil and public servants, foster parents, and other state employees). However, though the above-mentioned systems are suitable to perform statistical and (risk) analysis, they do not involve the narrowly interpreted automated-decision making.

5.6.3. IRIS - A Data Collecting and Pre-screening alGOVrithm of the National Media and Communication Authority-Hungary

We have sent a freedom of information request to the National Media and Communication Authority, knowing about the fact that they have operated an elaborate system, IRIS, that records and pre-process a uniquely large database of broadcasts (both radio and video) to identify possible violations. Surprisingly, the answer of the authority was negative, and they answered that the National Media and Communication Authority does not use automatic decision-making systems. However, we learned a few things about the IRIS system and its possible future development from the existing procurement documents and new reports. The system was developed in-house by the Authority staff, somewhere between 2010 and 2013. It is used to collect and record broadcasts and provide metadata to the Authority. he latest publicly available information is that it has data for more than 8 million programs in case of 141 radio and television channels and can analyze data from 1990. According to the procurement documents, the most interesting part about this system is the plan to vest the IRIS with new features and replace human decision-making with a high degree of automation in the following fields

- Track recognition

- Protection of minors (automatic age-rating of programmes)

- Measuring ad volume

- Measuring the media presence of public actors, real-time follow up on 'supported contents', product placements etc. (this part also refers to face recognition and building a face-database)

- Recognition of audio signals

- Program monitoring

- Advertising monitoring

The preliminary information on this procurement has been withdrawn by the Authority in December 2020, and we have no information on the possible implementation of the project.

5.6.4. Automatic Electronic Auction in Procurements- Hungary

Following the 2014 EU-directives on procurement, and the following national legal amendments, the use of a single electronic platform for basically all procurements and related communications became mandatory from 2018. In theory, it means that the whole procedure is electronized, bidders and contracting authorities can only share documents with each other via the EKR (Electronic Procurement)-system. While there are some safeguard functions in the system, e.g., one cannot submit a late bid, with a few exceptions, the introduction of the system is much more important from the perspective of eliminating an enormously large amount of paper, than from the complex use of alGOVrithms. Obviously, the EKR can generate real-time statistics (but it is not available for the public), and formal checks of announcements are automatic, but for the purpose of this study the relevant issue is that one of the development goals was to foster the use of electronic auctions. It is important to strike here, that the new EKR portal was not developed from the scratch, its elements have already existed for centralised procurements, the development was rather an expansion of the previous system - that is why rather few information is available on the IT-background of the EKR, besides that instead of the Procurement Authority, it is operated by a company owned by the Prime Minister's Office.

So, while the possibility of electronic auctions has been a feature of the procurement system since 2007, in the newly introduced EKR system it was developed as an individual, automatic function. Unfortunately, as of February 2021, no comprehensive statistics are available if electronic auctions became more widespread.

5.6.5. E-Procurement Bureau - North Macedonia

The Public Procurement Bureau was one of the very few institutions in North Macedonia that provided feedback for our research, and their efforts in transparency should be noted. The Bureau is under the jurisdiction of the Ministry of Finance, though nevertheless, answered the questionnaire sent, while the ministry itself did not. The following paragraphs reflect their answers in the questionnaire.

The Public Procurement Bureau develops and maintains the Electronic Public Procurement System enabling electronic trading between contracting authorities (suppliers) in the Republic of North Macedonia, domestic and foreign economic operators. The software generally automatically migrates the procedure to the next stage after each subsequent stage. The electronic public procurement system performs automatic ranking of bids, based on awarded points, automatic ranking after completed electronic auctions, automatic sending of notifications and notifications to the affected parties.

The system is continuously monitored by the Bureau as a competent institution, by application maintainers, users, and other stakeholders. The system operates in accordance with the provisions of the Rulebook on the manner of using the ESPP and the Law on Public Procurement. Moreover, it is designed in such a way that different users with different roles have different modules available and the results of the processes of the application are stored in accordance with the legal deadlines prescribed. At the same time security copies of the processes are stored.

The alGOVrithm is created in-house by the institution and the service provider provides detailed instructions for the operation of the processes and modules. The electronic public procurement system uses cloud solutions and is located on a cloud platform as well. Technical maintenance and monitoring of the platform are done externally. While the overall control of the functionality and compliance with the legal regulations is done by the Public Procurement Bureau.

The Public Procurement Bureau is the owner and has the source code of the application. For security reasons, only the Public Procurement Bureau and the application maintainer have access to the source code, which simultaneously has access to the software and servers. The software is not open source. According to the Law, alGOVrithms are not necessarily open or available to the public. Meaning the present alGOVrithm work is not transparent to the public or its users.

The control over the outcomes, functioning, processes and accuracy of the alGOVrithm is controlled by the Public Procurement Bureau. Based on the existing legislation, users can comment, complain, or point out possible mistakes.

The Public Procurement Bureau conducts procedures in a transparent manner, making the documentation available to the public, both in the planning and later procurement phases as well. There are no conditions in the agreement that refer to the "ethical" standards of the alGOVrithm, granting the designer the necessary power to make the rules and standards. Also, there is no external audit clause, but the institution conducts an external audit of the system.

6. FINAL CONCLUSIONS

There is no doubt that the future will witness a significant increase in the number of alGOVrithms. These technologies are being used to automate administrative processes, support public decision-making, increase internal efficiency, and improve the delivery of public services. Yet, this study highlights the need for increased attention in how alGOVrithms are designed, developed, adopted, and used by public sector organizations. Their dual nature became evident throughout this study as well. It was found that in different countries, similar alGOVrithms are used for opposing purposes. As a result, we emphasize the need for serious efforts to improve the general comprehension of these technologies by public managers, CSOs, businesses and citizens. Though, the current state of knowledge about alGOVrithms remains ambiguous and restricted to the organizations/ departments that developed and use these technologies.

This study explores a list of questions related to the identification and application of alGOVrithms by public organizations in Hungary, Czechia, Kosovo, North Macedonia, and Poland. Therefore, we identified six broader categories under which existing alGOVrithms can be grouped:

1. Allocation alGOVrithms

2. Fraud Detection alGOVrithms

3. Home Quarantine (Covid-19) alGOVrithms

4. Intelligent Monitoring/Survelliance alGOVrithms

5. Professional and Career Advising alGOVrithms

6. Other Cases of alGOVrithms

Differences in the number, pace, and level of development among countries were evident as well. Though there are many factors to consider in this context, we assume that such differences also reflect the general state of digitalization in the country as well. Existing alGOVrithms were mainly implemented to address problems (i.e., growing corruption, unfeasible workload etc.), improve internal efficiencies, improve the quality of public services and support automation of administrative processes and public services. In different countries, these technologies are labeled with different names- i.e., 'software', 'automation software', 'information systems' etc.

This study also identified a few initiatives to regulate alGOVrithms. Given the number of political and ethical issues that these technologies give rise to, we suggest that similar practices should be intensified and followed by all countries in this report as well. Since regulating alGOVrithms requires an extensive and domain-by-domain understanding of their implications, regulators need to expand their capacities and engage other stakeholders- i.e., CSOs, academia, businesses, and citizens.

Many of the concerns about alGOVrithms are also related to how and by whom these technologies are developed. Throughout this study, we identified three dominant practices: 1) alGOVrithms are developed in-house, 2) development of alGOVrithms is outsourced to external firms, 3) alGOVrithms are developed through a mixed approach (i.e., developers from both sides collaborate, developers from the private firm are placed at the premises of the public organization etc.). In closing, we identified a shared tendency to control the accuracy and fairness of alGOVrithms by public organizations. Yet, this is rarely done in a systematic and regulated manner. For this reason, we call for more internationally recognized standards and guidelines on how alGOVrithms should be controlled and audited to ensure equal and fair handling of all cases.

7. A WAY FORWARD: POLICY RECOMMENDATIONS

In order to ensure responsible usage of alGOVrithms and unleash their full potential in governance, we propose the following measures:

1 Establish a regulatory government body that overlooks the development, implementation and usage of alGOVrithms:

We propose that all partner-countries evaluate the use of alGOVrithms and start the process of creating new regular bodies within their governance systems. These public entities would be in charge to provide timely, accessible, and sufficient information about alGOVrithms to the local/national government bodies, media, CSOs, businesses and citizens in general. The same public entity should also have the mandate to monitor and audit existing alGOVrithms and provide annual reports on their usage, possible abuses and further policy recommendations.

2 Train civil servants with the necessary skills to monitor and audit alGOVrithms:

Having trained and skilled public officials is a prerequisite for the much-needed independent monitoring and auditing of alGOVrithms. We propose a comprehensive, continuous, and systematic training schedule for selected state employees and elected public officials. Not all civil servants should be included in these training programs. However, as time passes, these initial small groups can expand, and every institution using ICT should have at least a small team of two persons who have undergone trainings on alGOVrithms and AI.

3 Develop a legal framework to guide the development of trustworthy alGOVrithms and strengthen their transparency:

A clear guideline on what are trustworthy, ethical, and transparent alGOVrithms contributes to increase general understanding of these technologies. Hence, this guideline can serve as a common standard to develop, supervise, monitor, and evaluate new alGOVrithms as well. Moreover, transparent alGOVrithm procuring practices are also important to increase the interest of media, CSOs and academia to monitor this process, which does not necessarily involve code-auditing.

4 Create the necessary legal framework and incentivise CSOs and academia to engage in monitoring and regulating alGOVrithms:

Without a comprehensive and well-designed legal framework, it is very difficult to guide the use of alGOVrithms. By having a clear set of regulations in place, public institutions can acquire, supervise, and audit these technologies easier and make the process open for other interested parties as well- including media, CSOs, academia, businesses, and citizens.

At the same, public bodies should be more willing to collaborate and incentivize CSOs, academia and media to engage in this debate as well. The latter are yet lacking in terms of tools and capabilities to monitor alGOVrithms. For this reason, we propose a special capacity-building program that is open for all the interested parties and empowers different stakeholders with new skills and mechanisms that ensure responsible use and trustworthy alGOVrithms in the public sector.

5 Initiate public debates between policy-makers, CSOs, media, businesses and citizens to co-create lawful alGOVrithms that guarantee good-governance, human rights and democracy principles:

Initiating a broad debate on the use of alGOVrithms and AI in governance should become a priority for countries that are aspiring a prosperous future. This study suggests that an informed public will provide invaluable feedback and constructive ideas on how to shape the future of these technologies and guarantee the survival of good-governance, human rights, and democratic principles.

6 Create a national, high-level expert group on alGOVrithm and AI, comprised of legislative, CSO, business, and academia representatives, which will act as counsel to government bodies attempting to utilize ADMs:

While having the legal framework, and guidelines for institutions when it comes to procuring and auditing ADMs and algorithms, we believe that having a permanent body of expertise, which will include non-state actors, will drastically improve the understanding of ADMs in state employment. This body would have an advisory role: it would not bring about legislative change or vote of any kinds. Simply put, this expert group would serve at the disposal of parliament, or government, and will always be up to date with the latest development of AI implementation, algorithms, ML, NLP, etc. - especially when it comes to utilizing them on a large scale, such as a national use.

7 Incentivise the share of knowledge and exchange of good practices between government agencies on the responsible use of alGOVrithms:

So far, knowledge about alGOVrithms and AI usage has been exclusive and restricted to the specific agencies that developed and use these technologies. While progress is very slow and deficient, the pace at which these technologies evolve is increasingly growing. For this reason, we suggest that governments at the local and national level should take a proactive role and incentivize different knowledge-sharing practices. While this gives rise to good and successful practices, it also creates a learning culture among civil servants.

8 Develop national standards for procuring,supervising, and auditing of algovrithms:

We propose, in lieu of specific institutional or local-level standards when it comes to procuring, utilizing, supervising, and auditing of ADMs, a set of national standards to be maintained by the higher levels of government. These set of national ordinances would provide all interested stakeholders (including non-state stakeholders, like CSOs) future reference points when evaluating the justification, costs, auditing, and all related processes in terms of alGOVrithm and AI usage. Such standard should contain the obligation to include in the contract notices the scope of data which will be processed, the purpose of the tool, transparency obligations which are limiting the potential trade secret clauses making it possible to fully explain the way the tool will influence the rights and obligations of citizens.

Such standard would have to be broad enough to encompass all government levels, institutions, and agencies - and flexible enough in their wording, that when it comes to acquiring cutting edge software solutions, they would not act as a deterrent, but rather as a minimal expected guideline from which further, institution-based specifications and requirements could be made.

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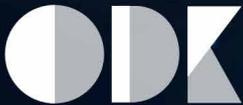
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