

# Automated Decision-Making in Public Sector

*Tina Sever<sup>1</sup>*

## Abstract

Firstly, we define some basic terms, such as artificial intelligence, algorithms, automated etc. Further, we define and explain automated decision-making. In the third chapter, danger of biases in such decision-making is discussed. Finally, the paper provides an analysis of different practices and tools among the EU member states and beyond in the field of introducing automated decision making in public sector activities. The paper finds the importance of ADM, which contributes to efficiency; however, it is still lacking unified and clear regulation in the selected analyzed countries.

**Keywords:** public services, automated decision-making, bias, artificial intelligence, algorithm, regulation

## 1. Introduction

As numerous human activities experience increasing automation, public sector entities such as administrative agencies are progressively relying on automated processes for their routine regulatory responsibilities. This brings critical questions: can the support on automated and algorithmic decision-making within government regulation and judgement be reconciled with existing legal frameworks and principles?

Automated Decision-Making (ADM) in the public sector can be defined as the use of data, machines and algorithms to support or replace human decision-making in public functions. ADM is applied in areas such as public service delivery, health and social care, law enforcement, urban planning, and environmental management, fraud detection, healthcare, child welfare, social services, and law enforcement (Cobbe, 2019; Roehl, 2022). ADM has shown several benefits like increased efficiency, cost savings, consistency and data-driven insights. However, risks, challenges and ethical concerns should be taken into account such as data privacy, algorithmic biases, and skills gaps. Best practices to implement ADM in the public sector can be stakeholder involvement, monitoring and evaluation, establishing guidelines, and prioritizing data quality. ADM has the potential to transform the public sector, but its deployment requires careful management to address concerns and ensure fair benefits.

In chapter 2 we define the term automation and basic terminology relevant for the theme, such as artificial intelligence, algorithm etc. An important issue discussed is bias related to ADM, in Chapter 3. In chapter 4, we present some examples of digital services and ADM in Slovenia, Estonia, Sweden and USA. Finally, short conclusions are drawn.

## 2. What is “automation” and what are the approaches

The paper analyses the level of “automation”. Is it solely procedural (formal) or providing substantive decision-making? For example in the USA, some courts use automated systems to assist with decision-making processes (ACLU Washington, 2021; Barysè & Sarel, 2023). However, there are many questions arising, such as how to ensure non-discrimination etc. It is of great importance on what algorithms is such decision-making based and, of course, who is the author of these algorithms, defining the content of them. Namely, the algorithm should enable unbiased decision-making, respecting the highest standards and values of society, human rights, morality, ethics etc. in order to enable legal certainty and fairness.

This paper provides answers to the following questions:

- Definition of automated decision-making;
- Scope of use (formal, substantive);
- Real examples in public sector and their range of use;
- Pros and cons of automated decision-making.

Different sources mention different definitions of terms “automated”, “automation”, “autonomy” etc. According to the Oxford Dictionary, “automation” refers to the employment of machines and computers to execute tasks that were formerly carried out by humans. Automation can be understood as a “device or system that accomplishes (partially or

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<sup>1</sup> Assistant Professor, Faculty of Public Administration, University of Ljubljana, Ljubljana, Slovenia.

fully) a function that was previously, or conceivably could be, carried out (partially or fully) by a human operator” (Parasuraman & Riley, 1997).

In the realm of jurisprudence, autonomy denotes the capacity to exercise self-governance. The word is a combination of Greek terms self (auto) and governance (nomos). It relates to the quality of self-directedness, or freedom from outside control. Human-machine systems concern a dynamic balance of self-sufficiency and self-directedness (Bradshaw et al., 2013).

Automation is developed to increase efficiency, safety, preciseness etc. It can have economic, environmental, social benefits as well as negative effects, such as influencing employment market by reducing need for certain profiles, cybersecurity issues, questions on liability for damages, danger of abusing personal data, losing competences to perform certain tasks. Complacency is often a side effect of automation, making users too much dependent on the systems and relying on them (Parasuraman & Manzey, 2010). Another phenomenon related to automation is automation bias, which results in making both omission and commission errors when decision aids are imperfect (Parasuraman & Manzey, 2010). We explain more on biases in Chapter 3.

## 2.1. Computational approaches for ADM systems

ADM is performed by algorithms, which collect, process, model and apply data from different sources (Araujo et al., 2020). In mathematics and computer science, an algorithm is a finite sequence of rigorous instructions. There are different types of algorithms. The most simple, predictable, are deterministic algorithms that will produce the same output with certain input, based on the same process or sequence (Zapušek, 2017). This type of algorithm does not allow robots to form new structures or unforeseeable results. Behind robot’s action is always a human (typically a software engineer), taking responsibility for mistakes (Zapušek, 2017).

Not all problems can be solved by deterministic algorithms. Non-deterministic approaches can produce different outputs for the same input data, even when executed multiple times under identical conditions. With this approach, even a problem, for which the programmer does not know which algorithm is needed to find a solution, can be solved (Zapušek, 2017).

Often, non-deterministic algorithms are the base for approaches defined as “artificial intelligence” (AI). Information Commissioner’s Office and Alan Turing Institute (Information Commissioner’s Officer & Alan Turing Institute, 2022) define AI as “an umbrella term for a range of technologies and approaches that often attempt to mimic human thought to solve complex tasks.”

A detailed definition of AI is beyond the scope of this paper, but as a concise description, we report a section from the Proposal for a regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (artificial intelligence act) and amending certain union legislative acts (European Commission, 2021) “*AI systems means software [...] that can, for a given set of human-defined objectives, generate outputs such as content, predictions, recommendations, or decisions influencing the environments they interact with.*”

“ARTIFICIAL INTELLIGENCE TECHNIQUES AND APPROACHES [...]

(a) *Machine learning approaches, including supervised, unsupervised and reinforcement learning, using a wide variety of methods including deep learning;*

(b) *Logic- and knowledge-based approaches, including knowledge representation, inductive (logic) programming, knowledge bases, inference and deductive engines, (symbolic) reasoning and expert systems;*

(c) *Statistical approaches, Bayesian estimation, search and optimization methods.*”

The most used AI approaches for ADM are probabilistic decision-making. In this case, the algorithm makes decisions based on the likelihood or probability of certain outcomes, rather than following a fixed set of rules. This allow having a solution even with a limited amount of data, but the solution contains some uncertainty, that can be minimized but not eliminated.

## 2.2. Human involvement

Based on different algorithms we can also distinguish different ADM. It can be just a support system for humans to make a final decision or it can be done without any human involvement. The EU General Data Protection Regulation (Article 22 of (GDPR, 2016)) which allows ADM does not allow only fully automated decision-making. However, systems, which draw up the basis for human decisions and give recommendations, may still be used (Dreyer & Schulz, 2019). Furthermore, we can distinguish augmented intelligence, which improves human intelligence, gives assistance to human decisions, but does not replace human intelligence. Such approach is typical in health care (Crigger & Khoury, 2019). ADM can also take a form of shared decision making (Larus et al., 2018) or the whole process of making a decision on behalf of human or organization can be fully automated (Araujo et al., 2020).

ADM can be both formal and substantive, depending on how it is implemented and used. Formal ADM refers to the use of algorithms or other computational methods to make decisions based on predefined rules or criteria. In this case, the decision making process is entirely automated and does not involve human judgment or discretion.

On the other hand, substantive ADM involves using algorithms or other computational methods to support or augment human decision making. In this case, the decision making process still involves human judgment, but the automated system provides additional information or recommendations to inform the decision.

Both formal and substantive ADM can be used in the public sector, and both come with potential benefits and challenges. Formal ADM can increase efficiency and consistency, but it can also be prone to algorithmic bias and may not take into account the nuances of individual cases. Substantive ADM can support human decision-making and lead to better outcomes, but it may also be subject to the biases and limitations of the humans who design and use it.

Ultimately, the effectiveness of ADM in the public sector will depend on how it is implemented and used. It is important to consider carefully the potential benefits and risks of this approach and to ensure that appropriate safeguards are in place to mitigate the risks and protect individual rights.

A purely AI-focused approach is insufficient to address the intricate challenges that stem from the practical application of artificial intelligence. Therefore, AI should be human centric, meaning it should strengthen, extend and improve human behavior by the use of technologies. It should not threaten people, but qualify them through design choices that give people power over the technology (Shneiderman, 2022). Humans should be placed at the center of the discussion about AI since humans are the actors and the subjects of the decisions made through algorithmic means (Lepri et al., 2021). The following conditions should be fulfilled to reach human-centric AI: privacy and data ownership; transparency and accountability; and fairness in AI-driven decision-making processes (Lepri et al., 2021). Such approach is important to bring higher level of acceptance of AI among the people. Furthermore, higher impact of AI can be expected by introducing technology that serves human needs. Finally, human centered AI is ground to respect human rights, justice and dignity (Shneiderman, 2022).

Proposal for a regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (artificial intelligence act) and amending certain union legislative acts (European Commission, 2021) forms four different levels risks of specific uses of artificial intelligence: unacceptable risk, high risk, limited risk, and minimal risk. Systems creating an unacceptable risk, such as government-run social scoring, are prohibited. High-risk applications, such as a CV-scanning tool that ranks job applicants, are subject to specific legal requirements. Applications not explicitly prohibited or listed as high-risk are mostly left unregulated (The Artificial Intelligence Act, 2023). Furthermore, the Council of Europe prepares important guidelines for the European space (see *Recommendation CM/Rec(2020)1 of the Committee of Ministers to Member States on the Human Rights Impacts of Algorithmic Systems*, 2020).

## 3. Automated decision making and the danger of bias

While ADM can be beneficial, it also comes with potential risks and ethical concerns. Some of these issues are the risk of algorithmic bias, the potential for privacy violations, and the impact on individual rights.

To mitigate some of the risks associated with automated decision making, it is essential to ensure transparency and accountability. This can be achieved through algorithmic auditing and the establishment of oversight bodies.

Furthermore, we need sound regulation that enables development and application of algorithms or AI that are put to good use to society and individuals. On the other hand, these individuals should not be jeopardized by these systems (e. g. no discrimination, undermining of the principles of rule of law, manipulation of decision making etc.) (Thouvenin et al., 2021). Regulation can have different approaches. An interesting idea is put forward by (Thouvenin et al., 2021), who suggest that the regulation should not be general (e.g. general AI law), but rather a combination of general and sector-specific nature. In addition, existing laws can be amended in such a way to be applicable also to new technologies. Finally, the approach should be technology-neutral, not focusing on certain particular technology, but applicable to any technology. Except when needed, sector specific rules would apply (Thouvenin et al., 2021).

Since, the AI systems can manipulate individual's thoughts and actions, discriminate etc. it is important for the person dealing with such systems that she or he is informed about it (Thouvenin et al., 2021). It should be clearly stated that algorithmic systems are applied. Individuals should be able to understand the decision. This means that they understand the logic upon which the decision is based (which data were used and upon which criteria the decision was made). Furthermore, the individual needs to be able to acquire the information needed to dispute the decision. Importantly, the information are easily reachable and comprehensible to laypersons (Thouvenin et al., 2021). The register of areas in which public administration uses algorithmic systems should be established (Thouvenin et al., 2021). Of course, as it is relevant in democratic systems, it should be clearly stated the type and source of processed data, legal ground, purpose and tools to process data, responsible body, which logic is applied by the system and who created the system (Thouvenin et al., 2021).

Danger with algorithmic systems is discrimination (see Resolution 2343 of Council of Europe on Preventing discrimination caused by the use of artificial intelligence) (Council of Europe, Parliamentary Assembly, 2020). The latter can happen due to different reasons. For example, people are treated differently based on protected elements (e.g. gender, race, origin, religion, age etc.) without objectified reason (Resolution 2343, point 4). The algorithmic system can apply such protected elements, which leads directly or indirectly to discrimination. Alternatively, the data put into the algorithm produce bias (Thouvenin et al., 2021). Namely, the quality of automated decision depends on the quality of the data we put in, which was done by a human. Through the automated decision a prejudice, discrimination already existing in society is reproduced. Rules on discrimination should be applicable to all situations, regardless of who made the decision, human or algorithm (Thouvenin et al., 2021).

Finally, which elements are taken into account and weight given to the elements by an algorithm is many times unknown (maybe even by the developers of the algorithm or when they do have this information, they have no interest to share it since they understand it as their intellectual property). Such lack of transparency is called "black box" syndrome, which makes it very difficult for individuals to dispute such decision (Lacroix, C., 2020).

#### **4. Existing examples of digital accessibility of public services and ADM in selected countries**

Important document in EU for automated individual decision-making is GDPR, which applies in cases that involve the use of personal data. In Recital 71 of GDPR it is clearly stated that ADM and profiling based on special categories of personal data should be allowed only under specific conditions. Further on, GDPR regulates automated individual decision-making in article 22, defining that the data subject has the right not to be subject to a decision based solely on automated processing, that can have legal effects for the subject or similarly significantly affect the subject. The only exception is if the decision is needed to enter into, or perform, a contract between the data subject and a data controller. In addition, the decision should be authorized by EU or member state law, which is obligatory for the controller and defines measures to protect the data subject's rights, freedoms and legitimate interests or the data subject gives explicit consent to a decision.

Moreover, Articles 13 and 14 of the GDPR give individuals the right to be informed of the existence of solely ADM creating legal or similarly important consequences; meaningful information about the logic involved; and the significance and envisaged consequences for the individual. In addition, Article 15 of the GDPR gives individuals the right of access to information on the existence of solely ADM. Finally, Article 21 of the GDPR gives individuals the right to object to processing of their personal data, including profiling (Information Commissioner's Officer & Alan Turing Institute, 2022).

Proposal for a regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (artificial intelligence act) and amending certain union legislative acts (European Commission, 2021) prohibits manipulative systems that are likely to cause harm by using subliminal techniques or exploiting vulnerabilities due to age or disability. It prohibits to public authorities to do social scoring for general purposes. The application of 'real time' remote biometric identification systems in publicly accessible spaces for the purpose of law enforcement is not allowed unless certain limited exceptions apply (European Commission, 2021).

ADM systems are often subject to the readiness of digital services. ADM systems need to depend on reliable and specific data that can be supplied by the citizen when accessing digital services. ADM systems can leverage the vast amounts of data generated by digital public services to make more informed and evidence-based decisions. This data-driven approach can lead to better policy outcomes, more targeted interventions, and improved overall performance of public services.

On the other hand, ADM systems can rationalize and simplify processes, making it easier for citizens to access public services through digital channels. ADM reduces bureaucratic barriers and delays and optimizes resource allocation within digital public services. This leads to improved overall digital services usability, increased efficiency, faster response times, and potentially lower costs for public administration.

In addition to that, automated decision-making systems can facilitate a continuous development of digital public services. By identifying patterns, trends, and areas for improvement, these systems can help drive innovation and ensure that digital public services remain responsive to evolving user needs and expectations.

In the following section, cases of digital public services and ADM systems in selected countries are listed.

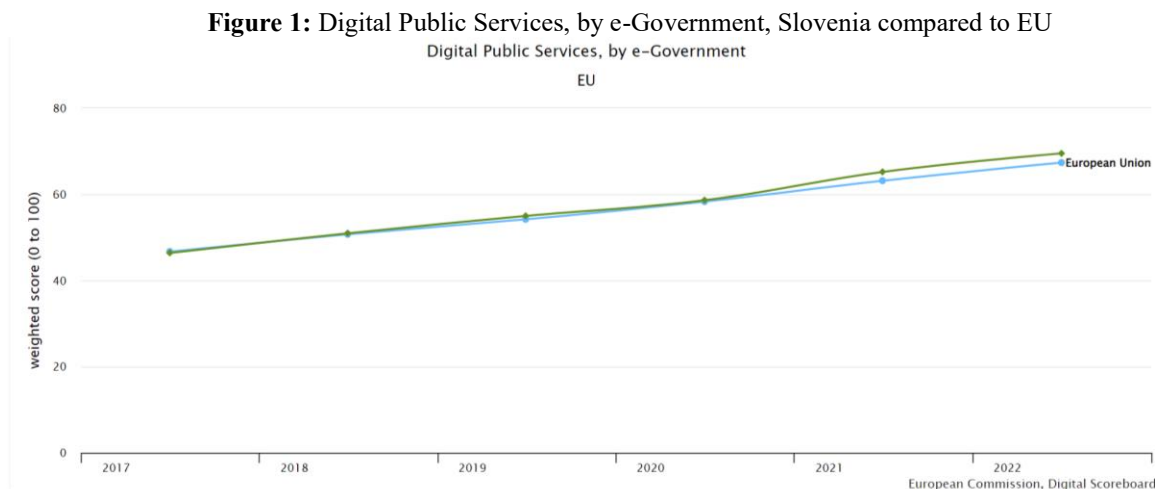
## 4.1. Slovenia

The key public services that will be accessible online by the 2030 according to Slovene Digital Strategy are the following:

- “Starting a business (a business life event in the field of business, covering services around orientation, administrative requirements, basic registration, tax matters, insurance matters, recruitment of the first employee and requirements for environmental permits, etc.).
- Ordinary business operations (business life event in the field of business, covering company tax and finance, VAT and business changes, etc.).
- Career (citizen's life event in the field of employment, covering services related to unemployment measures, guidance on fringe benefits and allowances, maintaining current benefits, finding a new job and filling in forms on recruitment and retirement, etc.).
- Study (life event of a citizen in the field of education, covering services related to orientation, enrolment and study guidance, etc.).
- Family (life event of a citizen in the field of social protection, covering services related to birth, marriage and death).
- Relocation (life event of a citizen in the housing domain, covering services related to finding, adapting and moving to a new dwelling, moving and living abroad, etc.).
- Small value disputes (life event of a citizen in the field of justice, covering services related to the preparation and initiation of a dispute, monitoring of the status, etc.).
- Transport (a citizen's life event in the field of transport, covering services relating to purchase and related taxes and certificates, parking permits and public transport, etc.).
- Health (citizen's health life event, covering basic health services in terms of finding the right healthcare provider, EU health insurance, ordering health services, possibility to communicate online with a doctor (e-consultations), e-prescriptions, access to health data - prescriptions, reports, vaccinations, etc.).” (Strategy of Digital Public Services 2030, 2022)

The goal for 2030 is not only accessibility, but also 80 % digital performance of these services.

According to DESI index comparing Slovene progress to EU level in the field of Digital Public Services (e-Government), Slovenia is at the same pace or a bit better than EU average since second half of 2021.



Source: (DESI - Compare Countries Progress — Digital Scoreboard - Data & Indicators, 2023)

Many digital tools enable public participation in policymaking and administrative decisions, such as the portals E-Demokracija, predlagam.vladi.si and STOP Bureaucracy portal.

Debureaucratisation act of December 2021 regulates the rules on communication between bodies deciding on rights, legal benefits and obligations in administrative matters. As of 4<sup>th</sup> April 2022 the use of electronic documents and e-signature by the central administration and public authorities became mandatory.

There are some “platforms”, which can be exposed as regards online available services, such as health portal zVEM, which enables online medical records in the central registry of patient data. In 2021, the zVEM e-health mobile app launched enabling mobile access to the national patient portal. Over 750 000 users (35% of population) have installed the app (European Commission, 2022).

Slovene Digital Strategy for 2030 explicitly requests in case of use of IT solutions that automate decision-making that all service users are treated fairly and ethical principles are taken into account in the design. It promotes digital services that are optimized by digital technologies and automation, with the necessary transparency.

We can specifically expose the Rules on form sheets, types of enforcements and the automated enforcement procedure (Official Journal of Republic of Slovenia, no. 104/11 and amendments), which allow the automated processing in the information system of enforcement applications for the recovery of a pecuniary claim based on an authentic document. However, this is not the case of ADM, but just automated processing of data.

In addition, the cases in tax field and social benefits systems can be mentioned, where informative calculation of taxes; benefits etc. are done by the system.

Furthermore, Personal Data Protection Act (Official Journal of Republic of Slovenia, no. 163/22) allows processing of personal data by automated means. ADM can be done in accordance with the GDPR.

## **4.2. Estonia**

Bürokratt is official AI based virtual assistant in Estonia, which International Research Centre on Artificial Intelligence, functioning under UNESCO, selected as one of the top 100 in the world. Artificial intelligence service (kratts) is an AI system based on a software algorithm that is autonomous, capable of learning, and performs tasks traditionally performed by humans (*Republic of Estonia Information System Authority*, n.d.). It is used as a communication tool (national speech robot; interoperable network of public and private sector AI solutions), that can give you all answers in one place in Estonian language, accessible via voice. As such, it contributes to efficient digital public services, sparing time to citizens and businesses. Through this one communication channel, a person can apply for a permit, renew ID, borrow a book etc. Government and private sector AI agents, bots, and assistants, will serve the user through a united channel, enabling them access to a spectrum of services (Petroni, 2022). An important contribution of the Bürokratt is the inclusion of people with hearing or visual impairments. Moreover, enabling people being abroad to more easily access state services.

Consumer Protection and Technical Surveillance Authority are testing the chat. In the near future, it is planned to implement the complete version consisting of a chat function and a robot for the Police and Border Guard Board and the National Library (Mäe, 2023). Moreover, Bürokratt components were applied to evolve forecast models in the Tax and Customs Board and Estonian Health Insurance Fund. Machine learning algorithms were adopted by the Information Technology Centre of the Ministry of the Environment to help the identification of tree species and recording of forest resources (Lopes Gonçalves, 2022).

The final aim is to simplify communication between citizens and the state, give access to different types of public services in one place, sparing users to search different webpages of different state bodies. On the other hand, it will enable the state to inform citizens about the opportunities and benefits offered by the state and answer their questions 24 hours per day (Mäe, 2023). Finally, it is planned to offer also cross-border services. An important contribution to development of AI supported service of the state is its collaboration with the private sector in developing AI solutions. The total estimated budget for the whole project is 13 million euros.

Despite advanced steps in promoting and approaching digital services to the citizens, there are not so many ADM systems applied in Estonian public administration. For now, there is also no general legal framework (Pilving, 2023).

There are some exceptions in sectoral legislation. E.g., the Taxation Act (paragraph 462) enables tax authority to issue an administrative act in an automated manner without the direct intervention of an official of the authority (Pilving, 2023). Furthermore, the Social Welfare Act (paragraph 151) allows automated processing of data of young people (aged 16 to 26) to identify persons not in an employment, education, or training relationship (Pilving, 2023).

Furthermore, the following cases of ADM can be mentioned: supporting decision-making at the Unemployment Insurance Fund to assess the probability of an unemployed person returning to work; covering child's health insurance at birth without the need for the parents to submit a request and birth certificate; risk-based selection of claims for VAT refund at the Tax and Customs Board (Pilving, 2023).

### **4.3. Sweden**

Sweden uses ADM since the 70ties. Its' political and governmental attitude promotes the digitalization, and the use of AI in the public sector, through different strategies, projects etc. (e.g. Swedish national strategy of AI adopted by Parliament in 2018 that complemented Strategy on the digitisation). The ADM is used on all levels, state, regional and local.

The legislation itself is rather reserved when it comes to regulation of ADM in administrative law, which is basis for the public sector. Such approach is due to the standpoint that administrative law and procedures should be technology-neutral. With neutral position, the procedures can adapt to new situations and do not lose their relevance (Reichel, 2023). ADM was allowed already with the Administrative Procedure Act (APA) from the 80is. In 2017, a revised APA included new general provision, which explicitly defines that public authorities can make automated decisions (Reichel, 2023). However, the legislation lacks clear limitation when ADM is to be allowed. Furthermore, it is not clear if APA is in accordance with Article 22 of GDPR (Reichel, 2023).

In 2020, Swedish National Audit Office checked the effectiveness and efficiency of ADM in Swedish public administration. They audited Parental benefits at the Swedish Social Insurance Agency, annual income taxation of private individuals at the Swedish Tax Agency and driving license learner's permits at the Swedish Transport Agency. The conclusion was that government agencies' ADM led to higher level of effectiveness and efficiency. Furthermore, fundamental legal certainty aspects have improved to some extent. On the other hand, shortcomings in the agencies' processing of cases with a high risk of fraud and error were found. Finally, it found out that there is far too limited control of the correctness of automated decisions. This brings a risk that resources for manual control and follow up had too low priority. Shortcomings in the division of responsibility for ADM processes, as well as a lack of clear and readable documentation of the automated process, were also found (Swedish National Audit Office, 2020).

### **4.4. USA**

In USA most of legislation is focused on prohibiting certain uses of ADM systems:

- "Governmental use of facial recognition has been prohibited in King County, Washington state's most populous county; Portland, Oregon; the state of Maine; and over a dozen other cities around the country.
- Vermont, Virginia and several cities have banned law enforcement use of facial recognition (while continuing to allow other governmental uses).
- Bellingham, Washington, Santa Cruz and Oakland, California have banned predictive policing." (Washington Technology Solutions, 2021)

Furthermore, many states are thinking of introducing state legislation, which would prohibit discrimination by ADM systems, demand an inventory of ADM systems, or introduce guidelines for governmental ADM systems (Washington Technology Solutions, 2021).

Furthermore, the White House Office of Science and Technology Policy in October 2021 announced the preparation of a Bill of Rights for an AI-Powered World. This Bill would require powerful technologies to respect America's democratic values and respect the principle that everyone should be treated fairly. The rights and freedoms data-driven technologies should respect could include:



- “A right to know when and how AI is influencing a decision that affects your civil rights and civil liberties.
- Freedom from being subjected to AI that has not been carefully audited to ensure that it’s accurate, unbiased, and has been trained on sufficiently representative data sets.
- Freedom from pervasive or discriminatory surveillance and monitoring in your home, community, and workplace.
- Office of the Chief Information Officer.
- A right to meaningful recourse if the use of an algorithm harms you.
- Likewise, to effectively protect these rights, measures could include:
  - The federal government refusing to buy software or technology products that fail to respect these rights.
  - Requiring federal contractors to use technologies that adhere to this “Bill of rights.”
  - Adopting new laws and regulations to fill gaps.” (Washington Technology Solutions, 2021)

The Equal Credit Opportunity Act in US prohibits discrimination in credit transactions and requires companies to explain to applicants the specific reasons for denying their application for credit or taking other unfavorable decisions, based on complex algorithms (Gesser et al., 2022). E.g. at the municipal level, New York City accepted “Automated Employment Decision Tool” law (in enforcement since January 2023), which requires employers to perform independent bias audits of their automated employment tools. They need to give detailed information to employees or candidates about the use of tools, and make an alternative selection process or accommodation upon request (Gesser et al., 2022).

For example, in USA Correctional Offender Management Profiling for Alternative Sanctions (COMPAS), recidivism algorithm is used to predict recidivism in case of criminal sentencing. It is a tool used to do case management and support decision making by US courts. The owner and creator of COMPAS is Northpointe. It created risk scales for general and violent recidivism, and for pretrial misconduct. The scales were made by applying behavioral and psychological constructs "of very high relevance to recidivism and criminal careers" (Northpointe, 2015). However, in 2016, an analysis by non-profit organization ProPublica was performed, which showed that the algorithm recognized significantly more black defendants than white defendants as potential repeat offenders, despite similar rates of prediction accuracy between the two groups (Angwin et al., 2016). The algorithm weighs criminal history, education, employment, age, and substance abuse history. Based on these it generates “risk scores” to predict the probability of pretrial recidivism, general recidivism, and violent recidivism (Bloch-Wehba, 2020).

Furthermore, cities use machine-learning algorithms to follow gunshots, decide where to send police, and fire unproductive teachers. State agencies foresee criminal activities, explain DNA evidence and give Medicaid benefits based on algorithms (Bloch-Wehba, 2020). On the federal level, government puts individuals on immigrant and terrorist watch lists by applying algorithms and makes policy decisions about changes to Social Security, and finding tax evaders (Bloch-Wehba, 2020).

## 5. Conclusions

Algorithmic systems are opening quite some important issues in society. Different approaches can be detected in different legal cultures. Today’s technology gives many possibilities to the authorities to make the procedures faster. However, there needs to be sound regulation setting the standards and limitations if needed to protect basic legal principles and human rights when using these technologies. Even though efficiency can be achieved with new technologies in authoritative decision-making, the question is if such decision-making is also effective and legitimate. For example, facial recognition, social scoring as some of the practices used by some countries are enabling governments fast conclusions, but are on the other hand putting under question the right to privacy, freedom of movement and speech, respect of dignity etc. For the functioning of the state, which does so in the name of citizens, protecting public interest, regulation is the prerequisite for its actions. Therefore, administrative law on national level should tackle also ADM and enable legality, procedural fairness, transparency and accountability. Finally, we must strive to design sustainable AI, which produces tools and applications that are ethical, safe, well-founded and transparent.

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