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DEVELOPMENT OF PUBLIC ADMINISTRATION THROUGH ARTIFICIAL INTELLIGENCE

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Abstract
Both the specialized literature in the field of public administration and the official sources of information regarding artificial intelligence have shown that there is a desire to renew the administrative system, to the same extent that there is also a trend towards digitization. In the last decade, numerous directions of action oriented towards the implementation of artificial intelligence ecosystems have been outlined, and a relevant number of states around the world are undertaking measures with a unitary goal, especially in the European Union space. The purpose of this article is to establish the potential for the development of public administration through artificial intelligence, to establish the limits of action of modern ecosystems and the impact it has on servants of the state, on the one hand, and on the other hand, on citizens. The methodology used to create this article is based on the study of specialized literature, official websites that provide information about artificial intelligence, and the methods used are documentation and critical analysis. The importance of this study emerges from the increasing use of technologies based on artificial intelligence and its use in daily activities.
Keywords: *artificial intelligence, public administration, development, public institutions*
JEL Classification: H83, J18

1. INTRODUCTION

In the 21st century, the desire for efficient development of all activities that are carried out by human resources has taken on a different dimension, and there is the possibility of putting them into practice much more easily compared to the years before the current democratic system. Whether in the public or the private sector, information systems, development plans and strategies, objectives that are at the root of other objectives, professionalism, quality and efficiency are the main attributes pursued. As far as public administration is concerned, there is a trend towards quality rather than quantity, with an emphasis on professionalism, interest and commitment.

Public administration is an area of activity that aims to satisfy the public interest, guided by principles such as legality, timeliness, subsidiarity and transparency. Most of the people who provide services in this area are called civil servants, who have a special status compared to employees with individual employment contracts. This field of activity is undergoing a process of development due to its involvement in the lives of ordinary people, but also due to external factors which are forcing this environment towards digitisation and therefore innovation.

Development means striking a balance between all the components that intersect the area of action, e.g. economic elements, human resources, social aspects, the environment, public services and, of course, making them more efficient or increasing their quality in a concomitant upward trend.

After countless studies, research and hard work, people have created more and more powerful software programs, until they ended up bringing the concept of artificial intelligence into the public domain via the internet. This concept has created a lot of controversy and is considered by critics to be harmful, with potentially harmful effects on civilisation and everyday life. In 1956, artificial intelligence was founded as an academic discipline and went on to be analysed, improved and used by an increasing number of people, and it was also used in an early form during the Second World War. It is generally accepted that this program has surpassed man in a great many respects, and if it has not yet surpassed him in some, it is certainly competing for a higher place.

Artificial intelligence is currently being used for several things that have an impact on the population, either directly or indirectly. Some of them are autonomous vehicles, public transport, intelligence of objects (vacuum cleaners, refrigerators), smart architecture, innovative agriculture (irrigation, animal feeding), robots used in factories, optimisation of products and sales channels, drones, medicine, administration and public services.

The possibility of storing and processing enormous amounts of data, the use of new algorithms to prevent negative events and the fact that artificial intelligence is expected to be used in all areas of activity, makes it possible to launch the idea that public administration should be left under the umbrella of computer programs and the tasks of civil servants should be handed over to a system that is objective and impartial.

The methodology of the work consisted in studying the literature together with websites providing information on artificial intelligence, looking for links between what artificial intelligence can offer and what public administration can receive in its structure. The methods used include the quantitative method and critical analysis. The quantitative method aims to analyse statistics on the development of artificial intelligence and the administrative field, while the critical analysis method aims to objectively assess the current situation in relation to the potential for development.

The paper is structured in several parts, the first one referring to the literature, and the second part presenting the reality in Romania and its potential for development through artificial intelligence. The third part exemplifies, with the help of critical analysis and personal vision, how to simplify administrative procedures, but also how to make many of them more efficient. The fourth part presents the position of some EU Member States in relation to artificial intelligence. The last part presents the conclusions drawn from the authors analysis.

2. LITERATURE REVIEW

The literature provides an overview of public administration, defined as follows: "*Public administration, in its formal-organic meaning, evokes the* following *public authorities: the President of Romania, the Government, the ministries and other bodies directly subordinated to the Government, central bodies, autonomous specialized central bodies, institutions subordinated to the ministries, the Prefect, specialized local bodies subordinated to the ministries and headed by the Prefect, autonomous local bodies - County Council, City Council and Mayor - and other institutions subordinated to them. In a material, functional sense, public administration evokes legal acts and material operations through which the law is executed, either by organising or, as the case may be, directly providing public services*" (Berchi, 2000, p. 17).

For an efficient society, long-term strategies are the key to success, but these strategies must be based on public policies. Gabriela Pohoață (2017, p. 9) believes that public policies are a relevant part of modern democracies, because they guide officials and at the same time give citizens the possibility to exercise control over officials.

Only a coherent framework created between administrative and political decision can form the premises for achieving the objectives of public administration, which implies creating a system of interconnection between all activities and a hierarchy of tasks (Bedrule-Grigoruță, 2008, p. 31).

For the civil servant, the study of IT has become part of the work of the public administration training, and the National Institute of Administration (NIA) organises training programmes in accordance with European standards (Bercu, 2009, p. 153).

It is well known that in the public administration there are tasks or duties to be performed which are repetitive in nature, subsequently leading to burnout and inefficiency. Systems such as computational intelligence or artificial intelligence can solve this problem. Computational intelligence usually refers to the ability of a computer to learn a particular task from experimental data or observations.

Computational intelligence research and application has grown and will continue to grow considerably as the needs for adaptability, evolution, and self-configuration continually increase to cope with unknown or incomplete operating

conditions, environments, and the evolving needs of users and beneficiaries (Piuri, 2008, pp. 356-357).

Artificial intelligence is defined as the potential of a machine or robot to replicate human functions, including creativity, reasoning and learning. Artificial intelligence can enable technical systems to perceive and understand their role and place in their environment. Artificial intelligence ecosystems take in information, process it and provide solutions based on the effects that will follow, but also on the context (European Parliament, 2020).

Artificial intelligence is also identified with the ability of a computer to perform various tasks that would naturally be performed by human beings. Over the last decade, various sceptical views have emerged about the potential of artificial intelligence, but the ability to reason, generalise or learn from experience have proven otherwise. In a narrow sense, artificial intelligence can be found in applications such as medical diagnosis, computer search engines and voice or handwriting recognition (Copeland, 2023).

Artificial intelligence is "*one of the strategic technologies of the 21st century, both globally and in Europe*", helping to position the EU on the innovation, productivity and welfare ladder. Industry and manufacturing have the potential to be reshaped by robotics and artificial intelligence, and this is part of the long-term strategies of European companies (European Parliament, 2019).

In 2018, the European Commission committed to coming up with a proposal for a European approach to artificial intelligence by developing draft guidelines on artificial intelligence, working with a group of experts in this field.

Through the funding of the Administrative Capacity Operational Programme 2014 - 2020, the Romanian experts concluded that: "*The Recovery and Resilience Programme can be used to modernise the public sector both by supporting procurement with artificial intelligence-based systems and by funding digital skills development initiatives within the public sector. Strong focus on digitisation of government public sector, on skills development in the public sector, on supporting the procurement of needed artificial intelligence systems*".

In terms of data processing, NASA uses artificial intelligence because it would be impossible for a human to find links or relationships between available information. In this endeavour, the Earth Science Data Systems (ESDS) programme acknowledges the responsible use of artificial intelligence. Likewise, recognizing the potential for development through artificial intelligence is an important step toward improving operations and significantly advancing the capabilities of existing data systems (https://ai.jpl.nasa.gov). U.S. authorities believe that artificial intelligence is at the heart of the global technology revolution, and the evolution of AI-based technology has both opportunities and challenges. On the other hand, there is intense work to advance scientific and technological capabilities and promote democracy and human rights. Protecting national and economic security is one of the stated goals of government in the

United States, while promoting national values is another (US Department of State, Artificial Intelligence, https://www.state.gov).

Artificial intelligence (AI) is a revolutionary technology with the potential to boost economic growth and create productivity gains. It also has the potential to profoundly restructure labour markets and working conditions. From a government perspective, policies should focus on maximising the potential for economic and entrepreneurial activities. Policies should focus on the potential to improve work, increase productivity and stimulate growth (Hartl et al., 2021).

After reviewing the literature, as well as the websites of European institutions referring to artificial intelligence, we have accumulated a fair amount of information that will be used throughout the paper to identify development opportunities. The field of artificial intelligence is a relatively new one compared to public administration, and scriptural documents are not as readily available as those on the administrative environment.

3. THE POTENTIAL OF PUBLIC ADMINISTRATION DEVELOPMENT THROUGH ARTIFICIAL INTELLIGENCE

The areas and structures in which artificial intelligence has the capacity to engage are multiple, diverse and evolving. For example, according to the European Parliament's website, the most visible areas where AI is at work are: 'Online shopping and advertising, internet search, personal digital assistants, machine translation, smart housing, smart cities and infrastructure, automotive, cyber security, countering disinformation, healthcare, transport, manufacturing, food and agriculture, government and public services' (European Parliament, 2021).

The field of administration and public services is the most relevant for this study, of course, making connections with the other fields mentioned above. The countries of the European Union are undergoing an extensive process of digitisation, a process which involves the artificial intelligence component during the implementation of specific systems. Public administration needs autonomous systems to handle most of the activities involving repetition, but not only. The European Commission has earmarked €2.5 billion to fund artificial intelligence.

3.1. CITIZEN - ARTIFICIAL INTELLIGENCE INTERACTION

Starting from the relationship with the citizen, at the local level, artificial intelligence can solve problems. The solutions to these problems aim to reduce bureaucracy, eliminate lengthy and time-consuming procedures and shorten the waiting time to resolve requests for public services. Actions such as collecting taxes, issuing certificates, receiving applications and processing them can be classified as tasks for artificial intelligence. The vision for a digital world is based on the idea that all interaction with the civil servant should be reduced exclusively to the supervision of the work of the AI by the person who is supposed to perform

those tasks. Thus, at an early stage, the civil servant will correct any errors, and then reorientate himself professionally to other tasks within the institution. It is not recommended that the future of public administration should move towards the total elimination of human resources from the system; there needs to be a clear demarcation and stable connection between the human factor and artificial intelligence, using this autonomous ecosystem to make the civil servants work easier and not overload the system. It is essential to mention that with this big step for society, there must be zero tolerance for those who are working in the field but do not have quality training or are not open to the new.

Similarly, internally, there must be a link between all departments for a higher degree of resolution of requests. In some public institutions in Romania, there are systems in place for civil servants to communicate and exchange information. Artificial intelligence can process and store a large volume of data and so it is on a higher level than ordinary programmes which have limitations in terms of overload.

Another area where artificial intelligence could be used is in communication between different state institutions, which is currently partly achieved through Virtual Private Networks (VPNs). This is made possible by civil servants providing information requested by another institution. By introducing autonomous ecosystems, information can be stored in a common space and accessed by interested parties. For agreements, artificial intelligence will identify all the stakeholders involved, analyse and verify the information, and after completing certain well-defined steps, electronically sign the administrative acts. For example, if a citizen wants to register a car, he or she will have to provide proof of registration in the records of the tax authority of the local public authority within whose jurisdiction the owner has his or her domicile, seat or residence. This proof will be accessible by artificial intelligence, making the work of the town hall easier, saving material resources, time and, overall, breaking down many bureaucratic barriers. The same applies to proof of payment of the registration fee, which can be recorded in a database and checked when the application is submitted. Once the autonomous ecosystems reach the public administrative environment, administrative procedures can be handled entirely online, with artificial intelligence taking care of checking all legal aspects and, of course, correctness.

Adding details to the above example, it will be possible to apply for the registration of a vehicle in an organised setting, where there will be a mechanism for producing registration plates at the time of validation of the application, after the identity card has been inserted. The amount can be taken directly from the associated bank account and the rest of the information can be extracted from the common database of institutions. This will be feasible if all the authorities involved will operate according to the regulations.

Another example of the use of artificial intelligence in the administrative field could be the change in the procedure for obtaining an identity card or biometric passport. Interaction with a single robot can solve this. If the identity card needs to be changed, after inserting it into a special machine, the artificial intelligence ecosystem checks the data, finds the address where the citizen resides (if necessary, the owner can express his or her wish to take the person in question in advance, online of course), takes a photo and can issue the identity card. Cases can be varied, but depending on their complexity, the robot could read documents and analyse them.

The above examples can be modified and adapted to create a framework in which the human factor, in this case the civil servant, can carry out part of the job. The measure is not intended to create a 100% digital and autonomous system as this would lose the essence of public administration and the study of this field.

At the central level, functions such as councillor can easily be replaced by artificial intelligence, which collects information from the public and makes proposals and initiatives. One example is the honorary advisor to the Romanian Prime Minister, Robot Ion, a 100% Romanian creation. He has the task of quickly receiving the opinions, views and wishes of Romanians, and hopes that in the future he will have more and more prerogatives. Artificial intelligence can also be used to assess the consequences of administrative acts. It also can anticipate effects and to outline guidelines for solving problems.

One of the most rewarding functions that artificial intelligence can perform is to draw up documents and take over the most static work of civil servants.

3.2. ETHICS AND SECURITY OF ARTIFICIAL INTELLIGENCE IN RELATION TO PUBLIC ADMINISTRATION

Starting with the implementation of artificial intelligence in all activities carried out by humans, but especially in the public domain, it is necessary to draw guidelines towards the ethics of using artificial intelligence, but also the security of this environment. As has been exposed throughout the paper, the artificial intelligence ecosystem stores a large amount of data, especially personal data, and this requires the establishment of clear rules and procedures.

For the European Union, artificial intelligence has been a hotly debated topic in recent years, and the first ideas on systems ethics were addressed in "*Artificial Intelligence in Europe*", specifying that: " *[...] the EU must ensure that artificial intelligence is developed and applied within an appropriate framework that promotes innovation and respects the fundamental values and rights of the Union, as well as ethical principles such as accountability and transparency*" (European Commission, 2018).

Artificial intelligence security succeeds in establishing clear responsibilities that are closely related to cyber security, the ability to develop preventive measures and the protection of citizens' data.

Another approach to artificial intelligence security is contained in the "*EU Artificial Intelligence White Paper*" (European Commission, 2020), a document that outlines two principles on ensuring good functionality and regulating data protection measures: Directive (EU) 2016/680; Regulation (EU) 201/1725; European Data Strategy.

4. SIMPLIFYING AND DE-BUREAUCRATISING PUBLIC ADMINISTRATION PROCEDURES WITH THE HELP OF ARTIFICIAL INTELLIGENC

The term bureaucracy is defined in the Explanatory Dictionary of the Romanian Language (DEX) in two distinct meanings. The notion is described as "E*xcessive power of the administration*" on the one hand, the other meaning being "*Routine, formal wor*k" (DEX online, https://dexonline.ro).

Over time, Romanian society has developed the idea that bureaucracy takes over most of the administrative procedures, concluding that, in our country, they are tedious, and, consequently, end up being abandoned in most cases. According to The Global Business Complexity Index (TMF Group, 2022) which analysed 77 countries around the world, Romania ranks 33rd in 2022 in terms of the complexity of administrative formalities. Compared to other European countries, there is no considerable discrepancy between them and Romania. For example, Poland ranks 10th, Germany 20th, Hungary 38th and Bulgaria 50th.

The adaptation and use of artificial intelligence in everyday life requires public administration to move towards another way of making the system more efficient.

4.1. MAKING IT MORE EFFICIENT TO OBTAIN PLANNING PERMISSION FOR A DWELLING

The building permit is an administrative act issued by the local authorities in the area where the building is to be constructed. It gives the holder the right to build, strengthen or alter a building. It must be obtained, for example, for the construction of a house, an outbuilding, a swimming pool, a garage, a fence, a greenhouse, a warehouse, etc. This list is not exhaustive. In 2022, 50 520 building permits were issued for residential, non-residential and administrative buildings in both urban and rural areas (according to Romanian National Institute of Statistics).

The steps to obtain a building certificate for a dwelling are:

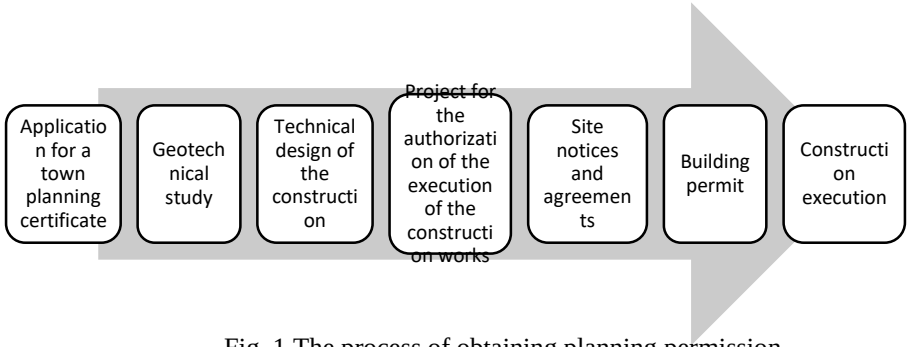

Fig. 1 The process of obtaining planning permission
Source: Authors processing using information from Law 50/1991, accessed 26.03.2023

Analysing the process of obtaining a building permit for a dwelling, the difficulty of completing the formalities, but also the waiting time for its issuance, stands out. These inconveniences are compounded by the cumbersome process of obtaining the necessary approvals from the various institutions or network operators. In practice, building permits are issued within 30 days of the date of application.

The first stage of the authorisation procedure can be improved in terms of where and how the application is submitted. Through artificial intelligence and digitisation, every citizen will be able to have a place online where they can store documents. These documents can be accessed by the artificial intelligence ecosystem at the appropriate time. For example, to obtain a town planning certificate, an application is required, which can be filled in online. The next document is the property deed, which can be scanned in advance and placed in the designated place. Then comes the payment of the fee, which can be automatically withdrawn from the bank account of the beneficiary of the public services. The topographical and cadastral plans endorsed by the Land Registry Office will be entered into a system from which artificial intelligence will be able to process them and extract data at the appropriate scale and for the right land. Therefore, the first step will be possible only online by filling in the application on the City Hall website.

The second stage involves a technical and practical part that cannot be left exclusively to artificial intelligence but must also be carried out with the contribution of qualified personnel. In this case, the geotechnical survey could be carried out with intelligent equipment to facilitate the extraction of information, but also to make it more efficient and shorten the time.

The third stage involves drawing up the technical design of the construction. The owner chooses how the construction will look, but the technical data will also be described. This stage can easily be placed in the hands of artificial intelligence by the beneficiary entering some data and obtaining models of the house with all

the technical data. Standards will be able to be in line with those of a legislative nature, updates in the system can be made at any time and errors are non-existent.

The fourth stage involves selecting parts of the technical project. This process is no doubt apt to be left to artificial intelligence.

The fifth stage involves applying for and receiving site permits and agreements from various public institutions or network operators (water, gas, sewerage). They are mentioned in the town planning certificate and are compulsory to obtain planning permission. This stage is transferable to the artificial intelligence ecosystem. As soon as the necessary documents can be accessed by artificial intelligence, the transition will be made towards obtaining their opinions and agreements without human involvement. This will be achieved by entering technical data, the location of the dwelling and other mandatory elements into a system and validating them instantly by linking them to the databases of the institutions involved and to the legislation in force. This process will help to streamline the processing of applications, reduce waiting times and, at the same time, increase the satisfaction and confidence of the beneficiaries of public services in the public administration.

The sixth stage approach is a formal one, where all the data has been successfully entered and the application will turn into the actual building permit after the analysis of the artificial intelligence ecosystem.

The last stage includes the construction, which will take place much faster than it is currently done, thanks to artificial intelligence and digitisation.

The process of obtaining planning permission after implementing artificial intelligence:

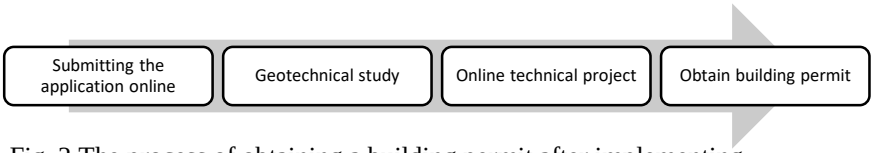

Fig. 2 The process of obtaining a building permit after implementing artificial intelligence
Source: authors processing

4.2. STREAMLINING ENVIRONMENTAL PERMITTING

The environmental opinion is the administrative act issued by the competent authority for environmental protection, which confirms the integration of environmental protection aspects into the plan or programme subject to adoption, as provided for in Article 2 of GEO 195/2005 on Environmental Protection approved with amendments by Law 265/2006 with subsequent amendments and additions.

A short series of steps had to be taken to obtain an opinion, but these could be improved and made more efficient. Typically, the steps involved in obtaining an environmental permit are as follows:

Fig. 3 The process of obtaining an environmental permit

Source: author's processing

In terms of streamlining the environmental permitting process, artificial intelligence will be able to shorten the waiting time and eliminate any human error. For example, it will be possible to obtain this permit after entering technical data into a system that will be linked to the legislative environment, i.e. to standards imposed at national or EU level. Artificial intelligence will be able to analyse the situation and, without a doubt, anticipate the effects of implementing a given project or plan.

The artificial intelligence ecosystem will be able to validate the environmental permit directly from the system. This will help those who want to implement projects in a shorter time.

The draft plan submission stage can be streamlined by using artificial intelligence alongside the traditional way of obtaining a plan. Following implementation, the stages will be summarised as follows:

Fig. 4 The process of obtaining an environmental permit following the implementation of artificial intelligence
Source: author's processing

5. THE APPROACH OF SOME EU MEMBER STATES TO THE USE OF ARTIFICIAL INTELLIGENCE IN PUBLIC ADMINISTRATION

With the use of artificial intelligence in various fields, certain rules and regulations must be respected. As regards its use in public administration, some EU Member States have taken steps in this direction. For example, the Czech Republic accepts the mandatory availability of data used by public administration for the use of artificial intelligence.

Another country with significant implications in this area is Malta, which has launched six pilot projects using artificial intelligence, needed for traffic management, education, customer service, health, tourism and utilities. These programmes will run for three years (Malta AI, https://malta.ai).

The German federal government is making it easier to access data in the public domain and has already set up several portals such as www.mCLOUD.de or www.MDM-portal.de with the aim of increasing the efficiency and quality of

public sector services (Artificial Intelligence made in Germany, (https://www.ki-strategie-deutschland.de).

Authorities in Spain believe that data analysis through machine learning by artificial intelligence is the key to success in public administration management. The public sector is rated as the largest producer of personal data.

Creating a secure and stable data climate and an artificial intelligence friendly public sector dynamics is Lithuania's action plan.

In the Netherlands, the government is organising meetings with professionals from various fields working on improving artificial intelligence, with the aim of using it in the public sector (European Commission, Country Report-Netherlands, 2019).

6. CONCLUSIONS

After studying the literature, websites with information on artificial intelligence and public administration, and from personal interaction with public institutions, we can admit that the public-administrative field in Romania urgently needs an alignment with contemporary standards. Equally, the recurring activities and duties of civil servants and employees in public institutions can easily be left under the umbrella of artificial intelligence.

The efficiency of public administration with the help of artificial intelligence should be part of a well-developed national strategy with clear objectives and results that can be achieved in a gradual and reliable way. All measures to be taken in this area should be implemented in stages so as not to create a gap between traditional procedures and those governed by artificial intelligence. Another edge of the administrative cube is the mentality of citizens when they agree to use the streamlined means of public administration. This goes hand in hand with the duty of qualified people in public institutions to create education and training campaigns for the beneficiaries of public services.

We believe artificial intelligence has a lot of pluses and comes with as many or even more advantages than the implementation of the internet in public institutions. However, it is necessary to draw a line between the use of artificial intelligence in all public administration activities and human resources. The human factor gives vitality to public administration and only through it can transform itself and move towards sustainable development. Part of the essence of public administration is the civil servant-citizen interaction, which should be maintained. Effective administration and attracting people to it is achieved through the connections that arise between people, and this is very important in a world that tends towards individualism.

Equally, the future is a digital one, and all spheres of action of artificial intelligence, as well as its limits, will be properly regulated. At European Union level, guidelines have already been drawn up on how artificial intelligence will be used and how information will be protected.

In our view, everything from obtaining documents and opinions to dealing with simple requests with a high degree of repetitiveness can involve 100% artificial intelligence. The human resource that is qualified and trained for this field must deal with complementary activities that involve attention, but also the identification of legislative problems or atypical situations.

In conclusion, public administration can adapt to current and future times by combining artificial intelligence with autonomy and at the same time considering the practical elements of human resources.

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