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STATE MECHANISM OF REGULATING THE DIGITAL SPACE

Abstract. This article is devoted to the legal understanding of the role of the state in the context of contemporary digital transformation. Particular attention is paid to institutional and regulatory mechanisms through which the state exercises its regulatory functions and participates in the operation of the digital environment. The article analyses relevant initiatives, including the draft Law of the Republic of Kazakhstan “On Artificial Intelligence” (2025), as well as selected foreign approaches implemented within the European Union and the United States. Special focus is given to the legal status of the state in the digital space and the challenges of ensuring the protection of individual digital rights.

Two main approaches to the implementation of the digital transformation of the public administration system are analyzed, “the pros” and “cons” of the approaches under consideration are identified.

The main issues that should be focused on by civil society and government agencies have been identified. These include: the likelihood of algorithmic bias that will lead to AI making wrong decisions; digital inequality among various segments of the population of Kazakhstan; vulnerability of government digital systems in cases of cyber attacks on government information resources; fragmentation of digital solutions.

Also a serious problem is the lack of an appropriate regulatory framework to protect the digital rights of individuals, ensure responsible behavior in the digital environment, and regulate the mechanisms of state and public control over the functioning and development of artificial intelligence systems. The authors of the article propose ways to solve the above-mentioned problems of regulating the digital space.

Keywords: state; artificial intelligence; draft law; Republic of Kazakhstan; digital transformation; digital rights.

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ЦИФРЛЫҚ КЕҢІСТІКТІ МЕМЛЕКЕТТІК РЕТТЕУ ТЕТІГІ

Аннотация. Мақала қазіргі заманғы цифрлық трансформация жағдайында мемлекеттің рөлін құқықтық тұрғыдан пайымдауға арналған. Онда мемлекет цифрлық ортада реттеу функцияларын жүзеге асыру және қатысу мақсатында қолданатын институционалдық және нормативтік тетіктерге ерекше назар аударылады. Қазақстан Республикасының «Жасанды интеллект туралы» (2025) заң жобасы және Еуропалық одақ пен Америка Құрама Штаттарында іске асырылып жатқан кейбір шетелдік тәсілдер талдауға алынады. Сонымен қатар, цифрлық ортада мемлекеттің құқықтық мәртебесі және жеке тұлғалардың цифрлық құқықтарын қамтамасыз ету мәселелері қарастырылады.

Мемлекеттік басқару жүйесін цифрлық трансформациялауды іске асырудың екі негізгі тәсілі талданып, қарастырылып отырған тәсілдердің «артықшылықтары» мен «кемшіліктері» анықталды.

Азаматтық қоғам мен мемлекеттік органдарға назар аудару керек негізгі проблемалар анықталды. Оларға мыналар жатады: жасанды интеллект дұрыс емес шешімдер қабылдауға әкелетін алгоритмдік бейімділіктің ықтималдығы; Қазақстан халқының әртүрлі топтары арасындағы цифрлық теңсіздік; мемлекеттік ақпараттық ресурстарға кибершабуылдар жағдайында мемлекеттік цифрлық жүйелердің осалдығы; цифрлық шешімдердің фрагменттілігі.

Сондай-ақ маңызды мәселе жеке тұлғалардың цифрлық құқықтарын қорғау, цифрлық ортада жауапты мінез-құлықты қамтамасыз ету және жасанды интеллект жүйелерінің жұмыс істеуі мен дамуын мемлекеттік және қоғамдық бақылау тетіктерін реттеу үшін тиісті нормативтік-құқықтық базаның болмауы.

Мақала авторлары цифрлық кеңістікті реттеудің жоғарыда аталған мәселелерін шешу жолдарын ұсынады.



Түйінді сөздер: мемлекет; жасанды интеллект; заң жобасы; Қазақстан Республикасы; цифрлық трансформация; цифрлық құқықтар.

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ГОСУДАРСТВЕННЫЙ МЕХАНИЗМ РЕГУЛИРОВАНИЯ ЦИФРОВОГО ПРОСТРАНСТВА

Аннотация. Статья посвящена правовому осмыслению роли государства в условиях современной цифровой трансформации. Особое внимание уделено институциональным и нормативным механизмам, с помощью которых государство осуществляет регулирование и участвует в функционировании цифровой среды. Анализируются актуальные инициативы, включая проект Закона Республики Казахстан «Об искусственном интеллекте» (2025), а также отдельные зарубежные подходы, реализуемые в рамках Европейского союза и Соединенных Штатов Америки. Отдельно рассматриваются вопросы правового статуса государства в цифровой среде, а также проблемы обеспечения цифровых прав личности.

Проанализированы два основных подхода к реализации цифровой трансформации системы государственного управления, выявлены «плюсы» и «минусы» рассматриваемых подходов.

Определены основные проблемы, на которых следует сосредоточить внимание гражданскому обществу и государственным органам. К ним можно отнести: вероятность алгоритмической предвзятости, которая приведет к принятию ИИ неверных решений; цифровое неравенство среди различных слоев населения Казахстана; уязвимость государственных цифровых систем в случаях кибератак на государственные информационные ресурсы; фрагментарность цифровых решений.

Также серьезной проблемой является отсутствие надлежащей нормативно-правовой базы для защиты цифровых прав физических лиц, обеспечения ответственного поведения в цифровой среде и регулирования механизмов государственного и общественного контроля за функционированием и развитием систем искусственного интеллекта.

Авторами статьи предлагаются пути решения вышеуказанных проблем регулирования цифрового пространства.

Ключевые слова: государство; искусственный интеллект; проект закона; Республика Казахстан; цифровая трансформация; цифровые права.

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Introduction. Digital transformation and the rapid spread of artificial intelligence, the platform economy, and global networks are creating new challenges for the public legal order. As the key subject of legal regulation, the state is now compelled not only to adapt to the digital environment, but also to actively shape it. This is expressed in the development of new legal norms (indeed, a new branch of legislation), institutional reform (the creation of a dedicated ministry), and a strategic policy of digital development (the Information Doctrine of the Republic of Kazakhstan)¹.

The question of the state's participation in the digital realm has become especially pressing

in the context of sustainable governance, the protection of rights and freedoms, and the safeguarding of the public interest. "Today, the world is entering a new stage of development. Globalization continues, accelerated by the increasingly dynamic growth of the information sphere. Technological advances and the mass penetration of new digital tools have fundamentally transformed the modern media landscape"².

Materials and methods. The study, the results of which are presented in this article, was conducted using standard general scientific methods as well as specific private-law methods.

General logical methods such as – analysis,

¹ Об утверждении Информационной доктрины Республики Казахстан: указ Президента Республики Казахстан от 20 марта 2023 г. № 145 [Electronic resource] – Access mode: <https://akorda.kz/ru/ob-utverzhdenii-informacionnoy-doktriny-respubliki-kazakhstan-2025248> (Access date: 21.10.2025).

² In the same place.



synthesis, induction, deduction, analogy were used in the examination of monographs and dissertations, scholarly articles, media materials, and other sources.

Among the discipline-specific methods, we used the formal-legal method (which made it possible to identify the legal component of forming a state mechanism for regulating the digital environment) and the comparative-legal method (which enabled a comparison of various systems of state-legal regulation of digitalization abroad with the domestic system).

A large number of sources were studied: scholarly works by domestic³ [1]; [2]; [3]; [4]; [5]; [6]; [7] and foreign [8]; [9]; [10]; [11]; [12]; [13]; [14]; [15]; [16] researchers, sources of international law, strategic documents, domestic normative legal acts, as well as the draft Law of the Republic of Kazakhstan “On Artificial Intelligence.” We also analyzed the practices of Estonia and other EU states, the USA, Singapore, and the UAE in building a digital state.

Results, Discussion. The state is a multifaceted actor in the digital space, performing functions of legal regulation, ensuring digital sovereignty, data governance, and active participation in international digital processes.

The concept of digital sovereignty covers control over infrastructure, data, digital flows, and software under a state's jurisdiction. The European Commission emphasizes the importance of “technological non-dependence” as the foundation of digital sovereignty⁴.

In Kazakhstan, the development of digital sovereignty is reflected in the Concept for Digital Transformation, the Development of the Information and Communication Technology Sector, and Cybersecurity for 2023-2029⁵.

According to this Concept, Kazakhstan's digital transformation shows positive dynamics and holds leading positions internationally.

“According to UN studies, Kazakhstan ranks 28th (+1) in the ‘E-Government Development Index’ and 8th in the ‘Online Services’ index (1,208 government services 92% are provided electronically, of which 484 are exclusively digital and 724 are available both digitally and otherwise)”⁶. This became possible thanks to the construction of e-government infrastructure key databases and sectoral information systems, data-exchange buses (the “e-government gateway”, Smart Bridge), as well as a wide range of services (the e-government portal, the E-License system, Smart Data Ukimet, the digital projects “Digital Family Map” and “e-Otinish”, and the eGov Mobile application).

The transition to a digital-state model entails not only the automation of administrative processes but also a transformation in the very nature of public administration. In Kazakhstan, the eGov.kz platform is an example of integrated digital services, delivering more than 90% of government services in digital form. The eGov Mobile app also operates, offering services such as an electronic medical record, registration at one's place of residence, filing court applications, and more.

Kazakhstan's experience is comparable to that of countries such as Estonia, Singapore, and the UAE, where the digital state has become the foundation for modernizing public institutions. For example, in Estonia the X-Road platform enables secure interagency data exchange, ensuring the legal robustness of digital transactions.

With respect to data governance, “government bodies have accumulated vast data sets contained in more than 400 information systems”. The Concept notes that metadata for 128 databases across 32 government bodies (21 central and 11 local) were analyzed, encompassing a total of 84,523 tables and 969,203 fields. The analysis showed that in 107

³ Цифровое общество и право. – Алматы: «Институт философии, политологии и религиоведения» КН МНВО РК, 2024. – 520 с.

⁴ White Paper on Artificial Intelligence. A European approach to excellence and trust, 2020 / European Commission [Electronic resource] – Access mode: https://commission.europa.eu/system/files/2020-02/commission-white-paper-artificial-intelligence-feb2020_en.pdf (Access date: 12.11.2025).

⁵ Об утверждении Концепции цифровой трансформации, развития отрасли информационно-коммуникационных технологий и кибербезопасности на 2023-2029 годы: постановление Правительства Республики Казахстан от 28 марта 2023 г. № 269 [Electronic resource] – Access mode: <https://adilet.zan.kz/rus/docs/P2300000269> (Access date: 21.10.2025).

⁶ In the same place.



of 128 databases, metadata quality reached 90% or higher⁷.

Key priorities include the creation of national data processing and storage centers, and limitations on the cross-border transfer of personal information (Law of the Republic of Kazakhstan of May 21, 2013 No. 94-V “On Personal Data and Their Protection”)⁸. There is also active development of initiatives to localize critical digital infrastructure, including threat-monitoring centers and “cyber shields” based at JSC “TsARKA”.

Kazakhstan has achieved substantial results in building a digital state; however, the country still faces the task of moving from its current level of digital maturity to a higher level aligned with the concept of a “smart” state.

Below is a Gartner chart that reflects

Kazakhstan's path in developing a digital state (Diagram 1)⁹.

“To ensure the maximum effect, Kazakhstan will need: (1) digital transformation across industries to maximize data collection and provide seamless services; (2) a transition to a platform model of digitalization; (3) AI and advanced analytics; (4) systemic and sustainable engagement and integration of all sectors and regions into the national innovation system; (5) systematization, structuring, and digitization of the national innovation system and its processes to increase efficiency and user convenience; (6) creating favorable conditions for developing the venture market, including through rule-making; (7) developing a secure national digital infrastructure; (8) ensuring the security of individuals, society, and the state in the use of ICTs”¹⁰.

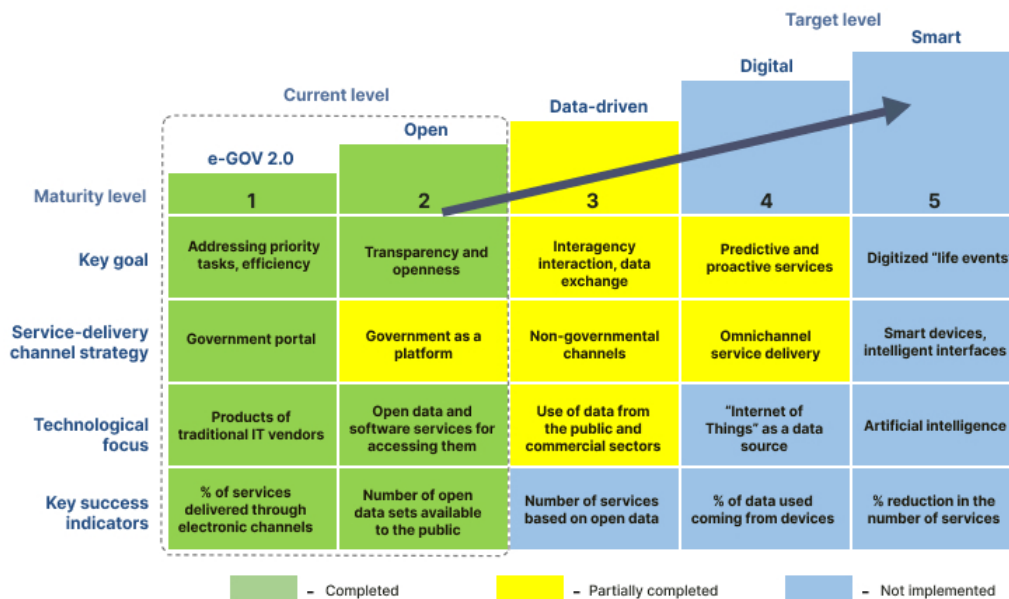


Diagram 1. Development of the digital state in the Republic of Kazakhstan

Digital transformation of public administration today is not merely the introduction of technology but a change in the logic by which public institutions function. In practice, there are

two principal approaches to implementing this transformation.

The first – conventionally “traditional” – path is to preserve existing departmental information

⁷ Об утверждении Концепции цифровой трансформации, развития отрасли информационно-коммуникационных технологий и кибербезопасности на 2023-2029 годы: постановление Правительства Республики Казахстан от 28 марта 2023 г. № 269 [Electronic resource] – Access mode: <https://adilet.zan.kz/rus/docs/P2300000269> (Access date: 21.10.2025).

⁸ О персональных данных и их защите: закон Республики Казахстан от 21 мая 2013 г. № 94-V [Electronic resource] – Access mode: <https://adilet.zan.kz/rus/docs/Z130000094/z13094.htm> (Access date: 21.10.2025).

⁹ Об утверждении Концепции цифровой трансформации, развития отрасли информационно-коммуникационных технологий и кибербезопасности на 2023-2029 годы: постановление Правительства Республики Казахстан от 28 марта 2023 г. № 269 [Electronic resource] – Access mode: <https://adilet.zan.kz/rus/docs/P2300000269> (Access date: 21.10.2025).

¹⁰ In the same place.



systems while gradually improving them. This can include improving inter-system interaction, creating new solutions, and phased integration. The advantage is that it does not require abrupt institutional changes. However, it also has serious drawbacks. In particular, it preserves outdated management models that limit the state's ability to process data, make decisions quickly, and scale digital services.

Another problem with the traditional approach is the so-called “digital feudalism”¹¹. In this situation, each agency designs and maintains its own digital solutions solely according to internal needs. As a result, the architectures and logics of different agencies' systems diverge significantly, data are not interoperable, and the state loses the ability to pursue a unified digital policy.

Over time, the fragmentation of these solutions makes it difficult to expand the range of public services: rollout times for new services increase substantially, and by the time they launch the services may already be losing relevance for users.

The second option is a platform approach based on rethinking digital processes and implementing architectural solutions that ensure end-to-end integration. This means creating a single digital space that guarantees data compatibility, procedural flexibility, and the rapid deployment of new solutions.

In practice, the new digital ecosystem should be introduced in stages, without destroying the existing infrastructure but gradually replacing it. This approach maintains the stable functioning of public bodies during the transition and minimizes risks associated with the implementation of new technological solutions.

At present, the most topical development is the draft Law of the Republic of Kazakhstan

“On Artificial Intelligence”, which lays the groundwork for special regulation in the field of AI¹². The document defines types of AI systems, establishes their classification by level of autonomy and purpose, and introduces principles of responsibility and oversight in the use of these technologies.

Of particular interest is the proposed definition of artificial intelligence as an information and communication technology that enables the imitation of, or surpasses, human cognitive functions in order to perform intellectual tasks and search for solutions.

The draft law also contains a separate Chapter 2 devoted to public administration in the field of AI. According to Article 12 of the draft, the Government of the Republic of Kazakhstan: (1) develops the main directions of state policy in the sphere of artificial intelligence; (2) determines the operator of the national artificial intelligence platform; (3) approves the list of priority sectors of the economy for the introduction of artificial intelligence; and (4) exercises other powers provided by this Law, other laws of the Republic of Kazakhstan, and acts of the President and Government of the Republic of Kazakhstan¹³.

The bill is based on principles proposed by international organizations, in particular the OECD and the Council of Europe. Among them are: algorithmic transparency, protection of human rights, and the predictability and accountability of AI-assisted decisions. These approaches align with the provisions of the European Union's Artificial Intelligence Act¹⁴, which also provides for risk categories and bans certain types of AI.

In conditions of digital interdependence, the state faces cross-border challenges: cloud computing, the transfer of big data, the hosting of servers in other jurisdictions. The European

¹¹ Об утверждении Концепции цифровой трансформации, развития отрасли информационно-коммуникационных технологий и кибербезопасности на 2023-2029 годы: постановление Правительства Республики Казахстан от 28 марта 2023 г. № 269 [Electronic resource] – Access mode: <https://adilet.zan.kz/rus/docs/P2300000269> (Access date: 21.10.2025).

¹² Об искусственном интеллекте: досье на проект Закона Республики Казахстан (сентябрь 2025 г.) [Electronic resource] – Access mode: https://online.zakon.kz/Document/?doc_id=34868071 (Access date: 21.10.2025);

О внесении изменений и дополнений в некоторые законодательные акты Республики Казахстан по вопросам искусственного интеллекта и цифровизации: досье на проект Закона Республики Казахстан (сентябрь 2025 г.) [Electronic resource] – Access mode: https://online.zakon.kz/Document/?doc_id=32933085 (Access date: 21.10.2025).

¹³ In the same place.

¹⁴ High-level summary of the AI Act, 27 Feb, 2024 [Electronic resource] – Access mode: <https://artificialintelligenceact.eu/high-level-summary/> (Access date: 12.11.2025).ysfcdnwsdgajshdnxkihiw



Union is developing the concept of a digitally strategic autonomous space¹⁵ (EU Data Governance Act, 2022). In the United States, similar approaches are embedded in Executive Order 14110 of October 30, 2023¹⁶, which recognizes AI as a strategic priority requiring trust, safety, and international interoperability.

Kazakhstan, advancing a digital foreign-policy agenda, has signed cooperation agreements on digitalization within the OECD, WTO, CSTO, and SCO. Within the Eurasian Economic Union, initiatives are being promoted to create a single trust space, exchange digital signatures, and develop unified identification standards.

Government bodies are introducing AI- and big-data-based analytical platforms to forecast social and economic dynamics. For example, the Enbek.kz analytical system identifies labor trends and automates the provision of social assistance. In addition, the Smart Data Ukimet platform operates to analyze macroeconomic and demographic indicators in real time.

In the United States, a similar approach is implemented in projects such as Predictive Policing and AI-powered Social Benefits, where algorithms are used to identify crime risks or automate social payments. Such systems require clear regulation of responsibility, adherence to explainability standards, and bans on algorithmic discrimination.

Digital diplomacy requires the development of a new foreign-policy agenda. Kazakhstan participates in global digital security projects and advances proposals for harmonizing digital legislation among Central Asian countries. Consultations are underway on recognizing digital signatures, enabling interaction between blockchain registries, and exchanging normative legal acts in digital form.

A promising area is Kazakhstan's participation in the Open Government Partnership, where digital transparency and access to open data are viewed as the foundation of trust in public institutions.

Based on the foregoing, we consider it possible to identify the following problem points

in the development of the state and state institutions as subjects of digital relations:

1. One of the key challenges in the development of digital technologies is ensuring strict compliance of AI systems with fundamental human rights. The problem of algorithmic bias, well known in Western legal scholarship [10], raises serious concerns in Kazakhstan's legal system, especially in the context of automated justice.

2. The rapid spread of digital technologies intensifies the problem of digital inequality. A lack of adequate access to quality internet, coupled with low digital literacy among certain groups, inevitably exacerbates social injustice.

3. Cyberattacks on government information resources (for example, the high-profile incidents of 2021 in Kazakhstan and Kyrgyzstan) vividly demonstrate the vulnerability of state digital systems.

4. The shift from disparate, fragmented digital solutions to a comprehensive digital state necessarily entails reform. Public authorities must be prepared to regulate new forms of digital interaction, including issues of electronic identification, the functioning of virtual digital environments, the handling of sensitive personal information, and the operation of autonomous digital technologies. At the same time, there is a need to develop regulatory mechanisms that can not only respond adequately to emerging digital challenges but also form a sustainable legal environment with anticipatory regulation.

5. The draft Law of the Republic of Kazakhstan "On Artificial Intelligence" is only the initial stage in establishing a new legal regime aimed at adapting public law to digital reality. Going forward, it is necessary to work out core constitutional guarantees to protect digital rights, develop principles of responsible behavior in the digital environment, and institutionalize mechanisms for government and public oversight of the operation and development of AI systems.

Conclusion. Thus, the state in the digital space is not only a guarantor of legal order but also

¹⁵ Регламент Европейского Парламента и Совета Европейского союза 2022/868 от 30 мая 2022 г. О европейском управлении данными, а также об изменении Регламента (ЕС) 2018/1724 (Акт об управлении данными) [Electronic resource] – Access mode: <https://base.garant.ru/405860337/1cafb24d049dcd1e7707a22d98e9858f/> (Access date: 12.11.2025).

¹⁶ Executive Order 14110 of October 30, 2023. Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence [Electronic resource] – Access mode: <https://www.federalregister.gov/documents/2023/11/01/2023-24283/safe-secure-and-trustworthy-development-and-use-of-artificial-intelligence> (Access date: 12.11.2025).



a regulator that ensures digital justice in public and private legal relations. It simultaneously acts as a developer, user, and regulator of digital technologies.

Kazakhstan demonstrates a readiness to build a well-considered digital strategy that takes into account international experience and local context. However, further development requires both strengthening the regulatory framework and cultivating a culture of responsible digital governance based on transparency, accountability, and the primacy of human rights.

We believe that the state mechanism for regulating the digital space should ensure the following:

1. Elimination of algorithmic bias (recurrent AI errors leading to violations of citizens' rights) in the development of AI systems through maximally complete training data, diverse development teams, etc.

2. Ensuring inclusiveness in digital processes, with special support measures for residents of small settlements, persons with disabilities, senior citizens, and other socially vulnerable groups.

3. International cooperation in cybersecurity; the development of multilateral legal mechanisms for responding to cyberthreats; and the robust protection of critical information infrastructure.

4. Reform of the entire public (civil) service through architectural solutions that provide end-to-end integration and create a single digital space.

5. Development of an appropriate regulatory framework to protect digital rights, ensure responsible conduct in the digital environment, and regulate mechanisms for governmental and public oversight of the operation and development of AI systems.

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