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Artificial Intelligence Governance: Mapping Slovakia's Policy Approach to AI Regulation and Development (2023–2025)

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Abstract

The article examines how the Slovak government has designed and implemented artificial intelligence governance between October 2023 and December 2025. In the context of the EU AI Act and a growing emphasis on digital sovereignty, it seeks to identify which governance model—regulatory, pro-innovation, hybrid, or “strategic state”—best characterizes Slovakia’s emerging approach. Methodologically, the paper employs a single-case study combining a qualitative content analysis of laws, strategic documents, and official communications with an analytical chronology of key decisions. The results indicate a gradually consolidating hybrid, risk-based model supplemented by selected strategic investments and coordination mechanisms, which is constrained by limited administrative capacity. The article’s main contribution lies in providing the first systematic map of institutions, instruments, and strategies shaping AI governance in Slovakia. It offers a basis for comparative research in Central Europe and practical orientation for policymakers designing future reforms.

Keywords

Slovakia, artificial intelligence governance, AI Act, digital sovereignty, public policy implementation

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1. Introduction

Discussions concerning artificial intelligence governance have gradually shifted over the past decade from the domain of technological expertise toward the center of attention in political science and social sciences more broadly. This process accelerated further following the adoption of the *Artificial Intelligence Act* (Regulation (EU) 2024/1689), which establishes harmonized rules in the field of artificial intelligence. A critical question emerges: how are EU member states translating abstract norms into concrete institutional arrangements? The responses and actions of states have become a key test of their administrative capacity and strategic direction (Veale and Zuiderveen Borgesius 2021; Floridi 2023). In this context, small and medium-sized member states find themselves in a particular position: on one hand, they face identical regulatory requirements as larger states; on the other hand, they possess significantly more limited resources for building complex AI governance infrastructure.

In the case of the Slovak Republic, the arrival of a new government in October 2023 coincided temporally with the finalization of the European regulatory framework for artificial intelligence and mounting pressure to modernize digital governance. Upon its formation, the government declared an ambition to strengthen digital sovereignty, consolidate fragmented data sources, and leverage AI as a tool for increasing public administration efficiency and private sector competitiveness. These declarations subsequently materialized in the creation of new institutions and positions, the preparation of legislative proposals implementing European regulations, and the formulation of strategic documents that frame expected developments in the second half of the decade.

Against this backdrop, the aim of this study is to characterize the approach to artificial intelligence governance adopted by the Slovak government in the period from October 2023 to the end of 2025. Specifically, we focus on four analytical dimensions. First, we track the institutional architecture—the emergence and mandate of new bodies, particularly the government plenipotentiary for artificial intelligence and related actors within the central state administration. Second, we analyse the legislative dimension, in which we document proposed and adopted legal regulations related to the implementation of European AI regulation and the organization of state administration in this field. Third, we examine strategic documents, particularly conceptual materials formulating the "vision" and planned direction of Slovakia in the field of artificial intelligence. Fourth, we track sectoral initiatives in selected policies, such as cybersecurity, education, healthcare, and defence, where AI appears as part of the digitalization agenda.

Proceeding from these dimensions, we seek to provide an answer to the main research question: What model of AI governance is characteristic of the Slovak government in the analysed period (October 2023 – December 2025) and to what extent

does this model approximate existing typologies in the literature? The results will make it possible to assess whether the government is moving primarily toward a predominantly regulatory, pro-innovation, or hybrid arrangement and to what extent it is profiling itself as a “strategic state” in the field of artificial intelligence. Part of the analysis also involves assessing how the concept of digital sovereignty, which is gaining increasing salience in the European context, is deployed in discourse and adopted measures (Pohle and Thiel 2020).

2. Literature review

The scientific literature addressing AI governance questions offers several typologies through which national approaches can be systematically classified. Some authors distinguish between pro-innovation, primarily “soft-law” models, risk-based legislative models, and hybrid schemes in which hard regulation is combined with voluntary standards and experimental governance tools (Floridi 2023; OECD 2025). Others emphasize the concept of the “strategic state”, which not only regulates but actively invests in infrastructure, supports ecosystems, and seeks to make artificial intelligence an instrument for strengthening state power and digital sovereignty (Kattel and Mazzucato 2018). The point of departure for this study is the assumption that the Slovak case can be analyzed at the intersection of these frameworks, as the government simultaneously implements binding European norms, builds institutional oversight architecture, and declares ambitions in the field of data and computational infrastructure.

This analysis also builds upon the broader tradition of comparative public policy analysis, which systematically emphasizes the importance of conceptual precision and thorough mapping of policy instruments when evaluating new policy domains, including technology regulation (Howlett 2019). In the existing literature, one can find works capturing global trends in AI governance and analysing the approaches of large European states and supranational actors, particularly the European Union and the OECD (Jobin et al. 2019; Veale and Zuiderveen Borgesius 2021; Gstrein et al. 2024; Maas 2025; Schiff 2025), while the Central European and specifically Slovak context remains covered only minimally (Csernatoní 2024; Tárnok 2025). A partial exception is represented by recent research from the Czech Republic, which notes that “*AI tools play an important role in the political process - a fact reflected by governments and other political actors, including political parties*” (Šárovec 2025).

Regarding the specific context of Slovakia prior to October 2023, the development of AI governance was predominantly subsumed under the broader digital transformation agenda. The foundational policy framework was established by the *Strategy of the Digital Transformation of Slovakia 2030* (Ministerstvo investícií, regionálneho rozvoja a informatizácie SR 2019) and the subsequent Action Plan for 2019–2022, which prioritized ecosystem support and the definition of ethical principles. Institutional efforts

in this preparatory phase included the establishment of the Standing Committee for Ethics and Regulation of AI (CERAI) in 2020 as an advisory body and the publication of strategic recommendations by the multistakeholder platform Slovak.AI (AmCham Slovakia 2020). Nevertheless, this period was characterized primarily by a “soft governance” approach lacking binding regulatory instruments and centralized coordination, creating the institutional baseline from which the post-2023 developments diverged.

Slovakia, however, represents from an analytical perspective an interesting case of a small EU member state with an industrial base, with a relatively developed digital infrastructure thanks to previous digital transformation strategies, and simultaneously with limited human and financial capacities for building a complex system of AI governance.

3. Methodology

Methodologically, we proceeded from a single-factor case study that combines qualitative content analysis of official documents with the creation of an analytical chronology. The primary sources were strategic materials, legislative proposals, adopted laws, press releases from key ministries, and public statements by major actors. Based on a deductive-inductive approach, we assigned them to predefined categories derived from literature on AI governance and gradually refined them with empirically induced codes reflecting the specifics of the Slovak case. Although the study remains primarily descriptive, the systematic documentation of institutional and political developments in the defined period creates the preconditions for subsequent comparative analyses with other states in the region.

The contribution of this article is threefold. At the empirical level, we provide the first more comprehensive summary of the Slovak government's steps in the field of artificial intelligence in the period immediately following the adoption of European regulations and the assumption of executive power on October 25, 2023. At the theoretical level, we test the heuristic utility of existing AI governance frameworks when applied to a small Central European state and identify places where the Slovak case supplements or challenges these frameworks. Finally, at the applied level, we offer a map of actors, instruments, and strategic documents that can serve as a reference point for policymakers, expert audiences, and further research on artificial intelligence governance in Central Europe.

4. Theoretical framework

Artificial intelligence governance emerges as a political domain at a time when traditional institutional and regulatory tools face unprecedented challenges. The pace of technological development, the extraterritorial character of digital services, and

uncertainty regarding the long-term impacts of AI create pressure on policymakers to formulate approaches supporting innovation while simultaneously protecting fundamental values, expectations, and social cohesion (Floridi 2023; OECD 2025). Contemporary digital technologies increasingly shape political communication and party competition, thereby influencing power relations and legitimacy in democratic governance (Maškarinec and Novotný 2020: 13–14). This chapter comprises three main theoretical sections that frame our analysis of the Slovak case in this problematic area: typologies of AI governance models, the concept of digital sovereignty, and analytical dimensions of policy implementation.

4.1 Typologies of AI governance

Differing approaches to AI regulation appear in the literature, which can be analytically distinguished, though authors themselves do not classify them in this way. On one side are approaches emphasizing pro-innovation, soft tools and governance—for instance, the OECD's emphasis on “enablers, guardrails and engagement” in the context of digital government (OECD 2025: 105–148). Also noteworthy is the risk-based legislative model, which Veale and Zuiderveen Borgesius analyze using the example of the proposed EU AI Act as a product-safety regime with graduated risk levels and obligations (Veale and Zuiderveen Borgesius 2021: 33–39; Veale and Zuiderveen Borgesius 2021: 97–104). Floridi, in this connection, distinguishes between hard and soft ethics and emphasizes that legal regulation and ethical self-regulation intertwine in practice. This allows us to speak of hybrid schemes that combine firm legal obligations with voluntary standards and experimental governance tools (Floridi 2023: 78–82). This enables us to discuss hybrid schemes combining hard legal obligations with voluntary standards and experimental governance tools, such as regulatory sandboxes or codes of conduct.

The pro-innovation model proceeds from the assumption that technological progress requires flexible and adaptive frameworks that minimize regulatory burden and leave high degrees of freedom to the private sector (Floridi 2023). The state in this model acts primarily as a facilitator of innovation: supporting research, establishing general ethical principles, and relying on self-regulation through industry standards and professional norms (Floridi and Cowls 2019; Floridi 2023). The weakness of this approach lies in its inability to promptly capture and manage systemic risks arising from the expansion of AI into critical areas such as healthcare, infrastructure, or security (OECD 2025).

The risk-based legislative model, by contrast, places a binding legal framework at the center of regulation, which categorizes AI systems according to risk level and establishes specific obligations for each category (Veale and Zuiderveen Borgesius 2021). The European Union through its artificial intelligence regulation presents a typical example of such an approach. High-risk systems, according to this framework, must be

subject to stringent requirements concerning documentation, transparency, and human oversight, while certain practices are directly prohibited, such as real-time biometric identification in publicly accessible spaces without exceptions or “social scoring” systems (European Union 2024). The advantage of this model is legal certainty and a high level of fundamental rights protection. The disadvantages, however, include higher compliance costs and the risk of impeding innovation, particularly in smaller economies with limited capacities.

The hybrid model combines elements of both preceding schemes. Hard regulation is reserved for clearly defined high-risk sectors, while in the remaining areas it relies on soft tools: recommendations, codes of conduct, “regulatory sandboxes”, or sector-specific guidelines (OECD 2025: 133–147). Some European states declare themselves in the context of implementing the EU AI Act as pursuing a hybrid approach designed to ensure compliance with European law while maintaining space for experimentation in less sensitive areas.

Part of the academic literature simultaneously points out that purely regulatory typologies do not capture the growing role of the state as a strategic investor and coordinator in the field of AI (Kattel and Mazzucato 2018). The concept of the “strategic state” emphasizes that the public sector fulfils not merely the role of a supervisory body but actively participates in shaping technological trajectories through purposefully oriented investments, infrastructure building, and support for innovative ecosystems (Kattel and Mazzucato 2018; OECD 2025). In the case of artificial intelligence, this concerns particularly long-term commitments to computational infrastructure, the data ecosystem, and public administration capacities to leverage AI in policy formulation and implementation. This is an element often absent from classical governance typologies such as soft-law versus risk-based legislation.

For the purposes of this study, we assume that the Slovak case can be interpreted at the intersection of the hybrid model and elements of the strategic state. The government simultaneously implements binding European norms with a pronounced risk-based structure, builds institutional oversight architecture, and declares ambitions in the field of data and computational infrastructure typical of strategically oriented states.

4.2 Digital sovereignty as a framework for AI policy

The concept of digital sovereignty has entered European political discourse as a reaction to growing dependence on global technological platforms, which are predominantly controlled by non-EU actors. Although there is no universally accepted definition of this term, the essence lies in the idea that a political community should possess the capacity to autonomously shape norms, infrastructure, and data flows in the digital space without critical dependence on external providers (Pohle and Thiel 2020; Floridi and Cowls 2019).

In the European context, digital sovereignty divides into four interconnected dimensions. The technological dimension concerns the capacity to develop and operate key technologies—from semiconductors and cloud services to foundational artificial intelligence models. The regulatory dimension refers to the ability to enforce legal norms governing digital services and AI systems operating within the EU territory, including the extraterritorial effects of certain regulations. The EU AI Act provides an example. The data dimension emphasizes control over data production, processing, and sharing, particularly in relation to industrial and public digital spaces. Finally, the infrastructural dimension concerns ownership and location of data centers, networks, and computational capacities—a critical topic in the context of AI innovations (Pohle and Thiel 2020; OECD 2025).

In recent years, digital sovereignty itself has become a framework through which European institutions legitimize extensive investments in data and computational infrastructure, support for domestic technology firms, and efforts to reduce dependence on non-European cloud and AI providers. The debate is not, however, limited to the EU level. Increasingly important is the national discourse, which takes various forms, from protection of “strategic data” to the construction of “sovereign” data centers and supercomputers.

The Slovak context is specific in this regard. The state possesses a relatively developed digital infrastructure and long-standing digital transformation strategies. On the other hand, it ranks among smaller economies with limited resources for building its own AI platforms and cloud solutions. Government documents published after 2023 (for example, the Government Cloud Development Concept, the Digital Transformation Action Plan for Slovakia 2023–2026), the presentation of preparations for the AI Vision for Slovakia, and the signing of the Declaration on European Digital Sovereignty clearly link ambitions in artificial intelligence with the objective of strengthening digital sovereignty, particularly through consolidation of state data, development of computational infrastructure, and reduction of dependence on foreign providers. These declarations provide a suitable analytical bridge between abstract European debate and concrete national measures.

4.3 Analytical dimensions of AI governance implementation

For the purposes of systematic analysis of the Slovak case, the aforementioned concepts must be operationalized into individual dimensions. We proceed from the tradition of policy design and comparative public policy analysis, which emphasizes the importance of conceptual precision, careful distinction of instruments, and attention to institutional context (Howlett 2019: 3–12). The analysis of AI governance implementation in a particular national context requires a systematic approach to capturing diverse dimensions of governmental action (Bolleyer and Börzel 2010: 158). Literature on policy

implementation emphasizes that the success of political intent depends not only on its formulation but above all on the way abstract principles transform into concrete institutional structures, legal provisions, and operational measures (Signé 2013: 4–7). In the case of artificial intelligence, this transformation proves particularly demanding. Governments must respond to rapidly changing technological environments, coordinate actors across sectors, and simultaneously implement binding European norms while possessing limited capacities.

For the purposes of this study, we distinguish four analytical dimensions of AI governance implementation representing distinct though mutually interconnected planes of governmental action. This framework emerges from the intersection of literature on policy tools, institutional capacity, and governance structures (Bali et al. 2021: 296–299; van Nipsen n.d.). Each dimension captures a specific aspect of how governments build, formalize, and operationalize their approach to artificial intelligence governance.

The institutional dimension encompasses organizational structures and arrangements created to ensure oversight of the artificial intelligence field (Bolleyer and Börzel 2010: 161–165). Specifically, this concerns the emergence of new bodies or positions (for instance, government plenipotentiary, AI offices, coordinating bodies), the assignment of mandates to existing institutions, and the creation of mechanisms for horizontal and vertical coordination (Matei and Dogaru 2013). Institutional architecture determines who holds formal authority to decide on AI policies, how activities are coordinated across ministries, and what personnel, financial, and informational resources are available. In the context of implementing the European artificial intelligence regulation, member states must designate at least three types of authorities: a market surveillance authority, a notifying authority, and possibly a body for regulatory sandboxes (European Union 2024). Member states, however, possess considerable discretion. Some states create a centralized model with a single main agency (Spain), while others prefer a decentralized approach with multiple sector-specific authorities (Finland with ten surveillance bodies). This variability reflects different traditions of administrative organization but simultaneously creates coordination and oversight challenges (Larouche 2025: 31–35).

The legislative dimension captures legal instruments and regulatory frameworks adopted to govern artificial intelligence (Veale and Zuiderveen Borgesius 2021: 98–101; Larouche 2025: 12–16). This concerns primarily the transposition and implementation of the European regulation into national law, as well as complementary national provisions governing state administration organization, private actor obligations, or specific sectors. The legislative dimension can be further subdivided into primary legislation (laws, regulations) and secondary legislation (implementing regulations, delegated acts) (Larouche 2025: 14–18). Literature on policy tools distinguishes between substantive and procedural instruments (Bali et al. 2021: 297–299). Substantive tools directly influence the content of goods and services provided or regulated by government.

Procedural tools govern the institutional mechanisms through which such goods and services are provided. In the case of AI governance, this might involve the introduction of mandatory certification (a substantive tool) versus the establishment of an inter-ministerial coordination committee (a procedural tool).

The strategic documents dimension concerns conceptual and planning materials formulating a vision, priorities, and planned direction in the field of artificial intelligence over a medium to long-term horizon. Strategic planning plays a crucial role in coordinating public policies. It enables vertical coordination (between governance levels) and horizontal coordination (between ministries and sectors). Strategic documents typically include national AI strategies, sectoral visions (for instance for healthcare, education, defense), digital transformation action plans, and implementation roadmaps for European regulations. These documents do not serve merely as declarative statements. They shape decision-making regarding budgetary resource allocation, determine legislative priorities, and frame public discourse on the state's role in artificial intelligence (Matei and Dogaru 2013: 2–7). The quality of strategic documents directly influences the government's capacity to formulate coherent and consistently applied policies. Documents with unclear conception or conflicting objectives lead to fragmentation of effort and inefficient resource allocation (Signé 2013: 9–11). Conversely, strategic planning based on thorough analytical preparation and broad consultation with stakeholders increases the legitimacy and implementability of adopted measures. In the European context, moreover, national AI strategies are expected to reflect digital sovereignty principles and work synergistically with EU-level initiatives (European Commission 2024).

The sectoral (policy) dimension captures concrete initiatives, programs, and projects implemented in individual areas of public policy where artificial intelligence emerges as a tool or subject of regulation. This dimension transcends formal institutional structures and legislative frameworks. It tracks the actual deployment of AI solutions in cybersecurity, education, healthcare, defence, digital governance, or industrial policy (Howlett and Del Rio 2015: 1235–1239). Howlett and colleagues distinguish different levels of policy mix complexity according to the number of tools, objectives, policies, and governance levels involved in their formulation and management. The simplest are basic tool mixes (multiple tools, single objective, single governance level); the most complex are multi-level, multi-policy, and multi-tool portfolios (Type VIII in Howlett's taxonomy) (Howlett and Del Rio 2015: 1236–1243).

In AI governance, one can observe increasing complexity of policy mixes precisely at the sectoral level. Success depends on the extent to which tools are horizontally coordinated within one governance level and vertically between different levels and sectors. Synergistic relationships among tools strengthen the effectiveness of the entire portfolio. Conflicts or weak coordination, by contrast, lead to resource waste and emission of ambiguous signals to the private sector (Howlett and Del Rio 2015: 1243–1246). In the

case of small and medium-sized EU member states, such as Slovakia, limited personnel and financial capacities constitute a particularly pronounced factor shaping the government's capacity to build coherent and complex policy mixes.

These four dimensions—institutional, legislative, strategic, and sectoral—together provide an analytical framework for systematically capturing and evaluating the Slovak government's steps in AI governance. In practice, the individual dimensions are mutually interconnected. Institutional structure creates capacity for legislative preparation and strategic document formulation. Legislation formalizes institutional authority and determines tools for sectoral policies. Strategic documents frame institutional priorities and shape the legislative agenda. Sectoral initiatives test the functionality of institutional and legislative frameworks and generate feedback for their revision (Bolleyer and Börzel 2010: 172–174). Each dimension, however, captures a specific aspect of governmental action and thus enables more descriptively precise and analytically nuanced documentation of the implementation process.

5. Results

In the following sections, we apply this framework to the Slovak case. We systematically document the steps the government has undertaken in the period from October 2023 to the end of 2025 in each of these four dimensions. The objective is to identify functional elements and deficiencies in the implementation process and assess the extent to which the Slovak approach approximates the AI governance typologies identified in the theoretical literature.

5.1 The institutional dimension of AI governance in Slovakia

Institutional architecture represents the foundation upon which the entire implementation scheme rests. In the Slovak case, one can observe gradual building of structures during the period 2023–2025, with the focus of activities concentrated in the Ministry of Investment, Regional Development and Informatization (MIRRI).

5.1.1 The function of the government plenipotentiary for Artificial Intelligence

A decisive step in building the institutional dimension of AI in Slovakia was the establishment of the position of government plenipotentiary of the Slovak Republic for artificial intelligence. This function was assumed by Radoslav Štefánek, who simultaneously serves as state secretary of MIRRI (Ministerstvo investícií, regionálneho rozvoja a informatizácie SR 2025a). This is a dual mandate. The AI plenipotentiary remains institutionally anchored within the ministry, which provides him direct access to decision-making processes, yet simultaneously raises questions concerning horizontal coordination with other ministries.

The plenipotentiary subsequently presented the *AI Vision for Slovakia* at the ITAPA AI conference in December 2025 following his appointment. He participated in international events such as TED AI Vienna (September 2025) and represented Slovakia at the OECD Global Partnership for AI level, where the country holds for the second consecutive year the role of co-chair (Ministerstvo investícií, regionálneho rozvoja a informatizácie SR 2025b). These activities indicate an ambition to establish Slovakia as an active player in the European and global AI governance debate. The question remains; however, how far international visibility will translate into effective domestic implementation given the limited capacities of a smaller state. Personnel and financial provision for the position are not detailed in publicly available documents. This is presumably because the plenipotentiary is not an autonomous body, but a function integrated within MIRRI. One can therefore assume that operational capacity depends on ministry support units and the ability to mobilize sectoral resources for cross-cutting tasks.

5.1.2 Inter-ministerial coordination mechanisms

Coordination among ministries represents a critical factor for success when implementing cross-cutting policy such as AI governance. Štefánek explicitly named “sectoral silos”—the fragmentation of responsibilities among ministries—as one of the greatest obstacles at the autumn ITAPE 2025 (ITAPA 2026). The need for a central, unified, and homogeneous approach stands in direct contradiction to the traditional structure of Slovak state administration, where each ministry possesses its own agenda and seeks to protect its own competencies.

MIRRI coordinated the preparation of the AI Vision through an expert working group comprising representatives from academia, business, and sectoral ministries (Ministerstvo investícií, regionálneho rozvoja a informatizácie SR 2025c). The Vision was opened for public comment by expert audiences in December 2025. This consensual approach may strengthen the legitimacy of the resulting document yet simultaneously prolongs the decision-making process and creates risk of erosion of ambitious objectives in favour of compromises acceptable to all actors.

A Standing Commission for Ethics and Regulation of Artificial Intelligence (CERAI) was already established in 2020, intended to serve as an advisory body (Future of Life Institute 2024). Its actual influence on policy formulation in the analyzed period, however, remains unclear. Publicly available sources provide no information on the commission's activities in 2023–2025. Concurrently, the Slovak.AI platform (currently AISlovakIA) operated as a non-profit initiative bringing together universities, business associations, and government. (AmCham Slovakia 2020) This platform prepared strategic recommendations for government in 2020, though its institutional embedding and

decision-making capacity were limited. These institutions thus represented more of a facilitation network than a formal coordination mechanism.

From available data, it appears that inter-ministerial coordination remains ad hoc and project-oriented, lacking firmly anchored structure with clearly defined mandates, regular meetings, and measurable outputs. This condition may lead to duplication of effort, inconsistent approaches across ministries, and weakening of Slovakia's negotiating position in implementing European regulations.

5.1.3 Oversight capacity and infrastructure

The European artificial intelligence regulation requires member states to designate, by August 2, 2025, three types of authorities: a market surveillance body, a notifying authority, and possibly a body for regulatory sandboxes (European Union 2024). A government bill on the organization of state administration in the field of artificial intelligence, submitted to inter-ministerial comment consultation in August 2025, designates MIRRI as the general market surveillance body and as the sole contact point (Vláda SR 2025). Sector-specific competencies were assigned to the Office for the Protection of Personal Data and the National Security Authority (NSA).

As of January 2026, however, this structure has not been formally notified to the European Commission. Slovakia remains in the category of member states with "unclear" implementation status (Future of Life Institute 2024). Delay relative to the August deadline represents an indicator of capacity or political problems. The European Commission may initiate formal infringement proceedings against member states failing to comply with the notification obligation.

Slovakia opted for a partially centralized model with one primary body (MIRRI) and two sector-specific authorities. This approach differs from highly decentralized models (for example, Finland with ten surveillance bodies) as well as from completely centralized solutions (Spain with a single AI Oversight Agency) (Future of Life Institute 2024). The advantage of partial centralization is clearer coordination and lower costs for building duplicate capacities. The risk involves overloading a single body with oversight of a broad range of technologies, sectors, and AI system types.

MIRRI simultaneously announced the establishment of a national AI sandbox, which is to enable firms to test innovations in compliance with European legislation. This is a promising tool for supporting innovation. Its operationalization, however, depends on methodology development, allocation of personnel capacities, and securing financial resources. Without these steps, the sandbox remains a declarative intention.

One can conclude that the institutional dimension of Slovak AI governance is in a formative stage. Basic contours are sketched, but they lack full operationalization, personnel and financial provision, and testing of functionality in practice.

5.2 The legislative dimension of AI governance implementation

The legislative framework is the backbone of rules determining obligations of AI system providers, competencies of supervisory bodies, and contains sanctions for regulatory breaches. In the analysed period, Slovakia prepared several legislative proposals responding to European requirements.

5.2.1 Transposition of the EU AI Act

The draft law on the organization of state administration in the field of artificial intelligence entered inter-ministerial comment consultation in August 2025. The law responds to Regulation (EU) 2024/1689, which is directly applicable and does not require transposition in the strict sense, yet member states must domestically regulate oversight organization, sanction mechanisms, and procedural requirements. Key provisions of the draft include:

- Designation of MIRRI as the general market surveillance body and contact point for high-risk AI systems;
- Designation of sectoral authorities (Office for the Protection of Personal Data, NSA);
- Regulation of obligations of high-risk AI system providers and details of the sanctioning regime for breach of the regulation (Vláda SR 2025).

Substantively, the law reflects the risk-based approach of European regulation. Specific obligations for high-risk AI systems (documentation, transparency, human oversight) derive directly from the regulation. The national law primarily governs procedural aspects: which body is responsible, what procedures exist for incident notification, and how sanctions are applied. It thus represents primarily a procedural tool in the sense presented in theory by Bali et al. (2021: 298), governing oversight mechanisms while leaving substantive requirements to the European level.

5.2.2 Complementary legal provisions

In May 2025, MIRRI submitted an amendment to the law on information technologies in public administration. Its objective is to strengthen digital asset management of the state, increase cybersecurity resilience, and introduce clear rules for AI use in public administration. AI-specific provisions include requirements that AI systems remain under human oversight, do not jeopardize the rights and freedoms of citizens, and that the public be clearly informed when interacting with AI (for instance when using chatbots) (Baraniak and Mrázik Lukáš 2026).

This amendment partially implements the European AI Act and the European Data Act. It combines substantive requirements (human oversight, rights protection) with

procedural tools (informational obligation to the public). Notable is the connection of AI regulation with cybersecurity in one legislative act, reflecting the integration of diverse dimensions of digital transformation in public administration.

An amendment to the cybersecurity law adopted in November 2024 implemented the European NIS2 Directive (AmCham Slovakia 2025). It expanded the scope of regulated entities, introduced stricter security obligations, and standardized incident notification procedures to the National Security Authority within 24 hours. AI appears in the context of this amendment as a tool for automation of security procedures (European Commission 2021).

5.2.3 Enforcement and sanctions

The European artificial intelligence regulation establishes sanctions up to 3% of global annual turnover of the provider for breach of prohibitions on certain AI practices (Gstrein et al. 2024: 12). The Slovak law draft regulates details of the sanctions regime, though specific penalty amounts, and procedural steps are not fully specified in publicly available sources.

Enforcement combines *ex ante* conformity assessment (self-certification or independent assessment depending on AI system category) with *ex post* market surveillance. Veale and Zuiderveen Borgesius, however, point out that most high-risk systems may be classified through self-assessment, creating risks of insufficient pre-market verification (Veale and Zuiderveen Borgesius 2021: 105–107). Slovakia adopts this European framework without substantial modifications, as the regulation is directly applicable.

The intersection with existing legal frameworks, particularly GDPR, NIS2, and eIDAS, creates a complex network of overlapping obligations. An AI system provider processing personal data must simultaneously meet AI Act requirements (if the system is high-risk), GDPR requirements (personal data protection), and possibly NIS2 (if providing critical services). Coordination among the Office for the Protection of Personal Data (GDPR), the National Security Authority (NIS2, cybersecurity), and MIRRI (AI Act) will be crucial for ensuring coherent oversight.

One can conclude that the legislative dimension mirrors the European risk-based model with emphasis on procedural tools governing national implementation. Time delays and the complexity of intersection with other legal frameworks present challenges that will test Slovak institutional coordination capacity.

5.3 Strategic documents and the AI development vision

The strategic plane of AI governance in Slovakia crystallizes in the analysed period particularly around documents framing digital transformation and ambitions in digital sovereignty (Pohle and Thiel 2020; OECD 2025). The AI Vision for Slovakia represents the

most recent attempt at synthesizing these ambitions and connecting them with concrete MIRRI policy priorities (Ministerstvo investícií, regionálneho rozvoja a informatizácie SR 2025c).

5.3.1 AI Vision for Slovakia

The AI Vision for Slovakia was presented in December 2025 as a conceptual document intended to precede adoption of a full-fledged national AI strategy. The document formulates six pillars: infrastructure, economy, education, data, computational power, and digital sovereignty. It explicitly connects AI development with the objective of transforming data and computational capacity into strategic state capital (Ministerstvo investícií, regionálneho rozvoja a informatizácie SR 2025d). Unlike earlier digital strategies, which focused primarily on public administration e-services, the vision shifts emphasis toward building capacities for development and adaptation of AI systems within the broader ecosystem.

Based on available information, the vision can be assumed to function as a framing document. It holds mobilization function toward ministries, local governments, and the private sector, yet does not itself contain a detailed schedule, measurable indicators, or budgetary commitments. In accordance with literature on strategic planning, one can expect its contribution to depend on whether it transforms into binding action plans with clearly defined milestones and specific actor accountability.

A noteworthy element of the vision is the emphasis on selective ambition. State representatives openly declare that Slovakia has no interest in building its own large language models for billions of euros but wishes to concentrate on infrastructure, data, and the capacity to “teach global models Slovak language and Slovak law on its own data” (ITAPA 2026). This position can be interpreted as pragmatic adaptation of the digital sovereignty concept to small economy conditions, where capacity does not exist to compete with global technology giants yet where comparative advantages can be leveraged in energy, supercomputers, and consolidated data sources.

5.3.2 Digital Transformation Action Plan and related documents

The AI Vision builds upon older strategic documents, particularly the *Strategy for Digital Transformation of Slovakia 2030* and the corresponding *National Plan for the Digital Decade of the Slovak Republic* (Ministerstvo investícií, regionálneho rozvoja a informatizácie SR 2019; Ministerstvo investícií, regionálneho rozvoja a informatizácie SR 2024). These documents define long-term priorities in connectivity, digital skills, and e-government services. AI appears in them more implicitly as part of the broader digitalization agenda than as a distinct policy domain.

If we connect these documents to the latest vision, a two-tier structure emerges. Horizontal digital transformation strategies create the framework for infrastructure

investments, data centers, and digital skills development, while the *AI Vision for Slovakia* adds sector-specific AI ambitions and explicitly ties them to the objective of strengthening digital sovereignty. In policy design logic, this configuration can be understood as combining an “umbrella” strategic document with a specialized sub-strategy for a particular technological area.

From an implementation risk perspective, the question remains whether document stratification will not manifest as policy fragmentation. If ministries reference sometimes horizontal digital strategies and sometimes specific AI documents without clear hierarchy and binding linkages, it may weaken the consistency of the overall policy mix.

5.3.3 Digital sovereignty in strategic discourse

In strategic texts and public statements by Slovak representatives after 2023, the concept of digital sovereignty repeatedly appears, borrowing from European discourse on limiting dependence on global platforms. In the Slovak case, this term is most frequently connected with consolidation of state data, development of government cloud, and construction of computational infrastructure, including supercomputers involved in the European EuroHPC initiative.

From a conceptual perspective, Slovak discourse approximates the four-dimensional framework of digital sovereignty, distinguishing technological, regulatory, data, and infrastructural dimensions. The regulatory dimension is largely determined by European regulations, while the technological and infrastructural dimension focuses on efficient utilization of existing capacities rather than building its own global AI platforms. The data dimension is crucial in the Slovak case; strategic documents emphasize the need to consolidate fragmented sectoral registers and make them available for model training and testing under strict privacy and security protection conditions.

It seems probable that the success of the Slovak model will depend on the capacity to translate digital sovereignty discourse into concrete investment decisions and regulatory measures. Without such linkage, the concept risks remaining primarily a symbolic framework legitimizing already existing digitalization projects.

5.4 The sectoral dimension: policy implementation across actors

The policy dimension of AI governance manifests in concrete projects, programs, and pilot activities across sectors. In the Slovak context, one can identify the most visible initiatives in education, healthcare, cybersecurity, and the broader innovation ecosystem.

5.4.1 Education and AI literacy

The Ministry of Education presented in 2025 the *Plan for Responsible Use of AI in Education in Slovakia 2025–2027*, with the ambition of systematically integrating AI into the education system beginning in the 2026/2027 school year. The plan rests on four principles: accessibility, equality, quality, and safety. It relies on five lines of intervention: AI in schools, AI for all, teacher support, improved education management, and innovation support (Ministerstvo školstva, výskumu, vývoja a mládeže Slovenskej republiky 2024).

This initiative represents an interesting example of a policy tool combining elements of both incentive and regulation. The state plans to finance AI tool implementation, prepares methodological support for teachers, and simultaneously establishes rules for safe and ethical use. Related to this initiative is the AI Days project, designed to support 100 primary and secondary schools with grants up to 2,000 euros and create space for AI experimentation in teaching (Edu Live 2025). From an implementation perspective, this will test whether the education system can absorb new technologies amid existing teacher overload and limited school capacities.

5.4.2 Healthcare and digital transformation

In the healthcare sector, one finds a combination of earlier pilot projects and newer innovative initiatives. The Institute for Health Policy at the Ministry of Health experimented before 2020 with algorithms for detecting prescription data fraud, working with hundreds of millions of records. The Health World hospital network tested the use of IBM Watson systems for oncology treatment recommendations (Dudek 2020). These projects illustrate the potential of AI for increasing both efficiency and quality of healthcare.

A newer element is the emergence of the European digital innovation hub *Center for Innovative Healthcare*, designed to serve as a “one-stop-shop” for digitalization projects in healthcare, including AI, telemedicine, IoT, and robotics (The Center for Innovative Healthcare 2024). The hub provides access to computational power, testing laboratories, and expertise, which can reduce barriers to entry for hospitals and healthcare start-ups. In the context of the forthcoming European health data space (EHDS), a foundation is thus created for leveraging high-quality data in training and validating medical AI systems.

Simultaneously, medical AI systems are subject to dual regulation—as medical devices under the medical device regulation (MDR) and simultaneously as high-risk AI systems under the AI Act. This accumulation of regulatory requirements may slow rapid deployment of innovations in Slovak healthcare, which already faces chronic underfunding and personnel shortages.

5.4.3 Cybersecurity and AI

The National Security Authority and MIRRI are building a *Competence and Certification Center for Cybersecurity*, which is to work with AI tools for automating security processes (Kompetenčné a certifikačné centrum kybernetickej bezpečnosti no date). The Cyberarena training center trained more than one hundred specialists in cybersecurity issues in 2024. All this occurred at a time when the National Security Authority reported in its assessments growing use of AI models in phishing campaigns and advanced persistent threat activities (National Security Authority 2025).

Slovakia experienced in 2025 an extensive cybersecurity incident at the Geodesy, Cartography and Cadastre Office that led to temporary shutdown of information systems. The incident demonstrates infrastructure vulnerability and presumably accelerated cybersecurity legislation reform and building of new capacities. From an AI governance perspective, this illustrates that AI is simultaneously a tool of defence and attack. On one hand, it strengthens detection capabilities; on the other, it increases threat sophistication.

Amendments to the cybersecurity law (NIS2) and preparation of implementation of the Cyber Resilience Act create a legal framework for safer product and service design. The connection of these regulations with the AI Act will in coming years shape conditions for AI solution deployment in infrastructure-sensitive sectors.

5.4.4 AI in public administration and political reactions

In the public debate on the government's AI agenda, critical voices have gradually highlighted the gap between declared ambitions and the actual use of AI in both the private sector and public administration. According to available statistics, only around 7% of Slovak enterprises reportedly used AI in 2023, rising to approximately 10.8% in 2024, while the EU average reached 22.4% and the European target for 2030 is 75% of enterprises using AI. Representatives of the innovation community and oversight bodies in this context argue that AI should be treated as a necessary instrument for improving efficiency and service quality in the public sector and emphasise that there are no formal legal obstacles that would prevent its deployment in administrative processes. Political reactions to the government's approach to AI governance were relatively limited in the analyzed period, reflecting the relatively low salience of the AI topic in broader public discourse. Opposition parties addressed the topic sporadically, usually in the context of broader debates on digitalization and cybersecurity. Political reactions to the government's stance on AI thus oscillate between calls for accelerating implementation and warnings that Slovakia risks "falling behind" in the regional competition over technological modernisation, with part of the argumentation drawing on assessments that digitalisation of public administration lags neighbouring states. On the government side, these concerns are reflected in strategic documents and legislative proposals that explicitly link AI to a broader reform of the research, development and innovation system

– a prominent example is the *National Strategy for Research, Development and Innovation 2030* (STVR 2025).

Media analysis and official statements suggest that AI governance does not yet represent a priority topic in party-political competition. The AI question appears more in a technocratic than in an ideologically polarized frame. This state may have a dual effect. On one hand, it allows a relatively consensus-based approach to policy formulation in which expert arguments dominate. On the other hand, it limits public attention and political capital that could be mobilized to secure resources and push through more ambitious reforms. One possible interpretation is that AI governance in the Slovak context remains largely the domain of technocrats and expert communities, while its connection to broader democratic discourse and civic participation remains weak.

5.4.5 Innovation ecosystem and industrial applications

The innovation ecosystem surrounding AI comprises academic centers, research organizations, business laboratories, and platforms such as AISlovakIA and KInIT. The AISlovakIA platform transformed from the civic association Slovak.AI and emerged as a neutral space for university, business, and government cooperation, preparing for instance a manual for companies implementing AI solutions (AISlovakIA 2024a). KInIT profiles itself as an independent institution bridging academic and commercial AI spheres. (KInIT 2024a) Alongside longer-standing initiatives such as AISlovakIA and KInIT, a new Association AI (ASAI) entered the ecosystem in 2024, positioning itself as a platform that connects firms, public-sector organisations, academia and civil society around the goal of responsible and innovative use of artificial intelligence in Slovakia. ASAI was founded on 23 July 2024 in response to the perceived need to create a more coherent environment for actors that already use AI or prepare for its deployment, and it explicitly frames its mission in terms of ecosystem-building, awareness-raising and providing a forum for debate on ethics, regulation and practical applications. One plausible interpretation is that ASAI may influence the implementation of governmental AI policies in the medium term in two principal ways: first, by serving as a source of expert input into regulatory design; and second, by acting as an intermediary that translates political signals towards companies and professional communities, thereby reducing the transaction costs the state faces when promoting regulatory and policy innovations (Association AI – ASAI 2024a; Association AI – ASAI 2024b; TASR 2024).

In a broader regional perspective, the emerging AI ecosystem in Slovakia is embedded in cross-border cooperation that transcends the boundaries of a single member state. The collaboration between the *Czech Association for Artificial Intelligence* (ČAUI) and the *Slovak Association AI* (ASAI) illustrates how sectoral coordination increasingly takes place through transnational networks that seek to pool expertise, align project activities and build a denser community of AI professionals in Central Europe.

Based on this cooperation, it is reasonable to assume that a non-trivial share of practical implementation capacities, especially in the business sphere, is being built outside formal government structures and complements them through soft coordination mechanisms rather than hierarchical steering. This transnational layer is consistent with the literature on non-hierarchical coordination in multilevel governance systems, where policy goals are pursued through networked actors and joint platforms alongside traditional state-centred instruments (Czech Association for Artificial Intelligence 2024).

A closer look at the Slovak AI ecosystem suggests that key dynamics are not driven solely by top-down initiatives but also by bottom-up activities that build communities and circulate knowledge about AI beyond a narrow expert audience. The slovaks.ai project, implemented by KInIT, seeks to connect the Slovak AI diaspora and to support networking among Slovaks working with AI both at home and abroad, thereby creating informal channels through which ideas, practices and contacts circulate back into the domestic environment. Also, the civic initiative Slovensko.Digital has played a sustained watchdog and advocacy role in Slovakia's digital governance landscape. It monitors public IT procurement, critiques inefficiencies and opaque decision-making, and actively contributes to debates on transparency, open data, and the quality of citizen-oriented digital services (slovensko.digital.sk). These community-oriented activities may strengthen the social legitimacy of governmental measures in the AI domain, as citizens and professional communities perceive AI not only as a technology controlled by the state or large corporations, but also as a space in which they can participate through professional and interest-based networks. Taken together, such initiatives indicate that adaptation to the AI challenge unfolds simultaneously on the micro level, where individuals and small communities experiment with AI tools, co-shape emerging ethical standards and make the Slovak AI footprint more visible in global networks (KInIT 2024b; KInIT 2024c). According to available data, Slovakia published approximately 340 articles in the AI field in 2024, representing 3.8% of domestic scientific output yet a negligible share of global output (AI World 2024). This asymmetry illustrates the limited research capacity of a small state that must carefully choose priorities and seek synergies with European programs.

Regarding industrial applications, the government seeks to support AI adoption particularly in small and medium enterprises through tools such as the AI-Impact project, designed to create a structured "AI adoption roadmap" for Slovak firms (AI-ImpactSK Project 2025). If these initiatives can relate to the planned national AI sandbox and grant schemes, a relatively coherent mix of motivational and capacity-building tools may emerge.

6. Discussion and conclusions

The analytical framework of four dimensions (institutional, legislative, strategic, and sectoral) allows us to characterize the Slovak approach to AI governance as an emergent hybrid model with elements of the “strategic state” (Kattel and Mazzucato 2018; Howlett 2019). Slovakia implements risk-based European regulation, builds institutional oversight infrastructure, and simultaneously strives to transform existing infrastructural and data capacities into a source of digital sovereignty.

At the institutional level, we observe, based on available information, the emergence of a central actor in the form of the AI plenipotentiary. His mandate is, however, strongly tied to a single ministry and relies on relatively fragile coordination mechanisms. The legislative dimension is substantially determined by the European AI Act, with the Slovak contribution consisting of procedural oversight and sanctions setup. Delay in authority notification suggests capacity limits and potential tensions between implementation speed and quality.

Strategic documents, from earlier digital strategies to the new AI Vision for Slovakia, create a narrative in which AI is perceived as a key factor for competitiveness and digital sovereignty. Their real impact will depend on whether they translate into binding action plans, budgetary decisions, and measurable indicators. Sectoral initiatives in education, healthcare, cybersecurity, and the innovation ecosystem show that the Slovak model approximates a hybrid approach in which hard regulation combines with experimentation, pilot projects, and support tools.

Based on this analysis, one can tentatively argue that the Slovak government profiles itself more as a cautious “strategic state” than as a purely regulatory or purely pro-innovation actor. It seeks to leverage existing infrastructural and data capacities, participates in international AI governance projects, and attempts to establish a coordinated national framework. One possible interpretation, however, is that the rapid sequence of steps (vision, legislation, pilots) in 2024–2026 emerges under strong external pressure from European deadlines and increases the risk of implementation fragmentation. At the same time, the political debate increasingly contains explicit statements about Slovakia’s lagging performance in the practical use of AI in enterprises and public administration, which generates pressure to align the government’s “strategic state” narrative with concrete measures to streamline institutions, strengthen coordination and accelerate the effective adoption of AI technologies. Comparative EU data and strategic documents point to Slovakia’s below-average performance in the integration of advanced digital technologies, including AI, in both enterprises and public administration (Eurostat 2023). Despite this, Slovakia has the institutional and technological foundations to make progress in the field of artificial intelligence. However, fulfilling this ambition requires more than just strategic rhetoric. It requires sustained investment in digital infrastructure, strengthened administrative capacities, and coherent

governance frameworks capable of ensuring the responsible and effective deployment of artificial intelligence in public administration and society (MIRRI 2025).

Further research could build on a comparative analysis with other small EU member states facing similar capacity limitations yet choosing different institutional and strategic configurations. Such comparison would enable better assessment of whether the Slovak model represents a viable adaptation of existing AI governance typologies or more a transitional, not yet definitively anchored regime.

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