

Aspen Technology & Society Program 2024 White Paper

Unlocking Romania's AI and Cybersecurity Potential: Toward Broader Adoption and Coherent Governance

The Public Policy Programs of the **Aspen Institute Romania** seek to improve the formation of policy through transparent, non-partisan, evidence based, multiple stakeholders' dialogue. The **Aspen Technology Society Program** has created a platform for debate and a dedicated community comprising multiple stakeholders from the public, private, academic and non-governmental sectors, interested in subjects covering technological developments and their impact on society. The Program aims to contribute to public sector policies, frameworks and strategies about key domains that will be significantly impacted by the fast evolution of technology, and to the development of strategic sectors in Romania.

In 2024, the Program discussions focused on the opportunities and challenges generated by the digital transformation and the adoption of AI in Romania. This White Paper is based on the conclusions of the following roundtables, which brought together key decision-makers (representing institutions such as the Ministry of Research, Innovation and Digitization, the Authority for Digitalization of Romania, the Romanian Parliament, the National Authority for Management and Regulation in Communications of Romania – ANCOM, the National Cyber Security Directorate – DNSC), private sector leaders and innovators, representatives of academia and of members of the Aspen communities of fellows and alumni:

- ✓ [The AI Potential for Romania](#), June 18th, 2024
- ✓ [Generative AI and Cybersecurity: Opportunities and Challenges for Romania](#), September 26th, 2024

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About the White Paper

Artificial Intelligence (AI) is transforming industries, governance, and security worldwide, offering unprecedented opportunities for innovation and societal advancement. In 2019, Romania committed to the OECD AI Principles, promising to uphold innovation, trustworthiness, and respect for human rights through a National AI Strategy. While the recent adoption in 2024 of Romania's AI Strategy marks a significant milestone, its current focus on European funding programs limits its broader transformative potential.

This policy paper, informed by discussions under the activities of the **2024 edition of the Aspen Technology & Society Program**, explores the strategic gaps and proposes actionable recommendations to enhance AI adoption, governance, and cybersecurity. By leveraging AI as a cross-sectoral enabler, Romania can position itself as a regional leader in responsible and innovative AI deployment.

Findings

1. The Current AI Strategy: Progress but Limited Scope

Romania's AI Strategy, while a step forward, is primarily aligned with European funding programs. This narrow focus risks sidelining the broader potential of AI to transform public administration, industry, and governance. A more ambitious and comprehensive approach is needed to ensure AI drives innovation, efficiency, and competitiveness.

2. Lack of Coherent Coordination Across Government

The lack of a clear mandate of a centralized body overseeing AI implementation has led to fragmented initiatives across ministries and agencies. This misalignment hinders Romania's ability to leverage AI effectively and risks duplicating efforts or overlooking key opportunities.

3. AI Education and Workforce Development

Education remains a critical bottleneck. Romania's workforce lacks the skills needed for an AI-driven future, and public awareness of AI's potential remains low. Integrating AI-focused curricula and reskilling programs is essential to address these gaps.

4. Generative AI and Emerging Cybersecurity Threats

The rapid advancement of generative AI presents both opportunities and challenges. While it can improve cybersecurity defenses through automation and predictive analysis, it also increases the sophistication of cyber threats. Romania's strong reputation in cybersecurity provides a foundation, but further investment is required to address these evolving risks.

5. Collaboration with Academia and Industry

Romania's innovation ecosystem is underutilized. The government must foster stronger partnerships with academia and the private sector to co-create solutions and align efforts toward national priorities.

Recommendations

1. Broaden the Scope of the National AI Strategy

Romania's recently adopted National AI Strategy provides a framework for aligning with European funding programs, but its scope must expand to leverage AI as a transformative enabler across the economy and public administration. The strategy should explicitly outline how AI can address Romania's unique challenges, such as digitalization, improving healthcare access, and driving

industrial modernization. This would ensure the strategy not only aligns with European standards but also serves national priorities.

To achieve this, Romania must invest in targeted AI research and development (R&D) programs, particularly in emerging areas like generative AI, edge computing, and natural language processing. Such investments can be used to stimulate local innovation ecosystems and encourage the development of AI solutions tailored to Romania's specific context. For example, AI-powered agricultural tools could improve crop yields, while AI-driven data platforms could optimize resource allocation in public administration.

Supporting AI entrepreneurship is another critical component of broadening the strategy's scope. Startups and small businesses should be incentivized through grants, tax benefits, and access to mentorship programs. These measures can help foster a robust ecosystem where innovation thrives, enabling Romania to position itself as a regional leader in AI innovation.

Lastly, the strategy should prioritize equitable access to AI solutions. This includes designing AI applications that benefit underserved communities and marginalized populations, such as tools to improve rural education and healthcare services. By addressing these gaps, Romania can ensure that its AI initiatives contribute to inclusive development while meeting ethical and democratic standards.

In brief, Romania's AI Strategy must evolve beyond a EU funding-centric framework to a more transformative, inclusive vision. Key actions include:

- **Incorporate AI in National Priorities:** Use AI to address critical challenges in public administration, healthcare, and environmental sustainability.
- **Promote AI Entrepreneurship:** Support startups and SMEs to develop AI-driven products and services, creating a robust innovation ecosystem.

2. Establish a Centralized AI Coordination Body

A centralized coordination body is essential for ensuring coherence in Romania's AI initiatives. Currently, fragmented efforts across various ministries and agencies have led to inefficiencies and missed opportunities. A dedicated task force, with a clear coordination mandate would serve as a focal point for overseeing AI implementation and aligning efforts across sectors.

This body should be empowered to define clear roles and responsibilities for all stakeholders, including government ministries, industry representatives, and academic institutions. By creating a national AI roadmap, the coordination body can establish a shared vision and set measurable goals for AI adoption and integration. Regular updates on progress should be published to ensure transparency and maintain public trust.

The coordination body can also serve as a platform for stakeholder engagement. Periodic consultations and workshops with academia, private sector representatives, and civil society

organizations can help refine AI policies and ensure that diverse perspectives are incorporated. This collaborative approach can foster innovation while addressing concerns related to ethics, bias, and data privacy.

Monitoring and evaluation will be a critical function of the coordination body. Key performance indicators (KPIs) should be established to measure the impact of AI initiatives across sectors. These metrics can guide adjustments to policies and ensure that Romania's AI strategy remains dynamic and responsive to emerging challenges and opportunities.

In brief, to ensure alignment and coherence, Romania should establish a dedicated task force with a clear mandate to oversee AI policy implementation. Its responsibilities should include:

- Setting national AI priorities.
- Facilitating inter-ministerial collaboration.
- Monitoring and evaluating the impact of AI policies.

3. Integrate AI Across Sectoral Policies

AI's potential cannot be fully realized if it remains siloed within a standalone strategy. Instead, it should be embedded across sectoral policies to drive innovation and modernization in education, healthcare, public administration, and beyond. This approach ensures that AI is leveraged as a cross-cutting enabler for national development.

In education, integrating AI into curricula at all levels is essential for preparing the next generation for an AI-driven future. Primary and secondary schools should introduce foundational AI concepts, while universities should offer specialized AI degree programs and research opportunities. Beyond formal education, reskilling initiatives can help the current workforce adapt to technological changes, ensuring that Romania's economy remains competitive.

Healthcare is another sector ripe for AI integration. AI tools can enhance diagnostics, streamline patient management, and predict outbreaks of diseases. For example, AI-driven telemedicine platforms can improve access to medical care in rural areas, addressing disparities in healthcare delivery. These innovations can make healthcare more efficient and equitable, benefiting millions of citizens.

Public administration can also benefit significantly from AI adoption. Automating routine processes, such as tax filings and permit approvals, can reduce bureaucratic inefficiencies and improve citizen satisfaction. Additionally, AI-powered data analytics can provide policymakers with actionable insights, enabling evidence-based decision-making and better resource allocation.

In brief, AI should not be siloed within a standalone strategy. Instead, it must be embedded across national policies, including:

- **Education:** Introduce AI-focused programs in schools and universities to foster technical and ethical AI literacy.
- **Healthcare:** Use AI for diagnostics, predictive analytics, and resource optimization.
- **Public Administration:** Enhance service delivery through AI-powered automation and citizen-centric solutions.

4. Prioritize AI Education and Workforce Development

A strong education and workforce development framework is critical for building an AI-ready society. Currently, Romania faces significant gaps in digital literacy and expertise, both in the general public and the professional workforce. Addressing these gaps requires a comprehensive approach to curriculum reform, reskilling initiatives, and public awareness campaigns.

Introducing digital and AI-focused curricula in primary and secondary education is the first step. These programs should include not only technical skills like coding and data analysis but also discussions on the ethical and societal implications of AI. At the university level, specialized programs in AI and machine learning can equip students with advanced skills while fostering research and innovation.

Reskilling and upskilling programs are equally important for professionals in traditional industries such as manufacturing and agriculture. These sectors can benefit immensely from AI adoption, but only if their workforce is prepared to use and manage these technologies. Partnerships between the government, industry, and academic institutions can help design targeted training programs to bridge these skill gaps.

Finally, public awareness campaigns can play a crucial role in demystifying AI and building trust among citizens. These campaigns should highlight the benefits of AI while addressing common misconceptions and fears. By engaging the public in an informed dialogue about AI, Romania can foster a culture of openness and innovation that supports its digital transformation goals.

In brief, building an AI-ready workforce requires targeted investments in education and reskilling programs:

- **Curriculum Reform:** Integrate AI concepts into primary, secondary, and tertiary education.
- **Upskilling Initiatives:** Offer reskilling programs for professionals in traditional industries.
- **Public Awareness Campaigns:** Educate citizens on the benefits and risks of AI to foster trust and acceptance.

5. Strengthen Cybersecurity with Generative AI

Generative AI has the potential to revolutionize cybersecurity by automating threat detection, analyzing vulnerabilities, and predicting attack vectors. However, it also introduces new risks, as malicious actors can use generative AI to create more sophisticated cyber threats. Romania must proactively address both the opportunities and challenges posed by this technology.

Investing in AI-driven cybersecurity tools is a key priority. These tools can identify and respond to threats in real-time, reducing the risk of breaches and data theft. Romania should also explore the development of generative AI systems for penetration testing, which can simulate attacks to identify vulnerabilities before they are exploited.

Ethical and regulatory frameworks are essential for preventing the misuse of generative AI. Romania should collaborate with international partners to establish norms and standards for responsible AI use in cybersecurity. These frameworks should also address issues of accountability, ensuring that AI-driven systems are transparent and auditable.

Finally, Romania's reputation as a leader in cybersecurity offers an opportunity to position itself as a hub for AI-based cybersecurity innovation. Establishing regional innovation hubs can bring together researchers, industry experts, and government stakeholders to develop cutting-edge solutions. This approach can not only enhance Romania's cybersecurity resilience but also drive economic growth and create high-skilled jobs.

In brief, generative AI presents a dual-edged sword in cybersecurity. To maximize its benefits while mitigating risks:

- **Invest in Defensive AI Tools:** Develop AI-driven systems for real-time threat detection and incident response.
- **Create Ethical Guidelines:** Establish a regulatory framework to prevent the misuse of generative AI.
- **Support Regional Leadership:** Position Romania as a hub for AI-based cybersecurity innovation, leveraging its existing expertise.

6. Foster Public-Private-Academic Partnerships

Collaboration between the government, academia, and private sector is critical for advancing Romania's AI ecosystem. Each stakeholder brings unique strengths that, when combined, can drive innovation, address challenges, and align AI initiatives with national priorities.

Knowledge sharing is a key component of effective partnerships. The government should establish platforms for dialogue where academia and industry can share research findings, best practices, and insights into emerging technologies. Hackathons and innovation challenges can also foster collaboration and generate creative solutions to pressing national issues.

Funding collaborative research projects is another important step. Grants and incentives can encourage universities and private companies to work together on AI applications that address Romania's specific needs, such as improving agricultural productivity or enhancing public service delivery.

Engaging with the global AI community is equally important. By participating in international research initiatives and forums, Romania can adopt cutting-edge technologies, share expertise, and

strengthen its position as a regional leader. These partnerships can also open up opportunities for training, funding, and technical collaboration.

In brief, collaboration is key to unlocking AI's full potential. The government should:

- **Encourage Knowledge Sharing:** Facilitate regular dialogue between academia, industry, and policymakers.
- **Provide Innovation Grants:** Fund joint research projects and AI-driven pilot programs.
- **Engage the Global Community:** Participate in international AI and cybersecurity initiatives to adopt best practices and build partnerships.

Policy Implications and Opportunities

By adopting these recommendations, Romania can:

- **Enhance Competitiveness:** Broader AI adoption will drive innovation and position Romania as a regional leader.
- **Improve Public Services:** Embedding AI in public administration will increase efficiency and citizen satisfaction.
- **Bolster Cybersecurity:** Investments in AI-driven defenses will protect critical infrastructure and data.
- **Empower Citizens:** Education and awareness campaigns will build trust and equip citizens for the AI era.

Romania stands at a transformative juncture where the effective implementation of Artificial Intelligence (AI) policies can redefine its economic and social landscape. The adoption of the National AI Strategy is an encouraging step, but its limited scope necessitates a more ambitious vision that incorporates broader national objectives and strategic coordination. Expanding the scope of AI policy and embedding it across sectors can bring profound implications and opportunities, ensuring Romania remains competitive in a rapidly digitizing world.

1. Enhanced National Competitiveness

AI has the potential to position Romania as a leader in innovation and technology in the region. By moving beyond European funding programs and investing in homegrown AI solutions, Romania can develop cutting-edge technologies that address its unique challenges. This includes leveraging AI to optimize agricultural practices, enhance industrial productivity, and drive the digital transformation of public administration. With strategic investments, Romania can attract global attention as a hub for AI research and development, creating high-value jobs and fostering an ecosystem of innovation.

Romania's cybersecurity expertise is already recognized internationally, and this strength can be amplified through the integration of AI-driven tools. By focusing on generative AI for cybersecurity,

Romania has the opportunity to become a leader in developing advanced defensive technologies, thus ensuring both economic and national security.

2. Improved Public Service Delivery

AI-driven solutions can transform public administration by automating routine processes, reducing bureaucratic inefficiencies, and enhancing citizen services. For instance, AI-powered chatbots can provide instant assistance for citizens, while data analytics can help policymakers make evidence-based decisions. In healthcare, AI can improve diagnostics, optimize hospital resource allocation, and support rural healthcare systems through telemedicine.

A coordinated and well-implemented AI strategy can also foster greater trust in public institutions. Transparency and accountability can be improved through AI tools that analyze government spending, monitor the delivery of public services, and identify corruption risks. These advancements can lead to a more efficient and citizen-centric government.

3. Strengthened Cybersecurity Resilience

As AI advances, so do the threats associated with its misuse. Generative AI has introduced a new wave of cybersecurity risks, enabling attackers to craft sophisticated phishing schemes, malware, and deepfake content. However, the same technology also offers unparalleled opportunities to strengthen cybersecurity defenses. AI-driven tools can detect and respond to cyber threats in real time, reducing the likelihood of successful attacks on critical infrastructure.

For Romania, investing in generative AI for cybersecurity not only ensures the protection of its digital assets but also enhances its reputation as a regional leader in this domain. By developing and exporting advanced AI-based cybersecurity solutions, Romania can attract investments, build partnerships, and contribute to global security standards. This proactive approach aligns with the country's goal of maintaining a strong cybersecurity posture while addressing emerging threats.

4. Empowered Workforce and Inclusive Development

AI is reshaping the nature of work, making it imperative for Romania to invest in education and workforce development. By integrating AI-focused curricula into schools and universities, the country can prepare the next generation for an AI-driven economy. Reskilling and upskilling programs will ensure that the existing workforce remains competitive, reducing the risk of technological unemployment.

AI also presents opportunities for inclusive development. By prioritizing projects that address disparities in rural areas, such as AI-powered tools for agriculture or telemedicine platforms, Romania can reduce inequalities and improve quality of life across the country. Empowering citizens with AI knowledge and tools not only enhances their productivity but also builds trust and acceptance of AI technologies.

5. Expanded International Collaboration

Romania's commitment to ethical AI and alignment with global best practices opens opportunities for international collaboration. Partnering with organizations like the OECD, EU, and UN, Romania can access funding, expertise, and technology to accelerate its AI adoption. Participating in global research initiatives allows Romanian institutions to learn from and contribute to cutting-edge developments in AI, ensuring that the country remains at the forefront of innovation.

Furthermore, Romania's strategic focus on cybersecurity and generative AI can make it a valuable partner in addressing global digital threats. By positioning itself as a regional leader, Romania can influence international norms and standards, strengthening its voice in global policy discussions.

6. Fostered Public-Private-Academic Collaboration

Effective AI policy requires the collaboration of diverse stakeholders, including government agencies, private companies, and academic institutions. This triad of cooperation can unlock innovative solutions to complex national challenges. For example, universities can focus on applied AI research, while private companies bring technological expertise and resources to scale solutions. The government, in turn, can provide the regulatory framework and funding to support these initiatives.

Public-private-academic partnerships also create opportunities for knowledge transfer and innovation. Collaborative projects, hackathons, and research initiatives can bring together talent from various fields to co-create solutions that drive economic growth and social development. These partnerships ensure that AI initiatives remain relevant, impactful, and aligned with national priorities.

Conclusions

The effective implementation of AI policies has the potential to redefine Romania's future, enhancing its competitiveness, improving public services, strengthening cybersecurity, and fostering inclusive development. By addressing the current gaps in strategy scope, governance, and coordination, Romania can fully harness AI's transformative power.

The implications of adopting a broader and more integrated AI strategy extend beyond national boundaries. Romania can serve as a model for responsible and innovative AI adoption, setting benchmarks for ethical standards and collaboration. By embracing this vision, Romania not only

secures its position as a leader in the region but also contributes to shaping a global AI landscape rooted in innovation, trust, and democratic values.

Romania stands at a pivotal moment in its digital transformation journey. The adoption of the National AI Strategy is a significant milestone, but its current scope must be expanded to unlock the full potential of AI. A coordinated, inclusive, and forward-looking approach will enable Romania to harness AI as a catalyst for innovation, governance, and security.

Through strategic investments in education, cross-sectoral integration, and cybersecurity, Romania can solidify its position as a regional leader. By fostering collaboration between government, academia, and the private sector, Romania will not only address its immediate challenges but also chart a path toward a prosperous and secure AI-driven future.