

AI State Policy in Belgium

(Focus on Flanders Region Action Plan)

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Abstract

This study examines Belgium's artificial intelligence (AI) strategy, focusing on its federated governance model that balances regional autonomy with national cohesion. Belgium's approach to AI governance, specifically through the Flanders AI Action Plan, reflects a decentralized structure that enables regional initiatives while supporting national AI objectives. The research analyzes the integration of AI strategies at both national and regional levels, highlighting the distinct roles of Flanders, Wallonia, and the Brussels-Capital Region. A multi-method approach, including expert interviews, document analysis, and comparative analysis, provides insights into Belgium's strategy and the broader European context. Findings reveal that Belgium's AI initiatives prioritize ethical standards, public trust, and competitiveness, aligning with EU guidelines. However, the country faces challenges in coordinating efforts across regions, fostering public trust, and addressing digital literacy. The study underscores the need for a unified communication strategy and enhanced key performance indicators (KPIs) for ethical and societal impacts. Belgium's model offers valuable insights into how federated governance structures can support technological advancement while respecting regional diversity and societal values, positioning it as a potential leader in responsible AI governance.

Keywords: Artificial Intelligence; Belgium; Flanders; Strategy.

Introduction

In recent years, artificial intelligence (AI) has emerged as a transformative force within governance frameworks worldwide, reshaping how public administration, policy implementation, and citizen engagement are approached. AI's potential to streamline government operations, improve decision-making, and personalize services has prompted nations to explore AI-driven strategies that align with their unique societal and political structures (Brynjolfsson & McAfee, 2017; Wirtz et al., 2019). Belgium's approach stands out as a significant model, particularly given its focus on integrating AI within a federated governance system (Djeffal et al., 2022).

Belgium's approach to AI in governance is marked by a dual emphasis on regional autonomy and national cohesion, with each region undertaking distinct yet complementary AI initiatives, especially Flanders. By examining Belgium's AI strategy and the Flanders AI Action Plan, this research sheds light on a decentralized model that could provide valuable insights for other nations, particularly those

seeking to balance regional independence with cohesive, nationwide digital transformation strategies (AI Flanders, 2022). This study contributes to the discourse on AI in governance by highlighting Belgium's nuanced approach to AI policy, which offers both opportunities and challenges in the evolving landscape of digital governance.

The primary objective of this research is to analyze Belgium's AI strategy, with a specific focus on understanding how AI initiatives integrate at both the national and regional levels within a federated governance model. This study aims to identify the distinct approaches undertaken by various Belgian regions, particularly Flanders, and to examine how these efforts align with or diverge from national AI objectives. Additionally, this research seeks to assess Belgium's overall approach to AI governance, with attention to its strategic focus areas and the challenges encountered in implementing AI within public administration.

Research Questions

1. How does Belgium's AI strategy integrate at national and regional levels?
2. What are the main focus areas in Belgium's AI policy, and how do these reflect both national and regional priorities?
3. What specific challenges does Belgium face in implementing AI across its federated governance structure?
4. How does the Flanders AI Action Plan contribute to or influence Belgium's national AI objectives?

These questions aim to provide a comprehensive understanding of Belgium's AI governance, exploring both the strategic coherence across regions and the unique contributions of regional policies to national digital transformation efforts.

Research Methodology

This research employs a multi-method approach to gather a comprehensive understanding of Belgium's AI strategy, focusing on expert interviews, document analysis, and comparative analysis. Each method is chosen to address specific aspects of the research questions and to provide a nuanced perspective on the integration and focus areas within Belgium's AI governance framework.

1. Expert Interviews

To gain qualitative insights into the practical implementation and challenges of AI in Belgium's governance, a series of semi-structured interviews will be conducted with ten experts. These experts include policymakers, academic researchers, representatives from regional AI initiatives (such as Digitaal Vlaanderen), and key stakeholders involved in the Flanders AI Action Plan. The interviews will focus on gathering perspectives regarding:

- The integration of AI initiatives at both national and regional levels.
- The focus areas within regional and national AI strategies.
- Challenges and opportunities in Belgium's federated AI governance model.

The semi-structured format allows for in-depth exploration of themes that emerge organically, ensuring that critical yet unforeseen insights are captured.

2. Document Analysis

Document analysis will be conducted to assess primary and secondary sources that outline Belgium's AI policies and strategies. This includes reviewing national AI strategy documents, regional action plans (such as the Flanders AI Action Plan), government reports, policy briefs, and relevant EU guidelines. This method provides a foundation for understanding the policy context, objectives, and strategic priorities of AI implementation at various levels. Key aspects of document analysis will focus on identifying:

- The specific goals and focus areas of Belgium's AI strategy.
- Regional variations in AI policy, especially regarding Flanders.
- The alignment or divergence of regional policies with national AI objectives.

3. Comparative Analysis

A comparative analysis will be conducted to evaluate Belgium's AI strategy in the context of other European countries with distinct approaches to AI governance, such as Estonia and the UK. This comparison will help contextualize Belgium's strategy within broader European trends, identifying unique elements and shared challenges in federated AI governance. The analysis will focus on:

- Comparative evaluation of national vs. regional AI governance frameworks.
- Differences and similarities in strategic focus areas.
- Insights from other countries that could inform Belgium's AI governance.

Together, these methodologies aim to provide a robust understanding of Belgium's AI governance model, revealing its strengths, challenges, and potential areas for enhancement in the evolving landscape of AI-driven public administration.

Background and Context

Overview of Global AI Strategy Trends and Belgium's Position in the European Context Globally, AI strategies are being formulated and implemented to harness the transformative potential of AI across various sectors, with many countries taking strategic steps to position themselves as leaders in AI innovation. Common trends in AI strategies worldwide include prioritizing AI research and development, promoting AI literacy and skills, enhancing data infrastructure, and establishing ethical guidelines for AI applications (Villani et al., 2018; OECD, 2019). Major economies, such as the United States and China, have focused on rapid innovation and scaling, emphasizing private-sector collaboration and AI-driven economic growth. In Europe, the approach to AI strategy is often characterized by a balance between technological progress and ethical considerations, emphasizing privacy, accountability, and societal well-being.

Belgium's AI strategy aligns closely with this European approach, particularly in its commitment to ethical standards, transparency, and fostering regional partnerships. Within the European context,

Belgium stands out as a unique case due to its federated governance structure, which allows for regional autonomy while supporting national-level coordination. The Flanders AI Action Plan exemplifies this approach by emphasizing region-specific AI applications, including health, logistics, and public administration, in alignment with broader European goals, such as those outlined in the European Commission's AI strategy (European Commission, 2021). By fostering a decentralized yet cohesive approach to AI, Belgium contributes to Europe's strategic objectives, while navigating its own governance complexities.

The Role of AI in Public Administration and Its Potential Impact on Society, the Economy, and Governance Artificial intelligence holds significant potential for transforming public administration, presenting opportunities to improve government efficiency, decision-making, and service delivery. In public administration, AI applications can streamline processes through automation, enabling faster and more accurate data analysis, which, in turn, supports evidence-based policy making (Mergel, Edelman, & Haug, 2019). AI can also enhance service personalization, allowing governments to respond more effectively to citizens' needs and providing tailored solutions across various public sectors, including healthcare, education, and public safety.

The impact of AI in governance extends beyond administrative improvements to societal and economic dimensions. Economically, AI-driven public administration can reduce operational costs, boost productivity, and potentially stimulate innovation by reallocating resources more efficiently (Agrawal, Gans, & Goldfarb, 2018). Socially, AI has the capacity to promote inclusivity by making public services more accessible, such as through language processing tools and assistive technologies for individuals with disabilities. However, AI's integration into governance also raises important ethical and governance challenges, particularly around data privacy, algorithmic transparency, and public trust. Addressing these concerns is essential to avoid unintended societal consequences and ensure that AI's benefits are equitably distributed.

Belgium's AI strategy recognizes these multifaceted implications by prioritizing ethical AI development, supporting education and AI literacy, and fostering public trust in AI applications. By positioning itself as a responsible AI leader within Europe, Belgium is well-placed to leverage AI's potential in governance while addressing the challenges posed by rapid technological change. Through its AI initiatives, Belgium aims to set an example for other nations on how to balance technological innovation with social and ethical considerations, underscoring AI's role not only as a driver of economic growth but as a transformative tool for inclusive, citizen-centered governance.

National AI Strategy

- National Convergence Plan for the Development of AI (2022)

The National Convergence Plan for the Development of AI, launched in 2022, is Belgium's comprehensive framework for coordinating AI efforts at the national level. This plan aims to foster AI development across various sectors and regions, supporting Belgium's goals of innovation,

competitiveness, and responsible AI implementation. The plan outlines nine core objectives that align with both national priorities and EU AI guidelines:

1. **Trust:** Building public trust in AI by promoting transparency, ethical standards, and accountability in AI applications.
2. **Cybersecurity:** Ensuring AI systems are secure and resilient against cyber threats, particularly in critical sectors such as finance and infrastructure.
3. **Competitiveness:** Enhancing Belgium's position in the global AI economy by supporting local businesses and startups in adopting AI.
4. **Data Economy:** Developing a robust data infrastructure and fostering a data-driven economy that allows for effective AI deployment.
5. **Healthcare:** Leveraging AI to improve healthcare services, including diagnostics, personalized medicine, and patient care.
6. **Mobility:** Using AI to advance smart mobility solutions, reduce traffic congestion, and improve public transportation efficiency.
7. **Environment:** Employing AI for environmental sustainability, including climate monitoring, energy efficiency, and resource management.
8. **Lifelong Learning:** Promoting AI literacy and skills development, ensuring citizens and professionals are equipped to adapt to AI advancements.
9. **Citizen Services:** Enhancing public services through AI, making them more accessible, efficient, and tailored to citizens' needs.

The Federal Public Services Policy & Support (BOSA) and Economy are central to overseeing this plan. BOSA focuses on policy coordination, promoting ethical AI, and monitoring implementation across government departments. The Federal Public Service Economy is tasked with economic oversight, supporting the competitiveness objective, and fostering partnerships with industry stakeholders. Both agencies work to ensure that the plan's objectives are met in a coordinated and efficient manner.

The National Convergence Plan is supported by a multi-year funding strategy, with allocations distributed to various sectors and agencies. While specific funding details vary annually, significant investments are directed toward cybersecurity, healthcare, and data economy initiatives. Key performance indicators (KPIs) include metrics for AI adoption across industries, the number of AI-related jobs created, and progress in public AI literacy programs. Timelines for each objective are phased over five years, with a review scheduled to evaluate achievements and recalibrate goals as necessary.

Regional AI Initiatives

- Flanders AI Action Plan (2019)

The Flanders AI Action Plan, initiated in 2019, is one of the most prominent regional AI initiatives in Belgium. This action plan focuses on strengthening Flanders' AI ecosystem by advancing foundational

research, promoting technology transfer, supporting industry adoption, and addressing ethical considerations. Key focus areas include:

- **Basic Research:** Supporting research institutions to drive AI innovations, with an emphasis on fields like machine learning, robotics, and AI ethics.
- **Technology Transfer:** Bridging research and application by facilitating collaborations between academic institutions and the private sector.
- **Industry Support:** Assisting local businesses, especially SMEs, in adopting AI solutions to improve productivity and competitiveness.
- **Ethics:** Addressing ethical concerns, ensuring AI applications are aligned with societal values and regulatory standards.

The Flanders AI Action Plan is backed by an annual budget of approximately €32 million, funding various initiatives such as innovation hubs, research grants, and industry partnerships. Notable projects include AI4Growth, which supports SMEs in adopting AI, and initiatives focused on healthcare and smart mobility applications.

- DigitalWallonia4.ai Program (2019)

The DigitalWallonia4.ai Program, also launched in 2019, is tailored to the unique needs of Wallonia, Belgium's French-speaking region. This program emphasizes the societal impact of AI, business innovation, training, and fostering partnerships to ensure that Wallonia remains competitive in the digital economy. Key objectives include:

- **Societal Impact:** Developing AI solutions that address societal challenges, such as healthcare access and environmental sustainability.
- **Business Innovation:** Supporting Walloon businesses in integrating AI technologies, enhancing productivity, and creating competitive advantages.
- **Training:** Building AI skills within the regional workforce to increase Wallonia's digital competencies.
- **Partnerships:** Facilitating collaborations between public institutions, private companies, and educational entities to support sustainable AI innovation.

DigitalWallonia4.ai is uniquely adapted to Wallonia's needs, aiming to stimulate economic growth and address societal challenges relevant to the region. The program's budget is allocated annually, with funds directed towards business support, digital training centers, and collaborative projects with academic and research institutions.

- Brussels-Capital Region AI Investments

The Brussels-Capital Region, although without a formal AI action plan, has launched various funding initiatives, programs, and skill development activities to foster AI growth. The region invests in AI through innovation grants, research funding, and public-private partnerships aimed at advancing digital transformation. Key initiatives include the Brussels AI Project, which supports AI applications

in public administration, and skill development programs focusing on AI literacy among professionals and students.

However, in the absence of a dedicated AI strategy, the Brussels-Capital Region faces limitations in coordinating AI initiatives and ensuring cohesive policy direction. This gap poses challenges in effectively addressing AI-related ethical concerns, industry-specific needs, and public engagement. A formalized AI action plan could strengthen the region's ability to align with national and regional AI efforts, promoting Brussels as a leading hub for digital innovation within Belgium.

Findings

- General Overview of Belgium's Political Environment

Belgium's complex political structure splits competencies among federal, regional, and community levels, creating challenges in areas like innovation, digitalization, and AI policy. Regional governments (e.g., Flanders, Wallonia) handle innovation, research, economic growth, and education, while federal authorities focus on national matters, including defense and intellectual property rights (IPR). This division often leads to overlapping or parallel initiatives, especially in fields like AI, where regions assert autonomy due to funding and competency.

Regional AI strategies have emerged independently. Flanders pioneered with an AI strategy in 2019, followed by Wallonia's plan, inspired by Flanders. Each strategy aligns with local competencies, leading to different priorities and methods. Meanwhile, the federal government's lack of substantial funding limits its AI involvement, although a national plan introduced in 2022 seeks to strengthen Belgium's position internationally. Despite this, regional governments maintain their approach, skeptical of a centralized strategy that risks overlooking their specific needs and autonomy.

AI for Belgium, a network of AI experts across sectors, underscores AI's significance to the nation's agenda, advocating for a unified but regionally sensitive approach. However, autonomy persists, with regions like Flanders integrating research and innovation seamlessly, thanks to consolidated budgets for community and regional purposes. In contrast, the French-speaking regions remain more fragmented, with separate governance for regional and community matters. This contrast illustrates Belgium's distinct governance styles, with Flanders benefiting from streamlined AI policy integration.

- Digital Belgium and E-Governance

Belgium was an early adopter of e-governance, introducing electronic identity (e-ID) cards in the 1990s, although lacking infrastructure limited their effectiveness. Recently, the nation has progressed with services like Tax-on-Web, enabling digital tax submissions and data-sharing across banks and governmental bodies. The pandemic further accelerated digital adoption, highlighting the importance of digital literacy, as citizens were compelled to use technology for services like vaccination registration.

While AI has gained public interest, knowledge gaps remain, with many unaware of AI's role in daily applications like GPS navigation or streaming services. This limited awareness emphasizes the need for digital education to foster a more informed and tech-savvy populace. Belgium's advancements in digital government reflect the challenges of integrating complex services within a decentralized framework, emphasizing the necessity of public trust and digital literacy.

- Data Administration and Privacy

Data privacy is fundamental to Belgium's e-governance, with decentralized verification gaining traction for secure user identification. The European Blockchain Services Infrastructure (EBSI) exemplifies this by using blockchain for decentralized identity management, allowing users more control over their data. This approach aligns with GDPR, addressing privacy concerns tied to centralized systems, which are prone to security risks.

Blockchain-based solutions are reshaping digital identity across Europe, with Belgium embracing decentralized verification for digital wallets and identity cards. However, monopolistic tendencies among dominant digital providers raise concerns over fair access and data control. Despite these challenges, decentralized models are increasingly favored, ensuring personal data protection while balancing innovation and security needs.

- AI Strategy and the 'Sputnik Effect'

Globally, AI has triggered a technological race, where countries feel compelled to advance their AI capabilities to remain competitive. In Belgium, regions like Flanders and Wallonia lead in AI strategy, with the federal government supporting AI mainly for international positioning rather than active involvement. The Flemish AI strategy, launched in 2019, emphasizes public-private partnerships and bottom-up research, allowing local agencies to set broad goals without dictating specific research topics.

Flanders prioritizes strategic applications and supports corporate innovation by connecting companies with research institutions. This includes broad initiatives but focuses on specific AI-driven research areas, such as applied medicine and agriculture, illustrating a decentralized, industry-responsive approach. The Flemish AI strategy emphasizes government-industry collaboration, while Wallonia follows a similar, though distinct, regional approach. The federal plan, while helping Belgium's international image, has met criticism for lack of consultation and direct regional involvement.

- Challenges in AI Strategy

Belgium's AI budget reveals prioritization of research over ethics and education, allocating €30 million to industry-academia research but only €2 million to ethics and education initiatives. Critics argue that more balanced funding would better address digital literacy and ethical AI, rather than leaving them as secondary concerns. Furthermore, the "brain drain" from public to private sectors undermines government guidance in AI development, as engineers are drawn to private companies with higher wages, giving the private sector more influence over AI's future.

The monopoly on digital services is another challenge, with a popular app dominating access to government services. Originally private, the app has grown essential, prompting the government to seek alternatives that ensure public oversight and data security. Belgium's decentralized governance

complicates such efforts, underscoring the need for cohesive approaches to secure and equitable digital service access.

- Evaluation of AI Policy and Governance

Measuring the ethical impact of Belgium's AI strategy is difficult, as ethical considerations often lack quantitative indicators. While the government set up the Knowledge Center for Data and Society, more KPIs could have streamlined tracking AI's societal impact. The Flemish AI strategy includes the AI barometer, which surveys companies on AI adoption to gauge policy impact. Although the second barometer report shows little change since the baseline, it reflects Belgium's cautious approach to adopting transformative AI initiatives.

Oversight remains decentralized, with separate steering and implementing groups meeting periodically to track progress. In Flanders, the Department of Economy, Science & Innovation and VLAIO (Flanders Innovation & Entrepreneurship) work on different AI pillars, from research to corporate collaboration. The AI strategy also includes educational programs like the Flemish AI Academy and the Knowledge Center for Data and Society, focusing on legal and ethical AI concerns.

- Governance and Ethical Considerations

Belgium's fragmented communication strategy for AI policy reflects broader governance challenges. Each AI initiative operates independently, creating a lack of cohesive messaging. AI applications for government services, such as chatbots, were not initially prioritized, missing opportunities to integrate research with policy-driven applications. This disconnect between research goals and government needs underscores the importance of a strategic approach that considers practical applications alongside technological advancement.

A pragmatic, action-oriented approach has led to progress, yet initial plans lacked a comprehensive long-term vision, leading to missed opportunities for integrating sustainability goals. Communication gaps also persist, with public-private sector cooperation strained by divergent AI ethics and implementation perspectives. Political leaders, limited by time and resources, struggle to prioritize strategic objectives, further complicating policy alignment.

- Challenges with Digital Trust and Public Perception

Public skepticism about data privacy affects AI adoption. Belgium's citizens are hesitant about data sharing, particularly with the government and corporate sectors. This unease complicates efforts to implement predictive models and AI applications reliant on public data. Additionally, the pace of digital transformation and the evolving role of technologists in policy-making has reshaped expectations around citizen data use, though the literature on digital governance struggles to keep up with these advancements.

Concerns over algorithmic discrimination further fuel public distrust. Misconceptions about AI's role in decision-making persist, with many mistakenly blaming algorithms rather than data or human oversight for biased outcomes. Clarifying AI's broader context and limitations is crucial for public acceptance and ethical AI policy development.

- Evaluation and Measurement Challenges

Evaluating Belgium's AI policy presents difficulties, especially in measuring non-quantitative goals like ethics and privacy. Quantitative metrics like publications and patents are easier to track, yet assessing ethical AI development lacks clear KPIs. Although meaningful changes are slow, the Knowledge Center's annual AI barometer provides insights. Efforts to expand KPIs to track societal impact continue, with recent policy evaluations aiming to shift from annual subsidies to longer-term funding models, like five-year covenants.

Policy assessments include both economic and societal impacts, acknowledging AI's importance in boosting productivity. Flanking measures support this growth, aiming to bridge research and practical applications. However, establishing earlier KPIs would have enhanced accountability, providing benchmarks for economic and educational outcomes.

- Communication and Public Engagement

Belgium's AI policy lacks a coherent communication strategy, with each initiative independently branding and targeting audiences. Integrating a unified communication approach would improve public engagement and transparency. The decentralized communication strategy reflects broader issues in Belgium's AI governance, where public awareness and understanding are often secondary to technical achievements. Initiatives like the Flemish AI Academy seek to improve public understanding of AI, although the need for a consistent policy message remains.

Efforts to bridge public and private sector priorities face additional challenges, as private companies' goals may not always align with societal values. The lack of a clear communication plan for Flemish AI initiatives hampers citizen engagement, lacking opportunities to effectively showcase the benefits and ethics of AI advancements.

- Public vs. Private Sector Interests

Belgium faces a common challenge of "brain drain," where skilled professionals move from public to private sectors due to better pay, reducing public influence over AI's future. Private companies' priorities may not align with public welfare, raising concerns over whose values shape AI development. As private firms dominate AI, public oversight remains limited, creating potential conflicts between corporate interests and societal values.

- Evaluation Methods and Future Considerations

Evaluating Belgium's AI policy requires balancing efficiency and ethics. Key metrics include patents, publications, and AI adoption rates, while ethical outcomes remain harder to quantify. The Knowledge Center's AI barometer indicates incremental progress, although political involvement delays comprehensive assessments. Future strategies aim for broader, inclusive KPIs to encompass economic, societal, and ethical impacts. The use of AI in sensitive areas like child welfare underscores the importance of careful evaluation. Biased training data has led to discriminatory outcomes, prompting public backlash and, in one case, the collapse of the government. This incident highlights the need for ethical oversight in AI policy, integrating value-driven approaches to prevent adverse societal impacts.

Conclusion

Belgium's decentralized governance presents both opportunities and challenges in implementing a cohesive AI strategy. Flanders leads with a structured, collaborative model, emphasizing innovation and industry partnerships, while the federal government attempts to strengthen Belgium's global AI reputation. Key challenges include balancing regional autonomy with federal cohesion, addressing public skepticism, and establishing meaningful metrics for AI's societal impact. Belgium's AI policy would benefit from a unified communication strategy and stronger ethical oversight, ensuring that technological advancements align with public values and foster trust in digital government initiatives.

Belgium's AI strategy exemplifies a unique, decentralized approach to AI governance, where regional autonomy and national objectives intersect to create a nuanced policy landscape. Through its National Convergence Plan, Belgium has set ambitious goals that emphasize competitiveness and innovation, ethical standards, cybersecurity, and public trust. The nine core objectives of this plan demonstrate Belgium's commitment to a responsible and inclusive AI strategy that aligns with broader European values and regulatory standards. However, as this study has shown, the balance between regional independence and national cohesion presents both opportunities and challenges for cohesive policy implementation.

In Flanders, the structured AI Action Plan highlights the importance of basic research, technology transfer, and industry support, positioning the region as a leader in AI innovation. Through its DigitalWallonia4.ai Program, Wallonia has tailored its AI initiatives to regional needs, focusing on societal impact, business innovation, and workforce training. The Brussels-Capital Region, while actively investing in AI, faces limitations due to the absence of a formalized action plan, which affects its ability to achieve cohesive alignment with national and regional efforts.

The findings of this research underscore the significance of public engagement, ethical oversight, and data privacy as essential components of AI governance. Belgium's decentralized structure allows for tailored regional strategies but also requires stronger coordination mechanisms to ensure national alignment. As AI continues to shape public administration, Belgium's approach provides valuable insights into how federated governance structures can embrace technological advancements while respecting regional priorities and societal values.

Belgium would benefit from developing a unified communication strategy to foster public trust, particularly around data use and privacy. Establishing clear, measurable KPIs for ethical and societal impacts could enhance accountability and public confidence. By addressing these challenges, Belgium has the potential to further strengthen its position as a model for responsible AI governance, demonstrating that decentralized governance and cohesive national strategy can coexist and mutually reinforce each other in the digital era.

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