



ARTIFICIAL INTELLIGENCE AND EUROPE'S DIGITAL ADVERTISING FRONTIER: GROWTH, GUARDRAILS, AND THE POLICY BLUEPRINT

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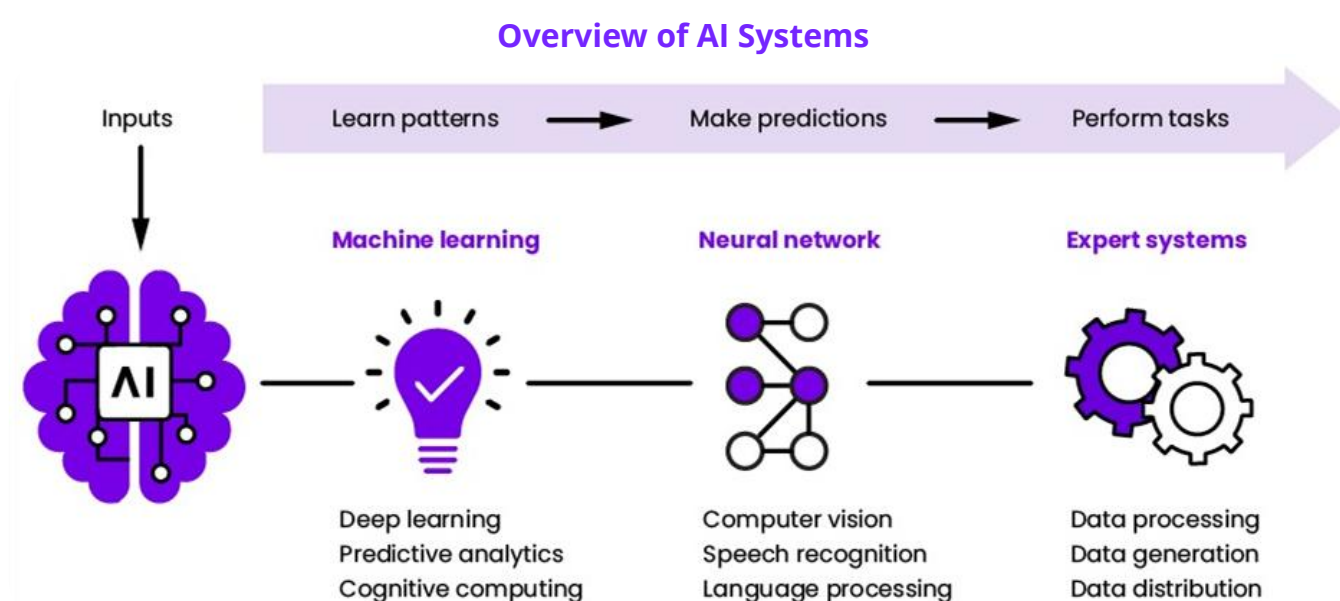
Introduction

Artificial intelligence (AI) has become the engine room of modern digital advertising, automating routine processes, surfacing real-time insights and enabling bespoke creativity at scale. Advertisers that embed AI across planning, buying and measurement report sharper campaign execution, faster optimisation cycles and richer consumer experiences that translate directly into higher return on ad spend.¹ These efficiency gains are now a principal competitive lever in crowded online markets.

Global economic evidence underlines the scale of the opportunity. AI revenue is forecast to soar from roughly \$200 billion in 2023 to about \$1.4 trillion by 2029, signalling a vast and rapidly expanding commercial ecosystem.² Firms that adopt AI early experience up to 3.1 percentage-point faster annual worker-productivity growth, while widespread AI deployment could lift euro-area productivity by 1.5 percentage points a year and expand EU GDP by around 8 percentage points over the next decade.³ Crucially for labour markets, 61 per cent of jobs are expected to be augmented - made more productive - by generative AI, with only 6.5 per cent likely to require long-term transition in Europe.⁴ Together, these figures position AI as a cornerstone of sustainable growth rather than a mere technological novelty.

Defining Artificial Intelligence Systems

AI systems are software and hardware combinations designed to perform tasks that typically require human cognition, such as recognising patterns, understanding language, making decisions, and generating content. They range from rule-based expert systems to machine-learning models that infer rules from data, and to deep-learning architectures that process information through multi-layer neural networks.

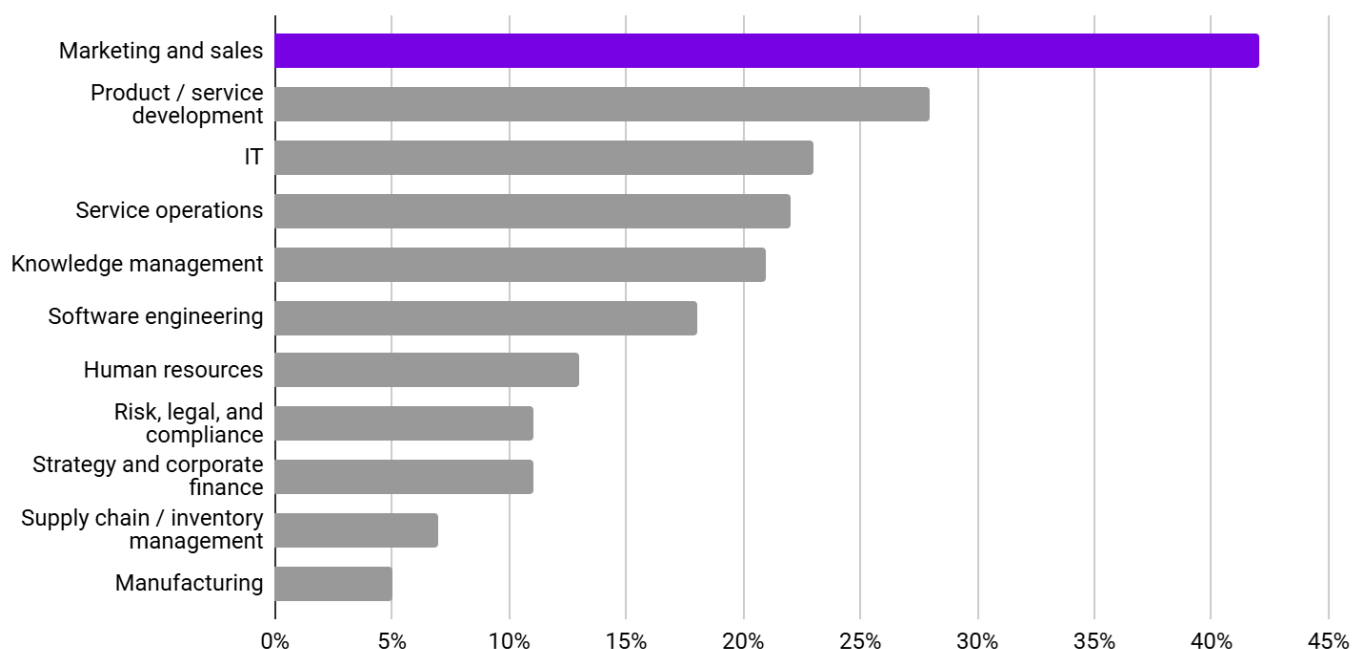


AI models operate by ingesting large datasets, training statistical algorithms to detect correlations and causal relationships, and then applying those trained models to new information. Generative models go a step further by synthesising text, images, and video, unlocking new creative formats for advertisers.

Artificial Intelligence in Digital Advertising

Since the early 2010s - when real-time bidding (RTB) first let advertisers decide which advert to show in the split second before a page loaded - digital advertising has been a fertile testing ground for successive advances in artificial intelligence. Academic studies at the time showed that statistical models could price each impression and adjust budgets continuously as campaigns unfolded.⁵ Subsequent research introduced deeper learning approaches capable of forecasting the likelihood of a click or sale and pacing spend so objectives were met by the end of a campaign.⁶ Later work took the next step by applying similar ideas to the advert itself: dynamic creative optimisation systems automatically combined headlines, images and calls-to-action to suit each viewing context.⁷ Today, generative techniques are being applied to draft copy, design visuals and even suggest full campaign ideas. Across these phases, the rapid feedback loops and rich data available in programmatic advertising have positioned the sector as a recognised hub for applied-AI innovation.

Regular gen AI use by business function across industries⁸



Recent research confirms that marketing and sales teams are leading adoption of generative AI technologies and digital advertising is at the forefront of this transition. More than 80% of marketers globally now integrate some form of AI into their online activities, and over half of marketing and advertising professionals in Europe report using generative AI for drafting content.^{9,10} AI's influence is also strong in customer journey personalisation, predictive analytics, and advanced ad targeting. Agencies highlight the importance of AI technologies across advertising functions - GroupM (now part of WPP Media) reports that as much as 70% of their advertising revenue is informed by AI technologies, a figure expected to reach 94% by 2027.¹¹

This early and widespread adoption within marketing and sales serves as a critical catalyst for broader AI innovation across the entire organisation.

As these customer-facing functions demonstrate tangible successes and efficiencies through AI – such as improved customer engagement, higher conversion rates, and reduced operational costs – they build a strong internal business case for AI adoption in other departments.

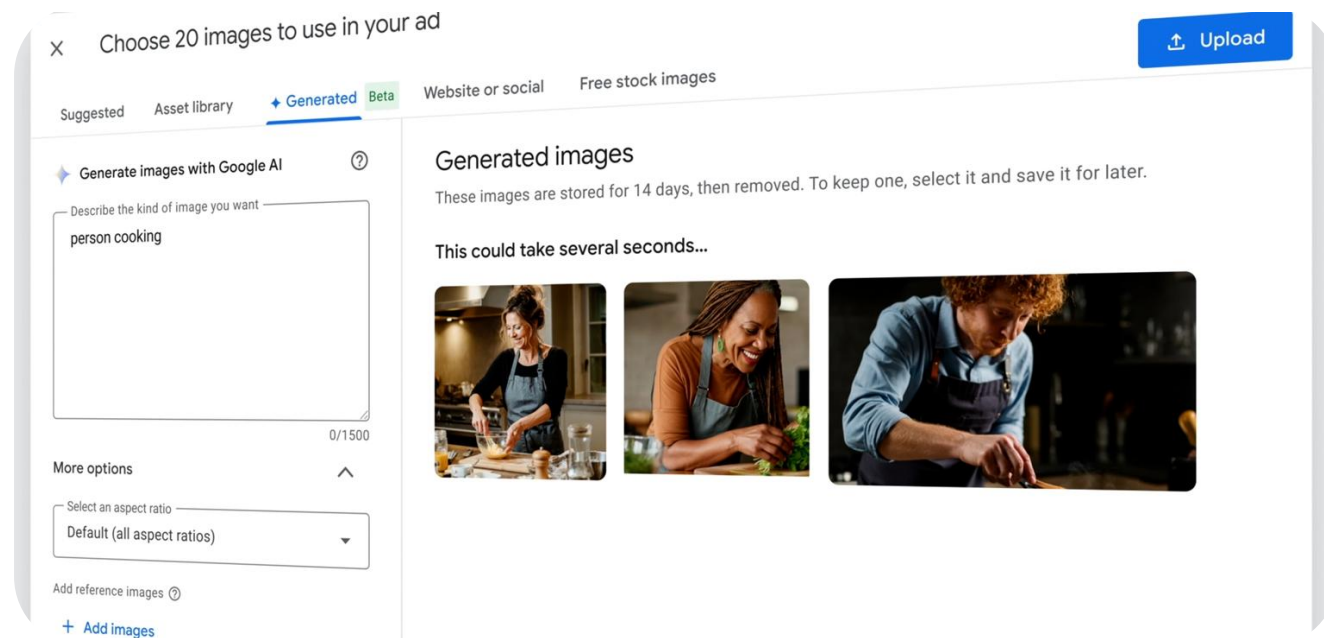
The demand for robust data infrastructure (e.g., Customer Data Platforms) and seamless integration of AI tools, initially driven by marketing needs, lays the groundwork for enterprise-wide AI capabilities that can then be extended to areas like supply chain management, human resources, finance, and product development. This cross-pollination of AI knowledge and infrastructure fosters a culture of innovation, allowing companies to reimagine core business processes, unlock new efficiencies, and accelerate product development. For Europe, this proactive adoption of AI, particularly in high-impact areas like marketing, is crucial for strengthening its global competitiveness by enabling businesses to achieve higher productivity, drive sustainable growth, and foster a more innovative ecosystem.

Examples in the Digital Ad Value Chain

Recent advancements in AI have enabled a new level of automation in digital campaigns. Where aligning digital activations with intended outcomes required managing a flurry of decisions and parameters in every stage of the campaign, businesses in the digital advertising supply chain are now delivering on the promise of end-to-end AI-led optimisation.

Creative Asset Generation by Google AI

Google's AI, exemplified by Performance Max campaigns, transforms ad creation by automating complex processes across the value chain. Advertisers provide strategic inputs like goals and assets, while AI handles real-time bidding, cross-channel placement, and asset generation, enabling clients to achieve significant conversion growth. This integration drives operational efficiency and enhances campaign effectiveness by optimising towards business outcomes across Google's network.



Examples in the Digital Ad Value Chain

Adform Recommendations interface surfacing real-time optimization suggestions

Adform, an ad tech platform founded in Denmark, has developed a proprietary AI engine combining predictive analytics, advanced machine learning, and generative intelligence. AI forms the foundation of all products and services offered in Adform FLOW, its campaign planning tool, supporting the entire advertising lifecycle from planning and execution to analysis and campaign optimisation.

A key component, Trader Intelligence, delivers real-time, context-aware recommendations to help users optimise campaign outcomes with minimal effort. These recommendations, based on campaign pacing, goal fulfilment, and performance trends, simplify complex decisions such as bid adjustments, budget allocation, and targeting refinement. They enable clients to achieve superior results faster while retaining full control, thanks to transparent, non-black-box automation. By applying AI to reduce manual effort and surface high-impact insights, Trader Intelligence helps clients optimise campaigns faster and more precisely than traditional workflows allow.

The screenshot displays the 'Domains & Apps' section of the Adform interface. At the top right, there is a 'Recommendations' toggle switch which is currently turned on. Below this, a instruction reads: 'Select recommendations to optimize targeting of domains and apps for the target KPI, or optimize manually'. There are three recommendation cards:

- Remove domains and apps with the highest eCPM Reach:** This card has a checked checkbox. Below it is a dropdown menu set to 'Balanced' and a status indicator showing '2 domains/apps'.
- Decrease bid multiplier by 20% for domains and apps with the highest eCPM Reach:** This card has an unchecked checkbox. Below it is a dropdown menu set to 'Strategy' and a status indicator showing '0 domains/apps'.
- Increase bid multiplier by 20% for domains and apps with the lowest eCPM Reach:** This card has an unchecked checkbox. Below it is a dropdown menu set to 'Strategy' and a status indicator showing '0 domains/apps'.

Below these cards is a horizontal performance bar ranging from 'Worst performance' to 'Best performance'. A yellow bar at the 'Worst performance' end represents the 'Remove' action. A legend below the bar identifies four categories: 'Remove' (yellow dot), 'Decrease bid multiplier by 20%' (green dot), 'Unaffected' (grey dot), and 'Increase bid multiplier by 20%' (blue dot). The bar indicates that 19 domains/apps are currently 'Unaffected'. At the bottom left, there is a button labeled 'Optimize Manually'.

Examples in the Digital Ad Value Chain

Contextual Targeting by Dataseat

Advancements in AI and machine learning have also elevated contextual targeting beyond simple keyword or category matching. Modern AI models can interpret complex contextual signals with greater precision and infer relevance from multiple data layers, including semantic, visual, and structural cues. An illustrative example of contextual targeting in practice comes from Dataseat (part of Verve). Within its platform, contextual intelligence is used to power campaigns that operate independently of device identifiers. AI is applied to extract and process signals from internal demand-side platform (DSP) logs as well as external datasets, such as app categorisation services, to construct a detailed understanding of digital environments. Additional metadata, including publisher genre and subgenre, is used to generate allowlist recommendations. These recommendations help identify relevant inventory when launching new campaigns or expanding the scope of existing ones.

Custom Bidding & Composite Outcomes by WPP Media

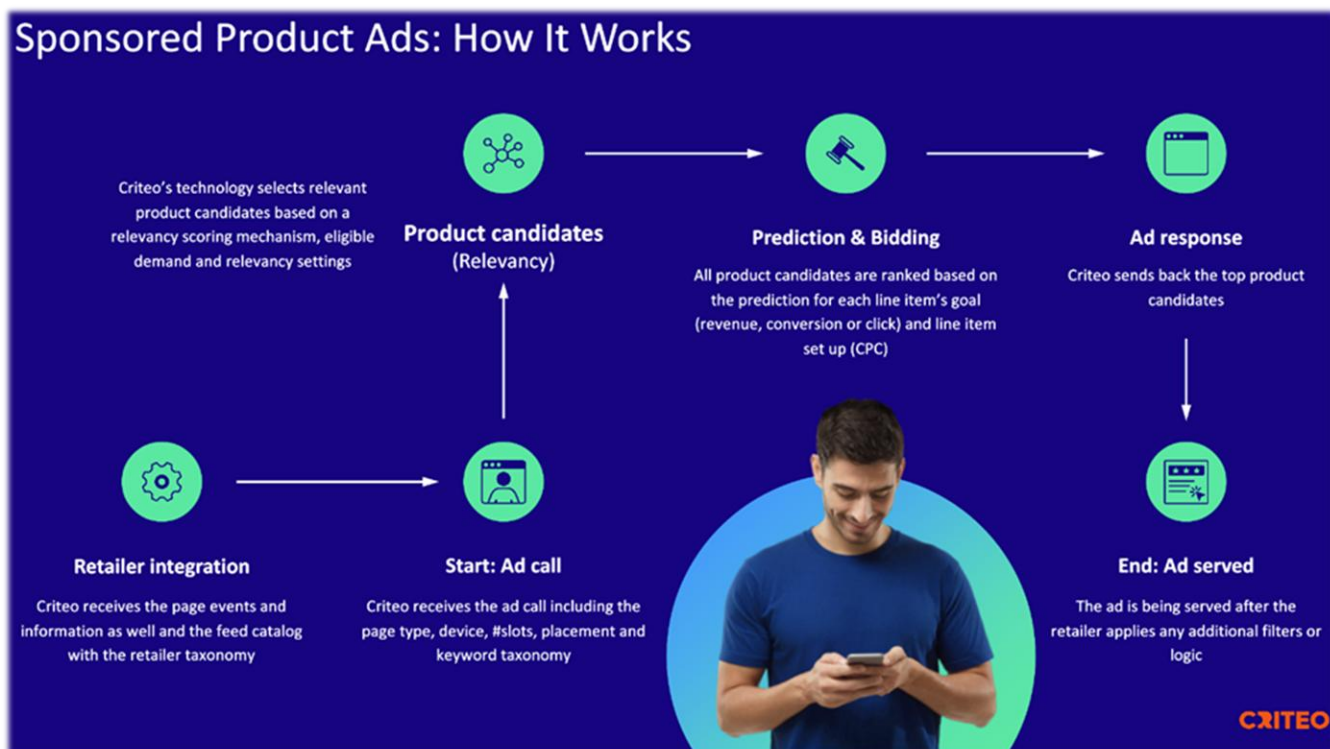
Over the past decade, WPP Media has developed and scaled an advanced Media Optimisation platform (formerly known as Copilot) demonstrating agentic AI in real-world application. Purpose-built for digital advertising, the platform integrates across all major demand-side platforms (DSPs), enabling advertisers to meet core KPIs such as CPM, CPV, and CPA, while also supporting more advanced objectives including brand engagement and in-store footfall. Custom bidding algorithms enable multi-signal, multi-KPI optimisation within a single platform, allowing advertisers to pursue composite outcomes such as improving both cost-efficiency and quality of exposure in tandem. Additional data can be layered in from third-party sources, including mobile location data, attention metrics, and sustainability signals like CO₂e per impression enabling richer and more precise optimisation across different campaign objectives.

Examples in the Digital Ad Value Chain

Criteo Sponsored Product Ads

Criteo leverages AI to enhance the precision and performance of sponsored product placements in Retail Media environments. Criteo's models optimise ad placements and find the best matches between shoppers and products based on contextual relevance from the search and advertiser goals, such as likelihood of conversion.

As AI capabilities mature, Criteo's infrastructure evolves beyond single-score search relevance to infer deeper contextual relevance by processing multimodal inputs, including text queries, product images, and structured commerce data. This approach enables advertisers to offer more meaningful product recommendations in real time.



How are Companies Building Safe AI?

Recent advances in artificial intelligence have led to a global proliferation of ethical frameworks and guardrails designed to guide responsible development, deployment and use of AI.¹² There is substantial convergence across high-level principles, including fairness, transparency, accountability, privacy and data protection, safety and robustness, and societal and environmental well-being. In Europe, the AI Act is now formalising many of these principles through a risk-based approach, introducing requirements to promote trustworthy and human-centric AI. Although the majority of digital advertising use cases do not fall within the regulation's high-risk classification and therefore lies largely outside its immediate scope, some companies in the sector are nevertheless working towards alignment with some of its core principles.

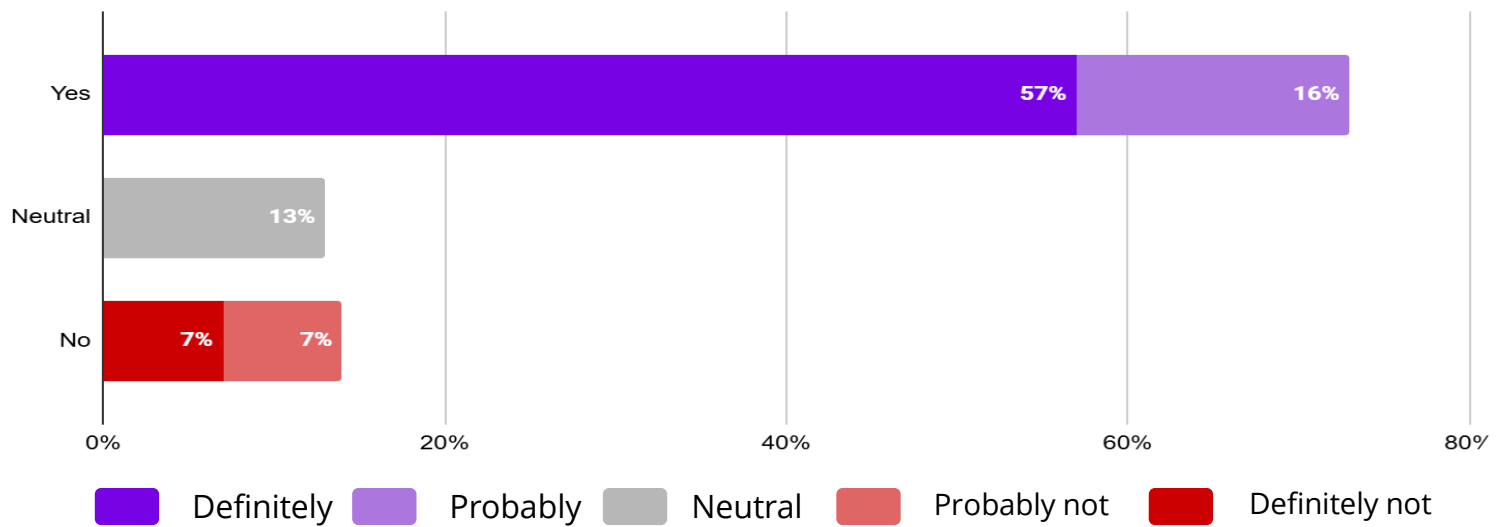
Although specific approaches vary, there is broad agreement on a set of shared foundations:

- Fairness and inclusion: AI systems should be trained and evaluated with attention to demographic diversity, avoiding discrimination or exclusionary outcomes when such outcomes significantly impact individuals.
- Transparency and explainability: It should be possible to interpret how or why an AI system arrives at its conclusions, especially where outcomes significantly affect individuals or groups.
- Accountability and oversight: Human responsibility should remain central to system design, with clear governance in place.
- Privacy and data integrity: Personal data used in training or deployment should be obtained in compliance with law and handled in line with ethical data principles such as data minimization and pseudonymisation.
- Robustness and safety: Systems should be resilient to misuse, manipulation, or failure, including mechanisms such as content safeguards.

As with any transformative technology, the increased use of AI introduces new challenges. These include the potential for opaque decision-making, biased outcomes, privacy concerns, and unintended system behaviours. These challenges are known across the ecosystem, and are often already subject to applicable laws.

Within the IAB network, many National Federations are engaging with digital advertising stakeholders to surface and navigate concerns relating to the impact of AI. For example, the German Association for the Digital Economy (BVDW) has published the [Responsible AI for the Digital Economy Report](#), outlining six principles for responsible AI products and providing insights on the public's perception of AI safety. The survey's results highlight the incentives to ensure security, reliability, and transparency when building AI-based products.

Almost Three Quarters of The German Public Would Avoid Opaque AI Products¹³



Question: Would you avoid using an artificial intelligence (AI)-based product/service if the AI's functionality is not transparent?

Statistical error overall result: 3.5% | Sample size: 2,507 | Survey period: July 29, 2024 - July 30, 2024

Inclusivity is also emerging as a practical necessity in building safe AI. Diverse development teams are more likely to identify edge cases, challenge assumptions, and anticipate unintended consequences. Efforts to broaden representation through inclusive hiring, audits, and product design are seen not only as a fairness issue but a key driver of quality and trust.

Another key consideration is data centre energy demand, which the International Energy Agency projects will rise from about 460 TWh today to roughly 945 TWh in 2030 - a figure equivalent to Japan's current annual energy consumption - driven chiefly by AI-optimised servers.¹⁴ AI training alone illustrates the scale: building GPT-3 consumed around 1,300 MWh, the annual electricity of 130 US homes, while preliminary estimates put GPT-4 at up to fifty times that figure. This energy intensity is particularly important in relation to advanced generative applications, as image and video generation and processing are more resource-intensive than text.¹⁵ Proactive implementation of sustainable AI frameworks and actions, such as measuring the energy cost of AI usage and optimising models to reduce energy consumption, can significantly mitigate environmental impacts. Organisations that establish robust sustainability metrics today will be positioned to navigate future regulatory requirements, maximise operational efficiency, and ensure uninterrupted access to the computational resources essential for capturing projected growth.

Organisational approaches to AI governance are at different stages of development, but overall momentum is evident. Ethical considerations are increasingly being incorporated into procurement, product development, and risk management. Many organisations are working to establish internal benchmarks and frameworks to guide responsible AI use. The general direction of travel is towards more structured, transparent, and accountable practices, supported by internal governance and emerging industry norms.

Policy Blueprint: Empowering Europe's AI Advantage

Artificial Intelligence has become a cornerstone of economic productivity, innovation, and strategic competitiveness. As global AI investment accelerates, the European Commission's goal of making Europe a world leader in responsible, human-centric AI is timely and ambitious. Success, however, will depend on turning regulatory frameworks into tangible outcomes by enabling uptake, supporting innovation ecosystems, and ensuring businesses can apply AI in ways that are practical, trusted, and scalable.

Digital advertising is among the more established sectors in Europe where applied AI is in use. AI tools are increasingly being integrated across areas such as content creation, campaign optimisation, targeting, measurement, and fraud prevention. These tools have democratised access to sophisticated capabilities, empowering companies, including small and medium-sized enterprises (SMEs) to compete effectively and unlock growth. To illustrate, over 75% of EU business leaders think that AI will save them time or money on digital advertising, and 74% of them believe AI will make it cheaper to advertise.¹⁶ These benefits translate directly into increased productivity, broader market participation, and enhanced consumer engagement.

While Europe will likely not lead in the development of large General Purpose AI (GPAI) models, its competitive edge lies in building trustworthy, domain or industry-specific AI models or systems that address concrete use cases. In the context of digital advertising, this means building and fine-tuning models that enable delivering online ads based on purchase intentions and using AI to deliver more personalised, efficient, and accessible advertising. This supports innovation across the value chain, from technology development to campaign execution and consumer choice and engagement.

To ensure this opportunity is fully realised, European policymakers should focus on the following priorities:

1. Deliver a Coherent and Proportionate Implementation of the AI Act

AI adoption must not be slowed by overlapping or inconsistent legal requirements. Risk assessments under the AI Act should be aligned with existing obligations under the GDPR and other frameworks, avoiding duplication. That's why we welcome the upcoming guidance being developed jointly by the European Commission and the EDPB to clarify the interplay between the AI Act and the GDPR. We urge that such guidance take a proportionate, risk-based, and innovation-friendly approach to implementation.

2. Equip Smaller Actors with Tools for Compliance and Innovation

Templates, model documentation, auditing protocols, and simplified guidance, as well as the AI Act Service Desk, should be made widely available to support SMEs developing and using AI. These instruments will enable responsible AI at scale and support cross-border business activity within the internal market.

Policy Blueprint: Empowering Europe's AI Advantage

3. Accelerate Public-Private Collaboration

Structured partnerships between industry, academia and public authorities can fast-track the translation of AI research into applied solutions. This is particularly important in advertising, where practical deployment requires harmonising technical standards and consumer trust. Collaborative mechanisms are also essential to sector-specific co-regulation.

4. Ensure Access to Infrastructure for AI Development and Access

If European companies are to innovate independently and sustainably, they must have access to the underlying compute and data infrastructure that supports AI training and deployment. That it is why it is also important to continue building out relations with trusted third regions as well as leveraging and securing access to shared resources. In addition, investment in European open-source models will help boost capacity and secure access to GPUs.

5. Promote Trust without Creating Unnecessary Burdens

Transparency and accountability are essential to responsible AI, but the labelling requirements set out in Article 50 of the AI Act risk being too broad or unclear. Without clear guidance, these obligations could lead to unintended effects such as user fatigue, regulatory overreach, or the marginalisation of smaller innovators. In advertising, where AI-generated content is often clearly fictional and under human supervision, mandatory labelling may be unnecessary and even counterproductive. Excessive labelling risks “banner blindness,” reducing consumer attention and trust, and may create an “implied truth effect” where unlabelled content is wrongly assumed truthful, potentially undermining trust and enabling misuse. Transparency obligations should therefore be context- and risk-sensitive, aligned with user understanding, and proportionate to promote both trust and innovation.¹⁷

Conclusion

Europe's path to AI leadership is not an abstract ambition but a tangible opportunity rooted in sectors already demonstrating significant AI integration such as digital advertising. The current market forecast projects AI revenue to reach approximately \$1.4 trillion by 2029, a substantial increase from \$200 billion in 2023, underscoring the immense economic potential. Generative AI-powered ads alone could create €250 billion in additional sales for EU businesses by 2030.¹⁸ Furthermore, widespread AI adoption could boost euro-area productivity by 1.5 percentage points annually and expand EU GDP by about 8 percentage points over the next decade.

To fully capitalise on this, policymakers must prioritize an implementation strategy for the AI Act that is clear, proportionate, and facilitative of innovation and adoption. Equipping smaller businesses with compliance tools, fostering public-private partnerships, and ensuring access to crucial AI infrastructure like compute and data are equally vital. Additionally, transparency obligations, particularly concerning AI-generated content in advertising, should be context- and risk-sensitive to avoid "banner blindness" and maintain consumer trust, rather than imposing overly broad or unclear labelling requirements. By focusing on these actionable recommendations, the EU can transform ethical AI principles into a global competitive advantage, fostering sustainable growth and innovation across the digital economy.

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Dimitris Beis


Data Analyst & Sustainability Lead
beis@iab europe.eu

Nina Hamann

Public Policy and Communications Officer
hamann@iab europe.eu

iab europe
Rond-Point Robert
Schumanplein 11
1040 Brussels
Belgium

 @iab europe

 /iab-europe

iab europe.eu

