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PIM RESEARCH

The State of Trending AI Technologies 2025

Data and AI Signals, Trends, and Predictions for Enterprises in 2025

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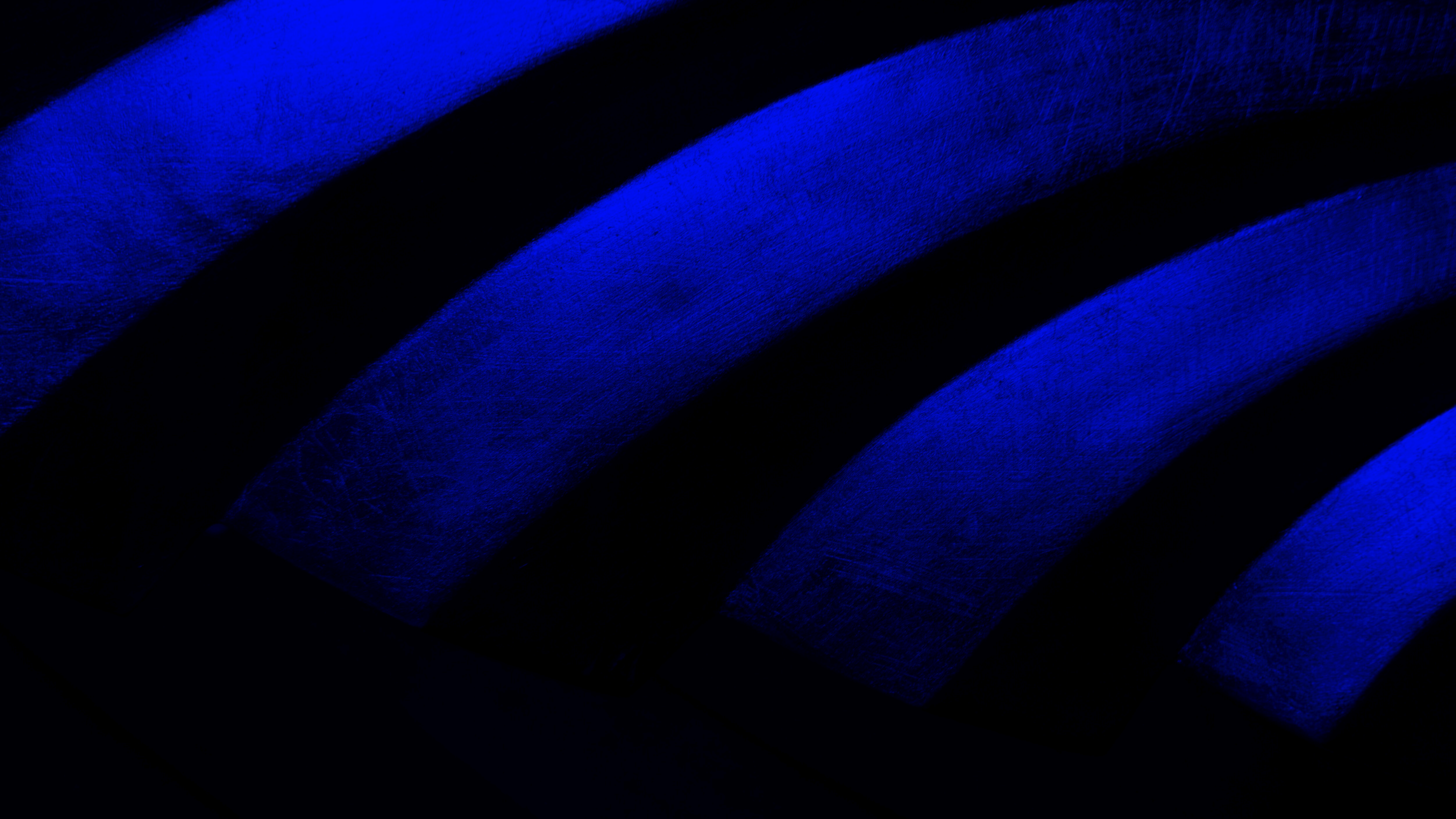

Introduction ↘

As we stand at the intersection of technological evolution and enterprise transformation, artificial intelligence has moved beyond being a mere buzzword to become the cornerstone of business innovation. The year 2025 marks a pivotal moment where AI technologies have matured from experimental initiatives to mission-critical enterprise solutions, fundamentally reshaping how organizations operate, compete, and deliver value.

From the widespread adoption of AI-powered everyday devices to the transformation of the SaaS model, this report examines how 'Data and AI' advancements are shaping business strategies, operational models, and customer experiences across industries. By analyzing market characteristics, trending technologies, and evolving dynamics, along with insights from industry leaders, the report aims to provide enterprises with the knowledge needed to navigate the AI-driven future. Understanding these trends and their implications is essential for making informed decisions in an increasingly AI-augmented business landscape.

Research Methodology ↘

Technologies and trends that define the data and AI market characteristics in 2025 are derived from our interactions with industry leaders during AIM Research's PeMa Quadrant vendor assessments, discussions with AIM Journalists and ADaSci AI Consultants, AIM Conferences and Events, recent news, and survey responses from AIM Council Leaders.

Section 1

Identifying 2025's Market Characteristics

Overview of areas that are expected to define the 2025 market characteristics

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Show the current state, predicted impact in 2025, and implications for businesses for each of the Top 10 Trending Technologies

Section 1

Market Characteristics

In this section, we explore the defining market characteristics and foundational technologies shaping the AI-driven business landscape of 2025

Technology Shifts and Dynamic Markets ↘

As AI-powered devices become commonplace in our daily lives, organizations are racing to develop in-house AI capabilities and industry-specific solutions. This push is democratizing AI technology, making it accessible to businesses of all sizes through pre-trained models and low-code platforms. However, with this rapid adoption comes increased scrutiny and regulation, leading to a stronger focus on responsible AI development, privacy preservation, and security against sophisticated AI-powered cyber threats.

The market is responding with innovative solutions - from AI Agents to AI-native tools - while service providers pivot from experimental projects to scalable enterprise solutions. Cost optimization has emerged as a key priority, driving automation across entry-level roles and pushing organizations toward multi-cloud strategies. Perhaps most significantly, the traditional Software-as-a-Service (SaaS) model is evolving into a "Service as Software" paradigm, where AI-driven capabilities are deeply embedded into the software itself, delivering hyper-personalized experiences that adapt and evolve with each user interaction.

2025 Market Charactertistics

AI-powered Everyday Devices

Rise in demand for GenAI Services

Regulations around AI take centre stage

Automation challenges entry-level roles

Software 3.0 where legacy code and AI generated code will co-exist

Rise in Autonomous Mobility

Addressing data overload becomes critical

AI Governance, Explainable AI

AI Democratization

Rise in In-house AI Chip development

Privacy preserving-AI

Analytics job market will shift towards Data Science

GenAI-powered self service platforms may replace traditional dashboards

Agentic framework based workbots will power next generation employee experience

AI-driven next gen communications

Tools to ensure trust in Intelligent Systems

Hyper-personalized CX with AI

AI tools become ubiquitous

Service as Software

Increased M&A activity in AI and Automation R&D firms

AI for Sustainability

Industry-Specific Models

Harmonizing Industry Models with AI Toolchains

Pre-trained Models for SMEs

Government-GenAI Firms Partnerships

AI-native tools

GCCs Expand into Tier-2 and Tier-3 Cities in India

Compute continues to scale, the real bottleneck is data

Rise in AI-powered Patient Care

Saving Costs for AI Solutions will become the top priority

Quantum Computing Breakthroughs

U.S. and China to dominate the global AI market

Rise in need for fraud detection

Localized Data Centers

RPA, Annoation, and Customer Service Professionals markets will undergo transformation

Rise in GenAI-powered Cyber Attacks

Multi-cloud Era

Data clean rooms for more transparent execution of marketing campaigns

More services providers move from offering exploratory PoCs to delivering scalable GenAI solutions

Revamp in the way Corporate AI Training is conducted

Areas that may bring major transformation

Areas that service providers may need to watch out for

Areas that may become common experiences for everyone

Other relevant areas

Key Market Characteristics (1/5)

#	Focus Area	Overview	Foundational Technologies Driving the Change
1	**SaaS is Transforming into Service as Software**	In the evolving Service-as-Software model, AI workers go beyond task assistance—they autonomously perform and complete tasks, transforming software from a tool into an intelligent, self-sufficient workforce. Traditional SaaS pricing, based on licenses or user seats, doesn't align with AI-driven workflows. Usage- and outcome-based models are better suited for Service-as-Software.	Agentic AI, LLMs, APIs and Microservices, Automation
2	**AI-Powered Everyday Devices**	Increased integration of AI into everyday devices, making smart, context-aware interactions for home automation, health monitoring, and personalized recommendations a common experience.	Edge AI, AI-Specific Hardware, Small Language Models (SLMs), Advanced Wearables, Quantized Models
3	**Software 3.0 where Legacy Code and AI Generated Code will Co-exist**	Software 3.0 will see the seamless coexistence of legacy code and AI-generated code. AI will automate coding processes, assist in maintaining older systems, and enable rapid innovation while preserving the value of established business logic.	Low-code/no-code platforms
4	**Analytics Job Market will Shift towards Data Science**	With the prevalence of more and more automation with AI and Machine Learning, traditional data analyst roles (basic data processing, visualization, and reporting) will be transformed into data science roles. Data analysts need to pick up new skills like machine learning, GenAI, and mathematical optimization to stay relevant in contemporary job market.	LLMs

Key Market Characteristics (2/5)

#	Focus Area	Overview	Foundational Technologies Driving the Change
5	**Generative AI Practicality, Scaling AI beyond Silos**	Generative AI will transition from development and proof-of-concept stages to production, empowering end users and delivering measurable impact on the bottom line. Organizations will prioritize maturing their AI capabilities by moving beyond isolated initiatives and integrating AI into core business strategies, operations, and decision-making. This shift will mark a transition from experimentation to enterprise-wide AI adoption.	LLMs, Automation, Digital Twins
6	**AI-Powered Patient Care**	AI powered productivity and efficiency optimizations will be available within EHRs to address Clinician burnout	LLMs
7	**AI Democratization**	Platforms enabling non-technical users to build AI solutions will become widespread, making AI development accessible across industries and skill levels.	Low-code/no-code platforms
8	**Saving Costs for AI Solutions will become the Top Priority**	With the growing complexity of AI deployments, businesses will prioritize cost-efficient AI models, compute resources, and infrastructure, turning to options like open-source tools, cloud-based solutions, and AI-as-a-Service to scale effectively without overburdening budgets.	Quantized Models, SLMs
9	**Synthetic Data will see further advancements**	While compute continues to scale, the real bottleneck is data. Even synthetic data, once seen as the savior, isn't delivering the breakthroughs we hoped for. As AI applications evolve from general-purpose models to more specialized systems, the need for contextualized and relevant datasets becomes critical.	Advances in Synthetic Data, Interpretable AI Models, Task Specific Models

Key Market Characteristics (3/5)

#	Focus Area	Overview	Foundational Technologies Driving the Change
10	**Humanoid Robots and AI Integration will see Major Developments**	By 2025, humanoid robots powered by advanced AI are expected to significantly impact industries like healthcare, customer service, and personal assistance. The global humanoid robotics market is projected to reach $7.3 billion by 2025. These robots could assist in elderly care, surgery assistance, education, and even hospitality, where their human-like features will help build trust with users.	Edge AI, 5G, Task-Specific AI Models, Advanced Sensors, Multimodal AI, Computer Vision
11	**Addressing Data Overload becomes Critical**	As IoT devices proliferate, managing the vast amounts of data generated at the edge will become increasingly challenging. Organizations will need to implement strategies such as edge AI for real-time analysis to filter out actionable insights from raw data streams.	Edge AI
12	**AI for SMEs**	Small and medium-sized enterprises (SMEs) are expected to increasingly leverage affordable AI tools and pre-trained models, marking a significant trend in the democratization of technology.	Pre-trained Models, SLMs
13	**Hyper-Personalized CX with AI**	Personalization in 2025 will shift from reactive to predictive, using advanced AI to anticipate individual needs before they're expressed. Unlike current methods, which often rely on segmented data, future personalization will analyze real-time, multimodal inputs (text, voice, behavior) to create truly dynamic, context-aware experiences. Scale and precision will also vastly improve.	Multimodal AI, LLMs
14	**Energy Efficient Data Centers**	Data centres will face mounting pressure to reconcile AI's surging energy requirements with strict sustainability goals, sparking an industry-wide rethink on AI applications.	Energy Efficient Chips

Key Market Characteristics (4/5)

#	Focus Area	Overview	Foundational Technologies Driving the Change
15	**Dashboards will Fade Away**	Dashboards will quickly fade, giving way to GenAI-powered self-serve platforms offering prescriptive insights. Decision-makers will embrace this shift for faster, more impactful decisions. However, early-stage data quality issues pose significant risks. By implementing guardrails and continuous data quality feedback, these risks can be effectively mitigated	LLMs
16	**Rise in GenAI-based Cyber Threats**	While GenAI offers substantial benefits for cybersecurity, it also poses risks, as bad actors can exploit these technologies to launch more sophisticated attacks.	LLMs, Automation, Blockchain
17	**The Rise of Multi-agent Frameworks**	The rise of multi-agent frameworks, powered by Generative AI, will transform how we tackle complex problems. These frameworks enable AI agents to collaborate, each specializing in different tasks while learning from one another. This collaborative approach boosts problem-solving, adaptability, efficiency, and scalability. Generative AI further enhances these systems by creating innovative solutions, adapting to changes, and making intelligent decisions. This synergy will drive advancements across sectors like healthcare, finance, supply chain, and customer service.	Agentic AI, LLMs
18	**Generative AI for Specialized Domains**	Generative AI will continue to mature with domain-specific applications in fields such as legal document drafting, personalized healthcare recommendations, and financial fraud detection. In 2025, organizations will use tailored generative AI models to solve industry-specific challenges, ensuring better accuracy and compliance. This shift will make generative AI a critical asset for driving innovation while maintaining precision in regulated environments.	LLMs, SLMs

Key Market Characteristics (5/5)

#	Focus Area	Overview	Foundational Technologies Driving the Change
19	**Rise in Urban Mobility**	Flying Taxis and AI-Powered Urban Mobility Flying taxis, or Urban Air Mobility (UAM), will transform transportation by 2025, using AI for autonomous navigation, traffic management, and route optimization. The global market for UAM is projected to exceed $1.5 trillion by 2040. These AI-driven vehicles will optimize flight paths, making them energy-efficient and autonomous.	Edge AI, 5G, AI-powered Navigation Systems, Computer Vision
20	**Harmonizing Industry Models with AI Toolchains**	Industry-specific foundation models provide tailored intelligence for domains like healthcare or finance, while AI orchestration tools, such as LangChain, integrate these models into complex workflows. This synergy bridges raw capabilities with actionable solutions, enabling seamless execution of AI applications. By combining specialized knowledge and orchestration, businesses can streamline operations, enhance scalability, and unlock new opportunities in automation and innovation.	Industry-Specific Models, Orchestration Tools, Observability Tools

Section 2

Identifying the Top 10 Trending Technologies of 2025

In this section, we present the trending technologies that are expected to define the market characteristics of 2025, along with a matrix illustrating their status at the beginning and end of that year.

Trending Technologies 2025

We have categorized the foundational technologies that are expected to define the market characteristics of 2025 into four themes.

1.

Disruptive Technologies

Advancements that may dramatically transform industries by replacing traditional solutions.

- Agentic AI
- Any-to-Any Multimodal AI
- AI-powered Drug Discovery
- AI-powered Diagnostics Tools

2.

Sustaining Technologies

Technologies that have been improving gradually, set for major changes.

- Small Language Models (SLMs)
- Physical AI - Humanoid Robots
- Reasoning Models
- Industry-Specific GenAI Models
- Quantum Computing
- Indic Models for Localized Tasks
- GenAI-powered Cybersecurity Tools
- GenAI Observability Tools
- Quantized Models

3.

Resurgence of Converging Technologies

Renewed innovation in once-promising technologies now poised for a comeback.

- Edge Intelligence/ Edge AI
- Digital Twins
- Blockchain-Integrated AI
- AR, VR, MR
- Advanced Wearables

4.

Infrastructure Advancements

Focus on better computing power, data storage, and networks to support efficiency.

- AI Chips
- Energy Efficient Technologies for Chips and Data Centers

Top 10 Trending AI Technologies 2025

1. AGENTIC AI
2. REASONING MODELS
3. ANY-TO-ANY MULTIMODAL AI
4. GENAI OBSERVABILITY TOOLS
5. AI CHIPS
6. SMALL LANGUAGE MODELS (SLMs)
7. GENAI-POWERED CYBERSECURITY TOOLS
8. AI-POWERED DRUG DISCOVERY
9. EDGE AI
10. HUMANOIDS

TechTrend Matrix

Based on the Trend Confidence, we have selected the top 10 trending technologies from a large list of foundational technologies presented across four themes on the previous page.

Trend Confidence

- We define Trend Confidence as the ability of a trending technology to gain momentum (popularity in media, R&D, patents, product launches, etc.) and maintain that momentum throughout the period of study.

- The result of Trend Confidence is represented as a percentage (0 to 100%). A low percentage indicates that there is a chance the trend may not persist and may fade out, while a higher percentage indicates that the technology has strong popularity and is expected to continue driving change in the market. The result is based on internal scoring given for each technology by AIM Researchers, Journalists, and Consultants.

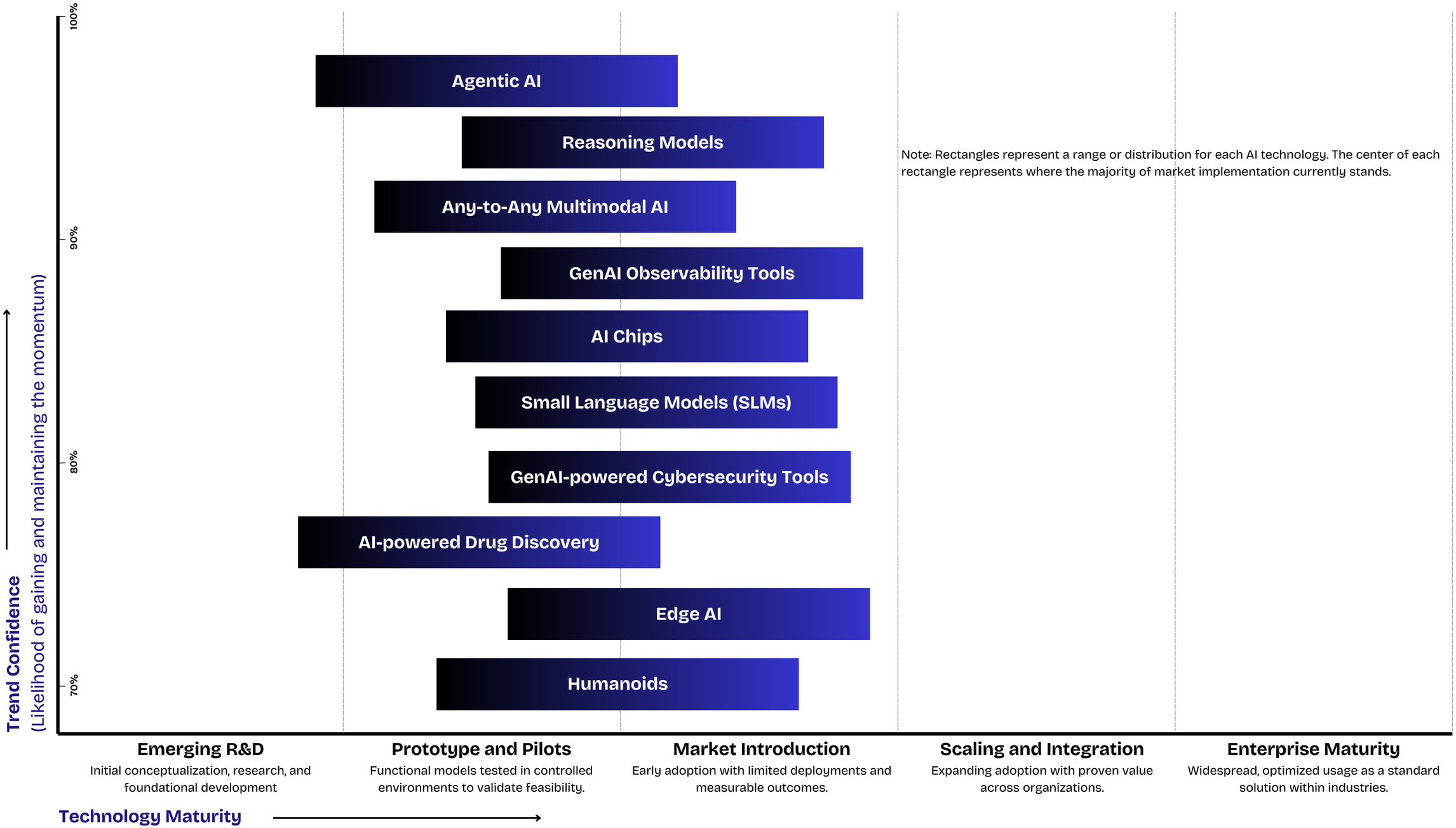
To identify the readiness of the technologies, we map each trending technology to suitable levels, from Emerging R&D to Enterprise Maturity.

Technology Maturity

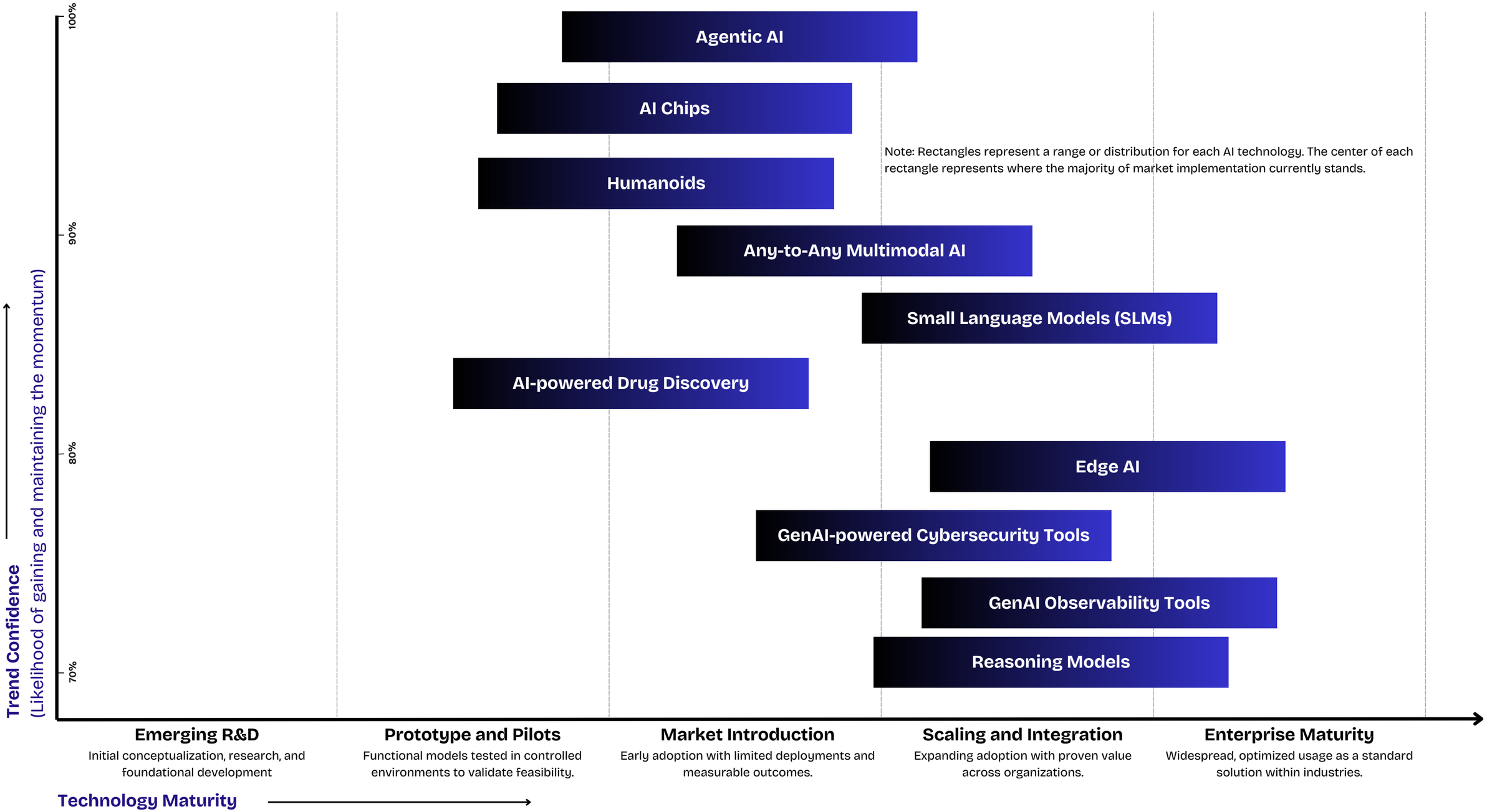
- **Emerging R&D:** The technology is in the early stages of conceptualization, research, and foundational development, with no real-world deployment yet.
- **Prototype and Pilots:** Functional technology is tested in controlled environments to assess feasibility through prototypes or pilot projects.
- **Market Introduction:** The technology is introduced to early adopters with limited deployments, gathering data and measurable outcomes.
- **Scaling and Integration:** The technology is adopted more broadly, integrated into systems, and proves its value across organizations.
- **Enterprise Maturity:** The technology is widely used, optimized, and integrated as a standard solution within industries.

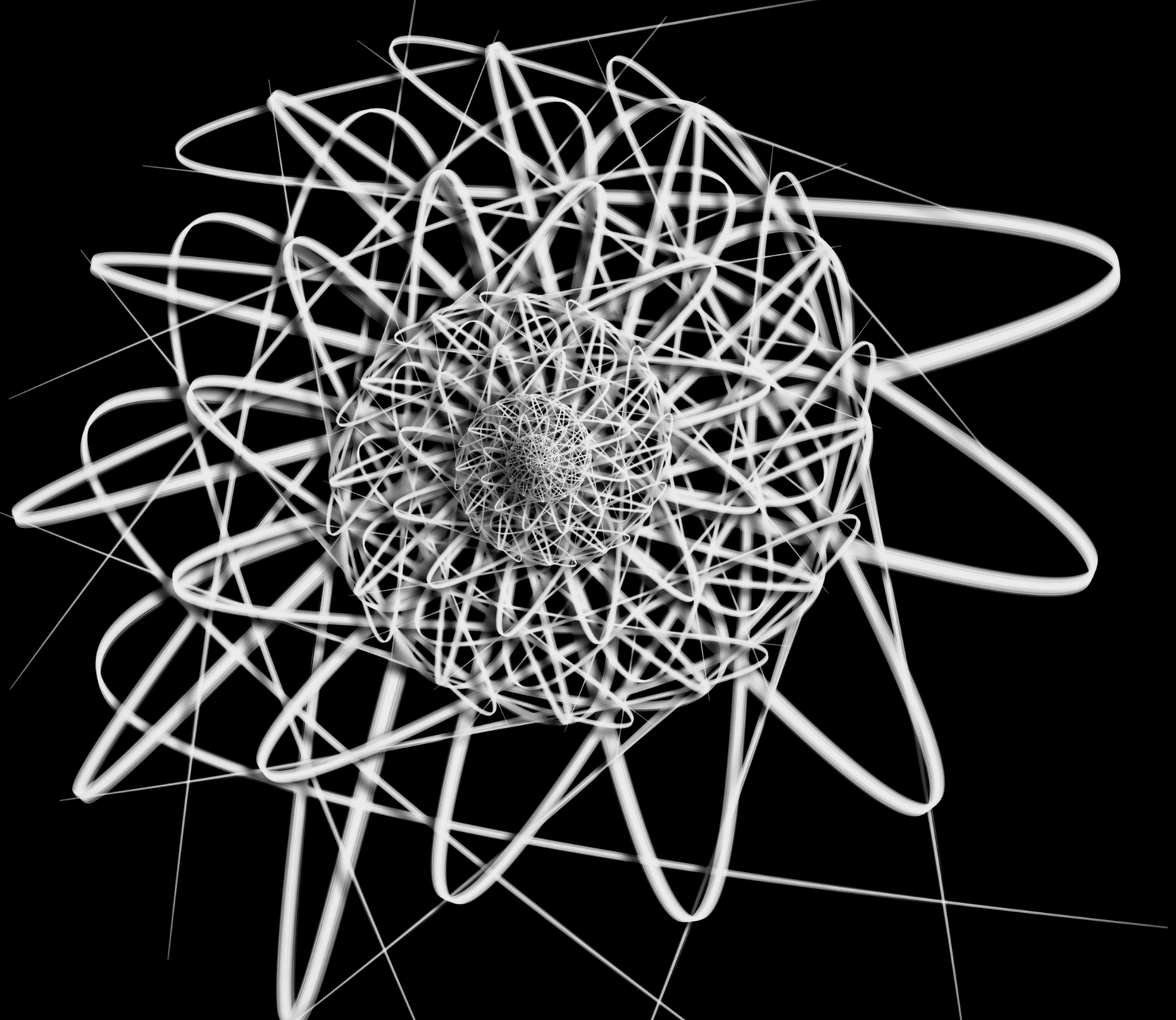
By assessing Trend Confidence and Technology Maturity (TechTrend Matrix), we can identify the technologies that are most likely to have a significant impact based on their growing popularity and readiness during the study period. The top 10 technology trends and their status at the beginning and end of 2025 are outlined on the following pages.

TechTrend Matrix: The State of Trending AI Technologies at the Start of 2025



TechTrend Matrix: The State of Trending AI Technologies by the End of 2025





Section 3

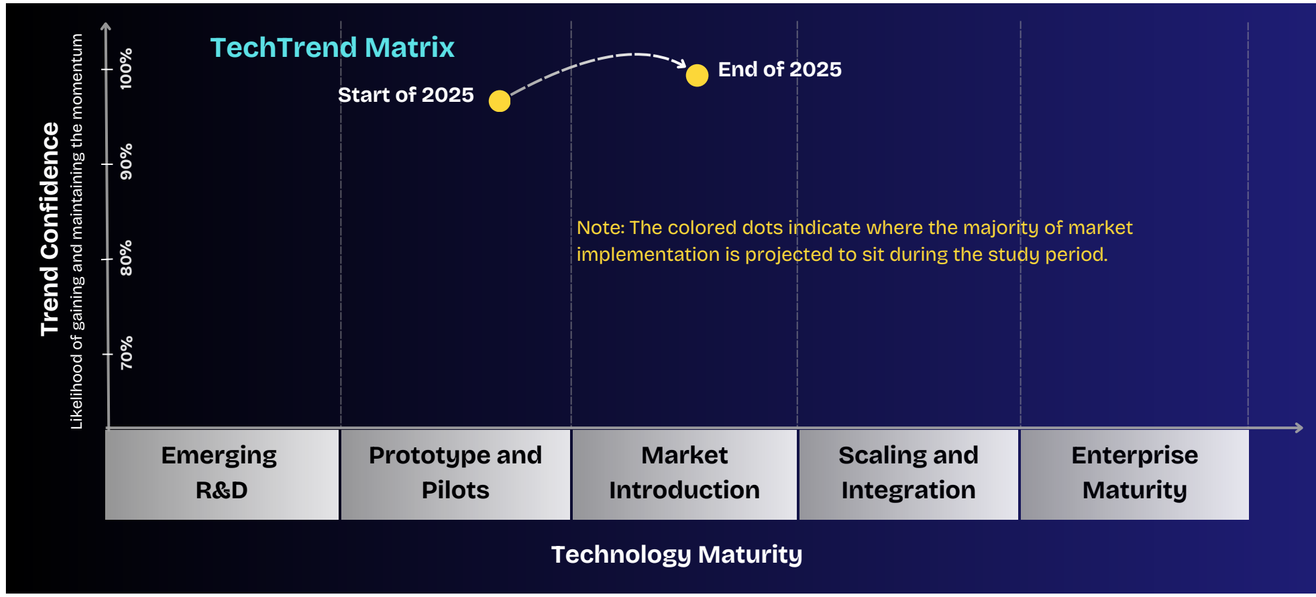
Deep Dive into the State of Top 10 Trending Technologies

In this section, we discuss the current state of trending technologies, their predicted impact in 2025, and key implications for business.

Agentic AI

Andrew Ng, a prominent AI researcher, introduced the term "Agentic" to describe a new class of AI that moves beyond merely responding to commands—it takes action independently. Unlike traditional AI tools that rely on user prompts, Agentic AI is envisioned to handle complex tasks autonomously, such as analyzing data, predicting outcomes, and even executing decisions.

Current State 2024	Tech maturity is shifting from prototype experimentations to market introductions, as major tech players and startups collaborate to expand autonomous agent capabilities. They are driving innovation through large language models, multi-agent systems, and domain-specific agentic frameworks, transforming complex decision-making processes. Technology has already attracted significant attention and the ecosystem is actively preparing to embrace it by fostering innovation.
Predicted Impact 2025	**Virtual assistants that can perform tasks with greater autonomy** (not full autonomy) The technology will quickly advance in maturity and we will see softwares integrated with Agentic AI for developing context-aware systems that can independently execute complex, multi-step tasks with minimal human intervention, marking a significant leap in artificial intelligence's practical applicability. **In the coming years, Agentic AI will play a key role in shifting the business model from selling access to tools (SaaS) to selling guaranteed outcomes (Service as Software).**
Implications for Businesses	Industry applications of Agentic AI will advance with a focus on improving reliability and safety. Key efforts will center on developing fail-safes, real-time monitoring, and adaptive mechanisms to prevent systemic failures, as Agentic AI systems may introduce unexpected failure modes. A particular risk arises when a large number of AI systems fail simultaneously or in the same way.



Trend Confidence for 2025 - 98% (Avg.)

We expect Agentic AI to remain the top trending technology of 2025, gaining and maintaining the momentum throughout the year.

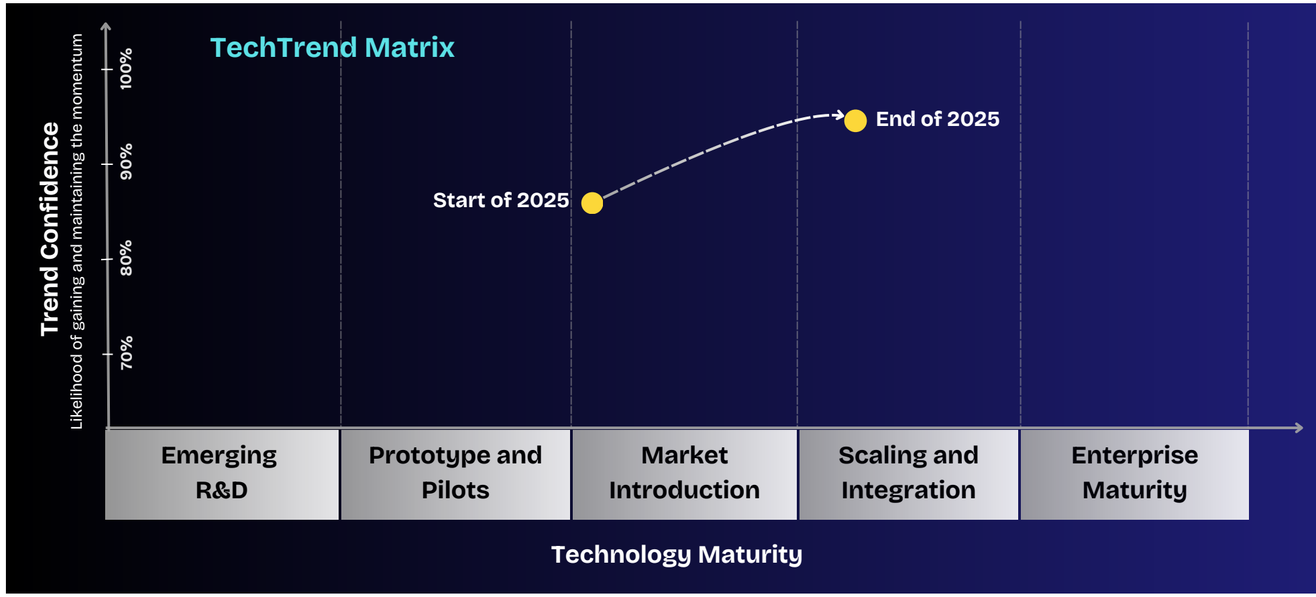
Key Signals:

- Google DeepMind: Gemini 2.0 new AI model for the agentic era
- OpenAI's AI Agent Tool 'Operator' may launch in 2025
- Hugging Face's role in Democratizing AI
- A few startups to track: Agency, Cognition Labs, Hippocratic AI, Adept AI, SuperAGI, Moveworks, Beam, and NinjaTech AI
- Salesforce's Agentforce developments

AI Chips

Artificial intelligence (AI) chips are specially designed computer microchips used in the development of AI systems. Unlike other kinds of chips, AI chips are often built specifically to handle AI tasks, such as machine learning (ML), data analysis, and natural language processing (NLP).

Current State 2024	The AI chip landscape is heavily influenced by tech giants' competition in acquiring AI chips to establish themselves as dominant players in AI infrastructure. Orders from these companies are more than double the amount they purchased in 2023, highlighting the aggressive expansion strategy in AI technology adopted by major tech firms, some even announcing their plans to develop custom in-house AI chips while others are entering the chip market to compete with NVIDIA and AMD.
Predicted Impact 2025	**Chips Race Bigins** Nvidia faces potential challenges as competition intensifies from companies developing custom AI chips. Despite these pressures, Nvidia maintains its market dominance.
Implications for Businesses	The AI technology stack will open many opportunities for semiconductor and AI Hardware companies; Demand for advanced materials to drive AI, Edge AI, and Data Center applications will rise.



Trend Confidence for 2025 - 91% (Avg.)

The AI chips market will gain even stronger momentum in the coming months and will remain a top trend by the end of 2025.

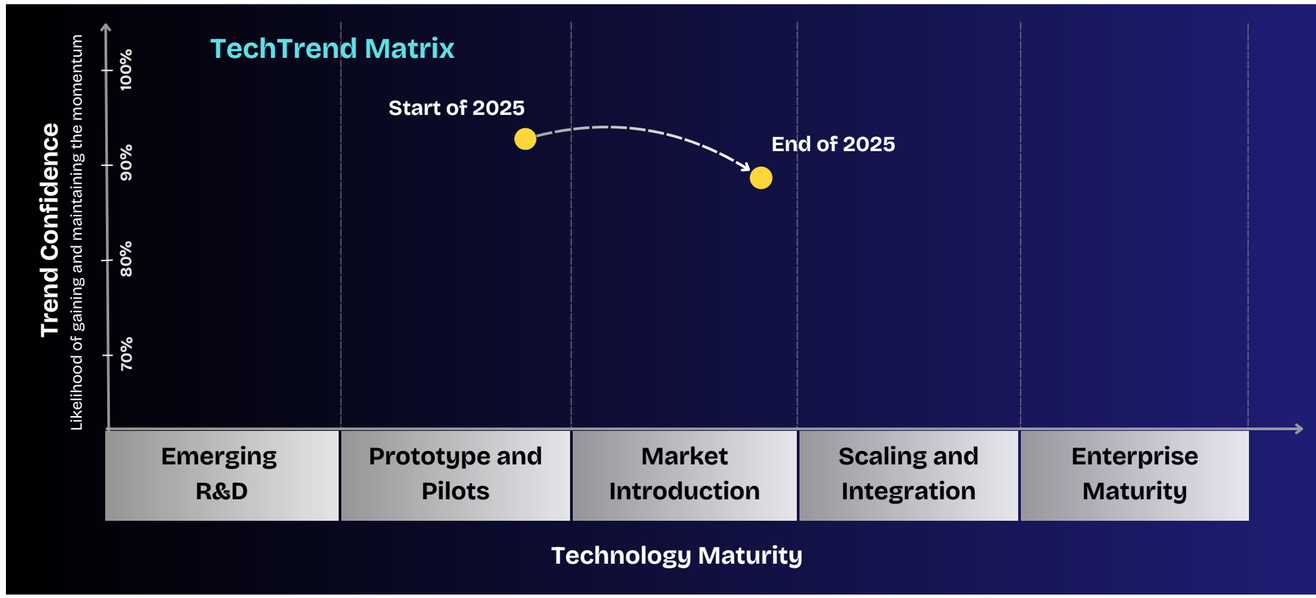
Key Signals:

- Amazon's launch of Trainium2 is poised to disrupt the AI chip market
- Apple working with Broadcom to develop AI chip
- Groq AI chip allows AI chatbots to operate up to 10 times faster and more efficiently than on comparable GPU-based systems
- AMD launches AI chip to rival Nvidia's Blackwell
- NVIDIA to ship 500-550K Units of Blackwell in Q1 2025

Any-to-Any Multimodal AI

AI models are advancing from text-to-anything capabilities to anything-to-anything (any-to-any), enabling interactions like image-to-video and other multimodal functionalities.

Current State 2024	Although we notice big tech companies pushing the boundaries with multimodal large language models, any input-to-any-output models have just begun transitioning from the experimentation phase to market introduction, with organizations like Amazon planning a launch in mid-2025 and OpenAI recently introducing advanced voice features with vision capabilities.
Predicted Impact 2025	**Towards creating more human-like systems** Progress in Any-to-Any multimodal AI could help AI assist in critical areas that need quick, informed decisions based on multiple inputs in unpredictable situations. This is an important step towards helping machines perceive and understand the world more like humans do.
Implications for Businesses	**These models will facilitate more personalized and intuitive interactions,** resulting in enhanced customer experiences. Patient Care, Customer service operations, Media and Communications, Autonomous vehicles, Education, and E-commerce sectors can be the early adopters of Any-to-Any Multimodal AI.



Trend Confidence for 2025 - 90% (Avg.)

We expect the technology to gain momentum and experience a surge in implementation across industries by the end of 2025 or early 2026.

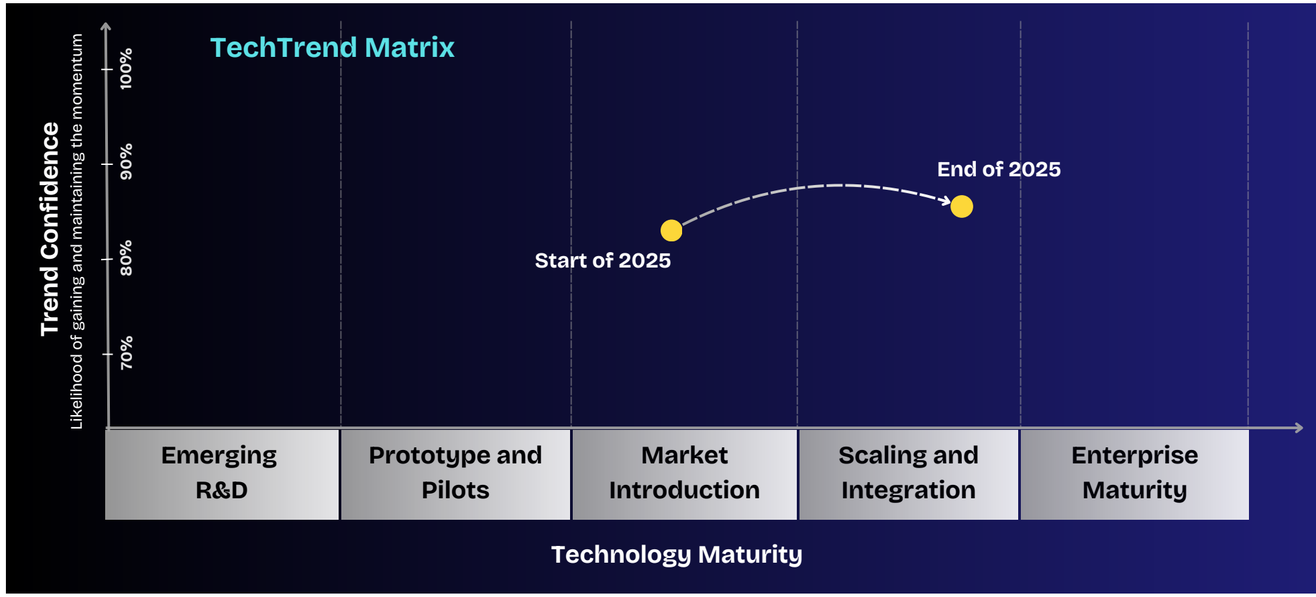
Key Signals:

- Amazon to introduce “any-to-any” modality capabilities by mid-2025.
- Experimental version of Gemini 2.0 Flash now supports multimodal inputs and outputs
- Waymo advancing end-to-end multimodal models for autonomous driving
- National University of Singapore driving NExT-GPT multimodal R&D.
- Qualcomm innovating real-time multimodal systems and interactions
- OpenAI’s introduction of advanced voice feature with vision capabilities

Small Language Models (SLMs)

SLMs parameters range from a few million to a few billion, as opposed to LLMs with hundreds of billions or even trillions of parameters. Small models are typically deployed for a single specific task. They're far less expensive, more efficient, higher performing and, often, more accurate than LLMs.

Current State 2024	SLMs are gaining focus as businesses realize the need for a portfolio approach, combining small and large models to tailor solutions to specific scenarios, recognizing that general-purpose LLMs with billions or trillions of parameters are often overkill for users needing help with specific tasks.
Predicted Impact 2025	We expect an increase in quantization of small models and new launches in 2025, as they become increasingly important for enabling AI at the edge and developing models for vertical-specific applications.
Implications for Businesses	• Small Language Models (SLMs) are uniquely suited for edge and on-device computations, enabling tasks to be completed without relying on the cloud. • According to Sonali Yadav, principal product manager for Generative AI at Microsoft, Small language models offer potential solutions for regulated industries and sectors that encounter situations where they need high quality results but want to keep data on their own premises.



Trend Confidence for 2025 - 84% (Avg.)

SLMs will not replace LLMs, but there will be a significant increase in the popularity of SLMs in the coming year due to rise in edge AI and vertical-specific applications.

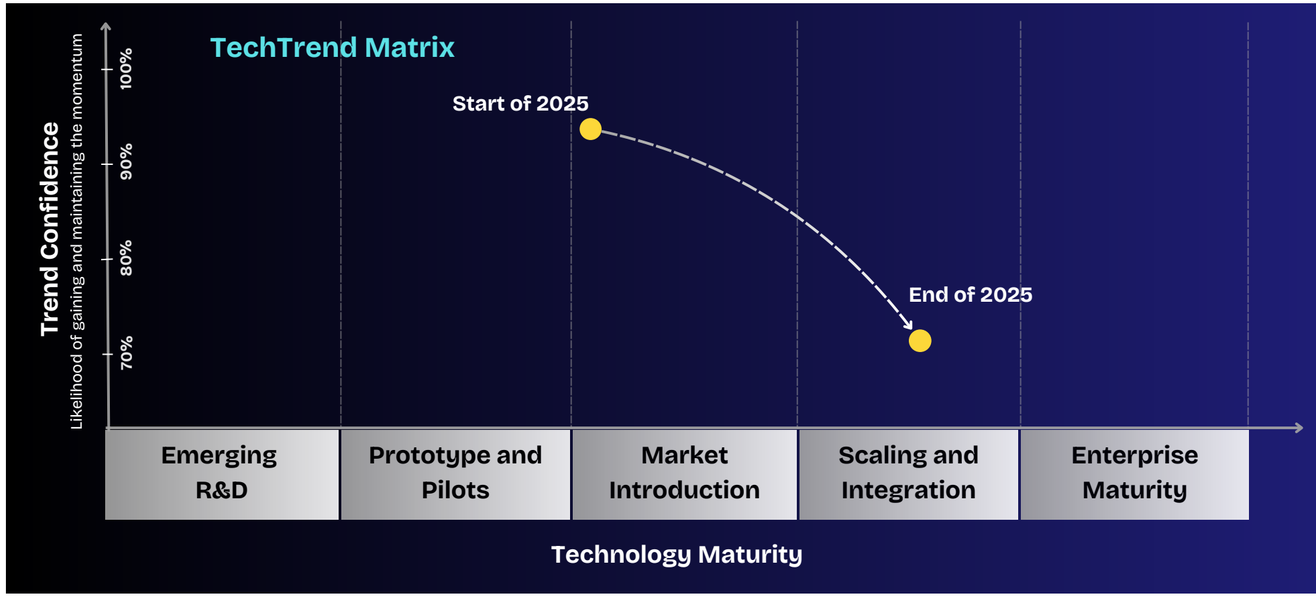
Key Signals:

- Apple's OpenELM, a family of smaller large language models
- Microsoft Phi open models
- Meta-Llama-3B Quantization model
- Mixtral 8x7B by Mistral AI
- Gemma by Google

Reasoning Models

Reasoning Models are a specialized Large Language Model (LLM) designed and optimized for systematic problem-solving through step-by-step logical thinking. These models are specifically trained to break down complex problems, show their work, validate their answers, and provide explanations for their conclusions.

Current State 2024	These models are characterized by their "thinking time" approach - taking longer to respond while working through problems systematically - and have shown remarkable performance improvements. The field is rapidly evolving with new evaluation benchmarks, though challenges remain in logic handling, security, and comprehensive evaluation frameworks, while emphasis continues to grow on self-verification capabilities and user customization options.
Predicted Impact 2025	**Improving self-verification and error correction** Reasoning models will focus on integrating into business applications for complex decision-making, developing hybrid systems with domain-specific modules, improving self-verification and error correction, and balancing speed with accuracy in real-world applications.
Implications for Businesses	Reasoning models will be essential for automating tasks and enhancing decision-making in business intelligence related operations.



Trend Confidence for 2025 - 82% (Avg.)

Reasoning Models will be among the key areas in which leading players demonstrate their competencies in the coming months. While media attention is expected to decline, technological progress will continue.

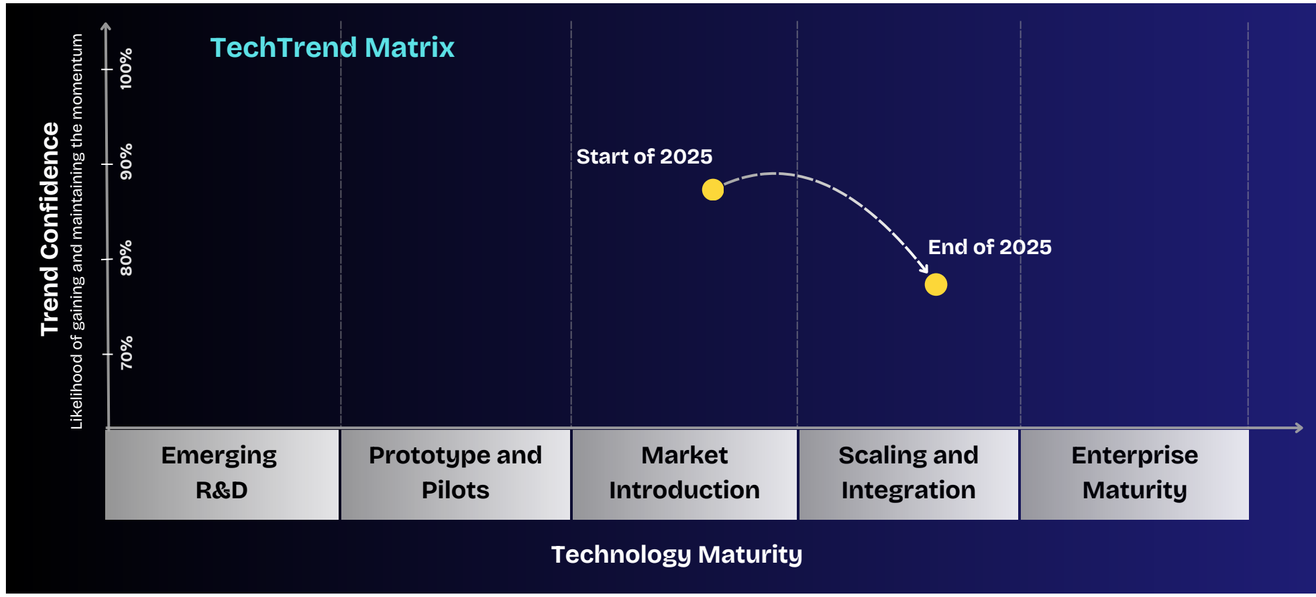
Key Signals:

- DeepSeek gets a Model Upgrade with V3
- Nous Research's introduction of its Reasoning API
- Per Alibaba's testing, QwQ-32B-Preview beats OpenAI's o1-preview. model on the AIME and MATH tests
- OpenAI's new series of AI models designed to spend more time thinking before they respond

GenAI Observability Tools

Tools for monitoring, analyzing, and visualizing the internal workings of AI systems, specifically generative models like Large Language Models (LLMs).

Current State 2024	• Organizations are moving beyond experimentation and are beginning to bring LLM-powered GenAI applications into production while focusing on scaling up. With increased usage and integration, the need for observability is becoming increasingly pronounced. • Observability tools market is crowded with large players such as Dynatrace, Datadog, Cisco, and New Relic, along with more than 50 startups offering tools for Logs & Analytics, Evaluation, Observability, Security Guardrails, and Cost Optimization of GenAI-powered applications.
Predicted Impact 2025	• We will see move towards unified platforms to reduce tool sprawl and deliver a seamless user experience. Advancements will enable the rollout of observability systems capable of not only detecting and diagnosing issues but also resolving them with partial autonomy. • We can expect increased M&A activity in this space, with large players in the AI observability market acquiring startups that offer tools for GenAI-specific applications.
Implications for Businesses	To enhance their overall offerings and provide users with greater visibility into generative AI and LLM pipelines, enterprises can explore a wide range of startups offering tools to observe and optimize GenAI applications for potential M&A opportunities.



Trend Confidence for 2025 - 81% (Avg.)

We are seeing more players emerge in this already crowded market. While GenAI observability tools will remain important for enterprises, their overall popularity may slightly reduce as solutions mature by 2026.

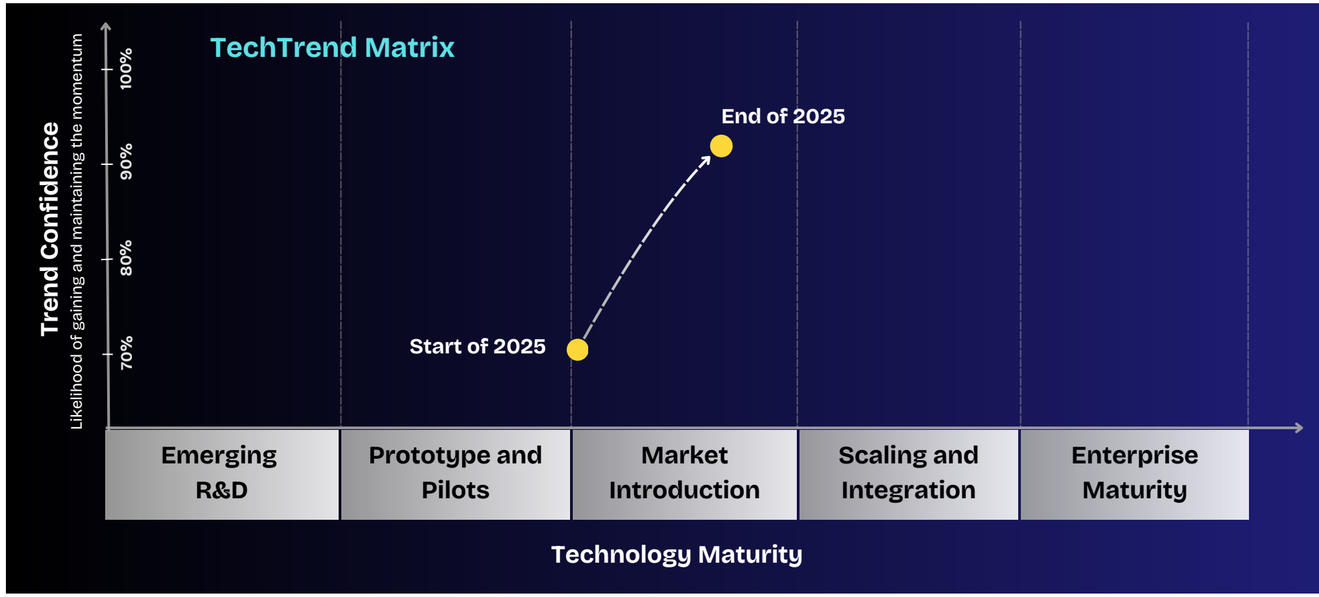
Key Signals:

- Startups such as Langchain, Arize, Fiddler AI, Helicone, and Langfuse are responsible for some of the key advancements in the field
- Large players such as Dynatrace, Datadog, Snowflake (TruEra), and New Relic, have expanded their offerings to include observability capabilities tailored for GenAI-infused applications, addressing the specific needs of this emerging field

Humanoids

Humanoids are general-purpose, bipedal robots modeled after the human form factor and designed to work alongside humans to augment productivity. They're capable of learning and performing a variety of tasks, such as grasping an object, moving a container, loading or unloading boxes, and more.

Current State 2024	The race to develop humanoid robots took significant strides, with tech companies from the US and China leading the way. Humanoid robots with advanced AI capabilities are being developed for a wide range of tasks such as home assistance, patient care, manual labor, public safety, and companionship. "Breakthroughs in generative AI are bringing 3D perception, control, skill planning and intelligence to robots," Rev Lebaredian, Nvidia's vice president of omniverse and simulation technology.
Predicted Impact 2025	• We will see limited production of humanoid robots from the companies for entertainment, companionship, factory and logistics tasks, customer service, and general-purpose tasks. Governments will focus on labor market analysis and job repositioning. • Further advancements may signal a transformative shift, as humanoid robots are gradually take on more complex roles across industries and households.
Implications for Businesses	• Hardware and software developers will prioritize creating solutions for better human-robot interaction, task versatility, and advanced decision-making capabilities. • There will be an increase in market collaboration between robotics companies and sectors such as elderly care, entertainment, logistics, and manufacturing.



Trend Confidence for 2025 - 81% (Avg.)

The trend will continue to rise in late 2025, as advancements mature and we witness early product launches.

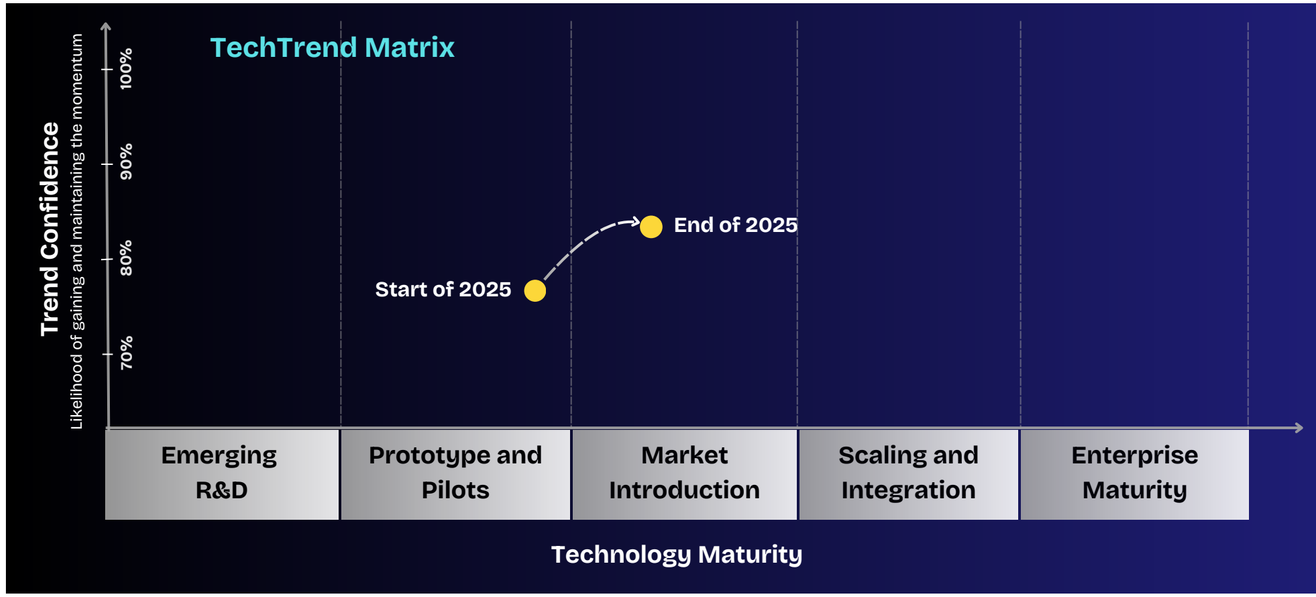
Key Signals:

- Agility Robotics becomes the first company to launch humanoid robots in commercial deployment
- OpenAI-backed robotics company Figure has started shipping its second humanoid robot 'Figure 02' to commercial clients
- Tesla plans to have humanoid robots in low production for internal use in 2025 and aims for high production for other companies by 2026
- Norway-based 1X aiming for thousands of units produced in 2025
- Nvidia plans to launch its "Jetson Thor" computing platform in the first half of 2025, providing the processing power needed to bring sophisticated humanoid robots to life
- Unitree has revealed a production-ready version of its G1 humanoid

AI-powered Drug Discovery

AI can analyze large datasets of chemical reactions to predict optimal conditions for novel compounds, reducing time and resources in experimental trials. By learning from successful reactions, AI models can suggest promising parameters, catalysts, and solvents, guiding researchers to the most promising pathways for synthesizing new drug candidates.

Current State 2024	While there are more than 1000 AI/ML-enabled medical devices, AI-driven drug discovery has yet to see rise in approved drugs, as the technologies are not ready for real-world applications. However, this is starting to change, with the FDA accepting its first AI algorithm as a drug development tool and the approval of an AI-generated drug for Investigational New Drug.
Predicted Impact 2025	• As the practical benefits of AI in medicine become clearer, there will be increased collaboration within the ecosystem. • "Heading into 2025 the growth trend of the last four years for pharmaceutical R&D budgets will continue and only gain speed," said Enes Hosgor, Carnegie Mellon Computer Science PhD. • CEO and founder of the clinical AI validation firm Gesund.ai. Hosgor points to a substantive jump in the number of drugs that used AI in its discovery and development submitted to the FDA. (Source: WTWH Media)
Implications for Businesses	Drug discovery will focus on real-world data over synthetic data for AI training, with hybrid trials becoming the new norm. AI will continue transforming trial design, patient recruitment, and precision medicine, with advancements in drug development using novel biomarkers.



Trend Confidence for 2025 - 80% (Avg.)

The turning point for AI-driven drug discovery may finally occur in 2025, as novel developments across the ecosystem begin to take shape.

Key Signals:

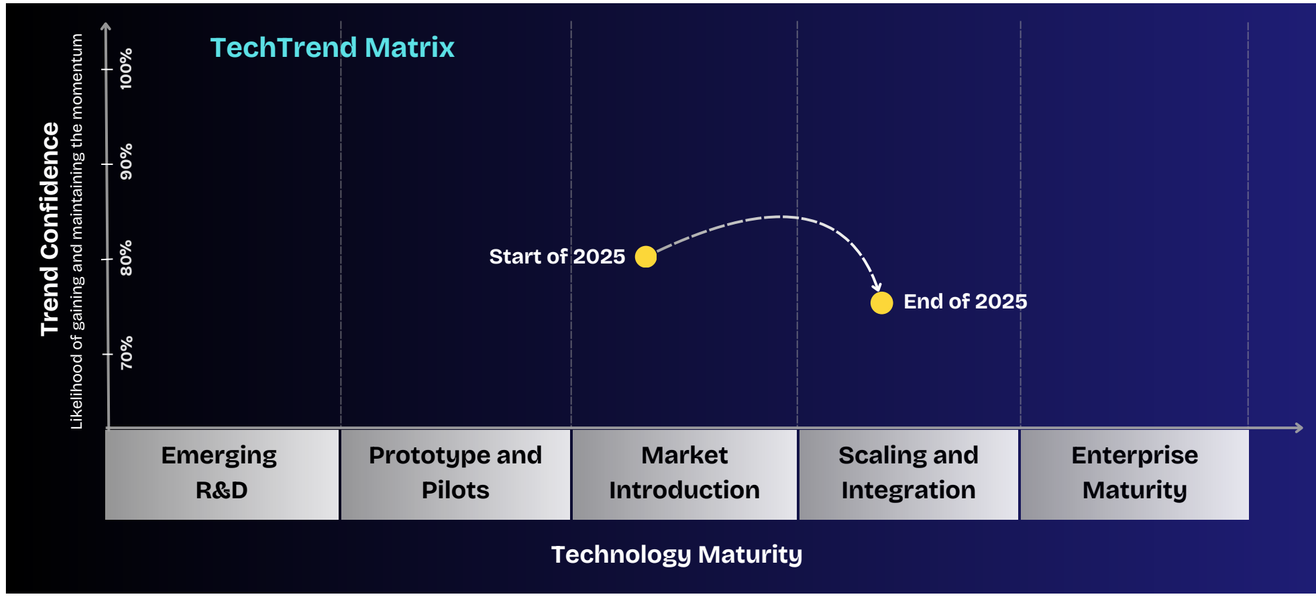
- Isomorphic Labs to lead AI-driven drug discovery with AlphaFold 3, alongside partnerships with two of the world's largest pharmaceutical companies — Eli Lilly & Co. and Novartis AG
- Generative AI has revolutionized de novo drug design, allowing researchers to create novel drug-like molecules from scratch
- Insilico Medicine estimates that their generative AI approach enabled them to develop a candidate from target discovery to phase 1 trials in under 30 months at a fraction of the traditional cost
- New Models MolMIM and DiffDock Power Molecule Generation and Molecular Docking in NVIDIA BioNeMo

GenAI-powered Cybersecurity Tools

AIM RESEARCH

AIM Research defines GenAI-powered cybersecurity as the integration of generative artificial intelligence technologies into cybersecurity solutions to enhance the detection, triage, and response capabilities against cyber threats.

Current State 2024	• With the maturation of AI technologies, all major Cybersecurity solution providers have added AI capability layer to their existing cybersecurity solutions and/or planning for an AI-native architecture based product from the start. With the emergence of GenAI, we are now noticing a rise in the integration of Generative AI-specific capabilities into cybersecurity tools. • Vendors are expanding beyond traditional solutions. We're witnessing the rise of 'AI agents' that autonomously monitor and respond to incidents, 'copilots' that assist IT teams in real-time, 'integrated security, automation, and analytics' platforms, and platforms that 'simulate attacks' to test and strengthen security postures.
Predicted Impact 2025	• Initially, the vendors rolled out solutions in a private preview, but we will now see many of these becoming generally available with advanced GenAI-driven features. • Although we won't see full autonomy, major developments will occur in automation, predictive threat intelligence, and in the way alerts are prioritized and triaged.
Implications for Businesses	Due to the increase in workforce gaps, the burnout crisis, and the lack of skills, we can expect more organizations to augment their early- to mid-level cybersecurity professionals with GenAI-powered cybersecurity tools. Enterprises will proceed with caution when adopting autonomous systems for more complex functions, so vendors will focus on enhancing functionalities in autonomous threat detection and providing transparency in how AI systems reach conclusions.



Trend Confidence for 2025 - 77% (Avg.)

We expect this field to gain and maintain momentum throughout the year. Although GenAI and autonomous systems will face challenges in penetrating the market for advanced applications due to the complex nature of cybersecurity, we anticipate major strides to occur in the second half of 2025 in terms of technology maturity of the solutions.

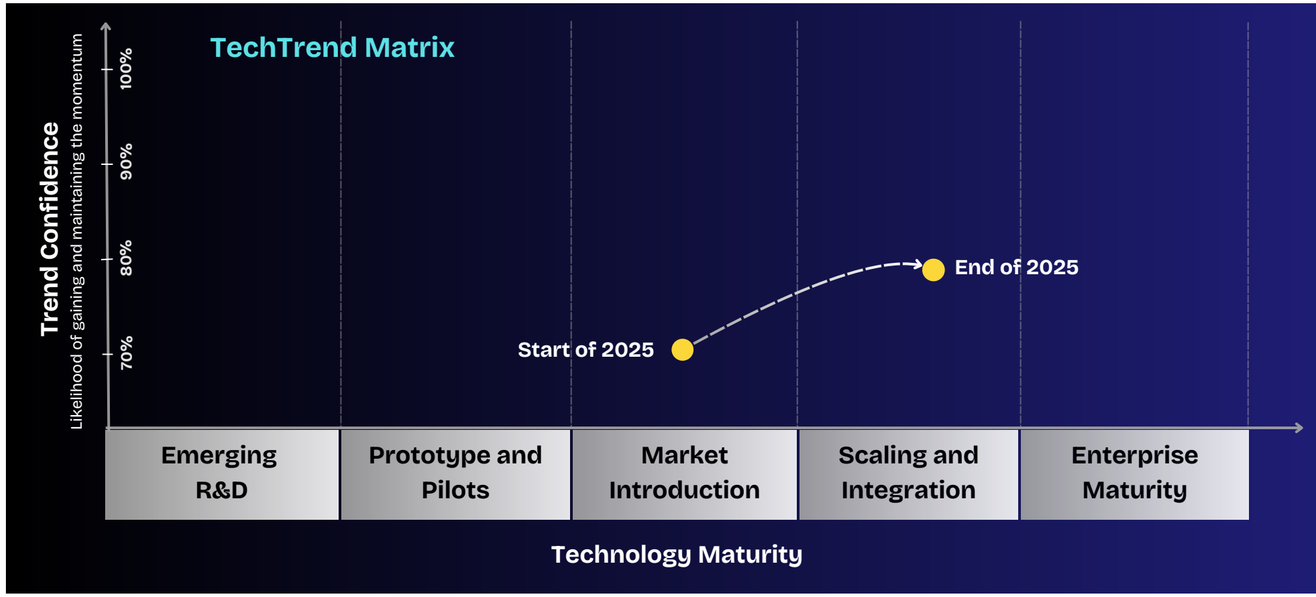
Key Signals:

- AI Agents, Copilots and AI Assistants, and Security platforms that incorporate Generative AI for comprehensive cybersecurity across various layers are rising
- Key players to track: Darktrace, Google Cloud, Microsoft Security, Radiant Security, ReliaQuest, Swimlane, Fortinet, Torq, CrowdSrike, IBM, Palo Alto Networks, and Cisco

Edge Intelligence/Edge AI

Edge AI is the deployment of AI applications in devices throughout the physical world. It's called "edge AI" because the AI computation is done near the user at the edge of the network, close to where the data is located, rather than centrally in a cloud computing facility or private data center.

Current State 2024	Edge AI has seen a renaissance in 2024, powered by efficient AI models and specialized hardware from Qualcomm, MediaTek, and Apple. The emergence of compressed foundation models like Meta's Llama 2 mobile and Google's Gemini Nano has enabled sophisticated AI to run locally. Industries from manufacturing to healthcare have embraced edge AI for real-time processing, driving substantial market growth as organizations prioritize reduced latency and enhanced data privacy.
Predicted Impact 2025	• More smart devices will leverage edge AI for automation and security, reducing cloud dependency and bandwidth costs while improving privacy. • Enhanced real-time processing for safety-critical decisions on-device, with selective cloud communication for non-urgent data. • Standalone 5G networks will enable distributed AI processing with near-zero latency across edge nodes.
Implications for Businesses	Rise in demand for Edge AI platforms and Hardware: Edge AI's business impact centers on unlocking new revenue streams through intelligent products and services while gaining competitive advantages from faster AI operations. This enables enhanced customer experiences through real-time personalization and creates opportunities for new business models leveraging distributed intelligence.



Trend Confidence for 2025 - 75% (Avg.)

The trend will continue rising throughout the year as advancements mature.

Key Signals:

- Qualcomm puts advanced AI edge computing power into the hands of developers everywhere through its RB3 Gen 2 developer kit
- Verizon and NVIDIA join forces to deliver real-time AI on private 5G edge networks
- Google's expansion of Gemini Nano across Android devices, and Apple's enhanced on-device AI capabilities in iOS
- Automotive manufacturers such as Tesla, BMW, and Mercedes-Benz have emphasized enhanced edge processing capabilities in their 2025 roadmaps.
- Emergence of wearable devices such as Friend, Human Ai Pin, etc
- Jony Ive and OpenAI are teaming up to create a new device

Future Outlook ↘

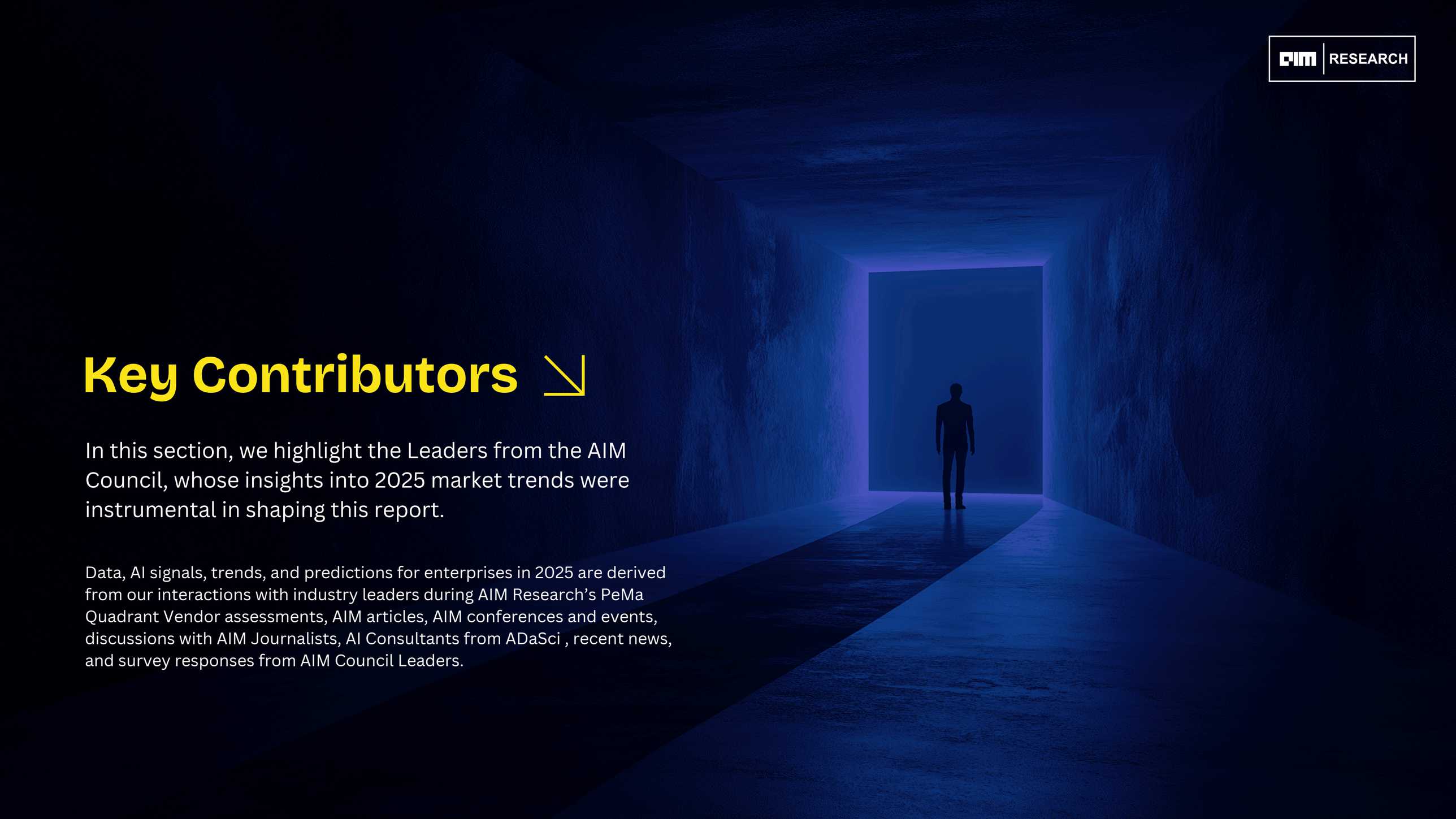
In this section, we provide concluding remarks on how the state of trending technologies in 2025 is redefining enterprise strategies and priorities.

Conclusion ↘

The 2025 market characteristics and trending technologies indicate a dramatic shift in how enterprises will operate and compete in the coming years. Organizations must stay agile and adaptive, ready to integrate these technologies while managing their associated challenges and risks. The key to success will be finding the right balance between innovation and practical implementation, ensuring that technological adoption aligns with business objectives and capabilities.

It's becoming clear that the technological roadmaps created in the immediate post-pandemic period may have underestimated the pace of AI advancement. Organizations must now navigate a landscape where:

- Traditional software models are being rapidly displaced by AI-driven alternatives
- The line between human and machine capabilities is increasingly blurred
- The speed of innovation requires constant strategic adjustment



Key Contributors ↘

In this section, we highlight the Leaders from the AIM Council, whose insights into 2025 market trends were instrumental in shaping this report.

Data, AI signals, trends, and predictions for enterprises in 2025 are derived from our interactions with industry leaders during AIM Research's PeMa Quadrant Vendor assessments, AIM articles, AIM conferences and events, discussions with AIM Journalists, AI Consultants from ADaSci , recent news, and survey responses from AIM Council Leaders.

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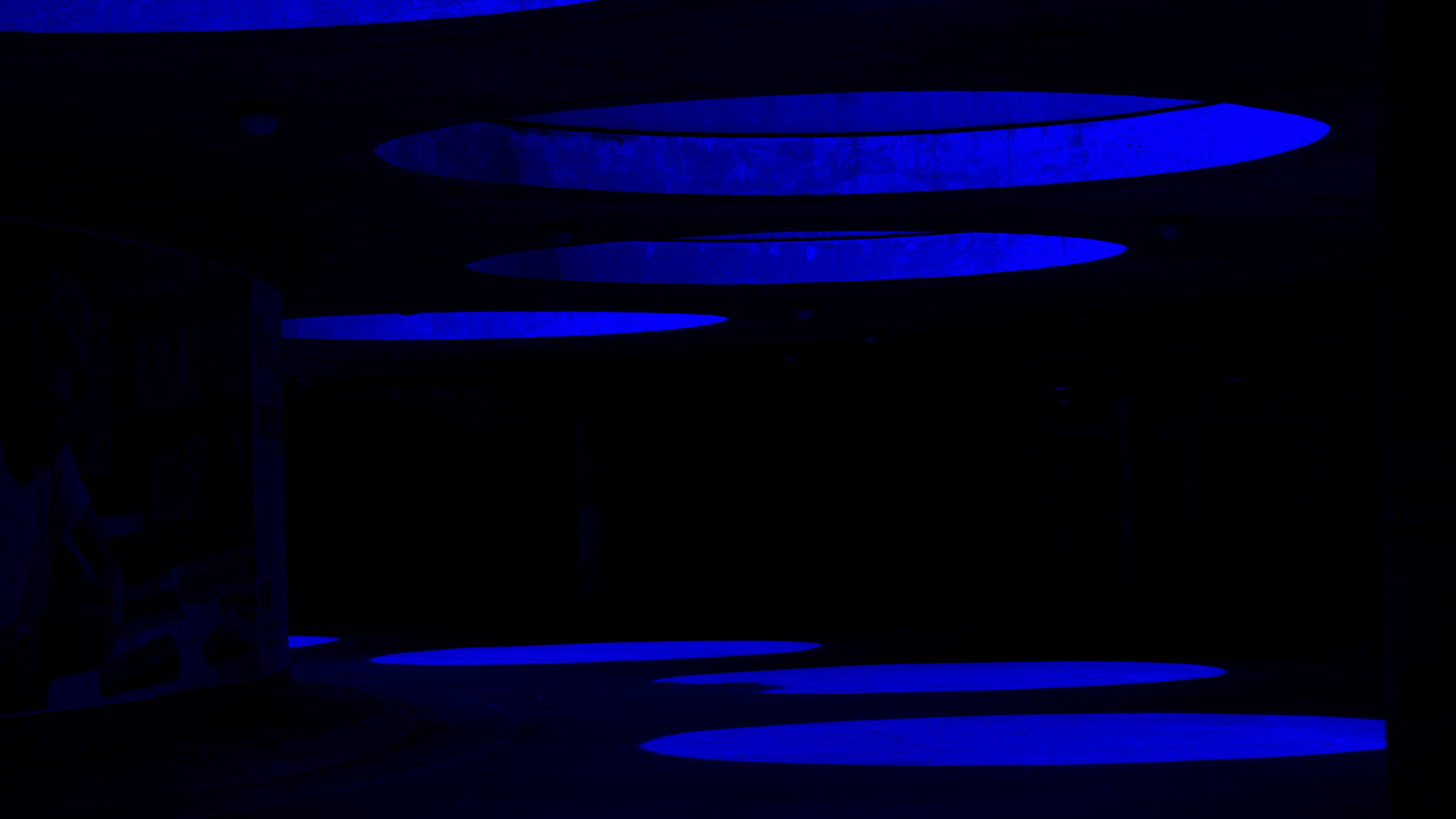

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