



# Al Empowerment Across Industries White Paper

August 28, 2025

www.frostchina.com www.leadleo.com Frost Sullivan LeadLeo





Scan the QR Code for More Details

# ■ 目录

Chapter 1 Industry Overview of AI	 04
1.1 Development Status of the Global Market	 05
1.2 Development Status of the China Market	 11
Chapter 2 Comprehensive Analysis of AI Industry	 18
2.1 Analysis of the Infrastructure Layer	 20
2.2 Analysis of the Technology Layer	 27
2.3 Analysis of the Application Layer	 36
Chapter 3 Exploration Across Various Industries	 46
3.1 Analysis of AI in the Financial Industry	 47
3.2 Analysis of AI in the Government Affairs Industry	 55
3.3 Analysis of Al in the Healthcare Industry	 64
3.4 Analysis of AI in the Education Industry	 70
3.5 Analysis of AI in the E-commerce Industry	 75
3.6 Analysis of AI in the Logistics Industry	 79
3.7 Analysis of AI in the Manufacturing Industry	 83
3.8 Analysis of AI in the Energy Industry	 89
3.9 Analysis of AI in the Communication Industry	 94
3.10 Analysis of AI in the Transportation Industry	 98
3.11 Analysis of Al in the Pan-entertainment Industry	 103
Chapter 4 Analysis of Future Development Trends of Al	 108
Chapter 5 Analysis of Typical Enterprises in China	 114



# Chapter 1 ——

# **Artificial Intelligence Industry Overview**

# Key Insights:

6 Global Al governance has entered a structured, security-driven phase.

Regulation is shifting from voluntary principles to systematic enforcement, with risk-based classification as the institutional cornerstone. Approaches diverge across economies: the EU tightens rules, the US and UK stress regulatory flexibility, while China emphasizes security reviews and registration for generative Al. Collectively, these shifts highlight that safety capabilities and compliance frameworks are becoming core strategic assets in the global Al landscape.

The global AI market is accelerating, with China and the United States emerging as dual leaders.

In 2024, the global Al market reached approximately USD 615.7 billion and is projected to exceed USD 2.6 trillion by 2030. The share of newly released large models from China and the United States rose from 72% in 2022 to 86% in 2024. China now leads the world with 1,509 large models, while the United States maintains its edge through technological depth and diversified applications.

Investment activity remains strong, with capital concentration increasingly evident.

In 2024, global AI financing exceeded RMB 590 billion, with China and the United States together accounting for 92%. The U.S. has leveraged capital-intensive operations to drive foundational technological breakthroughs, while China has pursued a differentiated path shaped by scenario-driven adoption. The AIGC segment captured 56% of total financing, making it the most prominent track and signaling a broader shift in capital allocation from "technology validation" toward "commercialization and closed-loop value creation."

O4 China's AI policy is evolving from exploration to systemic enablement.

At the national level, the "Al+" initiative has been elevated as a strategic priority, emphasizing technological security, application development, and industrial chain coordination. At the local level, policy efforts focus on areas such as education, healthcare, embodied intelligence, and computing infrastructure. Overall, China's core Al industry surpassed RMB 700 billion in 2024, entering a phase of rapid growth driven by the combined forces of policy, technology, and application.

# Chapter 1.1

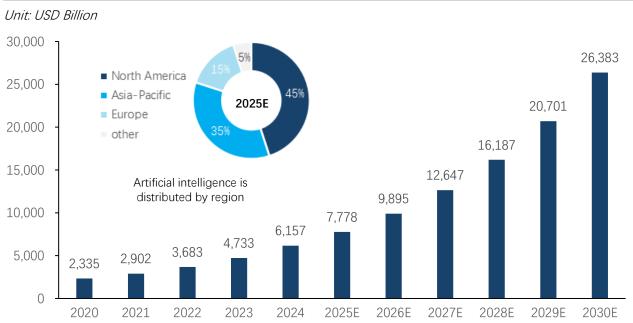
# Development Status of the Global Market

# Global Al

# Global Al Market Landscape — Market Size

 Driven by the dual leadership of China and the U.S., the global AI industry is accelerating, with market size projected to grow from USD 615.7 billion in 2024 to over USD 2.6 trillion by 2030. Through deeper vertical applications and optimized compute deployment, AI is expected to evolve into a "co-creation partner."

#### Global AI market size, 2020-2030E



The global Al industry is accelerating, with market size expanding rapidly. In 2024, the global Al market reached approximately USD 615.7 billion and is projected to surpass USD 2.6 trillion by 2030. Under the dual leadership of China and the U.S., their share of newly released foundation models rose from 72% in 2022 to 86% in 2024. China ranked first with 1,509 models as of 1H 2025 (40% of the global total), while the U.S. maintained its edge through technological depth and diversified applications.On the technology front, foundation model performance has advanced significantly. For example, OpenAI's o1 and o3 models released in 2024 adopted iterative inference architectures, greatly enhancing reasoning capabilities. The performance gap between Chinese and U.S. models narrowed sharply-from 10-40 pct in 2023-2024 on benchmarks such as MMLU, MMMU, MATH, and HumanEval to less than 4 pct by 2025. At the same time, multimodal integration and edge-cloud collaboration (e.g., Alibaba Cloud's AgentBay, Transwarp's AlInfra) are driving Al closer to industry applications, with generative Al and embodied intelligence enabling deeper use cases across healthcare, manufacturing, transportation, and education. Policy and capital are acting as dual drivers. Governments are intensifying strategic initiatives: the U.S. consolidates its lead through chip autonomy and R&D support, while China advances integration through the national "AI+" initiative. In 2024, global AI investment approached RMB 600 billion, with leading enterprises and tech giants serving as core engines of innovation. The open-source ecosystem is thriving. Emerging economies, led by China, are accelerating technological diffusion through high-level open-source projects, narrowing the global intelligence gap. For instance, DeepSeek has significantly reduced compute reliance through algorithmic optimization and streamlined architectures. By July 2025, 9 of the top 10 models on Hugging Face's trending list were developed in China. Looking ahead, AI is set to evolve from a "smart tool" into a "co-creation partner," deepening vertical industry applications, optimizing infrastructure and compute deployment, and continuously enabling economic growth and societal transformation.

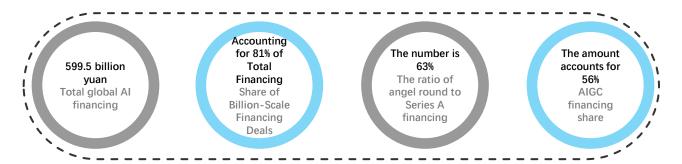


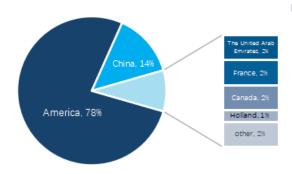


## Global AI Market Landscape — Investment Intensity

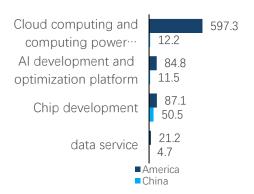
① Enterprise Distribution: By 1H 2024, the number of global AI enterprises exceeded 30,000, with the U.S. and China accounting for 34% and 15%, respectively.
 ② Financing: In 2024, global AI financing surpassed RMB 590B, doubling YoY, with China and the U.S. together representing 92%.

#### Global Al Investment Landscape, 2024





☐ The proportion of AI enterprise financing scale in countries around the world



☐ Comparison of investment scale of Al base layer between China and the US (100 million yuan)

- □ Financing Dynamics. In 2024, global Al financing surged to over RMB 590 billion, more than doubling from 2023 with an increase of RMB 300 billion. This momentum was driven by the commercialization of next-generation Al chips (e.g., NVIDIA, Google), the accelerated adoption of multimodal foundation models, embodied intelligence, AIGC, and Al Agents, which generated large-scale demand across healthcare, finance, and manufacturing. Mega-round deals—such as xAI (USD 6.0B, May 2024), CoreWeave (USD 1.1B, May 2024), and OpenAI (USD 6.6B, Oct 2024)—shaped a "two-peak pattern" in monthly fundraising, with capital concentration in May and Q4. Despite this headwind toward concentration, early-stage financing remained vibrant: angel to Series A rounds accounted for 63% of deals, up 5 pct from 2023.
- Regional Patterns. The U.S. dominated with 78% of global Al financing (avg. deal size RMB 1.55B), focusing on fundamental breakthroughs such as foundation models and chips. China ranked second with 14% (avg. deal size RMB 120M), following a scenario-driven path where cities like Beijing, Shenzhen, and Shanghai emerged as hubs through policy support and industrial chain advantages. This divergence reflects the U.S. strategy of capital-intensive operations (e.g., OpenAl-NVIDIA partnership) to secure technological leadership, while China builds differentiated "financing matrices" through large-scale application deployment (e.g., SenseTime in smart finance, healthcare, and urban solutions). Sectoral Hotspots. AIGC remained the hottest track, accounting for 56% of total Al financing in 2024. Its rise is shifting investment focus toward infrastructure and cross-sector applications, highlighting a transition from pure technology validation to scalable commercialization.



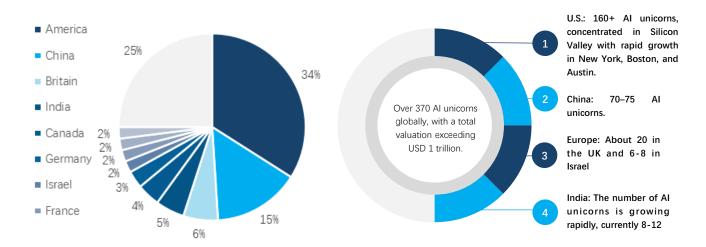


# Global AI Market Landscape — Enterprise Distribution

① Enterprise Distribution: As of 1H 2024, the number of global AI companies exceeded 30,000, with the U.S. and China accounting for 34% and 15%, respectively.
 ② Financing: In 2024, global AI financing surpassed RMB 590 billion, doubling YoY, with China and the U.S. together contributing 92%.

#### Global distribution of AI enterprises, 2024H1

#### Global Al unicorn enterprise, 2025.05



#### Phased Characteristics of the Global AI Enterprise Landscape

As of 1H 2024, the number of Al companies worldwide exceeded 30,000, signaling that the industry has entered a phase of rapid expansion. By geography, the U.S. led with 34%, forming a multi-polar cluster centered in Silicon Valley with New York and Boston as secondary hubs—demonstrating a "technology–capital–application" innovation loop. China accounted for 15%, rapidly catching up in algorithms and application innovation, while primarily driven by industrialization and scenario-based adoption, reflecting a differentiated path from the U.S. Other markets such as the U.K., India, and Canada show regional clustering but remain smaller in scale and ecosystem maturity.

#### ☐ Financing Landscape and Capital Concentration

In 2024, global AI financing surpassed RMB 590 billion, more than doubling YoY. China and the U.S. together accounted for 92%, underscoring both capital concentration in core markets and a trend toward oligopolistic innovation resources. The U.S., leveraging a mature VC system and exit mechanisms, continues to boost AI startup activity. China, supported by policy and industrial-chain collaboration, is generating unicorns in application-driven verticals. Europe and Israel hold strengths in basic research and niche verticals but still lag in financing scale and capital activity.

#### Global Distribution of Al Unicorns

By May 2025, the number of global Al unicorns exceeded 370, with a combined valuation above USD 1 trillion and rising concentration. The U.S. led with 160+, dominated by generative Al, Al chips, and enterprise applications. China followed with  $\sim$ 70–75, focusing on foundation model deployment, platform-based applications, and industrial Al scenarios. Europe, led by the U.K. with  $\sim$ 20, shows potential in healthcare Al, fintech, and robotics. India reached 8–12, reflecting momentum from both demographic and engineering talent dividends. Overall, global Al unicorns are forming a "China–U.S. dominance, Europe–India emergence" two-tier structure.





# Chapter 1.2

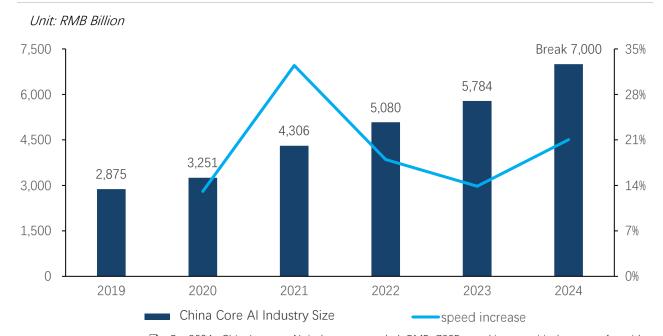
# Development Status of the China Market



# China Al Market Landscape — Market Size

 China is advancing the "AI+" initiative, accelerating the deep integration of AI with the real economy through three pillars—policy guidance, technological breakthroughs, and scenario applications—to drive industrial upgrading. By 2024, China's core AI industry exceeded RMB 700B.

#### China Core Al Industry Size, 2019-2024



☐ By 2024, China's core Al industry exceeded RMB 700B, marking a critical stage of rapid expansion for this strategic emerging sector. As a core engine of new productive forces, Al is being driven by technological innovation and industrial deployment, deeply integrating into all areas of economic and social development. Against this backdrop, China is advancing the national "AI+" initiative, anchored on three pillars-policy guidance, technological breakthroughs, and scenario applications—to accelerate integration with the real economy, upgrade traditional industries, and cultivate new growth drivers. Policy. At the national and local levels, governments are jointly advancing through top-level design and targeted measures. The "AI+" initiative serves as the core lever, pushing AI adoption into key fields such as smart manufacturing, healthcare, and transportation. Local governments further strengthen industrial hubs with tax incentives, R&D subsidies, and supportive infrastructure. Technology. China has established a full-stack ecosystem covering infrastructure, technology, and applications. Domestic Al chips are rapidly replacing imports, placing China among the global leaders in compute capacity. Foundation models (e.g., Baidu ERNIE, Alibaba Tongyi) have surpassed the trillion-parameter threshold, achieving verticalized deployment in healthcare and finance. Opensource models (e.g., DeepSeek) lower entry barriers, accelerating widespread diffusion and enabling inclusive innovation. Applications. "Al+" is moving from lab pilots to scaled commercialization. In industry, vertical foundation models (e.g., Hebei Taihang's steel model) optimize production processes, while groups such as Jingye use Al diagnostics to improve furnace operations, cutting energy consumption and boosting efficiency. In healthcare, Alassisted diagnostic systems enhance early disease detection through rapid image analysis. In education, Al-powered personalized learning enables adaptive teaching. Smart cities, autonomous driving, intelligent customer service, and smart logistics are also scaling rapidly, creating trillion-RMB-level market opportunities. In parallel, generative Al is booming across learning, content creation, and social interaction, unlocking further commercial value.

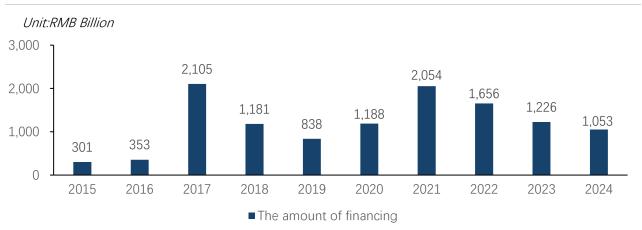


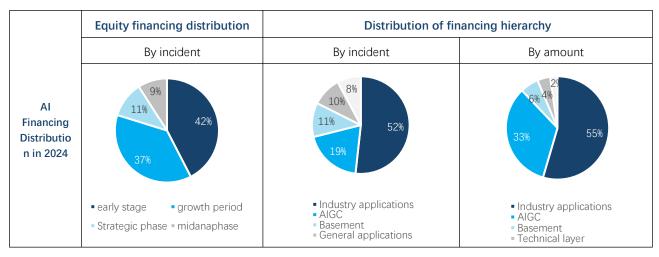


# China Al Market Landscape — Investment Intensity

• Since 2022, China's AI investment has entered a rational phase, stabilizing at RMB 100–200B. Early-stage projects and the application layer—particularly embodied intelligence—continue to dominate, while state-owned capital is emerging as a key driver in strengthening the AI value chain.

#### China Al Primary Market Financing Trends, 2015–2024





Note: Early stage investments include seed rounds, angel rounds and Pre-A rounds.

☐ China has established a complete AI industry ecosystem spanning infrastructure, technology, and applications, with explosive growth in enterprise registrations and patent filings, maintaining a leading global position.

Since 2015, the number of AI financing deals rose from 501 to a peak of 1,024 in 2018, before entering an adjustment phase. Activity rebounded to 1,076 in 2021, but declined steadily under macroeconomic headwinds, reaching 696 in 2024, indicating a more rational market. By stage, the rapid evolution of foundation models, AIGC, and embodied intelligence has enabled early-stage projects to attract capital through innovative technologies or differentiated business models. In verticals such as healthcare and automotive, the absence of dominant players and the abundance of untapped scenarios have shifted investment focus from "technology validation" to "commercialization." In 2024, application-layer financing exceeded RMB 50B, accounting for 55% of total, with state-owned capital emerging as an increasingly important driver of AI investment.

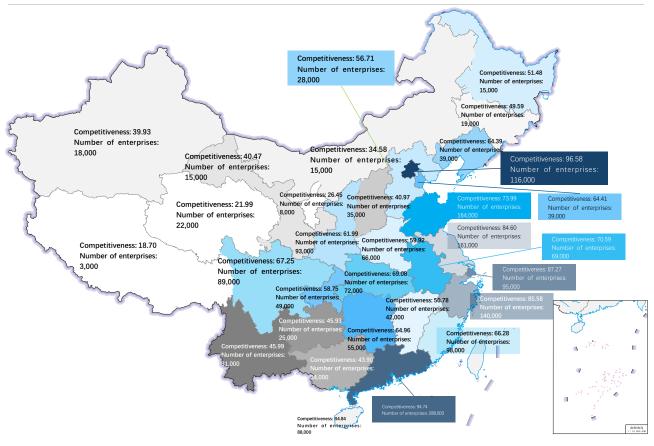




# China AI Market Landscape — Enterprise Distribution

 China's Al industry is clustering across three major hubs: Beijing-Tianjin-Hebei with full value-chain focus, the Yangtze River Delta building a world-class cluster, and the Pearl River Delta driven by Guangzhou-Shenzhen with emphasis on applications.

#### Regional AI Competitiveness and Registered Enterprises by Province/City, July 2024



Note: The criteria for judging AI enterprises in the figure are as follows: In the Tianyancha database, there are more than 2.03 million enterprises whose business scope involves keywords related to AI such as chip, image recognition, computer vision, speech recognition and sensor.

#### Filing Status of Generative AI Service Foundation Models in Selected Provinces/Cities, Apr 2024–Apr 2025











# Chapter 2 ——

# Al Industry Landscape Analysis

# Key Insights:

Poundation models, as the largest consumer of compute, are driving the rapid expansion of intelligent computing.

Large models now account for nearly 60% of intelligent computing demand. Innovations such as DeepSeek are lowering training barriers and improving inference efficiency, shifting competition from "stacking training compute" to "optimizing inference efficiency." This trend is forcing intelligent computing centers, chipmakers, and cloud providers to redefine resource allocation and product portfolios.

102 Intelligent Computing and Data Governance Have Become Structural Bottlenecks in Digital Economy Competition

From 2020–2024, intelligent computing achieved over 70% CAGR, supported by policies such as "East-to-West Computing" to build a nationwide compute network. Yet 95% of data remains unstored, with extremely low utilization of unstructured data. Looking ahead, regional competitiveness will hinge on coordinated breakthroughs in integrated computing and data governance.

Open-Source and Multimodality Are Driving China's Differentiated Advantage on the Application Side

The China–U.S. performance gap has narrowed to single digits, with China reshaping the cost-performance curve through open-source systems such as Qwen and DeepSeek. Meanwhile, vertical large models have risen to 70% of total, and multimodality has become the core breakthrough, indicating China's potential to leapfrog in industry application depth and inclusive adoption.

Commercialization Follows a "B2B First, B2C Later" Path, with AI Agents as Key Accelerators

Continuous iteration of large models is enhancing general cognition and task execution, while Al Agents leverage these capabilities for cross-scenario deployment, jointly driving Al industry penetration. By 2075, the large model market is projected to reach RMB 24.6T and the Al Agent market RMB 1.1T+, underpinned by systemic drivers including compute supply, infrastructure maturity, and application diffusion.

# China Al Industry Value Chain Landscape



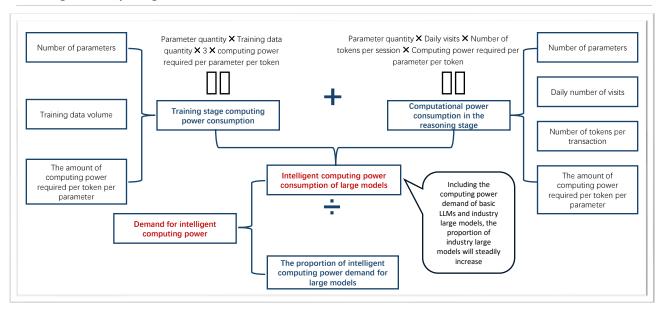
# Chapter 2.1 Analysis of the Foundation Layer

# Infrastructure

# Al Infrastructure — Compute Demand

As the largest consumer of intelligent computing (nearly 60%), foundation models
drive demand across training and inference. The emergence of DeepSeek is shifting
the pattern from "training-dominant" toward a balanced model of training and
inference, and even to an "inference-led" stage.

#### **Intelligent Computing Power Demand Forecast**





320

2025E

221

2024

147

2023

Chinas large model market size, 2023-2029E

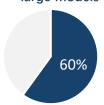
2026E

scenario-based deployment.

2027E

2028E

☐ The proportion of intelligent computing needs brought by large models



The compute demand of foundation models is typically divided into training and inference. Traditional models, with massive parameters and high single-training costs, concentrated compute resources on training. The emergence of DeepSeek has disrupted this pattern. Through innovations such as efficient model architecture design and distributed training frameworks, DeepSeek significantly lowers the barrier for model training. This enables SMEs to undertake customized training while, with high-throughput inference (e.g., DeepSeek-V3 achieving 60 TPS) and low power consumption, shifting compute demand from being "training-dominant" toward a balance between training and inference, and even to an "inference-driven" stage. As training costs decline, more industries are moving from renting pre-trained models to adopting a "self-training + inference deployment" model. Meanwhile, inference demand—driven by edge computing and real-time interaction—is becoming the main source of incremental compute consumption. This structural shift compels intelligent computing centers to optimize resource allocation, such as adopting heterogeneous clusters to support different training and inference requirements, while accelerating the expansion of domestic chip vendors in inference ecosystems. Ultimately, this drives compute resources toward broader accessibility and

2029E

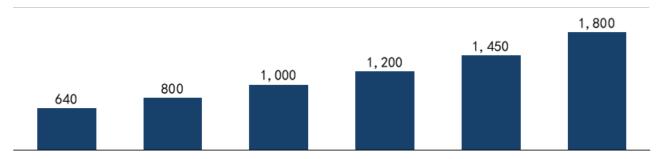




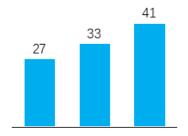
# Al Infrastructure — Data Output & Usage Scale

 The explosive growth of unstructured data is driving urgent demand for efficient storage and lifecycle management. Meanwhile, the continuous expansion of model parameters is intensifying the industry's reliance on massive, high-quality training data.

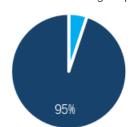
#### 算据整体发展规模



Total data production volume (ZB)

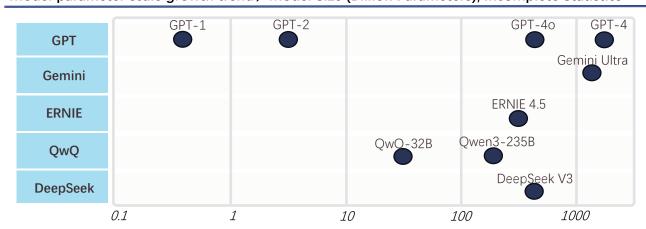


Total data storage capacity



- ☐ China's data storage capacity is experiencing rapid growth, projected to rise from 640 EB in 2020 to 1,800 EB by 2025. This expansion is driven by digital transformation, cloud computing, AI, and the surge of unstructured data from 5G and AI-enabled industries such as content creation and audiovisual services.
- □ However, data production far outpaces storage efficiency. In 2024, China generated 41.06 ZB of data but stored only 2.09 ZB, meaning nearly 95% of data was left unstored.

#### Model parameter scale growth trend, Model Size (Billion Parameters), Incomplete Statistics



□ Foundation model parameter scale is exponentially correlated with the volume, quality, and diversity of training data: the larger the parameter size, the stronger the reliance on massive, cross-lingual, cross-domain, high-quality datasets. To support the efficient training and generalization of models with 100B+ parameters, data augmentation, synthetic generation, and efficient collection/processing must be combined with big data storage, compute expansion, and algorithmic optimization.

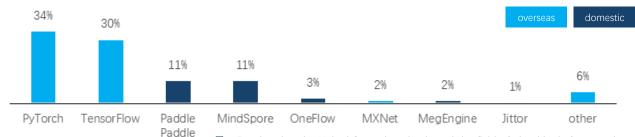




# Al Infrastructure — Algorithm Frameworks

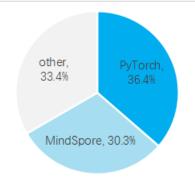
 Open-source frameworks such as MindSpore have made significant breakthroughs, enabling secure and controllable alternatives, better adaptation to domestic chips, enhanced distributed training, and lower development barriers. By 2027, China's AI framework market is projected to exceed RMB 40B.

#### Ranking of Chinese developers mainstream AI framework usage, 2022



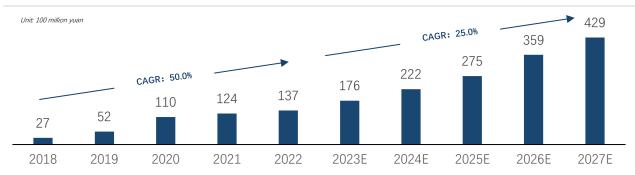
 $\bigvee$ 

Usage of new computing power open source framework in China, 2024



For decades, the United States has dominated the field of algorithmic frameworks. Leveraging the first-mover advantage of open-source frameworks like TensorFlow (developed by Google) and PyTorch (created by Meta Al Lab), it has built a comprehensive ecosystem spanning academic research, industrial applications, and developer communities. These frameworks have become core infrastructure for global Al innovation through flexible programming interfaces, rich toolchains, and extensive community support. In recent years, China has achieved breakthrough progress in algorithmic framework development through a dual-driven approach of "policy guidance + enterprise leadership." Domestic frameworks like Huawei MindSpore and Baidu PaddlePaddle not only provide self-reliant technological alternatives but also gradually establish localized AI ecosystems through deep compatibility with domestic chips (e.g., Ascend), enhanced distributed training capabilities (e.g., MindSpores native distributed parallel technology), and simplified development environments (e.g., PaddlePaddles user-friendly optimizations). Notably, MindSpores "edge-cloud-end collaboration" architecture supports over 50 major global models. In 2024, it captured over 30% of the newly added open-source computing frameworks market, emerging as one of the worlds fastest-growing AI framework communities. This momentum signifies Chinas significant enhancement in international competitiveness within AI foundational software (projected to surpass... by 2027). The AI market in Chinas algorithm framework is projected to exceed 40 billion yuan, reflecting a profound transformation in the global AI ecosystem from "unipolar dominance" to "multipolar competition and cooperation" — The deep integration of open-source ecosystems with independent hardware innovation is accelerating the restructuring of the global Al landscape, paving new pathways for developing countries to participate in global AI governance and industrial competition.

#### The size of the AI market in Chinas algorithm framework, 2018-2027E







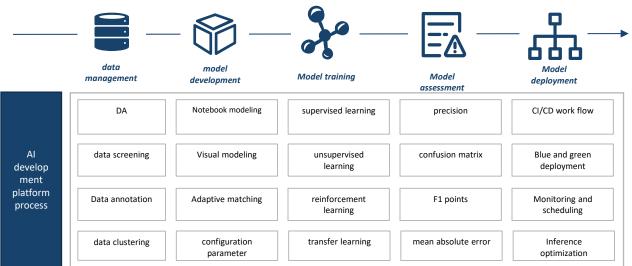
# Chapter 2.2 Analysis of the Technology Layer

# Technology

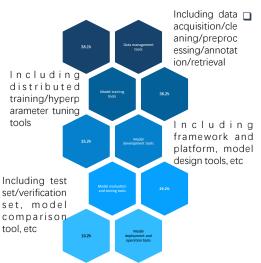
# Al Technology Layer — Development Platforms

 Al development platforms follow pay-as-you-go and subscription models, with storage, compute, and monitoring as common use cases. In China, platforms have achieved notable progress across technology, applications, and ecosystems, and are evolving toward scenario-driven, low-code, and open-source paradigms.

#### Al platform tools define the framework



The tool chain required by enterprise developers



Al development platforms are centered on end-to-end toolchains covering data management, model development, training, evaluation, and deployment, with enterprise developers showing strong demand in data management, model building, and training. Their business models are primarily pay-as-yougo and subscription-based, with storage, compute, and monitoring as common paid use cases.

Currently, China's Al development platforms have achieved significant breakthroughs across technology, applications, and ecosystems. Technology: Leading enterprises continue to release innovative tools that shorten development cycles. For example, in June 2025 Baidu launched Comate Al IDE, the first multimodal, multi-agent native AI IDE for developers, enabling oneclick code generation from design drafts. Comate now contributes over 43% of Baidu's new daily code. Alibaba's Tongyi Lingma plug-in has exceeded 15M downloads, with over 3B lines of code adopted by developers and monthly growth of 20-30%. Applications: Al development platforms are increasingly embedded in industry scenarios. Tencent Cloud's TI platform supports Bank of China in building a bank-level AI foundation for risk control and marketing, while the Nanjing Institute of Information's intelligent compute network has empowered 50+ scientific foundation models across seven domains. Ecosystem: On one hand, developer communities continue to expand, e.g., PaddlePaddle + ERNIE has over 21M joint developers, enhancing performance and efficiency. On the other hand, the open-source ecosystem is maturing, driving technology sharing and collaborative innovation. Looking ahead, Al development platforms will further evolve toward scenario-based solutions (from general-purpose tools to vertical applications), low-code (reducing barriers and costs, reshaping Al application development), and open-source adoption, jointly driving the large-scale commercialization of Al together with foundation models and agents.

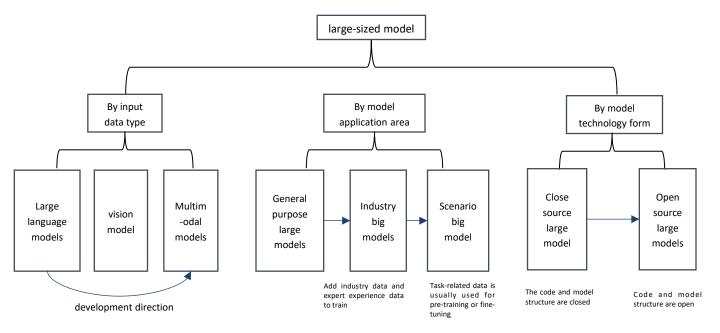




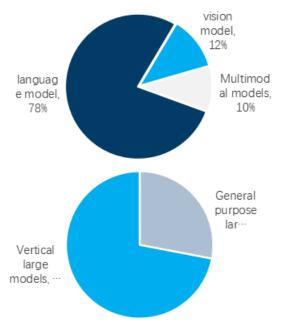
# Al Technology Layer — Foundation Model Development

 China's foundation models are rapidly closing the gap with leading international players, particularly the U.S. The industry is undergoing structural shifts toward multimodal integration and deeper vertical applications.

#### Classification of large model techniques



# Generated large model distribution for filing, November 2024





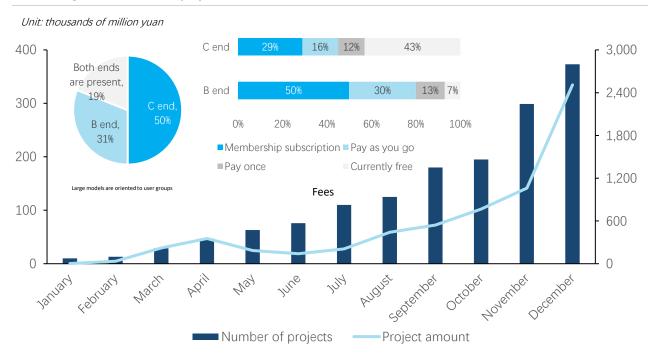
- China's foundation model capabilities are steadily improving, with the performance gap against leading U.S. models narrowing significantly. In 2023, top U.S. Al models outperformed Chinese counterparts by 17.5%, 13.5%, 24.3%, and 31.6% on benchmarks such as MMLU, MMMU, MATH, and HumanEval. By the end of 2024, these gaps had sharply narrowed to 0.3%, 8.1%, 1.6%, and 3.7%, respectively.
- At the same time, China's foundation model industry is undergoing structural transformation. LLMs are evolving toward multimodality, while general-purpose models are penetrating vertical domains—an emerging industry consensus. By November 2024, of the 309 generative AI models filed under the Interim Measures for Generative AI, language/vision/multimodal models accounted for 78%, 12%, and 10%, while general/vertical models accounted for 28% and 72%. Domestic models are breaking away from the traditional "single-modality + cross-modal alignment" path, moving toward native multimodal fusion. For example, ERNIE 4.5 leverages heterogeneous expert modeling, adaptive-resolution visual encoding, and spatiotemporal rotary position encoding, boosting multimodal comprehension by 30%.Model modalities are also expanding from the early text-image-audio triad to full multimodality.
- ☐ For instance, CAS's Zidong Taichu 2.0 incorporates video, sensor signals, and 3D point cloud processing. In industrial inspection, it can simultaneously analyze video streams, vibration signals, and 3D part models, raising fault prediction accuracy to 98.7%.



# Al Technology Layer — Foundation Model Bidding

• Since 2024, commercialization of foundation models has accelerated, with awarded contracts exceeding RMB 6B—up 7.2x YoY. The B2B market remains the primary commercialization arena due to clear demand and monetization, while rapid C-end adoption is emerging as a future growth driver.

#### Chinas big model bid for the project, 2024.01-2024.12



Since 2024, Chinas large model commercialization has witnessed explosive growth. According to Intelligent Hyperparameters statistics, the market disclosed 92 large model projects with 790 million yuan in funding in 2023, while this figure skyrocketed to 1,520 projects with 6.47 billion yuan in 2024, representing year-on-year increases of 15.5 times and 7.2 times respectively. This reflects an industry turning point driven by policy support, technological maturity, and market demand synergy. In terms of implementation pathways, B-end enterprise applications are becoming the main commercial battlefield: driven by corporate clients rigid demand for cost reduction and efficiency improvement coupled with strong payment willingness, closed-loop models featuring API calls, subscription-based services, and customized (software/hardware) solutions have been established. Leading vendors like iFlytek Marketing Cloud and Baichuan Intelligence have implemented a tiered pricing system of "free basic functions + paid advanced features". In contrast, C-end consumer applications face dual challenges of growth and profitability (with consumer products accounting for only about 20% of the large model market): although products like Tongyi Qianwen and iFlytek Xinghuo achieved daily active users exceeding 10 million through functional innovation, their business models remain exploratory. Surveys indicate that nearly 50% of current C-end large model applications still primarily operate on free models (possibly relying on advertising revenue sharing or data collection for indirect monetization), with only 29% adopting subscription-based models and 16% implementing pay-as-you-go pricing. The core pain points lie in users insufficient willingness to pay for basic functionalities and intensified homogenized competition, which has plunged the market into internal competition (In 2024, cloud providers like ByteDance Volcano Engine, Alibaba Cloud, and Baidu Cloud ignited a price war for large models, with discounts exceeding 90%). The industry has gradually adopted a "B before C" progressive development strategy: By validating technology maturity through enterprise clients, they lay the foundation for consumer applications; meanwhile, massive user behavior data accumulated from consumer applications can feed back into B-end technological iteration, forming a virtuous cycle of mutual empowerment. Looking ahead, with continuous breakthroughs in multimodal capabilities and gradual reductions in computing costs, the consumer market is expected to unlock profit growth potential through innovative models such as membership systems, virtual goods trading, and AI-native application ecosystems (ToC growth potential significantly surpasses ToB market).

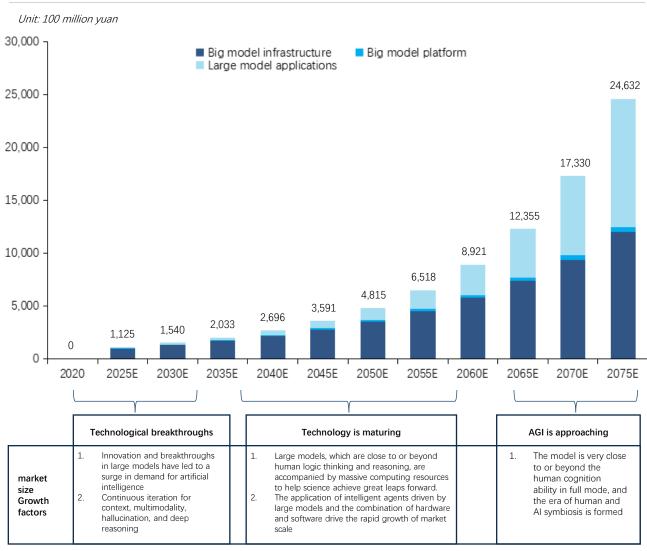




# Al Technology Layer — Foundation Model Market Size

 China's foundation model industry is shifting from compute- and infrastructuredriven growth to application-driven expansion. Market size is projected to rise from RMB 112.5B in 2025 to RMB 2,463.2B by 2075.

#### China Foundation Model Industry Size and forecast, 2020-2075E



□ Chinas large model industry will undergo a profound change from computing power and infrastructure driven to application scenario dominated, and the market size is expected to increase from 112.5 billion yuan in 2025 to 2463.2 billion yuan in 2075. Its growth path can be divided into three stages:

The initial phase was built on breakthroughs in core technologies like multimodal perception and deep reasoning; the rapid growth phase saw model performance approaching human levels as software-hardware collaborative intelligent agents began widespread deployment; and the final stage, nearing AGI, marks the arrival of the human-machine symbiosis era as upper-layer application ecosystems dominate and reach their value peak.

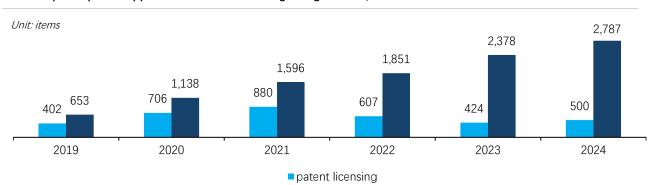




## Al Technology Layer — Al Agent Market Size

Al Agents bridge the model and application layers, serving as a key supplement for foundation model deployment. The market is expected to grow from RMB 8.5B in 2025 to over RMB 1.1T by 2075, reflecting long-term high growth potential.

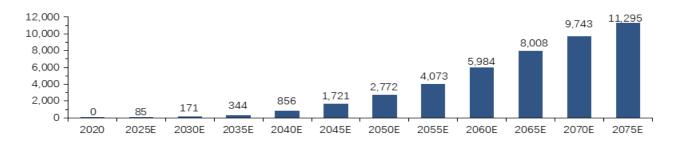
#### Status quo of patent applications in Chinas intelligent agent field, 2019-2024



☐ From 2019 to 2024, Chinas patent applications in the field of intelligent agents maintained robust growth, demonstrating accelerated technological iteration and significantly enhanced R&D activity. This sustained patent momentum not only reflects continuous breakthroughs by enterprises in algorithm optimization, architectural innovation, and practical implementation, but also signals that intelligent agents are transitioning from early-stage exploration to systematic industrialization. The accumulated technical expertise will lay a solid foundation for future standardization efforts and mature business models.

#### The development of intelligent agents in various industries

Unit: 100 million yuan



☐ The market size of the intelligent robot industry is expected to expand rapidly from 8.5 billion yuan in 2025 to more than 1.1 trillion yuan in 2075, showing strong cross-industry penetration and continuous growth potential

The intelligent agent is poised to undergo a profound evolution, transitioning from foundational technological breakthroughs to broadened application scenarios, ultimately becoming the core medium connecting humans, artificial intelligence, and hardware. Its development path will achieve explosive growth through large-scale adoption in both enterprise and consumer sectors, eventually stabilizing as a core technological form. This evolutionary trend will drive exponential market expansion, with its scale projected to surpass 1.12 trillion yuan by 2075.





# Chapter 2.3 Analysis of the Application Layer

# Application

# Al Application Layer — Value of AIGC

 The enterprise value of AIGC lies in the alignment of model capabilities with scenario needs, measurable ROI with executive buy-in, and the synergy of data resources and compute environments.

#### The current application status of AIGC in various industries

Settle down in the industry		internet		education		government affairs		scientific research	t	the sources of energy		Health care	finance		automobile
AIGC application scenarios	✓	Multimodal marketing material generation (copywriting/vi deo/poster)  Personalized recommendation and customer portrait analysis  Intelligent advertising delivery and ROI optimization	✓	Intelligent evaluation and assignment correction  Adaptive learning path planning  Digital teaching assistants and intelligent q&A  Personalized lesson preparation	✓	Predictive modeling and trend analysis Automated reporting and visual insights Anomaly detection and root cause analysis	✓	Predicting protein structure  Study the pathogen esis  Predict material properties  Weather forecast	\[   \lambda   \]	Power generation forecast  Power grid design and planning  Equipment operation and maintenance  Intelligent interpretation of bills	\[   \lambda   \]	Medical image assisted diagnosis  Al drug development and molecular simulation  Electronic medical records are structured  clinical decision support	Intelligent investment and quantitative trading  Anti-fraud and credit evaluation  Credit approval automation system  Document analysis, knowledge management, data decision	\[   \lambda   \]	Smart cockpit  Virtual test and verification  Autonomous driving algorithms  Fault prediction and maintenance optimization

## Technical competence matches

#### Model capabilities match industry needs

The matching of large model capabilities with the needs of specific industries is a key to the implementation of applications.

- Finance: Mature natural language understanding, logical reasoning, data analysis and generation capabilities, just meet the needs of intelligent customer service, antifraud, investment research, report generation and other scenarios.
- Medical: The multimodal processing, knowledge integration and reasoning ability of large models make them have great potential in assisting diagnosis, new drug research and development, medical record summary generation, health consultation and other aspects.

#### Clear value proposition

#### Quantifiable return on investment and impact

One of the core priorities for large models to land in these industries is the ability to deliver clear and visible value returns in key business areas.

- Efficiency and productivity improvement: Improve the efficiency of customer service centers (e.g., Industrial and Commercial Bank of China reduced the average call duration by 10% and improved the efficiency of seats by 18%)
- Cost reduction: directly related to efficiency improvement, reflected in reducing labor costs (such as customer service), reducing equipment maintenance costs (through predictive maintenance), and shortening R&D cycles.

## High data and infrastructure readiness

#### Fuel for the big model

The training and effective operation of large models cannot be separated from high-quality data and strong infrastructure support.

- Data availability and volume: Industries that can generate and accumulate large amounts of data naturally provide a rich training and application foundation for large models. Finance, medical and other data construction is relatively perfect.
- Computing infrastructure: Enterprises and industries that invest in cloud computing and Al infrastructure, or have sufficient financial resources to build/purchase relevant resources, will have an advantage in adopting large models.
- □ The successful implementation of large models across industries primarily depends on three key factors: capability alignment, quantifiable ROI, and sufficient data computing power. First, the models capabilities must closely match industry-specific needs to effectively address practical challenges such as automated processing, intelligent forecasting, or optimized decision-making. Second, the input-output ratio must be clearly quantifiable to ensure long-term sustainability and economic benefits, which remains a critical consideration for corporate decision-makers. Finally, industries must possess adequate data resources and computing power support—particularly when handling massive datasets or performing complex computations—where robust computational capabilities and high-quality data form the foundation for successful large model deployment. In summary, only through the organic integration of these three elements within specific industries can we drive efficient application of large models and achieve significant improvements in sectoral efficiency.

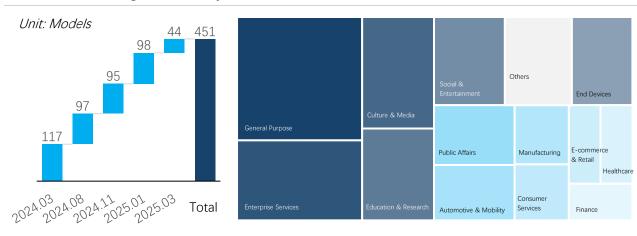




# Al Application Layer — Industry Scenarios

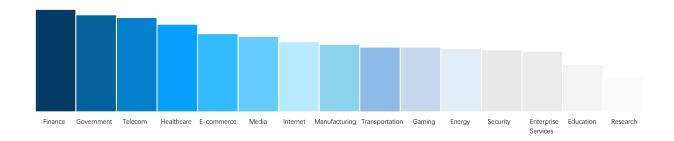
 All applications are evolving from general capabilities to scenario-specific deployment, with penetration exceeding 60% in finance, government, telecom, and healthcare. Though adoption in enterprise services and education is later, growth potential remains substantial.

#### Gen Al Service Filings and Industry Distribution, Mar 2024-Mar 2025



On one hand, according to the Interim Measures for the Administration of Generative AI Services issued by CAC in 2024, by March 2025 a total of 451 generative Al services had been filed nationwide. Over 80% were vertical customized solutions, while only 19% were generalpurpose models—signaling a shift from "general capabilities" to scenario-based deployment.On the other hand, under the "AI+" initiative, AI is being widely adopted across industries, forming a pattern of "deep application in leading sectors and accelerated exploration in emerging fields." Finance and government show the highest penetration: in finance, Al enhances risk management, robo-advisory, and customer service, significantly improving efficiency and accuracy; in government, Al supports policy analysis, urban governance, and regulatory oversight, boosting public service effectiveness. Other verticals such as telecom, healthcare, ecommerce, media, internet, and manufacturing are also at high penetration levels. Telecom leverages AI for network optimization and automated customer service; healthcare applies AI in disease diagnosis, personalized treatment, and drug R&D; e-commerce uses AI for precision marketing and recommendation; media adopts AI for content creation and intelligent editing; the internet sector is reshaping product formats and user experience through Al.Meanwhile, enterprise services, education, and research are still at lower penetration levels, yet hold significant potential to become the next growth drivers of Al adoption.

#### Al Penetration Across Industries



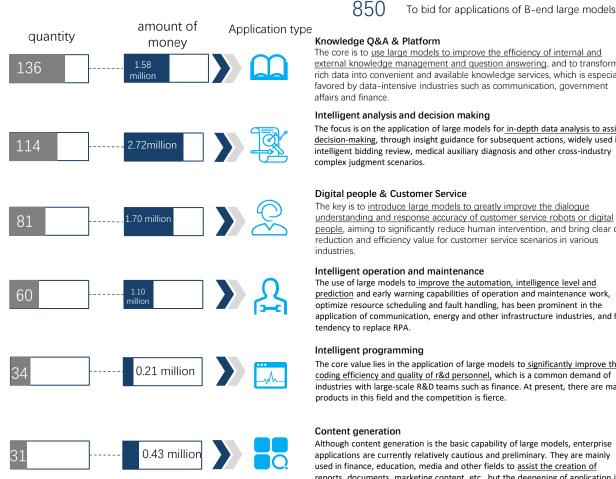




## Al Application Layer — Business Scenarios

B2B foundation model applications are entering the value realization stage, with intelligent decision-making, knowledge Q&A, and digital humans leading mainstream deployment. Industry adoption is expanding systematically, driven by both efficiency and value creation.

Current status of artificial intelligence business scenario application



The core is to use large models to improve the efficiency of internal and external knowledge management and question answering, and to transform rich data into convenient and available knowledge services, which is especially favored by data-intensive industries such as communication, government

The focus is on the application of large models for in-depth data analysis to assist decision-making, through insight guidance for subsequent actions, widely used in intelligent bidding review, medical auxiliary diagnosis and other cross-industry

The key is to introduce large models to greatly improve the dialogue understanding and response accuracy of customer service robots or digital people, aiming to significantly reduce human intervention, and bring clear cost reduction and efficiency value for customer service scenarios in various

#### Intelligent operation and maintenance

The use of large models to improve the automation, intelligence level and prediction and early warning capabilities of operation and maintenance work, optimize resource scheduling and fault handling, has been prominent in the application of communication, energy and other infrastructure industries, and has a

The core value lies in the application of large models to significantly improve the coding efficiency and quality of r&d personnel, which is a common demand of industries with large-scale R&D teams such as finance. At present, there are many products in this field and the competition is fierce.

Although content generation is the basic capability of large models, enterprise applications are currently relatively cautious and preliminary. They are mainly used in finance, education, media and other fields to assist the creation of  $\underline{\text{reports, documents, marketing content, etc., but the deepening of application } is$ restricted by hallucinations and other problems.

 Overall, the 850 large enterprise B2B models have been applied across six key scenarios: knowledge Q&A, intelligent decision-making, digital humans, smart operations, Al programming, and content generation, with a total investment exceeding 700 million yuan. This reflects the evolution of large models from single-function experiments to systematic implementation. Structurally, intelligent analysis and decision-making led with 272 million yuan, highlighting their critical role in high-value sectors like financial risk control and medical diagnosis. Knowledge Q&A and digital human & customer service followed closely at 158 million yuan and 170 million yuan respectively, demonstrating widespread adoption in corporate knowledge management and customer interaction. Although smart operations and Al programming have smaller scales, they are emerging as potential growth drivers through direct improvements in production efficiency and R&D effectiveness. The overall trend indicates that large models in B2B have transitioned from "proofof-concept" to "value realization," with business models becoming increasingly clear and forming dual drivers for efficiency enhancement and value creation.







# Chapter 3 ——

# Al Industry Future Trends Analysis

# Key Insights:

# End-Cloud Collaboration Becomes a Key Path for the Democratization and Practical Adoption of Large Models

By combining the complex reasoning of cloud-based large models with the real-time responsiveness of lightweight on-device models, end-cloud collaboration overcomes latency and compute constraints, offering advantages in privacy, personalized interaction, and dynamic scheduling. This signals a shift in human-machine interaction from "command-response" to "context-aware."

# **02** RL-Driven Large Models: Task-Oriented and "Digital Employee" Transformation

Extensive use of RL in the post-training phase is shifting models from passive response to active reasoning and strategy generation, significantly enhancing reliability and generalization in complex tasks such as math, coding, healthcare, and finance. This marks large models entering the "digital employee" stage.

### Al Agents Accelerate Application and Build a "Model-Agent-Industry" Ecosystem Loop

Al Agents are lowering the adoption barrier for large models, driving efficiency and value in general scenarios such as customer service and marketing, while enhancing decision-making and specialization in verticals like finance and healthcare. With advances in cross-domain generalization and real-time perception, agents are set to become a key lever for industrial upgrading.

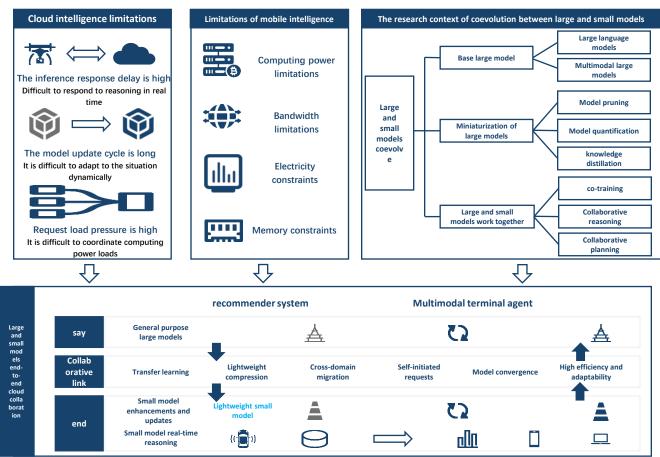
### Embodied Intelligence and AI Risk Governance Advance in Parallel, Shaping the Long-Term Industry Landscape

Tech giants and SMEs are jointly advancing embodied intelligence through "capital + scenarios" and vertical breakthroughs, moving toward virtual-physical integration, multimodal perception, and agentization. Meanwhile, global Al risk incidents rose 50% YoY, prompting stronger regulatory and technical defenses. The dual drivers of industrial evolution and risk governance will define both the depth of Al adoption and the boundaries of its safe deployment.

# Al Development Trend (I) — End-Cloud Collaboration

• By integrating the general compute power of cloud-based foundation models with the real-time perception of lightweight on-device models, end-cloud collaboration achieves breakthroughs in efficiency, responsiveness, and personalization. It is a critical path for the democratization and practical deployment of AI.

Technology roadmap for large and small model end-cloud collaboration



End-cloud collaboration between large and small models is becoming a key direction in the evolution of Al-powered human-machine interaction. This model integrates the general compute capabilities of cloud-based foundation models with the real-time perception of lightweight on-device models, overcoming the limitations of purely cloud or device-side deployment. It delivers improvements in efficiency, privacy protection, real-time responsiveness, and personalization. Large models (e.g., ChatGPT, DeepSeek) excel at complex reasoning and multimodal understanding but are difficult to deploy directly on devices due to high compute demands and latency. Small on-device models can respond quickly to simple tasks but struggle with complex ones. End-cloud collaboration, through dynamic task scheduling and layered data processing, combines the strengths of both: cloud models handle complex reasoning while device models ensure lowlatency interaction, forming a complementary "brain-senses" system. Application scenarios include recommendation systems dynamically adjusting strategies, voice assistants and agents improving conversational fluency through multi-step reasoning, and smart terminals allocating tasks via hybrid compute scheduling. The proliferation of on-device NPUs and the expansion of the open-source ecosystem will accelerate this trend, shifting human-machine interaction from "command-response" to "context-aware."Despite challenges in dynamic scheduling, privacy protection, and standardization, end-cloud collaboration remains a critical path for the democratization and practical deployment of Al. It is reshaping service models in office automation, consumer electronics, and autonomous driving, and is emerging as a core driver of an intelligent society.

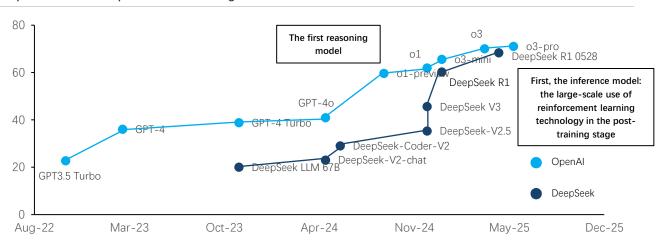




# Al Development Trend (II) — "Digital Employees"

In the post-training phase, large-scale reinforcement learning significantly enhances the reasoning and action capabilities of foundation models. RL is driving the "task-oriented" and "digital employee" transformation of models, deeply empowering vertical domains such as healthcare and finance where reliability and generalization are critical.

#### OpenAI and the DeepSeek AI Index changed



As the marginal benefits of parameter scaling in pre-training phases for large models gradually diminish, leading Al institutions worldwide (including OpenAl, Google DeepMind, DeepSeek, and Tencent) have begun adopting reinforcement learning techniques during post-training phases. This approach guides models to transition from "passive response" to "proactive problem-solving," thereby enhancing their reasoning capabilities. The core mechanism involves generating positive/negative reward signals for model outputs using limited annotated data or human feedback, followed by multi-stage training strategies to progressively optimize model behavior, enabling it to approximate human autonomous reasoning in complex tasks. Taking DeepSeek R1 as an example, it abandoned traditional supervised fine-tunings reliance on massive annotated data during post-training, instead extensively employing reinforcement learning. Despite having minimal annotated data, this model achieved significant performance improvements across complex reasoning domains including mathematics, coding, and natural language inference through multi-stage training strategies. This breakthrough validates reinforcement learnings critical value in transitioning large models from "potential unleashing" to "strategy creation." The transformative power of reinforcement learning manifests in three key aspects: not only propelling large models evolution from "language generators" to "task-executing agents," but also fostering "digital employees" with sophisticated workflow processing capabilities, while further advancing. Dynamic policy optimization effectively addresses the dual challenges of data scarcity and security sensitivity in scenarios such as medical diagnosis and financial risk control, providing reliable generalization capabilities for specialized domain models. Currently, reinforcement learning is leading large model training into a new phase of "active learning, autonomous decision-making, and continuous evolution". The maturity of this technology will directly determine the breadth and depth of AI systems implementation in real-world applications.

#### Performance comparison between DeepSeek R1/V3 and OpenAI o1/o1-mini







# Al Development Trend (III) — Expanding of Agent

 Al Agents are expanding in depth, accelerating the commercialization of foundation models and enhancing their ecosystem value. With advances in real-time perception systems, layered decision-making architectures, and cross-domain generalization, agents will break scenario barriers and further drive industrial upgrading.

Application map of general scenario and professional scenario of intelligent agent



Challenges in the development of intelligent agents

#### Perception needs to be improved

Due to the complex and changeable environment, the technical base of intelligent agent has many problems, such as insufficient multi-mode perception efficiency, lagging real-time learning framework, weak small sample and unsupervised learning, insufficient coverage of dynamic environment simulation, and poor coordination between perception — decision closed-loop

#### Long chain task planning capability is insufficient

Intelligent agents have obvious shortcomings in the decomposition of system tasks, and it is difficult to simplify complex tasks. Studies show that when the task steps exceed 5 layers, the decision accuracy of intelligent agents drops by 42%, and the risk of logical fracture increases by 68%

### Multi-agent combination and collaboration have not been fully reflected

The combination of multiple agents has become one of the development trends of agents. However, with the increase of the number of agents, how to deal with the complex interaction and coordination between agents, how to solve the conflicts between agents, and how to evaluate the performance of agents have become the key

Frost Sullivan, LeadLeo



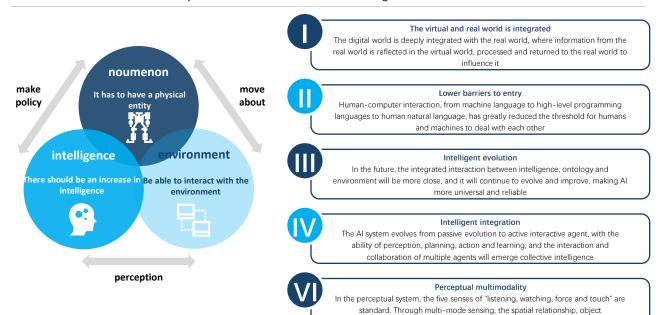
The rapid advancement of intelligent agent technology has significantly lowered the development and deployment barriers for native applications, continuously expanding the implementation boundaries of large models while enhancing application efficiency. Its value manifests in two dimensions: (1) In cross-domain scenarios, intelligent agents leverage modular design and generalization capabilities to swiftly respond to complex demands, driving quality improvement and efficiency enhancement across various business contexts through diversified forms. For instance: In the field of Al-powered customer service, intelligent agents can automatically identify and understand user inquiries, providing precise and timely responses that effectively reduce labor costs while boosting customer satisfaction; In smart marketing, intelligent agents dynamically analyze market data and deliver personalized marketing services based on customer preferences and behaviors, thereby improving marketing efficiency. (2) Within specialized verticals, intelligent agents address complex decision-making challenges through deep domain adaptation, unlocking industry value. For example: In finance, decision-making agents offer intelligent investment advisory, smart lending, Al-powered customer service, real-time anti-fraud, and risk control services, thereby lowering financial service barriers (supported by data infrastructure and policy backing, the financial sector has become a pioneer in intelligent agent applications, achieving coverage exceeding 75% across customer service, risk control, and investment advisory scenarios); In healthcare, intelligent agents analyze patient medical records, imaging data, and laboratory test results, This technology enables doctors to diagnose and develop medical plans more swiftly and accurately. In the future, as real-time perception systems are optimized, hierarchical decisionmaking architectures are established, and cross-domain generalization technologies achieve breakthroughs, intelligent agents will further break down scenario barriers. Ultimately, this will form an "agent + large model" ecosystem loop, injecting sustained momentum into industrial upgrading.



# Al Development Trend (IV) —Embodied Intelligence

 As a key pathway toward AGI, embodied intelligence is developing under a dualtrack ecosystem where tech giants consolidate scenarios and SMEs push technological frontiers. The industry is evolving toward virtual-physical integration, factor unification, agentization, and multimodal perception, lowering interaction barriers.

The three elements and development direction of embodied intelligence



Embodied intelligence, as the critical pathway for AI to achieve AGI (General Artificial Intelligence), is reshaping the paradigm of human-machine collaboration. Currently, tech giants and small-to-medium enterprises are accelerating their strategic layouts through differentiated approaches. On one hand, industry leaders like Meituan and JD.com are driving innovation through a dual engine of "capital + real-world scenarios". These companies not only provide financial support (e.g., Meituan investing in 30 robotics-related enterprises including StarMap) but also accelerate technological implementation through practical, continuous, and complex application demands in logistics, warehousing, and e-commerce sectors. For instance, JD.com deploys robots in vertical scenarios like smart home appliances, education, and household services via Joylnside, while Meituan collaborates with Galaxy General to train robots directly in pharmacy and retail environments. On the other hand, SMEs are securing strategic advantages in next-generation AI by focusing on vertical technologies (such as dexterous hands, biomimetic structures, and high-precision perception algorithms), leveraging data partnerships (collaborating with industry leaders to obtain real-world interaction data for model optimization), and pioneering cross-modal models like the "Vision-Language-Action" (VLA) framework exemplified by Qianxun Intelligence.

position/feature of the surrounding environment can be perceived in real time

In the future, embodied intelligence will continue to develop in the following directions: [1] Virtual-Physical Integration World: Deep integration of digital twins and physical entities. Through large-scale training in virtual environments (such as Suochen Technologys "Tiangong-Kaifu" platform), strategies can be migrated to real-world scenarios, significantly improving task efficiency. High-quality data (meeting three core standards: physical authenticity, semantic comprehensibility, and scenario generalization) will become the core support, with the combination of synthetic and real data driving technological iteration. [2] Lowering Technical Barriers: Human-computer interaction shifts from professional programming languages to natural language. Large model-driven VLA models have been applied in autonomous driving and service robots, such as controlling robots through natural language commands for complex tasks, greatly reducing development and usage thresholds. [3] Intelligent Evolution: Embodied large models combine multimodal data and physical interaction experience, continuously learning to enhance versatility and reliability, gradually transitioning from task-specific to general intelligence. [4] Agent-Integrated Intelligence: All systems evolve from passive tools to active intelligent agents with planning, action, and learning capabilities. For example, Zhejiang Universitys InfiGUIAgent 3B achieves automated execution of complex tasks through multi-step reasoning and reflection mechanisms; multi-agent collaboration (e.g., clusters of hundreds of robots) is achieved through joint..Bonsai employs both supervised learning and reinforcement learning to optimize task allocation. [5] Multimodal Sensing: The robots perception has expanded from single-sensor vision to integrated multi-modal sensing including tactile, force, and olfactory inputs. For instance, Aobizhongguangs RGB-D camera provides 3D visual data for the ReKep system, enabling complex interactions; breakthroughs in nanomaterials for tactile sensors have further enhanced precision in dexterous operations.





# Al Development Trend (V) — Al Safety

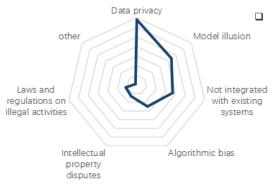
In 2024, global AI risk incidents reached 220, up nearly 50% YoY, underscoring the rising importance of safety. Meanwhile, global AI governance frameworks are being rapidly established, with coordinated advances in technical defenses and regulatory mechanisms ensuring secure and widespread adoption of AI across industries and daily life.

#### Artificial intelligence risk management matrix

Risk type	Risk description	lash	probability	risk grade
Prejudice versus fairness	Models show unfair or discriminatory results across different groups			
comprehensibility	Users or auditors cannot resolve the policy			
Data privacy	Sensitive or personal data is leaked through model reasoning			
Model drift	As the data changes over time, performance declines			
Adversarial attacks	A model manipulated by malicious input			
Overfitting	The model performs well in training but fails in actual data			
compliance	Al violated the requirements of relevant legislation			
operate	System failures in real-time decision making scenarios			
prestige	Negative public or media reactions to harmful Al behavior			
Abuse of automation	Key tasks are fully automated and require no human supervision			

low secondary tall critical

# Risks of enterprise implementation AI attention



With the accelerated deployment of Al, Al-related risk incidents are growing at a synchronized pace. According to the Al Incident Database, global Al-related risk incidents reached 220 cases in 2024, marking a nearly 50% year-on-year increase. Among these, 32.7% stemmed from inherent security issues within Al systems (such as data breaches, insufficient model explainability, and hallucinations), while 67.3% arose from security risks emerging during Al implementation (including legal, ethical, and environmental risks caused by Al technology misuse).

As AI risks become increasingly prominent, the global AI governance framework is accelerating its development. Technologically, tech giants like Baidu are enhancing their ability to identify deepfake content through advanced Al algorithms and tools. Microsofts PyRIT tool evaluates content safety in large models, while QiAnXins comprehensive AI security solution integrates security frameworks, solutions, and testing tools to address content safety and ethical risks posed by large models. Regulators are speeding up legislation to combat Alrelated crimes. For instance, the U.S. Senate passed the "2024 Combating Precision-伪造 Images and Unauthorized Editing Act," allowing victims of private digital forgeries to claim up to \$1 million in compensation. Chinas Cybersecurity Standardization Committee released version 1.0 of its "Al Security Governance System," proposing technical countermeasures and integrated prevention measures for algorithm/data/system security, as well as application risks in cyber, real-world, cognitive, and ethical domains. The synergistic enhancement of technological defenses and institutional constraints is building a secure foundation for large-scale Al adoption, effectively ensuring Als widespread integration into all industries and daily life.





### Methodology

- ◆ LeadLeo Research Institute layout of the Chinese market, in-depth research of 19 industries, 532 vertical industry market changes, has accumulated nearly 1 million industry research samples, completed nearly 10,000 independent research and consulting projects.
- ◆ Based on China's dynamic economic environment, the Institute's research covers the development cycle of the entire industry from the establishment, development and expansion of enterprises in the industry to the maturity of enterprises towards listing and listing. The Institute's various industry researchers explore and evaluate the changing industrial models in the industry. The business model and operation model of the enterprise, to interpret the evolution of the industry from a professional perspective.
- ◆ The institute integrates traditional and new research methods, adopts self-developed algorithms, combines cross-industry big data, and uses diversified research methods to dig the logic behind quantitative data, analyze the viewpoints behind qualitative content, objectively and truly describe the current situation of the industry, and prospectively predict the future development trend of the industry. In each research report of the Institute, A complete presentation of the past, present and future of the industry.
- ◆ The Institute pays close attention to the latest trends in the development of the industry, and the content and data of the report will be constantly updated and optimized with the development of the industry, technological innovation, changes in the competitive landscape, the promulgation of policies and regulations, and the deepening of market research.
- ◆ Adhering to the purpose of creative research and striving forward, the Institute analyzes the industry from a strategic perspective, reads the industry from the executive level, and provides worthy research reports for the readers of each industry report.

## Legal Disclaimer

- ◆ The copyright of this report belongs to Frost & Sullivan. Without written permission, no organization or individual may reproduce, reproduce, publish or quote this report in any form. If the report is to be quoted or published with the permission of Frost & Sullivan, it should be used within the permitted scope, and the source should be given as "Frost & Sullivan Research Institute", also the report should not be quoted, deleted or modified in any way contrary to the original intention.
- ◆ The analysts in this report are of professional research capabilities and ensure that the data in the report are from legal and compliance channels. The opinions and data analysis are based on the analysts' objective understanding of the industry. This report is not subject to any third party's instruction or influence.
- ◆ The views or information contained in this report are for reference only and do not constitute any investment recommendations. This report is issued only as permitted by the relevant laws and is issued only for information purposes and does not constitute any advertisement. If permitted by law, Frost & Sullivan may provide or seek to provide relevant services such as investment, financing or consulting for the enterprises mentioned in the report. The value, price and investment income of the company or investment subject referred to in this report will vary from time to time.
- ◆ Some of the information in this report is derived from publicly available sources, and Frost & Sullivan makes no warranties as to the accuracy, completeness or reliability of such information. The information, opinions and speculations contained herein only reflect the judgment of the analysts of leopard at the first date of publication of this report. The descriptions in previous reports should not be taken as the basis for future performance. At different times, the Frost & Sullivan may issue reports and articles that are inconsistent with the information, opinions and conjectures contained herein. Frost & Sullivan does not guarantee that the information contained in this report is kept up to date. At the same time, the information contained in this report may be modified by Frost & Sullivan without notice, and readers should pay their own attention to the corresponding updates or modifications. Any organization or individual shall be responsible for all activities carried out by it using the data, analysis, research, part or all of the contents of this report and shall be liable for any loss or injury caused by such activities.





# Al Empowerment Across Industries White Paper

**Driving Innovative Industry Evolution** 





