

AI Governance
Alliance



In collaboration with Accenture

Transformation of Industries in the Age of AI

Blueprint to Action: China's Path to AI-Powered Industry Transformation

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Reading guide

The World Economic Forum's AI Transformation of Industries initiative seeks to catalyse responsible industry transformation by exploring the strategic implications, opportunities and challenges of promoting artificial intelligence (AI)-driven innovation across business and operating models.

This white paper series explores the transformative role of AI across industries. It provides insights through both broad analyses and in-depth explorations of industry-specific and regional deep dives. The series includes:

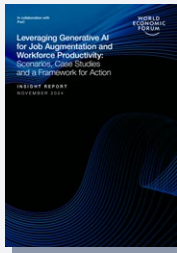


Cross industry

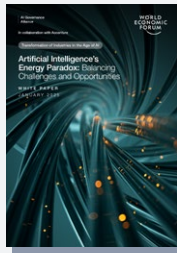
Impact on industrial ecosystems



AI in Action: Beyond Experimentation to Transform Industry



Leveraging Generative AI for Job Augmentation and Workforce Productivity



Artificial Intelligence's Energy Paradox: Balancing Challenges and Opportunities



Artificial Intelligence and Cybersecurity: Balancing Risks and Rewards



Regional specific

Impact on regions



Blueprint to Action: China's Path to AI-Powered Industry Transformation



Industry or function specific

Impact on industries, sectors and functions

Advanced manufacturing and supply chains



Frontier Technologies in Industrial Operations: The Rise of Artificial Intelligence Agents

Financial services



Artificial Intelligence in Financial Services

Media, entertainment and sport



Artificial Intelligence in Media, Entertainment and Sport

Healthcare



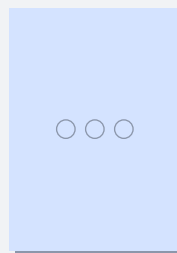
The Future of AI-Enabled Health: Leading the Way

Transport



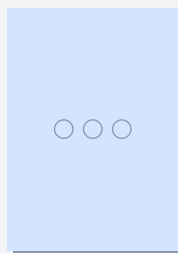
Intelligent Transport, Greener Future: AI as a Catalyst to Decarbonize Global Logistics

Telecommunications



Upcoming industry report: Telecommunications

Consumer goods



Upcoming industry report: Consumer goods

Additional reports to be announced.

As AI continues to evolve at an unprecedented pace, each paper in this series captures a unique perspective on AI – including a detailed snapshot of the landscape at the time of writing. Recognizing that ongoing shifts and advancements are already in motion, the aim is to continuously deepen and update the understanding of AI's implications and applications through collaboration with the community of World Economic Forum partners

and stakeholders engaged in AI strategy and implementation across organizations.

Together, these papers offer a comprehensive view of AI's current development and adoption, as well as a view of its future potential impact. Each paper can be read stand-alone or alongside the others, with common themes emerging across industries.

Foreword



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As we stand at the forefront of a new era, AI is anticipated to empower various industries, propelling China's digital economy to a new level.¹

In association with our knowledge partner, Accenture, the World Economic Forum's AI Governance Alliance (AIGA) – AI Transformation of Industries China deep dive is committed to sharing and equipping business

leaders with insightful knowledge and foresight on remarkable transformations powered by AI while showcasing best practices that drive innovation and growth in China.

This paper presents in-depth insights into China, focusing on AI transformation through:



Clarifying the strategy

and roadmaps from a country-level perspective



Identifying key enablers

for AI transformation within the ecosystem



Evaluating AI's potential

across industries that adopt AI technologies

The opportunities presented by AI are substantial, but we must also recognize the complexities that accompany this transformation. As AI development accelerates, it is imperative for all leaders to understand the nuances of this transformation – not only to use AI effectively, but also to understand its profound implications for industries and society in China and beyond.

The insights presented in this report are enriched by contributions from a diverse working group of experts, spanning academia and businesses. Their collaboration underscores the importance of strategic navigation and strengthened partnerships to effectively address these challenges.

Executive summary

Government support, a dynamic innovation ecosystem and strong industry focus underpin China's goal of AI-powered transformation.

China is positioning itself as a global leader in artificial intelligence (AI). The country aims to become a primary innovation hub for the technology by expanding its core AI industry to over \$140 billion by 2030, and to boost related sectors to \$1.4 trillion in value during the same period.²

Over the past decade, the country has established a robust foundation to support its AI economy and is strategically exploring AI for transformation in some sectors at speed and scale.

Three factors are propelling this transformation:

- **Government support:** The government plays a proactive role in facilitating AI development, exhibiting robust strategic planning and execution capabilities.

- **Ecosystem enablers:** China has established a vibrant AI ecosystem that promotes collaborative innovation. A culture of innovation is also taking root, enabling broader, more inclusive adoption of AI technologies at scale.
- **Industrial application:** Leading companies in China are investing heavily in the development of AI, with a focus on key business scenarios to solve industry-specific problems.

Despite its success, China's journey towards high-impact AI transformation also highlights key challenges that, if addressed, hold the potential for even more transformative growth. To ensure a bright future for AI development in China, an open, collaborative ecosystem that encourages active participation will be needed.

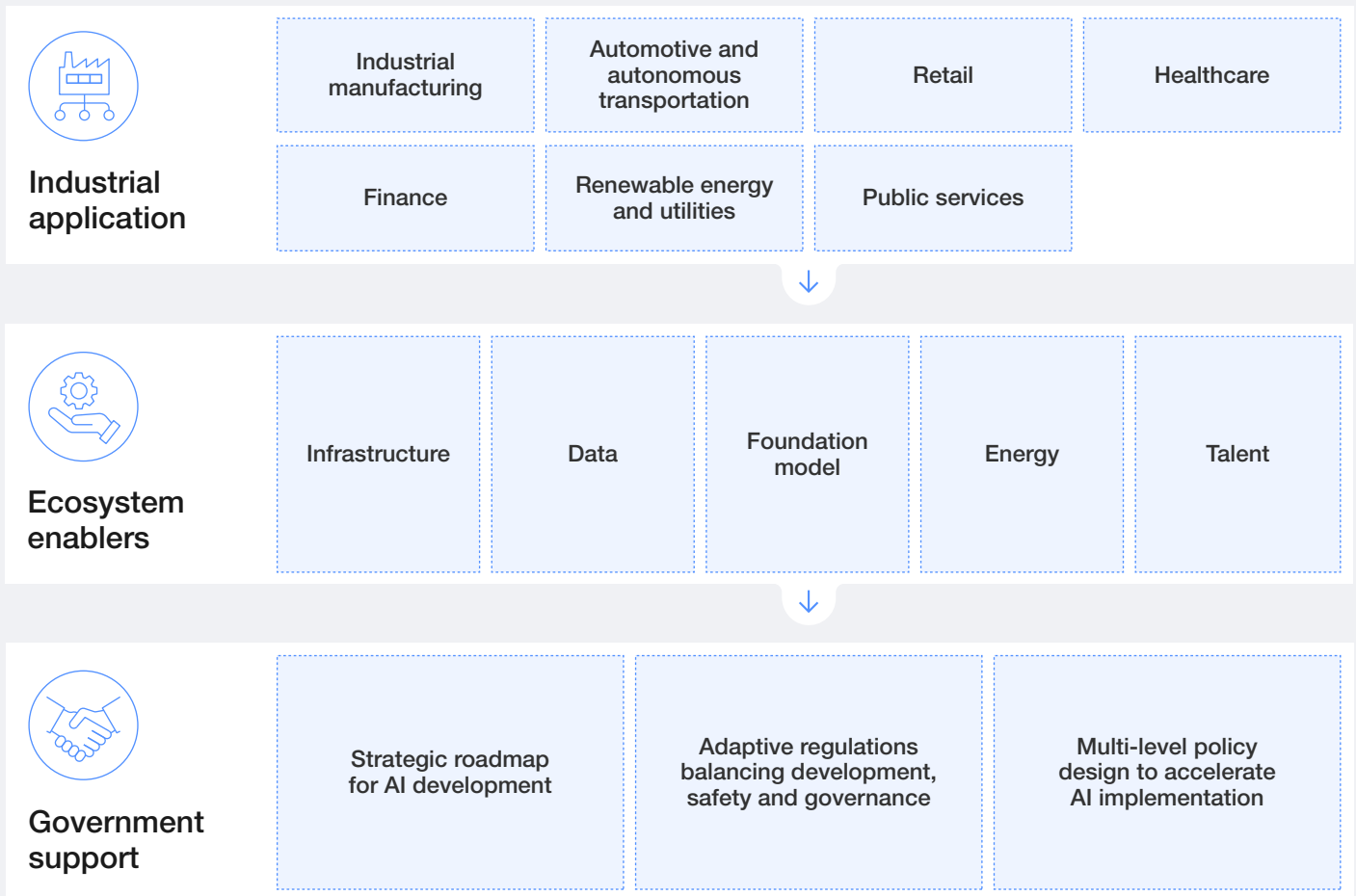
Introduction

China's fast-growing \$70 billion AI industry sees soaring optimism, yet collective effort is key to unlocking scalable impact.

Today, China's artificial intelligence (AI) industry is large and growing fast: it now exceeds \$70 billion and has cultivated over 4,300 companies that have contributed to a continuous stream of breakthroughs.³

This transformation is propelled by a dynamic interplay between market forces and government initiatives, all operating within a comprehensive framework designed to promote innovation.

FIGURE 1 Research framework for the AI-powered industry transformation in China

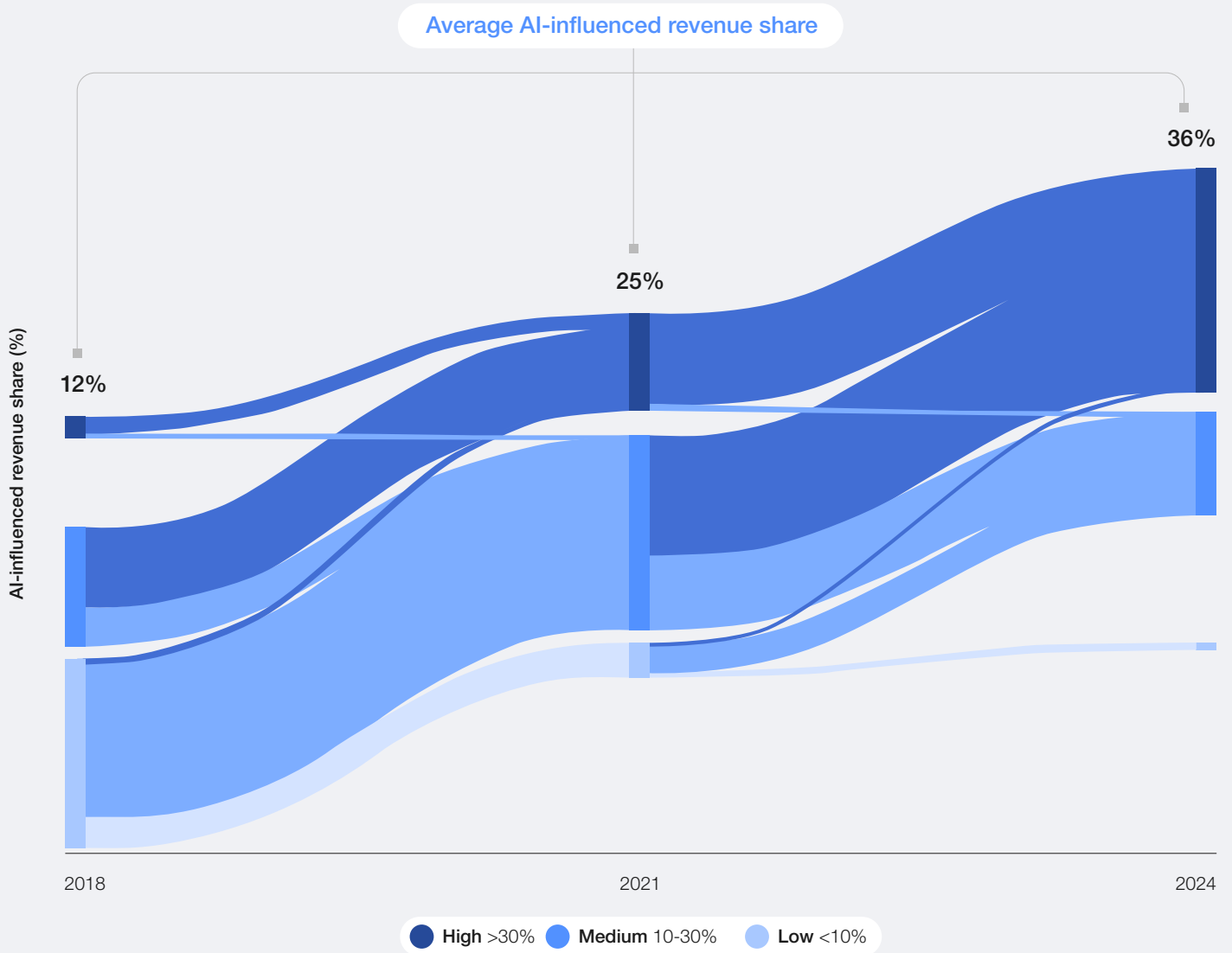


Source: World Economic Forum and Accenture.

From the company perspective, AI is seen as a significant opportunity for revenue growth. Between 2018 and 2021, the share of companies' revenues in China that were AI-influenced more than doubled;

by 2024, the share is expected to be roughly triple 2018's figures.⁴ In total, 90% of Chinese firms view generative AI (genAI) as essential for growth, reflecting high optimism in its potential.⁵

FIGURE 2 | AI-influenced revenues at Chinese companies, 2018 vs 2024^{1,2}



Note: 1. 2024 = projected **2.** Definition of “AI-influenced” revenues: a) sales of existing products and services made possible through better AI-driven insights on customers, supply chain, channels, b) sales of new products and services made possible by human and AI, and c) higher prices through dynamic pricing ML algorithms. These sales include some cannibalization and net new revenues. In contrast, this definition is excluding higher efficiencies in production operations thanks to AI.

Source: Accenture.

Despite this promising outlook, studies and consultations conducted for this paper indicate that genAI’s industrial application in China is still in its early stages. Large-scale, integrated deployment remains limited as companies work to overcome

various challenges, detailed below. As China’s AI ecosystem matures, these initial explorations will lay the groundwork for deeper, more transformative impact in the future.



1

China's national strategy and governance approach

China's three-tiered AI strategy: a strategic roadmap, adaptive regulations and multilevel implementation.

1.1 Strategic roadmap for AI development

China has demonstrated a clear commitment to long-term goals in the AI sector through top-level planning. The *Next Generation AI Development Plan* (2017)⁶ details a three-phase strategy for advancing AI and its applications in the country.

To achieve its AI goals, the Chinese government has also issued guidelines – such as *Accelerating Scenario Innovation to Promote High-Level Applications of AI for High-Quality Economic Development* (2022) – which emphasize the

integration of AI technologies across sectors to facilitate sustainable economic growth.⁷

To further develop the country's AI standards framework, the *Guidelines for the Construction of a Comprehensive Standardization System for the National Artificial Intelligence Industry* (2024) were introduced.⁸ These guidelines aim to strengthen the standardization system for AI by establishing over 50 new national and industry standards.

FIGURE 3 China's strategic AI development plan



Source: World Economic Forum and Accenture Research.

FIGURE 4 | China's AI standards framework (2024)



Source: World Economic Forum and Accenture research, public information from government website.

These standards, which are intended to impact at least 1,000 Chinese technology companies by 2026, seek to promote uniformity and enhance safety within the country's AI ecosystem.

Additionally, China plans to contribute to the development of over 20 international standards to support global collaboration in AI.

1.2 Adaptive regulations balancing development, safety and governance

A distinguishing feature of China's approach is the integrated relationship between the government and its highly regulated technology sector. The country has many existing regulations that impact the development and use of AI in China. Examples include the *Next Generation Artificial Intelligence Governance Principles* (2019),⁹ *Next Generation Artificial Intelligence Code of Ethics* (2021)¹⁰ and *Interim Measures for Ethical Review of Science and Technology* (2023).¹¹

In addition, various existing regulations address areas such as algorithm recommendations, deepfakes and content labelling. For instance, *Management Measures for Internet Information Service Deep Synthesis* (2022)¹² aims to regulate deepfake generation, from creation to

dissemination. Meanwhile, the *AI Safety Governance Framework* (2024) governs the classification of AI risks and corresponding safety guidelines for algorithm developers and service providers.

Though the principle of balancing innovation with responsible development has been established in China, the regulatory landscape continues to evolve rapidly. To provide clear directives that ensure safety while encouraging innovation for genAI, the government also issued the directive *Interim Measures for the Management of Generative AI Services* (2023).¹³ The frameworks establish a tiered regulatory approach that is both cautious and flexible, allowing companies to test new products and technologies in real market conditions under the supervision of regulatory authorities.

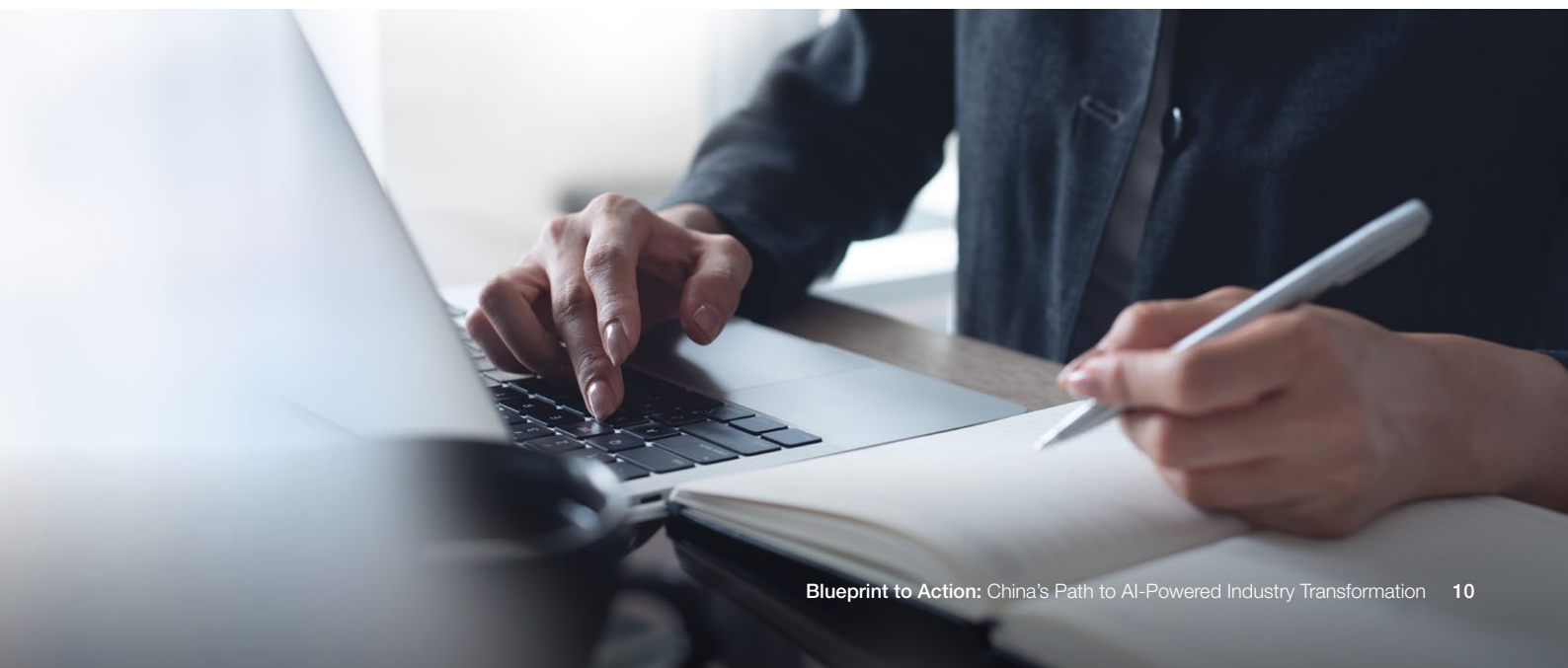
1.3 Multi-level policy design to accelerate AI implementation

“ The central government provides the overarching strategic direction for AI development, while local governments focus on implementing these strategies and supporting industry growth.

China's AI policy is characterized by a coordinated effort between the central government and various levels of local government. The central government provides the overarching strategic direction for AI development, while local governments focus on implementing these strategies and supporting industry growth. This multi-tiered approach allows for the creation of clusters that play to regional strengths and industry-specific advantages, thereby facilitating a comprehensive national AI ecosystem.

To encourage practical applications of AI, for example, the central government emphasizes both coordination and self-sufficiency among

local governments. To achieve this, provinces and cities are actively establishing policy support systems tailored to their specific stages of AI development. For instance, Shanghai has issued China's first provincial-level regulation for industrial AI development,¹⁴ while Guangzhou is focused on promoting the integrated construction of its “vehicle-road-city” model,¹⁵ which encompasses smart transport, infrastructure and urban planning. This multifaceted approach not only tackles local challenges, but ultimately contributes to a more cohesive and effective AI ecosystem across China. The development of AI in China is, however, marked by significant regional disparities, largely due to uneven economic development across the country.



2

Key enablers in the AI ecosystem

Five key enablers – infrastructure, data, technology, energy and talent development – are powering China’s AI innovation.

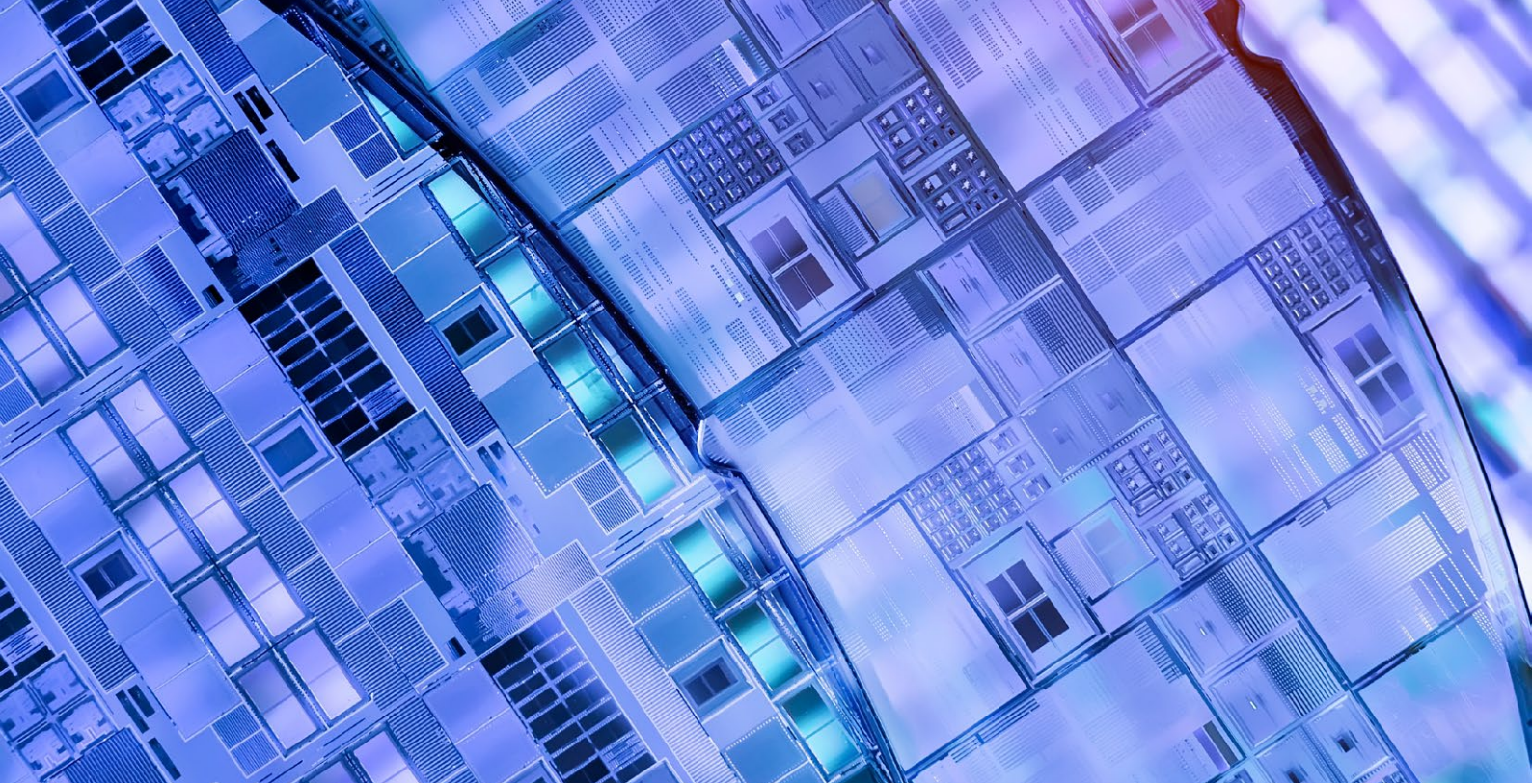
China has made substantial investments to upgrade and transform its infrastructure, data and energy into a critical resource for AI. Various stakeholders – including government, industries, universities, research institutes and

end-users – are also collaborating to promote the widespread adoption of AI throughout China. This collaborative effort is, in turn, driving the development of AI industry clusters and nurturing a vibrant AI ecosystem.

FIGURE 5 China’s five key enablers of AI



Source: World Economic Forum and Accenture research, with data sourced from IDC, MacroPolo and other public sources.



2.1 Strategic infrastructure investments to support AI scaling

“ China’s advanced information and communication technology infrastructure has provided a solid foundation for AI advancement.”

China’s advanced information and communication technology infrastructure, including extensive 5G networks, high-capacity data centres and robust cloud computing facilities, has provided a solid foundation for AI advancement. The widespread deployment of 5G networks, facilitates high-speed, low-latency communication and is essential for large-scale AI model training, efficient data processing and real-time AI applications. The number of data centres in the country has also grown rapidly, with over 8.1 million standard racks nationwide, as has China’s computing power – at 230 exaflops (EFLOPS), it’s the second-most globally.¹⁶

In terms of computing power, companies and governments are exploring public computing service centres to maximize efficiency by

leveraging underused computing resources across organizations. AI infrastructure, including computing power and technology platforms, is actively promoted for such shared use.

By tapping into shared data and computing resources, small- and medium-sized companies and research institutions can engage in cost-effective AI model development and applications. These shared resources can be tailored to specific application needs, too. For example, intelligent transport requires low-latency computing for real-time monitoring and data analysis, while smart manufacturing demands highly precise computing capabilities. This flexible management of computing resources enables effective support for AI applications across diverse scenarios.

CASE STUDY 1

China Mobile’s BaiChuan platform – building a unified intelligent computing power network

In 2023, China Mobile launched the BaiChuan computing power grid platform, building on the 2021 computing power network concept. It integrates supercomputing, quantum computing, and more, collaborating with data centres and cloud providers to exceed 3.3 EFLOPS in capacity.¹⁷ The initiative consolidates fragmented

computing resources into a unified network, making temporary borrowing of computing power common in Zhejiang Province. By effectively coordinating these resources, China Mobile is using this coordination to establish a new computing power service system.¹⁸

2.2 From internet plus to data multiplier

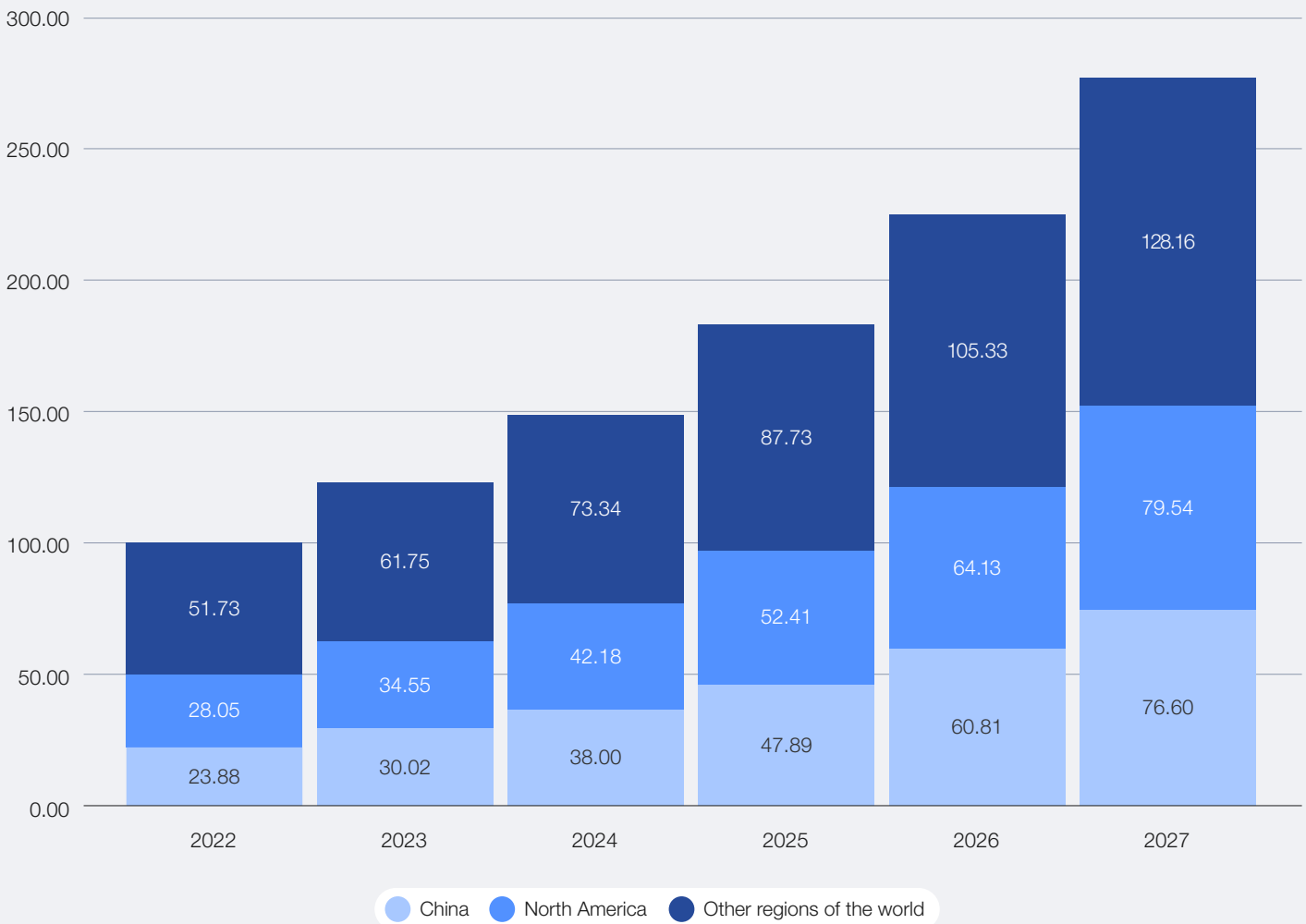
The annual volume of data produced in China will grow from 24 ZB in 2022 to an estimated 77 ZB in 2027 – a compound annual growth rate (CAGR) of 26% that is unrivalled elsewhere.¹⁹ As AI technology continues to evolve, its interplay with data will become increasingly vital. China has unveiled a comprehensive data strategy that positions data as a cornerstone for national development and technological innovation.²⁰

Central to this strategy is the launch of the National Data Administration, a government agency tasked with coordinating data-related policies, promoting the construction of data infrastructure and enhancing data governance across the country. This data-focused strategy also marks a shift in China's approach to the digital economy – from the internet plus model, which focused on internet integration with traditional industries, to a data multiplier model that emphasizes data's transformative impact across sectors.

FIGURE 6 Global growth in data volumes

Global data volume: 2022-2027 (zettabytes)

The scale of data in China has achieved a CAGR of 26.3%, ranking first in the world



Source: IDC Global DataSphere.

Achieving data interoperability across diverse fields, stages and industries in China still presents a considerable challenge, however. For example, in order to overcome barriers to sharing data,

local governments are promoting the creation of common data repositories and open source AI technology in partnership with industry, academia and research institutions.

2.3 Advancing industry-specific AI models

In the rapidly advancing field of large language models (LLMs), China is witnessing a strong trend towards the development of industry-specific or domain-specialized models. Through close collaboration with industry partners, these models integrate specific data, knowledge and task requirements, thereby enabling deeper customization and optimization. This vertical specialization could unlock significant advantages for domain-specific use cases within industries that are characterized by high levels of digitalization, robust data foundations and intricate knowledge systems.

Concerns about data security and the potential leak of proprietary information, however, have made some organizations cautious about data sharing, which limits the generalizability and accuracy of industry-specific or domain-specific models. To maximize the impact of domain-specific LLMs, research shows that cross-industry collaboration and coordinated efforts between upstream and downstream partners are essential.

CASE STUDY 2

Sunshine Zhengyan GPT – transforming insurance with AI-driven claims and service excellence

The Sunshine Zhengyan GPT is an LLM that showcases the immense potential of China's vertical-specialization approach, combining proprietary data with sector-specific applications. Developed by Sunshine Insurance Group, this LLM was trained to enhance customer service, sales support and intelligent claims processing.

Since its implementation, the model has improved information extraction accuracy by 15% compared to the pre-trained language model BERT.²¹ Meanwhile, the injury claims bot launched in March 2024 is now used in over 80% of cases handled by the firm, with an accuracy rate of nearly 96% in document classification.²²

2.4 Enabling sustainable energy solutions to power AI

“ China is prioritizing sustainable energy solutions to power AI while minimizing its environmental impact.

As AI advances, its energy demands are surging. Foundation models require substantial computing power and can consume up to 33 times more energy in order to complete a task compared to task-specific software.²³ In response to these demands, China is prioritizing sustainable energy solutions to power AI while minimizing its environmental impact.

One significant advantage for China in advancing its AI infrastructure is its ability to rapidly supply green energy. The country has established the world's largest and most comprehensive renewable energy industry chain.²⁴ China is projected to account for nearly 60% of all renewable energy capacity installed globally between now and 2030 – thereby positioning the country to host almost half of the world's renewable power capacity by the end of the decade.²⁵

In addition to increasing renewable energy capacity, China is actively redistributing computing resources

internally, from densely populated eastern regions to western regions where renewable energy is abundant. The East Data, West Computing strategic initiative has received over \$6.1 billion in government funding over the past two years alone.²⁶

For their part, green data centres in China are rapidly evolving, driven by government initiatives, technological innovation and industry commitments to sustainability. To date, 246 green data centres have been established in the country, with an average power-usage effectiveness of approximately 1.2.²⁷

Cooling systems, which account for 30-40% of a data centre's energy consumption,²⁸ present a significant opportunity for efficiency gains. By optimizing these systems alongside renewable energy and intelligent management, China can create greener, more sustainable data infrastructure.

CASE STUDY 3

Dongjiang Lake Big Data Centre – sustainable cooling and renewable energy innovation

The Dongjiang Lake Big Data Centre in Hunan Province operates over 36,000 servers and is a promising example of a green data centre. It uses an innovative cooling system that pumps cold water from the lake and employs plate heat exchangers to maintain an optimal temperature of around 26°C. This process only raises the water temperature by two to three degrees before returning it to the lake, ensuring minimal environmental impact.

The data centre aims to save 2 billion kilowatt-hours (kWh) of electricity annually, which translates to a decrease in carbon dioxide emissions by 2 million tonnes. Additionally, it relies on renewable energy sources such as hydroelectric, wind and solar power to sustain its operations.²⁹



2.5 Efforts to cultivate AI talent

“ Applications in fields such as autonomous driving, smart manufacturing and healthcare are further driving the need for professionals with diversified skills.

With China’s rapid advances in AI technology, demand for skilled AI professionals has surged. Applications in fields such as autonomous driving, smart manufacturing and healthcare are further driving the need for professionals with diversified skills. At least 535 universities in China currently offer AI-related majors,³⁰ reflecting a growing emphasis on AI talent cultivation across the country.

It’s estimated that China now accounts for nearly half of the world’s top AI researchers.³¹

Tsinghua University, for instance, has become renowned as a hub for top AI start-ups founded by its faculty and alumni.

More broadly, China’s emphasis on AI clustering strengthens its talent pipeline by creating hubs of excellence centred around leading universities and research institutions. These clusters create a self-reinforcing cycle of talent and resource aggregation, further driving AI innovation and boosting China’s competitiveness in the global AI talent landscape.



3

Scaling AI innovation in industries

A strategic focus on real-world industry needs is driving sector-specific innovations.

China's diverse industrial landscape, with extensive supply chains and varied sectors, creates a rich environment for AI adoption and innovation. As such, AI technology offers significant growth opportunities in key industries in China, particularly in manufacturing, automotive, retail, healthcare, finance, utilities and public services.

The deep integration of AI technology with business use cases in China has become a catalyst for both driving AI innovation and accelerating industrial transformation.

China's AI innovation is also increasingly characterized by cross-disciplinary fusion, which involves integrating AI with 5G, industrial robotics and other advanced technologies. This multidisciplinary approach, in turn, amplifies the impact of AI across sectors. There are 1.7 million industrial robots operating in China's factories; in 2023 the total annual installations of robotics in China represented 51% of global demand.³²

FIGURE 7 Top AI application scenarios in China by industry

Industrial manufacturing

- Production optimization
- Quality management



Automotive and autonomous transport

- Autonomous driving
- Intelligent cabins



Retail

- Hyper-personalized engagement
- Supply chain/logistics operations
- Virtual live host



Healthcare

- Assisted diagnosis and screening
- Healthcare delivery
- Assisted treatment
- Drug R&D



Finance

- Fraud detection
- Financial inclusion
- Digital payment
- Credit risk management



Renewable energy and utilities

- Energy management



Public services

- Smart city



Source: World Economic Forum and Accenture.



Industrial manufacturing

China's manufacturing sector is undergoing a profound transformation propelled by the integration of advanced AI technologies such as LLM, machine learning, computer vision and digital twins. This convergence is not only enhancing operational efficiencies but also redefining strategic priorities and competitive dynamics within the industry. AI applications like production optimization, predictive maintenance, intelligent quality control and AI-assisted design are revolutionizing traditional

manufacturing processes by enabling real-time data collection, advanced analytics and automated decision-making.

AI-driven technologies enable flexible, demand-driven manufacturing systems that replace rigid production lines, allowing manufacturers to swiftly adapt to changing consumer preferences and market trends. This shift not only empowers companies to meet the growing demand for personalized products but also creates new service-oriented business models.

TABLE 1 Selected scenarios and solutions in industrial manufacturing

Application	Solutions in China
Production optimization	<ul style="list-style-type: none"> – AI-equipped robots are increasingly used in factory assembly, reducing human error and enhancing safety. Mobile and collaborative AI-vision robots are projected to grow over 20% annually by 2027.³³ – AI and 5G-driven industrial internet support mass customization and flexible manufacturing via the connection of a vast array of industrial equipment.
Quality management	<ul style="list-style-type: none"> – The quality inspection market for industrial AI is projected to have a CAGR of 33% from 2022 to 2026.³⁴ – AI and 3D visual inspection technology (including robots) have made significant breakthroughs in their ability to analyse complex structural products.³⁵ – Perform root-cause analysis of defects and resolve issues, thereby establishing a closed-loop quality management system.



USE CASE 1

Haier COSMOPlat – AI-driven innovation hub for industrial transformation

COSMOPlat is an industrial internet platform established by Haier Group, specializing in industrial internet solutions powered by its “Tian Zhi” AI platform. The platform facilitates comprehensive interconnection among devices, systems and processes, while also focusing on specific industries and sectors. Chuangzhi Factory, for

instance, was recognized as the first lighthouse in China's printed circuit board assembly industry. By integrating AI and digital technologies, COSMOPlat also successfully established a dynamic optimization network that connects six factories and over 500 ecological partners, while also achieving a 50% improvement in order-to-delivery.³⁶



USE CASE 2

GAC Honda – enhancing quality inspection with AI-driven visual detection

Traditional quality inspection, which depends largely on human eyes and experience, is slow and susceptible to mistakes. By installing seven ball-shaped cameras on its production line, GAC Honda achieved comprehensive, graphical

and zero-code AI visual model production. This translated into big process improvements for the company: a mere one-second vehicle-detection time, an over 80% increase in data utilization, and a tenfold improvement in analysis efficiency.³⁷

Automotive and autonomous transport

Using China's extensive 5G infrastructure and smart transport networks, autonomous driving companies in the country are actively enhancing their intelligence systems. This progress is supported by pilot testing and operational permits in Beijing, Guangzhou, Wuhan and other major cities.

The development of autonomous driving in China aligns closely with the country's "vehicle-road-cloud" collaboration framework, which facilitates integration between vehicles, road infrastructure and cloud computing. More broadly, autonomous transport has emerged as a key area for AI innovation and application in China.

TABLE 2

Selected scenarios and solutions in automotive and autonomous transport

Application	Solutions in China
Autonomous driving	<ul style="list-style-type: none"> – Autonomous taxis are being piloted in more than 50 cities.³⁸ – Obstacle detection with computer vision technology allows vehicles to make real-time decisions without being subject to potentially dangerous distractions. – Route optimization allows vehicles to integrate real-time traffic and map data.
Intelligent cabins	<ul style="list-style-type: none"> – Over 67% of new vehicles sold in the first quarter of 2024 came with intelligent cabins that featured large screens, voice-controlled command systems and access to the internet.³⁹ – Intelligent cabins improve drivers' experiences by analysing sensor and GPS data to provide tailored travel suggestions and services. – AI companions provide services such as chatting, entertainment and itinerary planning.

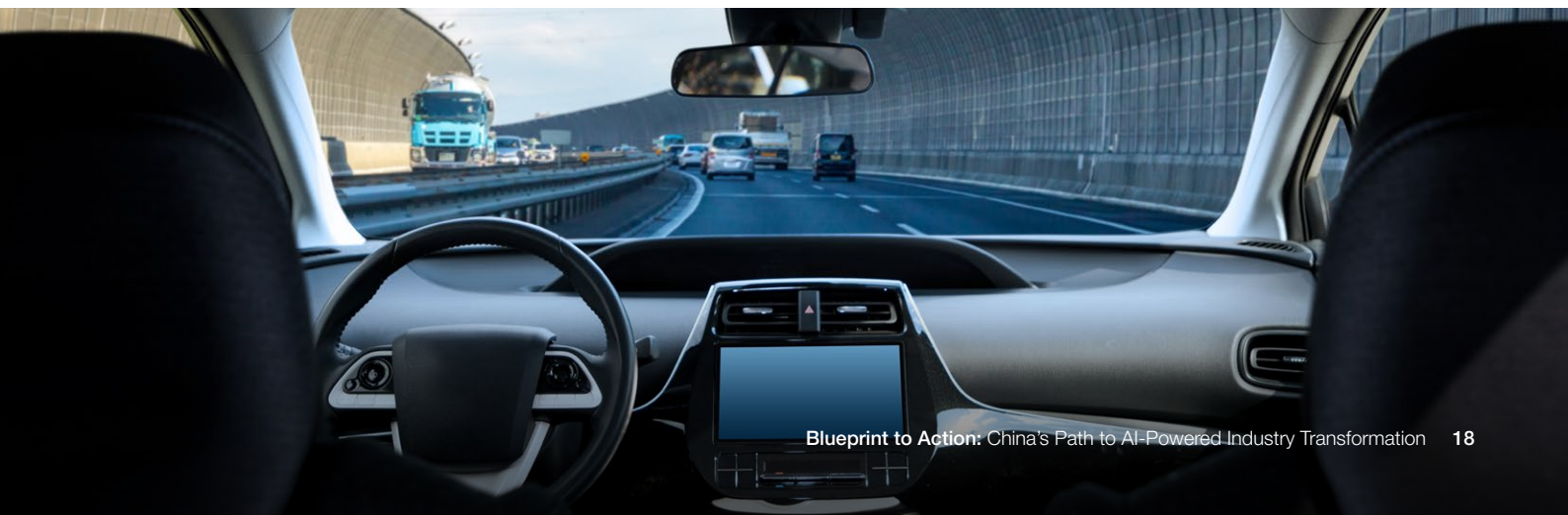


USE CASE 3

Apollo Go – pioneering fully driverless ride-hailing

Apollo Go, Baidu's autonomous ride-hailing service that operates in multiple Chinese cities, has made significant progress in commercializing fully driverless operations over the past year. It has begun offering 100% fully driverless operation

across the entirety of Wuhan City. Apollo Go has provided about 899,000 rides in the second quarter of 2024, a year-on-year increase of 26%. As of 28 July 2024, the cumulative rides provided to the public by Apollo Go surpassed 7 million.⁴⁰



Retail

Fuelled by an extensive internet user base and the influence of commercial giants like Alibaba, JD and ByteDance, China's New Retail model involves integrating AI deeply into online and offline shopping to enhance customer engagement and personalization. The country's commercial giants utilize traditional AI for operational efficiencies, such as supply-chain automation and demand forecasting, while using genAI for dynamic,

consumer-facing innovations, such as personalized shopping recommendations and virtual assistants.

The power of genAI and other forms of AI allows Chinese retailers to improve customer engagement, address operational challenges and adapt swiftly to China's highly competitive retail market. In fact, surveys show that over half of the merchants that trade on China's main e-commerce platforms have already used at least one genAI-enabled tool.⁴¹

TABLE 3 Selected scenarios and solutions in retail

Application	Solutions in China
Hyper-personalized engagement	<ul style="list-style-type: none"> – 55% of companies in China claim that genAI has impacted their customer strategy by automating some parts of customer service.⁴² – GenAI can gather and analyse customer feedback from reviews and social media, allowing retailers to refine products based on consumer input. – GenAI can provide personalized content and recommendations by integrating customer data and can predict customer needs with high levels of accuracy.
Virtual live host	<ul style="list-style-type: none"> – AI-powered hosts can operate 24/7 and effectively mimic human expressions and interactions.
Supply chain/ logistics operations	<ul style="list-style-type: none"> – Routes can be optimized for delivery fleets, inventory management and forecasting demand accurately, ensuring timely and efficient distribution of goods. – A 3D visualization solution can generate warehouse layouts using natural language instead of computer code.



USE CASE 4

JD's Digital Human – e-commerce with AI-driven livestream

Livestreams with product promotions are becoming a prevalent form of retailing in China. However, the cost of a livestream can be substantial. E-commerce leader JD has advanced the application of digital human technology,

focusing on key areas such as digital human creation, natural language processing and text-to-speech capabilities. These developments have enabled more lifelike appearances, voices and interaction styles.⁴³



USE CASE 5

ANTA – retail with AI-generated content and smart marketing

Sportswear company ANTA uses AI-generated content (AIGC) technology to transform its marketing and retail strategies. For example, ANTA places a strong emphasis on shopping-guide operations; by utilizing algorithm-recommended product combinations, the company aims to

enhance its sales success rate. ANTA also uses AIGC during digital human live streaming to enhance customer engagement. In 2023, ANTA was recognized for its innovations when Tencent named the sportswear firm in its *Top 10 in Smart Retail Digital Operations* list.⁴⁴



Healthcare

China is using its vast healthcare data pool to tackle systemic challenges, such as the uneven distribution of medical resources. For example, initiatives like Health China 2030 emphasize the transformative role of AI in enhancing the accessibility, efficiency and quality of medical care in the country.

To support this transformation, China developed city-level population health information systems that allow enterprises to access data for business-to-business AI application development. These systems also provide a solid foundation for operations such as training sophisticated AI algorithms, facilitating the digitization of medical records and creating AI-assisted diagnostic tools that improve healthcare accessibility.

TABLE 4 Selected scenarios and solutions in healthcare

Application	Solutions in China
Assisted diagnosis and treatment	<ul style="list-style-type: none"> – 76% of clinicians in China are confident in using AI for clinical decision-making,⁴⁵ a figure that is higher than the global average of 61%.⁴⁶ – Enhance diagnostic accuracy (e.g. the accuracy of judging the absence of pancreatic lesions with AI is as high as 99.9%).⁴⁷ – Use of AI-driven medical image screening – including subfields such as AI/pathology, AI/ultrasound, AI/endoscopy and AI/electrocardiography – is expanding.⁴⁸
Assisted treatment	<ul style="list-style-type: none"> – AI technology enhances the automation and efficiency of surgical procedures by autonomously performing denoising and modelling.
Healthcare delivery	<ul style="list-style-type: none"> – AI-powered healthcare delivery – in areas like telehealth, personal health record management and clinical decision support systems – is becoming more common. – Virtual care, including for intelligent diagnosis and consultation, remote monitoring, remote surgery and robotic assistance, is another emerging area. – 5G-enabled medical robots have been deployed in hospitals to assist with patient care, disinfection and logistics.
Drug research and development (R&D)	<ul style="list-style-type: none"> – China's AI-driven drug R&D sector is projected to reach \$187 million in 2024, making up 12% of the global market, with 30% annual growth.⁴⁹ – Use AI to accelerate first-in-class drug R&D, boosting drug discovery, treatment and healthcare outcomes. – Accelerate R&D for traditional Chinese medicine.

CASE STUDY 4

Alipay AI Healthcare Manager – a comprehensive platform for personalized healthcare services

The AI Healthcare Manager is an AI-powered platform within Alipay that exemplifies a comprehensive approach to healthcare by connecting users to over 30 health services with cross ecosystem data integration, including doctor recommendations, medical report interpretation, in-hospital navigation, and personalized medical advice.⁵⁰

It also integrates 20 AI agents from health service providers including hospitals. One notable example is Angel, an AI agent which served over 1,000 medical institutions with over 10 million interactions.⁵¹



USE CASE 6

GE Healthcare China – advancing CT imaging with AI-powered deep learning technology

GE Healthcare China developed a platform that uses AI technology for CT (computed tomography) clinical imaging, which enhances the effectiveness and quality of the clinical process.

Notably, the platform is the first to apply deep learning reconstruction using deep neural network models, across both conventional and spectral imaging. Developed by the local R&D team in response to local clinical needs, the platform marks a significant milestone in CT technology and imaging exploration.⁵²



USE CASE 7

Tsinghua University – pioneering healthcare innovation with AI-powered virtual hospital

Agent Hospital, developed by Tsinghua University, uses AI-powered agents to simulate a full healthcare process, enabling virtual doctors to diagnose and treat virtual patients. Through

continuous learning and case reviews, the system achieves high accuracy, outperforming existing methods in respiratory disease diagnosis with a 93.06% accuracy on the MedQA dataset.⁵³





Finance

When it comes to digital finance, China is a leader in market size, number of users and net interest income; \$460 billion in 2024, equal to about 31% of the global total.⁵⁴ The country also leads in digital payments, with platforms like Alipay and WeChat Pay ubiquitous in daily transactions.⁵⁵

China's finance industry has established a solid digital foundation and is at the forefront of AI transformation efforts. For example, 12 Chinese financial firms made it into the global top 20 ranking by the Massachusetts Institute of Technology (MIT)

Technology Review for public patent applications related to AI models.⁵⁶

Chinese financial institutions are also actively creating AI ecosystems by collaborating with tech giants, telecom operators and business clients. The goal is to aggregate multidimensional data, high-performance computing power and advanced algorithms to make their respective firms truly AI-driven.

The table below shows widespread AI applications in Chinese finance, spanning financial inclusion, fraud detection, credit risk management and digital payment.

TABLE 5 Selected scenarios and solutions in finance

Application	Solutions in China
Financial inclusion	<ul style="list-style-type: none"> – AI expands financial access by using alternative data for credit scoring, enabling banks to lend to individuals without traditional credit histories. – Predicts small enterprise cash flow, enabling financial institutions to offer tailored wealth-management services.⁵⁷
Fraud detection	<ul style="list-style-type: none"> – AI strengthens fraud detection by analysing transaction data and using predictive algorithms to spot potential risks.
Credit risk management	<ul style="list-style-type: none"> – Machine learning analyses borrower profiles and credit histories, helping banks make more informed lending decisions.
Digital payment	<ul style="list-style-type: none"> – A cashless ecosystem permeates daily life, with mobile payment penetration reaching 86% of the population.⁵⁸ – Facial and voice recognition improve payment security, efficiency and user experience. – AI enables efficient, automated processing of cross-border transactions.



USE CASE 8

Industrial and Commercial Bank of China – enhancing risk management with AI-powered eShield anti-fraud platform

The Industrial and Commercial Bank of China (ICBC) is one of the world's largest banks. To enhance its enterprise-wide risk management, ICBC developed the ICBC Security e-Message (融安e信), an anti-fraud platform. The platform embraces digitalization in credit risk management

and explores multi-scenario applications of big data and AI. The platform also integrates more than 3 billion pieces of internal and external data to provide intelligent risk control services, supporting over 300 corporate clients in the financial services sector in the process.⁵⁹

Renewable energy and utilities

Regional and seasonal imbalances in power generation and demand, along with operational inefficiencies, are common challenges faced by utilities companies around the world. To address these challenges, China is rapidly developing a new energy system powered by AI technologies, with key initiatives already in place. These include

uncrewed power plants, more efficient energy storage and improved smart grid operations, equipment maintenance and optimization, etc.

By transforming the business models of Chinese utilities through applications like virtual power plants, carbon trading and spare-parts platform transactions, AI is enhancing operational efficiency and promoting sustainability and decarbonization.

TABLE 6 Selected scenarios and solutions in renewable energy and utilities

Application	Solutions in China
Energy management	<ul style="list-style-type: none"> – AI forecasts of electricity generation and demand improve the integration of renewables into the grid. – AI improves grid stability through real-time monitoring of electricity flows, optimizing power distribution and more. – AI powers intelligent operations, with robots widely used for equipment inspection and testing, replacing about 80% of manual labour.⁶⁰



USE CASE 9

State Grid Corporation of China – AI-driven load forecasting for smart grid optimization and energy efficiency

The State Grid Corporation of China (SGCC) developed an AI platform to serve its headquarters and 27 provincial companies. The platform includes essential functions, such as data analysis and AI model training, to enhance its adaption to various application scenarios and business needs.

For example, SGCC uses the AI Electricity Load Forecasting System for real-time data analysis and forecasting to better balance electricity loads during peak consumption hours, while enhancing the integration of renewable energy sources into the power grid. The system achieved an accuracy rate of up to 97.8% in day-ahead forecasting in 2024.⁶¹

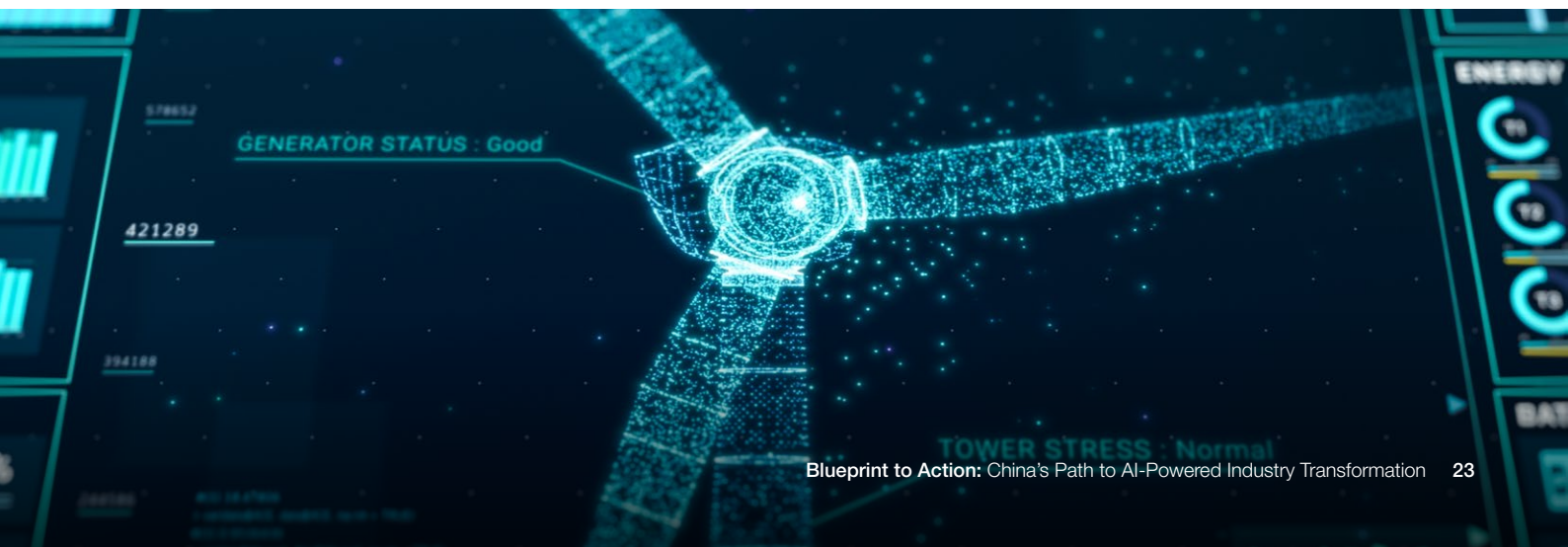


USE CASE 10

Envision Energy – AI-optimized wind turbines for maximal efficiency and reduced costs

Envision Energy uses AI algorithms to monitor and optimize the performance of its wind turbines. The upshot for the company – and its customers – is more optimal energy output and lower

maintenance costs. Thanks to its technological proficiency, Envision Energy manages over 17% (670 gigawatts) of the world's installed capacity of renewable energy.⁶²



Public services

China is actively promoting the application of AI in public sector management to enhance efficiency, optimize public services and improve decision-making processes.

A key aspect of this strategy involves developing “smart cities”, which aim to address urban

management challenges and meet citizen demands by integrating technologies such as big data, AI and digital twins. China has already implemented smart city initiatives for 94% of provincial capital cities and 71% of prefecture-level cities.⁶³ AI is expected to further improve the operational efficiency and innovation capabilities of Chinese cities.⁶⁴

TABLE 7 Selected scenarios and solutions in public services

Application	Solutions in China
Smart city	<ul style="list-style-type: none"> – AI integrates public services through super-apps from private and government entities, enabling citizens to pay bills, schedule appointments, etc. – AI enhances urban management with a unified system for traffic, emergencies and environmental monitoring.



USE CASE 11

Alibaba City Brain – AI-driven smart city for traffic, safety and urban efficiency

Alibaba’s City Brain project is a comprehensive smart-city initiative that uses AI to optimize various aspects of urban management and to enhance quality of life for residents. City Brain optimizes traffic flows, improves public safety, manages public healthcare efficiently and enhances urban

planning. For example, in Hangzhou, the City Brain analyses data from traffic cameras and sensors to manage traffic lights dynamically, reducing congestion and improving emergency response times.⁶⁵

Key challenges in China's AI development

China's journey towards impactful AI transformation calls for collaboration across sectors and borders to unlock its full potential.

“As AI integration across industries accelerates, the demand for interdisciplinary talent with a deep understanding of both AI and specific industry contexts is growing.”

Infrastructure and computing power

China has become one of the leading forces in global computing power development. China's computing advantage is expected to extend beyond mere capacity to include higher computational efficiency, broader application of emerging technologies and more comprehensive infrastructure support. However, several challenges need to be addressed to maintain this momentum. These include improving network connectivity to facilitate seamless communication between distributed computing centres, managing the diversity of computing resources to ensure interoperability, optimizing compatibility across diverse chip architectures and instruction sets, and promoting greater collaboration among ecosystem stakeholders.

Data use

China's extensive data resources are a cornerstone for its AI development. Despite this vast volume, challenges persist in data quality, interoperability and accessibility, which impact the effective training and deployment of AI models. Fragmented data flows across industries hinder the ability to consolidate data into a coherent, accessible resource pool for AI applications. These data islands prevent effective AI model training and limit insights across sectors.

Government agents and companies are working to improve data interoperability and encourage cross-sector data sharing and structured cross-border data circulation under-regulated frameworks to unlock the full value of China's data ecosystem. By tackling these data-related challenges, China can further bolster its AI ecosystem while contributing to a more cohesive and innovative global data landscape.

Algorithms and model sophistication

While China has made notable progress in both general-purpose and industry-specific AI models, there remains an opportunity to increase basic

research and fundamental innovation. Given the complexities and demands of industrial applications, Chinese companies often find it beneficial to prioritize specialized, smaller models tailored for specific scenarios. This practical approach has helped strengthen China's competitiveness in terms of product-market fit and affordability. However, it also suggests that there is further potential for pioneering breakthroughs and transformative advancements.

Addressing this area of opportunity could involve continued innovation in core algorithmic capabilities, possibly through encouraging closer partnerships between industry and academic institutions. Such collaborations can accelerate the development of adaptable algorithms and enable China to further advance the sophistication of its AI capabilities.

AI proficiency and talent

Although China is home to nearly half of the world's top AI researchers, the sheer demand for such talent has led to notable shortages. According to the country's Ministry of Human Resources and Social Security, the talent gap in AI in China exceeds 5 million people, with a supply-demand ratio as high as 1:10.⁶⁶

As AI integration across industries accelerates, the demand for interdisciplinary talent with a deep understanding of both AI and specific industry contexts is growing. Yet existing education and on-the-job training must scale up to meet this demand. Establishing joint initiatives between industry, academia and government can facilitate targeted training, on-the-job skill enhancement and tailored curriculum development.

Looking ahead, global cooperation and open dialogue on talent development will be increasingly important. Engaging in international exchange programmes, research partnerships and best-practice sharing can help align global education standards and create a collaborative ecosystem for talent growth.

Conclusion

China's AI transformation reflects a synergistic interplay of policy frameworks, a robust ecosystem and industry-driven innovation, positioning the nation as a pivotal player in the global AI landscape. The continued investment in foundational infrastructure, coupled with the strategic prioritization of industry-specific AI applications, has spurred rapid advances.

Yet China's journey towards high-impact AI transformation also highlights key challenges. Addressing these challenges will require intensive collaboration across public and private sectors, academia, and international partners to create an open ecosystem capable of achieving scalable and transformative impact in AI development.

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