

AIGC Technology and Applications: Policy and Industry Development

Case 1 in a 4-part series

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Introduction

This case explores the investment opportunities of AIGC by combining the core technological value and industrial application status of generative AI. We then analyse the impacts of these large-scale sectoral changes in a study of AI in China's energy industry. We are currently in the early stage of the generative AI industry, thus it is analysed more from the perspective of early value investment, including trend investment opportunities brought by macro cycles, inflection point investment opportunities brought by industry transformation and application, and value creation brought by disruptive innovation. The early investment in the Chinese market is also at a turning point in its own development, so it also combines with the adaptability of the development of early AIGC investment in China.

The development of large language models mainly stems from the explosion of the transformer technology route, among which the effect of the "SCALLING Law" is prominent. Training models require billions to trillions of parameters, so the computing power situation in the current Chinese market is currently insufficient to complete the training. Meanwhile, due to China's heavy data security and privacy regulation, the application of overseas models such as CHATGPT is restricted domestically, further limiting the innovation and application layer of domestic innovation based on overseas large models. Therefore, it can be said that the innovation and development paths of AIGC in China and the United States have been forced to take different routes. However, the commonality is still the same technological cycle and industrial cycle, as we will detail in our case analysis of China's energy sector.

1 Technological Cycle and Enterprise Life Cycle (Industrial Cycle)

In the **Technology Maturity Cycle**, new technologies go through the stages of innovation, overheating, trough, recovery, and productivity maturity. Currently, the application of AIGC needs to be combined with its scenarios. Different cycles will also correspondingly reflect the market expectations of valuation. Currently, AIGC innovation belongs to the manifestation of two states: the overheating period of technology and the maturity period of productivity. The specific applications in the scenario are also highly related to the strategic status faced by the enterprise life cycle.

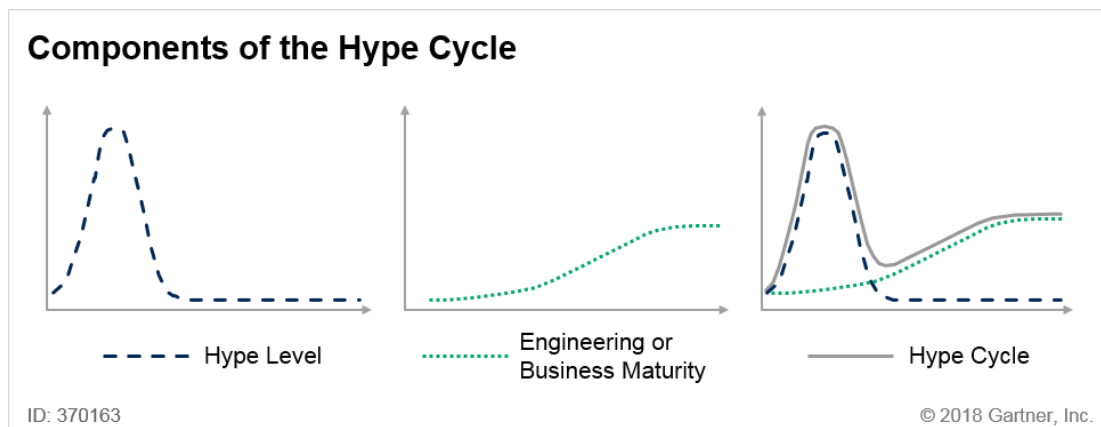


Figure 27 Technology maturity cycle (Source: Public information)

Meanwhile, from the perspective of the **Enterprise Life Cycle**, the adaptability of AGCI investment and innovation strategies depends on the growth stage of the enterprise, market environment, technological maturity, and the demand and supply of capital. The following is a discussion on the adaptation of AI innovation strategies according to different stages of the enterprise life cycle:



Figure 28 Diagram of enterprise life cycle (Source: Public information)

To understand subsequent industry analysis, we must first establish the layers of the AIGC industry. First, the Application Layer cycles every 1-3 years; since AIGC is still in its early stages, it is this Application Layer that has exploded recently, though notably many projects' innovation, iteration, and even lifecycle are faster than the previous generation of the mobile internet era. Meanwhile, the Middle and Industry Application Layer has a cycle of 5-8 years, involving a recovery and maturity period. Finally, the infrastructure layer results from the overheating period of technology to transformation, with a return on investment cycle of 8-10 years; technology in this layer also tends to be overvalued.

1.1 Application Layer

The companies involved in this layer are typically startups, primarily targeting end-consumers. Currently, the explosion of Application Layer based on AIGC is still in its early stages. Many projects' innovation, iteration, and even lifecycle is faster than the previous generation of the mobile internet era. The current innovation directions in the Application Layer mainly include several categories:

- **AI Digital Humans:** Represented by companies like Character.AI in the United States, mainly applied in social, chat, emotional companionship, and other fields. The sustainability of its monetization model is yet to be verified. The key lies in finding authentic and essential scenarios to generate sustainable revenue. Many enterprises are facing a state of "holding a hammer and looking for nails".
- **AI Creative Tools:** Mainly focused on multimodal applications, such as Midjourney, and more professional design tools than MJ. Examples include AI music generation like Suno. These applications often target new models for professionals.
- **Metaverse "Creation Class":** It refers to the construction of a native digital world mainly targeting young people under the age of 18 growing up in the digital wave, such as Sora, and Lis World. They follow the technological and creative route from PGC, UGC to AIGC, where AI scripts and AI tools

drive innovation.

1.2 Middle Layer and Industry Application Layer

The main players in the middle layer are companies in the growth period and companies that are mature or even declining.

Growth Period Companies: Companies in this stage of AI innovation primarily focus on industry applications. The main types of product and business innovations are twofold: one is based on fine-tuning training of industry-specific large models derived from foundational models, and the other is AI AGENTS based on industry or business process domains. Startups in this category often need to establish certain barriers in the industry and scenarios, including domain-specific data barriers and direct access to customer scenarios and closed-loop business barriers — that is, validated industry service capabilities. Compared to large models and innovative application layers, these AI GC innovations represent more grounded and sustainable business scenarios. That is, through AI GC, they can solve some industrial pain points and play a role in incremental innovation. The main value creation is as follows:

- **Cost Reduction and Efficiency Improvement:** This involves improving certain aspects of existing industrial processes, reducing costs, and expanding efficiency. Currently, most applications are concentrated in this stage. Many innovative companies mainly empower their internal employees and business departments through AI GC, and at present, apart from model services and hosting themselves, there are relatively few direct conversions into paid services.
- **AI AGENTS:** These are more like AI toolkits, mainly enhancing and extending existing software services. Both types of business are favourable for vertical industry digitization companies in the growth stage. For example, companies combining AI with legal innovation like Beijing Zhongjing Tianping Technology Co., Ltd. in China, AI combined with education, AI with the human resources industry, and Kingsoft in software. Overseas companies like Notion and Salesforce also leverage the AI GC scenario to expand their product boundaries and gain certain increments.

Value Analysis: The value of these innovative businesses is related to the characteristics of their industries. For example, landing scenarios in industries with high data annotation and standardization are relatively straightforward, such as the combination of AI with the legal industry. For industries sensitive to data and with high data barriers, the model service cycle is longer, but the conversion barrier is also high, such as the combination of AI with the financial industry. This also depends on the digital foundation and capabilities of these scenarios and industries themselves.

Declining Stage companies: These companies are often in sunset industries, with a certain business scale, facing pressure for transformation, and urgently need to lay out a second growth curve. For example, the combination of AI with the construction and decoration industry, AI with the municipal environmental protection industry, AI with the textile and clothing industry, etc. Companies in this category that can undergo AI transformation are listed companies, compelled by strategic considerations such as market value and business, with certain financial strength. They belong to leading companies in segmented industries, continuously seeking digital transformation. The AI growth business of these companies often adopts methods such as technical outsourcing or investment and acquisition.

1.3 Infrastructure

The main actors in the AI industry are early-stage and mature AI-native companies or internet giants.

According to data from the Ministry of Industry and Information Technology, the market size of language large models in China will reach 13.23 billion yuan in 2023, with a growth rate of 110%. According to Valuates Reports, the market size of large language models in 2022 was \$10.5 billion, and it is expected to reach \$40.8 billion by 2029, with a compound annual growth rate of 21.4% from 2023 to 2029.

The main actors in the infrastructure layer are early-stage and mature AI-native companies or internet giants. Thus iInnovation at the infrastructure layer is mainly distributed into the early stage and mature stage:

Early stage. Companies like OpenAI (Compared with big giant like google) have sparked a new technological revolution in AIGC base models with ChatGPT. Starting from 2022, Chinese, companies like DeepSpeech and WallTech made prototypes of large text models. Since ChatGPT4 attracted high attention from the capital market in 2023, Chinese companies like Bai Chuan Intelligence and Beyond Light-years have started entrepreneurial investment in base models. Among them, high-capital investment in base models requires founders with high influence and resource integration capabilities. Whilst Bai Chuan Intelligence and Beyond Light-years were both successful due to the founders' immense both resources and influence, other companies instead used smaller models to start businesses targeting specific industry tracks. Compared to the United States, China lags far behind in the technology and strength of early large models. Due to the outbreak of the Sino-US technology war, the blockade of underlying chips and computing power in the United States has continuously restricted the development of large models in China.

Factors affecting the impact of early-stage base model companies: capital investment and financing capabilities, team resources and founder influence, ecological strategy, and organizational flexibility. Among them, founder influence, capital investment, and financing capabilities are more critical in the early stages of project initiation, while ecological strategy and organizational flexibility become increasingly important after a certain stage of development. Since the training cost of large models is high, such as training with parameters at the level of hundreds of billions costs around 20 million, it requires heavy capital investment, and innovative companies with general resource endowments cannot afford it.

Mature stage. Under the wave of AIGC technology, base models have spurred R&D investment in large internet companies in the mature stage. This includes Google's Gemini, META's Llama series, etc. Chinese internet giants such as Baidu, Tencent, Huawei, and TikTok have also successively invested in the research and development of large models. Mature internet giants investing in base models have their unique advantages, especially in terms of funds, data, ecology, etc., and the core factors affecting the development of large models in such companies mainly lie in: ecological applications, data cleaning, computing resources, etc. Compared with the giants in China and the United States, China has obvious disadvantages in data cleaning and integration, software application ecology, computing resources, etc., especially in the cultural aspect of the open-source ecology in China, which is not conducive to the overall development of innovative ecology of large models.

2 Value Analysis of Different Stages of the Chinese AI Market from an Investment Perspective

2.1 Infrastructure Layer

For the infrastructure layer, apart from traditional large models, there are differentiated opportunities in large models and infrastructure, which belong to the long slope and thick snow. Examples include aggregation intelligent large models, world-building infrastructure, AI for Science, and models targeting differentiated groups, such as large models for sign language for the deaf.

Computing Power

Computing power is a must-have element for training large models. Currently, the adapted hardware includes Nvidia A100. As model parameters increase, the required computing power also increases. According to market estimates, the supply of computing power in China is insufficient even for models at the trillion-parameter level. The imbalance between supply and demand in the computing power market remains a focus for a certain period. Currently, it has led to the emergence of a batch of computing power centres going overseas, while ByteDance has the highest computing power configuration domestically.

- **Computing Power Centres:** Both overseas and domestic computing power centres essentially belong to the IDC model, with limited growth prospects.
- **Computing Power Optimization:** Depin, GPU acceleration, requiring ecological logic.
- **Domestic Computing Power:** Based on open-source Risk-5 for GPGPU, etc.

Investment Analysis of Computing Power Innovation Direction:

- **Computing Power Resource Type:** The computing power centre model has rapidly emerged domestically and internationally in the past year based on the explosion and growth prospects of the AIGC industry and US restrictions on China. The procurement cost of computing power equipment is generally balanced in the market, and the core operation and maintenance lie in labour and energy costs. Therefore, the location of computing power centres is mainly in regions with suitable temperatures for heat dissipation, such as Iceland, Russia, Malaysia in Southeast Asia, and developed countries like Singapore with high requirements for clean energy, which greatly increases the cost of computing power centres. Therefore, it is currently not the first choice for large-scale selection. The model of computing power centres mainly involves computing power leasing and model hosting. According to calculations, the highest monthly return of the smallest cluster of computing power centres is 44%, but it depends on the stability of demand. Therefore, the return model is still the IDC model, and the growth expectation is somewhat linear, with limited valuation multiples.

Investment Analysis: Companies such as World Internet and traditional mining companies in Web3, with mature computing power resource businesses, are currently involved in this type of business. From the perspective of early investment, it has a high downside risk and uncertain upside value. Therefore, it is not favoured from the perspective of early investment and is more suitable for the design of fixed-income investment products.

- **Computing Power Optimization and Scheduling:** Directions such as De-pin/Computing Power Acceleration Optimization have certain imagination space and business scenarios. That is, in the case of insufficient computing resources, optimizing and accelerating existing domestic chips have a certain substitute effect. For example, ClearSky Intelligence, established in 2022, is committed to solving problems such as the difficulty of landing complex AI models, poor performance, high resource consumption, and difficult hardware adaptation. For example, Wuxin Chip, established in 2023, focuses on model acceleration.

Investment Analysis: This direction has certain investment potential, and the core lies in the future ecological scale. For example, ClearSky Intelligence mainly cooperates with chip computing power suppliers, while Wuxin Chip mainly cooperates with model ecology. Currently, their shareholder background also reflects this, such as Smart Spectrum AI belonging to their strategic investors. Therefore, a combination of CVC investment and VC investment is more suitable for this type of field.

- **Domestic Computing Power Replacement:** Direction based on open-source Risk-5 for GPGPU involves a strategy of optimizing up to 60% based on open-source, then further achieving near 90% efficiency of the current training chip performance through professional design. This direction has certain prospects from both technical and application perspectives. The main core factors include:
 - **Standardization and Uniformity:** It requires transitioning from coda to opencl, thus necessitating the establishment of a unified standard from scratch and achieving a certain market scale during application.
 - **Open Source Cultural Characteristics:** Many domestic leading companies in similar fields are unable to be compatible and adaptable to each other due to the characteristic of being centred around leading companies. Therefore, laying the foundation for future application compatibility with open-source culture from scratch is crucial.
 - **Adaptability of Technical Application to Market Demand and Funding.**

In the Chinese market, current innovative operations include:

- Initiation by the Ministry of Industry and Information Technology to promote standardization and uniformity
- Initiation of open-source ecology by research institutes such as Tsinghua University
- Involvement of innovative enterprises responsible for connecting product development with market landing

Investment Analysis: This direction belongs to domestic substitution and aligns well with the current strategic direction of China from the perspective of policy trends. Therefore, the core participants are mostly investors with state-owned background, with financial returns not necessarily being the sole or most important objective.

Differentiated Innovation Opportunities

AI for Science

Currently, AI for Science primarily encompasses three scenarios:

a)	Building an AI tool directly used for scientific purposes, such as AlphaFold (used for protein structure prediction), which has already created significant value, and more similar tools will continue to emerge.	Similar to parallel computing, the core lies in matching computational costs.
b)	Using AI tools to enhance the efficiency of scientific research work, such as helping scientists and engineers find new research directions, write code, etc., similar to GitHub Copilot.	There's a possibility of AI safety concerns arising, such as the potential emergence of self-awareness.
c)	Supercomputing platforms, which further advance more complex scientific computations for various industries like finance and materials.	These are generic supercomputing platforms.

AI for Science is still in its early stages, but the establishment of its business model is often not directly correlated with AI capabilities themselves.

- **Resource-oriented:** Companies like DeepMind tend to be more oriented towards scientific research resources, functioning more as an intelligence resource as a service rather than prioritizing AI capabilities.
- **Research Market-oriented:** For example, the application of AI in the biopharmaceutical research system involves significant AI investment by companies. However, their products fall within a cost-constrained zone for customers, leading to a more low-cost strategy. Consequently, the business model does not align well.
 - Building an AI tool directly used for scientific purposes, such as AlphaFold (used for protein structure prediction), has already generated significant value, and more similar tools will continue to emerge.
 - Using AI tools to enhance the efficiency of scientific research work, such as assisting scientists and engineers in finding new research directions, writing code, etc., similar to GitHub Copilot. All these approaches contribute to advancing scientific research.
 - General-purpose supercomputing platforms represent a feasible direction with ample room for imagination. Additionally, typical supercomputing platforms align with the strategies of powerhouses like NVIDIA. Generally, market participants in this domain are predominantly scientists engaged in entrepreneurial innovation.

Future scenarios may involve AI evolving into a "scientist" capable of continuous self-iteration, exploring new discoveries, proposing new theories, conducting explanations, designing experimental validations, etc., thereby automating and intelligently enhancing the work of scientists.

AI safety Governance

AI trust, risk, and safety management (AI Trism) primarily address the alignment problem of AI systems with human values. Risks mainly revolve around the potential for self-aware AI to autonomously modify code and undertake actions beyond human control. Innovative companies in this realm are currently active in the Web3 domain, using technologies like ZKML privacy computing to constrain the underlying AI. Typically adopting a DAO organizational form, the investment returns of such initiatives are yet to be clearly defined, though they constitute a crucial component of AI infrastructure.

Differentiated AI Infrastructure

Primarily targeting minority groups, such as the Finger Dance model for sign language among the deaf community, this market segment is relatively niche but represents a long-term market demand. As mainstream models currently lack databases and product designs tailored to such niche groups, these minority communities risk isolation in the digital era. Hence, from the perspective of government procurement, ESG requirements for listed companies, and long-term value direction in capital markets, this represents a valuable but relatively niche market segment.

Areas such as AI for science, AI safety, and differentiated AI infrastructure are better suited for impactful investors or those employing influential investment strategies.

2.2 Industry Application Layer

The trend of integrating AIGC technology with industries primarily falls into two categories:

- **Incremental Innovation:** Mainly 2B business models, emphasizing cost reduction and efficiency improvement.
- **Disruptive Innovation:** Mainly 2C business models, focusing on new personnel propositions and profit claims.

According to Gartner's Technology Adoption Curve, AIGC's native integration currently experiences an overheated speculative phase. However, the convergence of industrial technology and AIGC technology, depending on the digital maturity of different industries and the implementation of AIGC, is primarily in a transitional phase from the bursting of bubbles to becoming a productive tool. During this period, there are inflection point investment opportunities.

Challenges and Opportunities in the 2B Model:

The 2B model is the most common pattern of industry application integration in the Chinese market. Current applications of AIGC in the 2B domain are mainly categorized into several demand types:

Table 1 applications of AIGC in the 2B domain

Business Orientation	Status	Business Potential	Value Evaluation
Defensive	Demand not yet clear, but hopes to gain a first-mover advantage or not be eliminated by the industry.	Market expectations driven by technological enthusiasm, weak sustainability.	Relatively low
Policy-driven	Mainly focused on the procurement of AIGC's underlying technology by new entrepreneurial companies.	Non-market driven, weak sustainability.	Relatively low, even a "resource curse".
Innovative	Mainly focused on the procurement of AIGC's underlying technology by new entrepreneurial companies.	Market-driven, but buyers themselves are uncertain about survival, and the market is in an exploratory phase.	Potential
Grounding and Incremental Market Exploration	These businesses involve a deep integration of AIGC with actual scenarios, i.e., the deepwater area of industrial innovation.	There may be potential for an outbreak of incremental market growth in the future.	Clear and significant potential

Challenges in the 2B Model:

- **Pricing Power:** The characteristics of the cash position payment model mean that the pricing position of AIGC startups in the 2B field is relatively weak. Typically, they involve technical development. In the Chinese market, customers have a much greater acceptance of hardware payments than software and algorithms. This has been a major reason why the SAAS business logic in the 2B industry has been difficult to expand. Therefore, AIGC's 2B vendors often embed algorithms and software into hardware for sale, and AIGC's software payment is often minimal or free. This differs significantly from the B2B software business models abroad.
- **Scaling is difficult.** Due to various client-side requirements in the 2B model of AIGC: 1) Data security often requires private deployment; 2) Customization mode, high customer concentration. 3) Discreteness of overall demand.

Opportunities in the 2B Model:

- **Innovative Pricing:** According to Gartner's technology curve, the application of any new technology is often first in 2B and then in 2C. Therefore, there exists market demand for 2B (based on previous AIGC spending). Innovation often occurs in areas where pricing is difficult, such as in the intelligent manufacturing field of 2B. In some common areas of production processes, scaling with AIGC models

can break the previous single-industry logic and allow for repricing. For example, Shiyuan Technology does intelligent modules.

- **Opportunity for an Industrial Incremental Transaction Platform:** In fields where market demand is discrete and complex predictions are needed to allocate industrial resources. For example, in the energy and power sector, there's Yi Ke Neng Yuan, which in the future can enter the transaction market based on discrete electricity demand.

Opportunities and Challenges in the 2C Sector

Challenges in the 2C Sector:

- **Legal and Compliance Requirements on the 2C End:** This is particularly important in the Chinese market. The Cyberspace Administration of China requires models and algorithms generated by AIGC for C-end products to undergo filing. Regulatory guidelines in this regard are still in the early stages. Therefore, startups that have reached a certain scale often face compliance issues such as "talks" in 2023, including content generation compliance and data access compliance. Therefore, teams often choose to start businesses targeting overseas markets.
- **Sustainability of Scene Landing Needs Validation:** Whether AIGC products can become products with user stickiness remains to be validated. The most critical aspect is whether users are willing to bear the cost of AI computing power; otherwise, it becomes a loss-making model. Tools like MJ ultimately optimize the allocation of computing power costs, requiring the team's computing resources and user base to have certain advantages to profit through optimized resource allocation. Because the product's algorithms are basically open source.
- **Underlying Technological Disruption:** Because the innovation of application-layer products is often based on the invocation of foundational large models. However, foundational large models themselves are rapidly iterating, and the iteration of one generation of products often disrupts the application-layer products, such as Sora's disruption of many video generation products. Therefore, these products have low barriers to entry and are prone to "being surpassed." Therefore, their competitiveness relies more on fitting customers and gaining stickiness.
- **Cost of Going Overseas:** AIGC products are often forced to land overseas due to policy and market trends. The high cost of going overseas often poses challenges for startup companies.

Opportunities in the 2C Sector:

Compared to the innovation opportunities brought about by the previous generation of mobile internet, which were often based on relatively standardized products and services, the current landscape focuses on the economies of scale that expand the marginal utility of services and reduce costs. This shift leads to new pricing models, value propositions, customer claims, and profit assertions.

The ecosystem of giant companies spawned by the previous generation of mobile internet is based on standardized products and services. For example, Didi provides transportation services through the internet, while Meituan and Taobao facilitate the circulation and transaction of goods online. Essentially, these areas of daily life—food, clothing, housing, and transportation—are already well-established standardized products and services offline. The efficient allocation of these services through the internet creates value

dividends, such as expanding traditional supply and demand pricing mechanisms through network search to achieve pre-matching and refined pricing of products and demands. This environment has also led to the emergence of a range of digital software service businesses, including digital marketing and digital customer management platforms. The core of these businesses is to achieve economies of scale by integrating supply and demand through the internet, generating profits via shared, co-built, and homogenized products and services.

In these scenarios, demographic dividends, the maturity and completeness of consumer products and services, and operational integration capabilities hold advantages. As a result, leading internet companies in China have maintained their competitive edges and continuously expanded their ecosystems. However, it is noteworthy that the growth rate of mobile internet reached its ceiling around 2019. After Pinduoduo went public in 2018, no new innovative mobile internet platforms emerged; instead, models like Shine transitioned from the already high market penetration in China to overseas markets with untapped potential. Consequently, the traditional 2C mobile internet model is beginning to change:

- **New online business models are no longer emerging; existing businesses are transforming and shifting industries.** This indicates that the mobile internet ecosystem has reached a certain growth marginality. According to IDC predictions, from 2024 to 2027, the global e-commerce software market is expected to grow from \$11.2 billion to \$16.5 billion, with an average annual compound growth rate of 14%. The compound growth rate for SaaS applications is projected to remain at 18.8%, while localized e-commerce application software is expected to decline at -1.2%.
- **In some cases, online products and services are priced higher than their offline counterparts.** On one hand, the maturation of digital marketing has added traditional intermediaries and costs to online platforms, increasing the costs of acquiring traffic and converting marketing efforts. On the other hand, factors such as the pandemic have activated local life and regional economies, especially as the real estate industry enters a downturn, lowering offline rental costs. The combination of local life and internet models has become a new hot sector, allowing for further refinement of pricing models for products and services. For example, the "cloud haircut" model that emerged in 2022—where local businesses eliminate intermediaries by directly linking consumers with local merchants via flyers—illustrates this trend. Taking "cloud haircut" movie tickets as an example, their prices can reach one-third of traditional online ticket prices because they link theatres directly to nearby customers.

Traditional internet giants are beginning to engage in large-scale monopolistic competition. This competition is not about technological research and development but rather about market share. With the rise of localization combined with online interactivity, companies like Douyin are entering the local lifestyle sector, which is Meituan's territory, while Meituan is venturing into live streaming, an area dominated by Douyin. Industry interviews indicate that Douyin's budget for local life reached 4 billion yuan in 2023, with Kuaishou coming in second with a substantial budget as well. This indicates that the saturation of the online market and its growth potential are entering a stage of capacity clearing and tipping points, ushering in a wave of overseas expansion that has become a necessary battleground for current corporate development.

3 Impact of Industry Cycles on AI Innovation and Investment: AI in the Energy and Power Industry

The impact of industry cycles on AI innovation and investment opportunities is particularly significant in the energy sector. Although the energy industry is traditionally considered a mature sector, this does not

imply that it is a "sunset" industry or in a phase of decline. Rather, the energy sector encompasses various stages of the industry cycle, making it highly representative of how industry cycles interact with technological advancements.

With the changing global energy demands and the growing emphasis on sustainable development, the application of AI across different stages of the energy industry continues to evolve. As a result, the combination of the industry cycle and AI technology introduces a more complex and dynamic space for innovation within the energy sector.

3.1 Case Analysis of AI + Energy: Equota

Company Background

Equota was established in 2014 as a technology company providing "energy" and "carbon" products and services based on artificial intelligence and big data analysis. It has landed top clients such as State Grid, Southern Power Grid, Dubai Electricity and Water Authority (DEWA), Baowu Group, and BASF, helping global clients achieve low-carbon futures and sustainable development goals.

Solutions and Innovations

- **Product Scalability and Customization:** Addressing the diverse needs of industrial industries, products with strong on-site implementation capabilities and customizable development capabilities have been launched, such as worry-free operation products, which can meet the specific needs of different customers.
- **Empowering Intelligent Technology:** Combining big data analysis and artificial intelligence technology to provide industrial enterprises with AI intelligent value-added solutions, not only enhances the differentiation of products but also strengthens the competitiveness of products in the market.
- **Strengthening Services and Support:** The company has established a comprehensive after-sales service operation system, providing continuous technical support and training services to ensure that customers can fully utilize software solutions, thereby improving customer satisfaction.
- **Extensive Cooperation and Partnership :** Established extensive partnerships with equipment manufacturers and system integrators in the industrial industry to jointly develop solutions and expand market share.
- **Continuous Deepening in the Power Industry:** Focus on grid companies, continue cooperation projects; expand business in grid marketing and equipment fields; deepen business cooperation with digital departments.
- **Accelerating Project Returns :** Utilizing high customer satisfaction with delivery projects; accelerating project acceptance processes by the delivery team; while ensuring service quality, accelerating fund recovery.
- **Strengthening Delivery Team Building:** Emphasize standardized training for teams in the work order process; strengthen training in data confidentiality and flow management; veteran employees lead new employees to familiarize themselves with processes to ensure compliance with grid customer

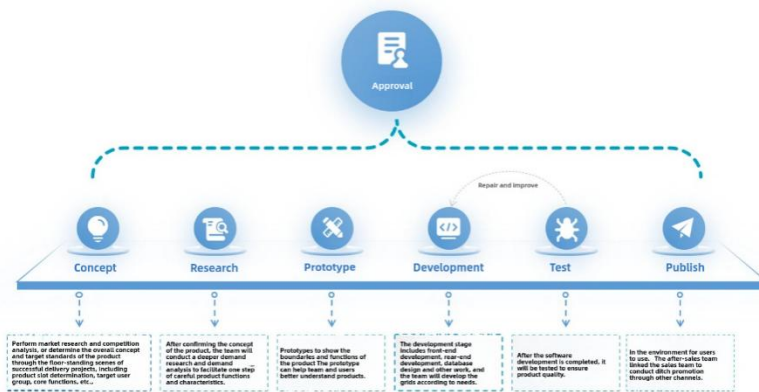
delivery; improve delivery quality and customer satisfaction.

Original Pain Points:

Excessive steam consumption per unit product, losses and consumption exist in all links of the operation process; huge data volume is difficult to refine, about 600 process variables, 100G of 3-year historical data; about 80 million steam costs per year, significant room for improvement in energy efficiency optimization and cost savings.

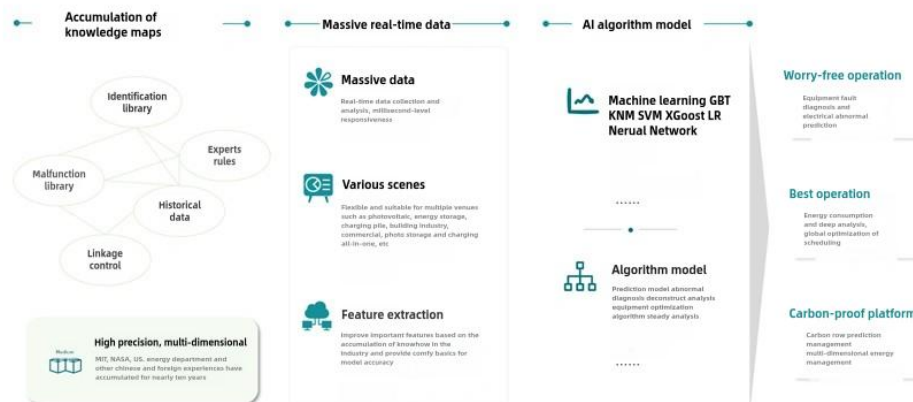
Solution:

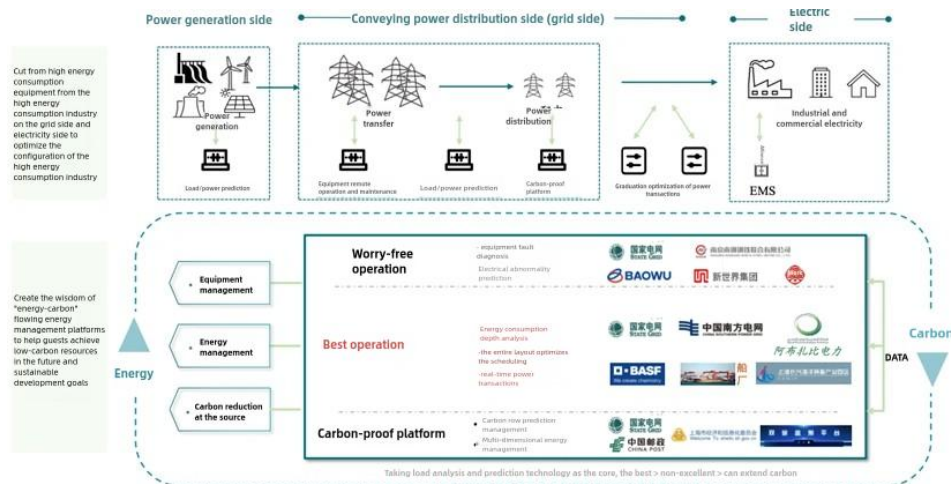
Provided comprehensive energy efficiency optimization analysis for BASF's chemical industry processes; quantified the impact of various features on performance indicators, proposed optimization recommendations for operating parameters to reduce steam consumption in evaporators; currently achieved a 1.3% reduction in steam consumption, 0.2-second response capability, and 40+ real-time supervision and risk control scenarios.



"Machine + big data" model polishing for many years, establishing wisdom energy benchmark

亿可能源





Commercialization Landing and Achievements

- **The solution has successfully achieved commercial landing and achieved significant results:**

The worry-free operation product has been implemented and delivered in locations such as Nangang and Baosteel, and the EMS product has also been applied in locations such as Baosteel and Jiangnan Shipyard. In addition, the EMPACT dual-carbon platform has also landed relevant projects at the government and central state-owned enterprise levels and has been recognized by users.

- **Major Customers and Market Size:**

Baowu Group: 1) Promote to internal branches of Baosteel such as cold/hot rolling, steelmaking, etc.; 2) Baowu Carbon Industry will promote to carbon furnace equipment; 3) Cooperate with Baowu Jinyi Inspection, signed a "Strategic Cooperation Framework Agreement" with Jinyi, focusing on two directions, one is to promote to Baowu's various bases such as Magang, Wugang, Zhanjiang Iron and Steel, Shandong Iron and Steel, etc. Baowu has more than 1,000 existing production lines, opened commercial scenarios by Baowu, promoted operations through 100 production lines, and formed a business model; promoted by Baowu Jinyi as a channel to other steel mills such as Ansteel.

- **State Grid, China Electric Power, China Shipbuilding, and other group company clients:**

There is great room for future growth, such as China Shipbuilding, where a shipyard may produce 50-60 million orders per year.

Company Organization

- **Values**

Centred around innovative technology, driving the transformation of energy intelligent management; committed to achieving a low-carbon, sustainable future development.

- **Technological and Scientific Attributes**

A robust algorithm and software development team ensure technological leadership; increasing R&D investment annually, continuously innovating and iterating products; actively recruiting high-quality technical talent to maintain technological competitiveness; collaborating with universities and research institutions for joint research and obtaining technical support; emphasis on intellectual property protection, with 10 patent applications, 13 software copyrights, 3 papers, and 1 team standard applied

for last year, with plans for further improvement this year.

- **Asset Operation Method**

Intangible Assets: Directly managing patents, trademarks, copyrights, software, etc., emphasizing the protection and application of intellectual property.

- **Equipment/Servers**

Most assets are operated independently, with some using cloud services to reduce maintenance costs.

- **Accounts Receivable**

Strict management of receivables generated from the sale of goods or provision of services to ensure cash flow.

- **Other Current Assets:**

Prepayments, other receivables, and other current assets are effectively managed to ensure the company's daily operational needs are met.

- **Industry Opportunities**

- The company currently primarily serves high-energy-consuming continuous manufacturing industries, including steel, chemicals, coal, and industrial parks, all of which have long-term potential. The steel industry is currently in a growth phase with high demand from large group companies; the coal industry's demand for intelligence is growing rapidly, benefiting from a series of encouraging policies issued by the government, such as guidance on accelerating the intelligent development of coal mines, demonstrating the momentum of initial development; interest in carbon emission management and demand-side response in industrial parks is also steadily increasing.
- The company's products and services mainly involve intellectual property rights, energy-saving laws, and regulations related to intelligence, which are supportive of the company's industry.
- Located in Shanghai, the company benefits from an excellent market, administrative, and talent environment. The government provides strong support for innovation and entrepreneurship, offering various support measures. Additionally, as a first-tier city, Shanghai attracts a large number of industry talents, providing a fertile ground for the company's development. Furthermore, as an economic centre, Shanghai has a complete industrial chain, enabling the company to easily connect upstream and downstream, facilitating business expansion.

3.2 Summary of the Impact of Industry Cycle Factors on AI Investment and Innovation:

- **Innovation Push in the Introduction Stage:**

In the early stages of industry transformation, traditional energy companies begin to pilot AI technologies, focusing primarily on exploratory projects such as energy demand forecasting, infrastructure monitoring, and renewable energy management. AI applications are still in the preliminary development and small-scale experimentation phases.

Investment Opportunities: Early investments mainly come from government support, green technology funds, and venture capital, focusing on cutting-edge technologies and pilot projects. Investment directions lean toward foundational AI research and concept validation, particularly in leveraging AI for new energy resource exploration, smart grid control, and energy forecasting models.

- **Innovation Acceleration in the Growth Stage:**

Driven by energy demand and environmental policies, AI becomes widely applied in energy production, distribution, storage, and consumption management. At this stage, AI applications such as smart grid management, predictive maintenance, energy efficiency optimization, and carbon management technologies gradually mature and scale.

Investment Opportunities: As the market expands, applications of AI in energy management attract significant private equity and venture capital. Investment opportunities focus on technologies like intelligent power scheduling, storage optimization, renewable energy integration, and carbon emission monitoring, promoting the transition of companies from point solutions to integrated and platform-based energy management systems.

- **Innovation Optimization in the Maturity Stage:**

During the maturity phase of the industry, the application of AI technologies becomes widespread, with innovation primarily focusing on optimization and cost reduction. The goals of technology development include improving model accuracy, energy efficiency management, and reducing carbon cost, while exploring integrated energy management across departments.

Investment Opportunities: At this stage, investors prefer AI energy companies with market leadership and technological depth, focusing on technology integration, industry consolidation, and innovation cost control. Mergers and acquisitions, along with strategic partnerships, become mainstream to further enhance technology application coverage across the entire industry chain, such as smart power systems, efficient integration of renewable energy, and distributed energy networks.

- **Innovation Direction in the Decline Stage:**

As the technological dividends gradually diminish, the application of AI in the energy sector shifts toward maintenance and exit strategies. Industry demand mainly focuses on maintaining existing systems, fine-tuning operations, and extending asset lifespan. AI innovation increasingly concentrates on smart monitoring of aging equipment, asset optimization, and disposal of declining assets.

Investment Opportunities: In the decline stage, investment opportunities are relatively limited, with the focus shifting from high growth to stability and asset management. Private equity and investors pay more attention to companies that can sustainably reduce maintenance costs and enhance operational efficiency, primarily investing in technical operations, asset management, and the intelligent transformation of aging infrastructure.

Conclusion

Through both our theoretical and case analysis, we have found that industry cycle profoundly influences AI innovation and investment directions in many sectors, including the energy sector. From the introduction stage to maturity, the application of AI in energy has expanded from experimental pilots to comprehensive integration, shifting investor focus from foundational research to optimization and integration. The overall technological and investment cycles of AIGC indicate that similar changes could occur in other fields with similarly stringent efficiency requirements. Against the backdrop of the current acceleration of global

energy transition, investment opportunities in the growth and maturity stages, particularly in key areas such as smart grid management, carbon monitoring, and renewable energy integration, are particularly pronounced. This trend is especially evident in the Chinese market.