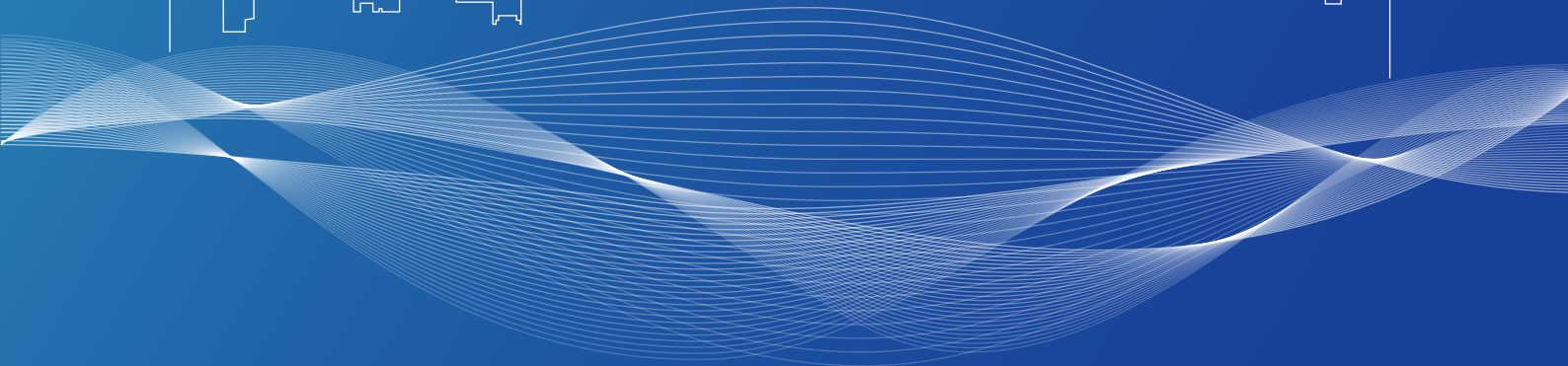




可持续发展 经济  
CHINA SUSTAINABILITY TRIBUNE 导刊

# INSPIRING PRACTICES

THE DIGITAL INDUSTRY FOR SUSTAINABLE DEVELOPMENT



## Preface

In this ever-changing era, the digital wave, which is reshaping the world at an unprecedented speed, has spawned countless new forms of industries and business with its amazingly innovation strengths, profoundly changing people's lifestyle. Also, it has provided brand-new ideas and solutions to address the sustainable development challenges faced by the traditional development model by virtue of its efficient, intelligent and eco-friendly characteristics.

During this digital transformation, from sustainable agriculture to smart and green factories, from online medical training to emerging digital jobs, we have witnessed the rejuvenation of traditional industries and the enormous potential of the digital industry in supporting and accelerating the realization of the 17 Sustainable Development Goals (SDGs) and promoting the well-being of human, society, and the planet.

Against this background, this report focuses on the topic of "Digital Industry for Sustainable Development", elaborates the current status and trends of the development of the digital industry, and discusses its potential role in enabling industrial development, protecting ecological environment, enhancing public services, promoting equality and inclusive based on the practices of some outstanding enterprises. In addition, the report also contains recommendations for addressing other derivative challenges brought about by digital technology.

We are pretty sure that in-depth understanding and discussion will help further tap the potential of the digital industry as an equalizer of social development while attracting more stakeholders to enter this field and work together to build a more inclusive, greener and better digital future.

## About China Sustainability Tribune

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Founded in 2002, China Sustainability Tribune, (CST for short, formerly known as China WTO Tribune) is supervised by Ministry of Commerce of the People's Republic of China (MOFCOM), and hosted by China Center for International Economic Exchanges (CCIEE). It is an upgrade of China WTO Tribune in the field of social responsibility and sustainability.

As the only domestic media named after sustainable development, CST has been actively contributed to global sustainable development based on the motto of "Global Perspective, Competition and Win Together". It promotes various fields, industries and organizations, especially those who have a huge influence on economy, society and environment, to be sustainable, to take actions for sustainable development, and to support the achievement of UN Sustainable Development Goals (SDGs).

# INSPIRING PRACTICES

## THE DIGITAL INDUSTRY FOR SUSTAINABLE DEVELOPMENT

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As the digital industry grows rapidly and dynamically across the globe, Internet-based digital technologies of all kinds have reached about 67% of the world's population. Even in low-income countries, the number of Internet users has increased by nearly 45% since 2020<sup>1</sup>. From 2000 to 2022, the value added of global IT services has grown at an average of 8% per year, almost twice as fast as the global economy<sup>2</sup>. According to the 2024 Global Digital Economy White Paper released by the China Academy of Information and Communications Technology (CAICT), the total digital economy of the United States, China, Germany, Japan and the Republic of Korea exceeded US\$33 trillion in 2023, with a YoY growth of over 8%; the proportion of digital economy in GDP was 60%, up about 8 percentage points from 2019; and industrial digitization accounted for 86.8% of the digital economy, up 1.3 percentage points from 2019<sup>3</sup>.

The digital industry refers to the digital transformation and development of various industries to provide digital technologies, products, services, infrastructure, and solutions, as well as various new digital economic activities that are completely dependent on digital technologies and data elements.

Cutting-edge technologies in the digital industry



**Big Data:** As one of the core technologies in the digital industry, it involves the collection, storage, processing, and analysis of massive amounts of data to reveal hidden information and trends in the data, and is widely used areas such as finance, healthcare, retail, etc. to help organizations make more accurate decisions.

**Cloud Computing:** As a way to provide computing resources and services through the Internet, it allows users to gain access to computing resources, including servers, storage, databases, etc., on demand. Due to its role in reducing IT costs for enterprises and improving resource use efficiency, the cloud computing technology is listed as a major infrastructure in the digital industry.

**Artificial Intelligence (AI):** AI is a technology that simulates human intelligence, covering various areas such as machine learning, natural language processing, image recognition, etc. It plays an important role in the digital industry, such as intelligent customer service, autonomous driving, intelligent recommendation, etc., greatly improving production efficiency and user experience.

**Blockchain:** As a decentralized distributed ledger technology that is immutable and traceable, blockchain is widely used in finance, supply chain management and other areas, providing a more secure and transparent solution for the digital industry.

**Internet of Things (IoT):** As a bridge to connect various devices and objects to the Internet for mutual communication and data exchange, IoT is widely used in areas such as smart homes, smart cities, etc., boosting the rapid development of the digital industry.

**5G:** As a new generation of mobile communication technology, which is characterized by high speed, low latency, and great connectivity, 5G provides a faster and more stable network connection for the digital industry, spurring the development of emerging fields such as telemedicine, autonomous driving, etc.

Areas covered by the digital industry



**Knowledge information industry:** including data processing, analysis, storage, etc.

**Communications industry:** involving mobile communications, Internet communications, etc.

**Network industry:** including Internet services, e-commerce, etc.

**Satellite industry:** utilizing satellite technologies for communication, navigation, etc.

**Some market-oriented digital technology application industries in the culture industry,** such as digital music, digital film and television, etc.

**Social public digital management application industry:** digital management in fields such as education, culture, broadcasting and television, health, sports, civil affairs, justice, social security, etc.

Along with the continuous innovation of cutting-edge digital technologies such as cloud computing, big data, and AI and the deep integration with communication, business, health, education, finance, and other fields, the digital industry is expanding its application boundaries at an astonishing rate, which, as a result, has not only created a new economic growth pole and changed the global economic landscape, but also played a strong digital supporting role in promoting inclusive growth and sustainable development of the global economy. It is largely down to the advantages of digital technologies as follow:

#### New quality productive forces, a driver of the high-quality economic development

As a major manifestation of new quality productive forces, the digital technology is reshaping the production processes and management models of contemporary industries and service sectors in an unprecedented approach to enhance labor productivity, reduce resource mismatch, leverage scale advantages, and promote high-quality economic development. For instance, automated workflows can reduce manual operations and improve accuracy; intelligent manufacturing and digital twin technology can realize dynamic scheduling and efficient use of production resources, helping enterprises timely respond to market changes, adjust production plans, and avoid resource waste and overcapacity; cloud computing and remote collaboration can break the limitations of space so that all departments within the enterprise and all links in the supply chain can share data, resources, and information in real time, jointly respond to market challenges, and achieve win-win results.

#### Promoting cross-border integration and innovation of traditional industries

Promoting cross-border integration and innovation with digital technology is a major trend in the current social and economic development, which can not only remove the boundaries of traditional industries for resource sharing and complementary advantages, but also boost the rise of emerging industries and innovation in business models to build a new business ecosystem. For instance, the integration of manufacturing and IT has promoted the development of intelligent manufacturing; the integration of finance and technology has given rise to emerging industries such as fintech; the integration of agriculture with IoT and big data has led to the transformation of smart agriculture; and the combination of e-commerce platforms and physical retailing has resulted in a new retail model that integrates retailing online and offline.

#### Providing data and analysis for specific goals

In addition to efficient and large-scale data collection, digital technology can also carry out in-depth mining and analysis of these massive data by virtue of advanced algorithms and models to reveal those hidden patterns and trends. This capability is meant to be strong support for achieving, tracking and evaluating specific development goals in different areas. Nowadays, digital technology is widely used to measure and track the progress in sustainable development, optimize resource use, and reduce greenhouse gas emissions. New technologies, such as AI and digital twins, are even considered as powerful tools for realizing the next batch of climate change solutions.

#### Lowering the threshold of access to services and information

Internet-based digital technologies have broken the geographical and time constraints of traditional service industries, thus becoming the core channel for the current provision of large-scale and important services. As a result, people can spend less time and money to obtain such life services as medical care, educational information, online social networking, news media, e-government, etc., which not only improves the efficiency of services, but also greatly promotes social equity and the optimal allocation of resources. Furthermore, big data and AI have also boosted the personalization and customization of services and information access, improved the pertinence and effectiveness of services, and brought about new market demands and business opportunities, accelerating the pace of social innovation.



## Chapter 2

# Activating the Digital Key to Sustainable Development



The year 2030 is approaching. However, the SDG targets in many key areas are facing severe challenges, with progress deviating from the expected track and some areas even showing signs of stagnation or regression. Climate change, resource depletion, and social inequity continue to grow. New solutions are urgently needed to reverse this trend. In this context, the digital industry, with technological innovation as its core driving force and a high degree of informatization, intelligence and convenience, is exactly the key to cracking those hard nuts hindering sustainable development.

According to UNDP analysis, 70% of the 169 SDG targets would benefit from acceleration through digital technologies, while 13% of the targets even directly call for the utilization of digital technologies. Also, its analysis of more than 120 countries at different income levels show that countries that have achieved stronger progress on digital maturity have made more progress towards the SDG targets over the past decade than others at the same income level.

In recent years, international organizations such as the United Nations and the World Bank have launched a number of initiatives to make digital technology a driving force for sustainable development on a broader scale so that all countries can benefit from it. These initiatives mostly focus on strengthening digital infrastructure, upgrading global digital skills, promoting green finance and digital health, and ensuring data security and privacy protection in an attempt to encourage the international community to work together to lay a solid foundation for a more equitable, green, and sustainable future.

**2015** The World Bank launched the Identification for Development (ID4D) Initiative to change the lives of nearly 1 billion people who still do not have an official ID card by analyzing, assessing, and financing to build inclusive and trusted digital ID systems. ID4D, in conjunction with the "Digitalization of Government-to-Person Payments (G2Px) Initiative launched in 2020, has supported more than 60 countries in issuing digital ID cards, which are more inclusive, secure and user-centered, to 550 million people, and building other digital public infrastructure, particularly for data sharing and G2P payments, to achieve inclusion, resilience, and innovation.

**2016** The World Bank established the Digital Development Partnership (DDP), a digital innovation and development financing platform, which aims to gather public and private sector partners to facilitate the development and implementation of digital development strategies and promote knowledge exchange on digital development across the world.

**2019** The World Bank launched the Digital Economy for Africa Initiative (DE4A), which aims to ensure that every individual, business, and government in Africa will be digitally enabled by 2030 in support of the African Union "Digital Transformation Strategy for Africa".

**2020** UN Secretary-General António Guterres presented the Roadmap for Digital Cooperation, which calls on countries to take eight actions to promote digital technologies for the benefit of all people in an equitable and secure way.

**2022** The UNDP released the Digital Strategy 2022-2025, which proposes to support countries and communities in making full use of digital technologies to reduce inequality, enhance inclusion, address climate change, and unlock more opportunities for economic development.

**2024** The United Nations Summit of the Future adopted the Global Digital Compact, which covers all stakeholders, including governments, the United Nations system, the private sector, civil society, grassroots organizations, academia, and individuals. The Compact aims to provide basic principles for the development of the global digital future, and build a more open, secure, and free digital future for all by taking on board the views and proposals of multiple stakeholders around the world and consolidating global consensus on digital development.

While actively responding to the global sustainable development initiatives, digital leaders, represented by China and the United States, have offered a series of policy support in various fields, such as digital infrastructure construction, data factor market cultivation, industrial digitalization, innovation in digital technologies, digitalization of public services, governance of digital economy, and international cooperation, to continuously promote the deep integration of digital economy and sustainable development.

**China** **Plan for the Overall Layout of Building a Digital China**  
Proposes to strengthen digital infrastructure, empower economic, and social development in a holistic approach, and improve the environment for digital development. According to the Plan, by 2035, the systematic layout of digital development in the country will be more scientific and complete, and the digital development in various fields such as economy, politics, culture, society, and ecological civilization construction will be more coordinated and adequate. All these combined will provide strong support for the country to turn into a modern socialist one in all respects<sup>5</sup>.

**United States** **International Cyberspace and Digital Policy Strategy**  
Focuses on building broad digital solidarity. Digital solidarity is a willingness to work together on shared goals, to stand together, to help partners build capacity, and to provide mutual support. Its principles center on efforts to support allies and partners, especially emerging economies, to better seize opportunities presented by new technologies, and to pursue their economic and development goals in a sustained manner<sup>6</sup>.

**UK** **Digital Strategy**  
Aims to bring together cross-government tech and digital policies into a unified roadmap to build a more inclusive, competitive, and innovative digital economy. It focuses on six key areas, namely digital foundations, ideas and intellectual property, digital skills and talent, financing digital growth, spreading prosperity and leveling up, and enhancing the UK's place in the world<sup>7</sup>.

**Germany** **Data Strategy of the German Federal Government**  
Aims to increase the collection and use of data in business, science, civil society, and public administration, to establish a data culture, to launch a national digital education initiative, to ensure fair participation, to prevention data monopolies, and to bolster the country's digital competency. The Strategy covers four areas of action, including building data infrastructure, digital innovation mechanisms, digital culture, and digital governance<sup>8</sup>.

**Singapore** **Smart Nation**  
Aims to turn the construction of smart cities into a national strategy. It includes strategic transformation in three areas, namely digital government, digital economy, and digital society, as well as three basic supports, including next-generation digital infrastructure and platforms, data resources, and Internet security. It focuses on future-oriented innovation in urban organizational mechanism and the optimization of development environment in order to create globally leading competitiveness and influence<sup>9</sup>.

**Japan** **Integrated Innovation Strategy 2023**  
Proposes to develop cutting-edge technologies from a strategic perspective and build a sustainable and resilient society. It includes the construction and development of digital twin systems, all-optical networks, and post-5G-related technologies to combine cyberspace and physical space, create new values, spur social change and disruptive innovation, solve global problems, and build a resilient, safe and comfortable society<sup>10</sup>.

**Republic of Korea** **Digital New Deal 2.0**  
Aims to step up the D.N.A (data, networking and artificial intelligence) ecosystem in the Republic of Korea. It focuses on the building of "Data Dam", a big data platform that helps to accumulate and offer AI-based learning data and online credentials to strengthen educational infrastructure, as well as digital social indirect capital (SOC) infrastructure, to improve public safety and convenience<sup>11</sup>.



Chapter 3

# The Digital Industry, a Booster for Sustainable Development

Enterprises are main drivers of sustainable development. Those in the digital industry fall into two types: Type 1 brings digital technologies into business, makes up for operational shortcomings, and achieves digital transformation. Most of such enterprises choose to prioritize their own sustainable transformation before promoting their ideas and practices to other stakeholders. They highly value efficiency improvement and cost saving in their internal operations and also do what they can to optimize supply chain management through digital means, aiming to reduce resource consumption and environmental pollution and facilitate sustainable production. For instance, the State Grid Wuxi Power Supply Company established a “Power Alarm” water pollution monitoring platform. By analyzing the electricity-related big data from the platform, the company has achieved regular monitoring in key areas such as pollution discharge, control, and treatment, providing data support for controlling pollution in a targeted, scientific, and lawful manner.

The Type 2 includes digital-native enterprises that utilize digital and intelligent capabilities to directly build new core business or competitiveness. They specialize in developing and applying innovative digital technologies, and directly address corresponding environmental and social issues through the technology products they develop. This approach has brought more business value to themselves while providing new paths and models to solve the sustainable development challenges facing the world. For example, VisionBlue established a digital management platform and a physical collection network based on the characteristics of marine waste generation and distribution to achieve high-value utilization and value redistribution of marine recycled plastics. By upgrading its apps for accessibility, Alibaba Group rolled out wheelchair navigation services and AI-based sign language interpreters, and opened barrier-free theaters to help people with disabilities better integrate into social life.

The digital industry does have much room to maneuver in all the 17 SDGs. When classified according to its mode of operation, the digital industry is particularly successful in optimizing industrial structure, protecting the ecological environment, promoting social governance, diversifying employment forms, improving the quality of life, and supporting the vulnerable groups.

## The digital industry helps achieve 17 SDGs



### SDG1

Digital technologies can accurately match resources and markets in poverty-stricken areas, diversify the sales channels of agricultural products through e-commerce models, and reduce the start-up costs of low-income groups by virtue of inclusive finance.



### SDG2

Smart agriculture-related technologies can reduce manual labor, monitor and analyze agricultural data, and help farmers make more rational decisions in agricultural production and increase income.



### SDG3

Remote diagnosis and intelligent diagnostic systems can help balance medical resources and break geographical limitations, enabling more people to gain access to high-quality medical services, and promoting medical equality.





#### SDG4

Accessible, affordable and open platforms for high-quality digital skills and training will help lower the barriers to education for different regions and groups and facilitate the efficient allocation of educational resources.



#### SDG5

Women and girls are able to have access to more health literacy and skills, as well as supportive services, and to express their views and make their voices heard through social media.



#### SDG6

The IoT and AI systems will help establish accurate rainfall, irrigation, leakage, and pollution management systems to enable monitoring and management of water resources.



#### SDG7

Digital technologies can assist in the efficient production and application of clean energy through accurate production, emission testing, technological innovation and market optimization to achieve accurate matching of clean energy supply and demand.



#### SDG8

The emerging digital occupations and business forms will bring more diversified and flexible employment options for workers. Intelligent matching can also accurately match employment needs and improve employment efficiency.



#### SDG9

The digital industry continuously expands high-quality digital infrastructure to underserved remote and rural areas. This process will accelerate the improvement of local innovation and productivity and narrow the development gap.



#### SDG10

Digital public goods can help reduce information inequalities and provide access to essential life services for all members of society, including vulnerable groups such as women and children in remote areas, the poor, and those displaced persons.



#### SDG11

The intelligent upgrading of urban infrastructure has improved the efficiency of urban management and the quality of life of residents, promoted the digital transformation of government services, and bolstered the transparency and responsiveness of urban governance.



#### SDG12

Digital technology can realize the accurate classification, recycling and reuse of waste materials, enable the whole life cycle management of products, and facilitate the formation of resource-saving and environment-friendly production and life style.



#### SDG13

Information and communication technology solutions can help reduce CO2 equivalent to nearly 10 times its own emissions. The integration of digital technologies and eco-product design can reduce the consumption of natural resources and materials by up to 90%<sup>13</sup>.



#### SDG14

Digital technologies allow for non-invasive monitoring and recording of underwater organisms, providing strong support for the development of scientific conservation strategies. Also, they can help to locate marine plastic waste and track the supply chain of discarded plastics.



#### SDG15

Remote sensing, satellite monitoring and artificial intelligence can help to monitor the distribution of wildlife in real time and to realize dynamic prediction and early warning of ecosystems. Technologies such as VR and AR can help to enhance public awareness of animal protection.



#### SDG16

E-government and smart cities can enable people to access more efficient and transparent public services, reduce waste and corruption, and provide valid data for public agencies to optimize the direction of their services.



#### SDG17

The international community can utilize digital tools for transnational and cross-border cooperation, deepen information sharing and resource integration, and work together to find solutions for all sustainable development goals.

Note: Part of the table refers to the SDG Digital Acceleration Agenda issued by UNDP, and has been adjusted and explained in line with its own subject and research direction.

Enabling Industry development

Digital technologies have turned out to be an important driver for the transformation and upgrading of traditional industries. The application of intelligent manufacturing, industrial Internet, big data analysis, and the like has enabled traditional agriculture, manufacturing, and service industries to improve production efficiency, reduce operating costs, and promote product innovation and service upgrading. Meanwhile, the digital industry has also brought about many new business forms, which provide a new impetus for economic growth and boost the transformation of the industrial structure in the direction of high-tech and high value-added.

Representative Actions

State Grid Linhai Power Supply Company

"Smart Eye e-Station" - "Digital Strategist" Helps Eyewear Industry Break Through Against the Odds



Corporate Profile

State Grid Zhejiang Electric Power Co., Ltd. Linhai Power Supply Company (hereinafter referred to as "State Grid Linhai Power Supply Company" or "the Company") is a branch company with limited liability fully funded by the provincial company. By the end of 2023, Linhai had one 500kV substation, five 220kV substations, eighteen 110kV substations, eighteen 35kV substations, thirty-eight 35kV power lines, fifty-four 20kV power lines, three hundred and eighty-four 10kV power lines, and five thousand and sixty-nine 10(20) kV common transformers within its jurisdiction. In recent years, the Company has fully implemented the "Six Hearts" program, continuously optimizing the city's power grid structure and improving the business environment for electricity. This has promoted sustainable development of the electricity sector and gained widespread social recognition.



Background

Linhai is a prime example of county-level cluster economies in Zhejiang Province. Over the past 40 years, it has become a major production and export hub for sunglasses in China. In 2022, the industrial output value of Linhai's eyewear industry chain accounted for 1/8 of the national total, with over 3,000 eyewear enterprises involved, including 72 above-scale enterprises. However, while rapid development brings opportunities and prosperity, it also faces the following challenges:

**Government:** With numerous small and scattered businesses, it's challenging for business-friendly policies to reach them accurately and directly. SMEs in the eyewear industry in Linhai are fragmented and numerous, with a variety of business models such as family workshops, front-shop-back-factory, and factory-in-factory. Production methods are diverse, including temporary production, staggered production, and contract production. This results in complex "one-to-many" and "many-to-one" data issues for tax management, energy management, and market supervision. At the same time, due to the time lag in data reporting, it's difficult for the government to immediately understand the operational challenges faced by businesses.

**Businesses:** Energy-intensive industries struggle to meet increasingly stringent policy requirements. The eyewear industry in Linhai consists of many small and scattered

businesses with weak energy management capabilities. These companies struggle to implement targeted energy-saving and carbon reduction measures, and find it even more challenging to meet the energy-saving and carbon reduction requirements of overseas customers. According to the survey, 15% of businesses in the supply chain have an urgent need to reduce their carbon footprint, and over 80% are eager to learn about ways and means to achieve this.



Highlights

The Company is committed to creating a "Smart Eye e-Station" that covers the entire county and the full industry chain, capturing all energy efficiency data, operational data, and other relevant information from the eyewear industry chain. Through key data captured by the "Smart Eye e-Station", the State Grid can combine insights and resources from multiple parties to analyze potential risks faced by enterprises and provide crucial support for their low-carbon, healthy, and sustainable operations.



The workers of State Grid Linhai Power Supply Company use the "Smart Eye e-Station" to analyze and monitor the industry Situation

Tackling Business Challenges: Introducing Three Innovative Indexes to Create a "Barometer" for the Industrial Economy

To better support the government's efforts to benefit businesses, the Company has tried to break down cross-industry and cross-departmental data barriers, and ensure that financial, tax, electricity, and business information are "matched as needed and provided wherever possible". This enables comprehensive analysis of electricity data, production and operation data, as well as financial and tax data of businesses. Furthermore, the Company has created eyewear industry prosperity index, industry development index, and industry energy efficiency index, and comprehensively assessed market activity intensity, production activity intensity, and energy efficiency, providing data-driven tools to help accelerate the implementation of business-friendly policies.

Tackling Industry Challenges: Eliminating Information Barriers in the Supply Chain to Provide Decision-making Support for Businesses

"Four reports" are released to optimize the operations on the consumption side. By monitoring energy consumption of individual enterprises and supply chain businesses, the "Smart Eye e-Station" can generate operational health reports, energy consumption analysis reports, industry operation reports, and summary reports, upgrading the operations on the consumption side. Businesses can use the "four reports" to understand their own levels of electricity sales and electricity taxes in the industry, and implement targeted carbon reduction measures.

Three-color tiered management enables efficient business operations. Additionally, the Company categorizes enterprises with red, yellow, and green codes based on their operational health. It collaborates with the government and upstream/downstream businesses to visit red-coded enterprises, understanding their operational difficulties, and providing targeted follow-up support. It also actively organizes visits to green-coded enterprises to learn from their advanced experiences, identify benchmarks, and promote the dissemination and replication of best practices.

**Tackling Challenges for Carbon Reduction: Providing One-Stop Services for High-Quality Transition of Businesses**

One-click response facilitates energy saving and carbon reduction. In response to dual restrictions and controls, the Company has expanded the application scenarios of "Smart Eye E-Station". It has developed a "one-click response" demand-side management model that covers the entire industry chain, region, and timescale. The system updates data for the entire area every 15 seconds. Through the "Smart Eye e-Station," the Company can deeply investigate specific energy consumption, energy management, and budget control of energy-intensive enterprises. It enables timely alerts, comparisons, and analysis of abnormal electricity and energy usage information, uncovering unusual energy consumption patterns. This helps enterprises pinpoint problem areas, whether they stem from equipment aging, poor management, or process issues, thereby improving energy efficiency.



The worker of State Grid Linhai Power Supply Company uses the "Smart Eye e-Station" to provide energy use advice for an enterprise leader



**Outcomes**

The large amount of multi-dimensional big data can better serve the needs of low-carbon transition in the industrial chain. Through comprehensive energy services such as demand response, energy efficiency analysis, and energy efficiency credit guarantees, electricity users and industrial parks can better understand their energy usage and implement targeted carbon reduction measures.

For businesses, the Company has so far provided on-site guidance to 130 inefficient enterprises and energy efficiency management services to 58 companies. By optimizing enterprises' electricity consumption dispatching and production scheduling, energy consumption can be reduced by nearly 45%. Moreover, the big data platform can better support energy demand matching. Companies can save around 2 million yuan in electricity costs annually by downsizing and upgrading their power capacity.

For industries, this serves as a demonstration and reference for extending the value of electricity data to low-carbon transition across more industrial chains. Moreover, the overall cost of the devices is relatively low, with labor and installation on existing devices costing about 1,000 yuan per unit, making it highly valuable for widespread extension.

**XAG**

**AI Helps Fine and Efficient Agricultural Management**



**Corporate Profile**

XAG is a smart agricultural technology company dedicated to building an unmanned agricultural ecosystem. It independently develops and manufactures agricultural plant protection drones, agricultural drones, agricultural unmanned vehicles, autopilots, and agricultural IoT and intelligent agricultural management systems, serving more than 42 countries and regions.



**Background**

With the global population expected to reach 10 billion by 2050, food production needs to grow by 60% to feed the entire population. There will be more and more people in the world who need to feed themselves against limited arable land and a declining labor force who are willing to farm it, putting enormous pressure on global food supplies.

Crop production involves ploughing, planting, management, and harvesting. At present, the proportion of machinery used in ploughing, sowing, and harvesting crops has exceeded 70%, but the proportion of machinery used in crop management, including spraying pest control agents and foliar fertilizers, is very low, accounting for less than 8%. However, crop management processes are often at risk of drug poisoning or drift, the most repetitive and most time-consuming throughout the entire crop cycle. In view of this, AI support is needed as combined with various functional modules on intelligent devices to replace the repetitive and dangerous manual labor during the implementation of crop management.



**Highlights**

Up to now, the application of AI by XAG mainly focuses on two aspects: environmental perception and operation execution. Through intelligent perception, users can quickly and accurately understand the status quo of the agricultural production process, that is, through AI perception technology, "letting people know more". After a user makes a decision, AI assists the intelligent execution of the operation to improve the production efficiency of the operation, ensure the uniformity of execution, and reduce the heavy and repetitive labor directly participated by people, that is, "doing more carefully and efficiently than people" through AI-assisted execution.

**AI Helps to Perceive Agricultural Production Environment**

As to the agricultural environment perception, XAG applies AI to image data processing after aerial photography of the environment. The first part of agricultural environment perception is generating a centimeter-scale HD map. At first, aerial photography with RTK precise positioning is completed by a polar flying remote sensing UAV manufactured by XAG. The flight time of the remote sensing UAV from takeoff to landing is about 40 minutes, and photo shooting is carried out according to the preset picture proportion. The collected image data will be transmitted to the cloud through the network and will be processed on the cloud. Then, the images will be spliced by AI algorithm, during which AI will help identify the content of the image edge, cross-compare with other image edges, and splice the matched images into an overall map. Just like doing a jigsaw puzzle, AI can help replace manual labor after training, and because of the fast computing speed, it can generate a centimeter-level HD map faster



than manual splicing, identifying and generating a HD map of about 200 mu in 10 minutes. The second part of agricultural environmental perception is element identification on the generated HD map. At present, AI can be used to identify farmland boundaries, fruit and vegetable boundaries, cotton emergence rate, weeds, plant diseases, and insect pests, as well as measure rice and wheat yields. The identified content will be applied to the implementation process of intelligent agricultural machinery and can be included in the intelligent agricultural management system to assist farm managers in making decisions.

Accurate data about farmland boundaries and areas is the basis for realizing unmanned, standardized, and large-scale production of agriculture, with which intelligent agricultural machinery equipment can carry out accurate and efficient operation; growers can accurately plan agricultural production materials and avoid waste; agricultural machinery operators can have accurate charging standards and basis for providing socialized agricultural machinery operation services.

#### AI Helps Perform Operations in Agricultural Production Management

In the execution process of agricultural management, XAG applies AI to the control part of the execution unit. The boundaries and obstacles of farmland are clearly marked in the XAG's high-precision map. The execution units, such as agricultural drones and agricultural unmanned vehicles, need to plan their routes in advance. AI algorithms will plan to optimal flight and operation routes to ensure the uniform distribution of routes. Combined with high-precision positioning technology, agricultural drones and agricultural unmanned vehicles can fly or run autonomously.

Meanwhile, these agricultural execution units need to spray agricultural agents while flying or running, and a certain dynamic balance needs to be achieved between the flying or running speed and the amount sprayed. XAG provides a solution to adjust the dynamic balance between the flying speed of agricultural drones and the amount of agricultural agents sprayed through AI algorithms. AI-based flight/vehicle control technology can quickly calculate how many milliliters of agricultural agents should be sprayed per second at which flying/running speed to ensure even distribution in the overall operation process, and it can also make sure the calculated amount just satisfies the use need for the current mapped field, thereby reducing excessive spraying, excessive fertilizer use, and pesticide waste.



#### Outcomes

As of August 31, 2020, the intelligent agricultural solutions provided by XAG have served 8.72 million farmers in 42 countries and regions cumulatively, covering more than 600 million mu of farmland. In the North China Plain, thousands of XAG's agricultural drones are input for the unified pest prevention and control on rice and wheat every year. While reducing pesticide use and improving grain yield and quality, they can save more than 90% of water use every year, avoiding excessive exploitation of groundwater resources in North China for agricultural production, and ensuring the sustainable production capacity of North China as "China's granary". In Northeast China, which is renowned as "the cornerstone of China's food security", cultivated land resources in black soil areas have been overdrawn for many years to ensure food supply. In recent years, XAG's unmanned intelligent agricultural equipment has been widely used in agricultural production activities such as farming, fertilization, and pesticide application in Northeast China, which can help save more than 30% of pesticides and fertilizers, protect black land from soil hardening caused by large-scale agricultural machinery, provide guarantee for sustainable agricultural production in Northeast China, and further improve food quality. In Zambia, Africa, the "traceless" wheat fields managed by XAG's agricultural drones are celebrating a bumper harvest this year because tractors were not used to plant crops, avoiding damage to wheat and increasing grain by about 8%.

### Marketing Service Center Wenling Power Supply Company of State Grid Zhejiang Electric Power Co., Ltd.

#### Big Data Helps Electricity Consumption Optimization and Escorts Enterprises to Reduce Costs and Increase Efficiency with the "Electricity Bill Butler"



#### Corporate Profile

The Marketing Service Center is a business unit directly under State Grid Zhejiang Electric Power Co., Ltd., mainly responsible for marketing intensive business implementation, marketing service monitoring, marketing innovation practices, etc. As a marketing full-service support organization and the highest measurement technology support organization, the Marketing Service Center always incorporates the concept of sustainable development into daily operation management and corporate culture construction, deepens the "power supply + energy efficiency services", cultivates characteristic low-carbon practice brands such as "Online Low-carbon Production and Lifestyle Initiative" and "Tankaka", and develops green productivity to comprehensively promote the construction of beautiful China.

The Wenling Power Supply Company is a wholly-owned subsidiary of State Grid Zhejiang Electric Power Co., Ltd., with a power supply business scope covering the entire Wenling City. It owns 7 functional departments, 4 business support and implementation agencies, 11 power supply stations under its jurisdiction, and 689,000 power supply households. In recent years, the company has deeply cultivated the practice of social responsibility, completed the construction and certification of the social responsibility management system under GB/T 39604, won the title of China Corporate Social Responsibility Management Innovation Enterprise, and been selected among the top 100 enterprises of the 2024ESG Green List for the pioneering service of "Electricity Bill Butler" to help enterprises reduce costs and increase efficiency in China, achieving the sustainable development of itself and society.



#### Background

In recent years, global economic growth has slowed down significantly due to multiple shocks and faces lack of momentum and increasing downward economic pressure, raising concerns of economic recession. For manufacturing-type enterprises, electricity bills account for a large proportion of production costs, and enterprises pay more attention to electricity prices and electricity bills. However, due to many reasons, such as complex electricity bills, rising electricity costs, a changeable policy environment, inaccurate electricity forecasting, etc., enterprises without professional data analysis capabilities and efficient tools lack a clear understanding of their own electricity costs and energy consumption levels, making it difficult for them to seek targeted electricity optimization suggestions. Enterprises are in urgent need to solve how to identify the power consumption law from the massive power consumption data in an intelligent way and select the appropriate power price strategy accordingly.



#### Highlights

State Grid Zhejiang Electric Power Co., Ltd. has innovated a digital value-added service product "Electricity Bill Butler" that integrates intelligent energy diagnosis, precise personalized services, and regular tracking management to help micro, small, and medium-sized enterprises to reduce costs and increase efficiency.

### “Breakdown” of Electricity Bills in a “Clear” Cost Structure at a Glance

Starting from electricity bills and adopting the historical electricity charge data of mass enterprise users as the basic data source, eight key factors affecting the electricity costs of enterprises are deconstructed and screened out, and a digital diagnosis, analysis, and decision-assisting model is built by deeply analyzing the cost components, cost structure characteristics, and cost change influencing factors of enterprises and comprehensively applying multiple technologies such as big data mining, data modeling, machine learning, and simulated statistical analysis.

Based on the “eight-dimension” model and deeply integrated with multi-source information such as electricity price policies and market-oriented transaction dynamics, massive historical data about actual electricity consumption status, electricity bill details, and electric power equipment operation efficiency of enterprises is comprehensively cleaned, sorted out, and summarized to deeply excavate the average benchmarking situation of enterprises in the industry. A detailed “electricity bill health check report” is also generated every month to visualize the potential problems and possible improvements in the overall electricity cost structure of enterprises.

### Health Check to “Tailor” Dedicated Services

On the basis of deconstructing electricity bills, intelligent enterprise users that fail the “electricity bill health check” will be intelligently identified and picked out; a list of key target enterprise users of targeted services can be precisely locked; and graded warnings can be sent to the enterprise users according to their electricity price star ratings upon the monthly average electricity price.

For the users of the first warning level, a reminder notice on the electricity cost optimization will be sent through the State Grid mobile APP, enterprise code, SMS, and other channels; for the users of the second warning level, a reminder notice will be sent actively in place to their intelligent voice phones; for the market-sensitive users of the third warning level, on-site service work orders are generated automatically for enterprise electricity cost optimization, and multi-dimensional digital fitting analysis is performed simultaneously to study the best “solution” for enterprise electricity cost optimization. On-site service customer managers participate in the formulation of the overall “one-policy-for-one-household” service plan to ensure the provision of accurate value-added services.

After enterprises optimize electricity consumption according to the suggestions, a “visual” performance dashboard is set up upon automatic data comparison and intelligent analysis to visualize the “efficacy” of the “electricity bill health check report and optimization solution” that have been utilized by the enterprise through multiple channels, assist in analyzing and studying changes in customer demands, closely track service effectiveness, ensure iterative upgrading of products and services, and accurately match actual customer needs.

### Studying Production Plans to Sort out Optimal Strategies

There are many factors affecting the production plans of some enterprises, which possibly leads to major changes in the production plans. The “Electricity Bill Butler” tailors enterprise-specific strategies on the premise that enterprise users independently report production plans, combining with previous electricity consumption data, deeply analyzing and considering the future production characteristics and electricity consumption trend of enterprises, and assisting enterprise users in selecting reasonable electricity price schemes from the three aspects of electricity transmission and distribution prices, retail packages, and time-of-use electricity pricing, thereby minimizing electricity bills.

“Comparison and selection of electricity transmission and distribution prices” mainly provides the simulated calculation service of electricity transmission and distribution charges under various electricity price schemes for industrial and commercial users with different capacities according to the latest policies of electricity transmission and distribution price adjustment and reform.

“Retail package comparison and selection” refers to the real transaction mode on retail trading platforms, which can achieve the simulated calculation and comparison of three different

retail packages at the same time, thereby effectively assisting industrial and commercial users to determine the optimal price scheme among various retail packages.

“Time-of-use electricity price comparison and selection” mainly serves general industrial and commercial users. Through automatic retrieval of electricity quantity and price files, intelligent price analysis and comparison is performed in mathematical models, which releases the pressure of manual calculation by users and effectively solve the difficulty in selecting time-of-use electricity prices for general industrial and commercial users, especially for small-sized and micro enterprises, under new electricity pricing policies.

### Precise Prediction of Electricity Consumption to Facilitate Systematic Upgrade

Considering the production characteristics, energy consumption characteristics, and other reference variables of enterprises, a “digital intelligent power prediction model” is established to provide auxiliary electricity prediction, reported balance warning, and electricity consumption query analysis services for enterprises. It offers significant support in accurately predicting electricity consumption, further guides the installation and use of reactive power compensation devices, encourages the implementation of electric energy replacement projects, guides participation in power market transactions, and help enterprises reduce costs and increase efficiency.

**Auxiliary electricity consumption prediction:** Provide customized electricity consumption prediction services for enterprises. By analyzing the electricity consumption data of enterprises, such as peak to valley measurements and year-on-year, quarter-on-quarter, and month-on-month growth rates, the energy consumption level of an enterprise in the industry can be determined, and an enterprise electricity consumption data analysis report is generated, facilitating the tailoring of an operational optimization plan for the enterprise.

**Reported balance warning:** Based on the daily electricity data, dynamically track the annual and monthly electricity balances of the entire cycle of enterprise electricity consumption; set the warning rules on the enterprise-reported electricity balance in combination with the actually enterprise-reported electricity quantity; and timely remind customers to adjust their production plans.

**Electricity consumption query analysis:** With visualization tools, users can see the monthly electricity consumption changes of enterprises, intuitively understand the historical electricity consumption analysis, year-on-year growth rates, three-year average growth rates, and other data, obtain the current electricity consumption situation and electricity consumption prediction data online, and therefore understand the basis and method to make better choices.



### Outcomes

Since its comprehensive promotion in Zhejiang Province in September 2023, the “Electricity Bill Butler” service has served more than 350,000 customers, pushed 40,100 “electricity bill health check reports” through multiple channels, and provided more than 30,000 auxiliary electricity consumption prediction services, saving about 300 million yuan of electricity costs for enterprises in Zhejiang Province every year.

While helping enterprises save electricity, the “Electricity Bill Butler” also realizes energy saving and consumption reduction. According to the CO<sub>2</sub> emission factor of electric power issued by the Ministry of Ecology and Environment and National Bureau of Statistics on April 12, 2024, Zhejiang Province will reduce the CO<sub>2</sub> emissions by 167,000 tons every year. Under the guidance of the “Electricity Bill Butler”, enterprises in various industries can promote pollution reduction, carbon footprint reduction, and energy efficiency improvement by means of energy saving, carbon emissions reduction, and green transformation and further accelerate the optimization and adjustment of product structure, energy consumption structure, and raw material structure and process re-engineering, thereby promoting industrial transformation towards high-end, intelligent, and green development.

Representative Actions

State Grid Kunshan Power Supply Company

"Digital Compass" Empowers Planning and Construction of Urban New Energy Facilities



Corporate Profile

Kunshan Power Supply Company of State Grid Jiangsu Electric Power Co., Ltd. ( hereafter referred to as "State Grid Kunshan Power Supply Company" or "the Company") has 12 departments, 2 industrial units under provincial management, 11 business offices under Sanxin Power Supply Service, 336 permanent employees, and labor productivity per capita of 24.1768 million yuan/person/year reported in 2023. In 2023, Kunshan's total social electricity consumption reached 27.711 TWh, covering 1.228 million electric power customers, ranking among the top counties in China. The Company deepens its global digital transformation and has developed 32 auxiliary business decision-making tools based on a single map of Kunshan power grid, among which the "Industry Expansion Plan Comparison and Selection" tool has been recognized by State Grid Corporation of China and promoted nationwide.



Background

Under the backdrop of "carbon peaking and carbon neutrality goals", the development of China's new energy industry has stepped into the "fast lane", and the key lies in the use of digital means to cultivate and develop new quality productivity and promote the construction of a new energy industry chain. As a city ranking first among the top 100 counties in China for 19 consecutive years, Kunshan is rooted in the hinterland of "Yangtze River Delta Integration" and attracts world-class enterprises to settle in. It is a demonstration sample of the high-quality development of China's county economy. In 2023, Kunshan's PV installed capacity reached 848 MW, with a year-on-year increase of 86.57%; the monthly average demand for installation of new individual charging piles was about 1000 households. However, with the rapid growth of new energy, the construction of new energy facilities is challenged by where and how to build them and how to form joint forces to tackle these problems.



Highlights

State Grid Kunshan Power Supply Company pays close attention to the difficulties in rational construction and allocation brought about by the surge of urban new energy facilities. Taking big data as the starting point and relying on the power data advantages of power supply companies, it unites multiple parties to innovate the "tools" for new energy construction and operation guidance in Jiangsu Province, so as to promote the co-construction and sharing mechanisms and energy interconnection among new energy-related parties and make power employees complete their work more easily, enterprises more safe about power connection, and residents more comfortable while charging.

**Multi-party Cooperation to Build a Data "Atlas" for New Energy Construction**

In order to effectively break the data barrier, the Company has set up a new energy information data chain across departments and industries. Taking a multi-dimensional and multi-state power grid as the data base, the whole process from power generation to power consumption of the power grid is covered. At the same time, the data from the Internet of Vehicles platform, Gaode Maps national new energy supervision platform, and the Kunshan "Lu Lu Tong" platform is integrated together for comprehensive collection and unified management, realizing the centralized management and sharing of government and enterprise data.



The workers of State Grid Kunshan Power Supply Company carry out safe electricity inspection for the charging piles

The platform realizes 100% "on-map" management of distributed PV equipment, new energy charging facilities, and new energy storage facilities for users and promotes real-time data sharing among government departments, power supply companies, new energy investors, Gaode Maps, and other relevant parties, thus creating a "data atlas" to guide new energy construction. On this platform, information, such as power load, charging demand, and land resources, can be shared safely, and all parties can quickly and accurately grasp key information, such as market demand and facility distribution, to promote scientific and accurate decision-making.

**Data Convergence to Provide Scientific and Efficient Forward-looking Services**

**Facility building, site selection, and model evaluation for scientific guidance on investment strategies:**

The Company relies on the new energy information data sharing platform and accesses the underlying data of Gaode Maps to deeply understand the actual energy consumption demand of various users, the charging demand of new energy vehicles, and the development potential of distributed PV. It adopts the AHP algorithm to evaluate the charging demand, builds charging facilities, selects charging sites, evaluates models, and draws a "thermal map" for optimizing the layout of charging facilities in the whole city. The map visually shows which areas should be given priority to the construction of charging stations and where residents have the greatest charging demand, thus providing practical investment strategies and guidance for investors and ensuring the scientific and reasonable layout of new energy facilities. Moreover, "Digital Compass" can assess the potential in light storage development and provide the government with a "potential map" for global light storage development, thereby effectively balancing power supply and demand and improving the operating stability and safety of the power grid.

**Providing one-stop new energy services for rational allocation upon big data guidance:**

Through scientific planning and efficient coordination, the Company builds an analysis and calculation model based on electric power big data. According to historical data, it simulates the power load situation in different areas of the city as a reference basis for information such as capacity and scale of new energy facilities. By providing one-stop new energy services for rational allocation, all boundary conditions, such as geographical conditions, safe operation, and policy requirements, are fully considered, covering from new energy consultation, project approval, installation application, construction, and power grid connection to later operation





The workers of State Grid Kunshan Power Supply Company check the dust on the roof photovoltaic panel of an enterprise

and maintenance management. A specific example is using 0.1 m aerial images that are 25 times clearer than commercial maps and the semantic segmentation and recognition algorithm to accurately classify building types and calculate the area where PV systems can be installed on roofs. Another example is, based on the Kunshan energy load characteristic library, utilizing the new energy initial configuration model for dynamic tracking of historical load to accurately calculate the light storage configuration scheme with less investment and fast return for enterprises.



#### Outcomes

Since its operation for 4 months, "Digital Compass" has provided 275 users with new energy construction and operation solutions, which can reduce energy consumption costs by nearly 30 million yuan per year. Relying on a map of Kunshan power grid that contains all elements and bases upon the digital twin technology, "Digital Compass" presents the "potential map" application for light storage development, which has enabled a unified view of 2.47 GW of light storage resources in 11 administrative regions of Kunshan City and met the charging needs of 12,000 residents, boosting the development layout for urban low-carbon industries and reducing carbon emissions by 300,000 tons per year.

In addition, it will successfully solve the transformer overload through the large-scale application derived from the distribution network calculation based on power big data, thus avoiding the investment in distribution network expansion caused by load growth and saving 2 million yuan in infrastructure construction expenditure.

#### Protecting ecological environment

Digital technology can play an important role in improving the digital governance capacity of ecological environment and promoting green and low-carbon transformation and development. It can not only accurately identify and track all kinds of ecological environment data, provide support for scientific governance, stimulate more innovative ecological protection models, but also break data barriers, promote collaborative sharing of environmental information, realize cross-region, cross-department, and cross-country environmental governance cooperation, and encourage more public participation in ecological protection actions.

#### Representative Actions

##### State Grid Wuxi Power Supply Company

##### A New Picture of "Clean and Beautiful Wuxi" Built upon "Power Alarm"



#### Corporate Profile

Wuxi Power Supply Company of State Grid Jiangsu Electric Power Co., Ltd. (hereinafter referred to as State Grid Wuxi Power Supply or "the Company") was founded in 1909 and has navigated a century of development. By the end of December 2022, State Grid Wuxi Power Supply Company had 4,104,200 business customers, 347 substations of 35 kV and above, a power transformation capacity of 68,008,000 kVA, and a total length of 7,955.2 km of 35 kV and above power lines. In the light of the new situation and tasks, the Company will make steady progress and take on responsibilities by firmly ensuring power supply and completing all tasks in an all-round way, thereby making greater contributions to writing a new chapter of "strong, rich, beautiful, and high" modernization in Wuxi.



#### Background

Wuxi, known as the "Pearl of Taihu Lake", owns nearly 30% of the water area of Taihu Lake. Multiple enterprises are headquartered in Wuxi, including 26,394 enterprises in key industries such as textile, chemistry, paper making, iron and steel, electroplating, and food. A series of water pollution accidents occurred in Wuxi in 2022, including the installation of illegal underground pipes by enterprises for sewage discharge, the dumping of waste liquids containing phosphorus and other chemical substances, the discharge of waste liquids through the rainwater piping network, and the tampering of monitoring data to evade regulation.

Meanwhile, the municipal government invests a large amount of money every year to harness Taihu Lake. In 2022, the state invested 10.2 billion yuan to harness Taihu Lake and 11 billion yuan in 2023. In June 2022, the National Development and Reform Commission and other five national ministries jointly issued a new round of the Overall Plan for Comprehensive Water Environment Management in Taihu Lake Basin.

Electric power big data is connected to thousands of households together with the power grid and characterized by large data volume, wide coverage, and high collection frequency. All kinds of smart city application scenarios implemented relying on electric power big data are highly compatible with social governance, which can effectively solve urban management problems.



### Highlights

#### New Mode: Comprehensive Analysis on the Characteristics of Water Governance Data

State Grid Wuxi Power Supply Company owns a wide coverage of electric power data and maintains a high data collection frequency. It collects data every 15 minutes and can accurately analyze various kinds of data. Based on the actual requirements posed by the ecological environment departments, the Company, starting with the data of monitoring indicators from electric power facilities related to water environment governance and downstream water quality environmental monitoring points, accesses the power data from key enterprises at the sources of sewage discharge, agricultural irrigation areas, and sewage treatment plants to calculate the characteristic values of power consumption and compare and analyze the daily power consumption under multiple scenarios upon multiple algorithms for multiple applications, thereby determining whether facilities work normally according to the changes and comprehensively analyzing water pollution sources in Wuxi. At present, the "Power Alarm" water pollution monitoring platform shares data with the Comprehensive Administrative Law Enforcement Bureau of Wuxi Municipal Ecology and Environment Bureau and Wuxi Municipal Ecological Environment Monitoring and Control Center for real-time data analysis and has widely supervised and monitored 29,816 pollution-related enterprises, 167 sewage treatment plants, 2,353 rural sewage treatment facilities, 30 agricultural irrigation points, 13 algae-water separation stations, and 31 cyanobacteria salvage points in Wuxi to make sure sewage treatment meets the related discharge standards.

#### New Model: Promoting the Whole-process Management of Water Pollution Control

Relying on information processing, data visualization, 3D rendering, and other technologies, the Company continuously improves the data quality of the "Power Alarm" water pollution monitoring platform, expands the application scenarios of power data, and provides quantitative basis and data support for accurate decision-making for the government. The "Power Alarm" water pollution monitoring platform solves the deficiency of supervision personnel and under-regulation, and it is more accurate, fair, and convincing than traditional manual monitoring analysis.



A video surveillance device mounted on a power transmission tower in Wuxi waters

the Company has studied the deep connection between power data and equipment discharge according to the preliminary research and analysis results, professional monitoring requirements for environmental protection, and the operation rules of facilities under different scenarios and integrated the production management system (PMS), marketing, distribution automation, and other power data to break through internal and external barriers and create online data analysis tools based on data centers; considering the changes in the electricity consumption of facilities, models, such as electricity consumption behavior of key industries, typical electricity consumption of agricultural irrigation facilities, smooth electricity consumption jitter, environmental impact prediction, etc., have been built to provide government departments with a list of day and night electricity consumption differences

among enterprises and the early warning services for suspected abnormal electricity consumption and assist environmental protection departments to accurately master sewage discharge conditions, thus greatly improving law enforcement efficiency and enabling closed-loop management of monitoring, early warning, and law enforcement verification.

#### New Application: Dynamic Video Monitoring to Preserve Clean Water and Green Mountains

State Grid Wuxi Power Supply Company has carried out research on the image recognition algorithm for cyanobacteria in Taihu Lake and explored a new pattern of "power + ecology" cross-domain data application. The existing video surveillance devices mounted on power transmission towers in Wuxi waters apply the algorithms such as anti-external damage and mountain fire identification in the power transmission video surveillance visualization system to environmental image monitoring and improve the YOLOv8-Grain Depot deep learning algorithm to further extract key information such as the categories and locations of key targets in effective frame images, thus effectively identifying the pollution level of water areas, enabling automatic early warning, and increasing the control efforts.

In addition, the Company has also portrayed a prosperity of sewage treatment facilities to assist precise pollution control. A prosperity analysis model is built upon the power data characteristics of pollution control facilities to determine and evaluate the status grades (excellent, good, moderate, and poor) of pollution control facilities and efficiently analyze the operation and energy consumption conditions of sewage treatment facilities on the basis of in-depth whole-process analysis on pollution discharge, pollution treatment, and pollution control, thus assisting the analysis of pollution control effectiveness and improving the efficiency of water treatment.

The "Power Alarm" water pollution monitoring platform regularly summarizes data, continuously optimizes analysis models, and sums up experience according to actual conditions, providing data support for accurate and scientific pollution control according to law. In 2022, the Company completed 1 comprehensive report and 5 data analysis reports and handed them over to the ecological environment departments of Wuxi City, assisting government departments in achieving true, complete, quantifiable, and traceable full-process supervision, as well as providing replicable cases for national water environment governance and a basis and reference for other industries to learn from.



### Outcomes

On the "Power Alarm" water pollution monitoring platform, more than 7,800 sewage outfalls into rivers (lakes) in Wuxi have been recorded; by 2022, all sewage outfalls into rivers (lakes) listed in classified remediation have been remediated completely, and the completion rate of remediation has reached 100%.

Through the joint investigation and rectification measures implemented by the government and enterprises, the water environment quality of Wuxi City has been effectively improved, promoting the protection of aquatic biodiversity in Taihu Lake Basin and the continuous ecological supporting role of Taihu Lake as a new benchmark for lake management nationwide. In 2022, the proportion of Type III grade water reached 84% in 25 surface water sections under the national monitoring program in Wuxi, with a year-on-year increase of 4%; the proportion of Type III grade water reached 94.4% in 71 surface water sections under the provincial monitoring program, with a year-on-year increase of 1.4%. Both indicators reached the highest level since the assessment, and the proportion of Type III grade water reached 100% in river-type sections for the first time.

In addition, compared with the traditional manual spot check "on foot", the "Power Alarm" water pollution monitoring platform increases 490 times the inspection efficiency and the investigation efficiency to 100%, reducing the pressure on the front-line law enforcement personnel of ecological environment departments and saving a lot of manpower, material resources, and financial resources. With clear water and rich ecotourism resources in the Taihu Bay area, Wuxi is attracting more and more tourists and has become one of the scenic spots with the largest number of tourists each year.



## State Grid Longyou County Power Supply Company

### Whole-process Electric Carbon Emission Measurement System for Green Development



#### Corporate Profile

The Longyou County Power Supply Company of State Grid Zhejiang Electric Power Co., Ltd. (hereinafter referred to as "State Grid Longyou County Power Supply Company" or "the Company") was established in 1984, with 212 long-term contract employees, 4 collective employees, 9 functional departments, 6 business support and implementation organizations (5 power supply stations and 1 material supply sub-center), 1 provincial industrial unit, and 12 teams. It has successively won honors such as the titles of National Civilized Unit, AAA Enterprise "Obeying Contract and Valuing Credit" of Zhejiang Province, and Safe Unit of Quzhou City, as well as the Quality Award of People's Government of Longyou County, etc.



#### Background

At present, the accounting of carbon emissions from electricity consumption in China's electric power system is mainly based on statistical methods, which have certain deficiencies in data accuracy, real-time performance, and equipment platform support:

**Coarse granularity:** There are no carbon emission factors below provincial level, making it difficult to carry out the green transformation work down to grass roots;

**Poor timeliness:** The data about carbon emissions involved in carbon trading are updated late and timeliness cannot be guaranteed;

**Difficulties in supervision:** Manual labor is highly involved in the carbon footprint verification process, causing great difficulties in supervision and data non-traceability.

In view of the above issues, State Grid Zhejiang Electric Power Co., Ltd., China Electric Power Research Institute Co., Ltd., and Huadian Electric Power Research Institute Co., Ltd. have jointly developed the first electric carbon meter in China and a whole-process carbon measurement system covering "power generation, transmission, transformation, distribution, and consumption" and launched the pilot application project in Longyou Economic Development Zone, Quzhou, Zhejiang, achieving carbon flow tracking and accurate measurement in the whole process of "power generation, transmission, and consumption" and providing reliable and accurate data support for the government, enterprises, and power grids.



#### Highlights

##### Carbon emission analysis algorithm

A power generation capacity-carbon emission model for fossil carbon source units on the "source" side is established to calculate the carbon emission factor on the source side in real time by using the on-grid energy of power generator units; based on the characteristics of power flow distribution, a carbon emission measurement model for the whole process is established, and a carbon emission measurement method with high spatial and temporal resolution is proposed for power transmission and distribution networks.

##### Electric carbon meter

Based on the design proposal of the distributed carbon measurement terminal and reuse of the intelligent watt-hour meter architecture, the first electric carbon meter that combines both electric energy measurement and carbon emission measurement functions in China has been

developed and fully applied at power plants, substations, and the user side to realize localized real-time dynamic calculation of carbon emission factors. It solves the difficulty of traditional carbon accounting methods in reflecting the space-time difference of carbon emission factors, meets national standard requirements on legal measuring instruments, and is traceable, providing equipment support for carbon emission data specification and legal measurement. In addition, a security chip that supports the domestic data encryption algorithm and the digital certificate system for the State Grid encryption service is embedded in the electric carbon meter to fulfill identity authentication and data transmission protection with the electric power system.

##### Carbon flow visualization

Based on the Collection 2.0 system planned by the State Grid, the first whole-process electric carbon flow monitoring platform has been developed and deployed to realize minute-level carbon emission factor calculation and carbon flow display. It supports retrieving the carbon emission data and electric-carbon conversion information of specific time periods and characteristic nodes, thus enabling accurate tracking and data traceability of carbon flow in the whole process of "power generation, transmission, and consumption". Meanwhile, the storage and management plans for carbon measurement data of electric power systems based on edge computing are also put forward to ensure the integrity and accuracy of data, prevent data from being tampered with or forged and ensure data security.



The new generation of electricity consumption information collection system



#### Outcomes

Real-time, effective, and reliable carbon data can help enterprises dynamically adjust production plans and reduce carbon consumption per unit product, provide a basis for enterprises to cope with carbon tariffs in the future, and ensure the competitiveness of enterprise products in the international market. By assisting users to perform carbon accounting, the project has now effectively reduced the carbon emissions generated from the purchased electricity of users in Longyou Economic Development Zone, Quzhou, Zhejiang by more than 50%.

In the future, the carbon measurement results of the electric power system can provide data support for enterprises, research institutions, governments, and relevant departments, assist enterprises to discover high emission points and links in traditional energy uses, promote relevant research institutions to innovate and develop new energy technologies according to the carbon measurement results, and promote the government to formulate more scientific and effective energy conservation and emission reduction policies on promoting clean energy utilization, promoting green power production, strengthening energy efficiency management, etc., thereby achieving the objectives of greenhouse gas emission reduction and carbon emission reduction. The carbon measurement results of the electric power system can provide a reference for regions where carbon trading markets or carbon pricing mechanisms have been established. Power companies and related industries can obtain carbon emission rights by reducing carbon emissions, stimulating enterprises to actively reduce carbon emissions.



## State Grid Nantong Power Supply Company

### Smart "Electric Eye" - Weaving a Rural Domestic Sewage Supervision Network



#### Corporate Profile

The Nantong Power Supply Company of State Grid Jiangsu Electric Power Co., Ltd. (hereinafter referred to as "State Grid Nantong Power Supply Company" or "the Company") is now a national large-scale power supply enterprise affiliated with State Grid Jiangsu Electric Power Co., Ltd. It is responsible for the power grid development, transmission, and distribution and power service tasks of the three districts of Chongchuan, Tongzhou, and Haimen in Nantong City and Nantong Economic and Technological Development Zone, as well as the three cities of Rugao, Hai'an, and Qidong and one county of Rudong, covering 4.925 million households. At present, it owns seven 500 kV substations, fifty-seven 220 kV substations, and one hundred and sixty-three 110 kV substations, forming a strong power grid interconnected with a 500 kV seven-station ring network, a 220 kV double-area ring network, and 110 kV and below power grids. In recent years, the Company has deeply implemented the new energy security strategy of "four revolutions and one cooperation" proposed by General Secretary Xi Jinping, adhered to the customer-centered and market-oriented approach, took the lead in building a modern service system, fully fulfilled its power supply service responsibilities, and made efforts to optimize the power business environment, thus playing an important role in serving economic and social development and continuously improving people's livelihood.



#### Background

Nantong belongs to the Jianghai Plain area, with a developed water system and numerous ditches and ponds. There are now about 2.12 million rural permanent residents, most of whom live scattered. According to the medium and low standard of 100 liters of water consumption per person per day, more than 210,000 tons of domestic sewage are produced every day. Therefore, a large number of rural domestic sewage treatment facilities need to be installed in wide areas as scattered and may change frequently. The Nantong Municipality attaches great importance to the quality of the rural water environment. However, the lack of scientific and reasonable management and protection mechanisms and a low frequency of manual inspection on domestic sewage treatment equipment easily lead to operational failure of installed facilities for domestic sewage treatment, such as unstable operation or shutdown of domestic sewage treatment equipment, and subsequent poor water quality, slowing the progress of rural domestic sewage treatment in forms of unscientific treatment mode and unstable treatment effects.

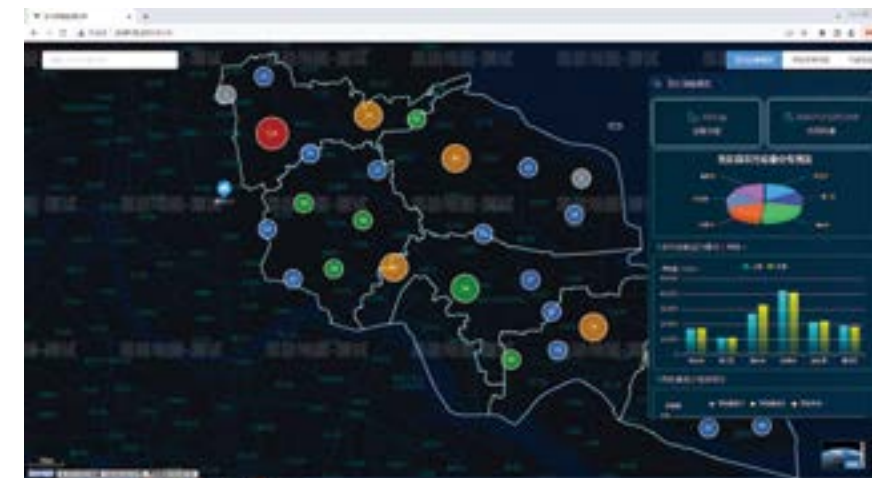


#### Highlights

Rural sewage treatment equipment needs power support to operate normally. State Grid Nantong Power Supply Company has created the electric power big data analysis product for rural domestic sewage treatment facilities. Combining with independent meter electricity consumption account data and the sewage discharge user information list of domestic sewage treatment equipment, it can remotely monitor and understand the electricity consumption and operation status of domestic sewage treatment equipment anytime and anywhere.

##### Scientific Judgment of Equipment Operation Status for Early Warning

There is a certain correlation between the peak period of domestic sewage discharge and the



Monitoring of electricity consumption of domestic sewage treatment equipment by the electric power big data analysis product

electricity consumption of villagers. The Company has built an analysis model to correlate and compare the electricity data of domestic sewage treatment equipment with the electricity consumption data of sewage discharge users and "portrays" the electricity consumption of domestic sewage treatment equipment, thus accurately judging the operation status of domestic sewage treatment equipment, discovering sewage treatment equipment that may operate abnormally, and sending classified warnings. In this way, it effectively improves the capabilities of intelligent monitoring on domestic sewage treatment equipment.

##### Forecast of Equipment Issues in Special Weather upon Responsive Feedback

The discharge of rural domestic sewage is presented with obvious seasonal surges. According to the latitude and longitude information about domestic sewage treatment facilities, State Grid Nantong Power Supply Company obtains meteorological data such as wind speed, wind direction, humidity, and air pressure of the nearest meteorological stations. By using historical meteorological data and historical electricity consumption data of these facilities, the Company has innovated an abnormal prediction model for domestic sewage treatment facilities based on meteorological data in the electric power big data analysis product for rural domestic sewage treatment facilities, and carries out correlation analysis on



Monitoring domestic sewage treatment equipment by incorporating meteorological information

the electricity consumption of domestic sewage treatment facilities in various regions and meteorological data around equipment. During extreme weather periods such as summer and winter, when the power consumption of domestic sewage treatment equipment suddenly increases or decreases and greatly deviates from the power consumption predicted by the model according to meteorological data, the abnormal operation of rural domestic sewage treatment facilities in each area can be predicted and warnings can be sent out immediately.

**Perception of Equipment Operation in One Panoramic View**

Based on one multi-dimensional and multi-state "power grid map", the Company incorporates various key power indicators of domestic sewage treatment equipment into the electric power data analysis product for rural domestic sewage treatment facilities. On a large screen, the monthly operation status and early warning information of domestic sewage treatment equipment in each region are displayed quickly, intuitively, and comprehensively. Through remote monitoring, instead of manual on-site inspection one by one, the operation status and rules of domestic sewage treatment equipment can be grasped, and abnormal operation problems can be discovered in domestic sewage treatment equipment as soon as possible.

**Collaborative "Data Support" for Improving Management Quality and Efficiency**

The Company outputs the operating conditions and early warning analysis results of rural domestic sewage treatment facilities in different areas in each month from the electric power big data analysis product for rural domestic sewage treatment facilities, and provides them to Nantong Municipal Ecology and Environment Bureau to provide data support and basis for timely management and maintenance of rural domestic sewage treatment equipment. Nantong Municipal Ecology and Environment Bureau, in cooperation with village committees, timely carries out on-site inspection on the domestic sewage treatment facilities that may operate abnormally, and then feeds back the inspection and resolution results of domestic sewage treatment facilities to the Company synchronously. According to the feedback information, the Company gradually improves the accuracy of monitoring and analysis on the operation status of domestic sewage treatment equipment and better plays its role of an "electric power butler".



**Outcomes**

By replacing traditional manual inspection operation and maintenance methods with electric power big data analysis, the Company efficiently detects the operation of rural domestic sewage treatment equipment, conveniently improves the capability of monitoring on domestic sewage treatment equipment, reduces manpower investment and time, lowers operation and maintenance costs by 40%, and improves human efficiency to more than 60%. Through intelligent early warning, it provides basis and support for the Nantong Municipal Ecology and Environment Bureau to strengthen the operation and management of rural domestic sewage treatment equipment. A total of 27 equipment issues were found, equipment maintenance was completed to 100%, and the monitoring indicators for rural domestic sewage in Nantong City were improved by 19 percentage points year on year.

The electric power big data analysis product of rural domestic sewage treatment facilities has covered 1,091 rural domestic sewage treatment facilities in 746 administrative villages, forming a comprehensive monitoring network of domestic sewage treatment facilities. The normal operation rate of equipment has increased to 92.3%, minimizing idle or long-term shutdown of equipment; 19 high-emission users have been found not to have installed domestic sewage treatment facilities; relevant parties have been indirectly assisted in time-limited rectification, improving the coverage and utilization rate of rural domestic sewage treatment equipment and achieving domestic sewage treatment within the "last kilometer".

**Zhejiang VisionBlue Technology Co., Ltd.**

**"Blue Circle" - A Project for Marine Plastic Pollution Control**



**Corporate Profile**

Zhejiang VisionBlue Technology Co., Ltd. (hereinafter referred to as VisionBlue) is a national high-tech enterprise focusing on the Internet of Things and blockchain technology for marine sustainable development. Its vision is to create a clean, healthy, productive, predictable, safe, accessible, and inspiring ocean.



**Background**

With the rapid development of globalization and integration, the world is undoubtedly facing how to effectively control marine plastic waste. Zhejiang Province is located in the middle of China's eastern coastline, with a sea area of 260,000 square kilometers, 4350 islands, and a coastline of 66,00 kilometers long. It boasts the largest number of islands and the longest coastline in China. Therefore, it is under increasing pressure of improving marine environmental protection and controlling marine plastic pollution.

In 2020, the Department of Ecology and Environment of Zhejiang Province, the People's Government of Taizhou Municipality, and VisionBlue jointly initiated the "Blue Circle" Project. Through the leadership of the government and enterprises, industry collaboration, and public engagement, a digital management platform and a physical collection network have been established according to the characteristics of marine garbage generation and distribution. A recyclable value chain covering marine garbage collection, transport, recycling, and international high-value utilization is enabled by big data and operates in a market-oriented manner, raising the purchase price and sales price of waste plastics, greatly reducing financial investment, and allowing the participating fishermen to earn money and enterprises to have the motivation to develop, thus forming a virtuous cycle of marine plastic waste management.



**Highlights**

**Multi-party Governance with Incentives and Penalties**

As early as 2019, the Taizhou municipal government initiated an intelligent pollution control model called "Ocean Cloud Warehouse" to connect all links from marine plastic waste collection and transport to supervision by relying on "intelligent equipment + big data + blockchain technology", ensuring that ship pollutants can be collected, removed, and conveniently managed. "Blue Circle" is an upgrade based on the "Ocean Cloud Warehouse", expanding the scope of marine pollutant control from ship oil pollution to marine plastics.

By setting up the marine plastic waste collection points called "Little Blue Houses", the project has attracted a large number of coastal residents to join in and built a three-dimensional collection network consisting of collection teams. The persons in charge of the collection sites scan the intelligent equipment worn by the front-line collectors to confirm that their action track is within 1 km of the coastline, and then scale the plastic garbage and recycle the garbage at a price higher than the market price. In this way, the coastal residents can increase their income by about 1,200 yuan per month, which greatly stimulates the enthusiasm of the public to participate.

In addition, the APP related to the “Blue Circle” model automatically reminds the ships entering the nearshore monitoring area of logging in and actively declare the waste through the “electronic fence” and intelligently match and notify the collection ships nearby to receive and transfer the waste; a “three-color code” pollution supervision system is established to evaluate the registered ships under the jurisdiction with scores, implement classified supervision, and list undeclared pollution-related ships onto the “blacklist” of fishing boat environmental protection as key supervision objects identified through procedures, facilitating the verification and disposal of more than 6,000 ships.

**Multi-point Storage Distribution and Intelligent Decomposition**

In addition to collecting plastic waste, the “Little Blue Houses” also complete preliminary garbage classification, packaging, and compression and bundling with compressors to reduce the volume of garbage and lower the corresponding transport cost by 80%. The treated garbage will be transported to the “Ocean Cloud Warehouse”, the mini intelligent unmanned factory for oil pollution treatment where has seven functional modules: oil pollution reduction, domestic sewage pretreatment, domestic garbage classification and compression, waste oil collection, waste lead-acid battery storage, emergency material storage, and control center unit. After preliminarily crushed in the factory, the plastics will be sent to the pelleting factory of VisionBlue and then made into phone cases, clothing, shoes, and other commodities according to customer needs.

As of 2023, Taizhou has built 61 “Ocean Cloud Warehouses” at 26 coastal ports and terminals and 15 “Little Blue Houses” for marine waste sorting and temporary storage.

**Traceability Certification to Achieve High-value Utilization of Marine Plastics**

With the development of sustainable development, the market for recycled environmental protection materials is expanding increasingly. However, proving that materials come from marine litter poses a challenge. Relying on the Internet of Things and blockchain technology, VisionBlue has developed and built a visualized closed-loop management system for the whole process of “collection, storage, transportation, recycling, and manufacturing” of marine plastic waste, enabling the visual traceability, carbon labeling, and carbon footprint calibration of each process and data of marine plastic waste recycling. Internationally certified plastic recycled particles will be purchased by international companies that focus on low-carbon and environmental protection at a price that is about 165% higher than the price of traditional recycled plastics to achieve market-oriented recycling.

In addition to being allocated to coastal collectors who recycle marine plastics near the coastal zone, about 20% of the high-value utilization premium generated through recycled plastics trading will be used for the “Blue Fund for Common Wealth” to provide value-added services, such as material subsidies, direct product sales, green credit, social protection, etc., to accurately benefit the collection groups.



**Outcomes**

“Blue Circle” has become the largest project in China to recycle marine plastic waste. Up to now, 61,800 persons and 10,200 ships have joined the project, and 237 domestic and foreign enterprises have joined the relevant industrial chain, collecting and treating 13,400 tons of marine waste cumulatively, including more than 2,700 tons of plastic waste, reducing carbon emissions by about 3,460 tons, and increasing the annual income of front-line collectors by about 13,000 yuan. The “Blue Fund for Common Wealth” has cumulatively provided 131 million yuan of green low-interest loans to fishermen, achieving marine environmental governance, resource circulation, common prosperity, and integrated development<sup>14</sup>.

**Enhancing public services**

From health management to transportation, from entertainment and education to social interaction, digital services have permeated almost every aspect of our lives. They have vastly enriched our daily experiences and made life more convenient and comfortable. At the same time, the development of various social media platforms, short video apps, and other emerging platforms, has provided people with more diverse and open channels for information acquisition and communication, promoting cross-regional cultural exchange and integration.

**Representative Actions**

**Beijing Baidu Netcom Science Technology Co., Ltd.**

**Baidu Maps Provides “Smart” Solution to Urban Parking Woes**



**Corporate Profile**

Baidu Maps is committed to the development strategy of “a new generation of AI-powered maps”. With location-based services as the foundation and AI as the engine, it provides solutions for sectors such as smart transport, smart logistics, smart vehicles, smart cities, smart industries, and smart finance, empowering the digital transition and intelligent upgrade of various industries. Baidu Maps currently serves over 1 billion users worldwide. With a leading AI-powered data collection and editing team, it has achieved 96% AI-powered data processing. The service covers 11 million kilometers of roads, encompasses 180 million POIs globally, and boasts over 2 billion panoramic photos.



**Background**

With the social and economic development and progress, cities are seeing an increase in both public space construction and traffic volume year after year. For large venues with concentrated parking demands, such as major transportation hubs, large shopping centers, and government complexes, as traffic flow gradually increases, the public’s travel experience will be greatly affected if there are no corresponding solutions in place. When digital upgrade alone isn’t enough to solve parking woes, more and more companies and organizations are realizing that building smart parking management capabilities has become a necessity.



**Highlights**

To tackle the headache of urban parking, Baidu Maps has rolled out its “Smart Space Integrated Solution” leveraging its expertise in artificial intelligence. This solution has been successfully implemented across a variety of scenarios such as shopping malls, train stations & airports, city streets, highway service areas, and hospitals. It offers a range of services, including parking spot reservations, automatic parking space allocation and navigation, automatic parking record-keeping, indoor AR walking navigation to store, reverse car-finding navigation, and one-click payment. It dramatically cuts down the time people spend parking, which not only efficiently enhances the digital management of parking and space but also boosts the sustainable development of urban transportation, making parking less of a headache for drivers.



### Highway Service Area Solution

There are about 3,200 service areas in China, and it's estimated that there will be around 4,000 in the future. With the main lines of the national highway network basically completed, the focus of service area development is gradually shifting from expansion to operations, with a push towards developing smart services. Currently, there are relatively mature hardware and software solutions for camera surveillance, smart public toilets, cashier systems, and energy utilization statistics in highway service areas. However, there hasn't been any intelligent navigation applications or smart operational decision-making solutions based on popular apps with nationwide usage.

Based on the scalable replication and expandability of highway service area scenarios, Baidu Maps has exclusively launched the upgraded "Baidu Maps Highway Service Area Solution". Taking the Ningyang Highway Service Area as an example, Baidu Maps has created an innovative "parking guidance" service for highway service areas. It features a refined classification and display of different parking spaces, as well as precise parking guidance within the service areas. This helps drivers quickly enter and exit the area, greatly enhancing the social and economic value of service area operations. It mainly boasts two functions:

1. Parking space level navigation: Users can select an available parking space on the map app and initiate navigation with one click, which will directly guide them to the space. This allows for quick parking, improving user parking efficiency and parking lot management.
2. Service area zone navigation: When users navigate to the entrance of the service area, they will be prompted to select their intended destination: gas station, charging station, restroom, rest area, or other (no selection/cancel). Based on the selected destination, the system can automatically assign available parking spaces to users and activate internal area fine-grained navigation, such as real-time guidance to parking spots, charging stations and gas stations.

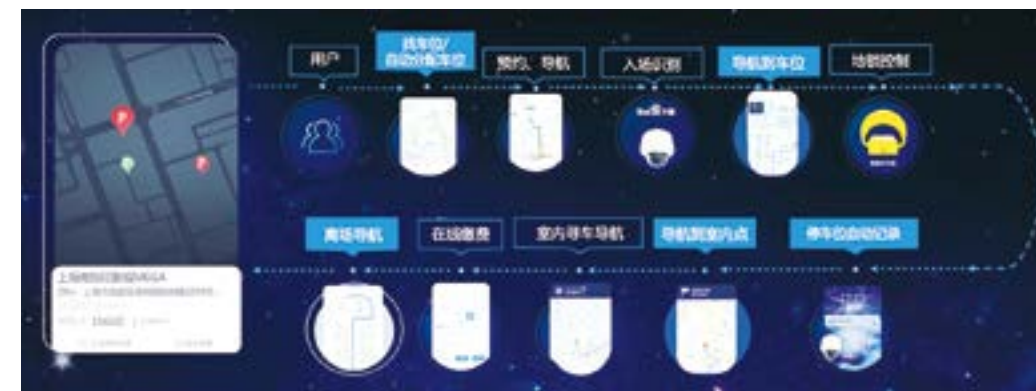
### Smart Parking Shopping Mall

Thanks to the smart mall solution provided by Baidu Maps, Shanghai Nanxiang Incity MEGA not only offers smart parking features like parking space reservation, automatic allocation upon entry, automatic parking space recording, reverse car-finding navigation, and one-click payment, but also provides users with intelligent experiences such as indoor navigation and AR walking navigation for store guidance. This optimizes the overall "indoor space" experience for parking + scenarios , creating an intelligent parking system that integrates smart parking with mall navigation.



Integrated "outdoor + parking + indoor" navigation

This system is made up of four main modules: parking information release, parking guidance, parking services & intelligent parking lots, and an intelligent parking management platform. By integrating information across the entire shopping and parking process, including software, hardware, and data centers, it has achieved intelligent capabilities such as parking space reservation, automatic allocation upon entry, automatic parking space recording, indoor navigation to store, AR walking navigation, reverse car-finding navigation, and one-click payment. When shopping at Nanxiang Incity MEGA, users can search for their desired store on Baidu Maps and start navigation. The "Indoor Navigation to Store" feature will then guide them directly to their destination. Moreover, the real-scene positioning of AR indoor walking navigation can also help users find their desired stores more intuitively in complex indoor layouts. Baidu Maps' smart online-to-offline services not only provide users with an intelligent shopping experience, but also help shopping malls enhance their digital management capabilities. They effectively address parking issues around commercial districts, contributing to improved urban traffic efficiency.



Indoor and outdoor integrated navigation parking solution



### Outcomes

Baidu Maps has connected its parking data center with its intelligent parking software and hardware service systems. Using AI, big data, and cloud computing, it creates a smart experience that covers the entire parking process. As we can see, this capability not only empowers businesses but also brings convenience to the daily lives of citizens. Currently, Baidu Maps' Smart Space Integrated Solution has not only been applied to highway service areas and shopping malls but has also been implemented in cities. In collaboration with the Yinchuan government, Baidu Maps has built the country's first city-level intelligent parking system. While providing users with efficient and convenient intelligent services, it has also accelerated the development of smart cities across regions.

## China United Network Communication Group Co.,Ltd.

### 5G+AI Empowers Primary Healthcare in Hainan, Alleviating Healthcare Challenges for Residents



#### Corporate Profile

China United Network Communication Group Co., Ltd., was formed on January 6, 2009, from a merger of the former China Netcom and the former China Unicom. The company has branches in 31 provinces (autonomous regions, municipalities) across China and several countries and regions overseas. It boasts an intelligent and comprehensive digital information infrastructure that covers the whole country and connects to the rest of the world. The company is going full steam ahead on the main track of the digital economy, making "broad connectivity, massive computing power, big data, extensive applications, and robust security" its core businesses. It has been listed among the "Fortune Global 500" for fifteen consecutive years, ranking 267th in the 2023 Fortune Global 500 list.



#### Background

There are over 3,000 primary healthcare facilities in Hainan Province, China. However, less than a third have licensed village doctors, and the community-level outpatient rate is under 50%, lower than the national average. Access to healthcare has become a challenging issue for ordinary people in Hainan. China Unicom Hainan has been earnestly implementing the national strategy of building Hainan into a free trade port, and focused on addressing issues such as the unbalanced allocation of health resources and weak primary healthcare services in Hainan. By promoting the in-depth integration of advanced digital technologies such as 5G, AI, big data, cloud computing, and IoT with healthcare, China Unicom Hainan has played a positive role in helping Hainan achieve its goal of "minor illnesses treated locally and major illnesses treated on the island" at an early date.



#### Highlights

##### Smart Diagnosis: Empowering Primary Healthcare Institutions with Six Enhanced Diagnostic Capabilities

China Unicom Hainan is building a "5G + AI remote diagnosis platform" to bring 5G tech upgrades to 2,693 village clinics and 340 township health centers across the province. By deploying 5G remote diagnostic facilities in primary healthcare institutions, it has gradually covered all secondary and tertiary hospitals across the province through a tiered diagnosis and treatment platform. China Unicom Hainan has leveraged 5G and AI to enable the downward transfer of diagnostic capabilities in six major specialties, which enhances the diagnostic and treatment capabilities of primary healthcare institutions throughout the province, and promotes the transformation of primary healthcare towards remote, online, and digital delivery.

**Establishing an AI-assisted diagnosis system:** Through an AI-assisted diagnosis system, community-level doctors can receive support in patient consultations and EMR documentation. Meanwhile, the system will push EMR quality inspection information to the national health information platform, allowing for precise display of EMR-related business information from all primary healthcare institutions based on multiple criteria. This provides management departments with a tool to monitor the quality of community-level diagnosis and treatment.

**Upgrading the 120 command and dispatch system:** China Unicom Hainan has upgraded the 120 command and dispatch system in Hainan Province. This includes upgrading the existing command and dispatch subsystem and geographic information subsystem, as well as building new subsystems for mobile phone positioning, smart emergency triage and dispatch, major incident early warning and handling, patient vital signs monitoring and transmission, and networked hospital pre-notification. These improvements aim to minimize the time it takes for patients to reach the hospital for emergency treatment, thereby protecting people's lives.

**Building community-level mobile clinics:** These mobile clinics, equipped with general practitioner workstations, are designed for village clinics and township health centers. Acting as integrated smart health terminals, they leverage 5G network capabilities to provide a wide range of health checkup services and diverse medical capabilities. These clinics provide village doctors with strong support for their work in communities.

##### Smart Rescue: Seamlessly Transitioning from Pre-hospital Emergency Treatment to In-hospital Treatment

To address the urgent need for rapid treatment of critically ill patients at the community level, China Unicom Hainan has built a 5G-based smart emergency rescue platform and a province-wide emergency rescue system. China Unicom Hainan has upgraded 230 ambulances across the province with 5G technology, equipped township health centers with 5G emergency backpacks, and provided one mobile CT scanner for each of the five regional health centers. Simultaneously, it has upgraded the province-wide 120 command and dispatch platform, creating a unified platform for centralized management throughout the province. Leveraging 5G network technology, China Unicom Hainan has connected primary healthcare facilities, ambulances, and emergency centers, enabling seamless data transmission and information sharing. By establishing a real-time remote consultation platform linking ambulances with in-hospital specialists, it has created an integrated, streamlined process for pre-hospital and in-hospital emergency treatment. This allows patients to be "admitted upon entering the ambulance", saving valuable treatment time for critically ill patients and improving efficiency in treating acute, severe, and critical illnesses.



#### Outcomes

China Unicom Hainan has been continuously exploring how 5G can empower healthcare and protect people's lives. With various initiatives gradually being implemented, digital medical equipment has become more sophisticated and advanced. This has effectively enhanced the capabilities of primary medical treatment and emergency response in Hainan Province. The unbalanced allocation of health resources has been alleviated, allowing the general public to access better health services. In close to a year since its launch, Hainan Province's 5G community-level healthcare platform has been used over 700,000 times, serving over 500,000 people. The platform saves time and transportation costs for community-level residents, improving their healthcare experience.

Promoting equality and inclusion

By driving progress in digital education, telemedicine, and smart agriculture, digital technology can overcome geographical and resource constraints, bringing high-quality services to remote areas and low-income groups, and bridging the development gap between urban and rural areas and across regions. The inclusion and accessibility of digital technology can help promote social equity and justice, alleviate global poverty, and achieve common prosperity.

Representative Actions

Alibaba Group

Leveraging Technology to Help Build a Barrier-free Environment



Corporate Profile

Alibaba Group was founded in 1999 in Hangzhou, China by Jack Ma, a former English teacher, and 17 other co-founders from diverse backgrounds. From the very beginning, all founders firmly believed that the Internet could create a level playing field, allowing small businesses to expand through innovation and technology, and compete more effectively in both Chinese and international markets. Since launching its first website to connect Chinese SMEs with global buyers, Alibaba Group has evolved into a holding company with six core business groups: Taobao and Tmall Group, Alibaba International Digital Commerce Group, Cloud Intelligence Group, Local Life Group, Cainiao Group, and Digital Media and Entertainment Group, as well as various other businesses.



Background

According to reports, by the end of 2023, China had over 290 million people aged 60 and above, and this number is expected to exceed 300 million by 2025. In addition, there are 85 million people with disabilities. Digitalization has made life easier for many, but seniors and people with disabilities still face barriers in accessing and using digital technologies. This can even cause them to fall out of step with social progress, creating a "digital divide".

"Information accessibility" refers to using technology to bridge the gap for people who, because of disabilities or their environment, can't access information the same way others do, ensuring that all groups can access and use information equally, conveniently, and safely. Alibaba Group actively supports the United Nations 2030 Agenda for Sustainable Development. It is committed to bridging the "digital divide" through technological innovation, achieving information equity and sharing in a civilized society through inclusive technology, and enabling people with disabilities to enjoy the benefits of social and technological development.



Highlights

Accessible Technology

In 2019, Alibaba Group established the Alibaba Information Accessibility Committee to coordinate and promote the accessibility and age-friendly upgrades of digital products. It developed the "Information Accessibility Developer Guide" to help developers enhance their understanding of accessibility and incorporate it into the entire lifecycle of products and

services, starting from the product development. By the end of 2023, all major apps under Alibaba had completed the accessibility and age-friendly upgrades, covering various digital life and work scenarios including shopping, mobility, entertainment, and communication. Taobao, Ele.me, Goofish, Amap, and Youku have all been recognized as outstanding examples in the first accessibility and age-friendly upgrades of internet applications by the China Academy of Information and Communications Technology. Alibaba Group has also made 11 patents related to accessibility and age-friendly upgrades freely available to the public, promoting the information accessibility and sharing of age-friendly technologies.

Barrier-free Consumption

In terms of shopping, Alibaba Group has developed "OCR" technology for Taobao app that can convert text on product detail images into speech, allowing visually impaired users to "shop by listening". In the fiscal year 2023, Taobao and Tmall apps served over 320,000 visually impaired users. In terms of food ordering, Ele.me provides a screen reader function for visually impaired users, allowing them to easily buy food without having to see it. In terms of grocery shopping, visually impaired users can use the screen reader guidance on the Freshippo app to order groceries by sliding their fingers. In terms of purchasing medicine, in June 2023, Alibaba Health introduced the world's first custom font featuring "Braille-Chinese" conversion and phonetic annotation functions. This innovation helps improve the convenience of Braille applications in various scenarios, such as product packaging design and artistic creation, building a bridge for visually impaired individuals to communicate with the world.

Smooth Communication

DingTalk has launched an accessibility work platform, utilizing technologies like speech-to-text and AI real-time subtitles, to help the hearing-impaired seamlessly participate in video conferences, live streams, and online courses. As of March 31, 2023, the Accessibility Work Platform had covered learning and working scenarios for hearing-impaired individuals in more than 80 cities across 31 provinces within the China Association of the Deaf and Hard of Hearing system. Cloud Intelligence Group has created a digital avatar named Xiao Mo using AI technology. This avatar can both understand and use sign language, helping to bridge the communication gap between the deaf and hearing. Xiao Mo is now available on Alipay and has even been used for sign language interpretation at the Asian Para Games in Hangzhou. By the end of 2023, the coverage had been extended to 46 scenic areas and 658 attractions around West Lake, with sign language interpretation services available at locations such as the Southern Song Dynasty Deshou Palace ruins and the China National Tea Museum.

Barrier-free Mobility

Since 2017, Amap has successively launched accessibility navigation information, such



Amap's "Wheelchair Navigation" feature now covers 50 cities across China



as accessible restrooms and elevators. In November 2022, Amap launched a "Wheelchair Navigation" feature, which automatically avoids routes with underpasses or pedestrian bridges that lack elevators for wheelchair users, providing them with their own exclusive mobility navigation. As of March 2024, Wheelchair Navigation has been rolled out in 50 cities, including Beijing, Shanghai, Hangzhou, Chengdu, Shenzhen, and Guangzhou.

#### Easy Access to Cultural and Entertainment Activities

In the fiscal year 2023, the "OCR Program" continued its collaboration with the China Braille Library and Zhejiang University, jointly launching "OCR Program 2.0." Alibaba Cloud will offer free storage and computing resources to help the library move its audiobooks, e-books, and accessible movies to the cloud, making it easier for visually impaired individuals to access these cultural resources anytime, anywhere. Visually impaired individuals across the country can have the China Braille Library place orders on their behalf when borrowing books, and enjoy free pick-up and return services provided by Cainiao. Youku has launched an "Accessible Theater" feature, which processes audio-visual works to make them accessible, eliminating barriers for visually impaired individuals to enjoy videos. By the end of 2023, Youku's "Accessible Theater" had been streamed over 690,000 times since its launch.



#### Outcomes

Alibaba Group has forged a digital "tactile paving" with technology, encompassing various digital life scenarios such as online shopping, food ordering, entertainment, social networking, office work, and healthcare, bringing more convenience to the lives of people with disabilities and the elderly: Amap's "Wheelchair Navigation" empowers people with disabilities who use wheelchairs to confidently step out of their homes; Taobao's "OCR" image recognition technology allows the visually impaired to shop by listening to images; DAMO Academy's digital sign language robot "Xiao Mo" enables smooth communication for hearing-impaired individuals; Youku's "Accessible Theater" allows visually impaired people to understand and appreciate film and television content, etc. By boosting continuous technological innovation through systematic approach, Alibaba Group consistently develops digital products and services that are accessible to people with disabilities, lowering the barriers for their use of digital tools. This has played a positive role in bridging the digital divide and helping to build a better society.

### Beijing Kuaishou Technology Co., Ltd.

#### "Rural Livestreamers Program" Creates a Better Life for Farmers



#### Corporate Profile

Beijing Kuaishou Technology Co., Ltd. (Kuaishou) is a world-leading content community and social platform committed to developing into the company most obsessed with creating values for customers in the world, helping people discover what they need and unleash their talents, and working unremittingly to enhance everyone's unique well-being.



#### Background

The key to rural vitalization lies in people. How to enrich the types of business, increase job opportunities and guide talents to start businesses in rural areas remains a challenge to talent training and industrial development in the countryside. Also, how to give play to the positive role of short video platforms in promoting talent development and rural development is a topic worthy of further exploration and practice.



#### Highlights

Through its short video and livestreaming platform, Kuaishou supports new individuals, new occupations and the microeconomy, paving the way to employment and entrepreneurship "on the doorstep", which continues to attract young people back home to run their own businesses as "rural livestreamers". In recent years, many rural livestreamers have boosted the marketing of agricultural products via Kuaishou, driving the development of rural life, culture, tourism and economy at the same time. In 2022, over 870 million orders of agricultural products were delivered to all parts of China through Kuaishou. Rural livestreamers are becoming a distinct source of talent for rural vitalization. The "Rural Livestreamers Program" launched by Kuaishou has empowered entrepreneurs, young people, women and scientific and technological talents in rural areas in terms of traffic, content, funding and training to promote rural vitalization.

#### Scouting for Happy Village Leaders to Set a Talent Benchmark for Rural Livestreamers

Focusing on people who returned home to run their own businesses, Kuaishou launched the "Happy Village Leaders" project. The project provides rural entrepreneurs (including in areas such as agricultural entrepreneurship, inheritance of intangible cultural heritage, and cultural and tourism promotion) with online and offline educational resources on business and management to cultivate and enhance their leadership and business management capabilities. By providing traffic and brand resources, it aims to enable these leaders to drive the development of rural industries and increase local employment, thus contributing to local poverty alleviation and development.

#### Focusing on Key Counties Receiving Assistance and Support for Rural Vitalization to Launch the Rural Young Livestreamers Incubation Program

In the "Rural Young Livestreamers" incubation program, Kuaishou provided training courses



Happy Village Leaders Recruitment Poster

on short video production and livestreaming, which are available on the national agricultural science and education cloud platform and Kuaishou's app for pre-learning by online trainees and online learning by high-quality farmers. Relevant provinces could choose online or offline training according to the actual needs of key counties receiving assistance and support for rural vitalization. Kuaishou provided courses and teachers for offline training free of charge. Upon completion of the training, Kuaishou also gave traffic support according to the development of trainees. Those who had successfully completed all courses with outstanding performance would be certified by Kuaishou.

**Paying Attention to Rural Women: "She Power" Lights up Rural Entrepreneurship**

In 2022, China Women's Development Foundation and Kuaishou jointly launched the "She Power: Rural Vitalization Assistance and Support Program" project, which focused on livestreaming e-commerce and marketing. The project helped rural women increase their income and boosts the upgrading of rural industries through e-commerce talent training and women's entrepreneurship support. On the hand, the "She Power: Rural Vitalization Assistance and Support Program" provided inclusive training on e-commerce knowledge and network video basics for ordinary women, and screened out 20 outstanding women, who were provided by Kuaishou with key support in livestreaming e-commerce training, visits and further learning. On the other hand, it provided six female entrepreneurial leaders with financial support for start-ups, and pooled resources to promote the development of women's entrepreneurship. In addition, the "She Power" project will provide training on practice teaching for cadres of grassroots women's federations to enhance their comprehensive capabilities.



**Outcomes**

According to a report on how village livestreaming boosts the value development of the rural economy, from January to June 2023, Kuaishou trained 100,000 rural livestreamers online and offline, creating 250,000 jobs. Rural livestreamers on the platform of Kuaishou covered 25,864 townships and towns, and 16 new occupations, such as new farmers, new intangible cultural heritage craftsmen, village BA recorders, B&B promoters, and rural horticulturalists.

As a "new agricultural implement" in the digital economy era, Kuaishou helps turn rural livestreamers into "new farmers". Among the projects launched by Kuaishou, the "Happy Village Leaders" project is the first Internet corporate social responsibility (CSR) project focusing on rural entrepreneurs in China, and has developed into the country's first incubator for rural entrepreneurs and accelerator for rural industries. So far, the "Happy Village Leaders" project has benefited more than 100 people from 90 counties in 30 provinces, nurtured 60 rural enterprises and cooperatives, created over 1,200 local jobs, and increased income for more than 10,000 rural households. The total annual output value of these leaders' local businesses has reached more than 50 million yuan, and the impact of their business development has covered nearly 10 million people. The "Rural Young Livestreamers Cultivation Program" has helped increase income for farmers in 160 key counties receiving assistance and support for rural vitalization across China, and expand county economies. The "She Power: Rural Vitalization Assistance and Support Program" has helped 1,200 rural women increase their incomes through e-commerce talent training and women's entrepreneurship support.

**WeBank**

**Putting "Finance for Good" into Practice, Helping Bridge the "Digital Divide"**



**Corporate Profile**

As China's first digital bank, WeBank aims to "make finance inclusive to all". With technology as its core engine for development, WeBank is committed to the strategic vision of becoming a "digital bank that integrates into life, pursues continuous innovation, and leads the world". It highlights the need to operate in accordance with laws and regulations and strictly control risks, with focus on providing high-quality and convenient financial services to the general public and small and micro enterprises.



**Background**

People with disabilities and the elderly are the "weak spots" in financial services. On one hand, due to the relatively smaller population base of disabled groups and cost considerations of some financial institutions, there is still room for improvement in financial services tailored for people with disabilities compared to services for other groups. On the other hand, in recent years, the size of China's elderly population has been expanding, and the degree of aging has been deepening. Accelerating the development of inclusive finance for the elderly has become an objective requirement for adapting to China's realities of an aging population. How to better provide inclusive financial services and reliable means of transferring safety risks for disabled and elderly groups, and how to enable groups with lower acceptance of new technologies, tools, and products to enjoy the convenience brought by digital inclusive finance, are new issues that inclusive finance must face and address.



**Highlights**

**Making Inclusive Financial Services "Accessible" and "Easy to Use" for People with Disabilities**

As early as 2016, WeBank's "Weilidai" set up a dedicated service channel for the hearing impaired, making it the first loan product in China to offer sign language customer service nationwide. Weilidai provides 24/7 remote video sign language services to seamlessly meet the consultation, borrowing, and repayment needs of hearing-impaired customers, offering them timely, effective, secure, convenient, barrier-free, and dignified inclusive financial services. Furthermore, Weilidai has redesigned and optimized its product to cater to the consumer credit needs of visually impaired customers. It supports screen reader adaptations for functions such as borrowing, repayment, and customer inquiries, comprehensively enhancing the credit product service experience for visually impaired customers.

On October 15, 2020, WeBank app released the results of its accessibility services, making it one of the first mobile banking apps to complete accessibility adaptation and optimization. It has pioneered an accessible facial recognition system and ID card recognition system, combining technologies like optical in vivo detection, AI voice synthesis, phone vibration sensors, and accelerometers. Specifically, the accessible facial recognition system informs visually impaired customers about the degree of facial misalignment through vibration frequencies and guides them on how to move their phones through voice instructions. This eliminates the need for unfriendly auxiliary verification actions for visually impaired customers, such as nodding, blinking, or reading numbers, which are typically required in traditional facial recognition processes.



#### Tailored and Convenient Inclusive Financial Services for the Elderly

On October 14, 2021, WeBank launched the "WeBank App Senior Mode", which incorporates numerous optimizations based on the current major financial usage scenarios and financial service needs of elderly users. The page design uses larger fonts, a cleaner interface, and fewer marketing pushes. In terms of product offerings, WeBank mainly provides low to medium-risk financial products that suit the risk tolerance of elderly individuals, and is gradually introducing exclusive financial products and related retirement benefits such as health and wellness tourism for the elderly. As for age-friendly services, the homepage features a one-click button to call human customer service, allowing for prompt responses to the financial service needs of older adults.

In 2022, WeBank App also launched the "Air Counter" service for the elderly and visually impaired users. Service specialists can remotely assist customers with various transactions such as wealth management and enhanced pension scheme via voice and video calls. As a result, elderly and visually impaired users can access secure, convenient, and comprehensive financial services on their mobile phones without having to visit a physical counter, pioneering a new model of online remote financial services.



#### Outcomes

Leveraging its fintech capabilities, WeBank specializes in "contactless" financial services, achieving paperless operations for all its major business processes. Building on this foundation, WeBank remains committed to independent innovation, and achieves self-reliance and self-improvement in science and technology by continuously strengthening its core technological capabilities, and accelerating the localization of software and hardware. WeBank is also actively involved in setting industry standards, building an open-source ecosystem, and promoting digital transition across industries.

By the end of 2023, WeBank had open-sourced 36 projects in areas like AI, blockchain, cloud computing, and big data. This not only provides effective tech solutions across industries, but also offers valuable lessons for other financial institutions looking to embrace open source. Moreover, WeBank's fintech services have reached over 200 prefecture-level cities across 20 provinces in China. Nearly 430,000 tech companies, almost 20% of the national total, have applied for its sci-tech innovation loans. It has also attracted applications from 119,000 national high-tech enterprises, accounting for 27% of the total nationwide.

## Chapter 4

# Challenges and Recommendations for Sustainable Development of the Digital Industry



It's foreseeable that in the future, the digital industry upgrade and digital development will further accelerate. While existing challenges facing sustainable development are being overcome, new and complex ones will emerge.

- **Environmental footprint:** The rapid development of infrastructure such as data centers, cloud computing, and the IoT, along with the production of numerous digital devices, is accompanied by substantial consumption of fossil fuels, water resources, and rare metals, putting a strain on the environment and climate. At the same time, as digital products are updated and iterated at an increasingly fast pace, the issue of e-waste is also becoming increasingly prominent. These waste materials contain a large amount of harmful substances. If not handled properly, they will pollute the soil, water sources, and air.
- **Digital divide:** Regional disparities in the development of digital industries will widen the digital gap between different areas and groups. Some regions or groups are unable to fully enjoy the conveniences brought by the digital industry due to limitations in economic conditions, infrastructure, or skill levels, leading to a further aggravation of social inequality issues. In particular, low- and middle-income countries often disproportionately assume the ecological costs associated with global digital industry development, while reaping fewer benefits.
- **Tech ethics:** As artificial intelligence, big data, and other technologies become more widely used, the ethical and moral dilemmas in the digital industry are becoming increasingly prominent. For instance, algorithmic bias may lead to unfair outcomes in decision-making processes; the misuse of technologies like facial recognition could violate personal privacy rights; and the rapid development of automation and intelligent technologies might impact job positions, intensifying social inequality.
- **Information security:** The Internet of everything implies, to a certain extent, the interconnected risks. In recent years, security incidents related to data breaches, data eavesdropping, data misuse, cyberattacks, and malware have become increasingly common, posing serious threats to individual privacy rights, corporate trade secrets, and national information security. Protecting data assets has become a global consensus and a critical task for governments, businesses, and individuals alike.
- **Economic risks:** The digital industry is highly innovative and uncertain, and its rapid development may bring about economic fluctuations and risks. For example, the rapid iteration of emerging technologies could lead to the rapid decline of traditional industries that have not completed digital transition in a timely manner, while potentially exacerbating structural contradictions in the job market. Similarly, over-reliance on a single industry or technological path can easily lead to path dependency and systemic risks, making the economic system more vulnerable and unstable.

Faced with these new challenges, we need to maintain a high level of vigilance and forward-thinking, work together to explore new paths for sustainable development, and build a digital world that is efficient, fair, prosperous, and sustainable:

- **Scaling up the application of green technologies:** Digital industries should be encouraged to boost their energy conservation and low-carbon development, improve energy efficiency, and reduce carbon emissions by leveraging technological innovation. At the same time, efforts should be made to strengthen the development of e-waste recycling and treatment technologies to reduce environmental pollution.
- **Improving laws and regulations and strengthening supervision:** It's necessary to establish a sound legal and regulatory system for the digital industry, and strengthen supervision in areas such as data protection and privacy security. Meanwhile, fair competition and anti-monopoly efforts in the digital industry should be reinforced, preventing resource hoarding and the erection of technical barriers.
- **Fostering digital inclusion:** We should strengthen digital infrastructure and enhance digital literacy and skills. We should also integrate digital industries with traditional ones, pushing forward the comprehensive digital transition of the economy and society.
- **Tightening international cooperation and exchanges:** We should actively participate in building and reforming the global digital governance system and facilitate international cooperation and exchanges in the digital industry. In the meantime, we should strengthen cooperation and coordination with the international community to jointly address the global challenges and issues brought about by the digital industry.

As a brand-new track for current and future economic development, digital economy holds unlimited opportunities for development. We believe that the digital industry in the future can further break the limitations of physical space, realize the seamless connection between traditional industries and emerging technologies, promote the deep integration and coordinated development of the global economy, and bring a more prosperous, fair, and sustainable future for all mankind!

## Appendix



The analysis targets of this report are mainly from the awarded corporate actions in the "GoldenKey – SDG Solutions" Campaign in 2020-2023, in which 389 enterprises shared a total of 449 SDG solutions.

Given the limitations on space and access to information, the report may not have detailed all the relevant content. If you have any questions or suggestions, please contact [zhulin@sdg-china.net](mailto:zhulin@sdg-china.net).



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