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The Transformation of Digital China: Harnessing the Potential of Data, Cloud and AI

"With the continuous deepening of digitalisation, every business, regardless of their industry, the nature of their operations, or their size, will evolve into a digital enterprise in the future."

Guo Wei, Chairman and Chief Executive Officer, Digital China

In early 2024 Guo Wei reflected on another successful year for Digital China group of companies (DC), the group he had led for more than 20 years. As Chairman and Chief Executive Officer, he had overseen the transformation of DC from an IT distributor to an IT services market leader, and now leading digital transformation partner. In 2022 DC ranked 29th on the Forbes China Digital 100 list and 114th on the Fortune China 500 listed companies.

However, he realised that DC could not afford to stand still. The company had achieved many notable successes with its clients across a wide variety of industries, and Mr Guo himself was well known throughout China for his insights into the power of datafication. But staying ahead would not be easy. Artificial intelligence (AI) technology had suddenly exploded in popularity with the launch of ChatGPT the previous year. DC had moved quickly to capitalise on the opportunity with its SmartVision platform, but competition was intensifying and it was not entirely clear how the needs of business customers would evolve.

Background on Digital China group of companies

Headquartered in Beijing and listed on the Shenzhen Stock Exchange (000034.SZ and 000555.SZ) and Hong Kong Stock Exchange (00861.HK), Digital China is a household name in the IT industry in China. With 2023 revenue of $20 billion and more than 20,000 employees, DC had offices all over China and four major institutes focusing on basic and applied research[1].

DC had come a long way from its origins, having originally been part of Legend Holdings, which manufactured Asia's top PC brand Legend (renamed Lenovo in 2003). Legend Holdings had grown to such an extent that, in April 2000, it separated the enterprise business (covering distribution and systems integration) and the IT services business into a new division.

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Digital China Holdings Ltd. was thus split off from Legend Holdings to focus on these businesses, which had tie-ups with hundreds of international brands. Guo Wei was appointed CEO of the new company. In 2001 the company was listed on the Hong Kong Stock Exchange.

During the 2000s DC focused initially on distribution; representing most of the leading international brands in the digital technology realm. Gradually it shifted emphasis from products to services, including software, enterprise systems integration and consulting. To enable this shift towards a service mentality, Guo Wei led a culture-change programme to encourage employees to be more innovative and open to taking greater risks. He also invested heavily in the company's internal enterprise resource planning (ERP) system. The shift towards a service mentality was successful, leading to continued growth throughout the 2000s, especially in areas such as finance, government and telecommunications.

The IT market in China in the 2010s

The primary goal of IT services was to ensure that information technology infrastructure, applications and systems were effectively implemented, operated and optimised to support an organisation's business objectives. The IT services market was typically classified into sub-markets such as consulting and implementation, business-process outsourcing, IT outsourcing and systems integration.

In the late 2010s the IT services industry in China had revenues of around $250 billion and was growing at about 6% per year. As shown in **Exhibit 1**, the industry consisted of suppliers of software and suppliers of hardware. The sector had a vital role to play in providing effective and integrated services to companies across the country[2]. There was strong government support for the industry, with digital transformation a key national priority.

The major segments of the market were: systems integration services (38%), IT consulting services (36%), IT outsourcing (14%) and maintenance and support (9%). The largest industry verticals by sales revenue were financial services (28%), telecoms (26%), manufacturing (14%) and government (13%).

IT services was a highly fragmented industry with no dominant player; in large part because the barriers to entry were low. Digital China was in the top tier of companies, alongside iSoftStone Information Technology and China Software Services, but each held only around 1% of total market share. Major international companies such as Accenture and IBM were also present in China but had smaller market shares.

The industry as a whole had relatively low profit margins, ranging from 6-10%, and these were falling because of new competition. It was a people-intensive business, with staff wages representing roughly 50% of all costs. R&D investment, typically around 5% of sales, was low compared to other sectors.

The growth of DC mirrored broader changes in the Chinese economy, which had been growing rapidly since the 1990s thanks to political and economic reforms and major advances in digital technology.

Starting from the 2000s, the Chinese government accelerated its development plans, with the aim of creating a fully digitised economy. The plans entailed the construction of major digital infrastructure across the nation. This included strengthening and digitalising China's governance, updating and promoting its manufacturing capability, bolstering its innovation ecosystem and enabling it to shape digital governance.

Digital China Group: from IT services provider to digital innovator

In the early 2010s, under the continued leadership of Guo Wei, DC maintained its focus on distribution, IT services and systems-integration businesses, with a strong client focus. The company was organised into vertical divisions focusing on finance, government and manufacturing.

DC partnered with most large technology companies inside and outside China, selling a wide range of products and services such as mobile phones, electronic devices, servers, software, cloud and SaaS (software as a service), along with providing its own bespoke services. It often sold 'bundled' solutions of hardware, software and services to clients.

DC's business model was thus inherently complex: its operations required interfaces with hundreds of IT tech companies globally and it handled a large volume of business. It relied on sophisticated order processing and customer relationship management (CRM) systems, as well as a robust transaction risk management system. It also made use of sophisticated technologies for supply chain and financial management.

Grant Li, CTO of Digital China Group reflected on the impetus behind the company's constant evolution:

> *"Chinese companies are extremely sensitive – sometimes even anxious – about new technologies and their potential applications. They are constantly considering how emerging technologies can be integrated into their business environments. This is because the competitive landscape they operate in is incredibly fierce."*[3]

DC's client companies were rapid adopters of the latest technologies as they sought to gain operational efficiency or provide a better customer experience. However, as Digital China Group President Arthur Wang noted, while this relentless pursuit of technologies "can give a company a significant advantage, it also comes with its own set of challenges."[4]

In 2015 DC started to consider new ways to address the rapidly changing digital environment, and in particular the emergence of new technologies such as cloud computing, big data and AI. Guo Wei framed this transition as follows:

> *"With the advent of the digital age, data has been endowed with two new attributes: one as a production factor and the other as an asset. In the traditional economy, land, labour, capital, and technology are all critical factors of production, but in the digital age, data has become a new production factor."*[5]

Faced with this shift, Mr Guo asked how businesses should respond. His answer, as subsequently spelled out in his book *The Power of Digitalisation*[6], was as follows:

> *"Digital transformation is an imperative that every enterprise must confront. Many businesses continue to be perplexed by the question of 'how to transform' and struggle to establish a clear course of action, despite the widespread acknowledgement that failure to do so will result in obsolescence.*
>
> *How can digital transformation be executed with efficacy? It requires considerably more than the mere adoption and implementation of digital technologies. This endeavour necessitates transformation, inside and out, demanding strategic consensus and complete commitment across the organisation."*[7]

Over the following years DC developed a range of new products and services, making use of the latest advances in digital technology to help it service its clients in more effective ways. Guo Wei subsequently branded these changes *The Data Cloud Integration Strategy and Technology Framework.*

There were three key components of the DC strategy; namely (in the order in which they were introduced) (1) cloud computing, (2) innovative infrastructure, and (3) artificial intelligence.

These were pulled together into an overarching strategy and the DC organisation was transformed to ensure effective implementation.

Capturing the opportunities in cloud computing

Cloud computing started to emerge in the early 2000s and gathered steam during the 2010s. This trend was quickly embraced in China. DC's customers sought to put their software, services and data on a remote 'cloud' rather than host them on their proprietary, on-premises hardware. Major cloud service providers in China included Alibaba, Huawei, Amazon Web Services (AWS), Microsoft, China Telecom and Tencent.

DC was well positioned to exploit the shift to cloud computing as its goal was to provide an integrated and effective service, rather than push a particular piece of technology. DC sought to capture the opportunity of "moving to the cloud" by working closely with most of the leading providers. It also saw itself as a pioneer in cloud-native and digital-native technologies and was a strong supporter of the open-source community.

For Guo Wei, the cloud computing transition was an important step forward because it allowed valuable data assets (such as customer data) to be made available for use in a more fluid way. By making such assets virtual and reconfigurable in novel ways, companies could potentially use them to generate additional value. He said:

> *"Once assets are digitised, various aspects of asset management become interconnected. Managers can grasp real-time data on the dynamics of asset, enabling them to achieve holistic lifecycle management and precise operations for these assets. Significant improvements are made to the safety, specificity, timeliness, and efficiency of asset utilisation and regulation. In this era of inventory rich economy, businesses will possess a stronger competitive edge".*[8]

Many of DC's clients were also taking advantage of the capability to harness their data in more effective ways through cloud-based services. For example, a major aviation group had a vast fleet of aircraft, with challenges in route planning, flight operations, maintenance management, customer service and cargo transportation. Grant Li explained:

> *"The company created a unified IT platform with three layers: a data layer integrating various sources of information such as flight data, passenger data, cargo data, airport data and climate data; a model layer with algorithms for prediction, optimisation and decision support; and a service layer providing data services, model services and analysis services to business departments.*
>
> *This allowed it to deliver significant benefits, such as optimising route planning, enhancing the customer experience by personalising offers to them, and improving the efficiency of flight operations."*

Building an innovative infrastructure business

To make cloud services work effectively, companies also needed to invest in their infrastructure. This created an opportunity for DC: to develop and sell total infrastructure solutions to data centres and enterprises.

In 2019, based on its 20 years of market know-how, DC therefore took a major step forward by moving into the fast-growing innovative infrastructure market. Its goal was to provide the full stack of intelligent computing products and services throughout storage, network and computing platforms. This was a market that had traditionally been dominated by leading players such as Huawei, Cisco, Dell and Hewlett Packard.

The heart of DC's offering was a series of intelligent computing products. A key example was the KunTai range of servers, which provided the rapid processing required for running deep- learning models and other high-end AI applications. These servers were used across many industries; typically being deployed in large data centres as part of cloud-computing offerings.[9]

DC's innovative infrastructure products were well received by key industries across China, including government, financial services and insurance, telecommunications, transportation, energy, and education. With the rapid growth of AI, these products were an important part of DC's portfolio as it sought to position itself as a leader in the AI space.

The innovative infrastructure business grew quickly (see **Exhibit 2**). During an annual review meeting in 2023, Arthur Wang noted 69% annual growth in this business, compared to 30% for the cloud-computing business, and 10% in traditional distribution and IT service businesses. Third-quarter revenues in 2023 were 2.019 billion yuan (approximately $279 million), with an annual production volume of 1.5 million units.[10]

The growth of the cloud and infrastructure businesses were central planks in DC's strategy. Guo Wei told an internal leadership conference in late 2022:

> *"Cloud and innovative infrastructure represent the most significant parts of our strategic transformation and this is clearly the path we'll continue to pursue. That's why we mobilised the resources of the whole organisation to push this business strategy forward*

and recruited the two top leaders (Arthur Wang and Grant Li) to join us in 2021 and achieved the remarkable results today."

Artificial intelligence: The SmartVision framework

DC first began to explore the potential of AI around 2015 as it had been working closely with international technology leaders such as Microsoft. Initially, the focus was on using AI technologies to tackle internal business challenges; for example, developing a chatbot system that allowed employees to quickly access risk-control measures and promotional policies, significantly speeding up communication between employees and the back office.

By working this way DC accumulated a pool of natural language processing (NLP) experts and data scientists, thereby enhancing its innovation capability. DC began deploying AI offerings with customers around 2020, helping them to enhance their productivity. Offering AI-based services was in many ways a natural extension of DC's existing strategy of providing integrated solutions to clients via the cloud.

In 2022 ChatGPT was launched and a huge demand for AI offerings suddenly emerged. As Microsoft and Azure's largest partner in China, DC quickly recognised the moment as "a tremendous technological leap." Grant Li said:

"We realised ChatGPT could enhance the functionality of our existing products a hundredfold, prompting us to base our generative AI technology strategy on it. In fact, to remain competitive, we've needed to provide services around these products, especially customised services tailored to our clients' needs."

In 2023 DC introduced its SmartVision platform to capitalise on the promise of AI. DC's approach was to focus on corporate use of generative AI to enhance productivity. Guo Wei explained:

"I created the Chinese name SmartVison ('Shen Zhou Wen Xue' in Chinese) with the vision that 'A teacher is one who could propagate the doctrine, impart professional knowledge, and resolve doubts'."

As we should consider AI our teacher, the SmartVision platform continuously accumulates knowledge by raising questions to the large language model. The knowledge accumulated becomes the data assets of enterprises, supporting them in accelerating innovation by lowering the entry barriers and cost of development."

The SmartVision platform sought to provide enterprises with the capability to connect models, data and applications (see **Exhibit 3**). For example, it used automated text analysis to examine customer service, helping businesses gain a better understanding of customer satisfaction and dissatisfaction. This information could then be used in conjunction with graphics technologies to link information dispersed across various documents, forming an "enterprise brain" spanning business domains. DC saw it becoming a "super sales assistant" or management assistant that would contribute to enterprise decision-making intelligence.[11]

The concept of SmartVision was that IT departments in companies didn't exist just to serve or manage others – they existed to empower others. In the words of Grant Li:

"The purpose of SmartVision is to build capability among users so that they can take responsibility for building future-oriented business scenarios, develop creative ideas,

> *write texts, create illustrations and so on. SmartVision is an AI app platform that lets customers try different models and to find out what works best. Our typical customer starts by nailing one thing on the platform, then quickly moves on to try out other stuff in different business areas."*

With the SmartVision platform as a base, DC's vision was to provide "Model as a Service" solutions tailored to each customer. This had the potential to significantly increase how much DC made from each customer.

For example, a local government department introduced a "Digital Teller" to answer common public queries about social security and guide users through basic self-service operations, such as checking social security payment records. This bot was trained on the body of data held by the government department and provided a user-friendly interactive experience, using simple language.

Another example was a multinational medical equipment company. Traditional FDA certification typically required six rounds of revisions and 10 months of repeated communication with third-party agencies. With the SmartVision platform, this was reduced to one month of back-and-forth and many fewer rounds of revisions with regulatory officers. Arthur Wang observed:

> *"AI tremendously enhances our productivity and creates new growth opportunities for DC. We are closely watching changes in customer needs as technology changes the expectations and needs of the customers who will be looking for new solutions."*

DC kept several additional principles in mind as it sought to deploy its AI models effectively. First, it was important to keep client data safe and protected, and to ensure that AI gave accurate answers. If unsure, it would be better to say "I don't know" rather than give a wrong answer. Tools such as Retrieval-Augmented Generation (RAG) were useful for refining the process.[12]

To be valuable to clients it was important to integrate "private" business knowledge with what was available through the "public" knowledge of large language models (LLMs) created by OpenAI, Anthropic and others, and to frame business problems in ways that LLMs could handle. It was also important to get different digital tools (such as voice recognition) to connect with the systems the business was already using, such as customer service and CRM systems.

Finally, it was important to use computing power wisely across different parts of the business, because "power is pricey."

Despite all the excitement around AI, the opportunity to build useful solutions for clients rested on understanding the limitations as well as the strengths of these new technologies. Guo Wei noted:

> *"In the AI-led era, personal creativity and curiosity is the utmost thing. AI can only replace repetitive works and those requiring memorisation; truly creative works will never be replaced."*[13]

The data cloud integration strategy and technology framework

The formal announcement of the Data Cloud Integration Strategy and Technology Framework was made in 2021. Alongside Guo Wei, the key proponents of this strategy were DCG Chief Strategy Officer Arthur Wang (who was promoted to President in 2023) and DCG Chief Technology Officer Grant Li, recruited in 2021 to strengthen the top leadership team.

Guo Wei envisioned a growth engine at the core consisting of data assets and business innovation with a range of additional services around it, including the data-service platform, general-purpose toolboxes, digital infrastructure, and cloud and open-source ecosystem (see **Exhibit 4**).

In this conceptualisation, data was both a representation of business and a reflection of it.[14] Guo Wei noted:

> *"The most fundamental goal of the digital transformation of a business is to accumulate digital assets, produced in the form of systematic data, alternative data, and AIGC (artificial intelligence generated content) data. These data assets are employed to restructure offerings and provide new products and services, thus leading to innovations and advancements in business.*
>
> *These processes of data generation and deployment reinforce one another, creating a growth engine that builds momentum. Gaining a competitive advantage and positioning oneself as a future industry leader is therefore contingent on the accumulation of data assets."*

The Data Cloud Integration Strategy and Technology Framework became an effective way of pulling together all DC's different service offerings in an integrated way.

A specific example was its work with a multinational cosmetics firm. This company had 20 brands, 12 affiliates and many third-party platforms across Asia. It was struggling with a silo structure and a lack of data integration. There was a lot of user churn and a lot of duplication of effort. There was no loyalty across the brands and the advertising ROI was low. DC was brought in to help and in 2019 it created a consumer data platform to integrate data across domains. For example, DC came up with the concept of a customer best record (CBR) to synchronise information on customers.

In 2021 DC's efforts expanded to create a data-mining capacity platform to help generate better insight into advertising campaigns and in 2023 it introduced digital-media targeting for the client. Building on existing systems, this was designed to further reduce marketing costs and boost efficiency. DC also streamlined the customer-acquisition process for clients using digital e-forms. Guo Wei summarised the progress DC had made through this approach:

> *"Over the course of the last two decades of development, Digital China has provided diverse information services to China's various industries. From traditional data networks to today's cloud, data modelling, artificial intelligence and intelligent computing centres, a plethora of solutions has catered to clients' needs in every conceivable way.*
>
> *In the realm of digital transformation, we have accumulated considerable expertise. I always envisioned consolidating the insights we have gained through our digital transformation efforts to develop a systematic and executable digital framework. The objective is to share it with perplexed business managers and collaboratively shape their digital future. By implementing this Data Cloud Integration strategic framework, it is possible to successfully disrupt an organisation and rebuild it."*[15]

Organisation structure: the middle platform

The evolution of DC's offerings led Guo Wei and his team to make changes in how the company was organised so that they could achieve effective integration across all the parts of the company.

The name chosen for this new structure was 'middle platform'. The concept had been introduced in China by Alibaba in 2015 as a way of resolving performance bottlenecks between the server side (back end) and the client side (front end) of an IT system.[16] One executive explained the concept as follows:

> *"Imagine you have data stored in different places, spreadsheets and databases. It is important to be able to use this data efficiently and that's where the data middle platform comes in – it's like a central hub or a middle ground that helps connect and make sense of all this scattered data. It allows different applications and tools to communicate, making sure data can flow smoothly from one place to another."*

Guo Wei introduced the middle platform as an organisational concept at an internal leadership conference in February 2017. He saw it as an internal function supporting DC's customer- facing units by providing hubs of expertise in key areas. From 2018 onwards the middle platform was built up, adding modules in key capability areas, which enabled DC to handle bigger customers and larger projects. Li Jing, the Group Vice President responsible, said:

> *"The mission of the middle platform is to facilitate our understanding of the business models of our clients so that we can digitise them and create data assets, and to further drive business innovation.*
>
> *"The first step for the middle platform is the datafication of businesses. For example, through the CRM system, sales processes are digitised, forming integrated sales capabilities. Through the business opportunities data in the CRM system, business forecasting and resource allocation are facilitated. Projects' delivery progress status and quality are managed by the project management system. The full product life-cycle management covering R&D all the way to product launching is managed by the [product lifecycle management] system. The intelligent factory production framework is built via the [manufacturing execution system]."*[17]

The process of datafication made it possible to build organisational capabilities under the framework of the middle platform, including four key functions: sales matrix and customer success; strategy and branding; digital enablement; and operational service. Li Jing noted:

> *"Before the group-level sales matrix was built in the middle platform we had a variety of divisions facing different types of customers (for example, server channel, PC channel and other channels). All these divisions were in their own silos. So we grouped them under a corporate-level channel system and classified the channels into different levels of importance according to selection criteria such as the opportunity for synergy and the potential for growth, ultimately resulting in a unified cross-company, cross-product, channel system."*

By 2023 the middle platform had become the nexus of DC's digital transformation, facilitating and supporting the work of the front-end businesses and allowing them to become more agile. It was also helpful in training a talent pool to equip companies acquired through M&A and cascading the DC culture to acquired entities.

Further changes in structure were made in 2024, resulting in the organisation chart shown in **Exhibit 5**. There were five major customer facing units: the cloud business group (CBG), applied electronics group (AEG), information infrastructure group (IIG), big enterprise group, each with at least 1,000 employees, and the overseas division. The Tech-System supported the customer-facing units on technologies, including emerging technologies such as GenAI under the SmartVision function. The middle platform was an internal function supporting the customer-facing units. The HR, finance and audit functions provided back-office support across the company.

An example of the benefit of the middle platform structure was DC's financial services cloud solution, which provides financial services to over 30,000 partners by offering differentiated financial products. It was created in a collaboration between DC and numerous financial institutions. Based on the data assets accumulated from the transactions over the past 20 years with these 30,000 partners, and as authorised by them, using digital technologies and scenario analysis DC managed to transform the data resource to data credit assets that were recognised by the banks. This enabled SMEs to have credit facilities from the banks based on their data credit assets. The financial services cloud solution enabled partners to rapidly acquire customers and to allocate financial products to them more effectively.

Digital China's Culture: building a future-ready enterprise

Guo Wei reflected on how DC had evolved over the years and how it had managed to stay relevant, despite huge changes in the world of technology. He revealed one of the key leadership principles in guiding where DC should head:

> *"We have to be a pioneer in our mindsets, our practice, and our mastering of technology. We have to continue to advance, moving from the edge to the mainstream and to the forefront."*

Approaches to innovation in China and the West varied in significant respects. Many companies in the West, such as US technology giant Microsoft, had a history of foundational innovation that originated from research labs and academic institutions. As a result their tech advancements were deeply rooted in theoretical research and were often the result of a profound exploration of scientific principles aimed at conceptual breakthroughs.

In contrast, much of China's innovation was driven by practical application in real-life scenarios. The focus was predominantly on engineering solutions to address immediate challenges, enhancing usability and user experience. This problem-centric approach emphasised rapid development and deployment. Guo Wei explained in an internal workshop:

> *"Digital strategy and business strategy are one and the same. The only variable is that technology [is a neutral tool] – it's the organisation's behaviour towards technology that can lend it a competitive advantage."*

In early 2024, Arthur Wang highlighted what he saw as DC's key differentiators:

> *"After close to 25 years of development, DC has accumulated numerous differentiators to support its move to the next stage of excellence. These include three key elements. First, the distribution business know-how, as acquired by years of deep collaboration with leading global and domestic technology players. This has helped DC become a 'mirror' of the Chinese IT ecosystem, thereby equipping us with a strong technical view and*

enabling high awareness of innovation opportunities. Second, DC works with 30,000 partners globally in a variety of sectors, forming an ecosystem of its own, and this enables DC to gain a unique position for differentiation in the IT industry in China. Third, the comprehensive customer application scenarios make all kinds of innovation implementation possible, resulting in DC being widely recognised by its customers."[18]

Next steps

In early 2024 Guo Wei reflected on the recent years of DC's success. Despite the severe challenges of the pandemic, the company had maintained its net profit growth rate of around 20% per year for the last three years. The company's share price had risen three-fold over this time (see **Exhibit 6**).[19] The data cloud integration strategy was proving successful and the SmartVision AI platform was being rolled out. In addition, a lot of work had been done on the organisation's structure and culture, notably through the implementation of the middle platform.

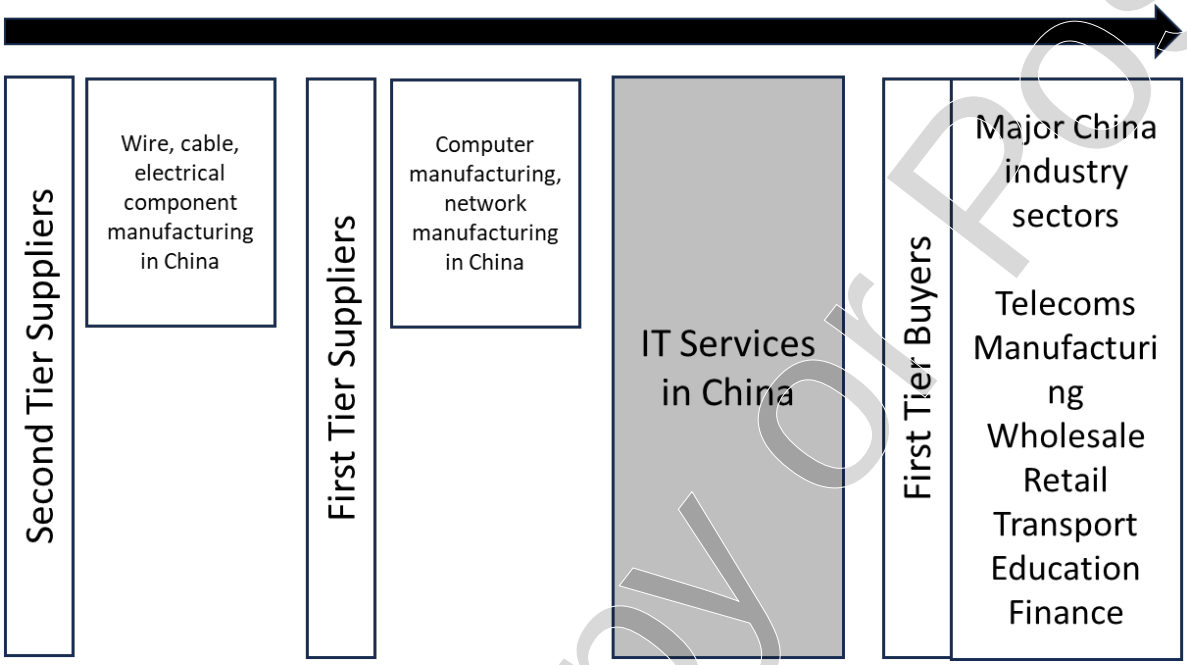
Future market growth looked promising. According to a June 2023 estimate, the Chinese Generative AI market was projected to be worth US$5.5 billion in 2023, growing to around US$30 billion by 2030.[20] China's cloud computing market was expected to grow from $66 billion in 2022 to $153 billion in 2025.[21]

National economic policy was also helpful. The *Overall Layout Plan for Digital China Construction*, unveiled by the State Council of China in February 2023, prioritised the development of digital infrastructure and data-resource frameworks. In August 2023 the Chinese Ministry of Finance released the *Interim Provisions on Accounting Treatment of Enterprise Data Resources*, which stipulated that data used internally by enterprises that met the relevant criteria could be officially included on the balance sheet. When exploring the opportunities of overseas expansion and M&A initiatives, Guo Wei said:

"We're exploring the possibility of replicating the capabilities we have built up organically within China to overseas growth through inorganic means. With the strong capability and know-how we already have in China, we're exploring to leverage the same capability, such as customer know-how and insights."[22]

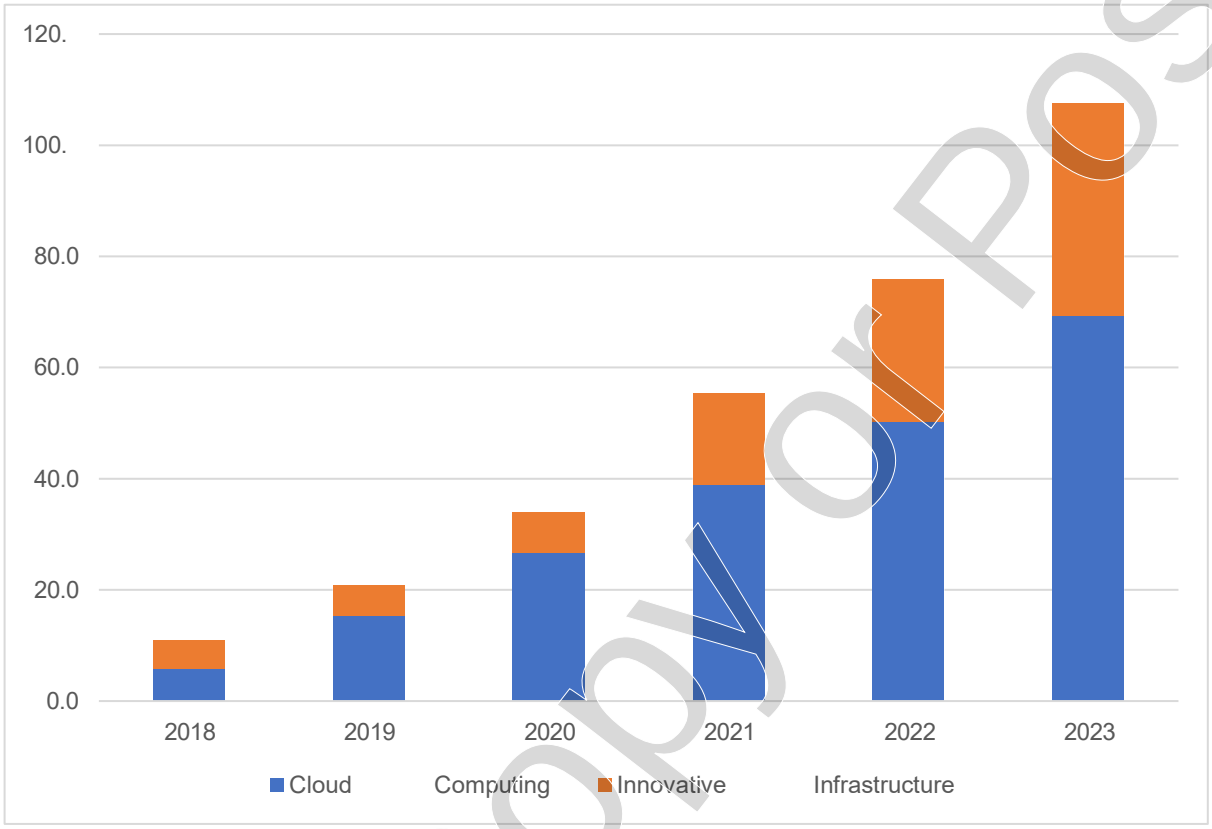
A number of challenges lay ahead for Guo Wei and his senior leadership team. How could they upgrade their legacy distribution business? Where was the emerging AI market heading and how might it be addressed? Would the middle platform continue to be the right organisational model in the years ahead? What kind of culture and branding would shape DC's next stage of development? In an era of open-source and digital-native development, generative AI was no respecter of national borders. There were also domestic and overseas expansion opportunities ahead. How, wondered Guo Wei, could Digital China maintain its innovation capability and market-leading position?

Exhibit 1. IT Services industry in China



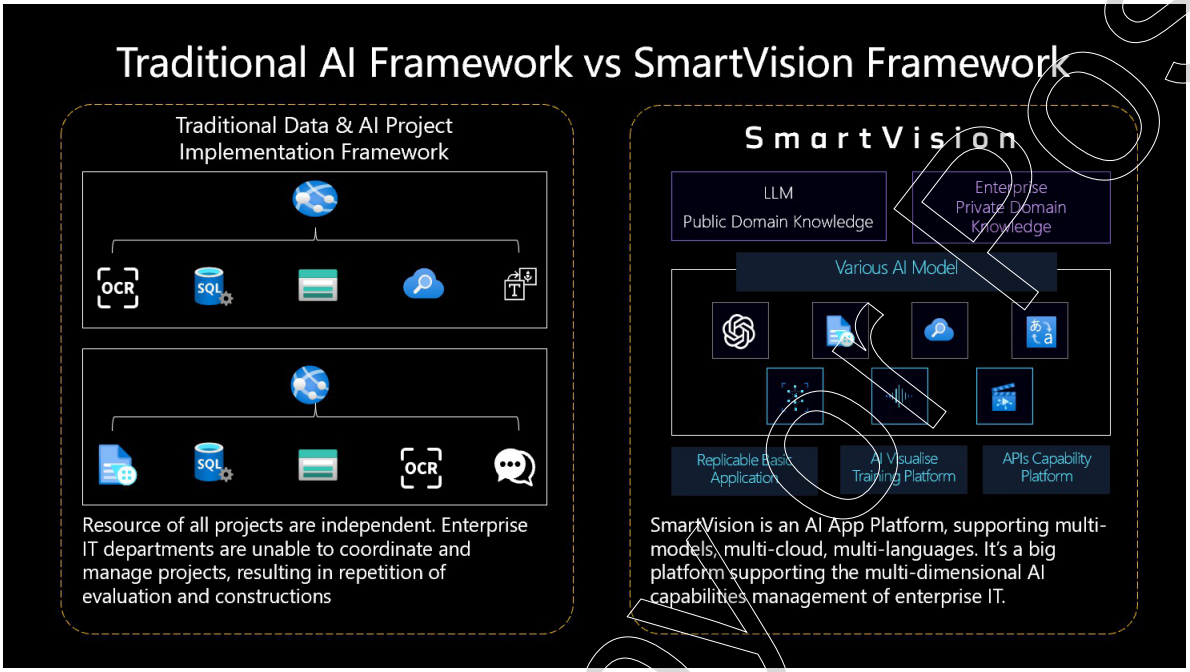
Source: IBIS World report

Exhibit 2. Digital China Group cloud computing and innovative infrastructure revenue growth 2018 to 2023



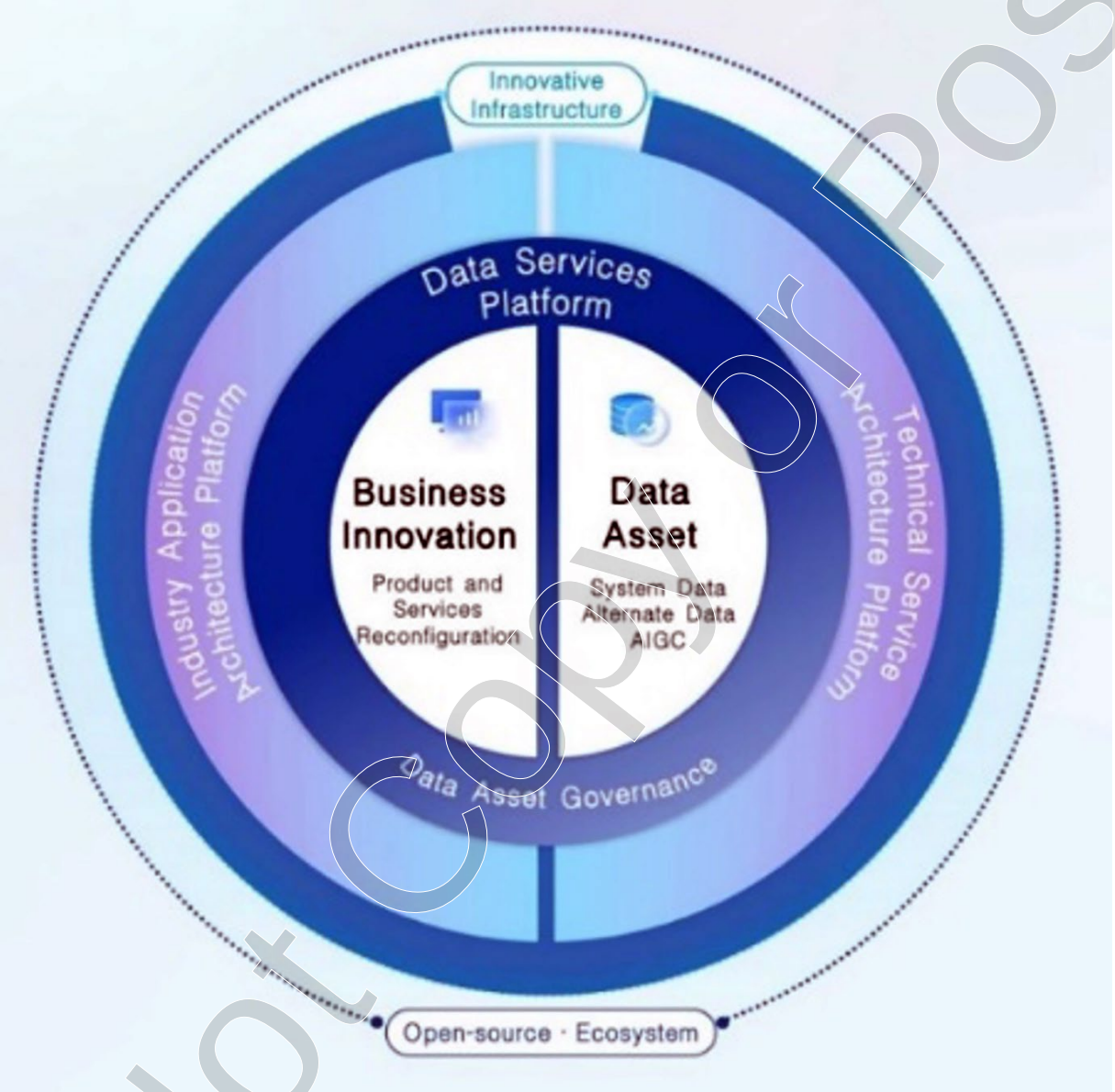
Vertical axis is 100 million yuan.
Source: Data from DCG annual reports; chart provided by DCG

Exhibit 3: Traditional AI framework vs. SmartVision framework*



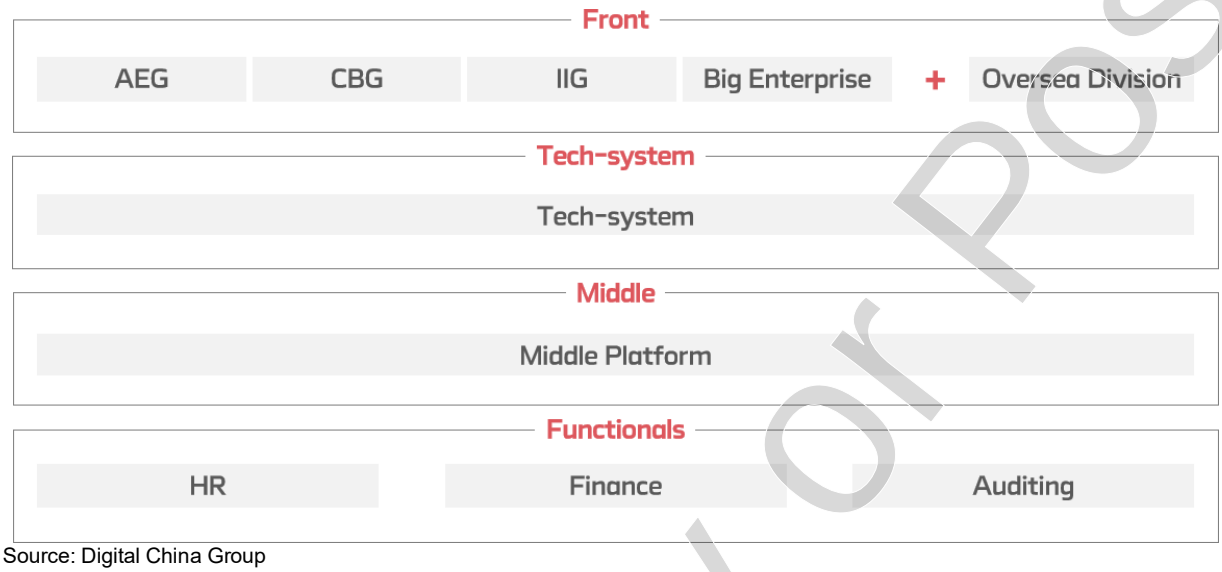
*Conceptual diagram illustrating the difference between a traditional AI framework and DC's SmartVision AI framework. Source: Digital China Group

Exhibit 4. Data cloud integration



Source: Digital China Group

Exhibit 5. Organisation chart in 2024



Source: Digital China Group

Exhibit 6. Comparison of Digital China Group share price and other Chinese companies, 2021 to 2023

Source: Digital China Group, from Wind

References and endnotes

1 The major research institutes and several research centres focus on digital technologies and incubation of disruptive innovations, fintech and digital finance, big data, cloud and innovative infrastructure technologies, with full-scale technology R&D frameworks and over 14,000 technical employees across the country and 3,000 patents. Digital China Holdings (00861.HK) focuses on big data and artificial intelligence to provide big data services, while Digital China Group (000034.SZ) and Digital China Information Service Group (000555.SZ) respectively focus on data cloud integration full-stack technology framework as driven by cloud-native and digital-native, and fintech services as driven by data cloud integration strategy.

2 This section draws from an industry report on IT Services in China by Rachel Wang, IBIS World.

3 Unless otherwise stated, all quotes by Grant Li are taken from interviews with the authors in October to December 2023.

4 Unless otherwise stated, all quotes by Arthur Wang are taken from interviews with the authors in October to December 2023.

5 The Power of Digitalisation by Guo Wei published by Machinery Industry Press, 2022 in Beijing (ISBN 978-7-111-70809-4).

6 The Power of Digitalisation op cit.

7 The Power of Digitalisation op cit.

8 The Power of Digitalisation op cit.

9 Data provided by Digital China Group.

10 Data provided by Digital China Group from its annual report and internal sources).

11 The Power of Digitalisation op cit.

12 Retrieval Augmentation Generation (RAG) tools, such as Microsoft's Azure AI Search, augment the capabilities of a large language model such as ChatGPT by adding an information retrieval system that provides "grounding" data. This can give the user control over the data used by an LLM when it formulates a response. See https://learn.microsoft.com/en- us/azure/search/retrieval-augmented-generation-overview.

13 The Power of Digitalisation op cit.

14 The Power of Digitalisation op cit.

15 The Power of Digitalisation op cit.

16 Guan Tao, 2021, "The intelligent evolution of the data middle platform – 12 years of development from Alibaba's data platform. Alibaba cloud community, September 17th 2021.

17 Unless otherwise stated, all quotes by Li Jing are taken from information provided by Digital China Group in early 2024.

18 Unless otherwise stated, all quotes by Arthur Wang are taken from interviews with the authors during October 2023 to March 2024.

19 Data provided by Digital China Group.

20 'Generative AI – China', Statista, August 2023; www.statista.com/outlook/tmo/artificial-intelligence/generative-ai/china.

21 Data from CAICT (China Academy of Information and Communications Technology) White Paper on Cloud Computing (2023), as provided by Digital China Group; http://www.caict.ac.cn/english/research/whitepapers/202311/t20231103_465035.html.

22 Unless otherwise stated, all quotes by Guo Wei are taken from interviews with the authors during August 2023 to March 2024.