The information and statistics set out in this section and other sections of this document were extracted from the report prepared by iResearch, which was commissioned by us, and from various official government publications and other publicly available publications. We engaged iResearch to prepare an independent industry report, in connection with the **[REDACTED]**. *The information from official government sources has not been independently verified by us, the Joint Sponsors,* **[REDACTED]**, *any of their respective directors and advisors, or any other persons or parties involved in the* **[REDACTED]**, *and no representation is given as to its accuracy.*

SOURCE OF INFORMATION

In connection with the **[REDACTED]**, we commissioned iResearch to conduct research and analysis of, and produce a report (the "**iResearch Report**") on, the audiovisual cloud service market in China. Founded in 2002, iResearch is a PRC-based independent market research institution that provides professional industry analysis, data insights, market research, strategic consulting and digital solutions to clients. We have agreed to pay a commission fee of RMB600,000 for the iResearch Report.

During the preparation of the iResearch Report, iResearch performed both primary and secondary research, and obtained knowledge, statistics, information and industry insights on the industry trends of the audiovisual cloud service market in China. Primary research was conducted via interviews with key industry experts and leading industry participants. Secondary research involved analyzing data from various publicly available data sources, such as the PRC National Bureau of Statistics, other government departments and various industry associations, publications and studies by industry experts, public company annual and quarterly reports, iResearch's other research reports, online resources and data from iResearch's research database.

iResearch's projection on the size of the related markets in China takes into consideration various factors, including (i) historical market size data, (ii) the public filings of, and other publicly available information regarding the audiovisual cloud service market, (iii) the projections of other industry experts, and (iv) views and estimates of industry developments. iResearch has prepared the iResearch Report on the assumptions that (i) the social, economic and political environments of China will remain stable during the forecast period, which ensures a sustainable and steady development of the audiovisual cloud service market, (ii) the data quoted from authoritative agencies remain unchanged, (iii) related key industry drivers remain relevant and applicable in the forecast period, and (iv) there will be no subversive changes to the related industries.

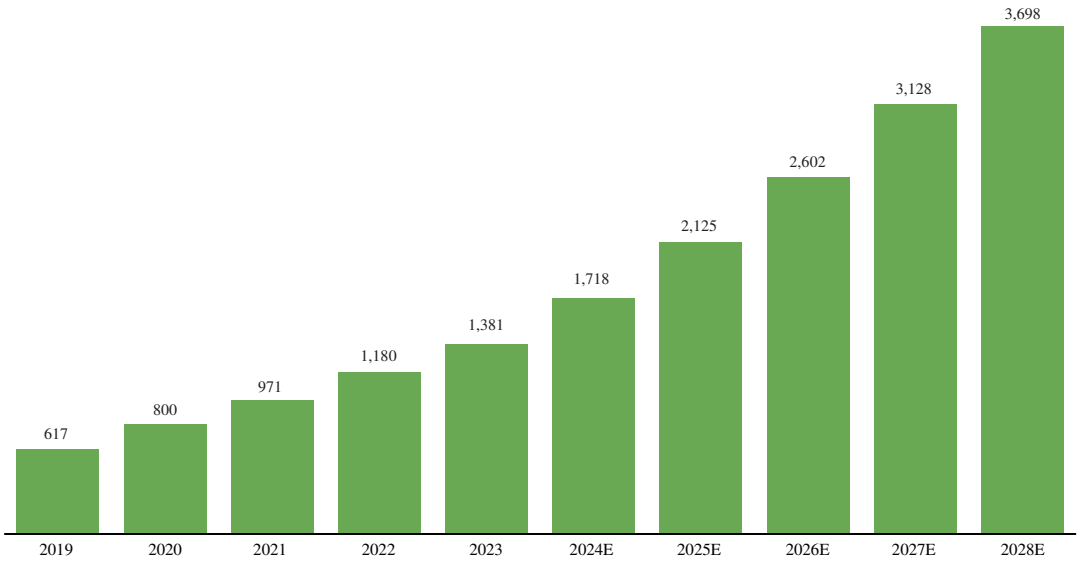
Except as otherwise noted, all the data and forecasts in this section are derived from the iResearch Report. Our Directors have confirmed, to the best of their knowledge, after making reasonable enquiries, there is no adverse change in the market information since the date of the iResearch Report which may qualify, contradict or impact the information disclosed in this section.

THE AUDIOVISUAL MARKET IN CHINA

With developments in network technology and increasing popularity of audiovisual, the audiovisual market in China continues to expand and many segments of the market have emerged, including long video, short video, live streaming, RTC, and their related services such as content production and audiovisual cloud services. In 2023, the size of the audiovisual market in China was approximately RMB1.4 trillion and is expected to continue to grow at a CAGR of 21.8% from 2023 to 2028.

Audiovisual Market Size in China[1], 2019-2028E

RMB billion



Source: The Game Working Committee of China Audio and Digital Association, China Game Industry Research Institute, iResearch

Note:

1. The size of the audiovisual market includes revenue from online video advertising and payment, short video and live streaming, online audio, intelligent speech, virtual reality, cloud services and other markets.

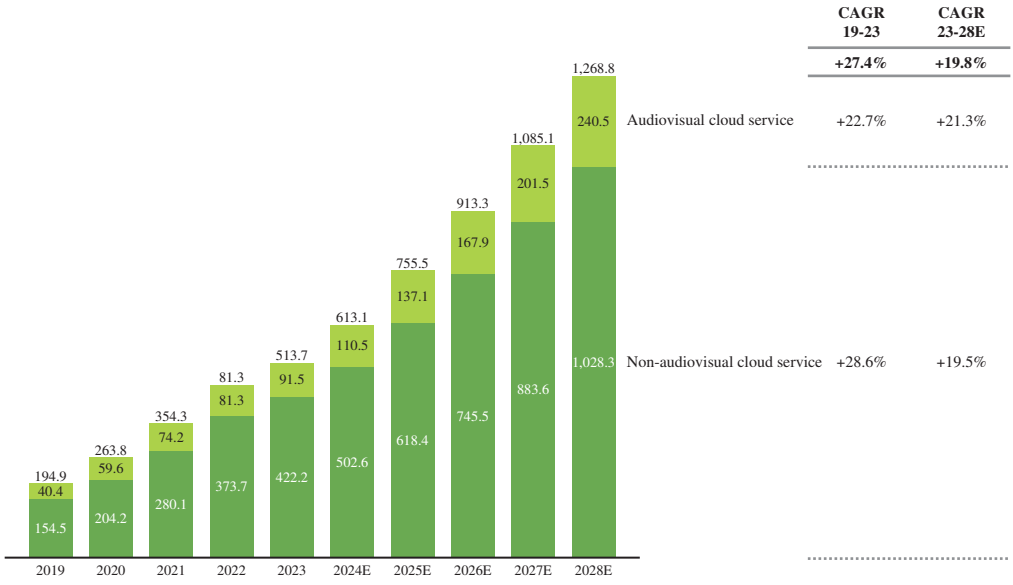
THE CLOUD SERVICE MARKET IN CHINA

The cloud service market in China include cloud services related to audiovisual cloud, AI cloud, governmental cloud, retail and catering cloud, industrial cloud, office automation (OA) and big data, and others. The cloud service market in China reached RMB513.7 billion in 2023. Audiovisual cloud service market reached RMB91.5 billion and accounted for 17.8% of the total cloud service market in China in 2023. Driven by the increasing demand for computing power and the development of AIGC, it is expected that the cloud service market in China will continue to grow and will reach RMB1,268.8 billion in 2028. Audiovisual cloud service market is expect to reached RMB240.5 billion and account for 19.0% of the total cloud service market in China in 2028.

The cloud service market in China can be divided into audiovisual and non-audiovisual cloud services market by type of content or data managed. Audiovisual cloud services refers to the producing, storing, processing, distributing, analyzing, auditing, retrieving, and recommending unstructured audiovisual content in multi-media formats. Such audiovisual content includes audio recordings, short videos, livestreaming videos, music and images. Non-audiovisual cloud services refers to the producing, storing, processing, distributing, analyzing, auditing, retrieving, and recommending content other than audiovisual content. Such content includes structured data, such as financial data, client contact lists, and other data with standardized tabular formats, accessible by enterprise resource planning ("**ERP**"), customer relationship management ("**CRM**"), and other similar databases, as well as certain unstructured data unrelated to audiovisual content, such as texts, emails, documents, developed applications and programs, etc.

Market size of cloud service market in China, 2019-2028E

RMB billion



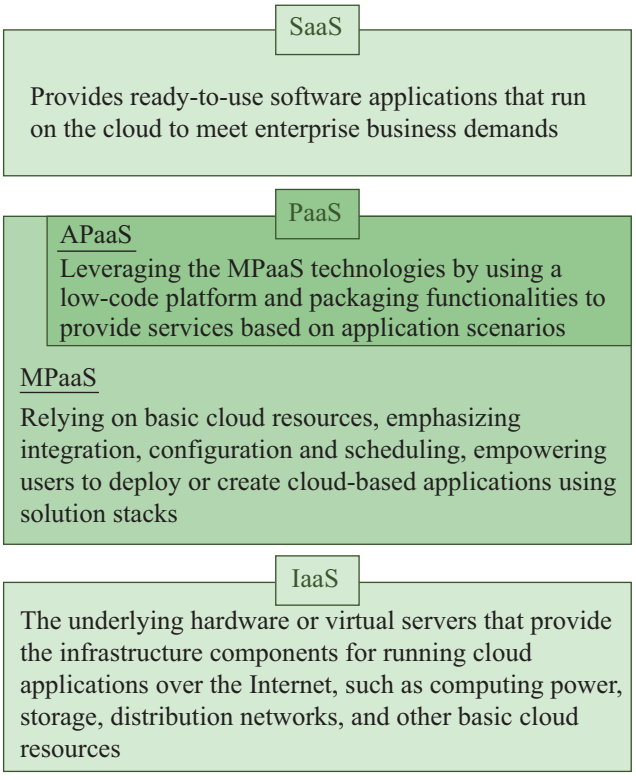
Source: China Academy of Information and Communications Technology, iResearch

THE AUDIOVISUAL CLOUD SERVICE MARKET IN CHINA

Types of Audiovisual Cloud Services

Audiovisual cloud services are based on cloud computing technology and tailored to the specific requirements of the production, storage, processing, distribution, analysis, auditing, retrieval and recommendation of videos and audios.

The audiovisual cloud service market in China can be divided into SaaS, PaaS and IaaS markets:



Source: iResearch

By background of service providers, audiovisual cloud service market participants in China can be divided into (i) non-independent audiovisual cloud service providers, which have affiliate companies providing services of other audiovisual segments in addition to audiovisual cloud services and can benefit from the ecosystem composed of their affiliate companies; and (ii) independent audiovisual cloud service providers, which generally focus on audiovisual cloud services as their main business.

The following chart compares the features of various types of audiovisual cloud services, namely SaaS, APaaS, MPaaS and IaaS:

Type of cloud service	Product/ service form	Accessibility	User group	Application development efficiency	Application development threshold	Degree of application customizability	Maintenance cost	Data usage efficiency
SaaS	Business-oriented software product or services	High	Business personnel	No customer development required		Low	Low	Low
APaaS	Zero-code platform	High	Business personnel	High	Low	Relatively high	Low	High
	Low-code platform		Entry-level developers	Medium	Medium	Relatively high	Medium	
MPaaS	Pro-code platform	Low	Professional developers	Low	High	High	High	
IaaS	Infrastructure which provides essential resources	Low	Professional developers	Not applicable as IaaS is not directly related to application				Not applicable

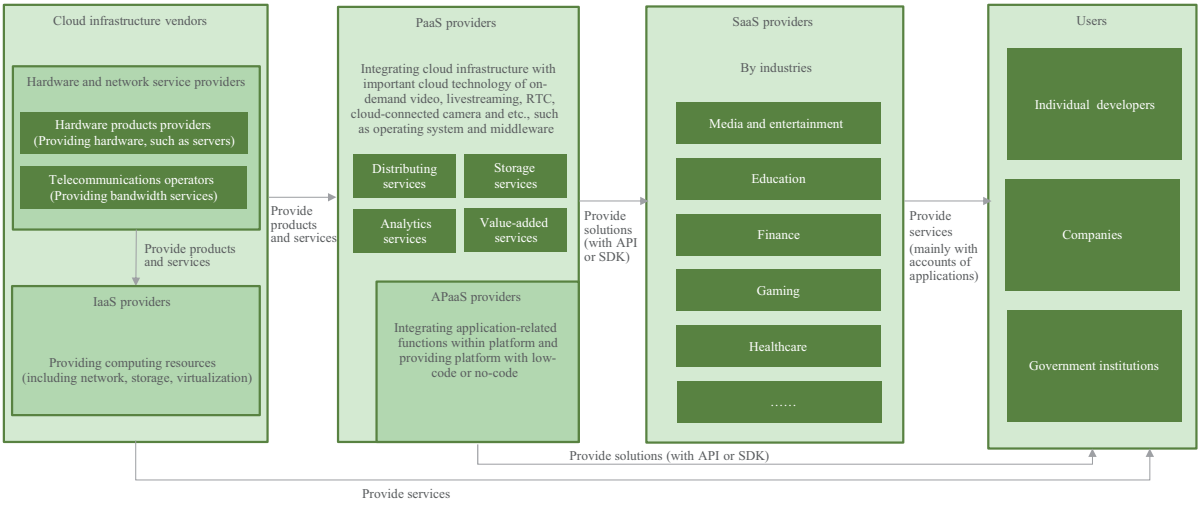
Source: iResearch

Note:

1. Given the complex workflow involved in delivering audiovisual cloud services, low-code platform is and will remain the mainstream technology in accessing audiovisual APaaS solutions in the industry in the near future.

2. Pro-code platform refers to an approach to building applications through extensive coding input by professional developers. Pro-code platforms offer a high degree of flexibility and control, enabling the creation of highly customized and complex applications, while at the same time requiring longer development cycle and higher development costs.

Value Chain of Audiovisual Cloud Service Market in China



Source: iResearch

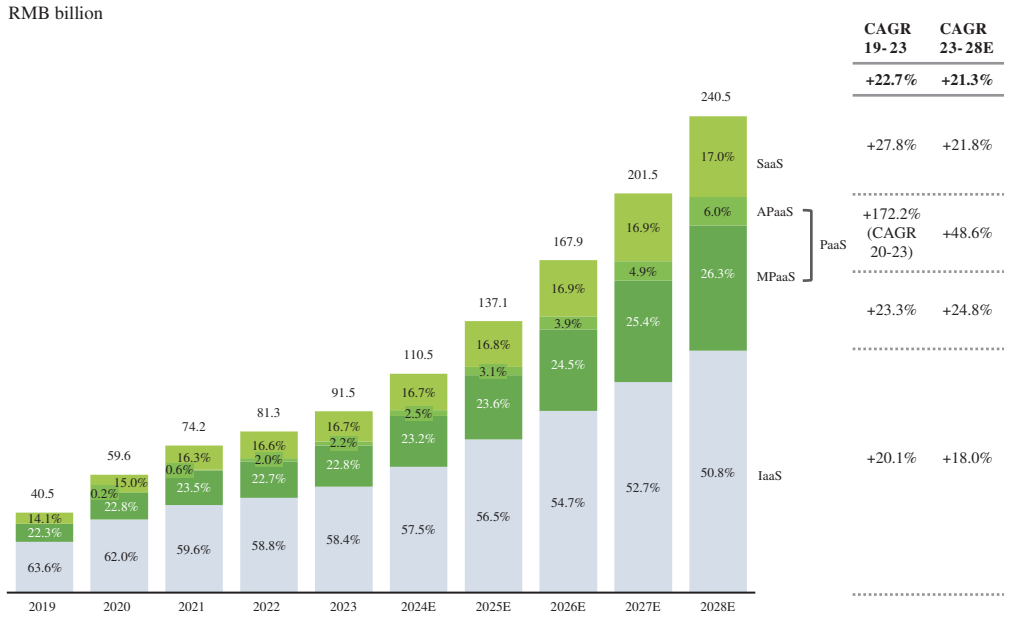
Cloud products and services are provided along the value chain of the audiovisual cloud service market. Cloud infrastructure vendors provide cloud products and services to PaaS providers and end users. PaaS providers provide solutions with API or SDK to SaaS providers. Meanwhile, PaaS providers may directly serve end users using APaaS solutions. SaaS providers usually provide specific applications to end users built on the solutions powered by PaaS providers and cloud infrastructure vendors.

Size of Audiovisual Cloud Service Market in China

Driven by upgrade of network infrastructure, iteration of audiovisual transmission technologies, and other factors, audiovisual service latency has gradually reduced and the application in various industries has been developed, resulting in the growth of the audiovisual cloud service market in China. In 2023, the size of the audiovisual cloud service market in China reached RMB91.5 billion. According to iResearch, the audiovisual cloud service market in China will continue to grow at a CAGR of 21.3% from 2023 to 2028, reaching RMB240.5 billion by 2028.

The audiovisual cloud service market in China can be divided into SaaS, PaaS and IaaS markets. IaaS is an essential component and the underlying infrastructure of audiovisual cloud. SaaS provides standardized applications. However, customers in the audiovisual market in China have highly differentiated needs, resulting in a bottleneck in the development of the SaaS market. With the development of audiovisual applications in various industries, the market share of PaaS, which has potential for further development, is expected to rapidly increase. The market share of PaaS in the audiovisual cloud service market is expected to increase from 24.9% in 2023 to 32.3% in 2028. With the applicability of low-code solutions addressing differentiated demand of the market, audiovisual APaaS is expected to see significant growth.

Market Size of Audiovisual Cloud Service Market in China[1], 2019-2028E



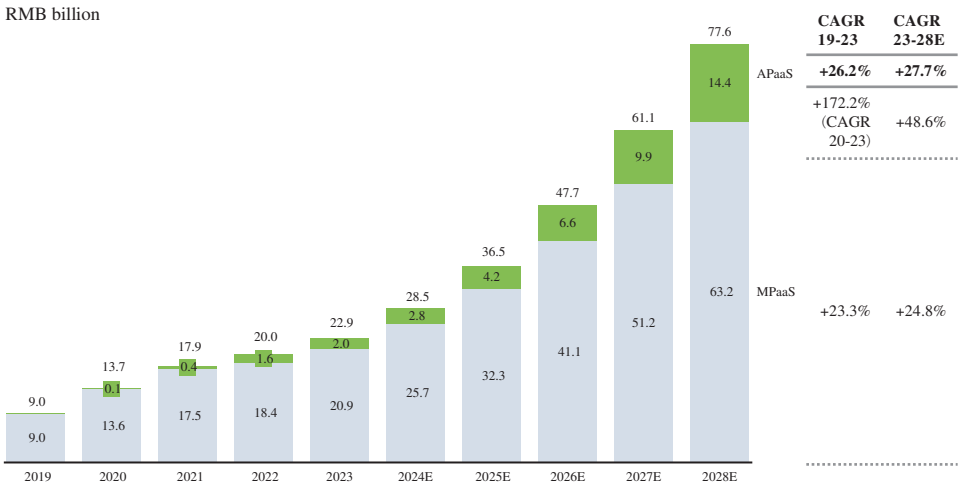
Source: Expert interviews, iResearch

Notes:

1. The market size is calculated based on the total revenue of audiovisual cloud service providers.

2. Any discrepancies in the chart between totals and sums of amounts listed therein are due to rounding.

Market Size of Audiovisual PaaS Market in China[1], 2019-2028E



Source: Expert interviews, iResearch

Notes:

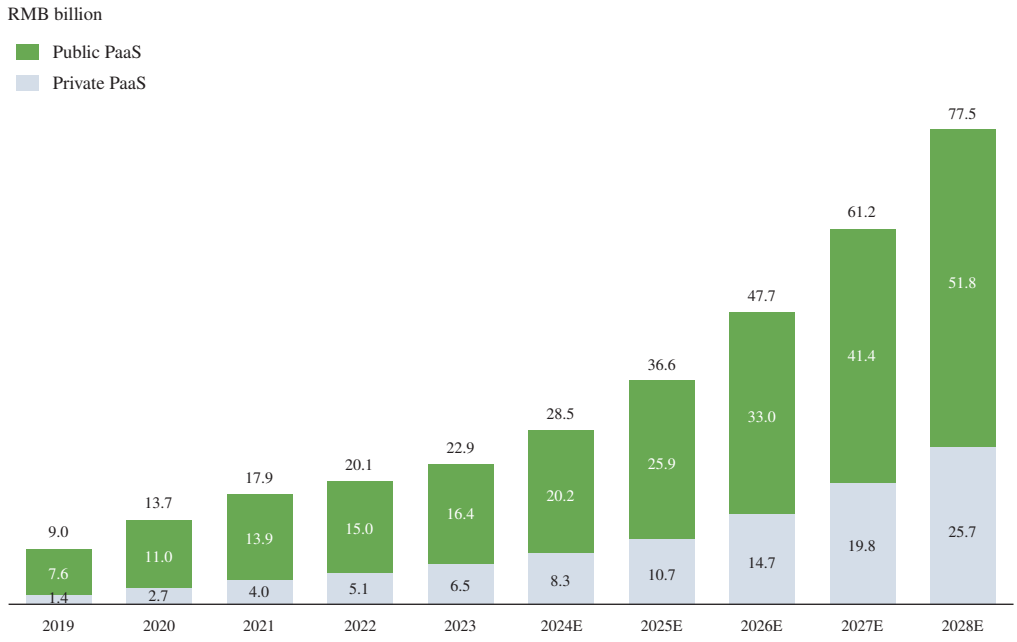
1. The market size is calculated based on the total revenue of audiovisual PaaS providers.

2. Any discrepancies in the chart between totals and sums of amounts listed therein are due to rounding.

Audiovisual PaaS can be delivered through public and private clouds. With public PaaS, customers share infrastructure, including database, servers and storage system, etc., that PaaS vendors provide and manage, and deliver over the internet. Customers usually pay service fees based on utilization and duration of usage. Public PaaS is less costly for customers as it requires less maintenance cost and is more scalable. In 2023, market size of public audiovisual PaaS reached RMB16.4 billion, accounting for 71.6% of the entire audiovisual PaaS market.

Private PaaS works within the customers' private cloud and PaaS vendors help establish cloud environment on the customers' infrastructure, charging on a project basis. Infrastructure can be customized to cater to customers' preferences and rules. For example, customers may prefer to store data on their local servers and access the data within firewall. Private PaaS has advantages in conformity with security requirements. In 2023, market size of private audiovisual PaaS reached RMB6.5 billion, accounting for 28.4% of the entire audiovisual PaaS market.

Market size of audiovisual PaaS service market in China, 2019-2028E



Source: Expert interviews, iResearch

Service Fees and Cost Analysis of Audiovisual PaaS Market in China

The industry range of service fees for CDN, object storage, interactive live-stream, and media analytics provided on public cloud are set out as below:

- CDN services are usually charged based on usage and it is usually charged cumulatively by tier and by stage. The industry publish price range of CDN services in terms of traffic is around RMB0.1 to RMB0.25 per GB depending on actual data usage. In practice, charges vary significantly from publish prices due to different billing methods and different discounts provided by CDN service providers. CDN service providers have been steadily lowering their prices to seize market share during the Track Record Period.

- Object storage services are charged based on usage. The price of standard object storage services ranges from RMB0.02/GB/month to RMB0.15/GB/month in 2023 depending on different charging items. The service fees for object storage services have experienced slight increase during the Track Record Period due to its better support for the storage of unstructured data, such as graphs, audio and video.

- Interactive live-stream services are charged based on usage, and its price could vary significantly depending on resolution ratio, latency rate, minutes used, etc.

- Media analytics services are charged based on usage or API calls, and its price could vary significantly depending on the selection of specific media analytic functions.

The service fees for APaaS provided on public cloud are charged based on usage or API calls in the industry. The pricing of APaaS solutions could also vary significantly depending on factors such as application scenarios, selection of function modules, and others.

The service fees for MPaaS and APaaS provided on private cloud are charged on a project basis in the industry, which varies significantly depending on factors such as client scale, scope of services, customization needs, and others.

Relevant cost involved in the provision of MPaaS and APaaS solutions primarily include:

- Network and bandwidth purchased from network operators and cloud providers. Network and telecommunication resources cost witnessed a steady decrease during the track record period because of China taking measures to lower the average rates of broadband and dedicated Internet access services for enterprises.

- Server and storage costs. The price of servers has experienced an increase at the beginning of pandemic outbreak. The rise in prices is linked to ongoing chipset shortages, COVID-19 restrictions continuing to disrupt supply chains and increasing demand for online activities. The average price has subsequently declined and returned to a relatively stable level with the ease of supply chain disruptions.

Market Drivers of Audiovisual PaaS Market in China

Demand for social entertainment, video conferencing and other scenarios continues to diversify

In recent years, people tend to consume media and entertainment content on the Internet. In addition, new forms of entertainment such as short video and live streaming have gradually become an integral part of people's daily lives. With the rise of remote working driven by enterprise globalization and the COVID-19 pandemic, more enterprises are communicating and collaborating through video conferencing and remote collaboration tools. To support social entertainment, video conferencing and other scenarios, reliable audiovisual cloud services are essential. Audiovisual PaaS, which provides efficient, stable and development-enabled video processing, storage services, distribution services, among others, are crucial for meeting the increasing demand for audiovisual content.

Customers' demand for scalable, customizable, low-cost and highly efficient audiovisual cloud services is growing

As the popularity of the Internet and mobile devices continues to grow, users are increasingly demanding high quality audiovisual services. To meet these demands, audiovisual business requires flexible, efficient and scalable audiovisual cloud services that can quickly respond to changes in business development and user needs. Audiovisual PaaS provides open platforms and API interface based on packaged functionalities, allowing customers to develop customized solutions. This approach helps reduce development costs and improve efficiency.

Advanced technologies including cloud computing, AI, and 5G technology continue to develop

The continuous development of cloud computing technology can provide scalable computing and storage resources to support the large-scale development of audiovisual cloud services and have contributed to the rise in market demand for audiovisual PaaS. Cloud computing technology provides elastic scalability, high availability, and flexibility for audiovisual PaaS service, enabling efficient storage, processing, and transmission of large volumes of audiovisual content. AI technology can intelligentize audiovisual cloud services from various perspectives including audio intelligent processing, video intelligent analysis, audiovisual intelligent recommendation, human-computer interaction, voice recognition, and AIGC. AI and AIGC technology can be widely deployed in automated editing of audiovisual contents, improving image and audio quality, generating original audiovisual contents from prompts, etc. With the empowerment of 5G network technology, the real-time transmission and cloud processing of audiovisual content will become smoother and more efficient. In addition, 5G network technology allows faster and more reliable audiovisual content transmission, making possible the pervasive distribution of high-definition videos, low-latency live-streaming, and many other audiovisual content. VR/AR technologies increase the consumption of video contents, such as live-streaming, video chats, in virtual reality or augmented reality devices, thereby increasing the usage of audiovisual PaaS services. The development of the advanced technologies and their operation in audiovisual cloud services have greatly contributed to the increase in market demand for audiovisual cloud services.

Entry Barriers of Audiovisual PaaS Market in China

Technical barriers

Technical capabilities covering multiple fields such as multimedia, network communication and cloud computing are required for audiovisual PaaS to achieve high reliability, high scalability, low latency and high definition. To provide high-quality audiovisual PaaS that effectively meets the business needs of their customers, PaaS providers need to possess competent technical capabilities.

Infrastructure resource barriers

The provision of audiovisual PaaS requires large-scale network equipment and server resources to provide data distribution and storage capabilities. Audiovisual PaaS also requires a large amount of bandwidth resources to ensure fast and stable transmission of audiovisual data. The stability of the infrastructure resources are crucial for the provision of audiovisual cloud services. As a result, PaaS providers need to maintain a stable and reliable quality of infrastructure resources, and strengthen the management and optimization of infrastructure resources to improve resource utilization and reduce operational costs.

Brand barriers

The reputation of audiovisual PaaS providers is mainly built upon their service quality and customer satisfaction. Customers generally choose an audiovisual PaaS provider based on the sufficiency of service coverage, service quality and after-sales support for audiovisual encoding and decoding, audiovisual transmission, live streaming, VoD, RTC services, among others. As a result, providers with good reputation and long service track record are more likely to attract customers.

Development Trends of Audiovisual PaaS Market in China

PaaS is becoming increasingly popular among audiovisual cloud services, and has become a new growth driver for cloud service providers

There has been an emerging trend of "narrowing the gap between demand and solution" in audiovisual cloud services. Customers prefer to directly purchase a set of solutions that can simultaneously meet their demand for infrastructure resource allocation, customizability and high usability, compared to the original service process from IaaS to PaaS to SaaS and finally to customers. PaaS, as the middle tier between SaaS and IaaS, is most likely to have both general and application capabilities. Through continuous improvement in customer understanding, PaaS providers are expected to launch more solutions, and bring new growth for cloud services.

More audiovisual cloud service providers are making efforts to provide APaaS

With the advantages of easy deployment and scalability of APaaS, service providers in the industry have devoted more attention to low-code solutions. Starting from 2021, many service providers have begun to introduce APaaS, in the form of low-code solutions, and even begun to make efforts towards becoming APaaS providers. Currently, service providers launch APaaS mainly by packaging SDKs which contain basic UI and functionalities. The emergence of APaaS has addressed the shortcomings of other service models, such as MPaaS which has a high development capability requirement to customers and SaaS which has low customizability. APaaS allows customers to take the initiative in development, while reducing development costs and shortening development cycles.

Innovative integration of cloud technology with AI, AIGC and VR/AR will accelerate the use of PaaS in more scenarios

As emerging technologies such as AI, AIGC and VR/AR are increasingly being utilized, audiovisual, as an important medium, will most likely play a part in the implementation of emerging technologies on the cloud including:

– Cloud rendering: Cloud rendering technology moves rendering work to the cloud to meet the requirements of complex computing and real-time rendering, and address bottlenecks in the metaverse applications;

– Digital person: Digital person technology presents the characters vividly by combining rendering, voice generation, animation generation, audiovisual synthesis display and interaction.

In the future, the integration of audiovisual cloud technology and emerging technologies are expected to penetrate more industries, including film and television, Internet media, games, finance, culture and tourism, healthcare and manufacturing.

Challenges of Audiovisual PaaS Market in China

Interactive revolution is limited by hardware and network

Audiovisual is an important medium in the metaverse and Web 3.0 revolution. The ultimate realization of interaction in the metaverse and Web 3.0 requires hardware to achieve holographic images and visual effects. The hardware or hardware-related technological breakthroughs will have an impact on the practical application of audiovisual cloud services in the interactive revolution. In addition, the interactive revolution requires high-speed network to transmit large amounts of data and to ensure data security, which poses certain requirements on the network transmission technology.

Competition in the PaaS market is becoming increasingly fierce

The prospects of development not only offer opportunities, but also bring potential and fierce competition to market participants. As the market share of PaaS is expected to rapidly increase, IaaS and SaaS providers have started to compete in the PaaS market, and the competition between non-independent audiovisual cloud service providers and independent audiovisual cloud service providers have become fierce. The influx of market participants will also bring new challenges. Going forward, in the increasingly competitive environment, the technical capabilities, business development capabilities and scenario understanding of market participants will become key measures of competitiveness and establish entry barriers.

IaaS providers have entered audiovisual PaaS market and are competing with existing PaaS service providers, but IaaS providers may fall short of necessary technical expertise and scenario knowledge, which have been the major competitive advantage of long-established PaaS providers. For details, please refer to the paragraph headed "— Entry Barriers of Audiovisual PaaS Market in China" in this section.

Unlike IaaS market, which lays the basic infrastructure and is applicable across all scenarios, PaaS market is more fragmented with scenario-focused needs, such as industrial, operational, governmental, retail, and audiovisual service needs. It is difficult for IaaS providers to cater to all the needs with quality. In addition, IaaS providers are limited in their capacity and capability in exploring niche business opportunities, and PaaS providers have more channels for reaching more end customers.

It is possible that market participants would reduce price in an attempt to obtain competitive advantage. However, price may not be the sole consideration for customers of PaaS as they would also consider a variety of factors, for example the overall data security and reliability, and value-added services available to them.

Overview of Audiovisual APaaS Market in China

History of audiovisual APaaS

Since 2019, with the completion of initial market education for APaaS, the audiovisual APaaS has started to penetrate into the market. From 2019 to 2020, audiovisual APaaS products in China entered the trial stage, and the product prototypes appeared. Audiovisual cloud service providers in China began to launch audiovisual APaaS products. However, most of the products provided were in the general service package in the form of beta or free trials. As a result, most providers had not explicitly identified those products as APaaS. In 2021, the audiovisual APaaS started to commercialize in scale. Since 2022, the market demand for audiovisual APaaS has started to increase rapidly. The easy access and scalable features of APaaS are expected to be crucial in the future era. Since 2023, the audiovisual APaaS industry has begun to explore the use of AIGC. Service providers have started to integrate AIGC technology into their audiovisual APaaS products to enhance their product functionality and efficiency. The incorporation of AIGC technology into audiovisual APaaS products is expected to empower creative conception, content innovation, and intelligent content generation.

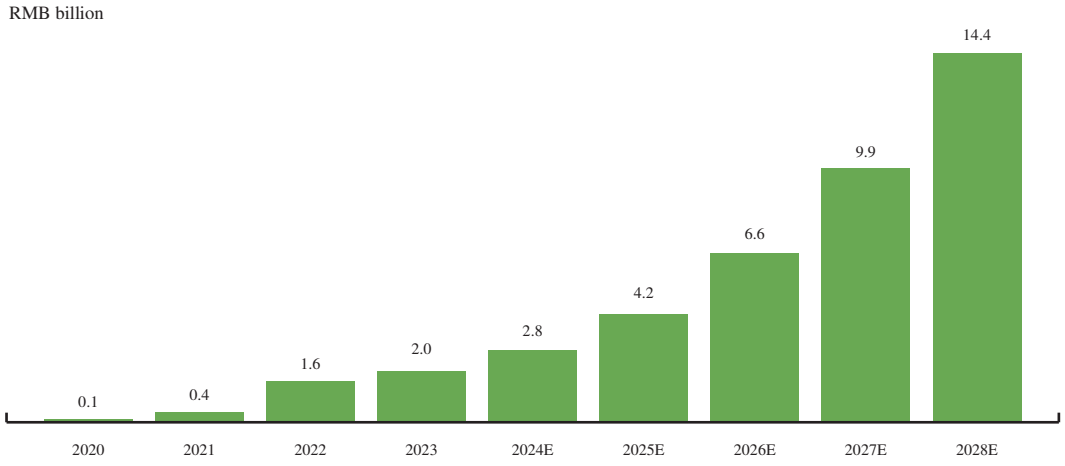
In terms of the demand, as customers require more lightweight and integrated audiovisual cloud service, audiovisual APaaS that integrates multiple functionalities can meet this demand. In addition, corporate customers require low-code solutions that are easy to use, rapidly deployable and readily expandable which can also be satisfied by audiovisual APaaS. Low-code solutions are and will remain the mainstream technology in the industry in the near future.

In terms of value for service providers, the audiovisual APaaS providers can use a business model that can penetrate into new scenarios and be quickly replicated after the customer needs are translated into solutions. In addition, the audiovisual PaaS providers may utilize their own PaaS capabilities and resources to expand APaaS business. As a result, it is easier for PaaS providers to develop APaaS compared to others.

Size, growth potential and penetration rate of audiovisual APaaS market in China

In 2023, the size of the audiovisual APaaS market in China reached RMB2.0 billion, with a penetration rate of 5.2% in the PaaS and SaaS markets of audiovisual cloud services. According to iResearch, by 2028, the size of the audiovisual APaaS market is expected to reach RMB14.4 billion, with a penetration rate of 12.1% and a CAGR of 48.6% from 2023 to 2028. PaaS and SaaS often intersect and APaaS and SaaS can serve as substitutes to one another. With the applicability of low-code solutions addressing differentiated demand of the market, APaaS is expected to gradually capture some of the market share of MPaaS and SaaS, and penetrate into the audiovisual PaaS market and the audiovisual SaaS market.

Market Size of Audiovisual APaaS Market in China[1], 2020[2]-2028E



Source: Expert interviews, iResearch

Notes:

1. The market size is calculated based on the total revenue of audiovisual APaaS providers.

2. APaaS solutions were first commercialized in the industry in 2020 and therefore the APaaS market size data first became available in 2020.

3. Any discrepancies in the chart between totals and sums of amounts listed therein are due to rounding.

The audiovisual PaaS market can be divided into the audiovisual MPaaS market and the audiovisual APaaS market. As a sub-segment within the PaaS market, the audiovisual APaaS market has certain similar market drivers, entry barriers and development trends as the audiovisual PaaS market. In addition, the audiovisual APaaS market distinguishes itself from the audiovisual PaaS market with the following unique drivers, entry barriers and development trends.

Market Drivers of Audiovisual APaaS Market in China

Continuous scenario penetration

In the social entertainment scenario, virtual reality applications will likely lead to the growth of audiovisual cloud services, and the ability of APaaS to quickly launch applications makes it possible for rapid expansion. In addition, APaaS applications are gradually integrated to reshape existing business and audiovisual cloud services may bring in live streaming to marketing, visual sensing to automatic driving, remote maintenance to manufacturing, and other applications.

Improvement of functions

In addition to basic services such as audiovisual transmission, production and processing, more scenario-based value-added services have been developed at customers' business level, such as traffic management in corporate live streaming and AI editing in new media. These new services added more practical features to APaaS, as well as providing customers with services of value. Different from PaaS, APaaS may be able to derive more diversified revenue sources with higher premium services. In addition, integrating multiple technologies in relation to VoD, live-streaming and RTC may further drive up the profitability of APaaS products.

Entry Barriers of Audiovisual APaaS Market in China

Technology barrier

In addition to the complex R&D process of audiovisual technology, full stack self-developed audiovisual APaaS solutions have even higher development barriers with platform-based, scenario-specific, and commercializable features. As a result, audiovisual APaaS providers that lack technical R&D and iterative capabilities will likely face the risk of losing competitiveness.

In recent years, audiovisual IaaS, PaaS and SaaS service providers have begun to expand their offerings to audiovisual APaaS. As compared to audiovisual IaaS and SaaS providers, audiovisual PaaS providers can leverage their existing PaaS capabilities and resources and have technical advantages. The expansion into APaaS business requires service providers to re-construct their platform and develop scenario-based solutions, which has a technical threshold and development cycle.

Scenario knowledge barrier

The audiovisual APaaS integrates different functionalities with scenario-specific knowledge using low-code platform. As a result, service providers will be able to deliver scenario-based solutions that directly address customers' needs only if they have in-depth understanding of customers' business processes. New entrants are unlikely to accumulate a deep understanding of multiple audiovisual scenarios in a short time.

Customer resource barrier

Audiovisual APaaS providers may improve audiovisual technology capabilities, scenario understandings, and customer service capabilities by accumulating experiences in providing services to different customers. As audiovisual APaaS solutions may be swiftly replicated to different customers, high-quality audiovisual APaaS solutions that have been validated by customers are more likely to win purchase orders and build customer loyalty. Lacking sufficient customer service experience and competitive products, new entrants may face difficulties in securing customer orders.

Product capability matrix barrier

Audiovisual APaaS provides an integrated service package with a variety of audiovisual service components. Audiovisual APaaS providers are not only required to have a set of mature audiovisual general functionalities, such as VoD, live streaming and RTC, but are also required to accumulate various scenario-based plugins, such as bullet chat, camera filter, and content auditing. As a result, an audiovisual APaaS provider with diversified product capabilities will be able to better meet the growing demand of customers and gain a favorable competitive position in the market.

Development Trends of Audiovisual APaaS Market in China

Integrated APaaS products will expand to more scenarios and add real value to customer's business

Audiovisual APaaS products that can be quickly launched and customized will be better integrated with customers' business and generate real values. For example, using remote maintenance instead of on-site maintenance in manufacturing can significantly reduce operating costs. Financial companies may also use audiovisual cloud technologies for claims settlement.

Technology is developing towards high definition, low latency, strong immersion and interaction

By improving resolution, frame rate and color gamut, videos will be ever closer to reality. By reducing latency, time interval between video presentation and capture will continue to narrow. The technology can also be applied to automatic driving that has high audiovisual latency requirement. Furthermore, the metaverse and Web 3.0 will require audiovisual technologies to create future-oriented perceptual experiences.

AIGC technology is expected to drive changes in audiovisual APaaS industry

"AIGC + audiovisual APaaS" is expected to emerge as a new form of audiovisual APaaS in the future, allowing users to automatically generate content and assemble a complete audiovisual application with simple input. Compared to existing audiovisual APaaS products, "AIGC + audiovisual APaaS" offers certain advantages, including increased efficiency, convenience, and ease of application generation. AI generated code, a subfield of AIGC (AI generated content), has the potential to improve the efficiency and code quality through the use of AI.

Deepened cooperation among audiovisual APaaS providers

Future trend in the audiovisual APaaS market is expected to be characterized by increasing cooperation among service providers. As more scenarios are created in APaaS and it becomes increasingly difficult for a service provider to cover a full range of scenarios, audiovisual APaaS providers may cooperate with each other to achieve efficiency. Individual service providers may provide infrastructure resources, technologies or industry know-how in a specific scenario in order to benefit from the integrated output. Service providers may also benefit from participating third-party developers to enrich the functionalities and capabilities of their audiovisual cloud services. In this process, leading service providers may benefit from open and established platforms with wide scenario coverage.

CDN, object storage service and hardware markets in China

CDN, object storage service and hardware represent the major sub-segments in the audiovisual PaaS market. According to iResearch, in 2023, the size of the CDN services in audiovisual PaaS market in China reached RMB9.7 billion. By 2028, the size of the market is expected to reach RMB23.8 billion, with a CAGR of 19.8% from 2023 to 2028. According to iResearch, the size of the storage services market in the audiovisual PaaS market in China was RMB5.8 billion in 2023 and is expected to reach RMB20.0 billion by 2028, with a CAGR of 28.2% from 2023 to 2028. According to iResearch, in 2023, the size of the server hardware market in audiovisual PaaS market in China reached RMB3.2 billion. By 2028, the size of the market is expected to reach RMB9.3 billion, with a CAGR of 24.0% from 2023 to 2028. The table below sets forth the market prices and cost trends of the CDN, object storage service and hardware markets in China.

	Market price	Cost
CDN	CDN services are usually charged based on usage, and it is usually charged cumulatively by tier by stage. In practice, charges vary significantly due to different billing methods and different discounts provided by CDN service providers. Therefore, publish price is listed for reference. The industry average price of CDN services in terms of monthly peak bandwidth is around 7 RMB/Mbps/month to 8 RMB/Mbps/month. From 2014 to 2021, CDN service providers have been steadily lowering their prices to seize market share. Going forward, CDN price is expected to be on a steady decreasing trend in line with its cost decline. CDN price decreased by 16% from 2021 to 2022 and there was a slow down in the decline of CDN price, which decreased by around 5% from 2022 to 2023.	Relevant cost involved in CDN primarily include network and bandwidth costs. • Network and bandwidth are purchased from network operators and cloud providers. Network and telecommunication resources witnessed a steady decrease during the Track Record Period. Tracking the price trends of network and bandwidth across different operators is difficult due to the fluctuating discounts offered for varying usage levels and various promotional activities. Instead, based on the results of expert interviews performed by iResearch, there has been a single-digit decline in the network and bandwidth prices of the operators during the Track Record Period. It is expected that the prices of network and bandwidth will continue to decrease due to intensified competition among telecom carriers and China government is taking measures to lower the average rates of broadband and dedicated Internet access services for enterprises.

	Market price	Cost
Object storage service ("OSS")	Object storage services are charged based on usage, ranging from 0.02RMB/GB/month to 0.15 RMB/GB/month in 2023. The service fees for object storage services have experienced moderate increase during track record period due to its better support for the storage of unstructured data, such as graphs, audio and video.	Relevant cost involved in OSS primarily include server and storage costs. • Server and storage costs. The global average price of servers rose from USD8,048.7 per unit to USD10,427.1 per unit from 2021 to 2023, representing a CAGR of 13.8% during the same period, according to IDC and Counterpoint Research. The price of servers has experienced an increase at the beginning of pandemic outbreak. The rise in prices is linked to ongoing chipset shortages, COVID-19 restrictions continuing to disrupt supply chains and increasing demand for online activities. The average price has gradually declined before increased again in 2023 because of the impact of supplier production reductions and resurgence of consumer market demand. It is anticipated that this fluctuating trend influenced by supply and demand dynamics and technology advancement will continue in the future. The global price of storage units has been relatively stable during the Track Record Period, according to Statista. It slight increased from USD13.5 in 2021 per unit to USD14.1 per unit in 2023 with a CAGR of 2.2% and is expected to continue this stable trend.

	Market price	Cost
Server hardware	The price of servers could vary significantly depending on processor speed, memory capacity, storage size, and software features provided, etc.	The global average price of servers rose from USD8,048.7 per unit to USD10,427.1 per unit from 2021 to 2023, representing a CAGR of 13.8% during the same period, according to IDC and Counterpoint Research. Relevant cost involved in servers primarily include hard disks and other components. Due to the supply chain shortages during the early stages of the pandemic and followed by a subsequent slowdown in consumer market demand, the prices of major storage hardware components have exhibited an initial increase and then a decrease. Recently, the impact of supplier production reductions and resurgence of consumer market demand drives the prices increase again. It is anticipated that this fluctuating trend influenced by supply and demand dynamics and technology advancement will continue in the future.

COMPETITIVE LANDSCAPE

In 2023, the top five service providers contributed to a total of 39.2% of the market share in terms of revenue of the audiovisual PaaS market in China, among which we ranked third with a revenue of RMB1.33 billion, accounting for 5.8% of the market share. The following table sets forth the top five service providers in the audiovisual PaaS market in China in terms of revenue in 2023.

Ranking of audiovisual PaaS market of China in 2023

No.	Company	Whether it is an independent audiovisual cloud service provider	Comparable revenue[1] *RMB billion*	Market share *%*
1	Competitor A[2]	x	3.89	17.0
2	Competitor B[3]	x	1.47	6.4
3	Our Group	√	1.33	5.8
4	Competitor C[4]	x	1.31	5.7
5	Competitor D[5]	√	0.99	4.3
Top five service providers			8.99	39.2
Total market size			22.9	100.0

Source: iResearch

Notes:

1. Comparable revenue is based on the revenue of audiovisual PaaS business of the companies.
2. Competitor A, founded in 2009, is a company providing cloud computing and artificial intelligence services. It is a subsidiary of a company that was listed on the New York Stock Exchange in 2014 and had its secondary listing on the Hong Kong Stock Exchange in 2019.
3. Competitor B, founded in 2010, is a China-based technology company that provides globalized cloud products and services. It is a subsidiary of a company that was listed on the Stock Exchange in 2004.
4. Competitor C, founded in 2012, is a company focusing on cloud computing, big data, and AI services. It is a subsidiary of a company that was listed on the NASDAQ Global Select Market in 2005 and had its secondary listing on the Stock Exchange in 2021.
5. Competitor D, founded in 2014, is a company providing real-time voice and video engagement services. It was listed on the NASDAQ Global Select Market in 2020.
6. Any discrepancies in the table between totals and sums of amounts listed therein are due to rounding.

In 2023, the top five service providers contributed to a total of 48.1% of the market share in terms of revenue of the audiovisual APaaS market in China, among which we ranked second with a revenue of RMB0.28 billion in APaaS, accounting for 14.1% of the market share. The following table sets forth the top five service providers in the audiovisual APaaS market in China in terms of revenue in 2023.

Ranking of audiovisual APaaS market of China in 2023

No.	Company	Whether it is an independent audiovisual cloud service provider	Comparable revenue[1] *RMB billion*	Market share *%*
1	Competitor B	x	0.33	16.6
2	Our Group	√	0.28	14.1
3	Competitor A	x	0.19	9.5
4	Competitor C	x	0.10	4.9
5	Competitor E[2]	√	0.06	3.0
Top five service providers			0.96	48.1
Total market size			2.0	100.0

Source: iResearch

Notes:

1. Comparable revenue is measured as the revenue generated from audiovisual APaaS business of the companies or the relevant revenue calculated based on an estimated percentage of the revenue from audiovisual PaaS. Only revenue generated from commercializable audiovisual APaaS products is included.

2. Competitor E, founded in 2010, provides an enterprise-level interactive video cloud platform in China. Competitor E is a private company and based on public information, it completed series D financing in the amount of RMB230 million in 2018.

3. Any discrepancies in the table between totals and sums of amounts listed therein are due to rounding.