PaaS for Mobile Cloud Gaming

November 2021

A New Market: B2B Service Platform for Mobile Cloud Gaming

- Niko Partners conducts research on the video game industry in Asia.
- We have recently written a report on **Cloud Gaming in Asia**.
- In writing that report we became aware of the **growing importance of the B2B aspect of cloud gaming** – cloud gaming is more than just the B2C platforms consumers are familiar with.
- This is called Platform as a Service (PaaS) for Mobile Cloud Gaming and this industry segment has the potential to **dramatically impact the mobile and F2P games market.**
- This white paper explains what **PaaS for Mobile Cloud** is and how it is being proven out in China already.
- We believe that the market for this extends beyond China, even beyond Asia, and **will be worldwide soon.**

The Emerging Opportunity of Mobile Cloud

- Mobile Cloud Gaming occupies a distinct industry segment, and unlike console or PC-to-cloud offerings, this technology is already changing how developers and publishers reach gamers.
- Cloud for mobile gaming is already in place in China and we are seeing new international Platform as a Services (PaaS) Mobile Cloud offerings emerge. This report details how tis technology has been deployed and the areas of mobile gaming which will be affected by this shift.
- Mobile cloud PaaS does not depend on widespread consumer adoption to achieve viability. Instead, it is a tool developers and publishers are using to streamline user acquisition and reduce associated costs, to circumvent app stores, and to explore new social, cultural, and creative possibilities.
- Unlike premium cloud gaming which is still developing and depends on a consumer market to succeed, mobile cloud is here now, already changing the games business, and easily integrated by gaming companies.
- Cloud for mobile gaming is already in place in China and we are seeing new international Platform as a Services (PaaS) Mobile Cloud offerings emerge. This report details how it has been deployed and the areas of mobile gaming which will be affected by this shift.
- B2B mobile cloud is still nascent, with Tencent, Now.gg, Ubitus and Haima Cloud as emerging players in this market space.

Defining Mobile Cloud Gaming & PaaS

Mobile Cloud Gaming refers to cloud applications that bring mobile games directly to users' connected devices without the need for installations or complex local computation.

All cloud gaming is designed to remove constraints that have been part of the videogame industry for decades – the need to own or dedicate hardware to the storage and execution of game files. A mobile-first or mobile-only approach uses cloud technology to increase accessibility, discovery, and profitability.

Platform as a Service (PaaS) describes a category of cloud technologies that allow customers or developers to manage, provision, and execute software from the cloud.

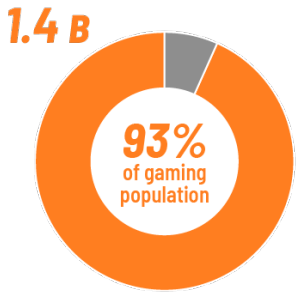
Unlike other notable cloud gaming services that target consumers directly, **Mobile Cloud PaaS** is designed to serve developers and publishers by giving them the tools to reach new gamers in new ways.

China’s Cloud Market is Cutting Edge

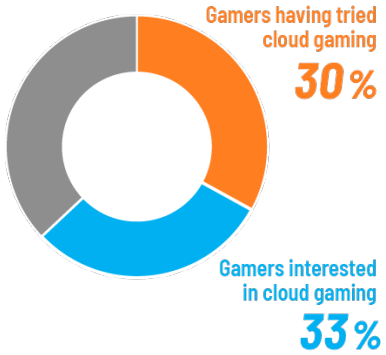
Niko Partners estimates that **there are 1.5 billion gamers in Asia in 2021, with 1.4 billion already playing on mobile**. However, most have yet to convert to cloud gaming. It will be more than 5 years before cloud gaming is fully adopted across the region, with established markets like South Korea, Japan, and China leading the way.

- As a mobile-first market, cloud platforms will be the first place many Chinese gamers will experience AAA PC and console titles. For this reason, the expansion of all cloud gaming **stands to significantly increase the addressable games market**.
- 5G implementation continues to be the hurdle for cloud adoption. Regulation and incentives supporting 5G Infrastructure will be particularly important in markets like China where the government plays a large role.
- **30% of Chinese gamers have tried a cloud gaming service while another 33% of gamers are interested in cloud gaming**. This is fertile ground for cloud gaming implementation and opens opportunities for companies to experiment in the space through both B2C and B2B solutions.

Mobile Gamers in Asia



Cloud Gamers in China



China’s Cloud Market is Diversifying

Chinese game companies, tech companies, and telecoms are all leading the charge when it comes to rolling out cloud gaming services, with government backing growth. Telecoms view cloud gaming as a proof point for 5G, using cloud gaming to drive 5G adoption and increase ARPU. Tech companies and game companies have started to set up their own B2C cloud gaming platforms.

B2B cloud gaming PaaS solutions are less prevalent at this stage with only a few players. However, B2B cloud is the segment to watch as many cloud platforms are built on technology from B2B providers, and **B2B has the potential to expand the segment into new areas.**

Mobile cloud gaming is a recent but important phenomenon in the cloud gaming space. B2C platforms such as **Tencent Xianyou** are taking the lead in China, but the service has yet to fully commercialize. Other game developers such as **miHoYo** have worked directly with B2B solutions providers such as **WeLink** to create a cloud versions of key titles making them available to a wider range of players. We discuss this in more detail later in the report.

The Cloud Gaming Ecosystem

Subscription & Premium

Premium B2C cloud gaming exists as an alternative to other premium or B2P gaming product models. **These services compete with Steam and other PC game stores as well as with console game stores.** To a more minor extent they also compete with premium (Pay-2-Play) mobile titles.

Time-Based Fee

Many telecom operated cloud gaming platforms opt for a time-based fee model, where **mobile subscribers pay based on the time they spend using the service.** This works to introduce players to cloud gaming services and serves as a marketing tool for telecoms, with the potential to turn some of these users into cloud gaming subscribers.

Ad Supported F2P

Social platforms like Facebook are experimenting with **ad-supported cloud gaming.** These services benefit social media platforms and aid with game discovery.

Free to Play Cloud Gaming

Platforms adopting a PaaS approach make titles free to users over the cloud and operate on a B2B model, where **developers and publishers pay to host a title.** This works well for F2P titles that can incorporate this as part of **user acquisition strategy** to reduce marketing and take-rate costs. Notable cases include Now.GG, Ubitus, and Tencent.

Notable B2C and Telecom Cloud Gaming Platforms in China

TENCENT XIANYOU

TENCENT START

NETEASE CLOUD GAMES

CHINA TELECOM TIANYI GAME

CHINA MOBILE MIGU GAME

HUYA YOWA

CHINA UNICOM WO GAME

SHUNWANG CLOUD GAME

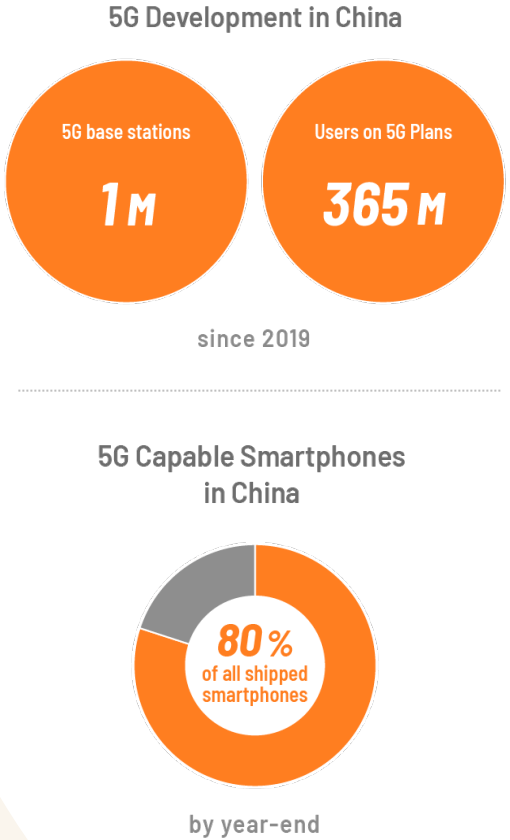
DALONG CLOUD GAME

Mobile-First Cloud Gaming is Here, and Only Getting Bigger

Mobile cloud gaming refers to cloud platforms with a **mobile-first or mobile-only approach.** These services are similar to PC and console cloud gaming services, with the potential to be much more impactful, but a mobile-only approach comes with its own challenges.

Technology is quickly arriving that has made mobile cloud gaming viable for players:

- **5G is essential for mobile cloud gaming for low latency, low jitter, and overall playability**. According to data from Google, 10Mbps is the minimum and 35Mbps is the recommended network speed needed to support cloud gaming, so 5G is essential to providing this to users.
- **China began 5G roll out in November of 2019 and has built over 1 million 5G base stations with 365 million users on 5G plans.** As these numbers continue to rise, so too does the importance of cloud gaming as a core business model.
- It is expected that **80% of all smart phones shipped in China will be 5G capable** by year-end.



Understanding the Hurdles of China's Cloud Market

1

In many respects, **China has the most developed cloud gaming ecosystems in the world.** With more than a half-dozen cloud gaming technology providers and many more cloud platforms. The high number of cloud gaming companies form the basis for an industry with high diversity.

2

Cloud gaming services range from **subscription offerings** (similar to western cloud platforms like Google Stadia, Microsoft's Xbox Cloud Gaming, Amazon's Luna, and Sony's PlayStation Now), **time-based services** where users buy a set number of hours or play by the hour, and **free-to-play cloud trials** and **mobile cloud titles.**

3

The number of services in the Chinese market is creating **stiff competition**, especially among B2C services. Cloud platforms are competing over titles and content while also competing over a **relatively small base of cloud users.** This has led to consolidation among cloud gaming platforms already. For example, Yoozoo closed their cloud platform and Huawei recently shut down its Cloud PC offering.

4

Cloud gaming market saturation benefits consumers by keeping pricing competitive. However, saturation also spreads content across too many platforms, forcing players to use multiple services to play top titles.

5

Finally, while China is the most developed market, many of its cloud service offerings may be **geographically limited to China's network.** As PaaS business models for mobile cloud rise to shape the way mobile titles are marketed, international platforms and technology providers like Now.GG or Ubitus may have an advantage over domestic Chinese cloud operators because they can scale internationally.

B2B Cloud Solutions Open the Playing field

The limitations of China's Cloud gaming market from over-saturation, stiff competition, titles spread across too many platforms, and geographical and regulatory concerns is giving rise to alternative models.

- **B2C Cloud gaming platforms** are the most susceptible to these limitations as they are in direct competition with each other for users.
- For the same reason, **subscription and time-based fee business models** experience similar constraints.

This opens the space to **mobile-first B2B PaaS solutions** that can sidestep some of the issues in the B2C space. These solution providers are building platforms that allow developers to utilize existing F2P models, while reducing acquisition costs, reaching a larger player base, and removing app store fees.

- **Tencent** leads China's cloud gaming B2B / PaaS space, but other B2B providers include **Haima Cloud**, **Huawei**, **Alibaba**, **Kingsoft Cloud**, and **WeLink**.
- Outside of China, we have found only a couple of notable companies in the B2B cloud gaming PaaS space. These are **Ubitus**, which primarily focuses on console and PC game solutions, and **Now.gg**, which focuses on mobile game solutions.

There is still experimentation in this space, but if successfully executed, these PaaS offerings solve concerns around the subscription or time-based fee business model and instead allow for a F2P model that mobile gamers are already comfortable with. For this reason, **we expect mobile cloud PaaS to mature faster than B2C premium cloud offerings.**

B2B PaaS in China

Tencent 腾讯

海马云 haimacloud

HUAWEI

Alibaba Group 阿里巴巴集团

Kingsoft Cloud KSCLOUD

WeLink

B2B PaaS outside China

ubitus

now.gg MOBILE CLOUD

Defining Mobile Cloud and PaaS Cloud Market Position

As cloud technology improves and as more companies in the game space recognize the value of cloud gaming, we are seeing a **shift to cloud gaming platforms that focus on mobile games** with Facebook Gaming and Now.gg being notable examples. These solution providers are deploying business models that enable users to start playing for free, like they would with any mobile game.

PaaS business models for cloud gaming are **built on partnerships** between cloud technology providers and developers or publishers

- With a **PaaS cloud gaming solution**, the developer works with **the solution provider** to host their game in the cloud and utilize various features offered by the provider.
- This essentially replaces the traditional app store distribution model for games and **disrupts the current landscape.**
- Current PaaS cloud gaming solutions offer a **complete one stop solution** that allows developers to host their game in the cloud, benefit from the platform's discoverability tools and process payments through the solution provider.

Notable examples

facebook gaming

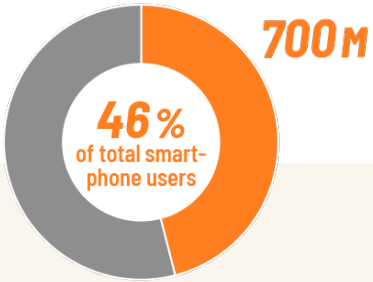
now.gg MOBILE CLOUD

Mobile Cloud and PaaS Cloud: Expanding Markets

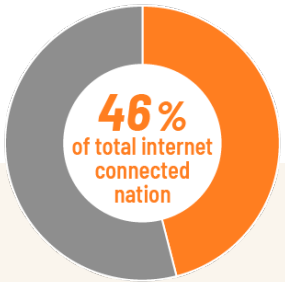
China is home to 700 million mobile gamers in 2021, but this is less than half of the 1.5 billion smartphone users in China. This means that while the Chinese mobile games market is truly massive, the mobile games market is reaching less than half of its potential possible user base.

- The same figures apply across Asia, where mobile gamers account for a combined 46% of the total internet-connected population.
- One of the fastest ways for the games market to grow in any country in Asia is begin to convert non-gamer mobile users to the game space, and the simplest way to do this is to lower barriers to discovery and to market entry for new gamers.

Mobile Gamers in China



Mobile Gamers in Asia



Mobile Cloud and PaaS Cloud: Generating New Opportunity

Although *Fortnite* is a more polished, more well known, and earlier entry into the mobile battle royale genre, it lags far behind the popularity of *PUBG Lite* and *Free Fire* across Asia. Low end mobile hardware is more common in developing markets and high end mobile games such as *Fortnite* struggle to reach a market share necessary for viral success.

Mobile Cloud PaaS is emerging as one tool through which publishers can grow their user base by attracting new, high-quality players. **By eliminating hardware constraints, points-of-pain in game discovery, and enabling seamless social discovery mobile PaaS services offer a way to onboard users like never before.**

Mobile cloud **enables high end mobile games to run on low-end mobile hardware**, and any other device as well. Mobile cloud also allows games to be played without downloading game files, meaning **local storage is also no longer a factor in adoptability.**

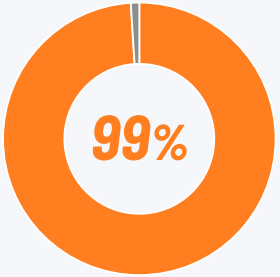
Discoverability tools, such as links that can be shared on social media, allow users to discover and play these games **not just on their phone, but on PCs, TVs and other smart devices too.**

How Mobile Cloud and PaaS Changes the Cloud Ecosystem

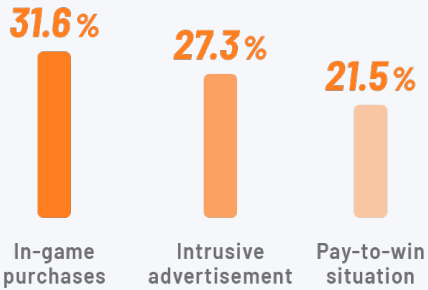
The challenge of marketing traditional, premium cloud services (subscription and buy-to-play) to mobile gamers and non-gamers is that these users are not conditioned to pay upfront for gaming experiences. Instead, F2P gamers play until they are invested in a title, before spending money to improve their experience or set themselves apart through cosmetics or other items.

- The **mobile games market segment** is the **most developed in its implementation of F2P**, relying on microtransactions, *gacha* mechanics, in-game cosmetics, and season-passes to turn free users into paying users. For this reason, F2P games rely on attracting the widest possible base of players, and mobile cloud gaming is ideally positioned to support this.
- Mobile cloud gaming is a much easier conversion than attracting mobile gamers to premium paid content. **Offering easier ways for F2P users to try a free game allows publishers to overcome discovery and acquisition hurdles, creating a much larger pool to convert into playing gamers.**
- Mobile Cloud for F2P Titles occupies a separate segment of the market and does not compete with premium cloud services that bring PC and console to mobile. Instead, mobile cloud platforms facilitate **more natural discovery cycles for mobile games.**

F2P or freemium titles in China



Dislikes of Chinese Mobile Gamers

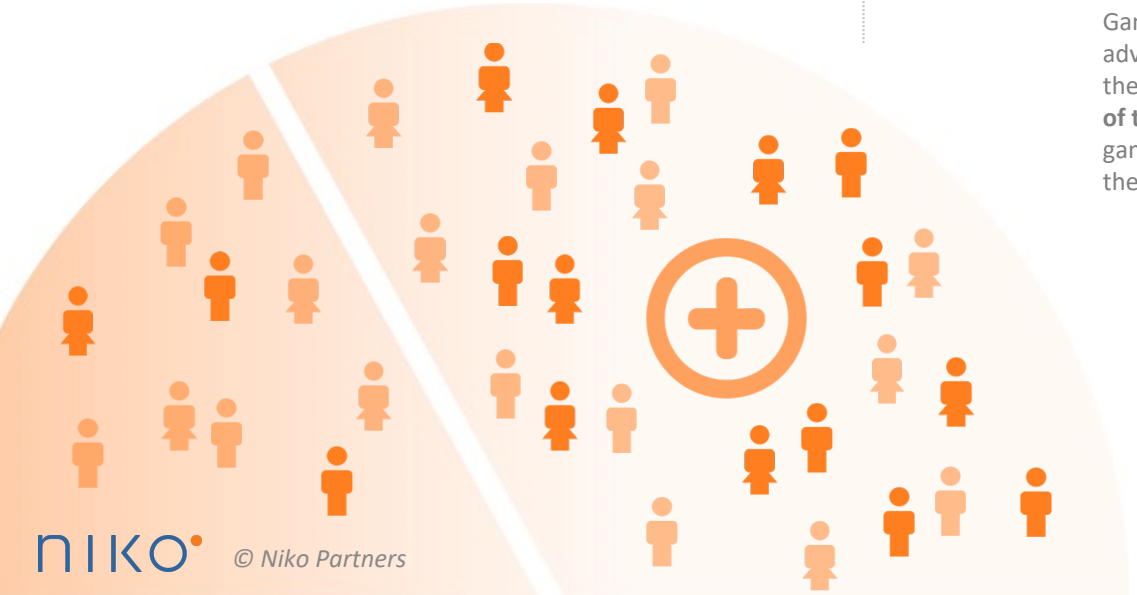


How Mobile Cloud and PaaS Changes the Cloud Ecosystem

Developers are struggling to be discovered on app stores and struggling with profit margins within this ecosystem. **Mobile PaaS, presents these developers with an alternative route to user acquisition.**

PaaS Mobile Cloud extends and integrates discovery into social platforms and browsers. It is not about attracting subscribers, it is about enabling discovery, and to this end it is a more eminently appealing proposition to publishers of mobile titles.

Games have frequently sought new users through advertisements, but mobile cloud platforms will enable these ads to **immediately place users into a live version of the game.** Additionally, players who post about the game will be able to share playable stories and posts with their peers.



Technology Making Mobile Cloud Platforms Increasingly Viable

Early iterations of mobile cloud gaming simply collected mobile hardware in server black boxes. Arranging hardware in this way meant that technology was **not adaptive or scalable.** A low-demand game would use the same hardware as a high-demand game.

More recent iterations of cloud technology are specialized for mobile cloud gaming, beginning with a move away from a centralized server **in favor of scalable, on-demand, and edge infrastructure.** These developments make cloud gaming more cost effective for operators and B2B partners, while also making the service more efficient for users.

5G is a crucial technological threshold for mobile cloud gaming a playability depends first on low latency.

Edge computing describes cloud infrastructure that places key data centers at network nodes closer to end users. This means a shorter distance between players and the server hardware executing the titles they are using. While this is an emerging technology, its applications are widespread with many cloud service providers investing in this technology.

Distributed hardware built on **ARM architecture** allows mobile cloud gaming servers to develop beyond black-boxes full of phones or emulation on x86 architecture. With this technology a GPU may be in one location, while storage or processors may be located elsewhere. Dividing a mobile technology up in this way means components can be allocated based on demand.

Crucially the **Distributed Mobile Cloud** is not built around android emulation, but rather **dedicated mobile hardware** at different nodes that can be selected based on demand and leveraged through the cloud.

The front-end of mobile cloud gaming is also improving, as the user experience is an essential part of acquisition and retention.

Mobile cloud discovery may take place on **either a mobile device or computer**, developing an interface that allows users to play mobile cloud games from any device and both mouse & keyboard or touch interfaces is important for growing user discovery.

Mobile-First Cloud Gaming: Built to Improve the Value Chain

Mobile B2B cloud PaaS exists as a service to developers and publishers. Its primary feature is **adding users and revenue that are not already captured by the mobile games market or by mobile app stores.**

By making F2P titles accessible over instantaneous cloud services, developers are able to **attract new, high-quality players** who may not be gamers or who may not discover games through traditional advertising or app store promotion.

Better integration into browsers and social applications mean cloud-based F2P titles are exponentially **more shareable and more viral.**

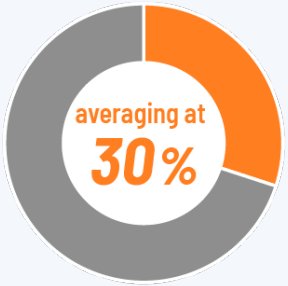
User acquisition costs account for 30-40% of game revenue, meaning that **low-cost tools to attract new users** (especially those unmet by other advertising and promotional channels) **are eminently valuable.**

Mobile-First Cloud Gaming: Built to Improve the Value Chain

PaaS cloud services also allow publishers to circumvent app stores for payments made over the cloud. With take rates for app stores averaging 30%, the ability for publishers to direct some of these payments through a cloud platform instead is an opportunity to make each payment significantly more valuable.

- Breaking away from a reliance on app stores will be a dramatic shift for the mobile games industry with effects on everything from the **value titles can generate to design and the implementation of monetization.**

Take Rates for App Stores



By attracting new, high-quality users, many of which are not addressed by traditional user acquisition efforts, and by giving these users alternative ways to pay that circumvent take-rates, **Mobile Cloud PaaS cuts down on the two major costs of doing business mobile game developers and publishers face.** Combined with increased virality, mobile cloud gaming will dramatically shift the way F2P titles are marketed and paid for.

Leading B2B Cloud Gaming Providers

An Opportunity for Growth

China

Tencent 腾讯

蔚领时代

海马云 haimacloud

Alibaba Cloud

HUAWEI

Kingsoft Cloud KSCLOUD

International

now.gg MOBILE CLOUD

facebook gaming

ubitus

Mobile Cloud Case Study: Genshin Impact

- In September of 2020 miHoYo launched its F2P MMO ARPG, *Genshin Impact,* on Android, iOS, Windows, and PS4. *Genshin Impact* enjoyed local and international success, becoming the **third most profitable mobile title in China** for several months.
- As a cross platform mobile/PC/Console title the game pushed the limits of mobile phones as it delivered a console-like experience on mobile. The Android installation of *Genshin Impact* requires 8GB of free space and a minimum of 3GB of local RAM to run. **These requirements limited the mobile market for the game to users with high-end devices** purchased in the last few years.
- To make the game more accessible miHoYo worked with **cloud services provider WeLink to create a mobile cloud version of the game.** This would allow mobile gamers with fast enough network speeds to play without having to download the game or run it locally.
- This meant that **players on older phones, players without the storage space required, and players who did not have the time to download the game files could instantly play the game on the cloud.** Even users of high-end phones benefit from the cloud version of the game, as it offers graphical features that are only available on the PC or PS5 version.
- However, miHoYo and WeLink are still working on the cost of hosting games in the cloud and are currently passing on those costs to consumers through a **time-based fee business model**.
- miHoYo was one of the first mobile developers to adopt this mobile cloud strategy, but as more mobile titles go cross-platform, and as install sizes and processing demands grow**, we expect these kinds of launches to become more common.**

The Future of Mobile Cloud Gaming is Transformation

1 The case for F2P mobile cloud gaming in China is growing with numerous developers experimenting in this space and leveraging PaaS cloud gaming solution providers to expand the addressable market for their games.

2 This is the core value proposition for mobile cloud gaming, and what sets it apart from premium and B2C cloud offerings: mobile cloud technology is immediately deployable and eminently valuable as a tool to speed discovery, user acquisition, shareability, and accessibility of mobile titles.

3 By reducing acquisition costs and providing an alternative to app stores for payment processing, mobile cloud PaaS is already beginning to dramatically reshape the F2P mobile games market.

4 Because Mobile Cloud PaaS is already in place and does not rely on large-scale subscriber buy-in, we expect that this market segment will continue to mature much faster than B2C cloud gaming.

5 As this segment matures the possibilities opened by mobile cloud platforms – including customization, immediate patching, social integration – stand to further redefine how mobile games are played, how live operations are conducted, and how games are experienced culturally. Some international platforms like Now.gg are already experimenting with this.

6 Mobile cloud gaming is at the cutting edge of cloud technology and network design. It benefits from edge computing, scalable and on-demand resource allocation, and the continued development of 5G infrastructure and user penetration rates.

7 While China is becoming a proving ground for this technology, we expect it market impact to be global and already on the horizon.

Intelligence, Strategy, and Guidance for Asia's Games Market

We're a market research and consulting firm covering the games, esports and streaming markets in Asia.

We provide qualitative and quantitative data collection and analysis, market models, forecasts, and strategic advisory services to give you the intelligence and answers you need to truly understand the region.

We leverage our own proprietary data, and **our panel of more than 4 million consumers** in China and millions more throughout Chinese Taipei, India, Indonesia, Japan, Korea, Malaysia, Philippines, Singapore, Thailand, and Vietnam.

We've helped game publishers, platforms, hardware makers, esports, consumer brands, investors, payments providers, hedge funds, telecommunications, consulting firms, and others — in the West and in Asia — understand and succeed in the world's largest and fastest growing games markets.

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