



MOBILE VIDEO REPORT

China Trailblazing Mobile Live Video Market



A Huawei Mobile Video
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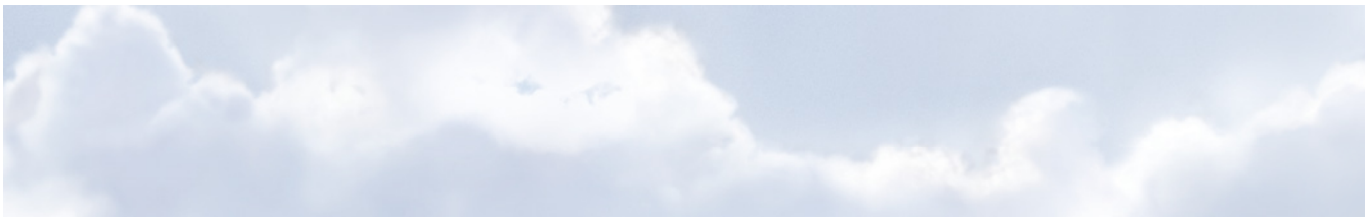






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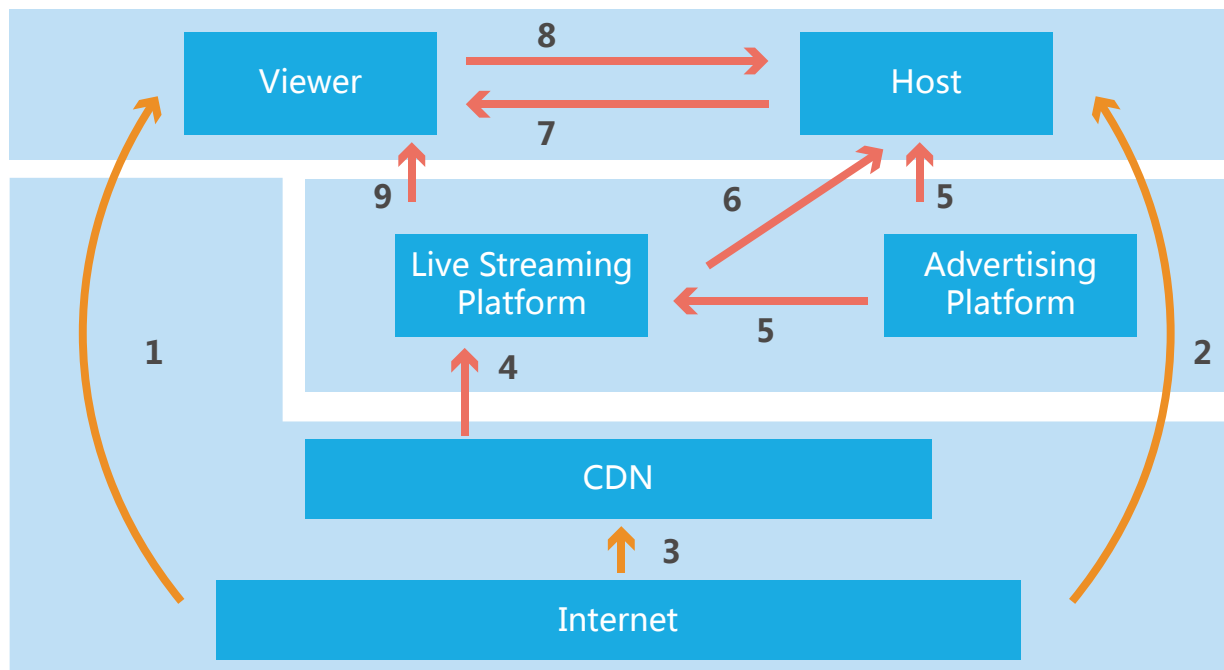
EXECUTIVE SUMMARY

Following the deep dive into the [mobile video industry dynamics](#) and [mobile operators' strategic options](#), this latest report, co-authored by Huawei, China Mobile Research Institute and Strategy Analytics, will focus on the creation, distribution and consumption of a new form of mobile video that is gaining strong momentum: mobile live video streaming.

By "mobile live video streaming" we mean the delivery of video content over mobile in real time, which is a subset of internet live streaming. In mobile live streaming the video content to be distributed is either streamed to the internet via a mobile device over a cellular or Wi-Fi network's uplink channel in real-time, or

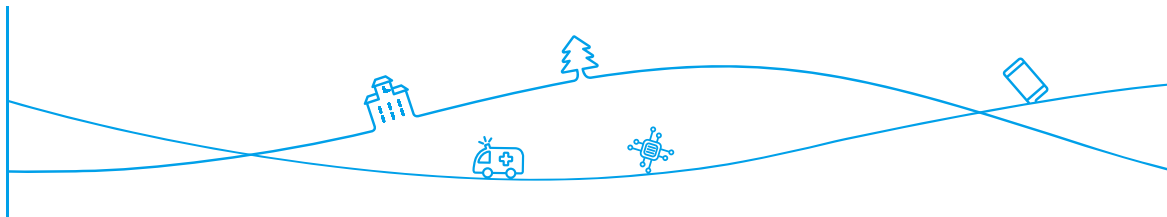
is streamed to a mobile device for consumption over the cellular or Wi-Fi network's downlink channel. Although this is similar to live coverage of events by the traditional broadcasters, and occasionally also called "mobile live broadcasting", the delivery is not carried over broadcast airwaves but over Internet, and the viewers watch the content on their mobile devices (e.g. smartphones). By definition, the content of live streaming is not stored on the service platform before being shared to viewers, but some live streaming platforms do make the live streamed content available for post-event viewing. The key players in the value chain of mobile video live streaming and their roles are illustrated as Exhibit 1:

Exhibit 1: Mobile Video Live Streaming: Industry Value Chain



- 1. Network Support for Viewing
- 2. Network Support for Streaming
- 3. Basic Network
- 4. Content Distribution
- 5. Advertisement Placing

- 6. Platform for Streaming
- 7. Delivering Content, Social Interaction
- 8. Delivering Feedback, Social Interacting
- 9. Platform for Viewing



Mobile video has grown from watching on-demand content on the mobile devices to new modes of content creation and consumption. Two of the most prominent recent trends are social video and mobile live video, and the two are often intertwined.

- On one hand, live video is being carried on leading social networks, e.g. Facebook and Twitter;
- On the other hand, the social aspect of live video, including the interaction between broadcasters and viewers as well as between viewers, is driving the fast adoption and, in the case of China, direct monetization of mobile live video.

We estimate the total value of the mobile live video market will reach \$6.5 billion in 2016, with more than 90% from China. Though the mobile live video market is moving forward at differing paces in different parts of the world, China has fast grown into a market of its own kind. The difference is mainly on two dimensions:

- **Individual broadcasters:** while major media outlets have used live video platforms as an additional channel to reach customers on social networks, due to its consumer preference and its own regulatory environment, mobile live video in China is much more individual based;
- **Monetisation mechanisms:** in-app purchase of virtual goods has become a common practice by China's mobile live mobile platforms and is the major value creation channel, for example, a viewer may buy a virtual "flower" for a host he follows. The spending on the "flower" is then shared by the live streaming host and the hosting platform. Advertising revenues in China's live streaming market is a supplement to in-app purchase. In the European and North American markets, monetisation of mobile live video has started late, and direct purchase is all but absent. Monetisation is realised through subscription by specialised services, and otherwise primarily through advertising.

Mobile live video is creating new sources of revenue for the hosting platforms as well as the streaming

hosts who live broadcast. Meanwhile, the new form of mobile video is also raising new questions for mobile operators, including the requirement for reliable uplink to deliver pleasant user experience, in particular in outdoor environments where Wi-Fi connectivity is likely to be absent or patchy. Equally important is the need for adequate capacity to support a growing population of smartphone users that will slowly become familiar with and adapt to mobile live streaming.

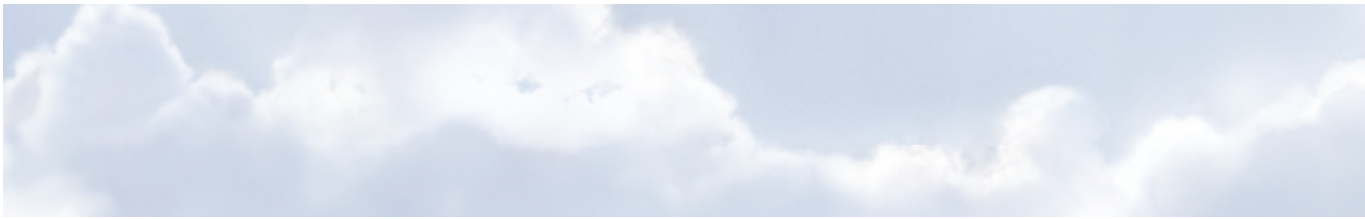
However, despite that the creation and consumption of mobile live video content may be new to compare with the on-demand video, we believe the strategic options identified for mobile operators are still valid. Specifically:

Data plan: in addition to offering larger data plans including data plans designed to be directly encouraging mobile video consumption, mobile operators should also consider targeting data plans at broadcasters to encourage more active content creation, i.e. live streaming;

Partnerships: in markets where net neutrality regulations are less stringent, operators can partner with selected platforms to provide guaranteed uplink to improve the user experience. Operators may even consider setting up their own mobile live video platform.

Zero rating: mobile operators may partner with advertisers who may choose to zero rate certain types of content traffic that is most relevant to the advertisers, e.g. games, or events, or reality shows, etc. Additionally, operators can even help advertisers improve the targeting accuracy of their ads with augmented user data, in exchange for the advertisers to sponsor data generated by selected users live broadcasting on their or their partners' platforms.





2

LIVE VIDEO GOING MOBILE: A MARKET POTENTIAL PROJECTION

2.1 Live video going mobile

The concept of real time communication over video is not new. Tools like Skype have long enabled professional and individual users to communicate through video calls. However the mobile video live streaming phenomenon discussed in this report is fundamentally different from the earlier video communication tools. In particular:

- **Mobility is central to both the production and the consumption of video**

To start with many mobile video live streaming applications are mobile only, for example Periscope, which means both the production and the viewing are conducted on mobile devices. This is both driven by consumers' growing needs for social connection anywhere they go, and is also facilitated by the increasing penetration of smartphones with front-facing cameras and broad rollout of LTE networks. Although it cannot be denied that there will continue to be the need to live stream from desktop especially in indoor environment, this is a niche segment and live video streaming on mobile is a runaway leader in this activity on smartphones' clear advantages: they are carried with users at all times, are less cumbersome, and notifications in applications can alert users to when relevant content comes on stream. That is recognized by the industry heavyweights, e.g. Facebook. It was only recently did Facebook Live start testing streaming from desktop but there is no announcement on when, or if, it will be made available to everyone.

- **Live video streaming technology takes real time video from "1 to 1" conversation to "1 to many" interaction**

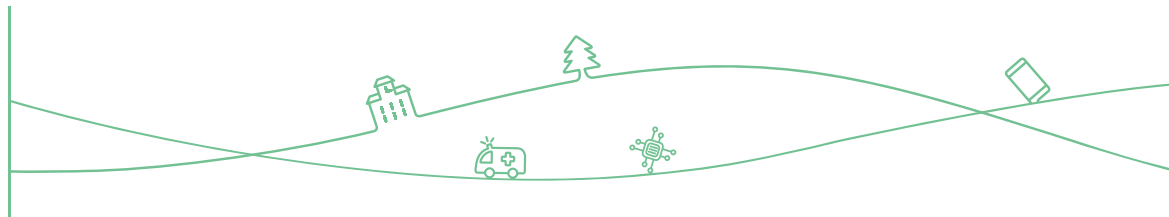
The capability to live stream adds a further dimension to user-generated content (UGC) services like YouTube, Daily Motion, and other popular video platforms. Furthermore, the popularity of social networks indicates that its users are becoming increasingly comfortable at sharing content, including live video. By definition, live video streaming does not need the content captured by the host to be stored on the device then uploaded

to a hosting platform afterwards. Instead, the content is transmitted directly onto the streaming platform and being viewed almost instantly. The real time feedback nature of a conversation is built in on smartphones and enabled by mobile video live streaming platforms, making this new type of "1 to many" communication much more interactive and social than the conventional "1 to many" broadcasting. With the capability of interaction between viewers added to the experience, there is also a "many to many" social dimension to live video streaming.

- **There are still impediments to the growth of mobile video live streaming**

The most critical impediments include: network coverage and network capacity that will impact user experience on both the uplink party (the streaming host) and the downlink party (the viewers); prohibitive data tariffs that will deter both hosts and viewers from spending longer or consuming large amount of mobile data on live streaming. The tasks of stakeholders in the mobile video live streaming value chain are to remove or minimize these impediments.





2.2 Market potential: China driving the growth

While mobile live video may have just started gaining traction from 2015, when Meerkat and Periscope launched their services, the growth momentum has been strong.

- At its first anniversary, Periscope announced that it has hosted 200 million live broadcasts in that year, and the time spent by its users around the world per day viewing live streaming on Periscope equals to 110 years;
- Twitch, which started with live streaming specifically for gaming has expanded into other categories, such as music performance and art creation, has reported more than 100 million monthly active users (MAUs) watching live streaming by more than 1.7 million monthly unique broadcasters;
- Facebook may be late to launch Live service but it is catching up, in particular with high-profile events. For example 14 million people live watched a 20-year old man climbing Trump Tower in New York City

on August 10th 2016, and close to 4 million people watched Michael Phelps' live broadcast before his final team race at Rio Olympics.

But the most phenomenal growth has come out of Asia, in particular China, Japan and Korea.

- In China alone, by Q2 2016, daily active users watching mobile live video reached 24 Million, more than doubled the user base in Q4 2015;
- In Korea, AfreecaTV's mobile live videos receive 20 Million daily views on average;
- In Japan, 30 Million daily views are registered on niconico live, the country's largest live video platform.

There are different categories of platforms to carry mobile live video streaming:

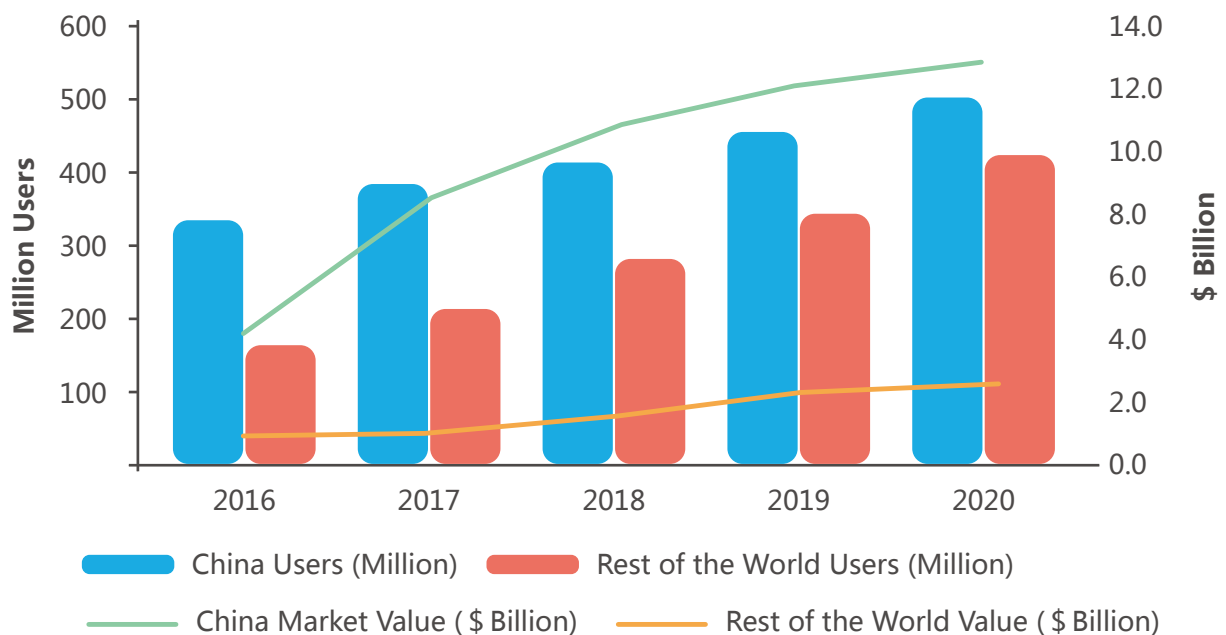
- Dedicated live streaming platforms, e.g. Twitch, and a large number of platforms in China, e.g. Douyu and Inke being the leading platforms;
- Integrated live streaming services, "live" is an integrated part of another larger ecosystem, e.g. Facebook Live;
- App-specific service, e.g. Periscope

We estimate that, **by the end of 2016, close to 340 million mobile users will have accessed mobile live video in China, generating a market value of \$5.9 billion**, including consumers' direct spending (e.g. virtual goods purchase) and advertising spending, with consumer direct spending accounts for 97% of the total. This is calculated with the percentage of users that are making in-app purchase of virtual goods out of the total user base (around 20% according to Strategy Analytics' research), and the average spending per user (around CNY50 per month).

China accounts to close to 2/3 of the world's total mobile live video users, but more than 90% of its total value (direct purchase, subscription and advertising values). The market will continue its growth momentum in China, while the growth rate in the rest of the world will be higher as it "catches up". The total number of users will approach 500 million by 2020 in China, accounting for 54% of the world's total, but the total market value of \$13 billion will still account for 83% of the world total. See Exhibit 2:

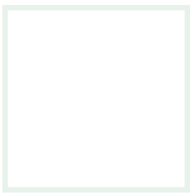
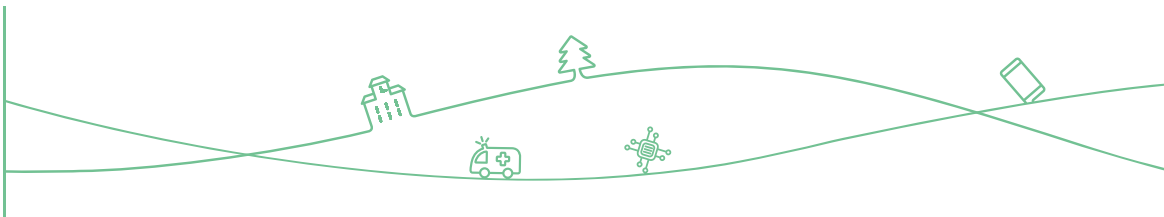
Exhibit 2: China vs. Rest Of The World: Mobile Live Video Growth Projection 2020

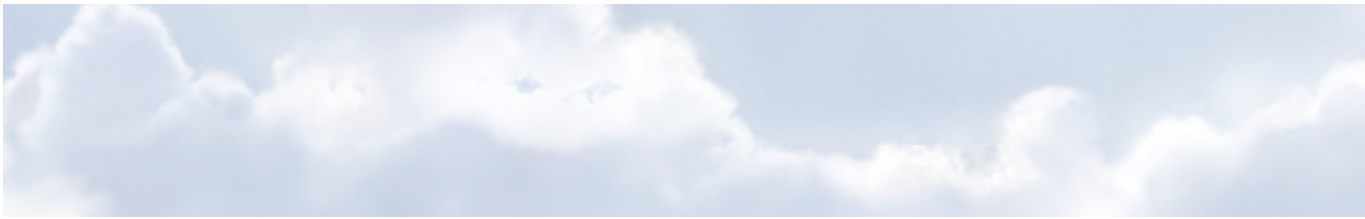
Mobile Live Video Market Size: Users and Values 2016-2020, China and Rest Of The World



Source: Strategy Analytics, 2016

The trend that China will continue to drive the world's live video streaming market will continue, making up the dominant portion of market value and more than half of the global total number of users.





3

VIEWS FROM STREAMING HOSTS AND STREAMING VIEWERS

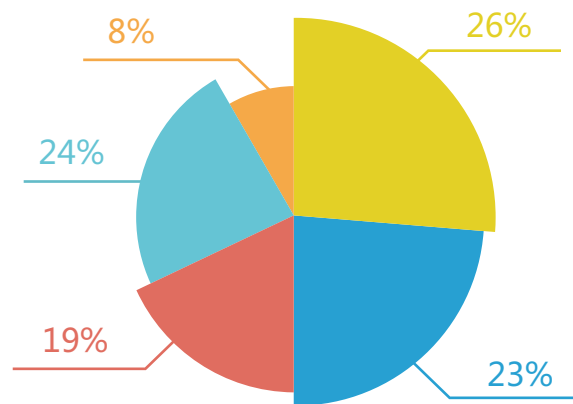
Experts at Huawei’s mLAB have continuously monitored consumer feedback on mobile video experience, and the research company Strategy Analytics has recently done an extensive survey specifically on the participants in the live video market in China including both live streaming hosts and viewers. Both sources have highlighted these common areas that are most important for the two groups:

3.1 Preference for streaming over LTE

Results from Strategy Analytics’ survey in China showed that increasingly live streaming hosts and live streaming viewers prefer mobile data over Wi-Fi while live streaming. 49% of surveyed viewers claimed that mobile data provided better viewing experience of live streaming video, while 90% of surveyed streaming hosts claimed that they stream live videos over mobile data at least once per month. See Exhibits 3 and 4:



Exhibit 3: Experience of watching live streaming videos over mobile data vs. Wi-Fi network



- Mobile data is considerably better than Wi-Fi
- Mobile data is slightly better than Wi-Fi
- The experiences are similar
- Mobile data is slightly worse than Wi-Fi
- Mobile data is considerably worse than Wi-Fi

Source: Huawei & Strategy Analytics Mobile Live Video Survey, 2016 (n=800)

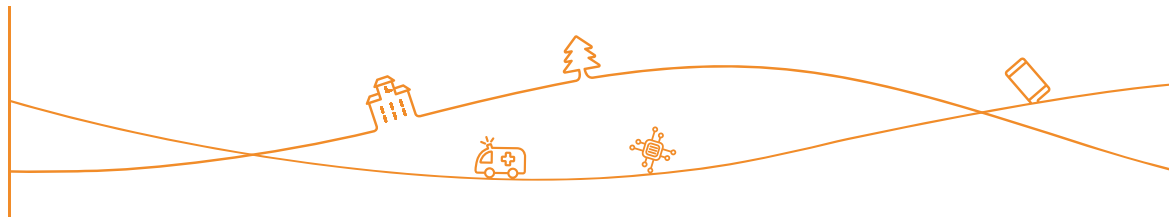
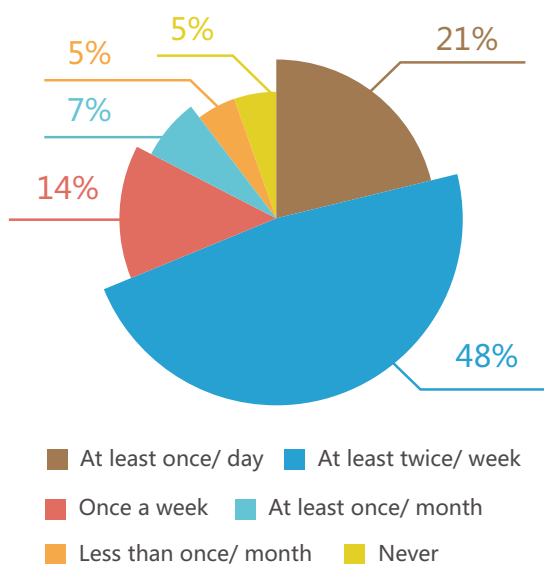


Exhibit 4: Frequency of hosting live videos streaming over mobile data:

Frequency of streaming live videos over mobile data



Source: Huawei & Strategy Analytics Mobile Live Video Survey, 2016 (n=800)

These two charts show clearly that cellular networks are quickly becoming the preferred mode of connectivity for both the hosts and the viewers when it comes to live video streaming: half of live video viewers think LTE networks provide better user experience, while more than 80% of live streaming hosts choose to stream over cellular networks at least once a week.

From the mobile operators' perspective, the increasing adoption of cellular network as the preferred bearer will both raise new demand for operators to provide reliable uplink, and present a good opportunity to upsell data plans.

Mobile video live streaming will create a multiplier effect of data traffic: according to Strategy Analytics' research, 1GB of total uplink traffic (cellular and Wi-Fi combined) can drive on average

120GB total downlink traffic. This is calculated based on the estimated number of live streaming hosts (0.5 million by the end of 2016) and the number of streaming viewers, the observed time spent on live streaming broadcasting and live streaming viewing per day (90 minutes and 24 minutes respectively), and the lab-tested average uplink and downlink bitrates (see section 3.3.3 of this report).

We expect similar multiplier effect to continue in the next 4 years, balanced between the growing popularity of mobile video live streaming and the expected consolidation of platforms, i.e. we expect the long tail of live streaming platforms to become shorter in the coming years, but each surviving platform will attract larger numbers of viewers.

3.2 Willingness to pay for mobile data

While 81% of survey respondents agreed that their mobile data consumption has increased due to live streaming videos, 73% of respondents have already increased their monthly data allowance for live streaming videos. Also, 72% of survey respondents have expressed interest in paying for a targeted data allowance package that provides dedicated data allowance, stable and fast network speed for viewing live streaming videos.

3.3 What makes pleasant experience: demand on network

3.3.1 Consumers' leading concerns

Strategy Analytics' consumer survey has shown that the leading requirements by live streaming viewers for a pleasant experience include: minimum stalling, good network coverage (for mobile data), high video image quality, minimum delay, and short loading time (Exhibit 5). All of the surveyed viewers have reported cases where they had to give up watching a live streaming video due to the video stalling.

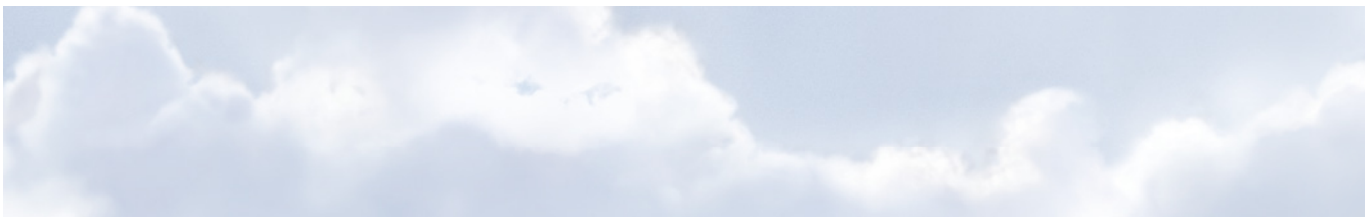
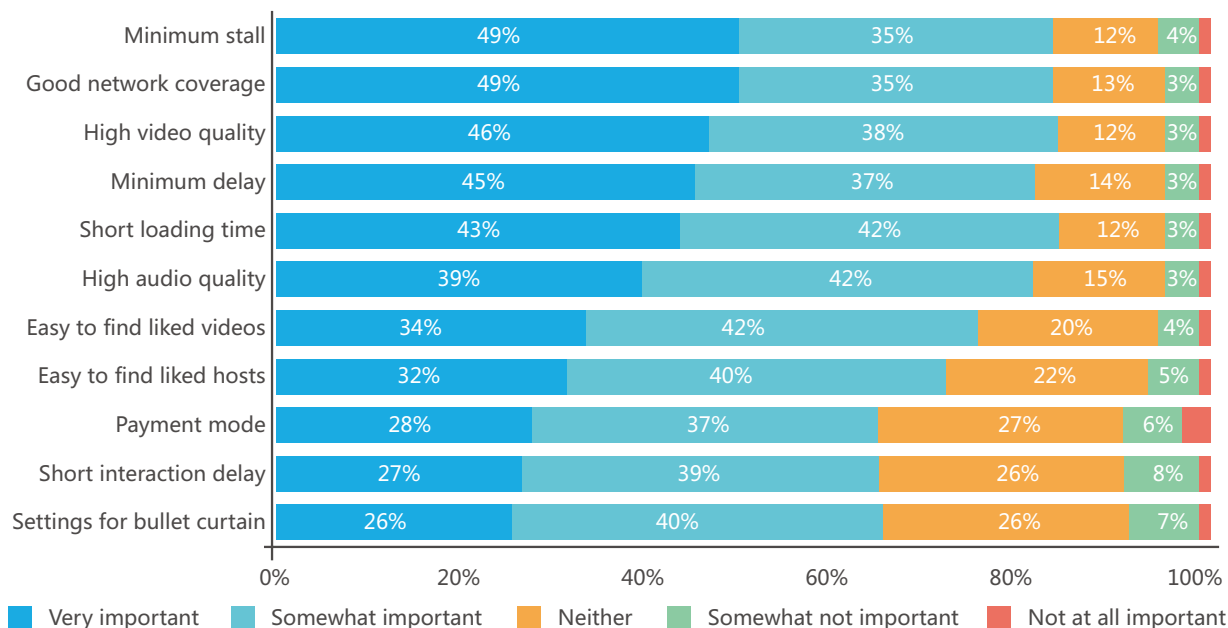


Exhibit 5: Importance when viewing live video streaming



Source: Huawei & Strategy Analytics Mobile Live Video Survey, 2016 (n=800)

This chart shows that viewers rate minimum stalling, high video image quality, minimum delay,

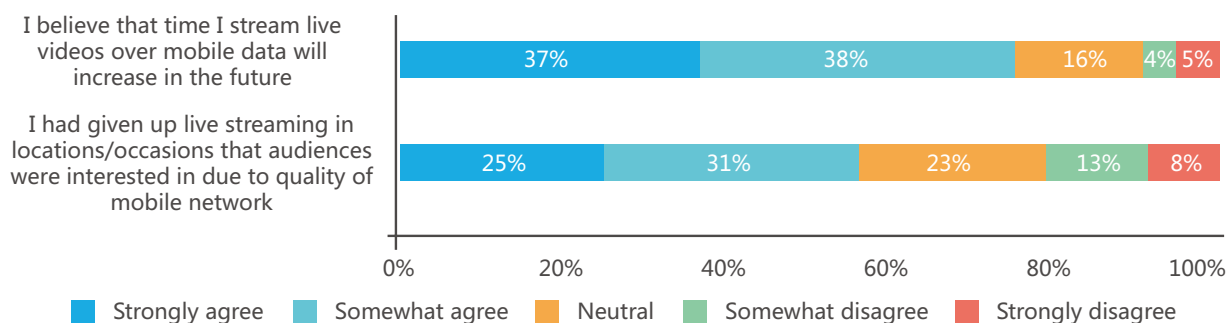
and short loading time as the leading factors for positive live video streaming experience.

3.3.2 Streaming hosts' leading concerns

The same survey has also shown that although three-quarters of respondents agreed that the time

they stream live videos over mobile data will increase in the future, over of half of them have also had the experience of having to abandon live streaming due to bad connection. Exhibit 6:

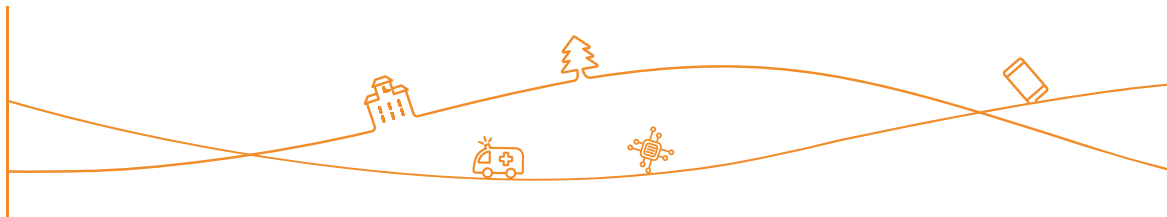
Exhibit 6: Experience of live streaming over mobile networks



Source: Huawei & Strategy Analytics Mobile Live Video Survey, 2016 (n=800)

This chart highlights the importance of good cellular network for live video streaming hosts, as more than half of them have had the experience

of forced abandonment of streaming due to poor network.



3.3.3 Capacity needs:

Both the sharing by the live streaming hosts and the viewing by the live streaming viewers need to have pleasant experience to complete the loop. Therefore both uplink and downlink capacities need to meet the demand to transmit the content. Huawei's mLAB research has identified the network capacity requirements for the two-way transport:

• Uplink:

After analyzing the uplink bitrates of the leading live video streaming applications, including those selected in Exhibit 7, Huawei's mLAB recommends that 2 Mbps is needed to deliver a satisfactory sharing experience.

Exhibit 7: Uplink bitrates of selected live video streaming apps

Selected Live Streaming Applications	Hosts' uplink bitrates (Mbps)	
	Peak	Average
Huya	2	1.5
6.cn	1.2	1
Inke	1.2	1
Facebook Live	2.5	1.2

Source: Huawei mLAB, 2016

These test results show that a guaranteed 2 Mbps uplink bitrate is a critical factor to provide live

video streaming hosts uninterrupted streaming experience.



• **Downlink:**

After analyzing the downlink bitrates of the leading live streaming applications, including those included in Exhibit 8, Huawei’s mLAB recognizes that a downlink bitrate 2 Mbps is needed to support viewing resolution

of up to 720p, which we believe will meet viewers’ expectation: 94% of respondents from Strategy Analytics’ survey agreed that the video smooth play is more important than video quality (e.g. resolution) when watching live streaming videos over mobile data.

Exhibit 8: Downlink bitrates of selected live video streaming apps

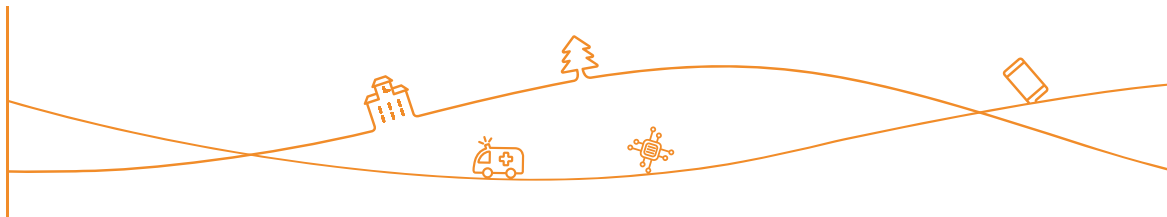
Selected Live Streaming Applications	Average viewing bitrates (kbps)			
	360p	480p	720p	1080p
LeEco	700	N/A	1000-2500	N/A
Douyu	500	1000	2000	N/A
YY	SD: 600; HD: 1000			
Panda	SD: 500; HD: 1200; UHD: 2500			
Migu	400	600	1000-2000	N/A
YouTube	600	1000	2000	4000

Source: Huawei mLAB, 2016

These test results show that 2 Mbps downlink bitrate is needed to deliver viewers the quality of

live video that can display up to 720 resolution on their smartphones.





3.4 Special requirements: hot spots, events, in-door

On one hand, amateur live streaming of events, especially highly prized sports or performances, has been a contested topic, e.g. to protect artists' and the performance rights, Apple has patented a feature to disable iPhone cameras when the user is in a theatre or at a live concert. On the other hand, live event is one of the most interested categories for live video streaming viewers. 65% of survey respondents have expressed interest in following live event streaming. Meanwhile, there are occasions when special network coverage needs to be arranged to facilitate as much live coverage as possible, e.g. product launches.

However, live video streaming hosts indicated that the mobile network in live events were most likely to be unstable and slow. Audiences are eager to upload video clips or broadcast live video streaming, generating tremendous capacity pressure on the mobile network. For example, in a round of AFC Champions League 2015, football fans generated 660GB mobile data traffic in Beijing Workers' Stadium during the 90-minute game. In Super Bowl 50 in February 2016, 15.9 TBs data were carried by the four of the major U.S. cellular operators combined in and around Levi's Stadium in Santa Clara, California.

This is beyond the capacity of traditional DAS (Distributed Antenna System). For example, at a pop concert held in Beijing's National Stadium in 2014, the success rate of mobile Internet access was lower than 50%, resulting in extremely bad user experience. Therefore, mobile operators have to find a new solution to improve performance and scalability, as well as reduce the deployment cost and complexity. Digitalized indoor coverage solution – such as Huawei's Lampsite – can meet these requirements. After upgrading to Huawei Lampsite, the indoor coverage system of Beijing National Stadium carried 453GB data traffic in the opening ceremony of IAAF World Championships 2015. Even if the data traffic was 50% higher than the traffic in the pop concert, the mobile access success rate was up to 99.9%. The digitalized indoor coverage solution is becoming a must-have for large public venues to guarantee consumers' mobile broadband experience, including sharing and viewing live video streaming.



4

A TALE OF TWO MARKETS: CHINA VS. THE REST OF THE WORLD

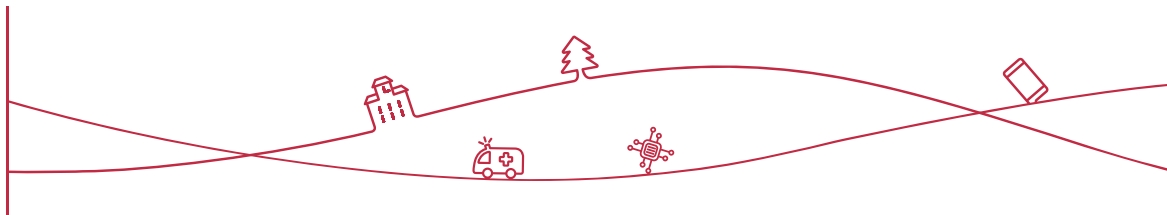
As is illustrated in the previous chapter, the mobile live video market grows much faster in China than the rest of the world, which is driven as much by user behavioural habits as its market dynamics and the macro social, economic, and regulatory environment. The divergence falls largely into two categories: individual broadcasters are playing a much more active role in China to drive the market growth, different monetisation mechanisms are adopted in China vs. that in other parts of the world, for example the US. The following table outlines the key differences:



Exhibit 9: Different Approaches Towards Mobile Video Live Streaming: China vs. US

		China		US	
		Level of importance	Examples	Level of importance	Examples
Streamers	Individual live streaming hosts	Extremely active	Hosts on Douyu, Inke, etc.	Active	Gamers on Twitch
	Mass media broadcasters	Non existent	N/A	Active	New York Times on Facebook Live
Monetisation	In-app purchase	Dominant model	All live streaming platforms	Little presence	
	Advertising	Less important	Xiaomi showcasing battery life on Bilibili	Nascent but dominant model	Ads on Twitter's live streaming of NFL games
	Subscription	Little presence		Niche	Twitch's subscription packages
	No direct monetisation: ecosystem play	Gaining importance	Alibaba's fashion show with direct purchase feature	Very important	Celebrities on Facebook Live

Source: Strategy Analytics, 2016



4.1 Role of live streaming hosts

While Meerkat and Periscope were created to enable individual users to live stream their life, and many of them do, the live streaming platforms are also used by leading media in North America and Western Europe, as an extended distribution channel, and in collaboration with social platforms. An example is Facebook Live, which has allegedly paid news publishers to live stream on its platform, including the traditional news outlets CNN and the New York Times, digital publishers Vox Media, Huffington Post etc.

This is a market characteristic that is absent in China, where live video streaming is predominant driven by individual streaming hosts, also participated by businesses live streaming events. While individual hosts also play an important role in the global live video market, e.g. the 1.7 million monthly active streamers on Twitch broadcasting game playing, the sheer size and dominance of individual streamers in China make it an entirely different market from markets like the US.

Strategy Analytics estimates there are 500,000 active live streaming hosts in China, and according to the survey, for 5% of them live video streaming is their full-time job, while for a further 31% live video streaming is a main job and income generator.

4.2 Roads to monetisation

4.2.1 China: direct payment for virtual goods more common, advertising a secondary role

Among the four monetisation models illustrated in Exhibit 9, in-app purchase of virtual goods is the dominant monetisation model in China's mobile video live streaming market. According to Strategy Analytics' research, in 2016, direct payment for virtual goods will account for 97% of the market value, with advertising spending making up the rest. The importance of direct payment will scarcely decline in the years to come, forecast to still account for 95% of the total market value by 2020.

Advertising spending is mainly in the shape of brand sponsorship. For example, the American department store Macy's has live streamed on Alibaba's live streaming platform a tour of its Manhattan shop floor; China's smartphone maker Xiaomi has also used the live streaming platform Bilibili to showcase the battery life of its new phablet, lasting 19 days.

Another trend in the China live video streaming market is the combination of direct payment for virtual goods and using live streaming as a means to promote the hosts' e-commerce business. According to Strategy Analytics' survey, 87% of surveyed live streaming hosts either already operate their own online shops or intending to do so. Meanwhile, 47% of surveyed live streaming viewers have spent money in the online shops operated by the hosts they follow.

4.2.2 Rest of the world: nascent advertising models

None of the major live streaming platforms, Periscope or Facebook Live, for example, has developed native, mature monetisation mechanisms. They have mainly tested different ways of advertising support.

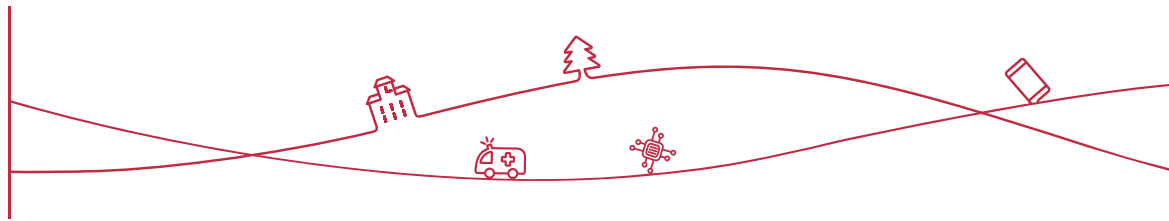
In August 2016, Periscope unveiled its sponsored broadcasting program. Brands can now sponsor selected live broadcasting with their brands and logos displayed but no pre-rolls or interstitials during the live streaming. The first partnership was between the retired tennis star Andy Roddick's live streaming during the 2016 US Open, and sponsors JPMorgan Chase and Grey Goose vodka. Roddick's live broadcasts will be promoted by his official Twitter account, while the sponsors' Twitter accounts will display selected broadcasts as Promoted Tweets. When the live session is over, the sponsors will share broadcast highlight videos, which they can insert pre-rolls, and will also be tweeted by Roddick.

Twitter made a bold move earlier this year to successfully bid for live streaming of 10 NFL games on Thursdays. The first match was on September 15, and according

to Twitter, 2.1 million viewers worldwide tuned in. This number went up to 2.6 million the following week. If the reported \$10 million payment was correct, the advertising revenues should more than pay off. According to the WSJ, Twitter was selling \$5 million ad packages that included two ad spots per game as well as sponsorship of video clips during the week. It is reported that NFL gave Twitter 15 ad-spots per game, therefore the expected ad income should top \$35 million.

One of Facebook Live's recently tested functions is the 15-second video ad five minutes into a live streaming, aiming at direct monetization. Two other new functions announced in June are the ability to stream a broadcast with two people in different locations, and pre-scheduled live broadcasting. With Facebook already a major source for consumers to get news from, these two functions, emulating conventional newsrooms, will make Facebook Live a more attractive platform for news outlet, therefore strengthening Facebook's ecosystem to fence users in.





4.2.3 Subscription: niche model

Though subscription is one of the most important models in on-demand video service, its application in mobile video live streaming is still limited. The most prominent case is Twitch.

Twitch displays pre-roll advertisements to users on the free tier, and shares the ad revenues with the broadcasters. A monthly subscription, called “Turbo subscription”, costs \$8.99 and gives subscribers ad-free streaming. Subscribers can also choose to subscribe to certain particular channels that have already entered partnership agreement with Twitch, which costs \$4.99. Twitch then shares the subscription income with the broadcasters, roughly along a 50/50 divide.

4.2.4 No direct monetisation: mobile video live streaming as part of ecosystem

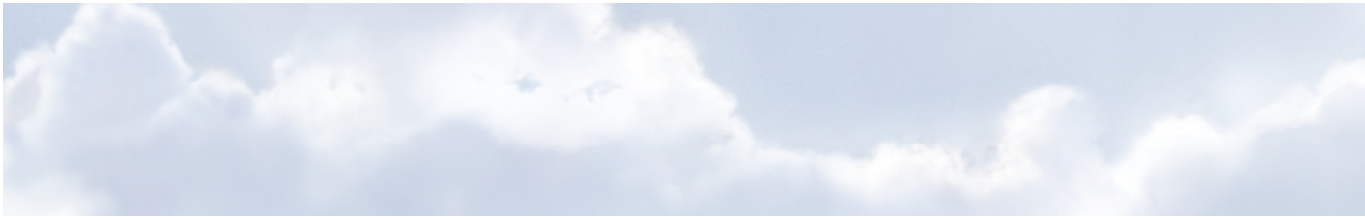
A few internet heavyweights have been slow in embracing mobile video live streaming, but when they do, they can look beyond short-term monetisation objectives and make live streaming part of their ecosystems. The two leading examples are Alibaba and Facebook.

Recently during the Shanghai Fashion Week, Alibaba’s Youku platform live streamed an 8-hour fashion show. It was not monetising this live streaming but enabled direct purchase with a “See Now, Buy Now” button that would take viewers to its Tmall shopping site.

Facebook’s business model is to monetise users’ time spent inside its ecosystem, and Facebook Live is used to perform the task to extend users’ time in Facebook. Actually, instead of monetising Facebook Live, it is going the other way: in order to shore up the adoption of live video, Facebook has paid celebrities and leading media to live broadcast using the Facebook Live platform, e.g. Michael Phelps, The New York Times, BuzzFeed, etc. This is a watershed in Facebook’s ecosystem strategy, going from building the platform to actually paying for content.

Facebook was also in the bid for live streaming Thursday’s NFL games but was outbid by Twitter. Not to be absent from live event streaming, Facebook has signed a deal with ABC News to live stream the 2016 US presidential debates.





5

WHAT'S THERE FOR MOBILE OPERATORS: RECOMMENDATIONS

We have identified in the report “[Innovation Drives Mobile Video Monetization](#)” business models that operators have adopted in different parts of the world to play an active role in the mobile video market. We believe these models, with modification and adaptation to the business dynamics will largely be applicable to mobile operators’ role in driving and riding on the fast development of mobile video live streaming.

5.1 Data plan to encourage live video

As has been discussed earlier, live streaming hosts are more likely to buy bigger data packages, especially when they do more live streaming outdoor. It is also important to note that active live streaming viewers are also more likely to pay for bigger data packages. According to Strategy Analytics’ survey, 55% of respondents have already paid for a bigger data package to live stream video. This positive attitude towards larger data plans presents mobile operators to launch special data plans to increase ARPU by encouraging live video streaming. This can be done in two ways:

- **Higher data caps, or unlimited data:** experience from operators like T-Mobile (with Binge On and then T-Mobile One) has shown that consumers are more willing to upgrade to a higher tariff tier if unlimited data is offered, to enjoy the benefit and to avoid unexpected overage bills.
- **Targeted data plans:** earmark certain amount of data for live video streaming, either for sharing (uplink) or viewing (downlink). According to the same survey, consumers expect the targeted data plans to be at least 1GB per month. It will be more attractive to consumers if the unused data can be rolled over to the following month.
- **Wholesale data:** operators may also sell wholesale data packages to live streaming platforms, which can then decide how to distribute to streaming hosts or active users or both.
- **Quality of Service:** this is particularly meaningful for the uplink traffic by live streaming hosts. 74% of the

surveyed streaming hosts have expressed willingness to pay for guaranteed network quality and speed.

5.2 Partnership with live video platforms, or launching own platform

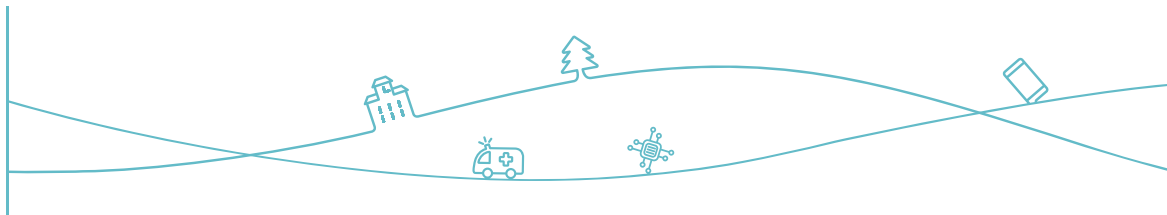
This is particularly relevant for operators in markets where net neutrality regulations are less stringent. Operators can include partnerships with live streaming platforms as part of service package, e.g. offering certain amount of free data to be used on the partner platform. Operators may also choose to launch their own live streaming platform. Exclusive content, e.g. signing up celebrities for live video streaming, will be an effective way to both fend off churn, locking customers in their own ecosystem, and to attract advertisers.

5.3 Sponsored Data

Sponsored data can be delivered in different ways:

- **Advertising-based sponsored data:** this is essentially the same mechanism as Verizon go90, where operators can monetize the traffic by providing partner live video platforms with augmented consumer data for better targeted advertisement placement. In return the live video platforms sponsor all or some data consumed by users on these platforms;
- **Operators zero rating data:** this can be applied on operators’ own live video platforms for both live streaming hosts and live streaming viewers. Operators can choose to zero rate data for all users or apply selectively to give privilege to their own customers.





Exhibits



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Research Methodology:

Huawei, partnered with China Mobile Research Institute and Strategic Analytics, conducts regular observations on market maturity and drivers for mobile video contents. These observations aim to support the strategy making and external market communication of the mobile video industry. All data in this report comes from historical records and future projections, and is verified against internal data from Huawei. User data is collected anonymously before transferred to Huawei engineers. Main sources of data include Strategy Analytics (on macroeconomics, traffic trend, and business model), Huawei mLAB (on consumer behavior survey, service and terminal behavior, user experience research, and actual network capability), as well as other public third-party materials. Huawei MBB engineers are qualified with long-term research experiences. They strive to present the current situation of the drivers for mobile videos both comprehensively and impartially. They try to identify the development trend, and point out latent problems facing the industry. Note that data involved in this analytical report is bound to factors including time period, sample quantity, and level of research. All information provided is for reference only.

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