

## A Case Study on Real-time Live Video Streaming Content

YU SHI<sup>1</sup>, Jean-Hun Chung<sup>2\*</sup>

<sup>1</sup>Doctor's course, Dept. of Multimedia, Graduta School of Digital Image and Contents, Dongguk Univ.,

<sup>2</sup>Professor, Dept. of Multimedia, Graduta School of Digital Image and Contents, Dongguk Univ.

## 실시간 방송 영상 콘텐츠 사례 연구

스위<sup>1</sup>, 정진헌<sup>2\*</sup>

<sup>1</sup>동국대학교 영상대학원 멀티미디어학과 박사과정, <sup>2</sup>동국대학교 영상대학원 멀티미디어학과 교수

**Abstract** With the development of new media, great changes are taking place in the way people get information. The change is the use of video content that can deliver content in a more three-dimensional way than words or photos. After 2016, the number of live video streaming content providers and users has increased. In this paper the write takes the 1 personal live video streaming content as the research object. And the write takes live video streaming content on YouTube live or Douyu TV as a research example. In this paper, the writer analyzes the digital information content in the live video streaming case. And the writer expounds the necessity of these visual information and the characteristics of real-time live video streaming content. Especially since 2020, because of the influence of the COVID-19, the live video streaming industry has begun to combine with the traditional industry. It is expected that the integration of digital cutting-edge technology and live video streaming will not only provide diversity in the content, but also create more social value for the video content consumption culture. Therefore, The writer thinks it is necessary to conduct in-depth research on the social responsibility of real-time live content in the future.

**Key Words** : real-time video, application, Youtube TV, Douyu TV, Live video streaming

요 약 뉴 미디어의 발전으로 인해 사람들의 정보 습득 방식에 커다란 변화가 생기고 있다. 글이나 사진보다 콘텐츠 내용을 더 입체적인 전달할 수 있는 영상콘텐츠 활용이 그 변화다. 2016년 이후 실시간 라이브 방송 콘텐츠는 제작자와 사용자 모두 증가하는 추세이다. 본 논문은 Youtube Live 또는 DouyuTV를 플랫폼으로 하는 개인의 실시간 라이브 방송 콘텐츠를 연구 대상으로 하였다. 개인의 실시간 라이브 방송 사례에 수록된 디지털화된 정보 내용의 특징 또는 필요성을 분석하였다. 2020년에 코로나19로 인한 온라인 생활의 변화는 실시간 라이브 방송을 더 다양한 분야로 확대될 수 있음을 보여주었다. 디지털 첨단기술을 융합한 실시간 라이브 방송은 내용적인 측면 뿐만 아니라 영상콘텐츠를 소비하는 대중들의 영상 소비 문화에도 다양성을 제공하여 더 많은 사회적 가치를 만들 것으로 예측된다. 그러므로 향후 실시간 라이브 방송콘텐츠의 사회적 책임에 관한 심도 있는 연구가 필요하다고 생각한다.

주제어 : 리얼 타임 비디오, 애플리케이션, Youtube Live, Douyu TV, 라이브 방송

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\*Corresponding Author : Jean-Hun Chung(evengates@gmail.com)

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## 1. Introduction

### 1.1 Research background

The development of network technology and digital , human's reading habits has been changing[1]. Especially, with the popularity of mobile network technology and smart phones, the content of new media based on mobile terminals is constantly enriched. Short clip, real-time live video streaming and other new media content developed rapidly. In the past, it was mostly the content creation and dissemination of creators in one direction[2]. It is different from the traditional way of content dissemination, real-time network live broadcast has the characteristics of interactivity and sociality[3]. The audience can communicate with the creator in real-time. It can shorten the distance between the creator and the audience. Real-time live video streaming (Hereafter this text will be abbreviated as 'live video streaming') has become one of the hottest Inter content.

### 1.2 Research purposes and methods

Since the popularity of 4G network, the functions of smart phones have been constantly enriched, and the public's dependence on smart phones has been strengthened. In the past two years, the digital new media of smart phones has developed rapidly. In the era of we media, the cost and difficulty of creating and sharing new media content are reduced. Since 2016, we media content, represented by short clip and live video streaming based on smart phones, has become a hot topic. It has changed the habit of public access to information, which is also impacting the reform and development of traditional media. With the rapid development of mobile Internet, video content has become an indispensable part of our daily life in a more three-dimensional way of information transmission. At present, the live video streaming content is very popular. Live

video streaming content and form are rich. And it is referring to all aspects of social life. To a certain extent, it meets the consumption demand of the public and is welcomed by the public. According to the 'Research Report on China's live video streaming online users from 2019 to 2020' released by iiMedia, the number of online users in China's live video streaming reached 504 million in 2019, with the highest growth rate from 2016 to 2017. Fig. 1 shows the scale and annual growth rate of live video streaming online users in China from 2016 to 2019.

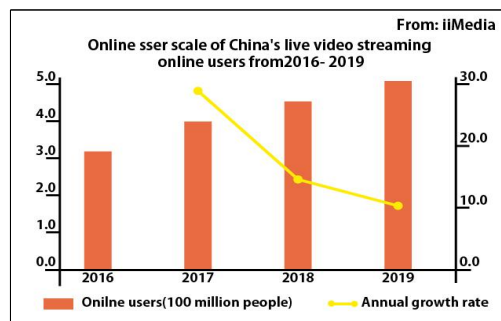


Fig. 1. Online user scale of China's live video streaming from 2016 to 2019 [4]

This paper takes the live video streaming of smart phone as the research object. In this paper, analysis of the current mobile live video streaming content development advantages and problems. At the same time, this paper combined with the current development of mobile digital content, analysis and future development trend. It will enrich the current research content of mobile live video streaming content, and provide reference for future research.

## 2. The point

### 2.1 The history of live video streaming

#### 2.1.1 The development of live video streaming



Live video streaming originated from the

television broadcasting industry. The first official live broadcast news event in the world was in 1937. The BBC broadcast the event of British Prime Minister Chamberlain's return from negotiations in Munich, Germany. The program was called 'peace in our time'. [5] Live video streaming is a new social way with the popularity of network and mobile devices. [6] In 2004, blogtv appeared and became the pioneer of live video streaming, providing network live video streaming service for the public. [7] After that, network live video streaming platform meerkat is success. It also made the media industry aware of the development trend of social media: from words to pictures to live video streaming. [8] Subsequently, Facebook, twitter and Youtube joined the live video streaming industry and launched the internet live video streaming service. And they are command the live video streaming industry [9,10].

2.1.2 The development of live video streaming in China

In China, live video streaming has experienced four periods [11]. Table 1 it shows the three stages of the development of China's live video streaming.

Table. 1. The development of China's live video streaming [12]

Live Broadcast 1.0 (2005–2014)	
2005–2014 During this time, the live broadcast content was dominated for social. The anchor always lives in the form of chatting or singing.	
Representative platform	
	
Liujian room	YY voice,
Live Broadcast 2.0 (2014–2017)	
During this time, the livebroadcast content was dominated by games, which benefited from the promotion of the development of the game market.	

		
Huya		Douyu TV
Live Broadcast 3.0 (2017–2019)		
·During this time, mobile live broadcast appears. More live broadcast contents and themes appear.		
		
Yingke	Huajiao Live	TikTok
Live Broadcast 4.0 (2019–)		
During this time, the content broadcast involves more fields and is more professional.		
		
Xiao Hongshu		Taobao Live

In 2015, there are more than 200 platforms providing live video streaming services. The number of users of live video streaming platforms is as high as 200 million. The highest number of people online at the same time is nearly 4 million. [13] In 2016, live video streaming has moved from computers to smart phones.

At present, in China, live video streaming platform can be divided into two categories according to the main content: one is the pan-entertainment live video streaming for the purpose of entertainment. Another is the vertical field mobile live application. Including live + e-commerce, live + education, live + social and other live video streaming content. At the same time, since 2020, live + enterprise appears, which provides live service for enterprise office. Fig. 2 shows the popular pan-entertainment and the vertical field mobile live applications in China.



Fig. 2. Mobile live application in China

### 3. Reasons for the rapid development of live video streaming

#### 3.1 Social factors

Live video streaming has high requirements for technology and equipment professionalism. However, with the development of smart phones and mobile network technology, it provides technical support for mobile live video streaming. With the emergence of smart phone HD camera lens, 4G and 5g network, the live host can broadcast whenever and wherever he wants. The cost of live video streaming is reduced, and anyone can create their own live video streaming content.

It compares with pictures and texts, video can record and convey content more realistically

through continuous dynamic recording and audio information. So that, whether it is traditional media or new media, video has become a major means of content communication. Media content video phenomenon is significant. Especially after the video playback and production ability of smart phones is becoming stronger and stronger, the public has been used to the way of dynamic video content dissemination. Whether it's long video, short video, vlog or live video streaming, they are currently popular content in mobile social platforms. At the same time, it compares with other video content, live video streaming can deliver information more timely and interact in real time.

At the same time, with the increasing demand of the public for cultural consumption and entertainment consumption. Diversified content and fast food consumption and other modern entertainment features appear. The development of traditional media has been unable to meet the entertainment needs of the public. The rise of the network live broadcast industry has provided the public with live video streaming contents such as travel, entertainment, life, commerce, sports, games, eating and ect. It attracts people with different interests.

#### 3.2 Mass factor

With the acceleration of the pace of life, time is fragmented. Mobile video live streaming can be viewed through mobile phones anytime, anywhere. Life, work and other aspects of the pressure increased. It is a good way to watch live video streaming to relieve the pressure. And When the live host starts live, the host can answers audiences' questions in real-time. This will give the audience a sense of identity.

### 4. Study on mobile live video streaming case

### 4.1 'Youtube Live' live video streaming case

In 2011, YouTube launched the live service—YouTube live. Fig. 3 shows the visual elements in the mobile live web broadcasting studio of YouTube live application in full screen. It contains the content set by the live host, including: host's information, real-time reward ranking, real-time chat box. And audience display content: real-time typing box, and real-time chatting and the reward content.

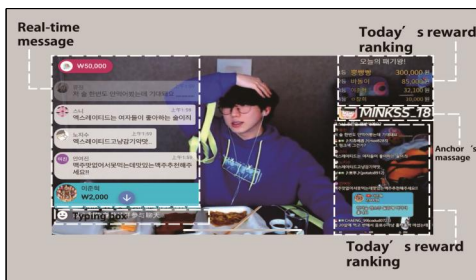


Fig. 3. 'Youtube Live' live web broadcasting studio

### 4.2 DouyuTV mobile live video streaming case



Fig. 4. DouyuTV live web broadcasting studio

DouyuTV is a live video streaming sharing website with bullet screen(bullet screen: refers to you have comments flashing past, so bulleting past when watching videos on the Internet). It mainly provides live video streaming content like game, game competition, entertainment, show, sports, outdoor activities, and etc[14]. Fig. 4 shows the visual elements in the mobile live web broadcasting studio of DouyuTV application in

full screen. It contains the content set by the streamer, including streamer's information, and game operation screen. And audience display content: paid gifts in the studio, and bullet screen.

### 4.3 Study on the visual content of the Youtube live and DouyuTV's cast

It is comparing the live video streaming contents of YouTube Live and DouyuTV. It can be found that although the visual contents of the two rooms are different, there are four main contents: live host, host's information, real-time chat and reward. Table 2 shows the functions of the four visual information in the live web broadcasting studio. It is different from the famous people, the average host needs to attract more fans through the content and to get rewards. Not only the content, but also the visual elements displayed in the live broadcast room can become one of the elements to attract fans and enrich the live video streaming content.

Table 2. The functions of the four visual information in the live broadcast room

Live host	
The content creation anchor of live video streaming. Hosts need to create and dissemination their live content.	
Reward	
It is the main source of income in the live web broadcasting studio. The reward amount can be accumulated. And it can improve the level of fans in the Live web broadcasting studio. The higher the level of fans, the more benefits they get. It is to attract fans and to stimulate the consumption of fans.	
Youtube Live	DouyuTV
The reward price is between 2500 won and 65000 won. It can quickly attract the attention of the host. The audience gets a reply, which increases the sense of identity and stimulates subsequent rewards.	There are many virtual gift to reward the streamer. The prices range from 0.1 RMB to 2000 RMB. The price is more expensive, the animation effect is more gorgeous. Cumulative consumption will improve the fan level and get more benefits..
Real-time chat	
It realizes the real-time communication between the streamer and the audience. The live host can reply to audience's messages in real-time. The audience who received the response got a sense of identity. And the host can also comprehend more about viewers' preferences.	
Live web broadcasting studio information	
It notes the anchor information of Live web broadcasting studio to convenient the attention of new fans. As well as there also shown the fan level and the corresponding welfare information.	

#### 4.4 The characteristics of real-time network live broadcast

Live video streaming has the characteristics of instantaneity, interactivity, entertainment and commerce.[15]

##### 1) Instantaneity

The host can interaction with audience in real-time.

##### 2) Interactivity

Through live video streaming, host and audience can communicate and interact in real-time. It is different from traditional media, the feedback of live video streaming information is more immediate, which can help the streamer know the audience's preferences more quickly.

##### 3) Entertainment

Live video streaming provides the public with games, social, music, dance, shopping and other entertainment activities at any time and any place.

##### 4) Commerce

Real-time network live broadcast + E-commerce appears. Live video streaming is also a process of commercial sales. The income is related to sales volume.

### 5. Conclusion

With the development of standardization and commercialization of the live video streaming industry, the live video streaming platform and content are more standardized. Especially after 2020, the impact of corona-19 on people's daily life, the live video streaming industry is not limited to entertainment, it began to integrate with other basic industries. It is also based on the development of communication technology, network technology and digital technology. Live broadcast + education, live + enterprise, live + store and other live content appear.

With the development of live video streaming industry, the technical requirements of live

broadcasting are not high. However, with the increasing requirements of public aesthetic and content acquisition, the current live video streaming industry is becoming more and more standardized. At present, it can be found that the content of live broadcast by popular streamer is becoming more and more professional. Camera switching, virtual streamer and other professional technologies have also been applied to live video streaming.

In the future, with the popularization of higher speed mobile network, the digital content of mobile terminal will be more abundant. There are more industries will join in the live video streaming industry. In order to enrich the live video streaming content and attract more fans, with the development of digital technology in the mobile terminal, more digital technologies will be applied to the live video streaming industry.

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정진현(Jean-Hun Chung)

[정회원]



- 1992년 2월 : 홍익대학교 미술대학 시각디자인학과(BFA)
- 1999년 11월 : 미국 Academy of Art University Computer Arts (MFA)
- 2001년 3월 ~ 현재 : 동국대학교 영상대학원 멀티미디어학과 교수
- 관심분야 : VR, Contents Design, 입체영상, 3D Computer Graphic, Computer Animation, Visual Effects 등.
- E-Mail : evengates@gmail.com

스위(YU, SHI)

[정회원]



- 2011년 9월 ~ 2015년 6월 : 중국 Zhongnan University of Economics and Law (BFA)
- 2016년 9월 ~ 2018년 6월 : 동국대학교 영상대학원 멀티미디어학과 석사 졸업
- 2018년 9월 ~ 현재 : 동국대학교 영상대학원 멀티미디어학과 박사과정
- 관심분야 : 3D Computer Graphic, Contents Design, Visual Effect 등.
- E-Mail : szzangss@gmail.com