

Postprint on Information Dissemination in Virtual Scenes in the Cloud Technology Era

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Abstract

With the rapid development of cloud technology, physical and virtual scenes are increasingly converging, enabling large-capacity storage and sharing of data, which further unleashes information productivity and expands dissemination capabilities. During the COVID-19 pandemic prevention and control period, virtual social scenes formed based on cloud technology can be broadly categorized into three types: interconnection-oriented, service-dissemination-oriented, and social-innovation-oriented, which more closely align with the everyday life contexts of ordinary individuals. Nevertheless, cloud technology continues to be subject to certain controversies, including data security, knowledge gaps, and social responsibility. This paper proposes corresponding issues and strategies targeting three dimensions of information dissemination: the production end, the reception end, and the dissemination field.

Full Text

Preamble

Information Dissemination in Virtual Scenarios in the Era of Cloud Technology

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Abstract: With the rapid development of cloud technology, real-world and virtual scenarios are increasingly overlapping, enabling large-capacity data storage and sharing. This has further liberated information productivity and expanded communication capacity. During the COVID-19 pandemic prevention and control period, virtual social scenarios formed through cloud technology can be broadly categorized into three interconnected types: relational, service-dissemination, and social-innovation, all of which have become more integrated

into ordinary people' s daily lives. However, cloud technology still faces controversies, including data security, knowledge gaps, and social responsibility. This paper proposes corresponding problems and strategies addressing three aspects: the production end, reception end, and communication field of information dissemination.

Keywords: information dissemination; cloud technology; virtual scenarios; cloud services; big data

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1. Information Dissemination Revolution Brought by Cloud Technology

The year 2020 was extraordinary, as the sudden outbreak of COVID-19 brought new crises and opportunities to all sectors in China. Cloud teaching and cloud office work have become new options during the pandemic. With the maturation of 5G technology, high-tech innovations such as sensors and big data can be promoted and applied nationwide, and various platforms have become new spaces for information exchange during the epidemic. Online collaboration and distance education have also achieved digital life innovation through cloud technology. “Cloud co-presence” enhances user experience, and the virtual scenarios it creates are driving transformation in the information industry while generating a new concept of sharing and commonality. However, rapidly developing cloud technology also harbors some unfavorable factors.

1.1 Cloud Platform Technology Opens New Paths for Information Dissemination

Today, the development and popularization of big data have maximally extended the breadth and depth of information [1]. Although cloud technology has many transformational forms, its essence is an efficient information processing mechanism—information is processed and flows in digital virtual space. Many enterprises use the cloud to build their own databases, allowing users to obtain relevant data and immersive scenario transitions simply by remotely logging into the cloud platform. Cloud servers can not only revolutionize the forms of information dissemination and reception but also enable the transformation, extension, and reconstruction of communication content and scenarios.

1.2 Cloud Technology Expands Information Productivity

The birth of cloud servers has made cross-boundary integration more convenient. For example, in the media industry, where product forms vary and communication channels are diverse, quickly locking onto target users and achieving precise targeted dissemination has become the best strategy for capturing “attention traffic.” The cloud can construct a platform based on user needs regarding content, communication channels, and target audiences, and algorithmic technology enables the updating and storage of massive data. Dynamic analysis of user behavior and analysis of phenomenal events have become possible, allowing the industry to produce targeted personalized information products. Cloud technology enhances the instantaneous nature of information dissemination, and with the support of 5G technology, “everything connected” and “everything as media” are no longer fantasies but achievable realities.

1.3 Cloud Technology Facilitates Large-Capacity Data Storage and Sharing

Traditional data storage methods involve saving data on computers or mobile hard drives, which not only leads to high storage costs and accumulation of redundant data but also carries significant risks of data damage or loss. If personal communication devices are lost, data leakage can easily occur. With the development of cloud servers, enterprise or individual users can store relevant data in a single cloud node, solving the problem of location-limited data extraction. As long as users log into the corresponding cloud account, they can access or modify data from anywhere in the world with internet connectivity, and can even trace data sources through original paths. Generally, cloud servers provide each user with a certain amount of free storage space; when users exceed this limit, they need to pay corresponding fees to obtain larger storage capacity [2]. Cloud technology has not only changed the intermediary of data storage but also brought greater flexibility, eliminating the cumbersome processes of traditional copy-and-paste methods.

2. Types and Characteristics of Virtual Scenarios in the Cloud Era

2.1 Relational Type

This refers to platforms that rely on digital forms to reproduce the organizational structures of real-world scenarios, copying and streamlining real work processes, and establishing functions based on reality to facilitate cloud information interaction, business docking, conference reporting, and results presentation [3]. Because these virtual scenarios are constructed based on real-world models, each user needs to register with real-name verification, and each user has clear objectives and acts accordingly, gathering in a particular field to complete certain tasks. For instance, due to the pandemic, many enterprises could not operate normally, and employees were forced to work from home. Cloud technology

simulated and reproduced office building and work scenarios—platforms such as ZOOM, Tencent Meeting, DingTalk, and Enterprise WeChat enabled online office work and video conferences. Superiors could convey instructions to subordinates through live streaming, subordinates could promptly report progress to superiors through meetings, files could be uploaded and shared without being automatically deleted after meetings, and various enterprise departments could collaborate with each other, thereby greatly improving work efficiency.

2.2 Service-Dissemination Type

This refers to public domain spaces similar to those in real life, specifically designed for information dissemination to meet users' information needs, guarantee freedom of expression, and facilitate sharing and communication. The most common examples are current affairs news platforms, government affairs platforms, and financial news platforms. Cloud technology has brought the possibility of “user sharing” to the public, greatly enhancing public participation. When news occurs, although the public cannot understand it up close, they can participate through cloud technology live streaming [4]. Especially during the pandemic prevention and control period, novel forms of anti-epidemic reporting such as “documentary short videos” and “cloud live streaming” emerged in an endless stream. Among them, the widely acclaimed cloud live streaming case “Construction of Leishenshan Hospital” attracted more than 57 million online viewers through 360-degree documentary live streaming, giving rise to the term “cloud supervisors.” The anti-epidemic theme entered online social platforms, where real-time construction work collided with heated online discussions among netizens, forming an interactive field of virtual companionship. The 2021 3.15 Evening Gala live stream also received unanimous praise and discussion through the “cloud live streaming + interviews + online interaction” format. This form of “cloud supervision” can not only further regulate and supervise the Chinese market but also increase consumer confidence in it.

This type refers to personalized scenarios formed by short videos and audio produced according to audience needs with the assistance of cloud technology [5]. Within these scenarios, information dissemination is more free, convenient, and open, and disseminators can produce and disseminate related products through third-party cloud technology resources. During the pandemic, various variety shows were recorded through cloud technology. For example, Hunan TV's “Singer” used “cloud recording” to interact with audiences online. Various tourist attractions also formed “cloud tourism” and “cloud flower viewing” through live streaming, allowing tourists who could not travel to appreciate scenic beauty up close on virtual platforms. On March 5, 2021, the Gui'an Cherry Blossom Garden used “cloud technology + VR + drone photography” to present viewers with a 360-degree panoramic experiential view of the cherry blossoms in full bloom. Additionally, CCTV.com's “Live China” used “5G + cloud live streaming” to bring scenic views from across the country to audiences. The low latency, high efficiency, and clear picture quality of 5G technology, combined

with the powerful algorithmic functions of cloud technology, provide innovative momentum for panoramic experiences in the intelligent era.

3.1 Data Leakage and Data Trafficking

Many third-party cloud platforms require users to submit relevant information and bind mobile phone numbers or WeChat and Alipay accounts before they can use the platform, and most users do not carefully read the relevant agreements. As a result, users' basic information is easily collected by third-party cloud platforms [6]. This creates risks of data leakage, trafficking, and exploitation, placing personal privacy information silently behind an invisible dangerous wall.

3.2 Economic Foundation Leads to Knowledge Gaps

The development and implementation of cloud platforms cannot be separated from infrastructure and equipment. However, from the user's perspective, not every social group can enjoy the convenience brought by cloud platforms. Economic disparities between different regional groups also lead to information gaps [7]. Taking education as a typical example, people in impoverished areas cannot enjoy the convenience of cloud education due to unstable communication signals and insufficient economic conditions to purchase smart electronic devices. Consequently, they cannot easily obtain cloud education conditions equal to those of students in big cities, resulting in knowledge gaps.

3.3 Social Responsibility Is Selectively Ignored

Currently, many third-party cloud platform institutions prioritize profit as their main objective. Under the prevailing consumerism, this can easily lead to an “entertainment 至死” situation, where people's livelihood issues are simplified while entertainment and commercial events are emphasized, potentially distorting or dissipating social responsibility and public spirit.

4. Challenges Facing Cloud Communication

4.1 Information Dissemination Distortion

While cloud technology development has endowed news communication with new paths and functions, it may also become a “wall” for news communication. Additionally, the characteristics of cloud technology can lead to a lack of news authenticity, which is an issue that both academia and industry need to address.

4.1.1 Possible Distortion in Information Content Acquisition First, due to spatial scenario limitations, journalists cannot go deep into every location to verify whether news content is true, creating limitations. Even with cloud technology assistance and empowerment, cloud technology is still in its initial stage with limited resource library space, making it difficult to proceed

according to expected plans in terms of news acquisition, entry points, and genres. Second, because of cloud technology intervention, the existence mode and reporting forms of news content have changed, making it difficult for journalists to efficiently judge whether news is true. Finally, the acquisition of news content and related information largely depends on cloud platforms without field research, which also affects the authenticity of news content.

4.1.2 Possible Distortion in Information Content Production As mentioned above, cloud technology is still in its initial stage, and its intelligence level needs improvement, which to a certain extent also affects the accurate expression of information. The emergence and intervention of cloud technology have also broken traditional news topic selection and planning processes, bringing changes to journalists in terms of content refinement, fact presentation, and viewpoint expression. At the same time, cloud-based collection has also broken traditional news gathering and editing models [8]. The current division of labor models for cloud-based collection are all new research topics, lacking relatively complete production experience and collaborative mechanisms, and cannot completely replace traditional face-to-face gathering and editing methods, posing many challenges for news production.

4.1.3 Possible Distortion in Information Reception Because current cloud communication channels mix multiple platforms with different technical standards, the content presented on different platforms and terminals may differ or even be inconsistent, such as in layout, audio-visual elements, and composition, all of which may cause information reception distortion. Additionally, due to the rapid iteration speed of communication and media technology, as well as uneven hardware conditions and media environments, and whether terminal user groups are familiar with terminal tools, all these factors may contribute to information reception distortion.

4.2 Loss of Content Control

Cloud communication content review differs significantly from traditional news organizations, resulting in cloud content operation largely depending on cloud platform technical support. If the technical closed loop of cloud platforms has problems, the self-protection system of cloud communication will be vulnerable to cyber attacks by ill-intentioned individuals, and information security cannot be effectively guaranteed.

4.2.1 From the Production Perspective The traditional news gatekeeper model cannot adapt to the news gatekeeping model of cloud platforms. Meanwhile, because cloud platforms involve cooperation among different platforms, the gatekeeper model has certain complexities [9]. Especially in cloud live streaming, if the gatekeeper model is imperfect, content may become uncontrollable. Additionally, cloud platform review models are usually technology-

dependent, but the initial stage of current cloud technology determines that the gatekeeper model cannot completely 脱离人工审核的形式。

4.2.2 From the User Perspective Cloud technology not only subverts traditional cognitive thinking but also connects unrelated people from distant locations, enabling the overlap and extension of real society and virtual society. Because cloud platforms have characteristics of sharing, development, and anonymity, this creates potential risks of losing control. Since every user is a communication node, belonging to both receivers and disseminators, the overly complex online news environment may lead users to subjectively misinterpret content when receiving news information, which could impact mainstream values.

5. Strategies

5.1.1 Information Acquisition

Since mass media cannot immediately improve the technical level, they can choose cloud platforms with relatively complete underlying technical structures as service providers to ensure reliable terminal channels [10]. At the same time, media organizations can also obtain appropriate cloud platform resource pools through multiple channels to acquire relatively high-quality materials.

5.1.2 Information Production

Media practitioners should appropriately use cloud platform production tools for information production, making full use of content materials to improve information dissemination quality. Additionally, in terms of collaborative editing, they should 善于运用云端平台的共享、开发属性,全面提升传播的品质。无论是 5G 技术还是短视频平台,都有高新的云端算法技术助力,并且这条新的传播路径还是一条高效率、低成本的路径。

5.1.3 Information Dissemination

Use big data to identify target user groups, dissemination timing, and release platforms to ensure technical rationality in the release process. At the same time, consideration should be given to the communication rules of different terminal platforms to avoid dissemination failure caused by technical inconsistencies.

5.2.1 Content Production Gatekeeping

Dissemination subjects need to conduct self-review of disseminated content and its ideological and value aspects to ensure correct guidance. Because cloud platforms have stable and complete closed-loop structures, they can prevent disseminated content from being maliciously tampered with by others. Media platforms should establish effective dual human-technology review models with cloud platforms to promptly identify distorted content. Additionally, establishing AR models involves text, images, audio-video, interactive interfaces, and

special effects production, all of which require cloud technology and data support [12].

5.2.2 Content Reception Gatekeeping

Cloud platforms should value user feedback channels, analyze user attitudes and viewpoints based on their words and actions, and promptly stop and prevent possible negative impacts. Meanwhile, media platforms need to strengthen their awareness and status as dissemination subjects, communicate and interact with users in a timely manner, and guide correct social values and public opinion.

Cloud technology not only subverts traditional cognitive thinking but also connects people who are unrelated and far apart, achieving the overlap and extension of real society and virtual society. Cloud platforms make data storage and sharing more convenient, expanding information productivity and communication capacity. The daily application of cloud platforms has successfully integrated into multiple fields closely related to people's daily lives, achieving scenario-based communication and decentralized, diversified communication. However, cloud technology is still in its initial stage and needs further integration with society to resolve some controversial aspects. As the "cloud concept" continues to penetrate people's minds, information dissemination methods are transforming, and the construction of a smart society needs to accelerate its pace.

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