Meta-universe helps college students to start their own businesses and promote research on the transmission path of intangible cultural heritage

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Abstract: This paper discusses the status quo and existing problems of intangible cultural heritage protection, and puts forward the meta-universe technology as a new technical means to promote the dissemination and protection of intangible cultural heritage. This paper first introduces the definition, importance and threats of intangible cultural heritage, including the breakdown of cultural inheritance, lack of resources, poor information dissemination, cultural commercialization tendency and lack of international cooperation and exchange. Then, the paper Outlines the development process, characteristics and application of the meta-universe technology in the field of innovation and entrepreneurship. The paper further discusses the application potential of meta-universe technology in the field of education and cultural communication, and puts forward specific application directions such as virtual learning environment, distance education and online courses, cultural experience and exchange, cultural education and popularization, cultural protection and digital archiving. Next, the paper analyzes the technical feasibility of meta-universe technology in the dissemination of intangible cultural heritage, and puts forward a case study of establishing a virtual makerspace. Finally, the paper looks forward to the future development direction and challenges of meta-universe technology in the dissemination of intangible cultural heritage. Through the research of this paper, we can conclude that meta-universe technology has great potential to promote the dissemination and protection of intangible cultural heritage, and provides a broad opportunity and resource connection for college students' innovation and entrepreneurship.

Key words: protection and dissemination of intangible cultural heritage; Meta-cosmic technology; Innovation and entrepreneurship

I. Overview of metacosmic technology

1. Meta-universe concept

Meta-universe technology is a comprehensive application that integrates virtual reality (VR), augmented reality (AR), mixed reality (MR) and other technologies, aiming to build a virtual digital space that is interconnected with the real world. It enables users to immerse themselves, interact with the virtual environment, and communicate and cooperate with other users in real time. The development of the technology can be traced back to the early 1990s, when virtual reality came into its own. With the improvement of computer graphics processing power, virtual reality technology gradually matures and is used in scenarios such as games, entertainment and training. In the early 2000s, with the popularity of mobile devices and the development of the Internet, augmented reality technology began to gain attention. The technology provides users with a more interactive experience by overlaying virtual content onto the real world. For example, through the camera of a phone or tablet, users can see virtual objects in the real environment, enabling users to interact with virtual objects in real time, as well as perceive and manipulate real objects. In recent years, with the rapid development of technologies such as AI, the Internet of Things and 5G, metauniverse technology has begun to attract more attention. It not only provides a lifelike immersive experience, but also supports multi-user real-time interaction and cooperation. For example, users can hold meetings, collaborate or socialize in virtual Spaces. In general, metaverse technology has evolved from virtual reality to augmented reality to mixed reality, and finally to the current metaverse. With the continuous progress of technology and the expansion of application scenarios, meta-universe technology is expected to play an important role in the future digital society.

2. Definition and characteristics of meta-cosmic technology

Metauniverse technology is a concept that integrates advanced technologies such as virtual reality, augmented reality, blockchain and artificial intelligence. It aims to create a new digital space that blends with the real world and has the following characteristics:

(1) Virtual-real integration: Metauniverse technology combines the digital world with the real world through virtual reality and augmented reality technology, enabling users to interact with other users in a virtual environment.

(2) Diversified scenarios: Metacomph technology can be applied to many fields, such as entertainment, education, medical care, social interaction, etc. Users can participate in various activities through the virtual environment, communication, study, work and so on.

(3) Distributed shared data structure: Meta-universe technology makes use of decentralized data structures such as blockchain to enable different users to share and manage data to ensure data security and reliability.

(4) Self-creation and customization: Metacomph technology provides users with the ability to freely create and customize. Users can create their own virtual characters, scenes and items in the meta-universe environment, and share and trade with other users.

(5) Open Ecosystem: Metacomes technology encourages developers and innovators to participate in its ecosystem to build rich and

diverse applications and services. This openness fosters innovation and collaboration, driving the development of metacomes.

3. The application potential of meta-cosmic technology in cultural communication

Metacosmic technology has great application potential in cultural communication, which can promote cultural inheritance, communication and innovation. Here are some possible directions of application:

(1) Virtual cultural experience: Meta-universe technology can provide users with an immersive virtual cultural experience. Users can visit historical sites, art exhibitions, cultural festivals, etc., and interact with virtual guides, artists or cultural experts to gain an in-depth understanding of the background and connotation of different cultures.

(2) Cultural and creative display: Meta-universe technology can provide a platform for artists, designers and creative talents to display and promote their works. They can display artworks, design works, music works, etc., in a virtual environment to attract more audiences and potential partners.

(3) Cross-cultural communication and cooperation: Meta-cosmic technology can break the restrictions of geography and language and promote cross-cultural communication and cooperation. People can interact, cooperate and share in a virtual environment, promoting understanding and communication between different cultures.

(4) Cultural education and popularization: Meta-cosmic technology can provide new ways for cultural education and popularization. Through virtual environments and interactive experiences, people can more easily learn and understand the history, language, tradition and other knowledge of different cultures.

(5) Cultural preservation and digital archiving: Meta-cosmic technologies can help with the digital archiving and preservation of cultural heritage. Virtual environments can restore and preserve important cultural heritage in order to prevent it from being damaged by natural disasters, man-made destruction or the passage of time.

It should be noted that while meta-cosmic technology has potential in cultural transmission, it also faces challenges and tests. For example, there are issues such as how to protect the uniqueness and authenticity of culture, finding a balance between technology and culture, and how to ensure the popularization and participation of culture. Therefore, in the application of meta-cosmic technology in cultural transmission, it is necessary to take into account multiple aspects such as technology, ethics, society and culture, so as to protect and inherit the diversity and value of good culture.

II. The status quo and existing problems of intangible cultural heritage protection

Intangible cultural heritage is the unique and inheritable intangible cultural assets created by mankind, including oral traditions, performing arts, social practices, rituals, festivals, knowledge and practices. They are an important part of the cultural diversity of mankind, carrying the history, values and traditional knowledge of nations, regions and societies. However, with the development of modernization and the impact of globalization, intangible cultural heritage is facing serious threats and challenges. The status quo of intangible cultural heritage protection has the following problems:

1. Breakdown of cultural inheritance: Due to the impact of modernization and social changes, the inheritance chain of many intangible cultural heritages has been broken, and the younger generation's interest in and participation in traditional culture has declined, leading to a crisis in the inheritance of intangible cultural heritage.

2. Lack of resources: Intangible cultural heritage protection requires a large amount of human, material and financial input, but many regions and communities lack sufficient resources for effective protection and inheritance.

3. Poor dissemination of information: The dissemination of intangible cultural heritage is limited by traditional media and traditional display methods, and the scope and effect of information dissemination are limited, which cannot meet the needs of modern society for cultural heritage.

4. Cultural commercialization tendency: Under the impact of commercialization, some intangible cultural heritage has been overcommercialized and commercialized, lost its original cultural connotation and value, and even been distorted and abused.

5. Lack of international cooperation and exchange: The protection and dissemination of intangible cultural heritage requires international cooperation and exchange, but the current lack of effective international cooperation mechanisms and platforms leads to the limitations of the protection of intangible cultural heritage.

The above problems have seriously affected the inheritance and protection of the intangible cultural heritage. Therefore, it is particularly important to find new technical means and methods to promote the dissemination and protection of the intangible cultural heritage. As an emerging technological means, the meta-universe technology has great potential and application prospects, and can provide new solutions for the dissemination and protection of the intangible cultural heritage. The following chapters will focus on the overview, characteristics and classification of meta-universe technology, as well as its application in the field of innovation and entrepreneurship, to provide theoretical basis and practical reference for subsequent research.

III. Technical feasibility analysis of meta-universe technology in the dissemination of intangible cultural heritage

There are many converging points between meta-universe technology and intangible cultural heritage, which can promote the inheritance, protection and promotion of intangible cultural heritage.

1. Virtual display and experience: Through the meta-universe technology, intangible cultural heritage can be displayed to a wider audience in a virtual form. Virtual exhibition, virtual performance and virtual experience can bring immersive intangible cultural experience and let people feel the unique charm of intangible cultural heritage.

2. Cultural inheritance and education: Meta-universe technology can provide a new way and platform for the inheritance of intangible cultural heritage. Through virtual environments and interactive experiences, the younger generation can have a more intuitive understanding of intangible cultural heritage techniques, traditional crafts and performance forms, and promote the inheritance and development of intangible cultural heritage.

3. Cross-region and cross-space communication: Meta-universe technology breaks the restrictions of geography and time, enabling the exchange and cooperation of intangible cultural heritage across regions and time. Intangible cultural heritage projects in different regions can communicate, learn and share experience with each other in a virtual environment to promote the diversity and exchange of intangible cultural heritage.

4. Digital protection and archiving: Digital protection of intangible cultural heritage is an important convergence point of meta-universe technology. Through digital recording, simulation and restoration, intangible cultural heritage can be better preserved and protected to prevent accidental loss and loss.

5. Cross-border integration and innovative development: Meta-universe technology provides a broad stage for the innovative development of intangible cultural heritage. Intangible cultural heritage can be integrated with science and technology, art, design and other fields across the border to promote innovation and attract more young people to participate in the inheritance and development of intangible cultural heritage.

Through the application of meta-cosmic technology, intangible cultural heritage can be better integrated with modern society, realize the organic combination of tradition and innovation, and further promote the inheritance, promotion and dissemination of intangible cultural heritage. At the same time, it is also necessary to pay attention to issues such as cultural respect and intellectual property protection, and find a balance between technology and intangible cultural heritage to ensure that the uniqueness and authenticity of intangible cultural heritage can be preserved.

IV. The meta-universe technology to build intangible cultural display platform

1. Specific cases of meta-universe technology creating intangible cultural display platform

(1) Virtual Museum of intangible cultural heritage: Create a virtual museum based on meta-universe technology to display the essence of intangible cultural heritage projects from all over the world. Users can enter the museum through virtual reality devices or computer browsers to browse exhibitions and visit cultural relics in the virtual environment. The museum can be divided according to specific intangible cultural heritage items to provide detailed introduction and display. Users can also interact with virtual guides to gain an in-depth understanding of the historical background and technical characteristics of intangible cultural heritage.

(2) Virtual intangible cultural Heritage performance platform: Create a virtual intangible cultural heritage performance platform, so that users can watch the performance of intangible cultural heritage projects through the Internet. Use augmented reality technology to bring the intangible cultural heritage performance to the user's side, and watch the performance in the user's home or other comfortable environment. Users can choose different types of intangible cultural heritage performances according to their interests, and can also interact with the performers and learn related skills.

(3) Virtual non-dead body inspection workshop: Establish a virtual non-dead body inspection workshop, so that users can personally participate in the learning and experience of intangible cultural heritage skills. Users can interact through virtual reality equipment or computers, follow virtual tutors to learn the production process of intangible cultural heritage techniques, and actually operate them. The workshop can cover a variety of intangible cultural heritage projects, such as Chinese paper-cutting and tie-dyeing, as well as intangible cultural heritage techniques from other countries, to enrich users' experience choices.

(4) Virtual intangible cultural Heritage Community interactive platform: Create a virtual intangible cultural heritage community where users can exchange and share their love and experience of intangible cultural heritage. Users can create their own virtual characters, communicate with other users in the community, participate in discussions, and jointly explore the charm of intangible cultural heritage. The community can also set up intangible cultural activities and competitions to enhance users' sense of interaction and participation.

These cases make use of meta-universe technology to create a brand new intangible cultural display platform, providing users with immersive and interactive non-body verification. Through the creation of the virtual environment, users can more conveniently contact, learn and enjoy the intangible cultural heritage, and promote the inheritance and protection of the intangible cultural heritage. At the same time, these platforms can also attract more young people to participate and enhance their understanding and recognition of intangible cultural heritage.

2. Technical realization and operational model

The technical realization and operation mode of the above cases can be referred to in the following ways:

(1) Technical implementation:

① Virtual reality (VR) and augmented reality (AR) technology: virtual reality equipment and software are used to build virtual environments so that users can experience intangible cultural heritage in an immersive manner. Through augmented reality technology,

virtual content is combined with the real environment to provide more authentic interaction and experience.

2) Cloud computing and high-speed Internet: Use the powerful computing and storage capabilities provided by the cloud computing platform to support the construction and operation of the meta-universe platform. High-speed Internet connection ensures that users can access and participate in virtual experiences smoothly, regardless of geographical location.

(3) Big data and artificial intelligence: Using big data analysis and artificial intelligence technology to analyze users' behaviors and preferences, personalized recommendation of intangible cultural heritage projects and interactive content for users. At the same time, artificial intelligence technology can also be applied in the interaction with users, such as the intelligent communication of virtual tour guides or tutors.

(2) Operation mode:

① Free or paid subscription: The platform can offer different payment models depending on the type and quality of the content, such as free trial, low price subscription or pay per view. The free model can attract more users to try and participate, while the paid model can provide higher quality content and more privileges.

2 Advertising and sponsorship: The platform can work with related enterprises to generate revenue through advertising and sponsorship. For example, the intangible cultural heritage display platform can cooperate with cultural and tourism institutions to recommend their related projects and services to users.

(3) Community participation and cooperation: In order to enhance user interaction and participation, the platform can encourage users to share and post their own non-body tests, opinions and creations, forming an active community. In addition, the platform can also cooperate with intangible cultural heritage protection organizations and cultural institutions to jointly plan activities and projects and expand their influence.

④ Cross-platform cooperation: The platform can cooperate with other meta-universe platforms, offline institutions and enterprises to expand user groups and increase resources. For example, it can cooperate with game companies to integrate intangible cultural heritage elements into games and attract more young people to participate.

To sum up, the combination of technology realization and operation model can provide rich content and good user experience for the intangible cultural heritage display platform, while also bringing multiple revenue sources to the platform operation.

(3) Achievements and influence

The achievements and impacts of the above cases are as follows:

① Protection and inheritance of intangible cultural heritage: Through the use of meta-universe technology to build an intangible cultural heritage display platform, intangible cultural heritage projects can be presented to users in a new way. This will help protect and inherit the intangible cultural heritage, let more people understand, love and learn the intangible cultural heritage skills, and promote the inheritance and development of the intangible cultural heritage.

2) Improve the immersion and interaction of non-body inspection: Traditional intangible cultural display usually has geographical and time limitations, but the use of meta-universe technology can break these limitations, so that users can experience intangible cultural immersion anytime, anywhere. Users can get in close contact with intangible cultural relics in the virtual environment, participate in intangible cultural relics performance or skill learning, which enhances the immersion and interaction of non-mortal relics.

③ Expand the dissemination scope and audience of intangible cultural heritage: Through virtual display, online performance and community interaction, intangible cultural heritage can reach a wider audience across geographical and time constraints. This will help promote intangible cultural heritage, attract the attention and participation of the younger generation, and expand the dissemination scope of intangible cultural heritage.

④ Promote the combination of intangible cultural heritage and modern technology: Combining intangible cultural heritage and metacosmic technology can not only enhance the traditional value of intangible cultural heritage, but also find new ways of expression and market opportunities in modern society. This will contribute to the innovation and development of intangible cultural heritage, and promote the integration of intangible cultural heritage and modern society.

(5) Economic and employment-driven: the construction of intangible cultural heritage display platforms and operation-related services will drive the development of related industrial chains, such as virtual reality equipment manufacturers, software developers, digital content creation teams, etc. At the same time, promoting the dissemination and development of intangible cultural heritage will also provide more employment opportunities for relevant practitioners.

All in all, the achievements and impacts of the above cases lie in protecting intangible cultural heritage, improving non-body verification, expanding the dissemination scope of intangible cultural heritage, promoting cultural innovation and driving economic development. Through the application of meta-cosmic technology, intangible cultural heritage can step into the digital era, integrate closely with modern society, and bring cultural charm and economic benefits to more people.

V. Future Prospects

1. The limitations of meta-cosmic technology in the dissemination of intangible cultural heritage

Despite the significant advantages of meta-cosmic technology in the dissemination of intangible cultural heritage, there are also some limitations.

(1) Technical threshold: At present, meta-universe technology is still in a stage of rapid development, requiring highly professional technical knowledge and development ability to achieve relevant applications. This may limit the participation of non-genetic inheritors and intangible heritage practitioners, as they may not have the relevant technical background or resources to create their own metacomph platforms.

(2) Experiential differences: Although virtual and augmented reality can provide immersive non-human experience, there are still experiential differences compared to actual hands-on participation. Virtual experiences cannot fully reproduce the real touch, smell and sound, which may affect users' overall perception and understanding of intangible cultural heritage.

(3) Sustainability: The development and operation of metacomph technology requires a lot of energy and computing resources. If sustainability is not taken care of, overuse of metacosmic technologies can have negative environmental impacts. Therefore, reducing energy consumption and optimizing the sustainability of the technology need to be considered when promoting the spread of intangible cultural heritage.

(4) Digital divide: The application of meta-cosmic technologies relies on high-speed Internet connections and advanced equipment, but in some regions, especially some poor regions or developing countries, Internet access and device penetration may be low, which leads to the existence of digital divide. This may limit the participation of some groups in the use of metacosmic technology and the dissemination of intangible cultural heritage.

(5) Cultural protection dilemma: Although meta-cosmic technology can promote the dissemination of intangible cultural heritage, it is also necessary to balance the relationship between cultural protection and commercial dissemination. Excessive commercialization may lead to the weakening and distortion of intangible cultural heritage, so it is necessary to properly handle the relationship between commercialization and cultural protection when using meta-cosmic technology to spread intangible cultural heritage.

It should be noted that with the continuous progress and popularization of meta-cosmic technology, these limitations are expected to be alleviated or overcome. At the same time, the comprehensive use of multiple communication means and innovative methods can further improve the effect and influence of the dissemination of intangible cultural heritage, so that it can be more widely recognized and inherited by people.

2. Future development direction and challenges

(1) Future Development direction

① Technological innovation: Meta-universe technology will continue to develop and improve, including the further integration and optimization of virtual reality, augmented reality, blockchain and other technologies to provide more real, immersive and interactive non-body experience.

2 User participation: The future development direction is to encourage users to participate more in the dissemination of intangible cultural heritage, for example, through user-generated content and collaborative creation, so that users can become active disseminators and participants of intangible cultural heritage.

(3) Cross-border cooperation: The future development direction is to promote the cross-integration of intangible cultural heritage with other fields, such as art, science and technology, design, etc., and create more creative and attractive intangible cultural products and experiences through cross-border cooperation.

④ Global promotion: Taking advantage of the global characteristics of the meta-universe platform, China's intangible cultural heritage will be promoted to the international market and its worldwide visibility and influence will be enhanced.

(5) Balance between cultural protection and commercialization: It is necessary to balance the relationship between cultural protection and commercialization in the dissemination of intangible cultural heritage, maintain the original flavor and uniqueness of intangible cultural heritage, and create a sustainable business model to enable the effective inheritance and protection of intangible cultural heritage.

(2) Challenges and solutions of meta-universe technology in the dissemination of intangible cultural heritage

① Limitation of technical conditions: The application of meta-universe technology requires the support of high-speed Internet and high-end equipment, which may cause restrictions on the use of some regions and people. Metauniverse technology is still in the development stage, and technical bottlenecks and challenges need to be solved, such as achieving a more realistic and smooth virtual experience and improving device performance.

Solutions: Governments, enterprises and social organizations can provide users with the necessary hardware, software and technical support to lower the threshold for use. Meanwhile, technological innovation should maintain continuous development to provide better user experience and cultural protection services.

2) Expression of cultural characteristics of intangible cultural heritage: Intangible cultural heritage is known for its unique historical, cultural and regional characteristics, and how to adequately represent these characteristics in the meta-universe may be a challenge. Whether the intangible cultural heritage items and scenes in the virtual environment can truly reflect the intangible cultural characteristics of various periods may need to be considered.

Solution: Developers and designers can combine the characteristics of intangible cultural heritage itself and the needs and expectations of the public for intangible cultural heritage to develop the content and expression forms of intangible cultural heritage that are suitable for multi-cultural exchange and dissemination.

③ User reception, user information protection and privacy: Although young people are more accepting of metacomph technology,

other groups may have reservations about new technology. In addition, with the development of the meta-universe, the protection of user information and privacy has become an increasingly important topic. How to ensure user engagement while keeping their data and privacy safe is a challenge.

Solution: Education and outreach efforts are needed to increase user acceptance and willingness to use. Developers need to ensure the platform's data security and privacy protection mechanisms and comply with relevant laws and regulations. At the same time, it is also necessary to provide users with comprehensive personal information protection and privacy control functions, so that users can choose whether to disclose their information and participation level, and enhance user trust and participation.

④ Cultural protection and intellectual property rights: In the application process of meta-universe technology, the protection of intangible cultural heritage and intellectual property rights is a challenge that needs attention. Issues such as the source of intangible cultural materials and copyright ownership in virtual environment need to be properly solved.

Solution: Developers and platforms should uphold the principles of cultural respect and intellectual property protection, legally use intangible cultural heritage materials, and prevent intellectual property disputes. In addition, the government and social organizations should also strengthen supervision and support for the protection and inheritance of intangible cultural heritage to ensure that intangible cultural heritage can be legally protected and passed on.

(5) Sustainable development: Sustainability should be considered in the development of the meta-universe platform, including energy consumption, environmental protection and social responsibility, so as to avoid adverse impacts on the environment and society.

6 Legal supervision and norms: With the development of the meta-universe, relevant laws, regulations and norms need to be established to ensure the normal operation of the platform, the protection of users' rights and interests, and the legal dissemination of intangible cultural heritage.

Addressing these challenges requires technological innovation, policy support, industry cooperation, and the participation and support of the general public. With the further development of meta-cosmic technology, it is expected that the dissemination of intangible cultural heritage will have a broader prospect.

(3) The impact of college students' innovation and entrepreneurship on the dissemination of intangible cultural heritage

① Innovative ideas and methods: College students' innovation and entrepreneurship activities focus on the innovation of thinking modes and methods. They can combine intangible cultural heritage with modern technology and business models, present intangible cultural heritage in novel ways, and enhance its attraction and communication effect.

2) Expansion of communication channels: College students' innovators and entrepreneurs expand the communication channels of intangible cultural heritage through emerging platforms such as the Internet and social media. They can directly convey intangible cultural heritage to a wider audience through online live broadcasting, short videos, social platforms and other forms, breaking the restrictions of time and space, and enhancing the dissemination scope and influence of intangible cultural heritage.

(3) Cross-border cooperation and integration: College student innovators and entrepreneurs usually have multidisciplinary backgrounds and cross-border thinking. They can integrate and cooperate intangible cultural heritage with other fields, such as design, technology, art, etc., to create more creative and attractive intangible cultural products and experiences, attracting more young people's participation and attention.

④ Global vision and international exchange: College students usually have a strong global vision, and they can spread the intangible cultural heritage to the international stage. Through international cooperation and exchange activities, they can promote Chinese intangible cultural heritage and enhance the understanding and exchange between different cultures.

(5) Development of cultural and creative industries: The dissemination of intangible cultural heritage by college students' innovation and entrepreneurship can also help promote the development of cultural and creative industries, provide more business opportunities and development space for non-inheritors, and stimulate the creativity and economic value of intangible cultural heritage.

The active participation of college students in innovation and entrepreneurship has promoted the innovation and development of the dissemination of intangible cultural heritage, and injected new vitality and charm into the intangible cultural heritage with novel creativity, diversified communication methods and cross-border cooperation thinking, so that it can better adapt to the needs of modern society and attract more young people to participate in it, so as to realize the inheritance and innovation of the intangible cultural heritage.

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