

# Research on UI visual interface design of local museum under digital background

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**Abstract:** With the rapid development of mobile internet, competition among similar software has become increasingly fierce. To stand out in this highly competitive market, in addition to having unique features, emphasis must be placed on creative UI design and finely categorizing it into mobile interactive interface design apps. This article's "Cloud Tourism" museum app relies on Internet of Things technology, mobile communication technology, cloud computing technology, artificial intelligence technology, and mobile interaction technology to provide users with high-quality experiences through perceptual, interconnected, intelligent, and flat design. This article provides a detailed introduction to the main design process, with the aim of making the interaction between people and software more comfortable, simple, and natural.

**Keywords:** creative design; fine classification; "Cloud Tourism" museum; Flat Design

## 1. Introduction

The mobile interaction design of "Cloud Tourism" project is completed through the creation and design of the UI interface. This project aims to develop software with unique features and focuses on its mobile interaction interface design within the app. The UI design is intended to create an overall style for the software's human-computer interaction, operational logic, and visual aesthetics. Excellent UI design not only adds personality and taste to the software, but also provides users with a more comfortable, simple, and natural operating experience, fully showcasing the positioning and characteristics of the software.

## 2. Project background

UI design is essential for effective human-computer interaction, logical operation, and aesthetically pleasing interfaces. A well-designed UI not only enhances the personality and style of the software but also improves the overall user experience, making it more comfortable, simple, and enjoyable to use. A good technical design fully reflects the positioning and unique characteristics of the software.

In recent years, with the influence of new coronavirus pneumonia, the development of traditional tourism has been greatly affected. Through the active exploration and innovation of tourism, many new forms of tourism and new service models have been born. "Cloud Tourism" is a model of advanced scientific and technological means to promote the cultural and tourism sector supply-side structural reform and demand-side service model innovation, better practice of cultural integration strategy, and win public opinion calls for sustainable development. In addition, the "Cloud Tourism" model also accelerates the training of new talents in tourism scenic spots and tourism organizations to meet the needs of new forms of tourism development. The design of this paper is based on such a social background, the implementation of the specific mobile phone APP interface design, in the realization of software interface design, based on the online travel for the people who need the model of cloud.[4] This paper mainly discusses the design and implementation of mobile interactive interface "Yunyou". This paper focuses on the design and implementation of the mobile interactive interface called "Yunyou." The primary objective is to combine UI creation and design to achieve the theme's completion.

## 3. Practical significance of the project

"Cloud Tourism" is a technology-based approach that leverages the Internet of Things, mobile communication, cloud computing, artificial intelligence, and mobile interaction technologies to connect the physical, information, social, and business infrastructure of the travel industry. This approach aims

to create a flat design, perceived, connected, and intelligent smart infrastructure for the new era, enabling information sharing and collaboration among different sectors and systems involved in the tourism industry. It promotes more rational use of resources and optimal tourism activities, providing different value to tourists, enterprises, governments, and residents. These value supplies are manifested in the information application level of cloud tourism[5].

“Cloud Tourism” is based on the new era of information technology, to meet the individual needs of tourists, providing high-quality, high satisfaction services, and to achieve the sharing of tourism resources and social resources and effective use of systematic and intensive management reform. From the connotation, the essence of “Cloud Tourism” refers to the application of intelligent technology, including information and communication technology, in the tourism industry, it aims to improve tourism services, improve tourism experience, innovate tourism management and optimize the utilization of tourism resources, a modernization project to enhance the competitiveness of tourism enterprises, improve the management level of the tourism industry and expand the scale of the industry. [6]This is of practical significance to the development of “Cloud Tourism” and to the transformation of economic and social development.

#### 4. Project contents

Through research and analysis, the “Cloud Tour” APP of this project mainly includes the following contents: the map function of the Cloud Tour Pavilion, the exhibition function of the cloud tour Hunan Expo, the function of the cloud watch Yi Nian Xin zhui, the function of the cloud listening and explaining cultural relics, the video function of the Cloud Pass, the function of the cloud watch cultural relics, the function of the cloud VR landscape experience, the function of buying and selling cultural and creative products, and the function of customizing cultural and creative products. The main features of the project include the following: Cloud View Museum, Cloud Find Tour Guide to listen to the introduction of cultural relics, cloud listen to the unearthed cultural relics with relevant characteristics, cloud buy feature cultural and creative products, Cloud View VR Interactive Experience, cloud view collection of cultural relics video, Cloud Zhixian story, online research activities (figure 1-figure 4).



*Figure 1: Screenshot of “Display of Han tombs at Mawangdui, Changsha”*

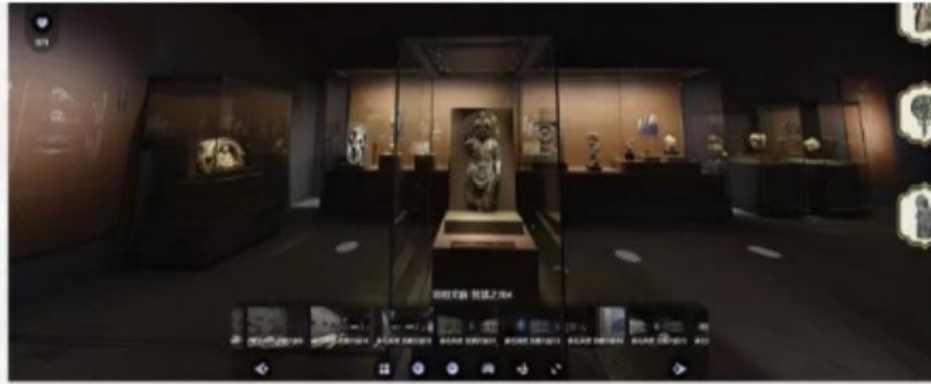


Figure 2: Screenshot of “Our Asia: Ancient Civilizations of Asia”



Figure 3: Product display

Research activity information research

Educational		Lectures	
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All Normal activities Parent-child activities  
Group activities

All Almost a week Nearly January  
Weekends All the time

No restriction Free For a fee

No restriction Registration




	Huxiang collection Box The genetic code of Hunan people
	Huxiang collection Box Two thousand years of stunning beauty
	Huxiang collection Box Art Red and black

Figure 4: Screenshot of the Hunan Provincial Museum Applet

## 5. Market analysis and positioning of mobile interactive interface

The target users of this project are tourists aged 20-45 with medium to high income living in first and second-tier cities. Their usage scenarios include online tourism through the app when unable to go out, or experiencing tourism in their leisure time by opening the app. Based on the characteristics of these users, the project positions itself by assigning highly refined feature tags derived from user information analysis. According to the analysis results, 53.6% of the user group are female and 46.4% are male, with medium to high income and living in first and second-tier cities. By understanding these characteristics, the project will provide target users with tourism experiences that better meet their needs and satisfy their tourism demands when they are unable to go out or in their leisure time. As shown in Table 1.

Table 1: User portrait

Mr. Mo	Ms. L	Mr. Yang
		
32, male, private enterprise	25, female, state-owned enterprise	27, male, self-employment
needs: want to go out	needs: want to visit the scene to learn more knowledge of human geography to improve their own	requirements: like outdoor shooting, want to share more wonderful landscape, due to external factors cannot reach

### 5.1. Market positioning

This project operates within the online travel industry, with a focus on VR virtual reality. Its main business services include cultural landscape attractions and attractions business, with a target consumer group of individuals aged between 20-45 years old who have a passion for travel but cannot afford high-end experiences.




### 5.2. Project image

The project aims to assist users with virtual travel experiences during times when physical travel is not convenient. Additionally, it aims to support the tourism industry by stabilizing the sale of tourism commodities for human landscapes in the current context of the pandemic and promoting steady growth of the tourism economy.

### 5.3. Similar Product analysis

Conducting an analysis of similar products is crucial for the project's design. We have identified several commonly used tourism apps in the market for comparative analysis, focusing on three aspects: product function, product characteristics, and product design style. These findings are summarized in Table 2 Competitive Product Analysis.

Table 2: Competition analysis table

Product name	main function	product feature	design style
 Traveling with a journey	core functions: Luocheng Consultant Hotel Reservation Service, air ticket service ancillary functions: Tourism Vacation Products, private guide platform, Ctrip Car Rental service, Ctrip credit card	CTRIP GIFT Card 3C business model, powerful technology management system, management side, 1-16 Sigma system	theme color: Blue Style: home page with nine grid navigation form, function, module clear and easy to understand
 Flying pig travel	the core functions: ticket ticket services, ticket security and park security services ancillary functions: route planning services, tourism planning services	"First to pay" services	with Ali the entire system of the connection theme color: yellow style: fun, simple, intimate
Same trip	core function: ticket service, travel product, Hotel Reservation subsidiary function: Car Rental Service, Line Reservation Service, national chain Travel Service	Unique Web 2.0 mode	theme color: white and blue background color style: home logo logo icon to strengthen the brand image, the overall page simple
 Hornets' nest travel	ore functions: ticketing service, bee-head travel notes, personalized recommended travel locations, hotel booking ancillary functions: provide access to purchase all kinds of travel goods, travel notes, writing and sharing	personalized recommendations, records belong to the user's own travel world	theme color: yellow and white style: simple and interesting page, personalized icons

## 6. The design and implementation of the mobile interactive interface “Yunyou”

### 6.1. Basic element design

#### 6.1.1. Design principles

The Yunyou app's user interface (UI) design for the Hunan Provincial Museum focuses on providing visitors with convenient access to online previews of museums, museum maps, exhibits, information, and cultural and creative products. Peripheral functions are also included to enhance the tourist experience.

To ensure a clear understanding of the visual design requirements, color schemes, visual styles, texture materials, and other elements were extracted based on the user's psychological emotions and needs. This provided inspiration for the visual design, including the interface visual style, icon style trend, and key icon selection. These aspects were considered in the production of visual details to lay the theoretical foundation.

Based on Hunan's rich cultural heritage, the Yunyou app provides users with an immersive experience of the Yue Lun and Mai cultures. The museum map is at the core of the app's design, creating an interactive experience that brings exhibits to life. Figures 6 to 8 show the color specification, font specification, and icon design for the Cloud Trek app.



Figure 6: Color specification for the Mobile Interactive Interface Cloud travel APP



Figure 7: The font specification for the cloud travel APP

### ICON design

ICON design is mainly for the display of “Cloud” tour and museum relics, the use of graphic combination design, the overall concise and clear design rules will not be attributed to the board.



Figure 8: ICON design for mobile interactive interface

## 7. The end result of the mobile interface

Here is an overview of some of the interface effects of the Yunyou app. The app predominantly uses

colors commonly associated with museums, while the interface design is more formal in its layout. The app's cover features a blurred background, which creates a visual experience of cultural relics being gradually revealed.

The Yunyou app is designed to enhance the digital travel experience and enable online-offline interaction. It achieves this by integrating cultural content with digital entertainment, placing cultural venues and scenic spots into digital entertainment scenes such as online games, animations, movies, and live broadcasts. Through the use of "Game + virtual tour", "Animation + cloud exhibition", and "Film + immersive experience", the app creates a digital "Virtual culture space" that drives the consumption of peripheral products formed by virtual experience. This approach guides online users into cultural venues and tourist attractions, promoting offline consumption and facilitating full interaction between users, information, and consumption in both physical and virtual spaces.

The app offers a seamless experience flow that includes a virtual experience on the front line, an immersive experience in the field, and a digital aftertaste experience after the tour, as shown in Figures 9.



Figure 9: Interactive prototype design of the Mobile Interactive Interface Cloud Trek APP

In the past, traditional tourism mainly focused on "Eat, live, travel, shop, and entertainment". However, modern tourism development now encompasses additional factors such as "Business, maintenance, learning, leisure, emotion, and novelty". As a result, the cultural tourism industry has begun to embark on a cross-border path, becoming one of the key trends in industry development. From an international to a domestic level, cultural tourism is moving beyond its reliance on cultural heritage and human-made landscapes, instead gradually integrating culture with creative, scientific, and technological industries to create new tourism elements that promote product innovation and upgrade the industry. Although this approach still has its shortcomings, I believe that in the future, cultural tourism will continue to broaden and deepen its cross-border integration with other industries.

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