A Study of Information about China-ASEAN Art (CAA) based on Application

Chen Xi [1, 2]

[1]Ph.D. Candidate

School of Creative Industry Management and Performing Arts

Universiti Utara Malaysia

[2]Lecturer

Collage of Art

Universiti Guangxi, China

Ahmad Hishan Bin Zainal Abidin

Associate Professor

School of Creative Industry Management and Performing Arts

Universiti Utara Malaysia

Abstract:There remains a significant gap in the literature concerning the establishment of a China-ASEAN art platform and the development and application of related software. This article introduces and critically analyzes the importance and feasibility of the China-ASEAN art platform. It creatively presents the newly developed mobile phone app: China-ASEAN Art. We evaluate the entire design and development process, from initial ideation to the final concept, providing a detailed introduction to its functions. Our research adopts a rigorous mixed-methods approach, including designer surveys, questionnaire surveys, depth interviews, and content analysis of a new responsive online platform. Our findings indicate that smartphones have become inspirational tools for artists' creative work. Aimed at supporting artists, the app allows users to log in as "USER" mode, enabling them to browse art news, visit exhibitions online, conduct art transactions, record impressions and comments, and incorporate art appreciation into their leisure time activities.

Keywords: China-ASEAN art platform, APP software, development, application

1. Introduction

China shares land borders with 14 countries and has eight maritime neighbors, fostering close geographical ties with its neighboring countries. (Zhang.Guo,2023)Southeast Asia, in particular, stands as a significant neighboring region for China, linked by both land and the South China Sea. As the Association of Southeast Asian Nations (ASEAN) evolves into a unified Community, the China-ASEAN Exposition (CAEXPO) emerges as a pivotal platform for collaboration and exchange.(Jörn Dosch1,Frederick Kliem,2023) Since its inception in 2002, the CAEXPO, initiated by former Premier Wen Jiabao and co-sponsored by economic and trade authorities from China, ASEAN, and the ASEAN Secretariat, has been regularly held in Nanning, Guangxi.(Chen X.R,Yang L.2023) Positioned strategically in South China, facing Southeast Asia, Nanning serves as a vital gateway city for China's collaboration with ASEAN, particularly under the framework of the "Belt and Road" Initiative.(Zhang.Y.L,Wang.Y.Z,2022)

In recent years, artistic exchanges under the CAEXPO have transcended traditional stage performances, embracing an ethos of open sharing. Events such as the International Folk Song Festival and the ASEAN Music Week, held annually and biennially respectively in Nanning, reflect the evolving cultural landscape. Additionally, the establishment of the China-ASEAN Art College Alliance in 2017 further underscores the burgeoning cultural ties between China and ASEAN. (Qing Liu,et,al,2023)Against the backdrop of the "Belt and Road" Initiative, Guangxi's exchanges with ASEAN nations have ushered in new opportunities for economic development and cooperative ventures in tourism, education, and culture.

In light of these developments, China seeks to foster cultural and artistic exchanges with ASEAN nations, not only through political initiatives like the CAEXPO and the "Belt and Road" Initiative but also through grassroots cultural exchanges. Interviews and questionnaires conducted with artists and designers reveal that technology has become an inspiring force, catalyzing artistic expression and practice.(Oliver H, Christoph B, Fares K, Christian L & Peter P, 2020)

Traditional works of art have historically been presented to audiences in static forms, limiting the potential for dynamic engagement and ideational exchange, crucial for the advancement of art and culture. Since the 1960s, the role of the audience in artwork participation has garnered considerable attention among artists and art theorists (Edmonds E, Turner G, Candy L, 2004). Professor Lu Yilin posits that art originates from artists' creation and is enriched by audience reinterpretation (Lu Yilin, 2023). With the widespread use of multimedia and advancements in generative systems, the scope for audience participation in artworks has significantly expanded. In contemporary interactive art, both artists and viewers play integral roles.

During the nascent stage of experimental interactive art, significant strides were made by Kayali, F., Hödl, O., Bartmann, C., Kuhn, U., Wagensommerer, T., & Mateus-Berr, R (2018). They proposed that computers could customize artworks and manage real-time customization, potentially shifting artists from creators to assistants in the artistic process. Additionally, they introduced a classical system-oriented model defining art systems as

composed of artists, single and multiple participants, artworks, environments, and interactive behaviors. They categorized art systems into four types: static, dynamic-passive, dynamic-interactive, and dynamic-interactive (varying) systems.

2. Painting Website Works and Examples

In recent years, extensive research has been conducted on existing websites featuring ASEAN art and culture through network resources, primarily focused on paintings and sculptures. Apart from the official China-ASEAN Expo and ASEAN cultural exchange websites established by Knot University, three notable examples stand out:

A. **China-ASEAN Culture Art.net (http://gxkiwi.com/web/asean/ 2019)**

 - Operated by Guangxi Guangwen Rong Media Culture Communication Co. (2019).

 - Supported by strong media networks and government cooperation.

 - Features factual news, tourism culture, and intangible cultural heritage knowledge.

 - Target audience: Domestic audience.

B. **China-ASEAN Art Museum (http://www.gxtopart.com/2012)**

 - Operated by Guangxi Model Artwork Investment Management Co., Ltd. (2012).

 - Associated with a brick-and-mortar store, focusing on art auctions and collections.

 - Offers high-value and high-level art treasures.

 - Target audience: Domestic art enthusiasts and collectors.

C. **Asian Art Platform (http://www.instagram.com/asianartplatform/2015)**

 - Established in January 2015, emerging as a leading art gallery in Singapore.

 - Provides comprehensive services in private and corporate art valuation and consultancy.

 - Specializes in mark-to-market valuations and art collection analysis.

 - Wide network of resources for artwork dealing and brokerage.

While numerous similar websites exist, an officially named China-ASEAN Art mobile app has not been developed. This underscores the pioneering significance and potential socio-economic benefits of the China-ASEAN art mobile app we aim to develop.

3. Design Exploration "CHINA-ASEAN Art Network"APP

Although experts and scholars at home and abroad have paid more and more attention to the development and construction of art platform network in recent years, more and more websites related to ASEAN art have emerged, such as China-Asean Culture and Art Website (Guangxi Guangwen Financial Media Culture Communication Co., Ltd. was established in May 2019 https://www.gxkiwi.com/), and the ASEAN art website (Nanning Yalun Culture and Media Co.,

Ltd. was established in July 2015 https://www.china-asean-art .com),erc.While,short video public accounts also have

ASEAN Culture and Art Exchange Center , China-Asean Art Academy , Guangxi News Network , Guangxi Literature and Art circles , Guangxi Daily and so on.However, so far, no mobile app has been developed and created specifically for China-Asean art. and only fragmentary content related to ASEAN art can be found on websites and short video public accounts.Based on these gaps, we specially designed an app for all smart phones and mobile devices - China-Asean Art(CAA),currently only applicable to Android phones, the language setting is only Chinese,then the next stage will be fully open to Apple phones, adding English options.(Chen.Q.H.2021)

This app is only for painting, sculpture, arts and crafts design, etc. Later, the development steps and functions of the app will be introduced, and the product performance test and user experience test will be carried out for better iterative update.

3.1 CAA App Design Concept and Framework

The CAA (China-ASEAN Art) app represents a culmination of joint efforts in website and app construction. At this stage, the design and development phase has been completed, transitioning into the operational and iterative update stage. The website's frontend features a responsive layout, leveraging the latest HTML5, CSS3, and other technologies to ensure adaptability across various screen sizes.

The CAA app was developed utilizing the uni-app software development program, registering with the Android system, and employing Dcloud packaging and secure packaging technical support. It primarily caters to individuals in China with an interest in ASEAN art, including academic artists, educators, students, and art enthusiasts. Throughout the development journey, the app has benefitted from the involvement of professional teams comprising faculty and students from prominent art institutions such as the School of Art at Guangxi University, Guangxi College of Art, and Guangxi University for Nationalities. This collaborative effort integrates the abundant resources and expertise of art universities in Nanning, fostering a rich and dynamic platform for art exploration and engagement.

We can observe the development and installation process of the CAA app outlined in the preceding development framework. The access devices include mobile devices (smartphones or tablets) and PCs (computers or laptops).

The installation process of the app project involves utilizing Uni-APP development and registering a Dcloud account. Subsequently, developers will proceed with the plug-in installation. The base directory files consist of uniCloud, .hbuilderx, common, components, pages, static, uni_modules, unpackage, androidPrivacy.json, among others. The presence of these files ensures the smooth operation of the app.

Following installation, the next step involves packaging and publishing the app. This process utilizes the packaging and release functionalities of the Android system and is not compatible with Apple computers.
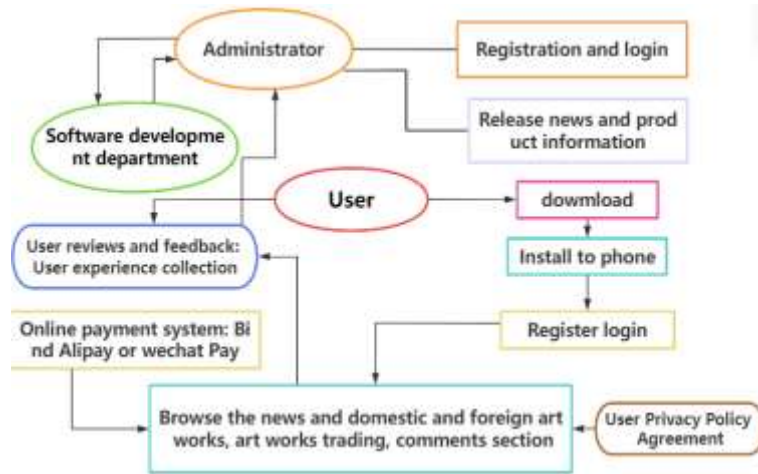
Figure. 1 CAA app System flow

The above depicts the working system flow chart of the CAA app. The administrator disseminates news and information regarding artworks through the management page, which is then transmitted to the mobile app. Users access the app by downloading it from the App Store or Android Store, followed by registration and completion of user profiles. Each time users log in, they can explore current news, images, and artwork descriptions within the functional area. Furthermore, users can engage in online art transactions and provide feedback through the comments section. Art transactions necessitate the setup of an online payment system, typically utilizing Alipay or WeChat Pay, with user privacy policies and agreements in place to safeguard user information and account funds. Within the user comment section, users can provide feedback on their experiences and rate the app and its operations. Administrators can then utilize this feedback to inform further improvements to the app's design and functionality.

3.2 Design Model Function Classification and Introduction

The CAA app stands as the largest and most intricate cross-border art sales platform between China and ASEAN. Serving as the official client of the China-ASEAN Art network, it encompasses sections such as art information, China-ASEAN art sales, auctions, exhibitions, and art scenes. Alongside the website's collection of artworks, numerous artists are also featured on the platform, showcasing and selling their original works.

function module

Registration module: responsible for user registration, login, forgot password acquisition and other content.

Management module: Registered users manage their own art module, is the main unit of work for registered users.

Art publishing module: It is the main place for registered users to publish artworks and communicate through art publishing.

Art trading module: is a platform for art trading between users, design to payment and other related functions.

Background management module: belongs to the art studio platform users to manage the background space, overall management of related Settings information, permissions and other content.

Art Forum: A platform for communication between registered and non-registered users to discuss art-related content.
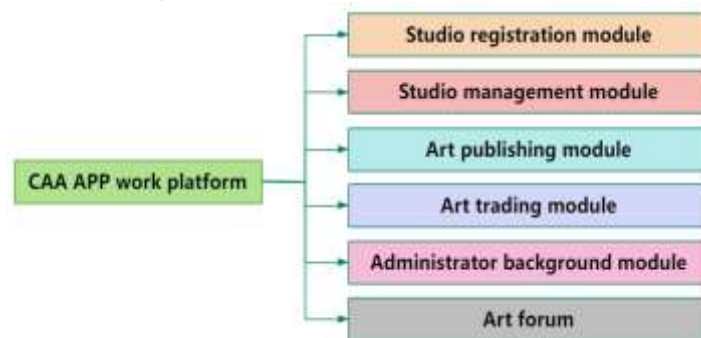

Figure. 2 The CAA app Work module distribution

CAA APP icon

As shown in fig.3,CAA app icon cover background color is mainly warm, fresh and elegant, like Chinese style landscape painting. The website name of "China-Asean Art Network" uses the calligraphy in the brush calligraphy, the phoenix in the app logo design is the representative animal symbol of Guangxi Zhuang Autonomous Region, and the feathers of the phoenix use ten colors, representing the mutual understanding and unity of the people of the ten ASEAN countries.

Figure. 3 The CAA APP icon

As depicted in Fig.4, the CAA app icon features a warm, fresh, and elegant background color reminiscent of a Chinese-style landscape painting. The website name, "China-Asean Art Network," employs brush calligraphy in its design, evoking traditional artistic elements. The phoenix featured in the app logo design serves as the representative animal symbol of the Guangxi Zhuang Autonomous Region. Notably, the feathers of the phoenix incorporate ten colors, symbolizing the mutual understanding and unity among the people of the ten ASEAN countries.

CAA APP Home Page

Figure. 4 The CAA APP Home Page

The function setting of the CAA app is mainly based on the display, collection, trading and other behaviors of art in ASEAN art, including eight sections: art consultation, art, "art 10+1", online art exhibition, famous shops, quality life, art auction and all categories.It is worth mentioning that "art 10+1" refers to the art of the 10 ASEAN countries plus China, which is an online exhibition hall, where you can visit the fine art, sculpture and other works of well-known Chinese and ASEAN artists onlineIt is composed of main columns such as About Us, News Center, Works display, celebrity zone, activity zone, ASEAN Window, auction display, form download, online service, etc.In addition, the bottom of the home page also contains the user registration and login entrance, users can fill in personal information, register and log in to the APP, in addition to art trading other functional areas are free to use

CAA APP News browse page

Figure. 5 The CAA APP News browse page

CAAapp's news browsing interface is primarily aimed at people interested in art-related news, including artists, student groups, educators, and the general population. The app news interface is divided into several sections

News title bar design section: Set the app logo and eye-catching news headlines at the top of the page, and set the search box at the upper right corner to facilitate users to quickly find the news they are interested in.

Navigation bar design: There is a navigation bar at the top side of the page to facilitate users to browse and screen different categories of news, including news, art consulting, art butler, leisure and entertainment, ASEAN Art Design Competition and other parts.

Main content area: Sort the news by time and popularity, put the latest and most popular news in the center of the page, and add thumbnails to attract users' attention.

Social sharing design: Add a social sharing button at the bottom of the news page or in the sidebar to make it easy for users to share news they are interested in with their friends.

3.3 Design Model Limitations and Iterative Improvements

Initially, based on user feedback and comments in the message area, several limitations of the app model have been identified:

The first one is**Geographical Restrictions:** The app's development program is currently tailored only for Android phone users due to geographical constraints (Nanning being a border region of China). Consequently, users with Apple phones or other devices are unable to install the app. To address this limitation, the program development department aims to debug the program for broader compatibility, ensuring it can adapt to all mobile phone systems. This will enable users to download and install the app on both Android and Apple devices, enhancing installation convenience and speed.

The other is **Language Functionality:** Presently, the newly developed app only supports the Chinese language. However, users from foreign countries, including Southeast Asian nations, have expressed the need for an English language function. Integrating an English language feature will not only cater to the needs of domestic users but also facilitate usage among international and Southeast Asian users. Setting up English functionality will be prioritized as the next stage of development. Despite resource constraints, the original goal of incorporating Southeast Asian minority languages (such as Thai, Malay, Indian, etc.) into the app remains challenging at present. However, these enhancements

will be gradually developed and implemented in future iterations.

4. The Methodology

4.1 The Semi-Structured interviews with artists

Painters and sculpture artists play a pivotal role as art suppliers in the development of the CAA app. The level and quality of artists directly influence the caliber of artworks exhibited and traded within the CAA app. Hence, employing the semi-structured interview method with art suppliers, specifically artists, holds significant importance.

Through semi-structured interviews, the author aims to address the following research questions: How do local artists in Nanning, Guangxi engage in exchanges and cooperation with ASEAN artists? Nanning, Guangxi, as the China-ASEAN Art Center and the permanent site of the ASEAN Expo, boasts unparalleled geographical advantages in economic, social, and cultural exchanges. Additionally, art educators in Nanning's colleges and universities not only excel as artists themselves but also bear the crucial responsibility of educating students and shaping the trajectory of social art development. Thus, fostering artistic exchange and cooperation with ASEAN countries is paramount.

The interviews were conducted jointly by two interviewers in a semi-structured question-and-answer format, with one interviewer responsible for conducting the interview and the other for recording and posing supplementary questions. Prior to the interviews, the purpose was explained to the interviewees, and their consent was obtained. The entire interview content was recorded for documentation purposes.

The selection criteria for interviewees were as follows: (1) Residing and working in Nanning, Guangxi; (2) Affiliated with an art institution; (3) Engaged in painting design or sculpture art creation for over 10 years; (4) Possessing significant social influence, among other factors. The researcher employed 'snowball sampling' to identify potential interviewees.

Between June and September 2023, researchers randomly interviewed five distinguished painters and sculptors in the industry. The codes for the five artists are as follows: ① Shi Xiangdong (Guangxi Art Institute), ② Zuo Jianhong (Guangxi Art Museum), ③ Lv Feng (Guangxi University), ④ Zhong Zhenhuan (Guangxi University for Nationalities), and ⑤ Wang Mengfei (Guilin Bagui Painting Academy). The interviews were conducted from June 10 to December 30, 2023.

Table1:information of 5 art artists

Artist's code	gender	age	School or institution	Art field	Working years
①	M	63	Guangxi Art Institute	sculpture	32
②	M	54	Guangxi Art Institute	Chinese painting	29
⑤	M	43	(Guangxi University	Oil painting	22
④	F	49	Guangxi University for Nationalities	Oil painting	27
⑤	F	36	Guilin Bagui Painting Academy	Chinese painting	16

The interview protocol consists of four sections: basic working conditions, views on art exchange in ASEAN, career ideas, and career prospects and evaluations. The issue of career prospects and evaluation falls under the career concept section. Prior to the interview, the purpose was explained to the interviewees, and their consent was obtained in advance. Small gifts were provided to interviewees as a token of appreciation post-interview.

The basic information of the five interviewees reveals that they are practitioners of art institutions or college art teachers in Nanning, ranging from 30 to 65 years old. Some originate from art institutions, primarily focusing on professional art creation, exhibition, and exchange activities (such as ①②⑤). Others are affiliated with art colleges and universities, involved in teaching art undergraduates and postgraduates, imparting non-mathematical knowledge and skills, and intermittently engaging in creation, exhibition, and art exchange (such as ③④). All artists possess over 15 years of experience in the industry, making them seasoned practitioners.

During the interviews, artists were directly asked: (1) Whether they would consider engaging in the field of China-ASEAN art exchange in their future career? (2) Is art exchange in the art community playing an increasingly significant role in cultural exchange between China and ASEAN? (3) Are they satisfied with their current career development and situation? Questions (1) and (3) serve to concretize question (2), aiming to describe the important utility and characteristics of the art community for art exchanges between China and ASEAN. The types of questions were tailored based on respondents' responses. With the interviewees' consent, all interviews were recorded, yielding 30 paragraphs of material for analysis.

Is the art exchange in the art community playing an increasingly important role in the cultural exchange between China and ASEAN?

whether they will consider engaging in the field of China-Asean art exchange in their future career?

Is there anything related to ASEAN art in your art creation?

Are you satisfied with your current career development and situation?

Do you have such plans and visions for your future career?

The types of questions we talk to respondents about are based on the questions they respond to. With the consent of the interviewees, we recorded all the interviews and obtained 30 paragraphs of material for analysis.

Table 2: 5 artists responses to 5 questions

Artist's code	Q1	Q2	Q3	Q4	Q5
①	Y	Y	Y	N	I plan to continue to improve my attainments in sculpture, hold a solo art exhibition once a year, participate in two art exhibitions in cooperation, and conduct peer or international exchange and learning once a year.
②	Y	Y	Y	Y	I plan to sketch more than once a year, hold independent art exhibitions 2-3 times a year, and participate in as many art funds or competitions as possible, as well as international exchanges and learning.
⑤	Y	Y	Y	Y	I plan to hold a large-scale oil painting exhibition in three years, lead the students to pick up the style, improve the teaching level, and hold academic lectures and exchange activities inside and outside the district..
④	Y	N	N	Y	I plan to hold a large-scale personal oil painting exhibition in Nanning next year, so that students can participate in oil painting competitions and exhibitions, participate in international academic exchanges and cooperation, and participate in ASEAN art works competition.
⑤	Y	Y	Y	Y	I plan to carry out sketching and collecting style activities twice a year, participate in the exchange activities of Guangxi Chinese Landscape Painting Association, and communicate and learn with fellow painters as much as possible to improve my skills.

As indicated in Table 2 above, 85% of the artists responded affirmatively to the first four questions, indicating a shared urgency among respondents to enhance their skills and engage in learning and peer or international communication. In response to the fifth question regarding ideas for future career planning, nearly all artists expressed aspirations to host personal exhibitions, conduct on-site sketching activities, and engage in international learning and exchange opportunities.

While these five artists represent only a small fraction of the larger artist community, their responses provide valuable insights. While they may not encompass the views of all artists, for those in art institutions in Nanning, Guangxi, this data holds significant relevance and reliability. It can be considered indicative of the common aspirations among artists in China's border regions: the desire to establish a virtual art platform. This platform would facilitate online exhibitions, exchanges, learning, and trading, thereby laying a solid foundation for enhancing and expanding the existing physical China-ASEAN art platform.

4.2 Questionnaires with designers

To gain a deeper understanding of the CAA app and its development process, we have crafted a questionnaire tailored for app designers. We selected 2/3 of the designers in the APP design team to conduct a questionnaire.Through this questionnaire, we aim to identify any existing gaps within the app and gather iterative suggestions for improvement based on the feedback data.The following are the main contents of the questionnaire for 4 designers within 6th.Jan.2023 to 21th.Sp.2023.

Table 3:Areas and specific topics covered by our questionnaire

Questionnaire items	Covered topics
General issues	Name, age,education, and Working years of designers
The concept and framework of APP design	The most important stage,Design AIDS,Design tool, User test tool,User feedback scheme
User experience open-ended question	Challenges and needs: improved and iterated comments Intention to participate in user surveys and in-depth interviews

Among the 10 app designers surveyed, 4 preferred Uni-app development software as their primary app development tool, followed by 2 who chose Flutter, 1 who opted for React Native, and 1 who selected Alpha Anywhere. This data illustrates the prevalent use and popularity of Uni-app

development software in China compared to other app development tools.

In terms of collecting user feedback, the majority of designers rely on three main methods: user behavior analysis, user survey feedback, and user testing. On the other hand, competitive product analysis, expert review, and A/B testing are less commonly utilized. This trend could be attributed to the scarcity of professional art apps in the market, particularly those focused on ASEAN art. Consequently, finding comparable products for competitive analysis, expert review, and A/B testing poses significant challenges.

Overall, the prevalence of Uni-app development software and the limited availability of similar apps for comparison contribute to the predominance of certain feedback collection methods among app designers.

4.3 The Conclusion

According to the demand and actual situation of the sample population for the art platform in the questionnaires, the researcher built a new type of China-Asean art platform from two aspects. One is to design and develop a mobile APP for art lovers "China-Asean Art network"; the other is to create and promote an offline China-Asean transnational art festival "Zhuang Township March 3rd, Bagui Carnival".

Nowadays,CAA APP has completed the initial development and debugging stage, and is undergoing market test operation. Later, it will be updated and iterated according to user experience. At the same time, the art team, led by the researcher, will, starting in April 2021, organize the annual: Guangxi Zhuang March 3rd - Baigui Carnival Festival Celebration "has been held for the third time as of January 2024, not only in the offline performance, but also on the Internet to watch live and replay, and at the same time in the Guangxi News network, Guangxi style channel, Douyin APP, Kuaishou app and other network social media sharing. The majority of local users as well as users in Southeast Asian countries can enjoy and experience on these network platforms.

5. The Results

5.1 Initial ideation

Software testing runs through the whole process of app development, is an important stage in the software life cycle, and is a key step in software quality assurance.(Han Feixue.2019) Generally speaking, software testing is the process of the final review of the requirements analysis, design and various activities of the app system, and the preliminary use test before the large-scale use of the software. The 1983 IEEE Software Engineering software testing term is defined as "the process of using manual or automatic means of a software system to perform or determine whether a specified requirement is met or to understand the difference between an expected result and an actual result." (Deng B.et.al 2019)This definition clearly states that the purpose of software testing is to test that the software system conforms to requirements.

From the user's point of view, generally in software support, hidden errors and defects are exposed through software testing, so software testing should be the "error finding and execution process." In other words, software testing should be based on the phases of software development specifications and procedures designed with an internal structure of a number of test cases, and using these test cases to run the program to find vulnerabilities or defects.

Practice has proved that even if the high standard software development software quality assurance methods and development skills are adopted, the hidden errors and shortcomings in the process of software development cannot be avoided. This is especially true for large, highly complex software. Therefore, strict quality assurance software running smoothly, safe software testing plays an important role in the development of the entire software system. Software testing spans two stages. In the coding stage of software, when writing a module, it is usually required to test it (called unit testing). In this stage, the system testing and coding belong to the same stage. After the software is encoded, the software system enters the integration testing phase, which is called integration testing or system testing. In a way, this is a separate phase that is separate from the development phase. In this stage of the test, there are two different nature of the test: one is the research, and in the integration test and acceptance test system; The second is to test the situation that may occur during the use of users. Every stage of software development can bring bugs. In the process of software testing, errors are found, classified, separated, and finally corrected throughout the entire software development process. Since software is constantly modified before it is handed over to the user, the process is an iterative one.

5.2 Public test and questionnaires

The test of CAA app system can be brief divided into interface test and system function test. Interacting with the user interface system is the most direct level, and the interface determines the first impression of the system user. The well-designed user interface can guide the appropriate operations to complete, playing the role of a wizard. (Zhang.Y.2022)The same interface as a human face is a direct benefit to attract users. Interface design gives the user a feeling of ease and success, on the contrary, the failure of interface design makes the user feel frustrated, and then powerful and practical functions may be lost due to the user's abandonment of use.Through the basic evaluation of each evaluator, the basic score evaluation value is obtained. Evaluators choose different professional backgrounds. A perfect score of 100.

We selected 30 users to test the app including 10 users majoring in Chinese painting, 10 oil painting and 10 sculpture.

5.2.1 Single choice questions

The interface evaluation and function evaluation and rating table mainly adopt the single choice test method, which is the most accurate, fast and convenient evaluation method for users. From this method, we can quickly calculate the user's experience satisfaction when using CAA APP, saving the statistical time and cost, and playing an important role in the subsequent adjustment of APP functions. In single choice questions,the tester prepared two scoring tables for the interface test and functional test for the tester, and let 30 testers score them respectively, and record the scoring results.The score table details and score values are shown in the table below.

As observed from the two tables above, the interface test employs the percentage scoring method, where operation, function, design, and friendliness each account for 25%. On the other hand, the functional evaluation primarily focuses on user experience. Therefore, a star evaluation model is utilized, which consists of four components: the registration module, transaction module, information release module, and work background management module.
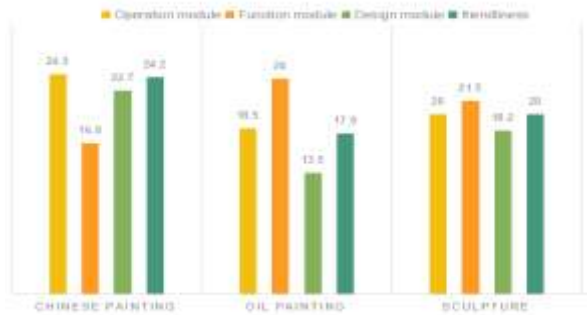
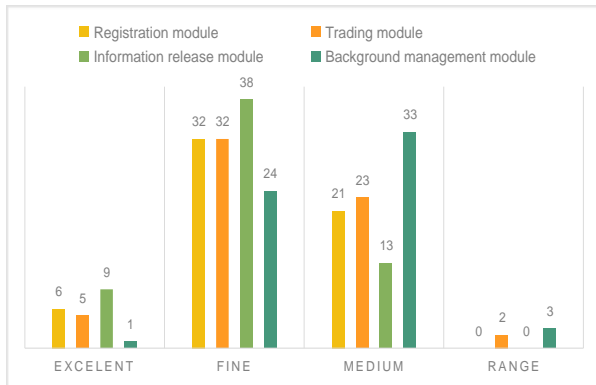Figure. 6 The Interface Test Result

Figure. 7 The Functional Test Result

From the analysis of the two figures above, it's apparent that users specializing in sculpture generally find the app interface more user-friendly. However, users majoring in Chinese painting express dissatisfaction with the app's functionality, while those in oil painting express concerns about the operation and design of the interface. These insights highlight the need for future improvements and updates to address these specific concerns.

Regarding functional testing, 75% of users rated their user experience as "fine", with only 2% rating it as "range". Among them, 75% of users identified the release information module as the most stable and satisfactory module. Additionally, the registration and trading modules received positive feedback from 60% of users. However, 70% of users rated their experience with the background management module as "medium", indicating room for improvement in this area.

Open-ended questions were also included in the user experience test of the CAA app. These questions allow users to express their individual perspectives and identify any difficulties they encounter. The responses gathered from the open-ended questionnaire will aid in summarizing issues and informing future improvements. Below are the open-ended questionnaire questions for 30 CAA app users, including 10 Chinese painting users, 10 oil painting users, and 10 sculpture users:

The table above outlines the primary questions from the open questionnaire completed by 30 users. It includes the users' basic information and common challenges encountered during the questionnaire's usage. Below is a summary and presentation of some of the issues:
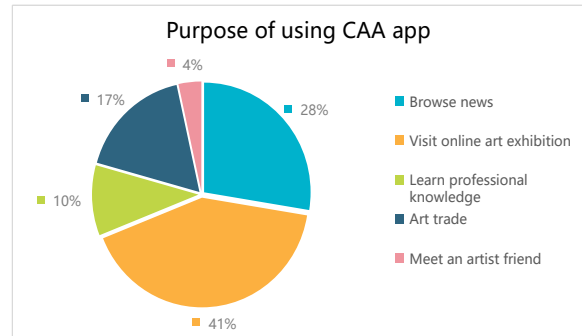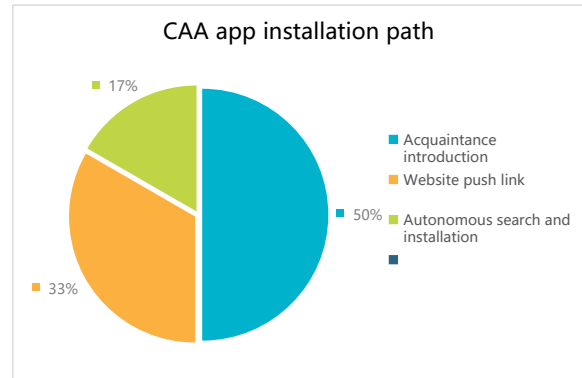
From the installation pathway of the CAA app on the left, it's evident that 50% of users were introduced to this app by acquaintances, while only 17% installed it independently. This suggests that the CAA app still requires enhancements in terms of its download and installation process. The primary issue lies in the lack of integration with well-known mobile app stores such as Apple Store and Google Store, making widespread adoption challenging at this stage.

On the right, the data illustrates the primary functions utilized by surveyed users within the app. A majority, accounting for 41%, engage in visiting art exhibitions, while others browse news and trade artworks. Only a minority of users aim to learn and socialize within the app. It's apparent that the most mature and widely utilized feature of the app is its art exhibition function. Considering this, the future iteration direction of the app should focus on enhancing and expanding the technical aspects of online art exhibitions. This may involve incorporating video explanations and expanding the 720-degree, all-encompassing art exhibition experience to eliminate blind spots. These improvements necessitate real-time involvement from the network technology department.

5.2.3 Summary of the Public Test

From the public testing of the app,it is evident that the design style of the app closely aligns with the aesthetics of Chinese painting. As a result, users specializing in Chinese painting exhibit the highest satisfaction levels with the app, followed by those in oil painting. Among users from all three majors, the most common activity on the APP is visiting online art exhibitions.

A minority of users express concerns regarding the security of user information during art transactions. Additionally, some users suggest the inclusion of functions and interfaces that support the use of English in the open-ended questions.

6. The Conclusions
Numerous studies have underscored the advantages of a dedicated smartphone application. In recent years, an

increasing number of experts and scholars, both domestically and internationally, have shown a keen interest in researching China-ASEAN art exchange. Correspondingly, the literature on this subject has exhibited a steady rise annually. Despite this growing interest, the development of network platforms and mobile phone applications remains in its nascent stages. Currently, there are scant mobile applications specifically tailored for facilitating ASEAN-China art exchange.

This paper elucidates the design concept and framework of the proposed application while offering a detailed account of its development process. It delineates the page functions and functional module flows comprehensively. Regarding research methodology, a blended approach encompassing qualitative and quantitative methods was employed. Unstructured in-depth interviews were conducted with five artists, including painters and sculptors, as well as designers involved in app development. Additionally, a questionnaire survey was administered to test app users.

The research findings indicate that the CAA app has garnered favorable user satisfaction and experience feedback particularly in interface design, art news dissemination, and the art trading module. However, it is noted that the interface development for online art exhibitions requires refinement, necessitating a transformation and iterative enhancement from diverse perspectives.

Furthermore, the survey conducted among designers and users reveals areas for improvement, tests the reliability,.availability,,maintainability, and performance of CAA app.The accessibility and searchability of the app require universal enhancements, particularly in promoting and developing the download function for IOS devices. Additionally, the art trading module necessitates bolstering user privacy and security measures.Resource constraints have hindered the development of usage rights for users in ASEAN countries and language support for Eastern Eng countries. These limitations are slated for correction in future development updates and iterations.

In summary, the development and implementation of the CAA app align with the evolving trends in China-ASEAN art exchange in the contemporary era. It addresses a significant void in mobile app development within this domain, serving as the portable application counterpart to the "China-ASEAN art website." The CAA app holds promising application prospects and underscores the positive cultural exchange between China and East China, contributing significantly to cultural and artistic exchanges.

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