

MEIZI GU

VISUAL DESIGN FOR
CULTURAL HERITAGE TOURISM
DIGITAL APPLICATION FOR ELVAS CULTURAL HERITAGE TOURISM



2019

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DIGITAL APPLICATION FOR ELVAS CULTURAL HERITAGE TOURISM

Scientific Report

Mestrado em Design de Comunicação para o Turismo e Cultura

Developed under the supervision of:

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Escola Superior de Educação e Comunicação

University of Algarve



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VISUAL DESIGN FOR CULTURAL HERITAGE TOURISM

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Declaration Of Authorship

I hereby declare that I am the sole author of this project report, which is original and unprecedented. Authors and works consulted are properly cited in the text and appear in the included reference list.

Declaro ser a autora deste trabalho, que é original e inédito. Autores e trabalhos consultados estão devidamente citados no texto e constam da listagem de referências incluída.

Meizi Gu

A handwritten signature in black ink, reading 'Meizi Gu', is written over a horizontal line. The signature is fluid and cursive, with the first name 'Meizi' and the last name 'Gu' clearly distinguishable.

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Acknowledgements

First and foremost, I would like to express my sincere gratitude to my respected supervisor Dr. António Carlos Camilo Correia de Lacerda of the Escola Superior de Educação e Comunicação at the University of Algarve. I deeply admire the professor's profound knowledge, careful teaching, and rigorous teaching attitude.

Secondly, my deepest gratitude is to my mentor, Professor Pedro Manuel Maia Oliveira Calado, for his constant encouragement, and his helpful suggestions. My appreciation for all he has done for me in my graduate work and professional studies, without his usual and enlightening guidance, this scientific report could not have reached its present form.

Also, I would like to thank all the professors who have taught me at university. They have enriched my knowledge and broadened my horizons and will always be of great value to my future academic research.

My thanks also go to all the authors whose books and articles have inspired me a lot in the entire process of completing my scientific report.

Finally, thanks to my parents and my friends, whose support and encouragement motivate me to move on and make me want to be a better person all the time.

Abstract

Cultural heritage symbolizes the importance of regional culture. It inherits the cultural traits in a region and the essence of traditional culture, which is an irreplaceable historical treasure no matter how much time changes. The advent of information technology and big data era has facilitated the integration of traditional culture and modern life. It is a new trend to carry forward traditional culture with modern technology.

Elvas, a historical town in Portugal, is also known as the fortified city. It boasts its largest bulwark fortifications that have been recognized by UNESCO to be of world heritage, as well as its rich history and culture. As a city combining with ancient and modern cultures, Elvas is full of historical monuments and sites. It is a solid foundation for the inheritance and development of cultural heritage tourism initiatives to effectively disseminate cultural heritage tourism, improve public awareness for cultural heritage, and consolidate the preservation of cultural heritage. In the meantime, the promotion of cultural heritage tourism project not only provides indirect protection for cultural heritage but also boosts the sustainable development of the urban economy.

As a kind of intelligent terminal platform, the mobile app provides a broader space for cultural heritage tourism, while giving visitors greater access to relevant information. The researcher integrates the strategic idea of 'cultural heritage tourism' and 'mobile internet' into the mobile app design. This project aims to design a dedicated mobile app for Elvas Heritage Travel, and conveys the core cultural value of Elvas to users through the app to enhance their experience.

Through the concept of visual communication, the researcher designs a visual image of cultural heritage and creates a mobile app to help to convey the core value of Elvas' cultural heritage in a more practical and modern way. With the help of the marketing concept of the mobile app market, it can better integrate the cultural heritage tourism project into people's daily life. Therefore, cultural heritage is not just a concept of history and buildings, but a mobile app project that promotes a historical tour of a town or city under the background of economic globalization.

Keywords: *Cultural heritage tourism, Interaction Design, Mobile Application, Visual Communication Design,*

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DATA: Setembro de 2019

TÍTULO DO TRABALHO: VISUAL DESIGN FOR CULTURAL HERITAGE
TOURISM

SUBTÍTULO: DIGITAL APPLICATION FOR ELVAS CULTURAL HERITAGE
TOURISM

Resumo

Portugal, localizado no sudoeste da Europa, é um dos países mais antigos da Europa. Possui uma cultura diversificada e ricos recursos turísticos. Para uma cidade histórica, as características do património cultural representam uma imagem da cidade, pois são relevantes para os visitantes.

O património cultural simboliza a importância da cultura regional. É a herança dos traços culturais de uma região e a essência da cultura tradicional, um tesouro histórico insubstituível, não importa quanto tempo mude. O património cultural nomeado como 'património mundial' tem valores extraordinários e universais e é um trabalho clássico da criatividade humana. Devido à sua reputação de prestígio, atrai muitos visitantes para o admirarem. Explorar diferentes culturas é um dos propósitos dos viajantes. A cultura injetou alma no turismo, e o portador dessa alma é o património cultural.

Elvas, uma cidade histórica em Portugal, também é conhecida como a cidade fortificada. Possui grandes fortificações baluarte que foram reconhecidas pela UNESCO como património mundial, bem como uma rica história e cultura. Como uma cidade que combina culturas antigas e modernas, Elvas está repleta de monumentos e locais históricos. Como todos os destinos turísticos têm o seu próprio património histórico e cultural, o investigador tentou explorar a

singularidade e as vantagens do turismo de património cultural de Elvas em comparação com outros destinos competitivos.

É uma base sólida de herança para o desenvolvimento de iniciativas de turismo do património cultural, e para disseminá-lo efetivamente, melhorar a conscientização do público sobre o mesmo e consolidar a sua preservação. Enquanto isso, a promoção do projeto de turismo do património cultural não apenas fornece proteção indireta ao património cultural, mas também promove o desenvolvimento sustentável da economia urbana.

O advento da informatização e a era do “big data” impulsionaram a integração da cultura tradicional e da vida moderna. É uma nova tendência desenvolver e levar adiante a cultura tradicional com a tecnologia moderna.

Neste relatório, o investigador descreve a importância de estabelecer a ideia de promover o desenvolvimento por meio da comunicação digital.

Os aplicativos de viagem oferecem grandes oportunidades de negócio e perspectivas no mercado de aplicativos para dispositivos móveis. Diante da concorrência acirrada no mercado, os aplicativos de viagem precisam explorar profundamente as necessidades do usuário, melhorar a inovação de produtos e seguir um caminho de desenvolvimento diferenciado.

Como um tipo de plataforma de terminal inteligente, o aplicativo móvel oferece um espaço mais amplo para o turismo de património cultural, além de oferecer aos visitantes maior acesso a informações relevantes.

Este relatório é um estudo aprofundado acerca do turismo, património cultural e design de comunicação visual. Explora os principais valores culturais de Elvas, levanta a questão de pesquisa "Como projetar um aplicativo de turismo de património cultural que possa ajudar a comunicar o valor fulcral da cultura com os turistas e aprimorar a experiência do utilizador?", responde e propõe um

projeto de design.

O investigador integra a idéia estratégica de "turismo de património cultural" e de "Internet móvel" na exploração do design de aplicativos móveis. Este projeto, projetar um aplicativo móvel para o turismo de herança cultural de Elvas e explorando como transmitir os principais valores culturais de Elvas aos utilizadores por meio desse aplicativo, visa melhorar a experiência do utilizador.

No processo de aprendizagem de design de protótipos, o investigador percebeu que os fatores do utilizador devem ser levados em consideração em todas as etapas do desenvolvimento de um produto e a importância de realizar uma extensa pesquisa com utilizadores na fase inicial do design.

Por meio do estudo do design de interação, design da interface do utilizador e design da experiência do utilizador, o investigador percebeu que apenas aplicando a essência da interação ao design do protótipo e ao "design centrado no usuário" pode a experiência do utilizador ser melhorada.

Para o design de interface, o mais importante é que o processo de design siga um sistema operacional. Atualmente no mercado os sistemas iOS e Android são os mais populares, bem como o novo sistema HarmonyOS. O investigador escolheu o design do aplicativo no sistema operacional iOS e o design foi desenvolvido estritamente de acordo com as diretrizes de interface humana do iOS. Eventualmente, concluiu-se o design visual de um aplicativo de viagem de património cultural para usuários do iOS.

Através do conceito de comunicação visual, o investigador projetou um conjunto da imagem visual do património cultural de Elvas e criou um aplicativo móvel do turismo de património cultural para ajudar a comunicar o valor central de Elvas de uma maneira mais prática e moderna.

Em virtude do conceito de marketing do mercado de aplicativos móveis, os projetos de turismo do património cultural serão melhor integrados com a vida pública, de modo que o património cultural não seja mais apenas o conceito de história e arquitetura, mas o projeto sistemático e coerente de aplicativos móveis. A herança e o valor principal do património cultural podem ser melhor integrados com o desenvolvimento e as técnicas modernas, aumentando o crescimento económico local, melhorando a conscientização e as medidas para a proteção do património cultural e promovendo o desenvolvimento da indústria do turismo a todos os níveis. Pode-se tornar um trabalho de comunicação turística do património cultural urbano com benefícios práticos no contexto da globalização económica.

Através deste relatório do estudo e do projeto de design, o investigador reconheceu a deficiência de competências. Há muitas deficiências no design do aplicativo que precisam ser aprimoradas, especialmente como obter inteligência de produto, que vale a pena ser explorada mais a fundo. Ainda há mais a aprender no campo do design.

Após a conclusão deste relatório, o investigador também resume as deficiências e perspectivas do desenho do projeto.

Palavras-chave: Turismo do património cultural, Identidade visual, Aplicação móvel, Design de comunicação visual, Design de interação

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AICEP	Portugal Global (Agência para o Investimento e Comércio Externo de Portugal)	UNSD	United Nations Statistics Division.
APP	Application software	UNWTO	United Nations World Tourism
AR	Augmented reality		
BBC	The British Broadcasting Corporation	USA	The United States of America
CD	Communication Design	UX	User Experience
EU	European Union	VI	Visual identity
GPS	Global Positioning System	WTTC	World Travel & Tourism Council
HCI	Human-computer Interaction		
IA	Information Architecture		
ID	Industrial Design		
IOS	Mobile operating system by Apple Inc.		
IxD	Interaction Design		
SF	San Francisco font		
UALG	Universidade do Algarve / University of Algarve		
UI	User Interface		
UN	United Nations		
UNESCO	The United Nations Educational, Scientific and Cultural Organization		

CHAPTER 1. Introduction

I. Background and motivation for the research

Portugal is one of the oldest countries in the world (AICEP, 2017). The country is rich in national cultural heritage and is a privileged destination for cultural heritage tourism, providing fifteen UNESCO World Heritage Sites (UNESCO, 2014).

World Heritage Cities has the highest level of the cultural significance (Tarrafa Silva & Pereira Roders, 2010) and is also the first choice of cultural heritage tourism destination. Unlike other World heritage cities in Portugal, the city of Elvas is known for its important defensive role which has played throughout Portuguese history. Elvas is recognized as the "kingdom's fortress" (Visit Portugal, n.d.), and it is the largest fortified city in Europe. The value of this city has been significant.

Today's urban development has formed a consensus from "functional cities" to "cultural cities". In this study, cultural heritage, tourism, and sustainable development are considered key elements of the city of Elvas. These three themes are inseparable because they are closely related to their own interests.

Elvas is a typical cultural heritage city with a strong cultural identity and has become a symbolic place. We should know that tourism and cultural heritage protection are not conflicting forces. Tourism has become a major development tool for cultural heritage cities, and tourism is also a way to preserve cultural heritage.

On the other hand, cultural heritage tourism is an important economic component of the tourism market (Rosenfeld, 2008). To gain a competitive identity through tourism, the city of Elvas can use its unique cultural heritage as a tool to promote sustainable tourism and urban development.

For the promotion of Elvas cultural heritage tourism, effective means of communication can expand the knowledge and popularity of cultural heritage of a region, and thereby enhancing the awareness of cultural heritage protection. The interactive abilities of the mobile Internet could be a destination marketing tool for communicating with travelers. (Management

Association USA, 2014). Therefore, the mobile Internet is a solid foundation for the development of cultural heritage tourism projects, which can inject new vitality into the protection and inheritance of cultural heritage, and also strengthen the development of urban cultural heritage tourism industry.

Therefore, this project is aiming to provide a specific digital application for the Elvas Cultural Heritage Tourism, which is characterized by the visual identity design of its cultural heritage.

II. Scope, the aim, and meaning of the research

The relation between Elvas' cultural heritage, cultural heritage tourism, and Visual communication design is the main purpose of this research project.

Cultural heritage tourism is a tool of economic development, which has a positive social impact and brings a considerable income to cultural industry and tourism. It is an important supporting factor of sustainable urban tourism and culture (Rosenfeld, 2008; Bowitz & Ibenholt, 2006).

When cultural heritage tourism has been identified as an important part of the overall tourism development strategy, promoting sustainable development of cultural heritage tourism, strengthening historical resources and preserving cultural heritage is critical to the sustainable development of a city or a region.

Since all destinations have their own unique historical and cultural heritage. As a typical cultural heritage city, Elvas needs to recognize its uniqueness and advantages compared to other competitive destinations. That indicates the needs to provide specific digital support which can be the driving force behind Elvas' sustainable cultural heritage tourism.

For a historical city, the features of cultural heritage represent the image of a city, as it will impress visitors. This project aims to find out the core cultural values of Elvas and to establish and enhance the visual image of Elvas' cultural heritage through visual communication design.

The general objects are to promote cultural heritage tourism of Elvas by creating a digital application as a specific guidance platform which can communicate the core cultural values of Elvas to users.

The prominent feature of this digital guidance platform is to create a visual identity of Elvas' cultural heritage, rather than to use the images of traditional cultural heritage. It has changed the traditional way of communication to better suit the modern concept of consumption. To this end, the combination of media technology and cultural heritage protection, as well as tradition and digital communication is the most intuitive, convenient and feasible way. This digital guidance platform will become an important tool to promote the sustainable development of Elvas cultural heritage tourism, enabling users to enjoy an unprecedented and memorable experience.

Therefore, the hypothesis of creating a digital support tool for cultural heritage tourism in Elvas will help to convey the core cultural values of Elvas to users, providing a better experience for users to fully enjoy this activity on site.

III. The relevance of the problem and research question

In the course of exploring the core cultural values and digital application development of Elvas, this study clarifies the important impact of the Elvas Cultural Heritage Tourism Application Design Project on strategic development.

This project proposed the development of the new technological asset to promote Sustainable Cultural Heritage Tourism in Elvas, which will work as a specific destination marketing tool for communicating the core cultural value with travelers and provide users/travelers a better experience.

As mentioned above, the research project tends to answer the following research questions:

"How to design a Cultural Heritage Tourism Application that can help to communicate the core cultural value with the tourists, and enhance the user experience?"

IV. Methodology

This research uses qualitative and quantitative method to study the standard visual identity design works, and tourism application model found in previous studies and finally proposes a new valuable cultural heritage tourism marketing model.

The methodology consisted of the research techniques as below:

literature review on cultural heritage tourism, cultural heritage in Elvas, visual communication design and case studies of visual identity design, analysis the existing visual identity works and identifying its strengths and weaknesses.

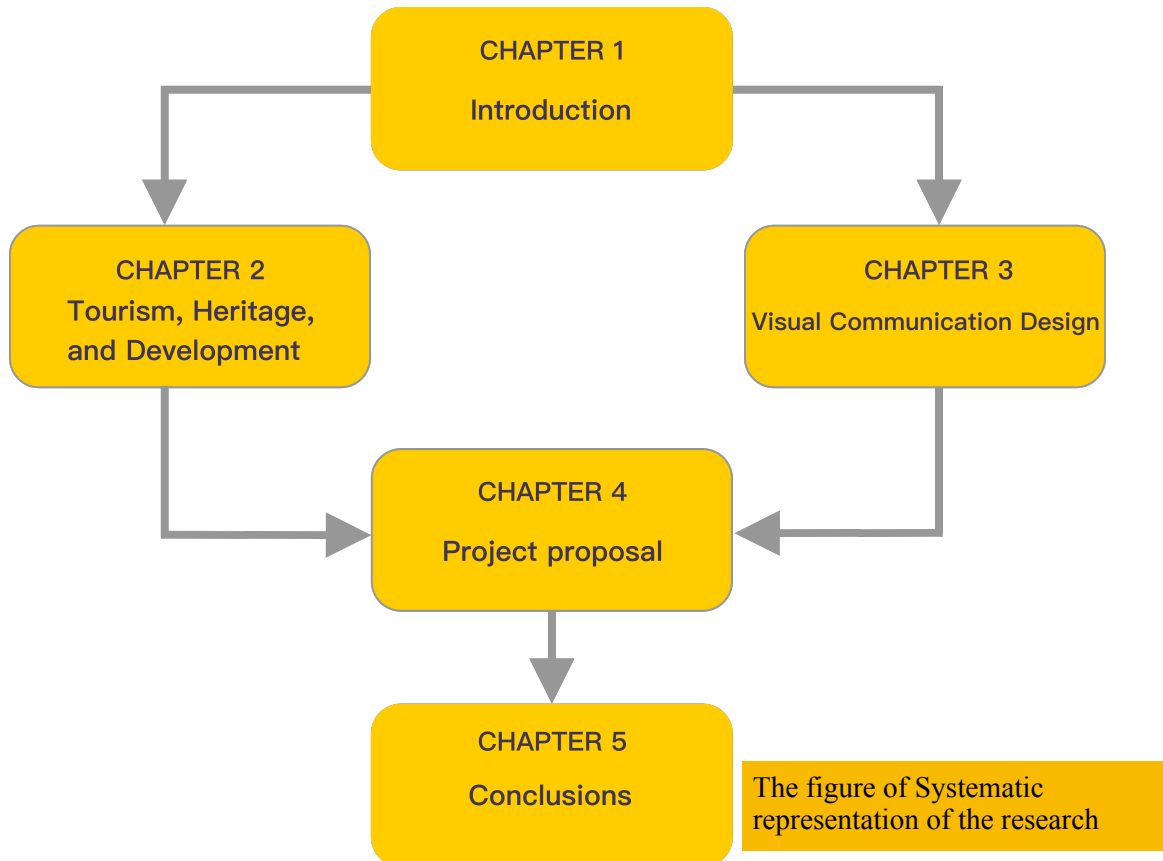
The prototype development of the project will complete through joint advisors.

"In the field of communications, it is increasingly important and necessary to monitor and evaluate the communications strategies to be implemented."(Bonjisse & Morais, 2017, p.5)

'User requirements research' is an important part of this study report. This study will adopt the non-interventionist methodology to determine and evaluate whether the hypothesis of creating a digital platform for cultural heritage tourism can help to communicate the core cultural value to users and provide a better experience in their trip.

V. Scientific report structure

This scientific report divided into five parts, described as below:



Chapter 1. “Introduction” presents the motivation for the research, scope, the aim and the meaning of the research, and clarified the importance of the design product along with the research question and the research methodology.

Chapter2. "Elvas, Heritage sites, Tourism, and Development”.

This chapter contains exploring the core value of the city of Elvas' cultural heritage, and a comprehensive review of tourism in Portugal, as well as in Elvas; analyze the prospect of Elvas' cultural heritage tourism; proposed the idea of promoting development through digital communication.

Chapter 3. “Visual Communication Design” describes the definition and the concepts of Visual Communication Design, Interaction Design, UX &UI design and presents case studies of several visual identity designs or Similar cases comparisons. Focus on the analysis of successful identity design cases.

Chapter 4. “Proposal,” provides digital support for Elvas cultural heritage tourism. It includes the visual design of Elvas' cultural heritage, the visual design of digital application of cultural heritage tourism for Elvas, and detailed process. Finally, this section includes a discussion and evaluation results of the application design.

Chapter 5, “Conclusions,” presents general and specific conclusions to answer the research question. Describes the contribution of the design product and finds its limitations. And future research recommendations.

CHAPTER 2. Tourism, Elvas Cultural Heritage, and Development

Section 2.1 Tourism

Tourism is a multifaceted activity which involves many different cultures and different economic activities. The World Tourism Organization defines tourism as "*Tourism comprises the activities of persons traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business, and other purposes.*(UNSD, 2001, p.1)."

The growth of tourism will have a tremendous impact on the development of economic, environmental, social, cultural, crowding and congestion, services, taxes, and community attitudes(Kreag, 2001). For many developing countries, tourism is a major source of income and affects the economies of the countries of origin and host countries(Mihalic, 2014). Tourism is a field of sustainable development, and that is the reason why the tourism sector needs to be up to date with society and technology.

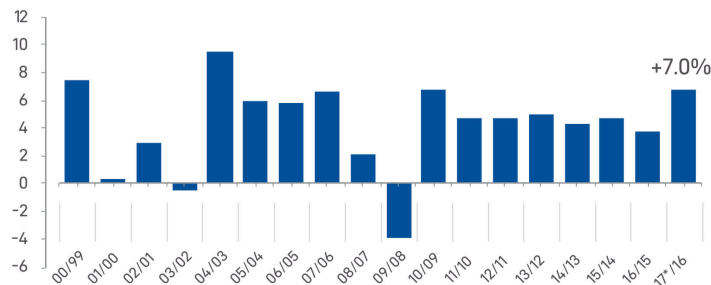


Table 1. International tourist arrivals, change (%). Adapted from:UNWTO, 2018

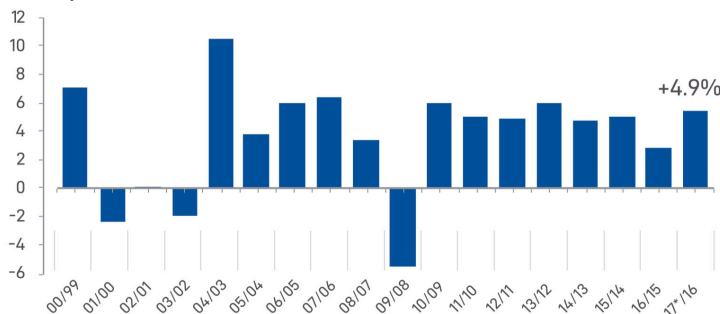


Table2. International tourism receipts, change (real terms, %). Adapted from UNWTO,2018.

According to the latest statistics released by the World Tourism Organization (UNWTO, 2018), the number of international tourists increased by 7% in 2017 (see Table 1), which is the highest growth in international tourist arrivals in the past seven years since 2010. In terms of tourism revenue, according to statistics, the total global tourism revenue in 2017 reached 1.34 trillion US dollars, an increase of 4.9% over the

previous year(see table 2). There is 20% of all global net jobs created in the last decade have been within the Travel & Tourism sector. The reason is the overall growth of tourism investment in the current global market and the increasing number of global tourism

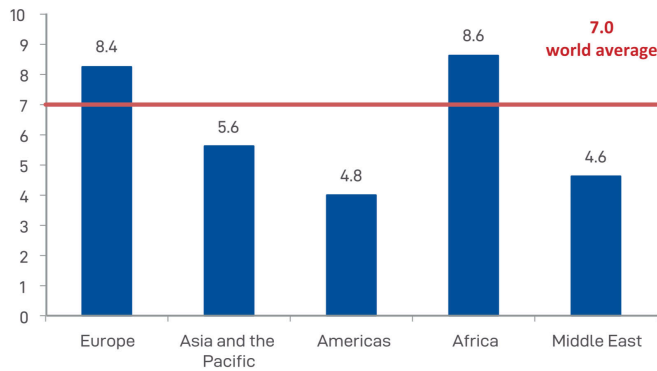


Table 3. International tourist arrivals, change by region, 2017 (%). Adapted from:UNWTO, 2018

destinations in the past few years, making it currently accounting for 10.4% of global GDP (Gross Domestic Product). Leading destinations are Europe and Africa, where the number of arrivals has increased by 8% and 9% respectively(see Table 3).

European region

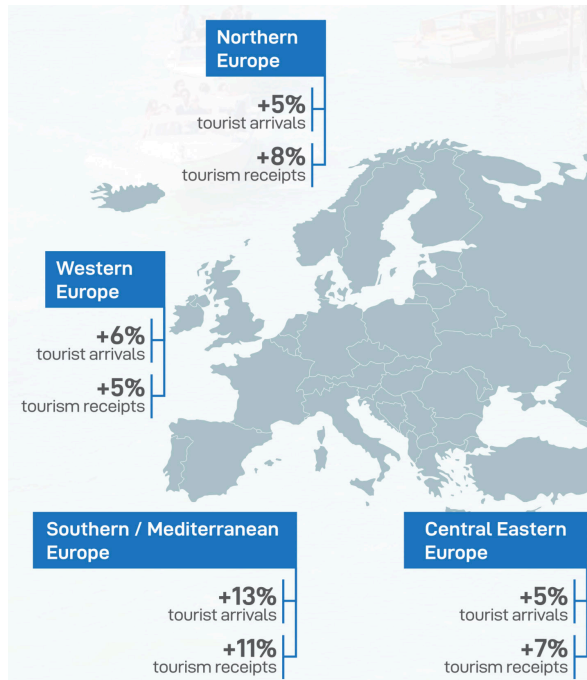
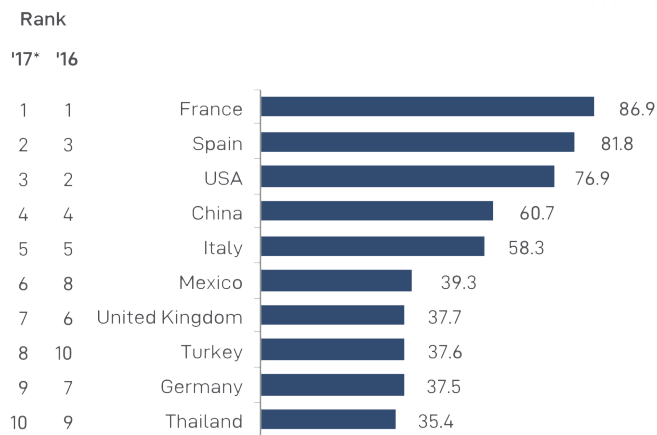


Figure 1. Southern/ Mediterranean Europe led results in arrivals and receipts.

Adapted from : UNWTO, 2018.

The European region is the largest tourist market and destination (EU-TWO, 2018), and the 28 EU countries have maintained growth for the eighth consecutive year. In 2017, the number of international arrivals in 28 EU countries increased by 8%. It accounts for 40% of the world total.

Thanks to the growing strength of traditional and emerging destinations, Southern Mediterranean Europe has achieved remarkable results in arrivals and receipts. There are 8 EU countries and 28 destinations in Southern Europe and Mediterranean Europe.



* = Provisional figure or data

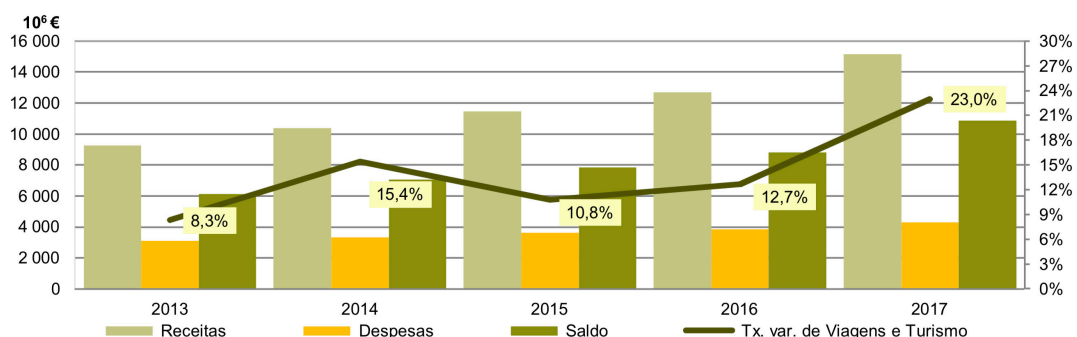
- Table 4. International tourist arrivals, 2017 (million). Adapted from : UNWTO, 2018

According to the data released by EU-World Tourism Organization, the number of arrivals increased by 13% in 2017 and receipts increased by 11% (see Figure 1). Spain has become the second-largest international tourist destination after France (see Table 4).

Portugal

Portugal maintained an 11% increase in 2017 after having achieved strong results in 2016 (EU-WTO). An analysis result of Portugal by WTTC(World Travel & Tourism Council) state that "The direct contribution of Travel & Tourism to GDP was 13.2billion Euros (15.0billion US dollars), accounting for 6.8% of total GDP in 2017and is forecast to rise by 5.4% in 2018(WTTC, 2018)."

According to the latest Balance of Payments data released by the Bank of Portugal, the balance of item travel and tourism increased by 23.0% in 2017, which is higher than the change rate of + 12.7% recorded in 2016(see Table.5)(Instituto Nacional de Estatística,2018).



Fonte: Banco de Portugal, julho 2018

Table 5. Portuguese tourism balance, Travel and Tourism, 2013 - 2017. Adapted from: Instituto Nacional de Estatística, I. P., 2018

The WTTC (World Travel and Tourism Council) stated that the tourism investment in Portugal in 2017 was 3.2 billion euros, accounting for 10.2% of the total investment (360 million US dollars). It is expected to grow by 7.4% in 2018.

The tourism industry in Portugal achieved substantial growth in 2017. Tourism in Portugal accounted for 20.4% of total employment or 967,500 jobs in 2017. And it is expected to increase by 4.5% in 2018 to 1,011,500 (WTTC, 2018). According to the Instituto Nacional de Estatística, I. P., hotel accommodation has increased in all regions. There are a total of 1,758 active hotel establishments, including hotels, hotel-apartments, inns, Quintas da Madeira, and resorts. It reflects an overall increase of 5.3% in 2017, which is higher than the 4.9% increase in the previous year. The number of beds in hotels in all regions has increased, with AR Açores and Alentejo standing out, with growth rates of + 6.2% and + 5.7%, respectively (Instituto Nacional de Estatística, 2018).

About Alentejo, the region in the mainland of Portugal. One of the reasons for the significant increase to the Alentejo's tourism industry in recent years is the reputation of a tourist destination - Elvas (see Figure 2 and Figure 3.).



Figure 2. Screenshot of Headlines. News from "Diário de Notícias", by reporter Roberto Soares.



Figure 3. Screenshot of Headlines. screenshot. News from "Diário campanario" Publicado em Regional, 27 junho, 2014.

Figure 2 and Figure 3 showed the headline of the news posted on “Diário de Notícias” on June 30, 2017, by Roberto Dores; and on “Diário Campanario” on 27th June, 2014.

Elvas is a municipality city located in the district of Portalegre in Alentejo. On 30 June 2012, the Garrison border town of Elvas and its fortifications were classified as World Heritage by UNESCO ((Comissão Nacional da UNESCO, 2014). The news by reporter Roberto Dores wrote: the city has received 1.2 million people since its cultural heritage was recognized by UNESCO five years ago. The heritage site (the garrison border town of Elvas and its fortifications) are considered to be the main drivers of the local economy and has guaranteed approximately 100,000 visitors. Elvas has witnessed the tremendous impact of its built cultural heritage on tourism.

Section 2.2 Cultural heritage

Definition of cultural heritage:

The UNWTO (2017) defines the term “cultural heritage” as tangible cultural heritage and intangible cultural heritage. Tangible cultural heritage includes movable cultural heritage, immovable cultural heritage, and underwater cultural heritage; And intangible cultural heritage is oral traditions, performing arts, and rituals.

Cultural heritage is a combination of past material and psychical or social achievements, representing the unique characteristics of an era or a nation, maintained it for the benefits of the present and future generations(Cigola, 2015; Özdemir & Kılıç,2018).

According to Article 1 of the Convention Concerning the Protection of the World Cultural and Natural Heritage, the definition of "cultural heritage" is:

*“1- **monuments**: architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science;*

*2- **groups of buildings**: groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science;*

*3- **sites**: works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view.”(UNESCO, 1972)* These conditions apply to the cultural heritage that is eligible for the World Heritage List.

Section 2.3 The core cultural value of Elvas, and its built cultural heritage

Urban Culture

The UNESCO World Declaration on Cultural Diversity states that culture is “*the set of distinctive spiritual, material, intellectual and emotional features of a society or a social group that encompasses art and literature, lifestyles, ways of living together, value systems, traditions, and beliefs*”(UNESCO,2001). Therefore, we can understand that urban culture covers the overall ideological and cultural concept within an urban setting, and it focuses on their cultural forms that grow up within cities.

Since the Garrison border town of Elvas and its fortifications were classified as World Heritage by UNESCO, Elvas has been named World heritage city. A World Heritage city has the highest cultural significance because it is acknowledged as an Outstanding Universal Value for all mankind.

Outstanding Universal Value

The term ‘outstanding universal value’ is a modern concept that was started to use after the adoption of the Convention (1972). However, its definition has been controversial since then. For uniform interpretation, the UNESCO World Heritage Convention (2013) defines terms as follows:

“Cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity. As such, the permanent protection of this heritage is of the highest importance to the international community as a whole.”(Operational Guidelines for the Implementation of the World Heritage Convention, paragraph 49.)

Built cultural heritage has a value in itself(Torre, 2002). Other built cultural heritage in Elvas, such as Amoreira Aqueduct, Castle, etc. A study of some travel webpages, the city of Elvas has eight cultural heritage sites. Built cultural heritage is the representation of the history of

the places and an evident way to remind people of the past(M.Torre, 2002). Without history, there will be no cultural heritage. Therefore, we can obtain an understanding of built cultural heritage is the carrier of national/regional historical and cultural spirits expressions.

Thus is clear that the core cultural value of Elvas is its history and cultural heritage. The expression is its history represented on built space. In other words, the built cultural heritage is the embodiment of the core cultural values of Elvas.

Section 2.4 Prospects of Cultural heritage tourism

Recently, tourism development strategies have become increasingly linked to cultural heritage. According to a recent study by the U.S. Office of Travel and Tourism, cultural heritage tourists accounted for 71.2% of all overseas visitors since 2004 (Foresite Consulting LLC, 2019). This data shows that the rapid expansion of travelers seeking cultural experiences has helped heritage tourism become one of the leading motivations for people to travel. An analysis of many tourism projects indicates that cultural heritage tourism can bring many benefits to the economy, society, and the environment. It injects new money into the economy; it creates new jobs, new companies, and new tourism destinations, thus helping develop the diversified culture. Tourism promotes the preservation and protection of important local history and cultural resources, thus awareness of the destination or an area's significance.

Since the garrison border town of Elvas and its fortifications were listed as World Heritage sites five years ago, it has undoubtedly become a famous tourist destination. The World Heritage Site has great potential to promote other lesser-known heritage destinations in Elvas as well as to develop its sustainable cultural heritage tourism and urban economic development.

Section 2.4.1 Definition of Cultural Heritage Tourism

The National Trust for Historic Preservation in the United States defines the cultural heritage tourism as *“traveling to experience the places and activities that authentically represent the stories and people of the past”*, and *“heritage tourism can include cultural, historic and natural resources”*(National Trust for Historical Preservation, 2015).

Cultural heritage tourism is a branch of tourism, which is an activity and a way to bring tourists to the past. It aims at authentically experience, exploring, learning and appreciating the local historical heritage (including cultural and natural resources), thus can then influence present and future cultures.

The Georgian Heritage Tourism Handbook(2010) defines cultural heritage tourism as:

- 1 - Not just about visiting historical sites, it is a personal encounter with its history, tradition, and culture;
- 2- It based on the concept that each community has a story to tell.
- 3-It aims to experience local customs, traditions, art, history, ruins, relics, and culture that authentically represent a particular place.
- 4- For tourists, this culture must be unique and authentic.

Section2.5 Set up an idea of promoting development by visual communication

The competition in the tourism market is fierce day by day. Faced with such competition, tourism organizations must adopt new promotional methods to remain competitive and carry out marketing campaigns. In this challenging competition, we can leverage the most popular mobile marketing model that is a digital travel guide application.

In this information age, tourism organizations need to provide more opportunities to connect people to the heritage on-site and online. It is a combination of modern technology and historical works. In other words, it becomes more diversified.

On the other hand, tourism is a field that presents a higher potential for digital applications. The availability of digital applications, especially in mobile devices, makes these travel applications more common.

This digital travel guidance application will be developed based on research questions :

" How to design a Cultural Heritage Tourism Application that can help to communicate the core culture value with the tourists, and enhance the user experience?" As mentioned above, the core cultural value of Elvas lies in its built cultural heritage. Therefore, this application will be used the visual identity design of the built cultural heritage in Elvas to help communicate the core cultural values of Elvas.

Chapter 3. Visual Communication design

Section 3.1 Visual communication design

In the last century, the academic community has already recognized the concept of 'design' is the "*conception and planning of the artificial*"(Buchanan, 1992, p.14). And the purpose of design, according to Richard Buchanan and Horst Rittel, what the design solves is the "wicked problems"(Buchanan, 1992). Horst Rittel, who determined the 'wicked problems' is a "*class of social system problems which are ill-formulated, where the information is confusing, where there are many clients and decision makers with conflicting values, and where the ramifications in the whole system are thoroughly confusing.*"(Buchanan, 1992, p. 15)

In Aakhus' argument, the design is a constructive work, and the scope of concern is how to communicate with people. The core issue of design is about communication (Aakhus, 2007). Through technical communication, information-development, and other comprehensive means aimed at producing concrete results within a specified area such as media, animation, web pages, games, publications, advertising and more.

As he clarified: "*{...}A central puzzle that people face, from a design perspective, is how to make communication possible that was once difficult, impossible or unimagined. Communication design happens when there is an intervention into some ongoing activity through the invention of techniques, devices, and procedures that aim to redesign interactivity and thus shape the possibilities for communication. The relationship between interaction and communication, which is a central problem for communication theory, is a central problem for design{...}*"(Aakhus, 2007, p.112)

In a nutshell, we use design to solve "wicked problems" and absolutely for communication. While communication is a process of transferring information, in which visual effects may help a lot. Visual communication, in theory, is, "*Any form of communication that relies in part or whole on the vision for its understanding.*"(Sless, 1981) and is as "*the activity that organizes visual communication in society*" (Frascara, 1998).

Visual communication is a multidisciplinary field (Griffin, Michael. 2008), which involves the field of visual studies, focusing on mass media, sociology, art, and visual representation. Use major art forms and media techniques to solve communication problems. And it belongs to the category of design, not art. Artists pay more attention to the pursuit of their “inspiration” and “self-expression”. From these motivations, *"art is a purely cognitive domain (Avital, 2017)."* And visual communication involves a design method and a visual medium, and it pays more attention to “targeted” communication (Frascara, 2004), and more efforts have spent in finding out about the audience or users. From these motivations, *"design is a mainly instrumental domain (Avital, 2017)."* Therefore, visual communication design is an artistic creation, but also the accordance with the purpose of the created product.

As described by the design educator and writer Jorge Frascara (2004), each communication design project should be planned at the communication, visualization, and production levels to ensure the clarity of form and content to facilitate and stimulate final manufacturing.

A visual communication design project should have a high standard of visual-target acquisition technology, information organization, processing, and information presentation. Therefore, how to transform target information into visual signals (visual detection), and how to improve visual acuity and understanding are the core issues of visual communication design (Frascara, 2004).

American art director and graphic designer Paul Rand has written in his book "Design, Form, and Chaos (1993)":

"Design is both a verb and a noun. It is the beginning as well as the end, the process and product of imagination. Like a huge onion with multiple layers, the more it is peeled, the more it reveals. Content is the raw material of design. Form, in turn, is the reorganization and manipulation of content. "

Designers should be able to provide clear and understandable forms and content to achieve more effective visual communication design. The design methodology is a set of actions that attempt to create a successful solution to a specific problem, which is, by exploring key aspects of the process of design thinking and making to achieve a more efficient design. A rigorous and practical formal design thinking and process, according to the handbook by Noble and Bestley (2016), as shown in the following diagram:



Figure 4. A schematic based on the design process. Adopted from: 'Visual Research'. 2016. Bloomsbury Publishing Plc.

The overall design thinking process begins with the first stage: identifying problems/user requirements; going to the second creative stage; the third visual presentation stage; and entering the final fourth stage: evaluation and output.

The first stage of the design process is to discover and define design problems/requirements. And to determine whether the problem is meaningful; Whether it can reduce or even solve this problem through visual communication. (If you cannot reach it, redefine the problem.) If the problem is of significance, then find out the causes of the problem and finally determine the audience for the design.

The second creative stage of the design process began to investigate in all directions, covers a wide range of primary and secondary research methods. Enhancing or dismantling the original pre-concept by gathering quantitative data, qualitative data, and visually researching the target audience(Noble& Bestley, 2016), which is the process of evaluating the original definition of the first stage. On the other hand, divergent searches can deepen the understanding of the target audience, thereby identifying and strengthening the design objectives. Whether the channel is an affordable and effective way depends on reaching a common language with the target audience.

The third stage of visual presentation is the process of transforming the raw materials collected in the second stage into visual form solutions by thinking/understanding and validating. Visual design is the core of the third stage. The key is to focus on the senses.

A product project has gone through various research and definitions and reached the stage of visual presentation. Although the logic, functionality, development, and innovation of the design occupy a large part of the design work, what users end up seeing is the visual presentation part. Each interface, text, and image play the most interactive role in the visual presentation stage. The graphic design should be accurate to the presentation of the combined layout, and the interpretation of the shape; and the text design should be accurate to the size of the field, the size of the font, etc. *"So it's crucial, at the Transformation stage, for the design team to examine its motives behind any proposed visual solutions(Noble& Bestley 2016: 36)"*.

As can be seen from the third stage that visual design must be evaluated and tested around the target audience and the market, rather than based on the interests/preferences of the designer or the customer itself.

According to Noble & Bestley(2016), the fourth section is called “convergence.” Designers work based on the design process. A basic understanding of the design process should be: product requirements (define the problem), creative stage (market analysis, user research, brainstorm and analyze data, conceptual design, etc.), develop solutions(prototyping), iteration (gathering feedback), and then redesign or improvement. If fortunately, everything goes well, so the product will be produced soon(Discoverdesign.org, 2019). Finally, there is user tracking feedback.

Prototyping will not be done satisfactorily at once. It requires a lot of time and effort to evaluate and test. The feedback from the market and users are the key factor in determining whether the product design is a success.

As Paul Rand said:

"So that is the design process or the creative process. Start with a problem, forget the problem, the problem reveals itself or the solution reveals itself and then you re-evaluate it. This is what you are doing all the time."([sic]Quotes, 2019)

An intelligent visual communication design solution, often visually simple, but also ensure the richness of information, and they are easy to understand and operate. The goal is to provide people/users with maximum convenience and solve complex problems in the shortest possible time.

In essence, providing people/users with maximum convenience requires people-oriented, so interaction design came into being. According to Alan Cooper, author of About Face, user interface and user interaction are critical to making digital products useful and successful. In addition to providing users with more convenience and better meeting user needs, interactive design products have the potential to increase the company's profitability and market share.

Section 3.2 Interaction design

Interaction, literally understood, is a series of actions and behaviors between X and Y. For example, when you go out to meet someone and say "hello" to him, he will also smile at you and say "hello" - this is an interactive process. Interaction is not limited to people, but can also occur between people and digital or non-digital products.

The term "interaction design (IXD)" refers to the design of interactive digital (or non-digital) products, systems, and services that focus on establishing connections between its device, its interface, and the users (Miller, n.d.). Interaction Design is exploring how users interact meaningfully with their products and services (Usability.gov, 2019). It is a user-centered design which aims to understand user goals, needs, motivations, requirements, and behaviors (Cooper, Reimann, Cronin, & Noessel, 2014.) According to Sharp, Rogers, and Preece, the interaction design can be defined as: "*supporting the way people communicate and interact in their every day and working lives* (Sharp, Rogers, and Preece, 2011)." And Saffer defines the Interaction Design in three schools of thought: "*a technology-centered view; a behaviorist view; and the social interaction design view*"(2010, p.5) and emphasizes the role of art in it and how people can enjoy using its products. In a nutshell, it's about creating and relying on the user experience to enhance the way people communicate and interact with products.

As mentioned earlier, the core purpose of design is to solve communication problems. Then the core purpose of Interaction Design should be: to boost user efficiency.

It is undisputed that Interaction Design focuses mainly on people and objects, but this scope is still too broad. Design is a generic term that covers a wide range of branches. There are many terms used to emphasize different design disciplines.

User Experience Design (UX) is the axis of Interaction Design; Human-computer Interaction (HCI) began as a human-machine interface, it refers to the design of computer technology, and it is about paying attention to the interfaces between users and computers (Kim,2018); Information Architecture (IA), which considers the structure by which information is organized so that users can more intuitively find the information they need (Usability.gov, 2019; Saffer, 2010, p.21); Interactive Systems Design is a comprehensive discipline of HCI, UX, and IxD, and based on user-centered; User interface (UI) design focuses on predicting

what users might do next (user behavior) and letting the user know what the system has done, thus ensuring that the interface is easy to access(Usability.gov, 2019); Software Product Design; Industrial Design (ID) and Human Factors, according to Saffer, it is an interdisciplinary profession involving physical objects that focuses on the limitations of the human body in order to improve user comfort(2010, p.21).

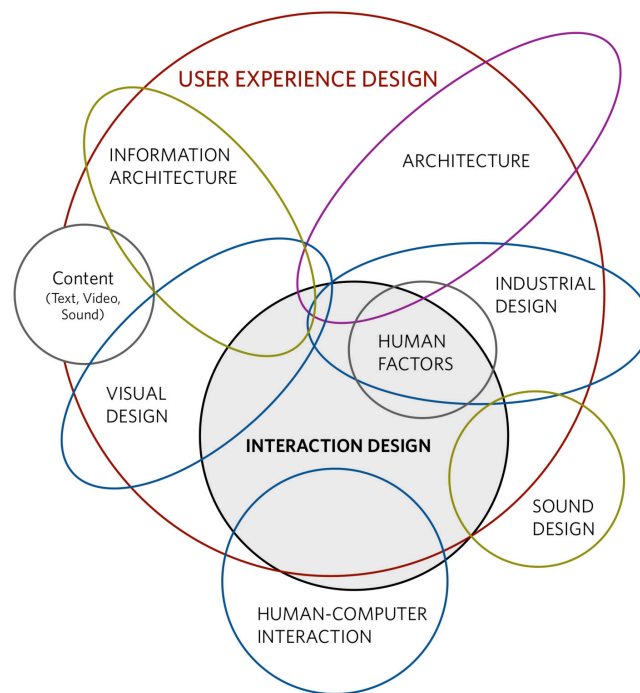


Figure 5. The disciplines surrounding interaction design. Adopted from the Dan Saffer (2010, p. 21).

Although Interaction Design is like an all-encompassing basket, and these investigations require a wide range of academic styles, however, it is born on demand. "Please respect your users!" Alan Cooper, an expert in the field of graphical user interfaces, gave advice. The development of software is inseparable from the purpose of serving the people. The focus of interaction design software is on the user's goals and behaviors, namely how to design the user experience.

Successful interaction design can affect users' emotions because such interaction design and the users are communicating at a personal level (Kolko, 2011).

The founder of the Austin Center for Design, Jon Kolko, shared his design philosophy: *"Interaction Designers are trained to observe humanity and to balance complicated ideas and are used to thinking in opposites: large and small, conceptual and pragmatic, human and technical. We are the shapers of behavior."* (Kolko, 2011, p.11)

As many designers hope, users can smoothly complete the product's tasks and be satisfied while "chatting" with the product.

Section 3.2.1 User experience design

As we know from Figure 5, the user experience design takes into account the all-encompassing, user-centered aspect of any system(Nielsen & Norman, 2019), every product we use has a user experience. Interaction design as part of the user experience design, it is central to the user experience, and vice versa. In some cases, these two disciplines overlap, each of which is an integral part of other.

According to Cooper et al. (2014), the User Experience (UX) of digital products consists of three overlapping problems: form, behavior, and content(see figure 6). They require careful planning, information architecture, and user experience design. It can be understood as a highly intuitive user experience design focuses on the content structure as well as the behavior of providing content access and the way of presenting content to users.

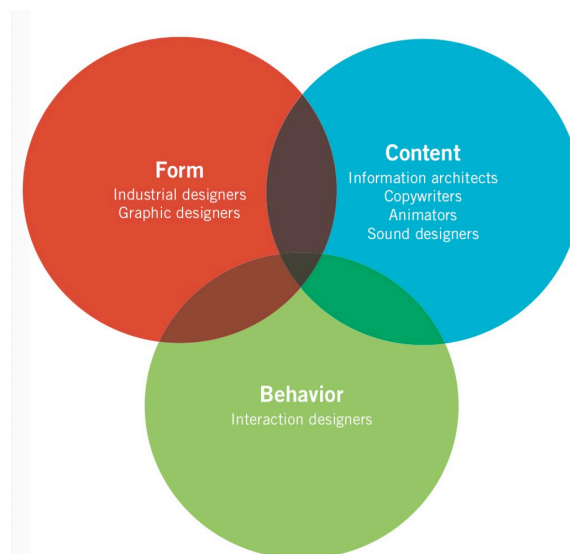


Figure 6. The User Experience concern areas.
Adapted from: Cooper et al.,2014.

It is worth mentioning that designers cannot design the user experience because the product experience comes from the user's sensation, that is, feedback from the user.

Designers can only design for the user experience. The user experience focuses on understanding users, what they want to see, their behavior, and their capabilities (Usability.gov.,2019). While considering management and goals, the entire product development cycle includes direct user feedback to create products that meet user needs. Most importantly, the product has a meaningful and valuable user experience (see Figure 7). According to Peter Morville(2004), the core of user experience is ensuring that users can find value in your product design. User experience products must be easy to use and must have simple and intuitive content, and credibility to achieve customer satisfaction level.



Figure 7. Peter Morville's User Experience Honeycomb diagram: "The seven factors that influence the user experience". Adapted from: Morville, 2004.

“Interaction Design is the creation of a dialogue between a person and a product, system, or service. This dialogue is both physical and emotional in nature and is manifested in the interplay between form, function, and technology as experienced over time.” (Kolko, 2011, p.11)

As mentioned above, the User Experience (UX) is the process of designing the entire product and has different evaluation criteria at each step of product design. The UX must provide users with ease of use and satisfaction. Interaction design(IxD), according to Kolko, is a dialogue between human and the product. As part of the product design, IxD is focused on current usage and attempts to improve the interactive experience. Therefore, interaction design (IxD) plays a crucial role in the user experience field. Good interaction will determine the success of user experience design products.

Section 3.2.2 User interface design

We now live in an era of information explosion. People seldom read the content carefully. Most users learn more about information by looking at the pictures, reading the first sentence, and reading the bold text. Nowadays, for designing digital mobile applications, how to concentrate and focus information, the rhythm of the interfaces, and how to attract the user's attention are the key to the design.

The user interface (UI) is the graphical layout of an application(device or software) which brings concepts in Interaction Design, Visual Design, and Information Architecture (Usability.gov, 2019). It is a means by which the user and the system interact. According to Saffer (2010), the UI is an experienced representation and a part of Interaction design. It typically refers to an aspect of mobile devices or software that users can see (hear and feel), as well as commands and mechanisms that the user uses to control its operation and input data. It is the function of the product, presented in visual images. By directly responding to the user's goals, the user can achieve the expected goals in the application (Luminant Design, 2014b).

Interface design involves the processing and arrangement of visual elements to communicate behavior and information(Cooper et al.,2014). As each element in the visual composition is a graphical language, the User Interface design is how to choose the right interface elements to create meaning, such as fonts, buttons, colors, graphics, etc. The purpose is to make it easy

for users to understand and use when completing operations on the interface. As with the requirements of the user experience, the interface design is a bridge to achieve the user experience.

As far as the interface design of the mobile application is concerned, we must consider which aspects of the layout design affect the cognitive approach that users take when interacting with the interface. Nielsen(1994)'s 10 usability heuristics for interaction design can be the key to understanding the UI: 1. *Visibility of system status* (users can keep abreast of the system's operation through feedback); 2. *Match between system and the real world* (use the user language instead of the system language. Create an unimpeded communication environment platform); 3. *User control and freedom* (draw attention to important events; support undo and redo; allow frequent repetitive operations); 4. *Consistency and standards* (build an integrated visual system to ensure consistency across the experience); 5. *Error prevention* (provide confirmation and cancellation buttons to the user before they commit to the action); 6. *Recognition rather than recall* (users need to be "familiar" with the interfaces, so they don't need to remember the previous actions); 7. *Flexibility and efficiency of use* (high efficiency and user satisfaction are the embodiment of humanization); 8. *Aesthetic and minimalist* (under the premise of paying attention to visual design, minimize the visual workload, keep the interface simple, limit the UI elements to the necessary, and focus on the core user experience); 9. *Help users recognize, diagnose, and recover from errors* (error messages should be expressed in simple language, pointing directly to the problem, and proposing solutions), and; 10. *Help and documentation*.

Section 3.3 Creating a Mobile app design

The mobile application frequently referred to as an app, which is a piece of software that has been around for a while (Cuello&Vittone, 2013). It is the iPhone that has created a new business model and pioneered a global application market since 2008. The owners of mobile operating systems (such as the Apple App Store, Google Play, and Windows Phone Store) are usually responsible for operations. However, there are also independent application stores, such as Cydia and GetJar. In response to market demand, mobile applications have a wide range of uses and allow consumers to hand-pick the operations that their devices can perform(Technopedia, n.d.). Users usually download these applications from a software store or platform to a target device for use in anytime they need. In short, an application is a computer program for a smartphone or tablet computer.

Applications can be roughly classified into big three types(ThinkMobiles, 2019): Native apps(applications built for iOS, Android, Windows Phone and other systems which cannot be used on other platforms); Hybrid multi-platform apps (for all platforms); and Web apps (which are as response versions of the website and runs on any mobile device).

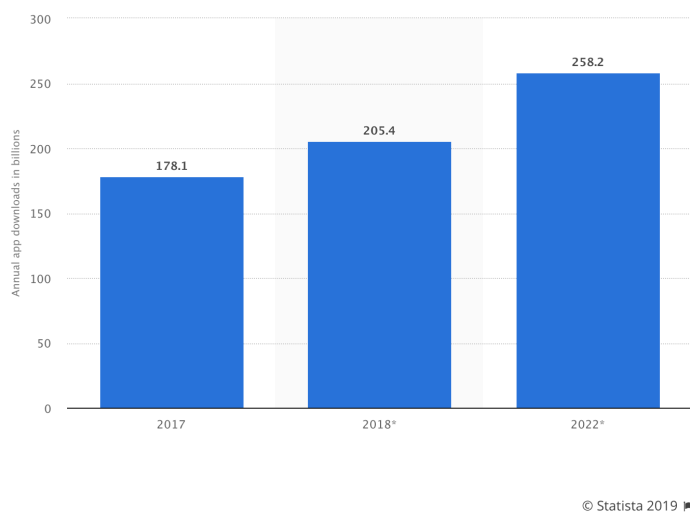


Table 6. **Global mobile application downloads in 2017, 2018 and 2022 (in billions).** Adopted from: statista.com (2019).

According to the statistic(see Table 6), the number of mobile app downloads has steadily increased year by year and gives a forecast that is expected to grow to 258.2 billion apps by 2022. Smartphone users will be more inclined and dependent on using the app. Which also means the application market needs to inject fresh blood continuously.

The Mobile apps categories are diversified. The purpose of these application markets is to cover any other imaginable application. In response to the demand of the tourism market, there are also many successful travel apps, such as Google Earth (Android & IOS), Uber (Android & IOS), and Airbnb (Android & IOS).

People are always expected to have a relaxed and enjoyable experience on the journey. Today, travel apps have a considerable advantage over the websites. According to the Mobile Travel Trends 2018(TravelBiz monitor, 2019), there is 25% of respondents have installed a travel app on their smartphones.

The statistic (see Table 7) shows the global mobile payment revenue from 2015 to 2019. Global mobile payment revenue reached \$930 billion. More than that, but it is expected to grow to \$1080 billion by 2019. The widespread use of smartphones and tablets has contributed to the development of the mobile application commerce market.

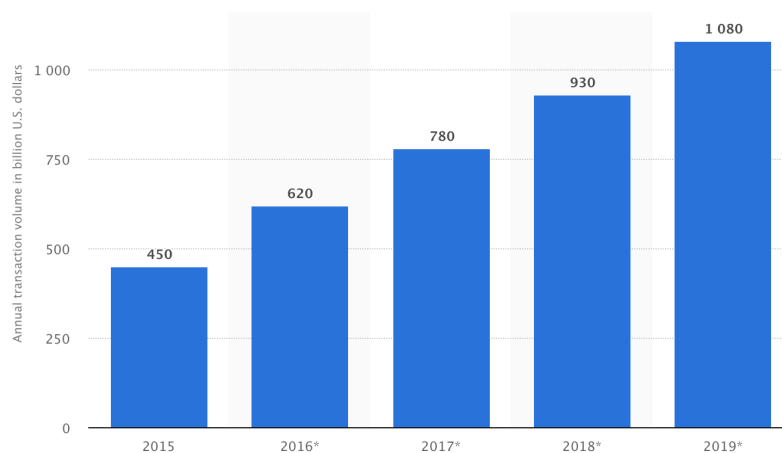


Table 7. Total revenue of global mobile payment market from 2015 to 2019 (in billion U.S. dollars). Adopted from: statista.com (2019).

Mutual promotion of the mobile application market and tourism can drive the local economy. Therefore, the creation of a cultural heritage tourism application for the historic town of Elvas will bring more convenience and benefits to the local tourism industry and tourists. It's a valuable thing.

According to Cuello & Vittone (2013), what the application and mobile website have in common is that they share the same screen.

The apps must be downloaded and installed, while mobile websites require only a browser. However, because of the screen sizes of mobile devices, websites can display problems in this situation. Moreover, even responsive websites need to consider whether they need to design an application for reasons such as business objectives.

Every visitor would not refuse to travel with that "chatty friend" in their palms, who ladles out inside details about the local attractions and things to do. This design project will demonstrate the advantages of the mobile app, including the speed of and richer functionality that are not available on the mobile web. The purpose of this travel app is of clarity. This application focuses on changes in user preferences and new things that technology must provide.

Ways of holding mobile devices

For creating a mobile app design, it is necessary to take account of the way users hold their phones (Cuello & Vittone, 2013). According to a report by Clark (2015), a research survey shows that people can roughly define three ways to hold a mobile phone, with the highest probability of holding the phone in only one hand (see Figure 8). Which means most users interact with the screen with their thumbs. Therefore, adhering to the user-centered purpose, the interface design should also consider the interaction of the touch screen fingers, that is, the position of features elements in the interface, and how the touch screen fingers reach the screen area in the most comfortable way (Clark, 2015; Cuello & Vittone, 2013).

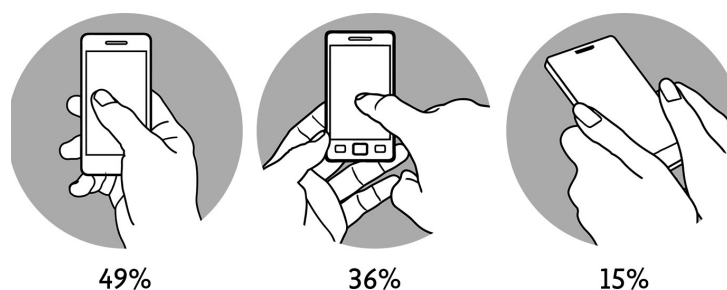


Figure 8. The three basic handholds of smartphones and their probabilities. Adopted from: Clark.J, (2015)

App Icon and Launch screen

Every application needs an unforgettable icon to attract attention in the app stores, which is also the first impression of an application to users. It will stay on the home screen when the user downloaded and installed it. The iOS Human Interface Guideline (2019) states that app icon design should meet the following requirements: simple; single focus; identifiable; simple background; minimize words unless necessary; do not include photo elements, screenshots, and other interface elements; do not use a copy of the hardware product; the app icon must not appear in the interface; use different wallpaper test icons; and, keep the icon corner square(Apple Developer, 2019).

In addition to the app icons, according to Cuello & Vittone (2013), the first impression of an app will also be limited to the launch screen. The launch screen, also known as splash, will appear when the application opens. It is used to enhance the user's perception of the application. Every application must provide a launch screen(Apple Developer, 2019).

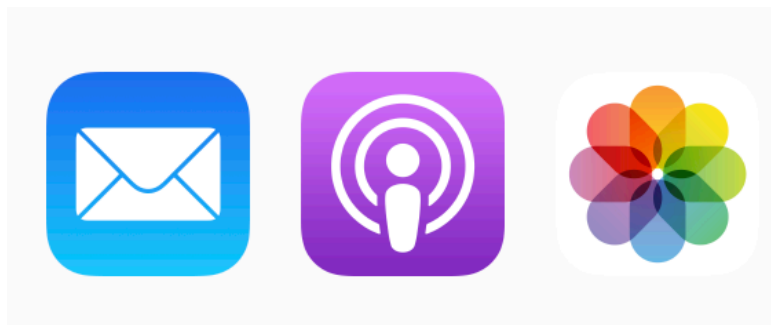


Figure 9. Examples of Apple hardware application icon.
Adopted from: Apple Developer, (2019)

Navigation transitions

Creating a meaningful screen transition is critical for mobile application design. Navigation transition is a motion to guide the user to switch between two screens of the application (Material Design, n.d.). It is an expression of how the application hierarchy and elements are related to each other.

The user will switch/move screens when needed, such as from the main screen to the detailed screen, or from the toolbar icon to the content screen, etc., the transitions would occur in these cases.

Navigation transitions are not equal. For the convenience of users, the application needs to provide users with the following different types are: *hierarchy transition* reflects the user moving up or down a certain level in the application; *peer transition* means switching between screens at the same level of the hierarchy; *sibling transitions* refer to the peer screen that slides in from one side, while the previous screen moves out of the screen in the opposite direction, and; *top-level transition*, switching between unrelated tasks and changing screen position by changing opacity or scale values (Material Design, n.d.).

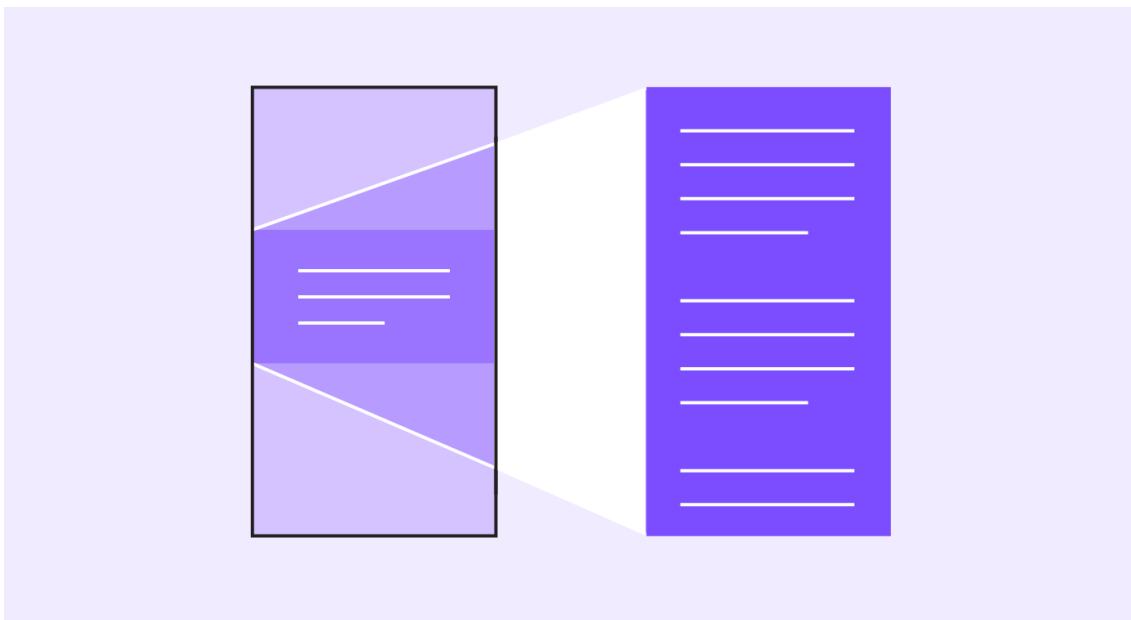


Figure 10. Example of navigation transition. Adopted from: (Material Design, n.d.)

Custom icon design

The system often provides built-in icons that represent common tasks and types of content, which are Navigation Bar and Toolbar Icons, Tab Bar Icons and Home Screen Quick Action Icons, as well as a variety of other use cases (Apple Developer, 2019). However, the images provided by the system are not guaranteed to meet all needs. Custom icons are designed to represent the characteristics of the application.

Every design icon in an application should have a specific, well-known meaning.

According to the iOS Human Interface Guidelines (Apple Developer, 2019), designing custom icons needs to meet the following requirements: the icon design is easy to identify, simple and universal; design icons are symbols; should be consistent; should not contain text; should have alternate text labels; do not use copies of hardware products, and; the color indicates the selected or unselected state.

Section 3.4 Visual identity design

Identity image plays a crucial role in the global market economy(Lacerda, 2011). Especially with social media, there are very few social media that don't use images, let alone their own identities. In other words, images are more important than ever on social media.

According to Wheeler (2009), visual identity images are tangible and appeal to the senses. Human cognition does not follow any artistic style, so does visual recognition ability (the ability to recognize objects through vision) is essentially a creative process. Therefore, visual identity image can stimulate recognition, enlarges differentiation, and makes general ideas and meanings available(Wheeler, 2009).In other words, the identity image creates perception, a wordless but meaningful communication.

“Visual identity is a way to communicate semantic content directly or indirectly through various communication channels, and its system is the "being" of social institutions (Lacerda, 2011, p.410)”.

As mentioned above, this report defines the value of visual identity is, by creating images to create perception and thus achieve the purpose of communication; on the other hand, it has helped to promote the development of the market economy.

For visual identity design, all semantic, graphic, and visual elements must support the original identity, personality, and positioning of the organization or the design object (Lacerda, 2011). Judicious use of colors for communication, and careful selection and use of appropriate colors(for example, consider that the use of the color is not misunderstood even in other countries and cultures) can provide visual continuity and better communicate information(Apple Developer, 2019).

Section 3.4.1 Case studies

Part 1) Visual Identity Design

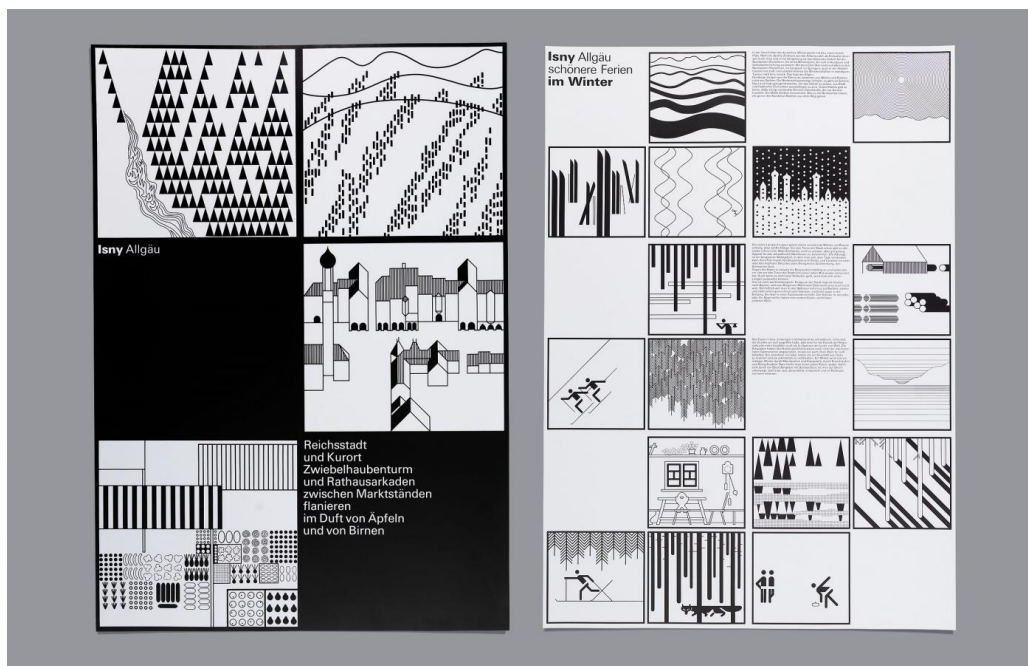
Otl Aicher's Isny

The late German designer Otl Aicher is famous across the globe for designing Lufthansa and 72-year visual identity of Munich Olympics. He ever spent nearly 10 years creating Isny im Allgäu Town a visual identity system made up of 120 images, which was exhibited at the London Design Festival in 2017 (London Design Festival, 2017).

In the 1970s, he was entrusted by the town to design a series of logos for the local tourism bureau so that it can show all tourists its rich resources (ibid.).



Figure 11 & Figure 12. The original photos about Isny im Allgäu, Germany. Adopted from: tripadvisor.com (2019)



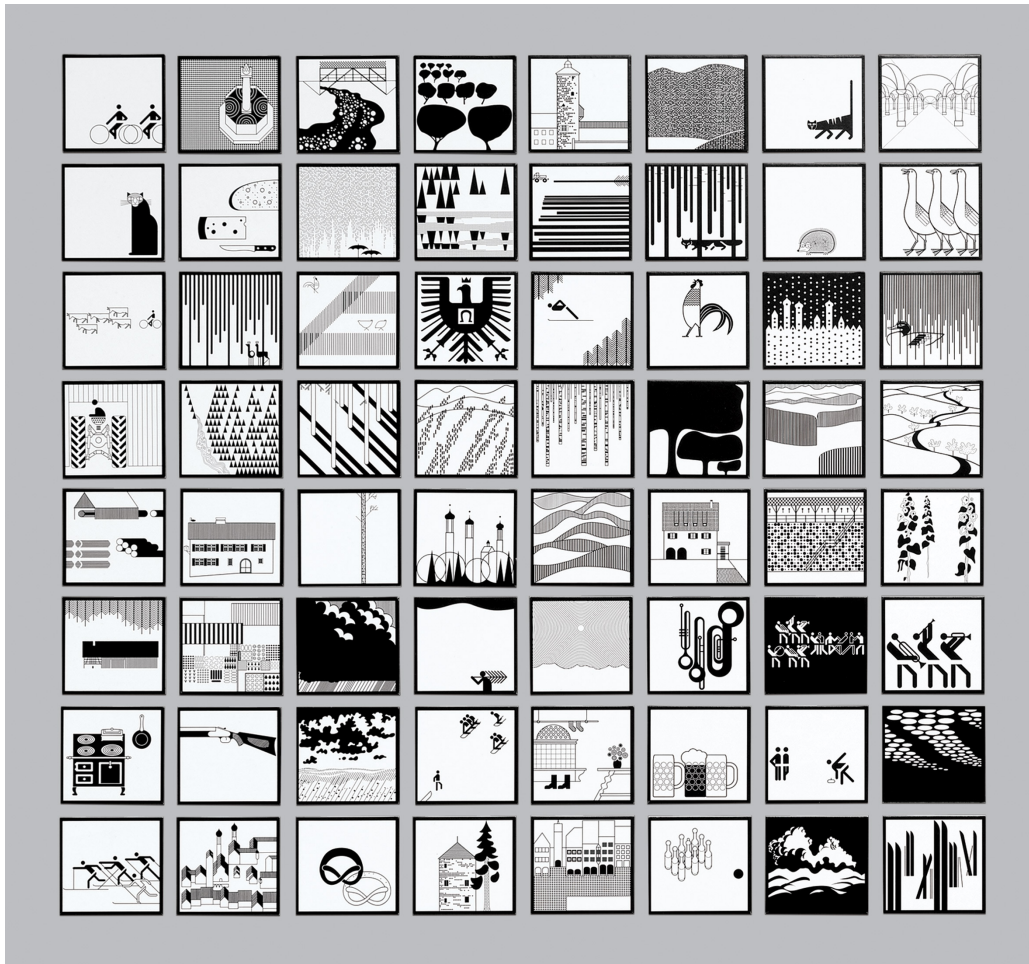


Figure13& Figure14. Isny's identity image series, designed by Otl Aicher. Adopted from: (London Design Festival, 2017).

He held the awareness of stressing identity in all of his works. Aicher adopted the bright, concise and single-color design of visual identity. In this work, Aicher chose white and black, and did not choose a typical view or a building from the town to represent it but made the town's features notable in an innovative manner -120 identity images(see Figure 13 and Figure 14). Black and white collocation are both the most concise and most expressive, giving off a strong visual impact that arouses people's consciousness of protecting cultural heritage. Before Aicher, maybe nobody had tried this method: combing 120 simple identity images and forming them a narration, depicting the all-year-around scenery of the town. *"He divided the town into 120 visually identity images, which at the time was a striking example of the German modernist approach, but still Isny (London Design Festival, 2017) ."*

Besides, this work also reveals diversity and complexity of visual identity design, which is not just a group of vectors but more a group of visual language communication of Aicher. From the uniformity, the coherency of visual identity needs all-round consideration of each and every visual cue and characteristic as well as how to keep the entirety balanced. All of this is very important.

Lithuania- Sufficient Postage

In November 2016, the Lithuania State Department of Tourism released a new urban tourism brand with design philosophy “Real is beautiful”(Lithuania State Department of Tourism, 2017).

That means Lithuania's national tourism industry is focusing on natural heritage as a marketing priority.



Figure 15. New tourism communication of Lithuania.
Adopted from: (State Department Of Tourism, 2017)

The group of the visual identity is presented by imitating stamps. The identity design follows the principle of easy recognition, memorization, and utilization. Meanwhile, it is featured by conciseness, clearness, and understandability. By integrating simple words and colors into

nature and simplified modern images, the designer created a brand and a whole set of tourism navigation signs. The colors embrace liveliness and warmth, as well as nature and leisure.

It stands out the natural heritage tourism and cultural spirits Lithuania tries to convey. This makes me comprehend that visual identity design requires passionate pioneering spirit; that mission of design is to explore and seek, demonstrate the prospects by a visual form, and put objective before value. Innovation is capable of solving today's problems and bettering tomorrow. Building cultural identities are for the output of culture and all-dimensional gains including economic gain.

As stated in the Lithuania State Department Of Tourism press release: *"The focus of the visual representation of the tourism brand of Lithuania is a postage stamp. The logo typeface resembles lively, growing tree branches and is contained within a pastel mint symbol of a postage stamp."* (Lithuania State Department of Tourism, 2017)



Figure 16 . Visual identities of the Lithuanian tourism industry. Screen capture from: www.lithuania.travel

Visual identity is a double-way communication between “the designed objects” and targeted groups of people. Brands can tell people its cultures and characteristics or a narrative story by

visual identity. People are also able to feel positive influences from it and find and accept their own pursuits. If all of these are met, the communication can be successful. Apart from inheriting the aim of the designed object, visual identity also needs to have inimitable symbols and bright personalities, as well as to consider whether people of different backgrounds or from different countries accept it, so as to avoid disputes or misunderstandings.

The London Olympic Logo 2012

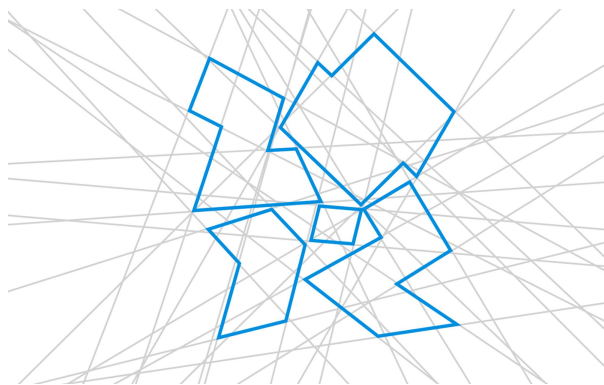


Figure 17. London 2012 Olympics Logo (sketch). Adopted from: Wolffolins.com,



Figure 18. London 2012 Olympic Logo. Adopted from: itsnicethat.com, 2018

The London Olympic Logo 2012 is the work of renowned British design team Wolff Olins. The logo gives people a drastic visual impact. But the clear acute edge and bright color had been controversial. The Wolff Olins team said that they defined the brand concept as unprecedented, aiming at breaking Olympic modes and encouraging people to show themselves in many ways(Wolffolins.com, 2019).

What Wolff Olins team initially wanted to express was the combination of “2012, London and Olympic Rings”. It nevertheless provoked controversy. Iranian Government claimed that the country would boycott the Summer Olympics 2012 if the logo looks like the Zion, according to BBC news. Because Zion is a term of the Bible of Jerusalem(BBC, 2011).

This dispute warns us of the importance of preventing cognitive impairment of cultural difference. This is especially important for the design of visual identity.

Part 2) Travel Applications



Tripoto: Travel Community, Plan Trips & Holidays

Version 2.19.7

Tripoto is an existing application in the mobile app marketplace and is a community of travel bloggers(Tripoto, n.d.).

The features of the Tripoto application include:

- explore the travel guide;
- get detailed information about the destination;
- create a travel blog to share travel stories and record itineraries ;
- discover the hotels;
- discover travel packages with the best deals from offline and online travel agencies;
- maps.

In the researcher's opinion, the highlights of the Tripoto application are its Tour Packages, and its activity content of the interface presents as a horizontal scroll.

The horizontal scroll interface is typical user-centered interface design. The activity sections of the main activity page of both Tripoto's web application(see Figure 19) and mobile application(see Figure 20) are scrolls horizontally.

If there is too much content in the activity section, it can be scrolled horizontally, which can reduce the space of the interface to present other content. Besides, it can also easily to separate a text into multiple paragraphs what made the user read in reasonably.

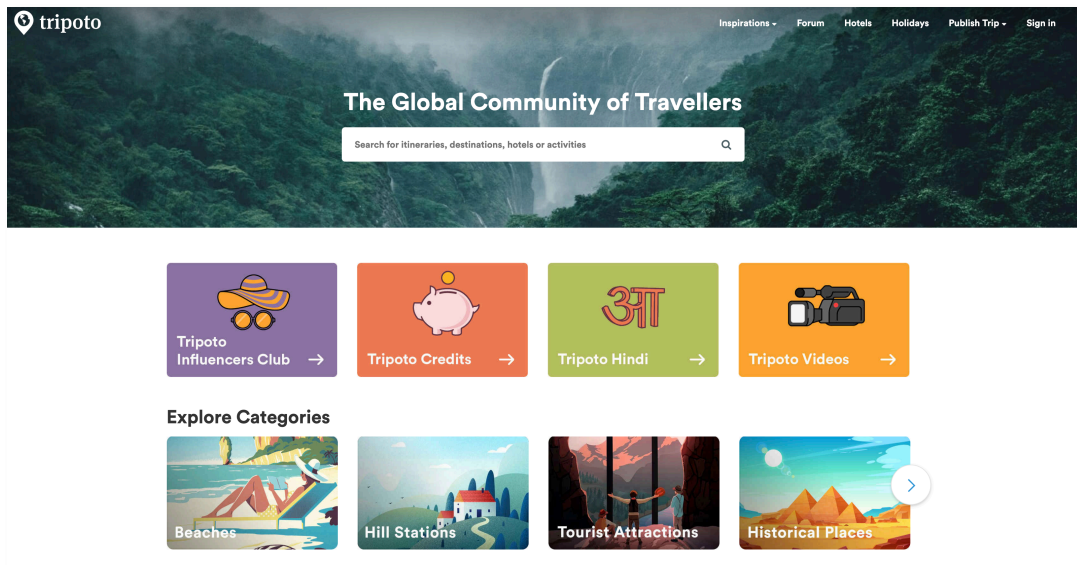


Figure 19. Screen capture of Tripoto web application home page. Adopted from: tripoto.com(n.d.)

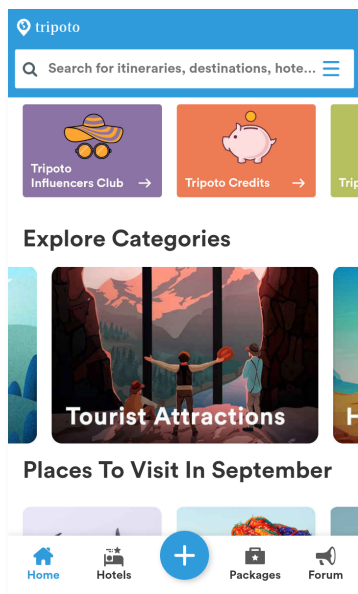


Figure 20. A screenshot of the Tripoto mobile application main activity page.

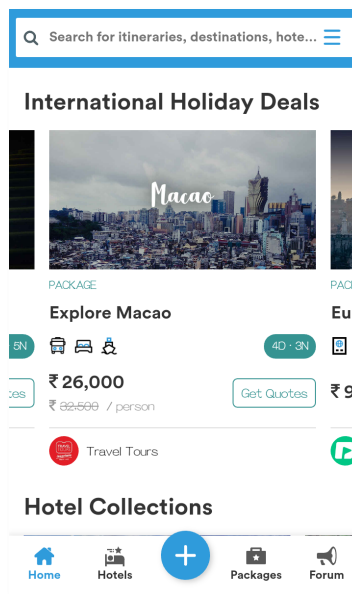


Figure 21. A screenshot of the Tripoto mobile application, Tour Packages

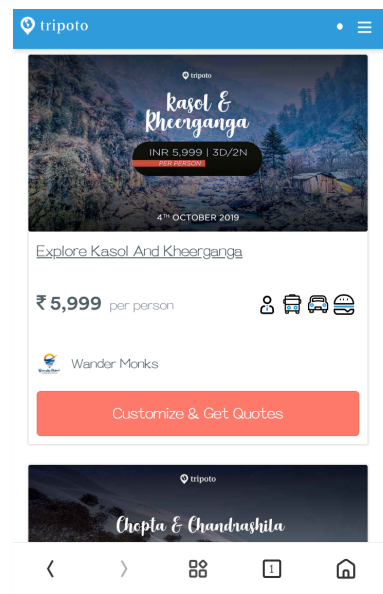


Figure 22. A screenshot of the Tripoto mobile application, Tour Packages-Custom quotes

Tripoto's travel packages(see Figure 21.) work with both online and offline travel agents to give the app a strong competitive advantage in the travel app market while also providing users with great convenience. The users can get custom quotes from multiple vacation package providers, and they can also customize the vacation to their preference(Tripoto, n.d.) (see Figure 22.).



Travello - Connect & Explore

Discover Experiences

Version 5.0

The Travello app, as a social network for travelers , focuses on exploring destinations and connecting with other travelers. The brainchild of two avid travelers, Ryan, and Mark(Travello App, n.d.).

The objectives of the application are :

“Travello aims to simply make traveling easier and to help travelers connect. Hopefully, you’ll make some lifelong friends along the way.”(Travello App, n.d.).

The highlights of the Travello application is the Community. Find someone nearby and start chatting while traveling through the app, which is good news and solution for those who are afraid of being alone on their journey. As mentioned in Chapter 3, the design is to solve "wicked" problems.

Exploring destinations, booking hotels, restaurants, selling air/train tickets, and maps are basic features that almost all travel apps can provide to meet users' basic needs. The community section is a viable solution to solve complex user problems and to meet the personal interests of different users.

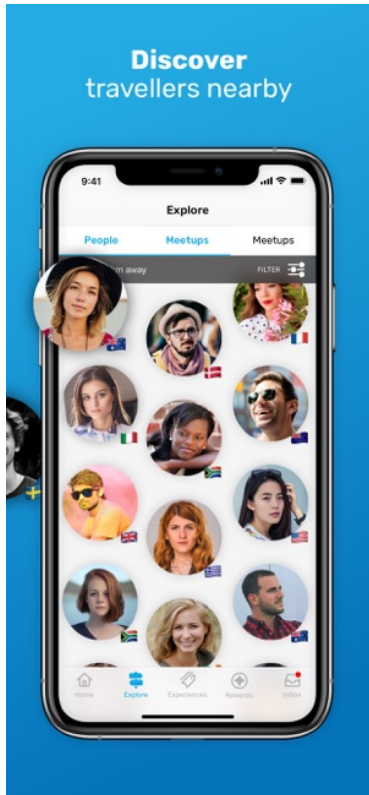


Figure 23. Travello mobile application community section. Adopted from: Travello App, (n.d.)



Figure 24. Travello mobile application messaging page, Adopted from: Travello App, (n.d.)



Figure 25. Travello mobile application "sharing moments" page. Adopted from: Travello App, (n.d.)

The community section of the Travello app categorizes travelers, photographers, backpackers, solo travelers, and more. It is easier for users to find peers who share their interests.

The researcher believes that the overall goal of the community section of the app is to ease travelers' loneliness during the trip by allowing users to add and chat with other nearby travelers(see Figure 23) and may develop into close friendships(see Figure 24). Make a trip with like-minded travelers and leave meaningful moments through the app(travel stories)(see Figure 25).



Rome2rio

Version 2.1.15

Rome2rio is a global reach platform and online multimodal travel search engine that founded in 2010, Melbourne, Australia(Rome2rio,2019).

It is a travel guide that allows users to get to and from anywhere in the world. The goal of the Rome2rio app is to show itinerary information where possible, to help users plan their trips more easily(ibid.).

The official explanation of how the app works are:

"Rome2rio searches any city, town, landmark, attraction or address across the globe with thousands of multi-modal routes to easily get you from A to B."(ibid.)

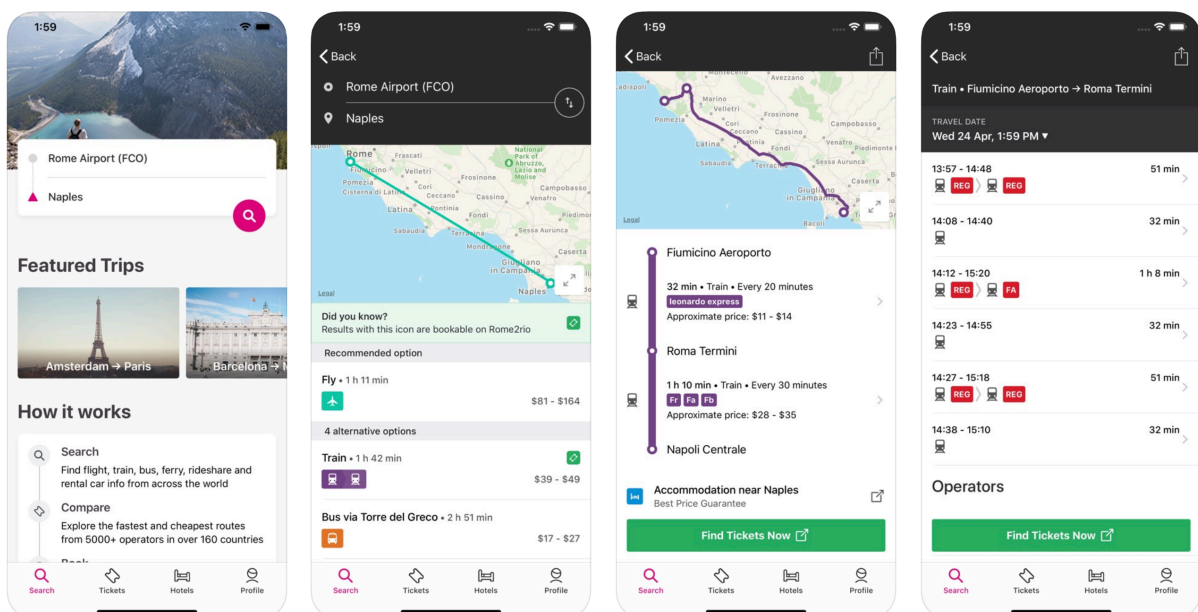


Figure 26. Screenshots of the main activity pages of the Rome2rio app. Adopted from: App Store Preview, (2019)

The Rome2rio app enables a hybrid search. Users input an address, the name of the town, or a landmark as the origin and destination, the app will automatically search the database of flights, trains, buses, ferries, and routes. The map also presents the alternative for each route, and clicking on any option can provide more details information, and clearly show the price of all route options. In addition to route options and a navigation service with the help of a Google map, the application also provides a hotel reservation service(see Figure 26). It meets all the basic needs of users.

Through the study of these cases, we know that in this era of information explosion and the prevalence of the mobile Internet, tourists will have three most obvious basic needs during the journey:

- 1- Travelers usually conduct detailed research on the destinations before they visit, such as local specialties, destination details, etc. It requires that the design of the travel application must be localized, thus to gain the user's favor.
- 2- Mobile internet is one of the characteristics of the Internet era. Therefore, from meeting the basic needs of users to satisfying users' interests and hobbies, travel mobile applications are required to solve all user problems as much as possible.
- 3- In this social network era, people are making new friends through a variety of apps. A mobile app would be satisfied users if it helps users make new friends during their trips.

The project proposal intends to incorporate the studied horizontal scrolling interface, itinerary packages, help users make new friends while traveling, and route navigation into the design of Elvas cultural heritage tourism application.

Chapter 4. Proposal: Digital Application For Elvas Cultural Heritage Tourism

Section 4.1. The public target audience for Elvas cultural heritage tourism application

Elvas town is rich in cultural heritage. Under the contradiction between developing the economy and protecting the pluralistic culture, the promotion of cultural heritage tourism will become a neutral or win-win situation. As mentioned earlier(mentioned in Chapter 2), the number of local tourists has increased by 300% since UNESCO designated the garrison border town of Elvas and its fortifications as a World Heritage Site in 2012. Cultural heritage tourism has become an important part of the city's economic development.

With the rapid development of local cultural heritage tourism, it has also directly promoted the development of various tourism projects.

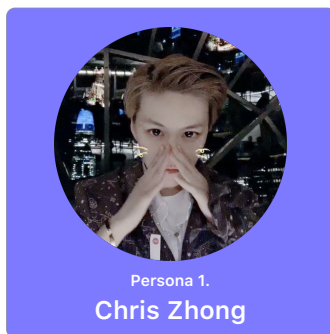
According to the 2015 World Tourism Organization Tourism and Culture Survey, 40% of international visitors are considered “cultural visitors” (UNWTO, n.d.). And take the United States as an example, according to a recent study by the U.S. Office of Travel and Tourism, cultural heritage tourists accounted for 71.2% of all overseas visitors since 2004(Foresite Consulting LLC, 2019). This data shows that the rapid expansion of travelers seeking cultural experiences has helped heritage tourism become one of the leading motivations for people to travel (mentioned in Chapter 2).

Based on these survey characteristics, the target audience for this application is international tourists and cultural heritage enthusiasts.

Section 4.1.2 Build personas

To create a more personalized application, the project researcher interviewed two groups of people with different identities to understand their respective needs for cultural heritage tourism application.

Below are two different personas, who are the target audience of this cultural heritage tourism application. They both like to explore different regions and cultures. They represent young and middle-aged people and have different needs and goals. The creation of characters is aiming to create an effective interaction and ideal application for potential users.



Occupation: Visual designer & UI designer

Age: 28

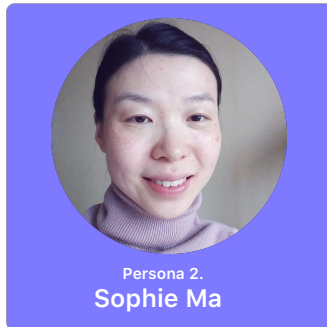
Location: Peking, China

Chris Zhong is a professional Visual designer & UI designer. Graduated from Royal Melbourne Institute of Technology, RMIT, Australia, and now working in Peking. She is a cultural tourism fanatic. She travels to different countries every year to explore different regional cultures. Collect cultural inspiration from different countries and communicate with the local to obtain user research data. World cultural heritage sites are her must-see destinations.

She doesn't want to download multiple apps for every region during the trip. As a professional UI designer, she would delve into each application. When she tries out an app, she has some requirements for the aesthetics and interaction of the interface.

She hopes each city to have a specific travel app that includes city destinations and restaurant searches, hotel reservations, preferably with reviews and filtering features, which can save a lot of time to make choices.

Search and navigation capabilities are essential for travel apps. She agrees that a travel app should have its own navigation, rather than blindly using well-known navigation such as Google Navigation or Autonavi navigation. Besides, augmented reality navigation is no longer new, but novel designs can still make it more interesting.



Occupation: Post-doctoral researcher in Economics at Université d'Evry-Val-d'Essonne

Age: 37

Location: Évry, France

“The development of cultural heritage tourism can promote the development of the economy, increase the employment rate, especially the demand for the service industry.” — Ma

Ma is currently a post-doctoral researcher at Université d'Evry-Val-d'Essonne. She is a cultural heritage travel enthusiast who travels around the world to visit cultural heritage and museums.

She often does a lot of preparation and planning before traveling and spends money to hire a local guide to guide her and introduce her to the history of cultural heritage.

If she travels somewhere and has a specific application as a helpful guide, it will bring great convenience to travel. As for the requirements of the application, she hopes that in addition to navigation, it should also make a simple historical introduction to cultural heritage and make heritage tourism more meaningful. Also, view the weather information for the destination over the app may help prepare for the items she needs to travel.

Besides, mobile payments have become very popular. It would be more convenient to be able to purchase and pay for everything on the app during the travel.

Section 4.2 Objectives

The general goal is to promote Elvas's cultural heritage tourism by creating digital applications as a specific guiding platform. Allow users to easily find cultural heritage destinations and get all the relevant information they need and integrate augmented reality(AR) navigation to enhancing the user experience through the application.

This application takes Elvas's cultural heritage visual identities as its highlight and applies these identities to augmented reality(AR) navigation, thus to convey the core cultural value of Elvas to users.

The mobile application platform is a good travel driver for local economic growth. This application aims to improve the travel experience of tourists and is an opportunity to promote local products and services. Besides, this application has an AR travel guide that will guide users to explore all famous sites in the town and provide relevant data as well as catering and leisure information, enabling users to enjoy easy access to good visual interaction and sensory experience.

An integrated tourism application platform not only helps travelers enjoy their journeys as best as they can but also enhances the popularity of local brands. This mobile application can directly collect feedback from users and provide them with timely support whenever they need, which is an effective way to avoid negative publicity. Furthermore, it can improve user experience on the platform by monitoring user comments or feedback.

The specific objectives of this application are to :

- Create a user account to save their itinerary list and share it with other users;
- provide a set of a visual identity for the cultural heritage of Elvas and to clearly show the heritage tourism resources of the town to travelers, thus making cultural heritage tourism more interesting and promoting local tourism in a much easier way;
- Providing dual mission navigation with Augmented Reality tour guide (which will be using the visual identities of Elvas's cultural heritage) and Google Navigation, and

offering tourists with information, maps and schedules, and even real-time route transfers.
Giving users more accurate and interesting travel guides;

- By using this travel app, users can discover places of interest; explore heritage sites, visit military museums, visit the church; discover hotels, coffee bars, and restaurants;
- Provide a quick search for attractions and famous cafes, hotels, and restaurants by typing a few letters;
- Online booking service is available that allows users to book hotel rooms and book restaurants through the app;
- Provide mobile ticketing for scenic spots. Mobile ticketing is the same as print-at-home ticketing, but the users only need to show the barcode of the ticketing on the phone instead of the physical ticketing;
- Provide one or two types of travel suggestion for tourists, either short-term (such as a two-hour trip) or long-term (such as a two-day trip);
- The AR travel guide offer "famous attractions in your area" notifications;
- Provide real-time weather forecast;
- Find nearby travel friends, can greet and communicate with each other;
- Create a community where users can comment and share their experiences.

Section 4.3. Brand identity

“A Destination Brand is a name, symbol, logo, wordmark or other graphic that both identifies and differentiates the destination; furthermore, it conveys the promise of a memorable travel experience that is uniquely associated with the destination; it also serves to consolidate and reinforce the recollection of pleasurable memories of the destination experience.” (Ritchie & Ritchie, 1998, p.17)

This application aims to build a new high-quality digital navigation platform for Elvas town cultural heritage tourism that attracts more visitors. Its brand identity(see Figure 27) strategy is designed for Elvas' cultural heritage tourism initiative. There are two directions of the expression of this brand identity:

- 1) **To express product and service:** Tourism products and services can present visually. Products and services are the most intuitive and concise expression of a brand, as well as the most primitive form of a logo. To visualize tourism product, I choose a general referent in the tourism industry, that is, location icon(also called Map pin); besides, as a part of smart service, the augmented reality (AR) tour guide is used in this application, which allows tourists to have more interactions with destinations and attractions in real-time, and makes it easier to obtain information and create a personalized travel itinerary. Its usage will maximize tourist satisfaction. To visualize the service clearly and straightforwardly, I use the navigation instruction arrow in the augmented reality tour guide. Also, this arrow is combined with the middle letter "v" of Elvas, so that the expression of "products and services" is in the center position of the entire logo. The key part of the logo is symbolized by a letter, conveying a dual meaning of town name and product service. Compared with the original image of the single location icon(map pin), the fusion of location icon and navigation indicator arrow not only makes it look more vivid but also brings a visual harmony to users.
- 2) **To express name and image:** The town name is using as a logotype, including the name that can clearly illustrate the graphic of navigation arrow; image expression is color. From the perspective of international tourists, the color purple is often associated with royalty, wealth, nobility, history and culture around the world(Shutterstock Inc, 2015;

Colormatters, 2019). In the meantime, purple is also the color most related to piety, religious faith, and repentance from sin - Elvas has an Old Cathedral - Our Lady of the Assumption Cathedral; Purple symbolizes dignity and honor - Purple Heart medal is frequently described as the oldest military award presented to American service members(ibid.) - Garrison Border Town of Elvas and its Fortifications is a World Heritage site. Therefore, purple is the primary color of this logo.

This brand identity (or app icon) design follows the design requirements of the App Icon specified in the iOS Human Interface Guide (Apple Developer, 2019)(see Figure 28).



Figure 27. The brand identity design

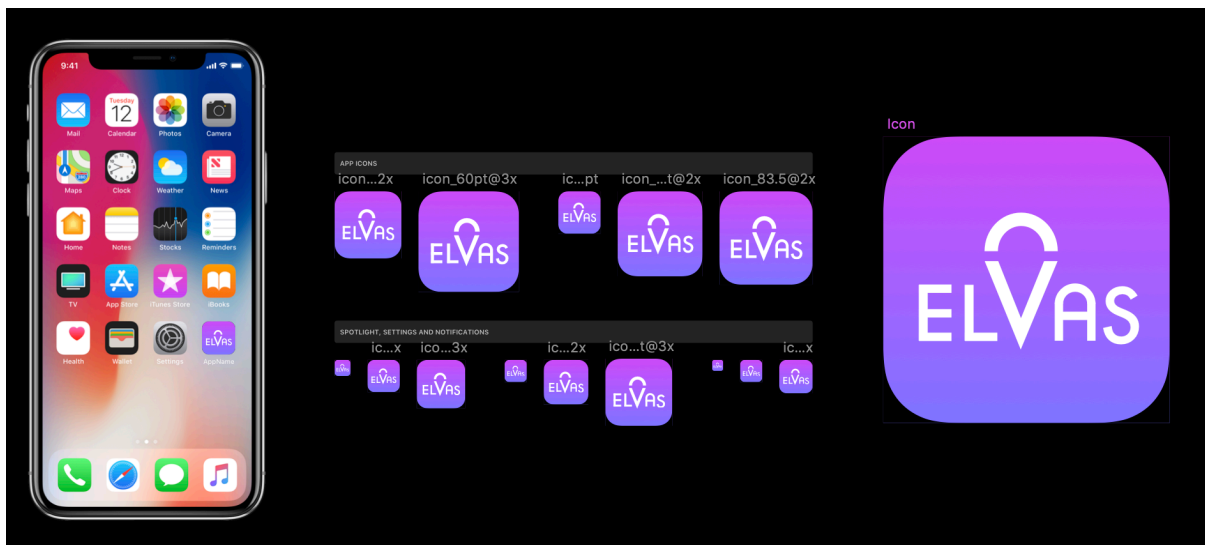


Figure 28. The brand identity and icon design.

Section 4.4. The Content

This mobile application is designed to provide clear and thoughtful service contents for Elvas cultural heritage tourism. Its fresh and distinct interface design allows users to obtain a good user experience. This application contains four areas: Elvas's famous cultural heritage destinations and entrance tickets online sales; dining and entertainment guide; maps and augmented reality navigation; and community. Besides, the real-time weather forecast is added to make travel more convenient for passengers.

This application will include the following features:

- Searching feature(search for hotels, restaurants, destinations, etc.);
- Seven top heritage destinations in Elvas;
- Dining and entertainment guide(restaurants, bars, and hotels);
- Filter function;
- Users can rate local attractions, cafes, and restaurants, and leave comments and shares;
- Real-time weather forecast ;
- Chat with nearby friends, socialize, real-time location, share travel experiences;
- Map navigation;
- Mobile ticketing ;
- Augmented reality outdoor recognition and navigation;
- Personal account settings.

The first main area of content besides the searching feature is ‘Top Destinations’. The seven top cultural heritage destinations of Elvas is introducing in the form of visual identity images based on a brief description of its history and authenticity. Users will get the information they need about the destination and leave comments. Besides, some heritage site requires entrance tickets that users can purchase through the app.

The second main area of content is the dining and entertainment guide, which provides users with information about Elvas's restaurants, bars, and hotel accommodations. As with all travel applications, this provides the user with the necessary rest service information. Users can use filters to select distances, star, and prices they can accept.

The third main area of content is the maps and augmented reality navigation. Travelers hoping to get approaches and techniques that are helpful, practical, and easy to understand when traveling, especially GPS enabled. When using the app, travelers can get the information they need for trips, booking services, maps, guides, and leave reviews.

The maps are integrated with augmented reality(AR) navigation and Google Navigation, offering users with distances and arrival times between base stations and target locations, and real-time route transfer.

The tool attributes of augmented reality(AR) have subverted the traditional ideas in the tourism industry, and its application in the tourism industry is worthy of further exploration and research. Users can get detailed information about cultural heritage tour in Elvas and learn about nearby attractions, accommodation, catering, and leisure activities only through AR. With AR technology and mobile internet, it helps make your trip enjoyable. Users can track navigation and positioning, information browsing, travel planning, and real-time weather conditions anytime and anywhere, which enhances the autonomy and comfort of tourism. Unlike ordinary GPS navigation, AR navigation is more intuitive and accurate, allowing walkers to know more details about their surrounding location scenes.

The last main area of content is the community. After creating and setting up a personal account, users can find nearby travelers and communicate with each other to share experiences, such as voice or video calls, photos and location sharing, real-time location, map navigation, and comments on other users' posts.

Section 4.5 Structure

This cultural heritage tourism application is designed to provide a smooth and thoughtful service process with a user-centered approach. The hierarchical structure is designed by following the iOS human interface guide (Apple Developer, 2019). Visual elements in the interface are simplified to the maximum extent possible, and all tedious operations are eliminated to minimize user workload, thus creating a useful and ideal user experience product. The structure of the application and content connections show in the scheme below (see Figure 29).

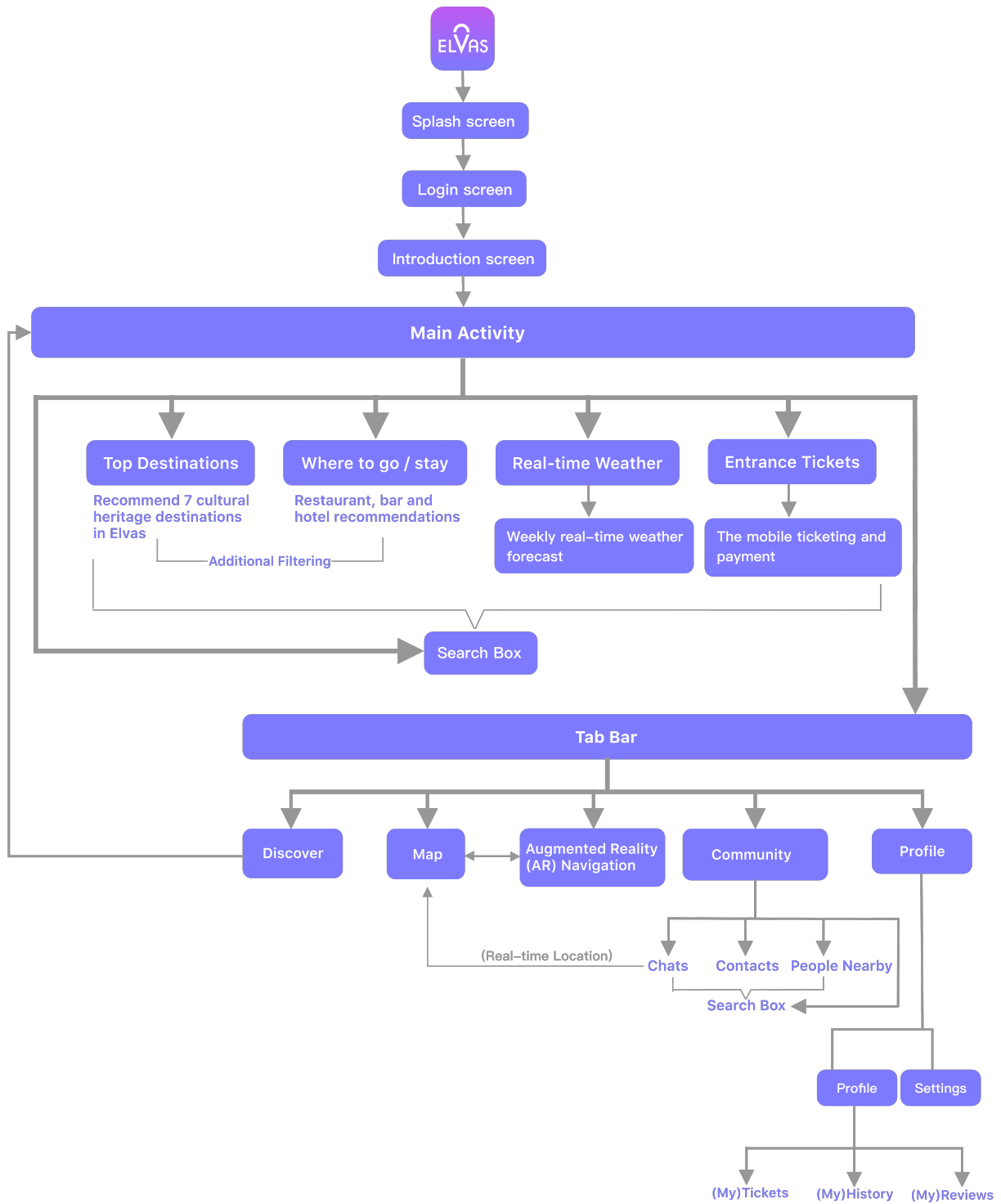


Figure 29. Application Structure

Section 4.6 Design Style and Interaction Design characteristics

Section 4.6.1 Design Style

System Colors

The color palette consists of two main colors: purple and indigo blue.

As a cultural heritage tourism application, mainly highlighting cultural elements, so the primary color preferred purple; indigo blue is the accent color. As blue is more of a travel color and a favorite color for most apps, indigo blue is between purple and blue, and it can go well with purple.

For semantic colors, such as the green color of the cafe rest area, the activity icons such as AR-directed arrows use blue, and like the case study of Lithuania-Sufficient Postage, which uses yellow for dining(restaurants); Maps and communities use colors such as green and red that have a common semantic representation when necessary. And neutral colors use the general semantically defined system colors for UI elements- black and white(Apple Developer, 2019).

According to the iOS Human Interface Guidelines(Apple Developer, 2019), the choice and use of colors follow easy-to-recognize, harmonious color blocks, easy-to-use buttons, and a comfortable environment(ibid).

The system colors of the application shown in the scheme below(see Figure 30).

SYSTEM COLORS



Figure 30. System Colors of the application

Typography (Font style)

Text is an important part of the interface, which conveys a lot of micro information. In the user interface design of this application, the font adopted the system typeface in iOS. 'San Francisco (SF)'(see Figure 31), and will keep using a single typeface. The font 'SF Pro text' avoids text causing visual fatigue and dyslexia(Apple Developer, 2019).



Figure 31. Typography, adopted from: Apple Developer, 2019

Iconography (Custom icon)

Users usually learn about the classification of information and the icons in the operation interface through different shapes and colors. Instead of using the IOS system icons, custom bitmap icons can be created to meet the needs of the interface design.

The role of icons in the user interface not only performs their main functions but also conveys brand attributes. The augmented reality navigation button in the TAB bar of this app is a vector icon combining the concepts of 'fortress' and 'lens' of Elvas(see Figure 32).

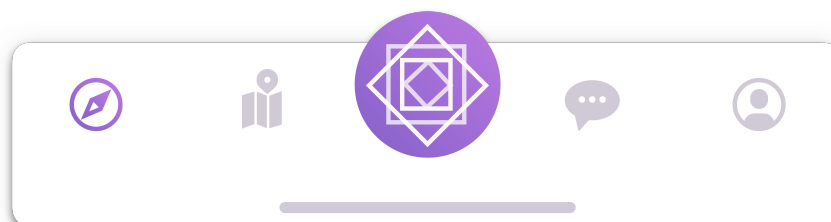


Figure 32. Augmented reality icon in the tab bar

Visual identity design of Elvas' cultural heritage

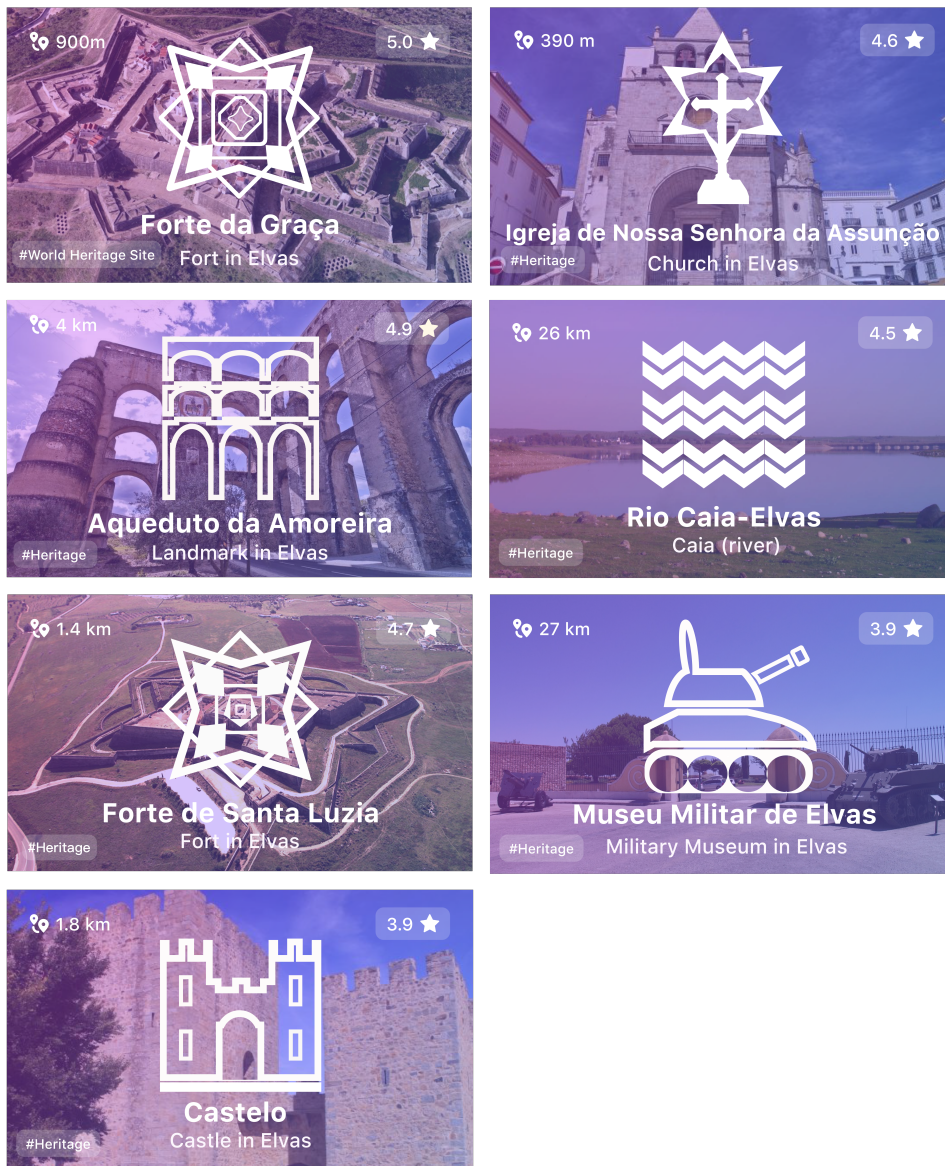


Figure 33. Visual identity design of Elvas' cultural heritage

As a town with numerous cultural heritage and world-class cultural heritage site, to create cultural heritage tourism application for Elvas, the visual identity design strategy and concept is defined as 'Heritage come Alive'.

Figure 33 shows a group of visual identity design for seven famous cultural heritages of Elvas. The design abstracted and vectorized concerning the original appearance of the cultural heritage, following the principles of recognizable, memorable and use familiar visual

metaphors which can directly relate to the actions they initiate or content they reveal, and while keeping it as consistent as possible (Apple Developer, 2019). And it acts as a set of cultural heritage destination icon in Elvas cultural heritage travel application.

As mentioned in Section 2.2, cultural heritage is the carrier of the expression of the history and culture of a nation/region and has its value. Designing a set of visual identity for Elvas' cultural heritage is like a case study of the late German designer Otl Aicher who divided the Isny im Allgäu Town into 120 visual identity images to communicate the core cultural value of the town.

This application uses the visual identity images of cultural heritage in Elvas to promote the local culture, spirit, and history to the world to discover and communicate the uniqueness and superiority of Elvas.

Furthermore, it can raise people's awareness and interest in cultural heritage, thus improving or solving the problem that travel apps for cultural heritage sites makes people feel dull and bored.

Section 4.6.2 Interaction Design Characteristics

The application interface design is based on the "IOS Human Interface Guidelines(Apple Developer, 2019)" and is designed to create good interaction and user experience design. To achieve a consistent look and feel, and to be well adapted to any IOS device, this application is built using UIKit components.

The purpose of the application is to make it easy for people to find cultural heritage destinations and to gain the core cultural values of the town through the visual design of cultural heritage; find suitable restaurants, bars, and hotels according to individual requirements; help people quickly view destination information and integrate augmented reality navigation to help to improve the user experience.

The visual design of Splash screen, Login page, and Onboarding page

The operating system or application code always has some loading tasks to do before the user can start tapping buttons and navigating screens. The key image of brand identity needs to be loaded from the server before the first screen appears, which is the splash screen. The splash screen will not take more than 3 seconds, and then immediately enter the login page(see Figure 34). Users can log in with Touch ID or other accounts(Google and Facebook).

The Onboarding page(see Figure 35) is after the new user logs in and before entering the main activity page. In a flash of a few seconds, publish an introduction to inform the users that the application includes augmented reality navigation.

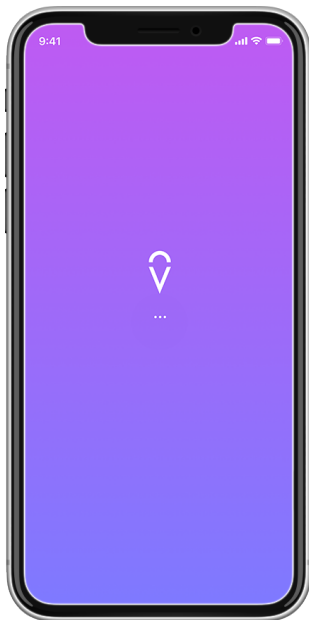


Figure 34. Visual identity design of Splash screen and Login page

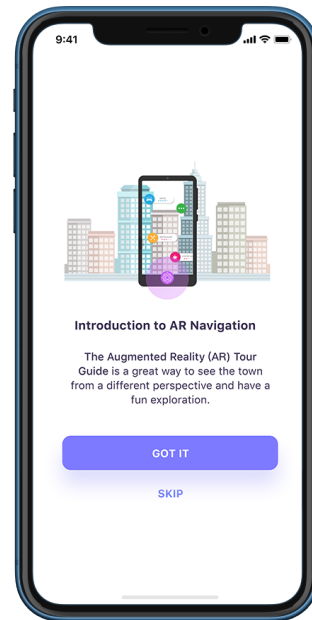
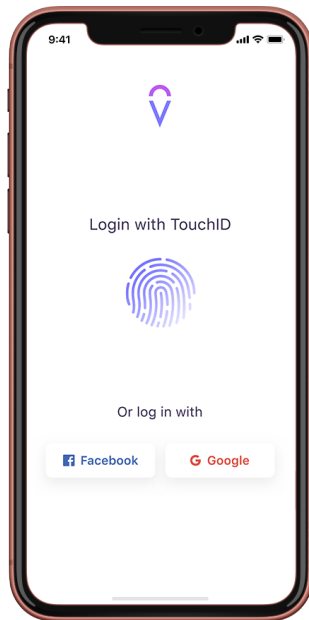


Figure 35. The Onboarding page

Main Activity User Interface Design

The main activity interface design(see Figure 36) encompasses all the activities in the application: page includes a search bar; cultural heritage destination recommendations; restaurants, bars, and hotel recommendation; real-time weather updates; and ticket sales.

The tab bar provided augmented reality navigation, maps, communities, and profiles. Pages and collection of images can be scrolled horizontally and vertically, allowing users to browse content that is larger than the visible area.

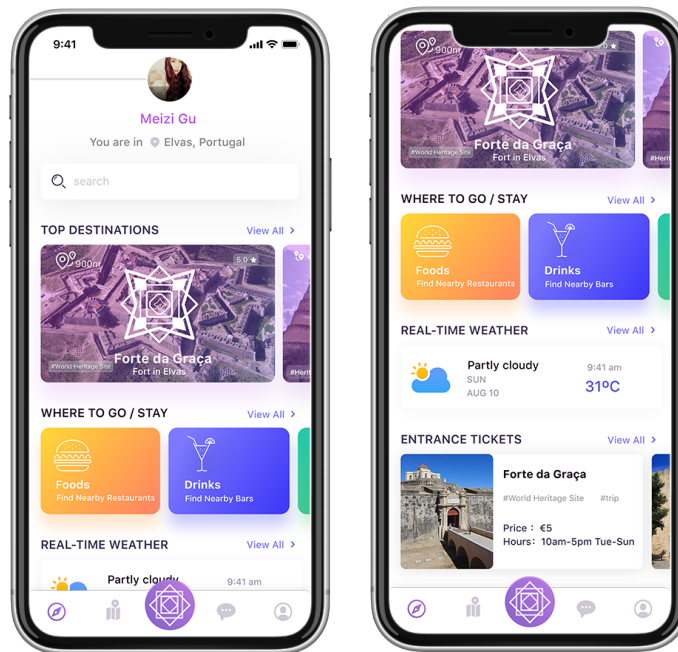
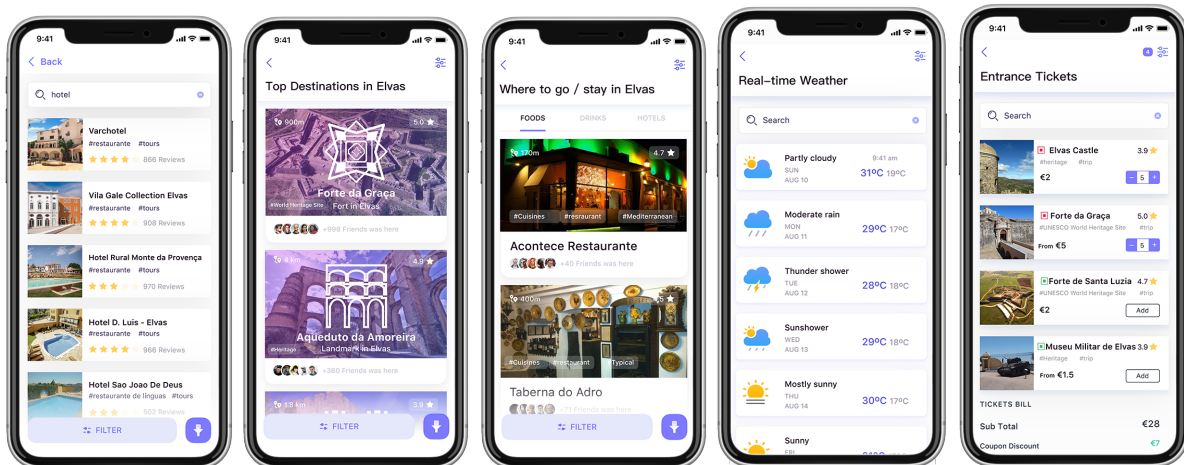


Figure 36. The visual design of main activity interface

Flow chart of each activity section



- Figure 37. The visual design of the search results interface
- Figure 38. The visual design of top destinations interface
- Figure 39. The visual design of the dining and accommodation area interface
- Figure 40. The visual design of weather forecast interface
- Figure 41. The visual design of mobile ticketing

Augmented Reality Navigation Interface Design

ARKit is Apple's augmented reality (AR) technology, its connection between the real world and the virtual world must assume by a medium (Apple developer, 2019), allowing users to identify specific icons on their phones. This application design added a simple augmented reality(see Figure 42), adopted the visual identities of Elvas' cultural heritage and other common icons(such as cafes, restaurants, and hotels). Its capabilities primarily to navigation, besides, if the user clicks on the icon, they can also view the details of the target location.



Figure 42. The visual design of AR Navigation interface

Community Interface Design

The app design has a community section(see Figure 43). During the investigation of user requirements, some users made it clear that they did not want to travel alone and hoped to get acquainted with other travelers. So that the researcher on the interface design has carried on the innovation: the chat list takes precedence over new messages; the contact list integrates the friends' name ranking in order and has a list of starred contacts; and the "people nearby" list has been added to meet users' need to chat with more new friends through the community.

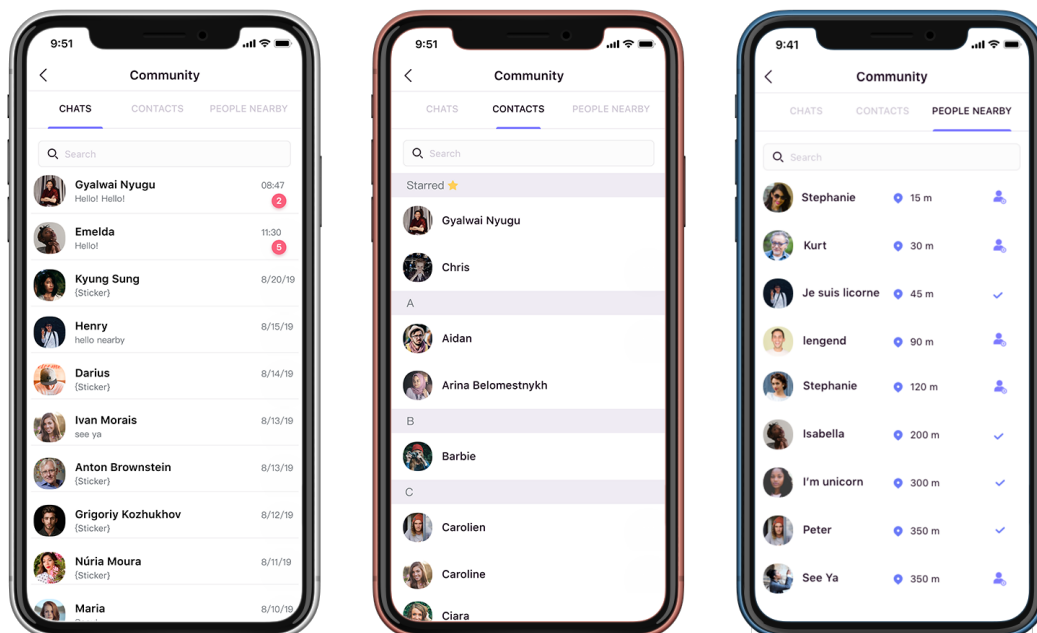


Figure 43. The visual design of Community interface

Messaging and Map Interface Design

The messaging interface(see Figure 44) is designed to send emoji, voice, audio and video chat, picture and attachment transfer, camera, and send user current location information. The "real-time location" function design(see Figure 45) is a case study of real-time location function in the *WeChat App*.



Figure 44. The visual design of Messaging interface

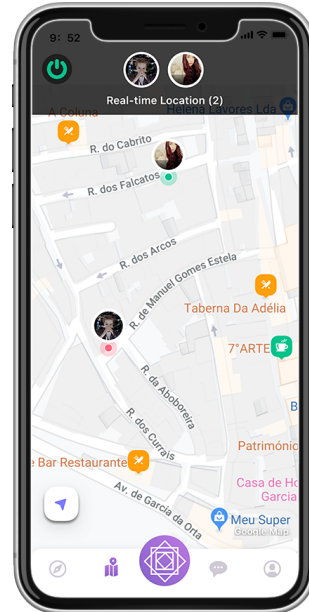
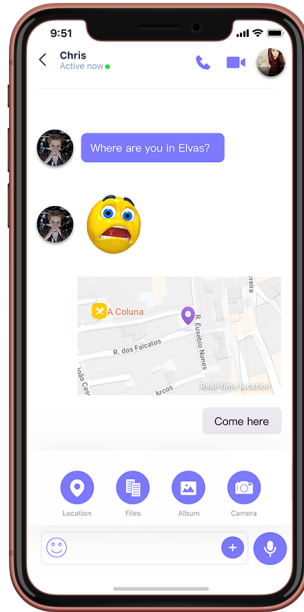


Figure 45. The visual design of Real-time Location

Profile User Interface Design

The content of the profile page(see Figure 46) includes the user's purchase of tickets and usage; records where the user has been, and the comment area. The Setting interface(see Figure 47) is where users can give feedback and logout.

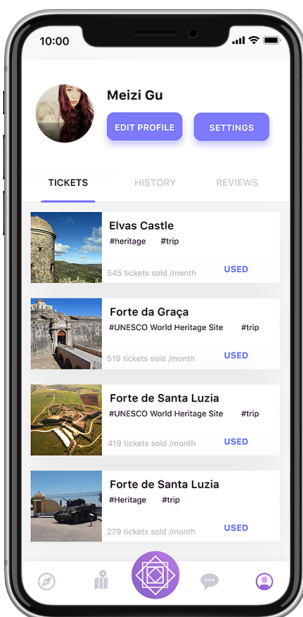


Figure 46. The visual design of Profile page

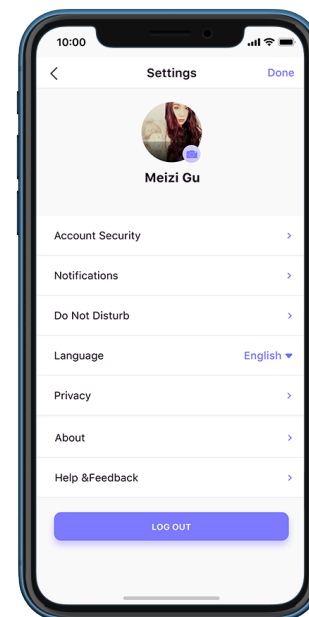
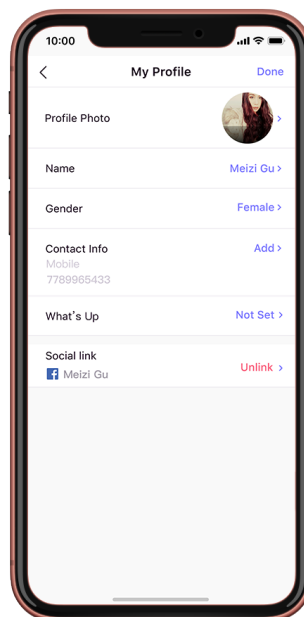


Figure 47. The visual design of Setting page

Section 4.7 Discussion

The design process of this prototype is based on the '*About face, the essentials of interaction design*(2014)' by Cooper et al. The basic design outline is as follows:

- 1) *Qualitative Research*: Questionnaires and interviews were conducted on customers who may use the product;
- 2) *Personas*: It refers to typical users of the product. The researcher made interviews with cultural tour lovers and design experts to identify their needs and purposes; the template - 'I like, I wish, what if' was applied throughout these interviews;
- 3) *Problem Scenario*: By thoroughly understanding personas through questionnaires and interviews, the researcher hypothesized some problems that they might encounter while using the product, and sorted into a short story;
- 4) *Action Scenario*: Based on the previous step - Problem Scenario, the researcher figured out some solutions to the problems faced by personas during use, and also assumed possible details that might occur when personas tried out the prototype. Then, a conceptual model was created;
- 5) *Framework*: A draft or wireframe was built by converting a conceptual model in the 'Action Scenario' into a visual model;
- 6) *Prototype*: It is an activity associated with extensive tests and refinements;
- 7) *Expert Evaluation*: The researcher adopted heuristic evaluation to examine the designed interface. The more common standard of this method is Nielsen Heuristic. (See 3.2.2 for details)

In a heuristic evaluation, it includes a set of guiding principles for interaction design, and its primary principle is to identify usability issues for a smoother experience based on users and their needs;

Since it is a visual prototype design, some principles had not yet been used.

According to Cooper et al. (2014), at least two professional designers or people who are familiar with interaction design went over multiple tests to find problems. The researcher then made some modifications after receiving the feedback.

8) *User Evaluation*: invited personas to test the prototype, and made further modifications according to the problems and feedback during their use.

Improvement Solutions: In fact, the interactive prototype is a continuous process of iteration. Any app on the market needs to be ‘updated’ regularly. As interaction design is all about users, their feedback is key to making the product more humanized. Therefore, every app has experienced repetitive modifications, and design is the process of ‘discovering problems’ and ‘solving problems’.

Section4.7.1. Results

The user interfaces(UI) design of Elvas cultural heritage travel app has received satisfactory results after undergoing multiple tests. In this app, it maintains consistency in both style and color palette throughout the entire UI design, with reasonable text and illustrations for a clear layout. Therefore, it delivers the best possible experience that can meet the different needs of users. This application design can accurately restore the interactive process with users.

However, there is still room for improvement in the interface design, which needs to further strengthen in many details. Besides, efforts should be made to acquire a broader understanding of the norms of the iOS operating system.

CHAPTER 5. Conclusions

5.1. General conclusions

Elvas is a small town with rich historical sites. Its particularity lies in its famous military defensive fortifications. In this case, the main cultural connotation of Elvas lies in its history: its military heritage once played a major role in defending against incursions during the battles, which was its core value at that time.

Compared with the past, changes have taken place in the values of cultural heritage. Because cultural heritage and Elvas have both generality and individuality: the core cultural value of Elvas is its cultural heritage. There is no cultural heritage without history. Cultural heritage represents the history of Elvas and carries the culture and spirit of the past. However, Elvas is a town developing in modern society. Only when we have better developed Elvas can its cultural heritage be given full play today.

Therefore, the value of Elvas's cultural heritage today is to create benefits for the city based on its own merits. In other words, the value of cultural heritage in modern times is to push forward the development of the city or region and bring more benefits.

Since the Garrison border town of Elvas and its Fortifications became World Cultural Heritage Sites, it has naturally drawn attention to this new world-class historical site. A significant increase in the number of visitors attracted to Elvas has enabled the town to seize the opportunity to improve its economy by developing tourism projects. National Trust for Historic Preservation(2019) has proposed five principles for sustainable cultural heritage tourism, one of which is to: *'Make Sites / Programs Come Alive'*. In response, the project is a mobile application design for the Elvas Cultural Heritage Tourism.

The content of this mobile app includes the visual identity design of Elvas' cultural heritage, which can quickly help to convey the core cultural value of Elvas through vision; and besides, to provide better user experience, interaction and UX designs prevail in this mobile app. Augmented reality makes navigation more convenient.

Designing a set of visual identity for Elvas' cultural heritage and developing a mobile application for cultural heritage tourism is a combination of historical and modern notions. Information technology has played a more active role in the cultural heritage tourism of Elvas.

5.2. Specific conclusions

This report provides a comprehensive introduction to the visual design of the Elvas Cultural Heritage Travel App and gives a detailed explanation of the whole process from preliminary investigation to project implementation, as well as the design details of the interface. Through this research project, the researcher obtained and summarized the following conclusions:

- By learning and practice of designing the Elvas cultural heritage travel app, the researcher has come to know that user-centered design has a great significance in product development. So, user factors should be taken into account in every step when developing a product.
- In the process of prototype design, the researcher tried to summarize the design process and methods of travel apps. In the design process of travel apps, the first step is to conduct in-depth user research. For app design, the starting point of any information and visual design must base on the needs of users. Therefore, it is important to define the target audience and carry out extensive user research in the early stage of design.
- The project design process of "Strategy - Scope - Structure - Framework - Visual" must be adhered. There is one thing to keep in mind while designing an application: it is the user — not the app — to control the iOS operating system(Apple Developer, 2019). Considering the usage habits of different iOS users, highly adaptive and interactive design prevails in the whole layout. A large amount of information is presented in a clear structure, making sure that the application information appears funny yet serious. Also, it makes users less confusing while reading a large amount of information, and improves the efficiency of information conversion to create a more friendly user-centered application.

5.3. Limitations

The limitations of the design project are as follows:

1) The design theory and methods of this mobile app interface design are base on the IOS Human Interface Guidelines(Apple developer.2019), with the commitment to providing a good experience for iOS platform users. Its interface, structure, and process are different from the Android platform.

The iOS Human Interface Guidelines recommend placing global navigation in the tab bar. The tab bar appears at the bottom of the app page for quick switching between sections of the app, without standard navigation control like a navigation drawer in Android system.

As a result, the platform may fail to meet the usage habits of Android users.

2) Due to limited user resources, conducting extensive research is not available.

3) Technology is constantly changing and advancing, and design is a field that needs continuous learning. The researcher has recognized skills deficiency during the research process of this project. There are many deficiencies in the interface design of the app that needs to be improved, especially on how to achieve product intelligence, which is worth to be further explored. There is still more to learn in the field of design.

5.4. Recommendations for future work

The value of Elvas' cultural heritage is something belonging to the category of culture. Therefore, we should explore this subject from the perspective of “cultural significance” and get a deeper understanding of the core cultural value of the town. To this end, the researcher should develop ideas and expand related knowledge in this field so that a more extensive investigation can be conducted.

In the context of modern development and economic globalization, there is an increasing tendency today to develop mobile apps in many tourism projects. The researcher hopes to pursue further study in the field of design, to promote cultural heritage by the use of new technologies in the future. What's more, inheritance and core value in the cultural heritage can be better integrated with the modern development, thus boosting the local economic growth, improving the awareness and measures for the protection of cultural heritage, and pushing forward the development of tourism industry at all levels.

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Annex A.

The survey is part of the scientific report that integrates into the Master of Tourism and Cultural Communication Design at the University of Algarve. The researcher used the user survey template from INTERACTION DESIGN FOUNDATION(Interaction-design.org, 2019), which is a structured way of “*I Like, I Wish, What If*” to organize the feedback gathered from the test session.

“I Like, I Wish, What If” Template		
I Like	I Wish	What If
I like to travel;	I wish each city to have a specific travel app that includes city destinations and restaurant searches, hotel reservations.	What if a travel app has its own navigation, rather than using well-known navigation such as Google Navigation or Autonavi navigation.
I like to explore different cultures;	I wish the options have filtering capabilities.	Augmented reality navigation is cool
I like the simple, good looking application interface;		
I like the travel app with navigation.		

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“I Like, I Wish, What If” Template

I Like	I Wish	What If
<p>To travel around the world</p> <p>To visit cultural heritage and museums</p> <p>Heritage tourism</p> <p>World heritage destinations</p> <p>To travel with guidance</p>	<p>I wish that when I travel somewhere, there is a specific travel app as a digital guide, which will bring great convenience.</p> <p>I wish that the travel app can give a brief introduction to the destination.</p> <p>This travel app has local cuisine recommendations.</p> <p>To book a hotel through the app.</p> <p>This app supports mobile payments.</p>	<p>Can view the weather information</p>



INTERACTION DESIGN FOUNDATION

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Annex B.


The researchers used INTERACTION DESIGN FOUNDATION's "Feedback Capture Grid" (Interaction-design.org, 2019), a structured approach to organizing feedback gathered from test sessions. After receiving feedback, the researcher modified the prototype for several times.

Likes	Criticisms
The interface looks clean.	Styles and color palettes should be consistent throughout the UI design.
Visual identities look consistent.	Keep the layout as simple as possible.
Can meet the needs of ordinary users.	There is still room for improvement in the interface design
	The augmented reality navigation interface design seems a bit cluttered.
	The visual image of the church needs to be modified.
	No serious problems, details need to be further strengthened.
Feedback Capture Grid	
Can mobile payment be paid by scanning the QR code?	Design a QR code for visitors to scan the code to download the app.
Questions	Ideas



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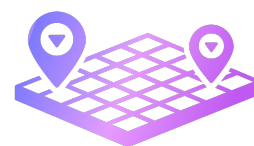
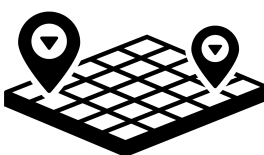
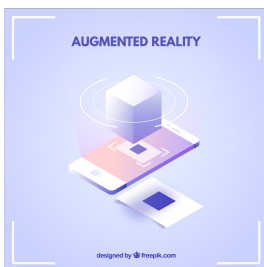
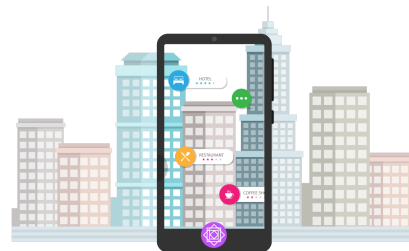
Annex C.

The illustrations used in this design project are from the design materials websites(pngtree.com; br.freepik.com) that are licensed for use. They can be downloaded, used, and modified freely. To conform to the prototype design style, the researcher modified the original images of the downloaded materials and finally used them in the prototype design. Below are the downloaded design material and modified illustrations:

Downloaded Design Materials

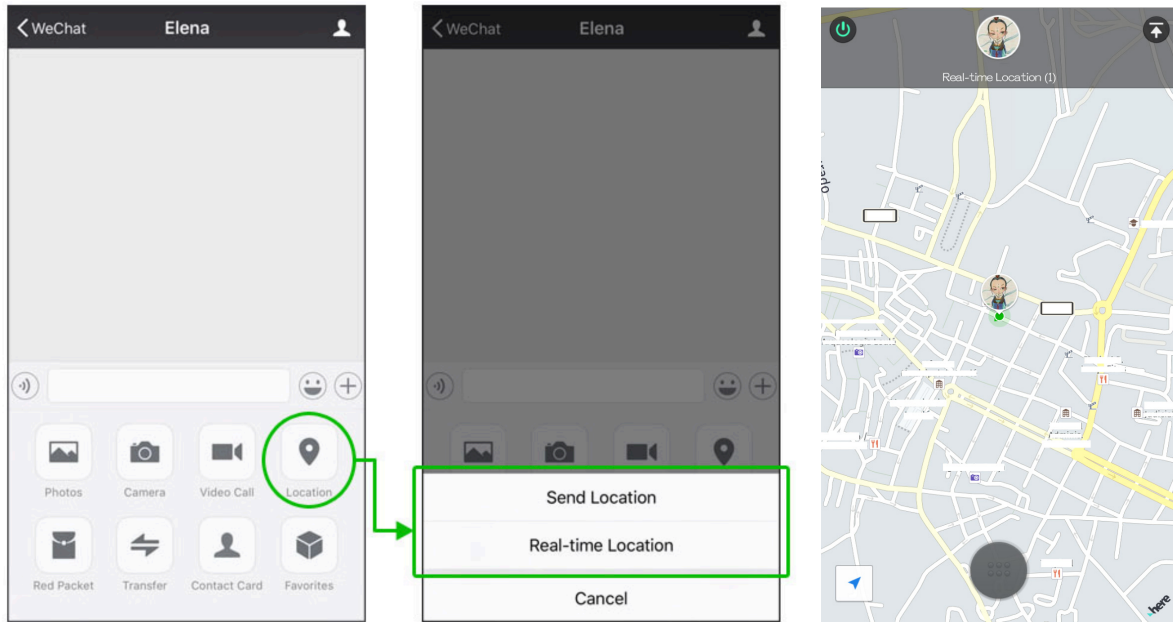


The modified illustrations



Annex D.

Real-time location Interface of Wechat App



Pictures adopted from: help.wechat.com(2019)