Topic Selection and Requirement Analysis Report

Content

1. Project Background

Data from the 8th National Census in 2021 show that 18.8% of the population is aged 60 and over, and 13.5% of the population is aged 65 and over. between 2010 and 2020, the population aged 65 and over rose by 4.63 percentage points. Compared with the previous decade, the rise has increased by 2.82 percentage points. The above data shows that the size of China´s elderly population is huge and the aging process is accelerating significantly. Nowadays, you need to use the ride code to pay for taking the subway and bus, and you need to use the health code to register in any public place. Most elderly groups are unfamiliar with the use and jumping process of smartphone APPs, which makes their daily travel very difficult and disconnected from the Internet life.

Therefore, an Elderly-oriented APP is a crucial initiative to actively respond to the aging population phenomenon. With the deepening population aging, how to bridge the digital divide of the elderly has been a hot issue of social concern. The State Council pointed out that it should encourage technology enterprises to provide "care mode" and "elder mode" of relevant applications, and emphasized that enterprises should closely follow the characteristics of the needs of the elderly, strengthen technological innovation, and provide more intelligent aging-friendly products and services. In the general environment of rapid development of the Internet and epidemic, the reliance on Internet technology for daily travel has increased significantly.

Orange APP is designed to solve the problems encountered by the elderly in their daily travel. The "elderly-oriented" product needs to consider the characteristics of the elderly in terms of physical function, psychological state, cognitive level, and other factors. Manual operation shortcut commands can realize the jumping of each function,

while the voice interaction system can also control the whole situation to further simplify the operation. Binding with trusted devices, remote assistance as a secondary backup function, real-time positioning, and one-Click alarm. The combination of real-time positioning and a one-key alarm function ensures security. The age-appropriate interface design and simplified operation process help elderly users to keep up with the pace of technological development and enjoy the convenience of the information age.

1.1 Industry Environment

Politics: National policies have encouraged and guided the elderly-oriented design of enterprises, and these measures have released the demand for elderly services, broadened the business scope of enterprises, and guided the development of the elderly-friendly design to a deeper and broader level.

Society: With the development of the times, the consumption pattern of the new generation of elderly groups is gradually changing while society urgently needs the services of elderly-oriented APP out of the consideration of the inherent physical factors of the elderly groups, and calls for enterprises to use diversified elderly-oriented to provide solutions for the elderly services.

Economy: The transformation and upgrading of the economy require individual enterprises to broaden their "holistic vision". A holistic vision is a comprehensive, systematic, and dialectical view of development trends in the process of economic development. The development of an aging-friendly design is one of the concrete results of this process.

Technology: The breakthrough of technical barriers is urgently needed for the wide

application of aging-friendly design. Software development is certainly the basis for the realization of elderly-oriented design. However, the age-appropriate design also needs to scientifically solve the difficulties caused by ordinary software to the elderly groups from medical and sociological aspects and other details.

1.2 Industry Ecology

Table1. Industry Ecology

Industry Ecology	
Strength	• Government and society encourage and promote "elderly-friendly" renovation • Lightweight design concept, scientific and authoritative UI design • Product-centered R&D mode
Weakness	• Low technical barriers to the product and the existence of substitutability of competing products • Brand image is brand new, with low visibility and user credibility • Restricted publicity channels and fixed audience groups
Opportunity	• Large space for brand and product development → Develop new functions, optimize old products, and design new products as the second growth direction to compete with peers for differentiation • High potential for product demand → provide users with solutions that are more in line with the background of the new era
Threat	• Low investment in commercial marketing and promotion compared to R&D, with a need to broaden marketing channels

	• Lack of brand image building and mutual benefit of multi-brand cooperation

2. User portrait

Taking Fujian Province as the landing point, through user research, further refining, and personalizing user labels, we get the following user portraits.

User portrait 1 (main).

- Elders aged 60 and above, with low literacy level
- Living with their children, mostly in the city, mainly rely on the use of public transport to travel
- Can travel independently, with aging body, degan raded vision and hearing, and may even have special diseases
- Have travel needs such as purchasing goods and exercising
- Most of the time travel alone, the probability of getting lost is high
- Resistant to the use of smartphones, dyslexic to software pages, and difficult to operate gestures

User profile 2 (main).

- Adults aged around 30-50 years old
- Living with elderly parents, mostly in the city, with fixed economic resources
- Honoring their parents and worrying about the safety of their travel
- Workers who work from 9 to 5

- Can´t be with parents during the working period, encourage the elderly to travel to relieve their boredom.

User Portrait 3 (secondary).

- Young people in their early to mid-20s
- Love life, minimalism; like to travel
- Safety consciousness is strong.

3. Requirement analysis

In this paper, the NABCD model is used to conduct a requirements analysis of Road Orange.

(1) Need

With the development of Internet technology and the information age, as long as one has a smartphone, one can use all kinds of travel codes, health codes, and other QR codes, which in turn facilitate people´s real life.

However, in today´s increasing aging, there are more and more elderly groups, who need an APP with more convenient operation and more barrier-free reading to guarantee their daily travel needs in the information age. To this end, Orange has introduced quick commands and voice interaction to achieve page jumping and thus complete the entire travel process.

In addition, individual elderly groups have symptoms of intermittent dementia, and thus get lost. They need to get help from their family and the police quickly. For this reason, Road Orange has also introduced functions such as remote assistance and a

one-Click alarm.

(2) Approach

-Quick command/global voice interaction to complete the travel process

-Single-threaded design travel process

-Remote assistance, you can bind the family and friends group and request the designated family and friends group members to control the phone remotely

-Fixed eye-catching position design of a key alarm button

(3) Benefit

Road Orange provides a convenient travel system for senior citizens, catering to the special needs of senior citizens and their families, allowing them to enjoy the dividends of the intelligent era and to receive timely help from their families and society when they get lost.

(4) Competitors

Autodesk is similar to Road Orange, but it has a simple interaction level, but no guide operation, complicated operation process, tight overall layout, and cold color. Both of these software is not friendly to the elderly group.

(5) Delivery

The promotion mode of Road Orange is consumption zan. The consumption in the app will be converted into consumption likes. The consumption likes can be used to exchange for travel coupons that can be used in travel consumption, which in turn attracts users to spend and improves user stickiness.

Innovative method: Cooperate with some daily necessities manufacturers and

accumulate certain consumption likes that can be exchanged for daily necessities at favorable prices.

4. Competitive product analysis

We will analyze the five elements of user experience of similar products, such as "Universal Access" and "ToDesk".

4.1 Competitor Analysis

Table2. Competitor Analysis

	Universal Access	ToDesk
Interface Design	−Lack of beauty and breathability due to tight arrangement −Use of cool colors that are visually insensitive to the elderly −Unfriendly to a small group of people who do not have literacy skills −Multi−flow task lines, which are logically confusing for the elderly	−Single way of function display and lack of intuitive information −Small font size is not conducive to the elderly to view −Complex interface hierarchy, difficult for the elderly to understand, lack of guidance
Functional design	−Lack of product promotion, low user viscosity −Functions not considered in detail, the actual use of poor results	
User Experience	Experience deviation, practicality problems are not fundamentally solved, and there is a certain risk of use	

4.2 Competitive Strategy

Table3. Competitor Strategy

Interface Design	−Use age−appropriate typography to design the user interface and interaction experience −Break the limitation of multi−threaded process of similar products, design and simplify the guideline operation to give the most comfortable user experience to the elderly user group
Functional design	−Use user−profiles and other demand analysis results to effectively address the special needs of user groups through humanized design −Designing the consumption praise mode to increase user stickiness
User Experience	−Through voice interaction and feedback with the voice assistant, users independently upload or download the dialect library and other links to make Close and effective communication between users and the product to improve user experience −From both scientific and safety aspects, to solve the practical problems of elderly travel from the root

5. Mind mapping

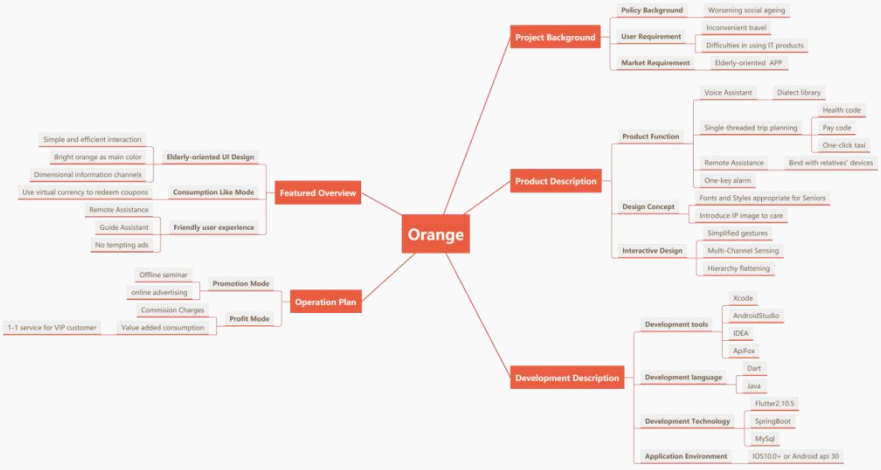

Fig1. Mind Gap

6. Function description

6.1 Login function

Login through micro signal or cell phone verification code, the verification code has a misunderstanding to jump to the login interface and prompts the verification code error, if the verification code is correct or use the WeChat binding login, then jump to the system home page. This function solves the problem of "informing and identifying" between users and the syste, so that the system can accurately retrieve the corresponding information from the background.

Interface prototype

Fig2. Login screen

6.2 Global voice assistant

It realizes the recognition of Mandarin, Sichuan and Cantonese, calls API using Baidu voice recognition technology, recognizes the voice signal converted to text to extract the command, and in the output of the corresponding voice signal. This system sets up global voice assistant to talk to users by voice throughout the whole process to

strengthen the guidance to users. Adding the form of voice interaction helps users to input voice information more easily and supports users to load their own dialect library to give users a more humanized and barrier-free using experience.

Interface prototype

Fig3. Voice Interface

6.2 Single-threaded trip planning

Navigation: The navigation function is realized through Baidu Map API, which guides users from the starting point to the destination safely and reliably.

Take public transportation: Through existing map software resources, use the location of the origin and destination to query the bus routes and provide feedback on all the accessible routes in a bus station, and display the optimal transfer routes if there are no direct routes.

Planning metro routes: Using existing map software resources, you can query metro routes using the location of your origin and destination, and get feedback on all accessible routes in a bus stop, and if there is no direct route, the best transfer route is displayed.

Taxi function: through the existing map software resources, to achieve the taxi function.

One-touch alarm function: Call the phone dialing function, jump directly to the dialing page, and manually dial the alarm number after confirmation by the user.

Show health code/trip code/payment code: Use Alipay to show the health code, trip code, and payment code by calling API.

Collection function: Collect the bus you often take, easy to find

Interface prototype

Fig4. Travel page

6.3 Remote assistance function

Bind to trusted devices (such as children), share location in real-time, and send shortcut commands for remote control.

Interface prototype

Fig5. Remote Assistance Page

6.4 Personal Functions

Record function: Transfer user information to the backend when an order is completed, update the corresponding order number and add records to the collection data table.

Friends and family group: users input corresponding data, upload user information, and input data to the backend, the backend judge whether the corresponding user has been added to the address book, and add/removes the number of contacts in the user information.

Interface prototype

Fig6. Personal home page

6.5 Points for coupons function

Each completed order users can get points, the points can be used to exchange coupons.

Interface prototype

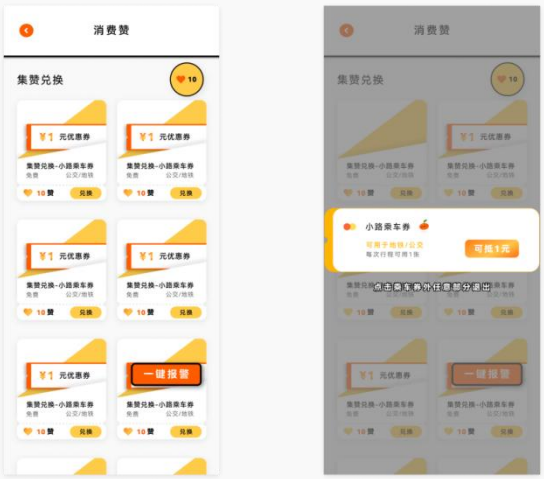

Fig7. Points page

7. Class Diagram

Log in:

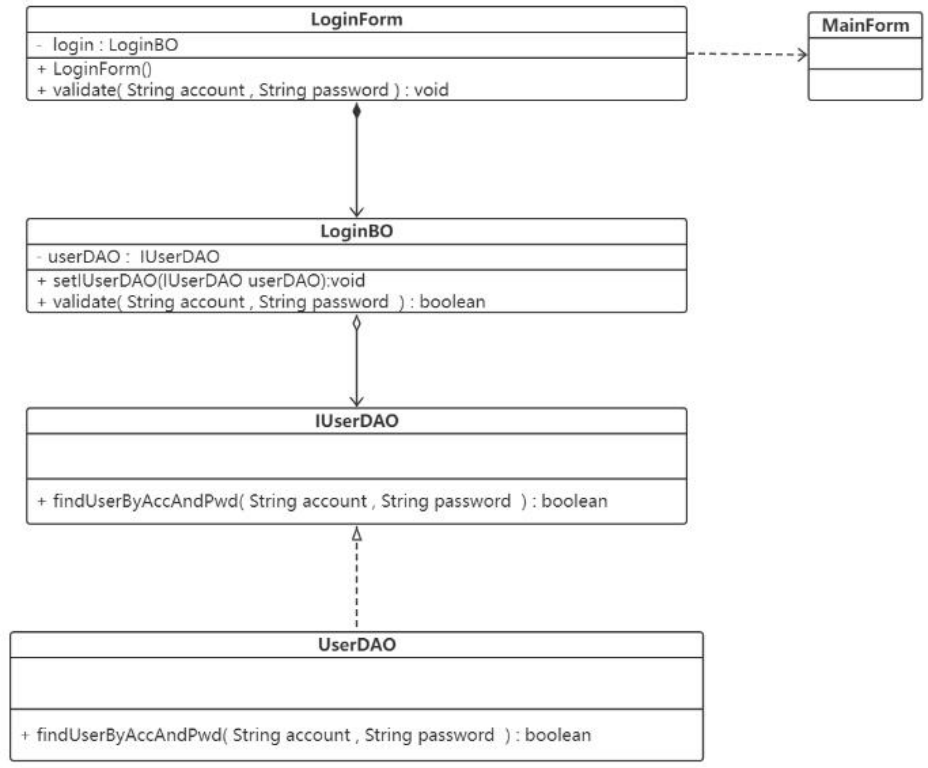

Fig8. Log in

Voice Assistant:

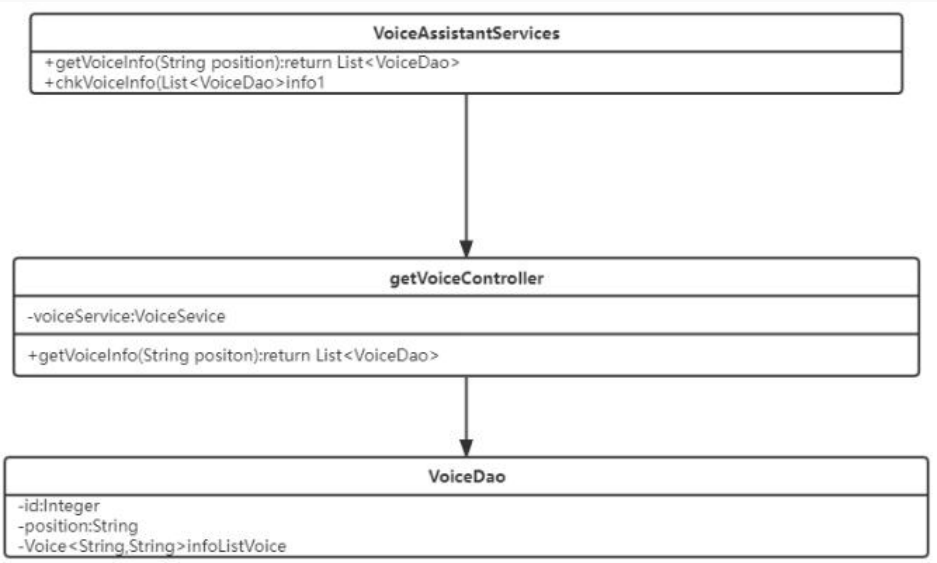

Fig9. Voice Assistant

Navigation:

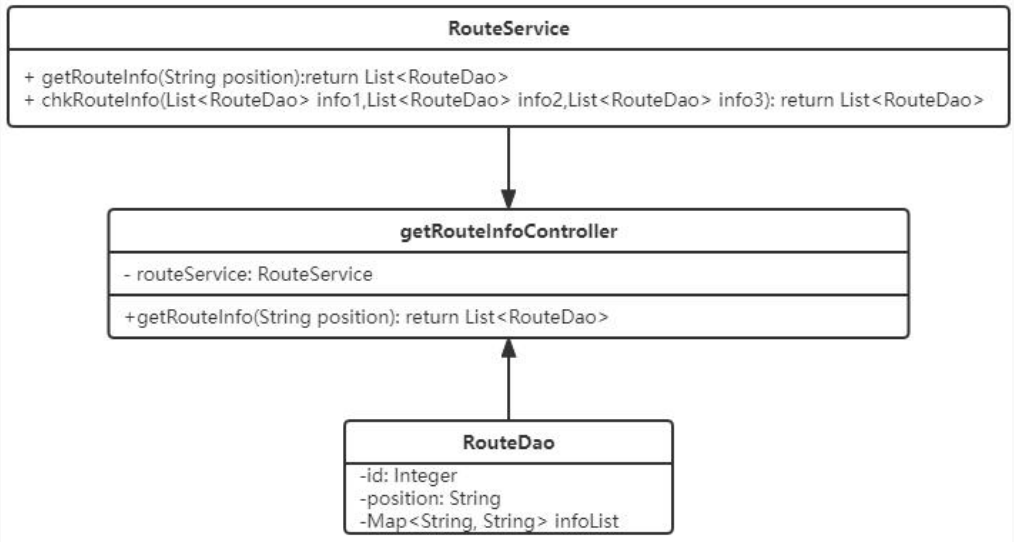

Fig10. Navigation

8. Acceptance verification criteria

8.1 Business Process Testing

Business process name: Single-threaded trip planning

Flow chart:

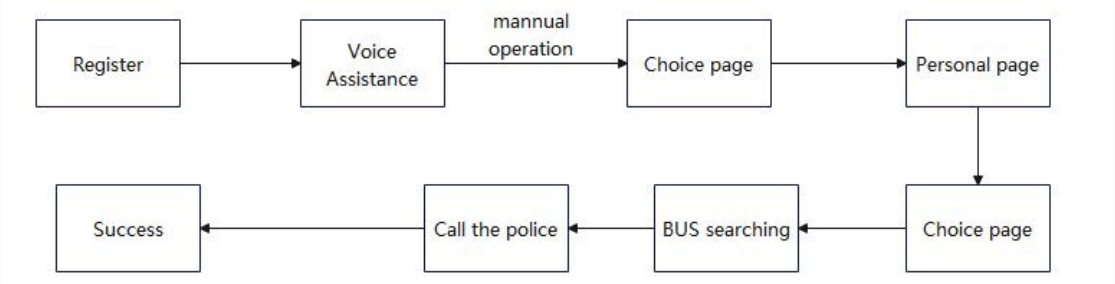

Fig11. Single-threaded trip planning

Target result: The function is working properly.

Business name: One-Click alarm

Flow chart:

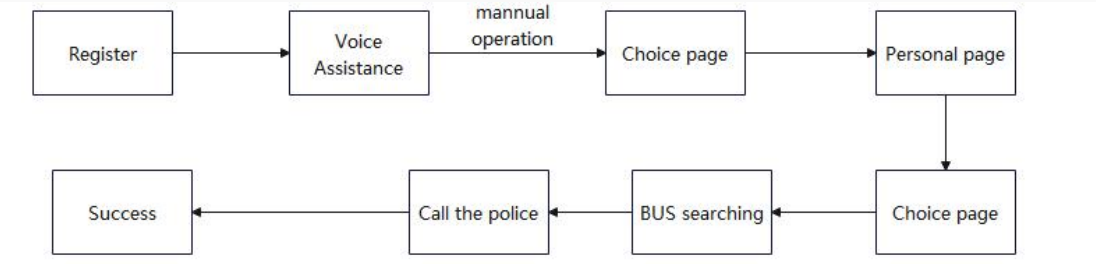

Fig12. One-Click alarm

Target result: The function is working properly.

Business name: Global voice assistant

Flow chart:

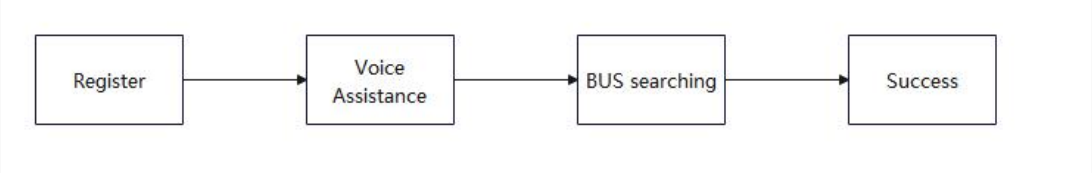

Fig13.Global voice assistant

Target result: The function is working properly.

8.3 Ease of use test

(1) The software user interface is friendly and there is no mix of Chinese and English.

(2) The information in the software is clear and easy to understand, and there is no original English prompt.

(3) The interface style of each module in the software is consistent.

8.4 Documentation testing

1) The user documentation contains information on the use of the product and functional modules.

2) the information described in the user documentation is correct and free of ambiguity and misrepresentation.

3) the user documentation is easy to understand.