

# Based on mobile Internet users to search the experience design development research

Shao Qiang Ning<sup>1</sup> Lan Zhang<sup>2</sup>

<sup>1</sup> Guangxi Normal University School of Design, Guilin, Guangxi, China  
723924855@qq.com

<sup>2</sup> Guangxi Normal University School of Design, Guilin, Guangxi, China  
zhang.orchid@gmail.com

## Abstract

The mobile internet devices, leading by Intelligent mobile phone and tablet PC, have grown up to the most popular hardware platform within 5 years. Search service providers such as Google, Baidu, who rose up in the era of traditional Internet platform, need adapt themselves to the new mobile Internet applications. Facing the new mobile Internet era, UI designers also become UE designers through extending their core area from original appearance and layout design to operational experience design. This article discusses users' experience design of the new search focusing on search environment, search content, search information input and search results output.

**Keywords:** Mobile Internet, Tablet PC, Users Design and Experience, Search

## 1. Why did the Search Experience Change?

The International Internet has experienced a rapid development since 1990s, and has changed people's communication and lifestyle from all aspects. After accumulating a large amount of information on the Internet, search has become a daily operation on the Internet. Search engine providers like Google and Baidu have al-

so become star enterprises in the whole IT industry. In 2007, the publication of iPhone had a greater layer impact on our access mode to the Internet, and the Internet has gradually entered into the era of mobile Internet. This is an Internet era with the intelligent mobile phone and tablet PC as the key hardware platform. Different from the application environment and operation manners of the classical desktop and laptop computers, when users use mobile Internet devices, there are some operation changes as follows:

**The Changes of the Using Environment.** Users no longer operate the devices at a fixed place. Mobile Internet users may use the Internet services at any place or occasion, especially in the subway, bus, toilet or elevator where users need to wait.

**The Changes of the Using Posture.** Users are no longer in a single sitting posture as the operating posture. Mobile Internet users use Internet services more in the posture of standing, walking or lying down.

**The Changes of the Operating Devices.** Users are no longer using the desktop or laptop computers as the only Internet device. Mobile Internet users more use the intelligent mobile phone or tablet PC as Internet devices, and the size of these devices is more handy and smaller

than the formers', and the display screen is also smaller than traditional devices'.

**The Changes of the Input Way.** Compared with the keyboard and mouse input of the traditional desktop and laptop computers, mobile Internet devices mostly have GPS, microphones, cameras, motion sensors, light sensors, a compass, and even a NFC-Near Field Communication module. The addition of these functions makes the mobile Internet devices have very rich and three-dimensional information input sources. The biggest difference is that the mobile Internet devices almost adopt the touch screen instead of the mouse, and the keyboard also uses the virtual touch keyboard rather than a physical keyboard.

These changes determine that the users' searching contents and experience requirements will both produce great changes. As for those designers who need to do the users' experience design, they need new searching methods to adapt to these changes.

## 2. The Effects of Searching Contents Changes on Designs

According to the research data for the mobile search service from the U.S. digital marketing company iCrossing, IResearch found that the query contents of using mobile search by the U.S. mobile search users were mainly related to the life information such as map and weather information. The user survey data show that 69% users searched for maps giving directions, and 65 %users searched for weather information. [1]( Fig. 1)

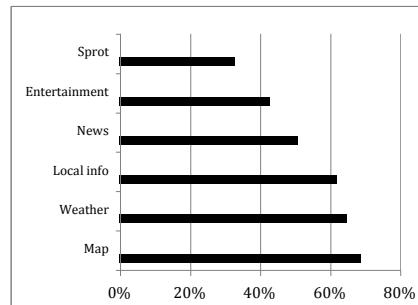


Fig. 1: The situation of the U.S. mobile search users using the searching contents in March, 2007

Because the hardware platform of the mobile Internet are mainly the Intelligent mobile phone and tablet PC, and these portable devices make users use the Internet anywhere and in any posture, which make users' searching contents gradually change. And more searching contents mainly focus on the following aspects:

**Search for the Specific Places and Transportation Routes.** As for the location search, the search engine must make a judgement based on the map database. The current location searches are mostly based on the GPS system, and pick up users' current location status for the search operation. But the current manners of the location searches are still based on the traditional desktop location search experience. For example, enter the location name, and then search out a map or the map marked with the driving routes, however, to the mobile Internet users, the real-time search of the camera finding a view to the photograph based on the virtual reality technology and image recognition technology will greatly enhance the users' experience of the location search and will give users more intuitive and clear information and tips. UE designers need to focus on the design details of the users' experience in this search mode such as the interface design

for the camera, which should make users immediately take images, conveniently upload, mark their own location and so on.

### **Search for the Public Information Such as Traffic, Weather and News.**

Searching for public information, the search engine should take full advantage of the users' GPS information and the current time information to provide users with more explicit and clear feedback. The search results of the public information should not be one-way operation accessed by users. UE designs should focus on users' information orientation, and make use of the notification system to filter the real-time information and then give them to users.

**Search for the Information of Commodities or Articles.** Search for commodities or articles is different from the traditional platform. Mobile Internet devices usually have cameras which can be used to identify article barcodes applied in many e-commerce websites such as Taobao.com which has used the identification of 2D codes and barcodes in the mobile phone, the users only need to aim the barcode or 2D code of the commodity at the camera, and can get the relevant information about this commodity. We no longer need to be distressed for the small screen showing a much smaller virtual keyboard than the PC or laptop computer, because we always press the unwanted letter button when we input through the virtual keyboard. The new NFC system took another item identification way to mobile Internet devices. With the popularization of the technology, the item identification function will get greater development and finally make users' search operation more convenient. Searching for articles on the mobile Internet is closely combined with the e-commerce at the present. So UE designers should focus on the con-

venience of the search operation and the connection with users' social network. "using materials to gather human beings" will become the new direction of the social intercourse of the mobile Internet and the development of e-commerce.

### **3. The effects of the changes in the way of search information on designs**

Just as the facts that the emergence of the mouse completely changed the mode of computer operation, and made the click operation of the GUI interface become the mainstream, touch-screen, especially the emergence and popularity of multi-touch technology both caused a revolution in the operation of mobile Internet devices. However, compared with the traditional keyboard input, the input feeling for the virtual keyboard showed on the touch-screen had inherent deficiencies because the press of fingers on the virtual keyboard did not get physical feedback, moreover, the screen of mobile Internet devices was relatively small, the button size of the virtual keyboard was also very limited, and these problems resulted in the inconvenience of the input of the textual content when users used the mobile Internet, especially when users were in the state of walking or the time limitation, which often leads to make mistakes and so the users' experience became bad. Now that the equipment we are using is very different, the user experience has to change with it.

The search information was almost inputted through the keyboard in the traditional platform. As for the mobile Internet search, the bad user experience of the virtual keyboard should be considered, and the specific input of the digital mobile device should be used more such as voice recognition, real-time picture of the camera recognition, system text capture, image recognition and so on, which gave users much more and more

direct input way. In addition to the keyboard input, voice recognition technology as the most intuitive and convenient technology in the text entry has increasingly attracted the attention of system developers. The present iPhone 4S has possessed the siri voice control. Although the current voice technology is far from satisfactory, after holding the mature technology, it is believed that the voice recognition will give a new design world to designers. Facing the new functions, designs should have advanced consciousness and leave room for the further expansion in the design to facilitate the use of equipment after upgrading or updating such as the corresponding function button , and the input or playing interface of the design media for the voice system.

In addition to the above mentioned active input mode, as the mobile Internet search engines, they should obtain information from users' devices, as the references of the search operators such as GPS location information, time information and so on. By using this information, the search engine can select search results with more appropriateness and timeliness to show more accurate results to users.

#### **4. The effects of the changes in the way of showing search results on designs**

iResearch survey data showed that in the report about Chinese mobile search users behavior research from 2010 to 2011, a survey of Chinese mobile search users using mobile phone to search for contents displayed that the number of users searching the web page was the first place in the whole China mobile search users in 2010, searching for the software was the second place and searching for MP3 was the third place. The satisfaction of the search field basically has a positive correlation with the search area

frequently used. The reason is that the number of users searching the web pages, software and MP3 by search engines is the highest, secondly, the keywords used in searching Web pages, software and MP3 are usually relatively short, which makes the search more convenient to operate, thirdly, the matching degree of keywords and search target content is higher. [2] ( Fig. 2)

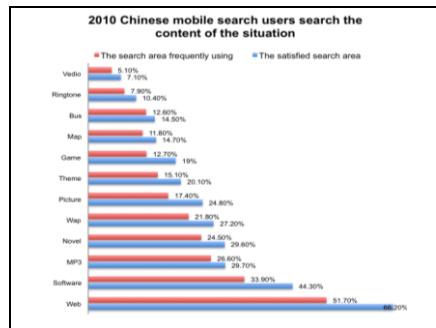


Fig. 2: The situation of using search contents by Chinese mobile search users(The description of samples: in the search area frequently using N=9019, in the satisfied search area N=9123, get from 3 mainstream phone websites and clients from January to February, 2012 )

Thus it can be seen that if there are results getting by the convenient and exact search, this search will be the mainstream. Getting good user experience, designers need to consider more for users in the case of function realized. As far as the present search situation is concerned, The feedbacks on the results are showed by as many website links, thumbnails pictures and links in the user search experience in the traditional platform. Moreover, the more search results, the more reliable search engine. Different from the traditional platform, the screen of mobile Internet devices is generally relatively smaller, and the information output is less during the same time period. Generally speaking,

users using mobile devices are likely to search in a moving or a short time gap such as walking. In other words, as for the mobile devices, the requirement for the search results is the accuracy of information rather than the amount of information.

This puts forward a new topic for the output mode design of the search results on the mobile Internet device platform. On the one hand, a large number of past search results need to be filtered again to determine which one result or results are more likely to be users need. There is a more direct display of the search results, for example, when the keyword "Da Vinci" was inputted, a list of web connections would be shown in the traditional web. (Fig. 3) However, search results should be shown more directly in the phone's interface, without clicking again to get information. (Fig. 4)

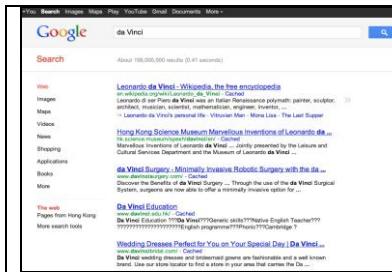


Fig. 3:Google search interface on the computer

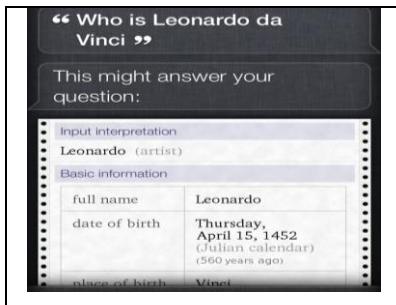


Fig. 4:Search interface on analog phone

If search results on mobile Internet devices are fed back in the form of sound or graphics, especially in the application to the place or route search application. Such feedbacks will be more suitable for users' demands, such as the blind or deaf.

Another search result is the direct application downloads rather than web pages or pictures. Mobile devices we are now using have considerable applications. For users using mobile devices, these procedures are needed to use to perfect device functions. The most direct way is searching and directly downloading the procedure. The modern mobile Internet devices all have their own operating system software, and the operating system of mobile Internet devices represented by iOS and Android have their own applications software market such as App Store of iOS and Android of Market of Android has formed a relatively complete industrial ecosystem. In recent years, the number of App in each mobile platform software market has been rising. According to the tracking survey (more than 55,000 samples) of Flurry Analytics which is a science and technology research institution, at the present, there are more than 55,000 applications on iOS platform, and 40,000 applications on Android platform. The APP Search in new equipments should also directly show the results. (Fig. 5)

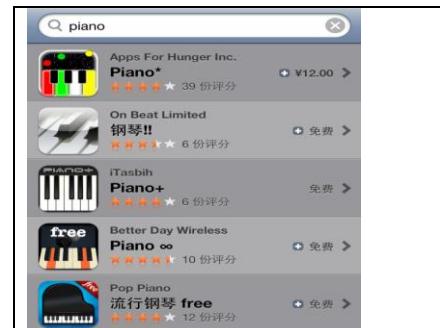


Fig. 5: APP search page on the iPhone

Because users require mobile Internet devices for more direct and easier way to access the "answer" information, the information access of the mobile Internet is more based on App form rather than traditional platform browser and web forms. At least Web forms will not play the role in the mobile Internet platform as important as the previous traditional platforms, that is to say, It is more direct and convenient for users to click and start APP than input a string of websites. To a great extent, APP has replaced the Web and become the mainstream of mobile Internet information operating. This is a typical and new search direction. In mobile networks platform, we set aside the results showing style of the web link mod , directly change into the results of an APP, download , install and then complete the user's search or achieve users' required functions.

## 5. Summary

Compared with traditional platforms such as PC and laptop computers, our search needs more accuracy and intelligence, which is closely related to our designs accessing information conveniently and accurately rather than providing users with large amounts of data to select. The

new search direction is making us have better user experience.

## 6. Acknowledgements

Guangxi cultural research center of social development projects " the characteristic industry of Guangxi art and design application research team " Contract Project No. TD2011011

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