

## From Paper Media to Palm-Reading: Analysis on Interaction Design of News APP under Background of Internet Plus

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**Abstract** — With the development of mobile internet technology and hardware of computer and cellphone, news reading is transformed from paper media to mobile application for the technical characters of Internet Plus, which becomes daily reading habit and lifestyle trend of wireless communication, and deeply influences the development of the present news publishing industry. By the case study on news APP, this paper proposes an innovation trend of User Experience (UE) theory entering Omni-media news publishing industry and analyzes interaction design features based on user behaviors of palm-reading. The paper targets the essentials of interface visual design style on news contents to form more human-based reading experience through UE design.

**Keywords** - *Internet plus; news APP; interaction design; user experience; information interaction*

### I. INTRODUCTION

The wide commercial use of mobile internet technology has deeply influenced publishing industry. Reading becomes a kind of wireless communication on mobile internet. The integration of both presents industrial development direction of Internet Plus. This trend continuously changes living competition ways of traditional paper media like newspaper and magazines and also changes reading ways of readers. This two-direction effect permeates every fields of news industry including producing, broadcast, carrier and derivation products of kinds of news reports. The creation produced under the background of mobile internet information age influences and even punches on the traditional media, which continuously changes present news information channels, forms Palm-Reading habit and finally performs living style of mobile interaction. The integration of publish and mobile applications becomes a new tend of Combination of Culture & Innovation in publishing field with Chinese edition <sup>[1]</sup>. The formation of living style with Palm-Reading mobile characters in some extent forces revolution of traditional newspaper media and even news website of personal computer. Multi-screen reading experiences through 3C information electronic products as carrier own multiply characteristics of news publishing. Especially, news APP of hand-held mobile intelligent terminals including mobile phone and Pad becomes indispensable news broadcasting media or news publishing forms.

### II. COMPUTER UE THEORY ENTERS NEWS PUBLISHING INDUSTRY

#### A. *Transferring: Information Service Puts Users as Core*

Internet Plus has innovation property with integration of industry and technology not additions of pure fields. So the design and operation of news APP isn't fit for directly copying experiences of paper media publishing. Internet Plus times depending on the development of mobile

information technology occurs a great revolution from Web1.0 to Web2.0 then to Web3.0 during a short time. News products on personal computer are very different from their relative mobile terminal, let alone publishing products of traditional paper media. So, establishing or operating news products to satisfy mobile internet times needs new theory of UE under Internet thought. It's a little bit similar with paper media setting readers as living line. In fact, users of news APP contain reader conception from publishing field and operator conception of product media, both of which are unique without any dividing. The service idea of User Centered Design (UCD) of computer domain shall integrate into whole life circle of APP products. On this base, there is a series of internet thoughts including user thought, platform thought and data stream thought. Commercial website could use these ideas and thoughts to manage every processes of value chain of news App such as content producing & providing, developing on products, products marketing and technology correcting <sup>[2]</sup>. UE thought is a kind of change and development keeping the pace with times for news publishing field providing news information required by users but not publishes news content for users. UE idea breaks narrow positioning of news but expands wider information service.

#### B. *Integration: Multiply Integration with Cross-Platform & Omni-media*

According to the influence trend of mobile internet technology, from the angle of platform format, most of the traditional industries shall become called internet enterprises in the near future or at least own internet production line. It's an integration challenge and a huge developing opportunity on traditional industries raised by Internet Plus. Paper media is a typical example among them, and there no any newspaper media neglects internet even mobile internet. This kind of integration tend is an inevitable requirement of times development and also a necessary adjustment of publishing field development. Media integration rises as a national strategy, so promoting

integration development of traditional media and emerging media shall be an important risk in media field in a future period [3]. Meeting the integration tend, no matter traditional books, newspaper, radio television or emerging internet media face their separate challenges and opportunities. Seen from angle of production line, no matter industry platform or media form, no matter equipment carrier or media technology, this kind of complicated and difficult integration shall always put User Experience (UE) as basic thought. The clarification on sense of value makes many situations with struggling and balancing become easy. Particularly, information technology makes life span of product very short, which presents change characteristics of Coming Soon & Going Soon. The Media integration promotes integration industry beneficial and also fastens the survival of fittest in publishing field.

*C. Design: Key Point Promotes Product Competition Power*

In the period of Internet Plus times, prime risk of Omni-media is to satisfy dimensional information experience demand to users with the same property. Core competitive power of traditional publishing is content creation, but the core competitive power of emerging media is information request service with interaction and many senses [4]. Based on above mentioned industry development of media integration, news APP shall organically combine these two kinds of core competitive powers through User Experience Design (UED). Design isn't the essential core but is a key point to efficiently raise up product competitive power. Especially for application products of portal news APP, when there are certain homogenized situations on news content, they shall attract users among numerous of APPs and keep users loyal through design. UE of mobile applications has been enhanced very important situation, so attracting users is not only visual interface of the application but also much experience on the whole [5]. Design innovation on interaction structure and interaction details could bring users more understanding and using memories on product. Interaction experience over visual design of interface forms product sense with more sophistication, dimensionality and diversification during the process of user reading activity. The difference between news APP and tools APP: the interaction experience of tools APP forms direct using judgment which belongs to obvious effect of design, but the interaction experience of mobile reading applications forms more potential using memory which belongs to hidden influence. The impression or memory is competitive power among news APPs with similar homogenization competition, as far as UED acts the role of promoting product competition.

III. MATCHING INTERACTION CHARACTERISTICS OF PALM-READING TREND

A. Diverse Scenario

Information interaction products contain not only cell phone mobile applications but also other kinds of innovation round mobile information technology like

wearable equipment, whose unusual using situations are called edge situation and the usual or high frequent situations are regarded as actual using situation. As shown in Fig. (1), time of music APP most booms on the way to work or to school not during tourism or in leisure time [6], it has become a lifestyle of many people nowadays. User's lifestyle has become so different in mobile internet age.

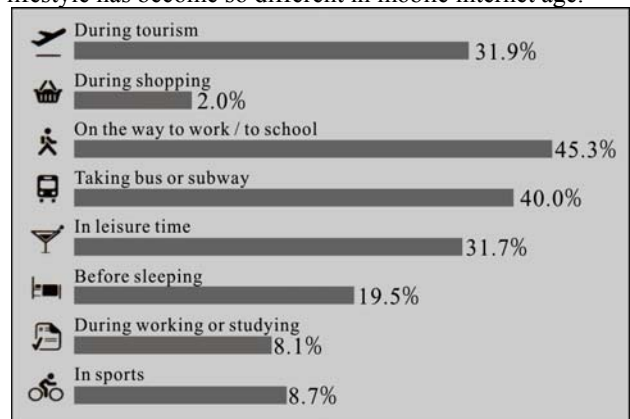


Figure 1. Investigation Results on Using Situations of QQ Music APP of Tencent.

This change trend also shows that using situation of news APP presents very diversity without stable mode:

- 1) Stable Situation: from sofa, bed in personal space to subway, bus of public space. As the investigation report shows, people's the most time of palm-reading is on bed for Chinese people [7], see Fig. (2);
- 2) Dynamic Mobile Situation: For example: walking, doing sports;
- 3) Temporary Situation: Such as, shooting a glance at them while waiting for red light of driving (Though the activity isn't allowed, sometimes it happens), which could be regarded as mobile style palm-reading.

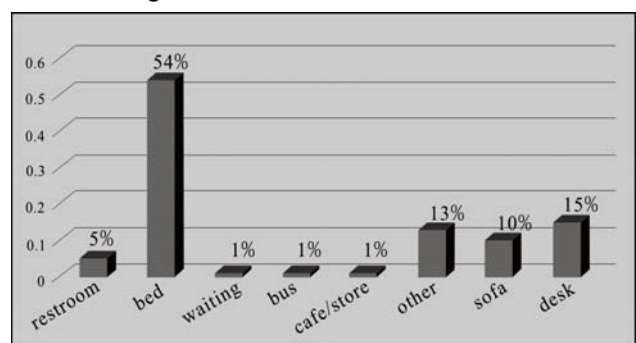


Figure 2. Mobile Reading Scenario of Chinese People in the First Half Year of 2015.

The background of multiply using situations originates from user time confetti for rapid life rhythm, which also makes reading habits changes and continuously becomes a kind of life styles. It raises new challenges on interaction

innovation of news APP which could use micro-interaction design to correct user experience. Micro-interaction is an interaction only appearing in one kind of using situations, only performing one kind of functions and only finishing one kind of achievements [8]. For example, the refreshing operation on present page, the old edition in early period required users accurately click semicircle-shape arrow icon of condition bar attachment, but present edition often adopts pressing any situation on the page and dropping it down (simultaneously accompanying with response design). The former interaction way actually inherits from the refreshing mode of personal computer terminals which is unsatisfied rapid operation in above dynamic and temporary using situations, and the latter one is really fit for kinds of using situations of Palm-Reading. Hence the interaction design innovation of mobile applications shall comply with reading habits of most of people, and the using situation essentially contains researches of using activities.

**B. Figured Dynamic Effect**

Different from other tooling mobile applications, text and figure are main information contents in the most of the news APP (some embed video contents are displayed in figure form before playing). Through module layout design, the proper combination between text and figure forms relative simply main body of the figure interface, which is an obvious character of news APP interaction. The figure is a main body of page information carrier and also an important interaction element. So, the interaction design could put figure information as an important innovation breakthrough and elevate fresh or specific reading experience through strengthening dynamic effect. On the contrary, action metaphor from proper dynamic effect promotes cognition and operation of figure information. For example, application Flipboard positioning at social magazine and individual reading is a kind of social media with real-time publication, automatic update and individuation, which is absolutely different from just electronic content of traditional newspaper and magazine. It reaches a purpose of turning page through dynamic effect of flexible page, whose specific reading experience consisting of innovation interactions is praised. So, the research and development team of the design thinks that the interaction design of news APP shall abundantly seek for innovation and micro-innovation based on information characters of figure. The common response dynamic effects of figure have overall self-adapt carousel and multiply-figure visible carousel [9]. Another example Zhihu Daily, it adopts the former mode in its home page, but after entering specific text, creative production around the relationship between figure and text forms chic reading dynamic effect. Different from common sliding of the whole figure and text, the word module floats on the figure. With the sliding operation, the figure continuously deduces to be covered and even disappears. In Fig. (3), this innovation presents that the dynamic effect design potentially reflects present reading progress without only depending on side progress bar.

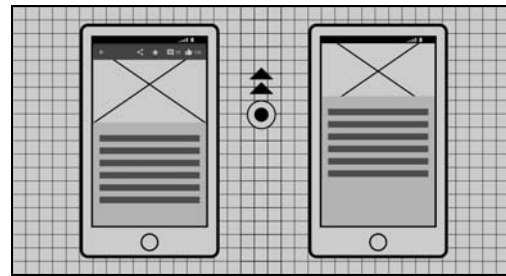


Figure 3. Analysis of Reading Dynamic Effect of Zhihu Daily APP.

**C. Character Usability**

The Plus of Internet Plus means superposition of several kinds of user, so the development of news APP shall be constructed on the basis of reader, whose functional positioning is between tool and immersion. The purpose of gaining news information is much clearer than APP of general electronic books. So the usability of interaction design is much more outstanding on this functional definition. The usability of news APP always concentrates on reading activities of readers because mobile reading connects with hands and eyes. Obey visual broadcast rule. Interaction procedure of mobile application visual broadcast shall be easily operated and understood and smoothly visual check. It arranges important information at accustomed region of visual broadcast [10] and combines general visual rule and specific users to produce interaction innovation satisfying using habits. For example, font with large size specially aiming at the old (different from setting general large font, its purpose actually realizes reading condition without wearing presbyopia lenses) and night reading mode for readers sleeping late. Satisfy gesture operation habit. Mobile reading meaning portable reading activity shall consider thermal region of fingers, see Fig. (4). And mobile equipment with different sizes have different thermal regions. Except for very large mobile phone, it's necessary to realize operation with single hand. So many applications changes navigation bar from form of top pulling down at early period to present popular hidden side navigation bar. The advantage of the latter one solves out usability problem of over thermal region when operating with one hand. Users prefer operating with one hand on cell phone with common size except for the hardware size bringing requirements with two hands such as Pad, which is similar with a few readers reading paper media to turn pages with two hands. The consequence of iteration requires interaction designers at the role of readers to survey and change usability problems.

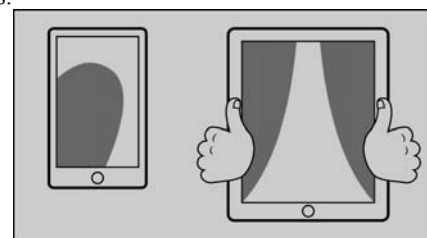


Figure 4. Sketch of Hot Touch Area on Mobile Phone & Pad.

#### IV. BUILDING UI STYLE TACTICS WITH NEWS PROPERTY

##### A. *Protruding Principle of Content Priority*

Mobile reading is full of challenges. For example, the understanding of users with screen of iPhone size understands only 48% of computer terminal. (The understanding of computer terminal reaches 39.18%, but the understanding of mobile terminal is 18.93%<sup>[11]</sup>) So it's clear that reading and cognition of mobile terminals on information of users have more obvious obstacles than computer terminals and traditional paper. Visual design of news APP shall firstly obey effective broadcast on figure and text of news content and clarify design orientation of content prior and then chase for further visual effect. Function of content prior could build clear distinction and smooth logistics which are results after properly positioning on product property of UI style and primary quality of news APP different from other mobile applications. There surely exist some products aiming at a small crowd, whose visual style chases high novelty and even peculiar. Seen from essential angle, the first method of raising user viscosity of this kind of products is to build unique information content. The performance of UI design also services for the content. The UI is novel in comparison of general news APPs.

##### B. *Expanding Reading Experience of Paper Media*

The change from paper media reading to Palm-Reading contains the continuous changes of reading activities. At the early or middle age of the changing period, the reading experience on some paper media shall be fully considered to keep especially for some old users in the process of acceptable or available for Palm-Reading. Inheriting or lasting the feeling shows User Friendly to these parts of users and even more users. News APP is the production of mobile information times and new born thing for users gaining information from newspaper and magazines for a long time. They need use and adapt depending on past reading experience. It's a recognition rule for most of the people that when facing new applications or products, we shall get the conception on the new production through adopting knowledge from other products. The past experience forms the understanding on the world<sup>[12]</sup>. During the process, UI design needs to properly perform the existed experience to display visual impression of paper media and form feeling of newspaper. For example, the edition of iOS 3.0 of SOHU News, the background is selected granular sensation of paper in order to strengthen reading feeling from paper. At the subscription place in the home page, red hobnail of relative top area is like true one with high light of plastic, which simultaneously increases reading atmosphere<sup>[13]</sup>.

##### C. *Referring Visual Design of Paper Media*

News APP interface at the early period excessively continues plate-type of figure and text from mobile newspaper at 2G mobile internet period, which is too much care on depending on past experiences. Experience is a

mixed blessing, on one hand it shall help to finish tasks more efficiently and more rapidly, but on other hand it shall lock thoughts. Interface design shall properly eliminate media boundary at some research and development stage, and the design view is no need to limit in equipment carrier and technical condition. The envelopment of mobile applications shall also follow the trend of above mentioned Omni-media integration, which is the requirement of transformation development of paper media. Interface UI of news App needs learn visual expression from paper media. UI design has close relationship with traditional graphic design which couldn't be divided into complete independent field. Magazine design owns a little bit longer graphic design history. There are many fast and efficient study points including research on form feeling of edition, color and structure match, strong rhythm, information figure of whole design and super large visual toleration, all of which are not only a kind of forms<sup>[14]</sup>. Surely, the mobile application products are limited by hardware like screen and technical conditions like internet, so completely copying design elements needs to avoid. The mutual cooperation between visual design and interaction design shall promote interaction experience on reading with emotions.

##### D. *Satisfying Targeted Users aesthetic*

The mobile applications of news portals have different types and own relative reader subdivisions. News APPs aren't only portal type like Tencent news and SOHU news. Especially fast development of present We-Media and read demand of user individual customization require UI style with characteristic. These UI styles need to satisfy aesthetic expect of targeted users. For example, ReadFM positioning on building individual magazine provides great reading interface with visual style of extremely concise like E-ink. ZAKER positioning information integration and mutual share is famous at its elegant layout and comfortable reading experience. Different information channels have their own visual color logistics. News APP gathers the types pursuant to their different contents so the readers are naturally divided into different types. On this relationship logistics basis, UI style services for the principle of content prior so there performs some certain taste of beauty. It's worthy mentioning that before users operate products they get some impression from glance of the visual style. So, the interface design is also important as well as content prior. Few readers could tolerate the application with great content but bad visual performance for a long period.

##### E. *Building Brand Identity Characters*





Paper media always have long publication history and stable readers, but the loyalty of readers are changing for Internet Plus. The brand accumulation of paper media needs actively meet the integration requirements on characters of Plus. Interface design of news APP relative to paper media shall pay much attention on matching the brand characteristics with traditional field, constructing mobile reading have the same identical UI style, which means UI style is same as news media CI. Seen from colors

investigations on start icon of news APP of Table 1, the consistency of foreign Omni-media style is better than domestic news media. The Omni-media including mobile phone, PAD, PC web page and paper media all care for the uniform and connection of color. Illustrated by the case of The Washington Post (See in Table 2) , visual design of several media and platforms forms an consistent style system. Actively running media influence of paper media shall promote mobile applications perform value of brand during the process of operating and marketing. There needs to be strengthened that interface vision could directly response brand identity. Operation interaction could also increase and construct brand characters and form interaction experience characters of brand through mutual operation. Some new media without paper media accumulation shall bravely carry out strengthening visual style to form specific or vivid characteristics. APP of Sichuan News in Table 1, icon background with jade green combines with panda image owns unique style among plenty of news APP adopting text icon, which has strong visual identity. It occupies more visual establishment space in the future construction of brand.

TABLE I. Lists of Icon of News App

APP Color Series e.g.	Euro / US	CHINA		
Blue Series				
News Media	The New York Times	The Washington Post	Global Times (English Edition)	INewsWeek
Red Series				
News Media	CNN	BBC	Global Times (China Edition)	The Beijing News

TABLE II. UI Style of Omni-media Characters of The Washington Post

Media	Interface	Media	Interface
iPhone		iPad	
Kindle Fire		Android	



V. CONCLUSIONS

Computer and mobile internet brings interdisciplinary development to News publication. It under the background of Internet Plus meets the challenge of changes of user reading activities, needs passively follow the trend of integration of Omni-media and carries out integration innovation through mobile internet technology in order to efficiently promote to keep with development direction and catch up with times opportunities. News APP as mobile application requires putting the internet thought and the design idea of UE into its life circle. Based on interaction design of Palm-Reading activity and combined with interface visual effect matching with news content, news APP brings humanization praised by reader and humanization reading experiences and finally establish or continue the value of news brand. It is also the necessary view and quality of news media worker on the way of Internet Plus.

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