Localization in Korea of User Interface of the 3G Mobile Handset Built on Open OS

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Abstract. In order to minimize Korean users' conflict as they use global brand 3G handsets which are built on open OS, Symbian of Nokia and Windows Mobile of Microsoft, the research was operated by KTF, Korean mobile telecommunication company. To figure out the difference between ordinary mobile handsets and 3G open OS handsets, major European handsets and major Korean handsets were observed. According to the result of research the requirements for the handsets were established including key pad layout and key functions, information architecture of native menu, labels and input method of Korean language, and other user scenarios for main services like messaging.

Keywords: Localization, Mobile User Interface, Open OS Mobile Handset.

1 Background

1.1 Mobile Telecommunication Industry

Telecommunication industry is known as a local industry particularly in Korea where the world first CDMA service was commercialized. The Korean operators have been supplied mobile handsets for their customers by native handset venders. Besides several foreign manufacturers have been participated in Korean market, their market share is very low; handset business of Nokia had been withdrawn in 2003 after their 1.5 year-effort. After recent launch of WCDMA service by 2 major operators in Korea, SKT and KTF in August 2006, the condition of Korean mobile handset market is gradually changing, especially to the global handset venders which already had globally launched many UMTS - WCDMA devices who hope to sell their products to Korean operators.

1.2 Smartphone Industry

There have been little opportunities in Korea for manufacturers of PDA and smart phone because Korean users did not prefer these devices. As the difference among normal handsets, smart phones and PDA devices is being obscure and their size is getting smaller, customers pay attention to the featured phones. Additionally regarding the entrance of Koran operators into global industry by launching WCDMA

service, both Korean operators and customers came to have global resources of mobile handsets.

1.3   User Interface

By communicating with customers for 20 years, Korean handset manufacturers set several tacit standards of user interface including key pad layout, access gate of wireless internet, etc. If KTF decided to commercialize global devices in Korea, it becomes necessary for KTF that make every effort to prevent the conflict between user experience from Korean tacit standards of UI and that from global devices.

2   Purposes and Process

The research was operated in order to minimize the Korean customers' confusion as they use the smart phones of foreign manufacturers: The specific purpose of research was to establish the requirements of KTF for the 3G handsets built on open OS, especially NOKIA Symbian handsets and Microsoft Windows Mobile handsets supporting WCDMA network regarding world wide market share.

2.1   Finding Out Facts Below

- What are the tacit standards of mobile handset UIs in Korea?
- Whose properties are those standards? Operating system companies, handset venders or operators?
- To whom KTF would require to implement these UIs?

2.2   Making Strategic Decision

- To maintain user experience in these tacit standards or to make users learn new interfaces
- If to maintain, what is the essential or mandatory requirements?
- If to make user learn, what is the essential or mandatory interfaces?

2.3   Making Documents of Requirement

- Requirement of UI for OEM venders and requirement of UI for OS companies
- Requirement of UI for the main applications: messaging, browser, WIPI internet platform
- GUI guidelines and image files

2.4   Process

- Researching the cases of mixed UIs of OEM's own UI and operator's UI on the handsets built on open OS: especially 3G handsets in Europe and Japan – handsets for O2, NTT Doccomo, T-mobile and Orange

Fig. 1. Handset models

- Researching the tacit standards of manufacturer's UI, Samsung, LG, Pentech & Curitel and KTFT
- Researching the user experience by monitoring consumer site of Korean handset users
- Interviewing UI designers in KTF
- Decision Making

3   Factors

In 2006 the standard UI guideline were released to Korean handset manufacturers by SKT, the largest Korean operator. Although it was the requirement made by SKT for the customers of SKT, there were several tacit Korean standards of user interfaces; key pad layout, key function, menu labels, navigation style and information architecture etc. Most initial differences between these tacit Korean standards and the user interface of global open OS handsets are as below.

3.1   Key Layout and Function

Table 1. Key Pad Layout and Key Function of Korean Handsets and Global Open OS Handsets

Key	Korean Handsets	Open OS Handsets
Power	• Front • Same as *End* key • No Profile	• Top or side • Separated from *End* key • Profile setting e.g. flight or normal mode etc.

Table 1. (*continued*)

|		
Back	• Same as *Cancel* key	• Only as *Back* key; no function as *Cancel* key e.g. Windows Mobile • Only as *Cancel* key in a text input box; no function as *Back* key e.g. Symbian S60
Center	• Soft key as *confirm/select* • Same as *Wireless Internet* key	• *Confirm/select* function but not as soft key • No specific dedicated service
Left/Right Soft Key	• Left soft key as *Options* • Right soft key as *Back* key	• Left soft key as *Options* and right soft key as *Cancel/Back* – Symbian S60 • Left soft key as *Cancel* and right soft key as *Options/Menu*– Windows Mobile
Side Up/Down	• *Volume* key	• Rarely found except on music featured phone
* / Long Press	• Toggle to *Etiquette mode*	• Not assigned
# / Long Press	• *Lock* or *Unlock*	• Not assigned
0 / Long Press	• *Quick Dial* • *Search* exclusively by KTF	• *Wireless Internet* key
Direct Access Key	• Several *Direct Hot Keys* for special service e.g. VOD, telematics, banking	• Rarely found except *Message* key or *Internet* Key
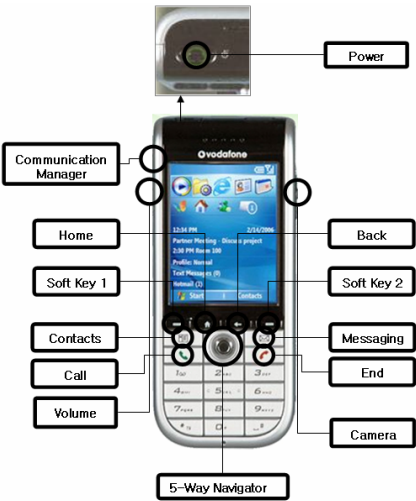
Fig. 2. Key Pad Layout and Function of V1240 by Microsoft Windows Mobile 5.0
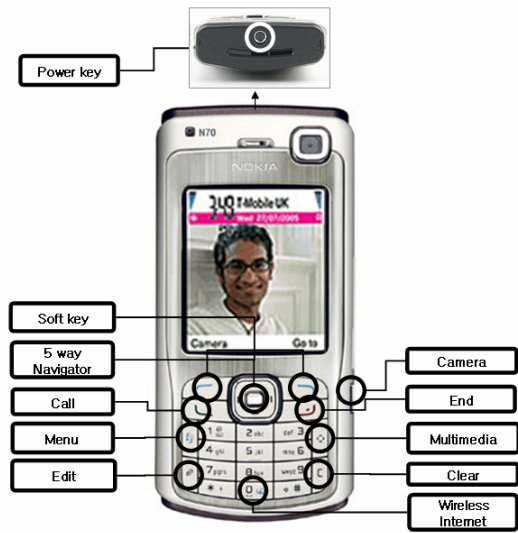
Fig. 3. Key Pad Layout and Function of N70 by Symbian S60

3.2 Information Architecture

Table 2. Different Information Architecture of Korean Handsets and Global Open OS Handsets

Information Architecture	Korean Handsets	Open OS Handsets
Basic Architecture	• Tree structure	• Folder structure.
Menu Structure	• Service oriented	• Function oriented
Menu Layout	• Graphical, complexed and various	• Simple; list or grid
Navigation	• Arrow key to move to another menu in the same depth • C Key to go *Back/Cancel/Exit*	• Tab menu to another menu in the same depth • Soft key to go *Back/Cancel/Exit*

3.3 Application

Table 3. User Interface of Main Applications of Korean Handsets and Global Open OS Handsets

Application	Korean Handsets	Open OS Handsets
Call	• Start video call with *Video Call* button separated from voice call button	• Options in a call application; *Video* or *Voice call*

Table 3. (*continued*)

Messaging	• *SMS/MMS* application separated from *email* application; in general no *email* application	• One messaging application including *SMS, MMS* and *email*

4 Output

4.1 Consideration

The experience of Korean users, who would use both the open OS handset which has its own UI identity and also Korean normal device which is already familiar with, is seriously considered during the research. Preventing them from the errors and conflict between two different user interfaces, the cost and time which are demanded to manufacturers and OS developers by modification of user interfaces were also considered.

Table 4. Point of Consideration

User Interface	Business
• Intuitiveness to Korean users • Consistency in usability of the device and of other KTF services • Effectiveness: causing no error • Learnability for Korean users	• Importance of the feature • Supporting KTF identity

4.2 Mandatory Requirement

Table 5. Most Important Features from Mandatory Requirement

Feature	Mandatory Requirement
Power Key	• Front and same as *End Key*
Back Key	• Same as *Cancel Key*
Center Key	• Same as *Wireless Internet Key*
Side Up/Down Key	• *Volume* key
* Key / Long press	• Toggle to *Etiquette mode*
# Key / Long press	• *Lock or Unlock*
0 Key / Long press	• *Search* exclusively by KTF
Direct Access Key	• At least 2 *Direct Hot Keys* for KTF service
Menu Architecture	• Service oriented
Messaging	• *SMS/MMS* application to be separated from *email*

4.3 Output List

Final Delivered Documents

- KTF UI Requirement for Open OS 3G Handset – Nokia Symbian S60
- KTF UI Requirement for Open OS 3G Handset – Microsoft Windows Mobile 5.0

Content. Requirement of UI and GUI for OEM venders and OS companies including:

- Requirement of key pad layout and functions
- Requirement of information architecture of OEM menu
- Languages including labeling by Korean and input method of Korean language
- Scenario of main services; downloading and storing files, messaging etc.