A Study of The Mobile Music Service Design Process

Based on Local User Mental Model in Cross-culture Context

Wang Shihui\textsuperscript{11} Ono Kenta\textsuperscript{11} Ashizawa Yusuke\textsuperscript{11} Watanabe Makoto\textsuperscript{11}
(1) Chiba University

1. Research Background & Objectives
In the mobile era, the mobile music service, as one of the fastest growing added value business, has attracted International Enterprises to put more investment in, especially in the emerging market such as Africa. However, compared with previous global mobile music service design process, how to develop localized mobile music service based on local users mental model to increase user satisfactory level and service usability in the cross-cultural context, remains a research topic in need of further investigation.

The objective of this research is to propose a rapid localized mobile music service design process model based on local users mental model in the cross-cultural developing context.

2. The User Mental Model and Its Characteristics
The user mental model signifies related knowledge of what a product should be like in user’s mind. This kind of knowledge may come from user’s experiences gained from using similar product and user’s expectation of product features and operational logic in the new task flow.

In the process of interacting with surroundings, due to the external stimulus, human beings gradually build up mental model (cognition of outside objects & experiences of achieving tasks) by a series of inquiry and explorative practice [1].

When users are receiving external stimulus such as using the new mobile music service, the dynamic evolvement of user mental model, assimilating new knowledge or adapting new knowledge will take place.

Assimilating new knowledge process implies the previous user mental model is strengthened when user successfully accomplish tasks in the new mobile service system based on previous knowledge.

Adapting new knowledge implies new knowledge gradually replaces previous experiences and cognition by iterative explorative operation--feedback--learning process, evolving into new user mental model, when users fail to operate new service system successfully by previous experiences.

As stated above, the user mental model is contradictory, incomplete, superstitious, erroneous, unstable and varying in time. [2]

3. The Localized Mobile Music Service Requirements
Compared with global mobile music service design, the localized mobile music service design based on user mental model in Africa has following features:

(1) Complex service function and features: Due to various kinds of only in Africa music activities, the requirements of service functions and features varies;

(2) Intuitive operation: As user behavior logic flow differs from regions, global UI flow can not meet user’s mental model in a different cultural context;

(3) Unique GUI: Local users cannot easily recognize the global GUI, thus GUI system with local visual elements is needed.

4. The Traditional Mobile Service Design Process
(1) Designers who are far from target emerging market, develop service prototype based on use case and general design principle, such as simplicity, familiarity, availability, flexibility, feedback, safety and affordances.[3]

(2) Develop prototype by visiting emerging market and launching usability test.

According to the features of service design prototype based on user mental in Africa, the traditional design process cannot generate design with complex service features, intuitive operation and unique GUI. Besides, due to the cultural differences, the decision made by experts in usability test cannot represent local user’s expectation and preferences.

5. New Mobile Music Service Design Process
According to the characteristics of service design prototype based on user mental model, a new design process is proposed: rapid gaining empathy in the local cultural context, exploring service features, intuitive operations & GUI by involving users, and making decisions by both experts and
users. (See Figure 1: The Rapid Mobile Music Design Process based on User Mental Model)

5-1 Empathizing in local context
Designers were immersed in the local music context by taking part in local music activities to gain empathy of user’s value system and emotions. Besides, deep interviews were carried out to identify task flow in various kinds of music activities.

5-2 Use case creation
Use cases with main service functions and simple operation flows were created in two days workshops according to different user value segmentations, music activity context and task flow, involving cross-disciplined team members. (UI designers, software engineers, anthropologists, business people).

5-3 Defining service specification and UI framework
As most target users in Africa use middle-low end cell phone outdoor under strong sunlight, the UI screen specification was defined 320*240 pxl keypad cell phone.
Based on the task flow of use case, UI framework was build up, evaluated and improved by internal staffs through lo-fidelity paper prototype.

5-4 Developing service feature list and intuitive operation
As the long responding time of paper prototype interrupted the users behavior logic, presenting difficulties of exploring intuitive operation behaviors, we developed interactive mobile music service flash and installed it in cell phone.
Users were given to try the prototype. Cognitive walkthrough and think aloud methods [4] were applied to explore better service features, operation flow and UI layout with users.
After an iterative process, service feature list, UI framework and several layout options reflecting users’ expectations were generated.

5-5 User and expert's evaluation
A focus group with 7 target users, 2 UI designers, 2 software engineers and 1 marketing staff were organized. By confirming, rating and discussion, a service feature list and UI layout prioritized by weighing users preferences and feasibility were proposed.

5-6 Local GUI design
The following steps were carried out to design an integrated and local GUI system:
(1) Gathering visual elements reflecting local music culture, including different forms, pattern, color, material and so on.
(2) Classifying collected visual elements according to the atmosphere of the music activities context and users emotions by mood board.
(3) Extracting presentative African style form, pattern and color.
(4) Proposing several UI style design and main screen shot by applying representative African form, pattern and color for user to choose from.
(5) Co-created icon design
Users proposed some keywords (both noun and adjective) of the icon image to be designed, while designers quickly drew simple sketches according to the proposed key words to confirm and explore user’s expected icon image. The process was iterated to develop from simple sketches to detailed design. Finally, several icon designs were generated and later selected by users through rating in focus group.

6. Conclusion
This research topic was carried out by a cooperated project between the China User Research Center and Africa User Research Center of Enterprises A to develop mobile music service for target African users from August to November in 2009 in Nairobi, Kenya.
The newly proposed rapid mobile music service design process model based on user mental model in cross cultural context tried to explore service functions and features from user’s value system and local music activity context, UI framework according to user’s intuitive behavior logic flow, and GUI reflecting local music visual elements. The final design solutions generated by this design process model showed high satisfactory level in the final user evaluation test, proving the validity and provide references for rapid mobile music service design based on user mental model in cross cultural context.

Note and references