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# Interface design practice and education towards mobile apps development

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## Abstract

Mobile apps development has been gaining popularity in Malaysia over the past 3 years. An app usually refers to a software application or programme. Although the development of software applications have been around for decades, app development on mobile devices reached the shores of Malaysia, mainly due to the popularity of Apple's App Store. Software development and complex object-oriented programming have been the exclusive harbour of technology hobbyists, IT professionals and business executives for many years. The flourishing presence of Web applications and the over-whelming influence of social media has augmented our need for greater connectivity, sharing and online presence. These have allowed smartphones and gadgets to become mainstream. This paper looks at how a design institution in Malaysia provides the growth of mobile apps development, and in supporting the national agenda to drive the Malaysian web and mobile application development industry to global standards. The paper highlights the practice and education of user-centered interface design towards mobile apps development in the country.

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*Keywords:* interface design, mobile apps development, user-centered design, mobile user interface

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## 1. Introduction

Mobile applications (herein as 'mobile apps') are designed to run on smartphone platforms. With recent emergence of Apple Apps Store, Google Play (known as Android Marketplace previously), Nokia Ovi Store, Windows Phone Marketplace and Amazon App Store open up a huge possibility for designers and developers alike. Apps are downloadable to a specific platform, which depends on the type of mobile one owns that allow to gain access to the stores.

According to Gartner Inc. (2011), recent research markets highlighted that worldwide mobile application store downloads had reached 17.7 billion downloads in 2011, which is a 117 percent increase from an estimated 8.2 billion downloads in 2010. This exponential growth of mobile apps download highlights the importance towards designing and developing mobile apps in the current mobile development industry landscape. However, creating a mobile app is not an easy task as many mobile designers and developers will wonder what the users really want that drive the massive apps download such as Angry Bird game, Draw Something. In Malaysia, a creative multimedia and design institute, Interface Design Department from Faculty of Creative Multimedia, Multimedia University,

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advocates a user-centered design (UCD) as a core philosophy in the design practice and education of mobile apps development process. In this paper, we will exemplify a mobile app development case study with the focus on the user needs and UCD process.

## 2. Related Work on User Interface Design Process Model

There have been well-documented and successfully implemented early design process model (Pugh, 1991; Khong, 2000; Ulrich and Eppinger, 2000; Kankainen, 2003; Plos and Buisine, 2006). For instance, Pugh's (1991) Product Development Process (PDP) model highlighting an iterative design process of 'market-specification-concept design-detail design-manufacture-sell'. One of the authors, Khong (2000) reviewed various user centered design based on Product Development Process (PDP) published by Pugh (1991).

Pugh's PDP model emphasize on physical (tangible) product development, whilst the curriculum design in Interface Design Department encompasses designing user interface designs for physical (tangible) and non-physical (non-tangible) products, that catered for users' needs and wants. Hix and Hartson (1993) also highlight developing user interfaces by ensuring usability through product process. Therefore, we adopted and integrated a modified Pugh's PDP model in our user-centered design process, namely User Interface Design (UID) Process Model in our curriculum design and practice at Interface Design Department. The iterative UID design process was conducted within the context of multimedia and content design. The process was developed to cater, adhere and consist of the user-centered and interface design elements. Human Factors methods and design tools were fused together to provide a holistic design approach as described in the diagram below (Fig. 1):

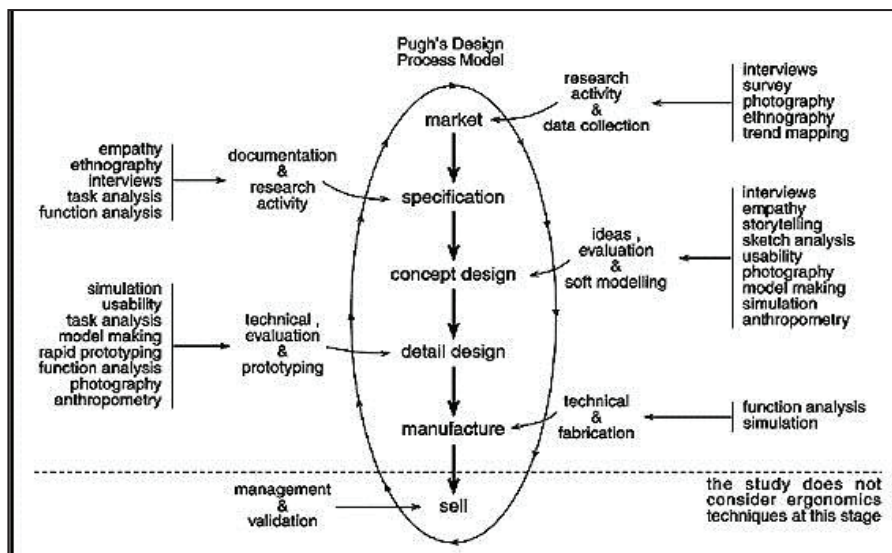


Figure 1. User-Interface Design (UID) Process Model adopted at Interface Design Department from a modified Pugh's Design Process Model.

Based on the UID process model, we had implemented and successfully produced several rounds of UID process for non-physical product development, in particular mobile apps. Our previous work described applying UID process model for a mobile community project for the Deaf (Wong, Khong and Thwaites, 2008), and non-physical designs practices in Malaysia context (Wong and Khong, 2011).

The User Interface Design Process Model (Figure 2) below lists a simplified iterative design process, which was applied in the context of mobile apps development at Interface Design Department. It integrates the design techniques and human factors tools, which are market research (market positioning/segmentation), user studies (user profiling, user persona), user-device observation, mood board, color scheme, metaphor studies, design narration, screen and display design, mobile apps prototype, and user evaluation.

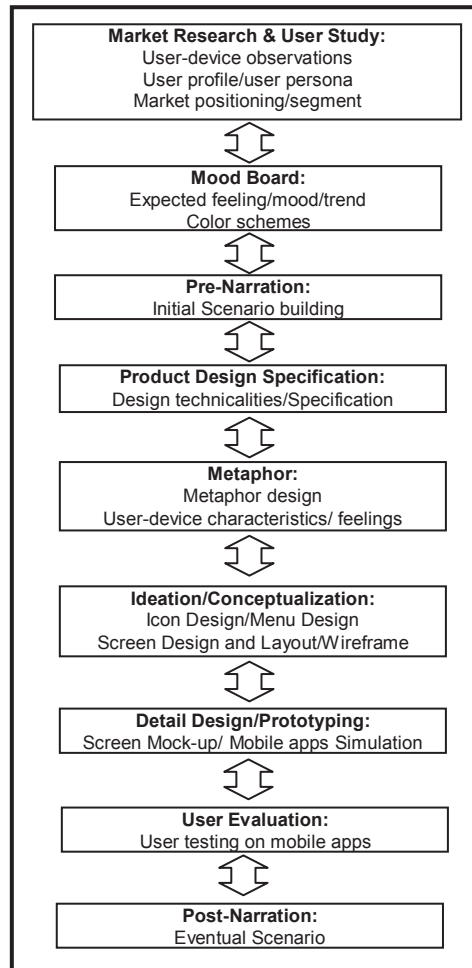


Figure 2. A simplified User Interface Design Process Model diagram deriving from Pugh's Design Process Model showing the design tools and human factors techniques deployed in the mobile apps development.

### 3. Mobile Apps Development


Since 2006, we have developed a series of mobile apps projects on Nokia and Apple iPhone platforms by the Interface Design students. Here we provide a case study with the adopted UID process model from the beginning of design project brief to translating user stories into developing a mobile app. PReS (Portable Recording Station) is a mobile app developed on Apple iOS platform. The idea was derived from the local animation studios and media production companies, whom required a lot of effort and resources to search for the right voice talents. Due to geographical distance, many times the potential voice talents having time constraint to travel to the production studio merely for voice audition and recording. Thus, PReS aims to streamline the voice casting for the potential voice talents, and to enhance the audio recording process for animation studios.

#### 3.1. Market Research and User Study

In view of market research and user study, two main target groups were identified as the targeted users for PReS. Basically, the user profile includes all age range of voice talents, female and male in regards of the character profile

in the animation production. To transform the user insights from the user study, we then translate those user profile into user persona. Cooper (1999) described persona as ‘*personae or personas as fictitious characters that are created to represent the different user types within a targeted demographic (profile) that might use a site or product.*’ Personas are given characteristics and are assumed to be in particular environments based on known users’ requirements so that these elements can be taken into consideration when creating scenarios for conceptualizing a site. The design process utilized in this project included the creation of personas in an attempt to assist the interface designers to identify and quantify the needs of the intended users. Figure 3 depicts a user persona of a professional voice cast that match with a character design in the animation production.

**Persona 2 (Professional)**

**Product Experience:**  
 Voice acting status: Professional  
 At first, being a voice actor was very challenging for him especially with the Bahasa Malaysia pronunciations as he was not used talk it formally. It was with the help of the voice actor that he improved a lot. He learns to exaggerate his acting in making it better. According to him, it is when the recording session is dragged into morning is when it gets hectic.

**Motivation:**  
 His motivation in being involved as a part timer as a voice talent (professional) is for additional experience. Apart from that, it is also for extra pocket money as he is planning to get married to the love of his life. He really just want to live his life to the fullest and try new things.

**Ambition:**  
 His ambition is to be tremendously successful with the company he built with his partners. Apart from that, he aims to be a successful animator whilst directing the company. He hopes to bring the creative industry of this country to a greater height and be at par with international production company such as Pixar’s.

**Education Background**  
 SPM: SMJK(C) Jit Sin, Pulau Pinang  
 DEGREE: 1st Class Bachelor of Multimedia (Hons) Film and Animation, Multimedia University Cyberjaya

**Lifestyles:**  
 Hobbies: Drawing and watching movies  
 Attitude: He is a workaholic person and someone who is very well organized.  
 He believes that he is a tunnel vision type of person, where he would only focus on one thing throughout. Also loves sports such as futsal and badminton.

Figure 3. A user persona describes about a target user’s product experience, motivation and aspiration.

### 3.2. Transforming Design Concepts into Mobile Apps Prototyping

To articulate the conceptual design idea, the interface designers first sketch out the initial ideas on paper form with wireframe. As advocated in the UID process, it is important that the interface designers give thoughts on the overall hierarchical menus, icons design, and its screen and display layout arrangement based on the user’s mental model (Norman, 1983) rather than designer’s mental model (McDaniel, 2003). Figure 4 shows some examples of wireframe concept and how those ideas were transformed into the mobile apps prototyping (Figure 5). The entire process is iterative as the mobile apps would be improvised in several cycles throughout the design process.

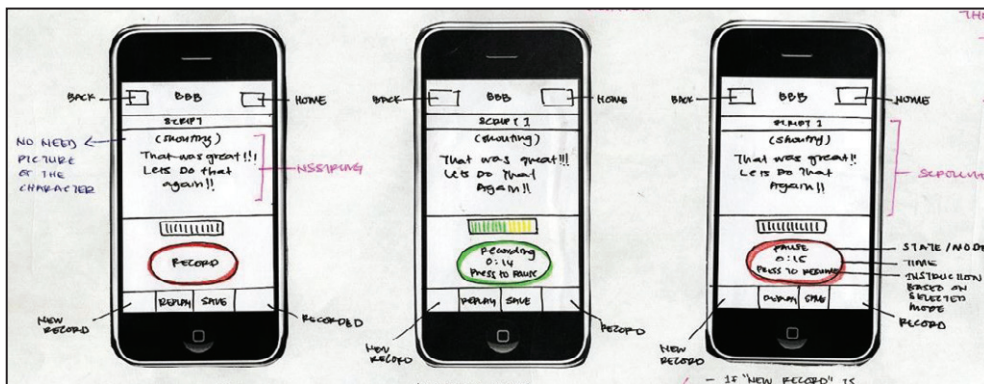


Figure 4. Screen shots of conceptual idea on wireframe.

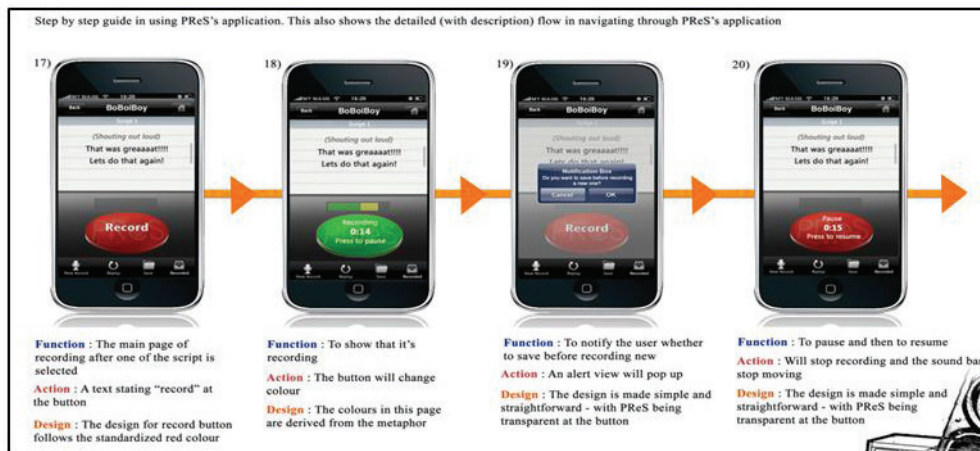


Figure 5. Screen shots of mobile app prototyping.

Once the mobile app prototype has been uploaded into the mobile platform (i.e. Apple iPhone), we conducted a user evaluation study to ensure the usability and functionality match with the targeted users' requirements.

#### 4. Conclusion

In conclusion, this paper addressed the design practice and education towards developing mobile apps with the adopted UID process model implemented in a design institute in Malaysia. In order to design a successful mobile app, an attractive aesthetical visual of user interface design is the first gateway to attract users to download. Having an enhanced usability and seamless user experience for the targeted users will add to the success of the app.

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