

Integrating Mobile Design Patterns within a User Interface Development Environment

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Outline

- * The broader context
- * Naïve developers and mobile UI design challenges
- * Interaction Design Patterns
- * The Mobile Interface Development Environment (MIDE)
- * Conclusions and future work

The Broader Context

- * The enormous amount of third party applications available for the various mobile platforms represent one of the main factors behind the wide adoption of mobile devices



However

- * Designing *usable* user interfaces for such applications still represents a challenging task



What when non-experts approach mobile interface development?

Obstacles to a good mobile interface design are

- * The lack of well recognized standards
- * No expertise and little knowledge of common mobile design issues and usability principles that should underlie any design choice



Mobile User Interfaces Design Challenges

- * Small size of the screen
- * Different level of support offered by current mobile platforms
- * Different types of interaction modalities
- * Poor computing power



Design Patterns

Pursuing Alexander's Dream

- * A concept introduced in the architectural domain by Christopher Alexander
- * They represent a general, reusable solution to a commonly occurring problem
- * They are formally documented in a given field of expertise
- * **Interaction** Design Patterns are a way to describe solutions to common usability or accessibility problems in a specific context
 - * They make easier for users to understand an interface and accomplish their tasks

Design Patterns

- * capture design practices rather than theory
- * capture the common essential properties of a good design
- * the common vocabulary provided can greatly improve communication within the team, and also serve as a corporate memory of design expertise
- * represent design knowledge at different levels: social, organizational, conceptual and detailed
- * express what is human in the interface design
- * are intuitive and easy to read and can therefore be used in the communication among stakeholders
- * a pattern language is usually generative and could therefore be profitably employed in the design of interactive systems.

Design Patterns

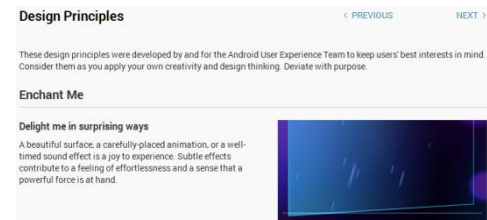
How to use them in practice?

- * Despite their benefits and advantages, the correct usage of design patterns can be difficult for novice users:
 - * Lack of expertise in the identification of the pattern(s) that best suit user's needs
 - * User's background or tight project schedules can constitute additional elements of difficulties
 - * Design patterns often represent generic solutions and their adaption to a real problem can constitute a further element of difficulty

MIDE – Mobile Interface Development Environment

A tool aimed at helping inexperienced developers with the design of usable mobile interfaces that:

- * Reflect the best practices of usability design dictated by widely used design patterns for the mobile world
- * Adhere to the Android platform guidelines proposed by Google



MIDE – Mobile Interface Development Environment

- * The common mobile design patterns catalogs are embedded inside a list of common application templates
 - Hooper, S. and Berkman, E. Designing Mobile Interfaces. O'Reilly Media, 2011.
 - Neil, T. Mobile Design Pattern Gallery: UI Patterns for iOS, Android and More. O'Reilly, 2012
- * The Google recommendations for the 4.x branch of the Android platform are supported

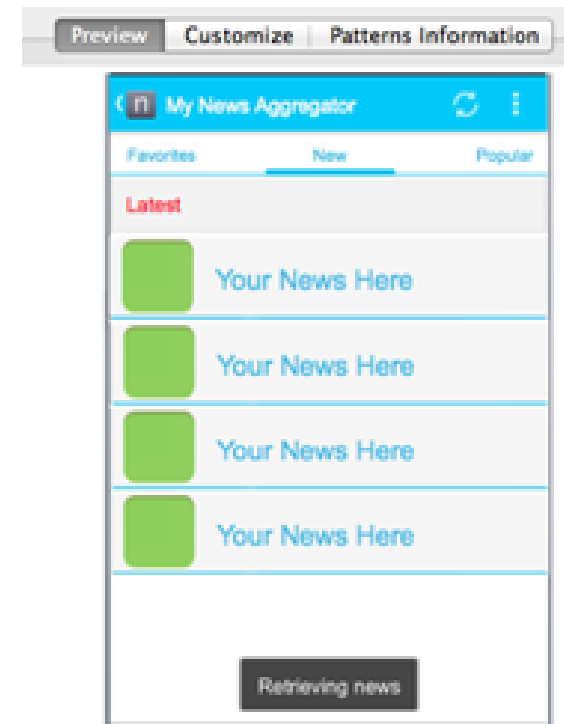
MIDE – Mobile Interface Development Environment

- * MIDE can be used in two complementary ways
 - * As a step by step wizard to rapidly generate the user interface skeleton of a typical Android application
 - * As a collection of commonly used functionalities that the user can manually compose in order to design the user interface

The general idea: bringing design knowledge closer to non-experts

MIDE – Wizard configuration

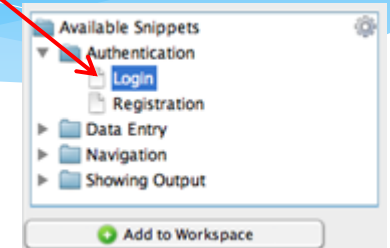
- * The user can choose among a predefined set of application templates
 - * Each template encompasses the general structure of a common mobile application such as an image gallery or a news application
 - * The user can customize the behavior of the proposed interface choosing among a proposed set of options
 - * Each option is a well-recognized pattern for the specific task



News template preview window

MIDE – Common functionalities configuration

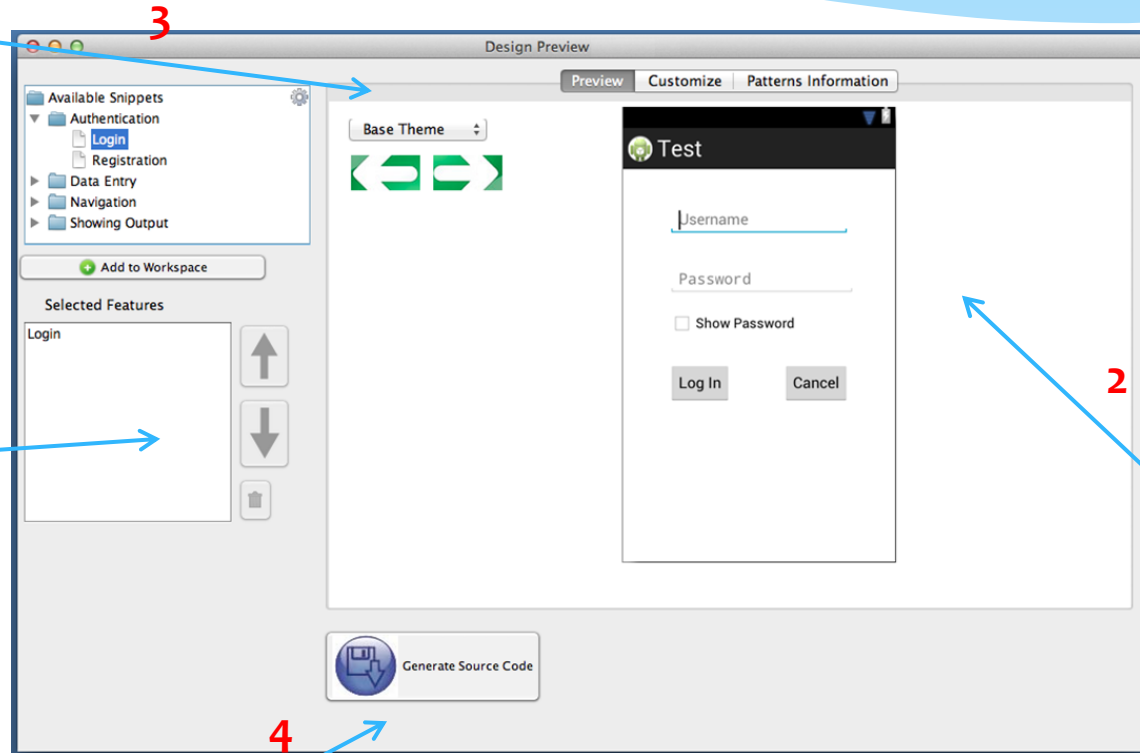
- * Ready to use UI snippets are provided to the designers
- * The user can build his own interface with a simple drag and drop of the chosen functionalities in the desired order
- * To simplify user's choice the list of available functionalities are divided into the classic interaction categories available in mobile applications
 - * Authentication, Showing output, Data insertion etc.
- * The proposed layout and behavior for each single functionality are the result of the application of one or more well recognized pattern



MIDE – A typical interaction sequence

Android offers three system themes for the 4.x branch :

- Holo Light
- Holo Dark
- Holo light with dark action bars



List of available and selected functionalities

The user builds his/her interface dragging and dropping here the desired functionalities

Generation of XML files and Java classes forming the actual Android source code of the chosen template or snippet

Future Work

- * New Templates
- * Making MIDE a cross-platform tool (support for Apple iOS and Windows Phone)
- * Empirical evaluation involving potential users to assess the effectiveness of our proposal

Your feedback definitely needed!