Android Applications Development and Design Patterns

References
1. Android Developers
   - Patterns Definition: Design apps that behave in a consistent, predictable fashion
3. Android Design Patterns – Interaction Design Solutions for Developers, by Greg Nudelman
4. Android UI Patterns and Anti-Patterns, Mobile Tech Conference 2012 Presentations, 57 min, http://www.youtube.com/watch?v=EisUfFS1fZk
Android Applications Design Topics

Android Developers

- Patterns Definition: Design apps that behave in a consistent, predictable fashion
  - Touch: Action – Press, lift
  - Swipe or drag: Action - move, lift
  - Double touch
  - Double touch drag
  - Pinch open
  - Pinch close

Android Applications Design Topics

  - App Examples
    - Calculator or Camera – single focused activity from a single screen
    - Phone – switch between activities without deep navigation
    - Gmail or Play Store – combine a broad set of data views with deep navigation
  - General Structure
    - Top level views and Detail/Edit views
    - Category view can be used to connect top-level view and Detail/edit view
Android Applications Design Topics

- Top Level Switching with View Controls
  - Fix tabs
  - Spinners (drop-down menu)
  - Navigation drawers (slide-out menu)
- Categories
- Details
  - Layout
  - Checklist

Android Applications Design Topics

- Navigation Within Your App
- Navigation into Your App via Home Screen Widgets and Notifications
- Navigation Between Apps
Android Applications Design Topics

- A dedicated piece of real estate at the top of each screen that is generally persistent throughout the app.
- General Organization

- Adapting to Rotation and Different Screen Size
- Layout Considerations for Split Action Bars
  - Main action bar, Top bar, Bottom bar
- Action Buttons
  - Sample Action button used in Gmail

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Android Applications Design Topics

- ...
- Contextual Action Bars
- Action Bar Checklist
Android Applications Design Topics

- **Navigation Drawer**,  
  - A panel that transitions in from the left edge of the screen and displays the app’s main navigation options.

- **Multiple-pane Layouts**,  

- **Swipe Views**,  

- **Full Screens**,  

- **Selection**,  

- **Confirming & Acknowledging**,  

- **Notifications**,  

- **Widgets**,  

- **Settings**,  

- **Help**,  

- **Compatibility**,  

- **Accessibility**,  
Android Patterns, [http://unitid.nl/androidpatterns/](http://unitid.nl/androidpatterns/)

Shared by UNITiD and Contributors:

- Dealing with Data
- Getting Input
- Navigation
- Notifications
- Personalize
- Screen Interactions
- Social

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Android Patterns: [http://unitid.nl/androidpatterns/](http://unitid.nl/androidpatterns/)

- **Dealing with Data / a Set of Data**
  - Displaying
  - Viewing
  - Sorting
  - Browsing
  - Searching

- **Change view on a set of data:**
  - Options Menu, Dedicated Button, Tab Bar

- **Let users load more items:** Dynamic loading of a list, Pull to refresh

- **Let users search:** Search bar, Main menu, Dedicated item

- **Let users sort data:** Drag & drop, Sort-key Dialog

- **Show a vast amount of content:** Expandable list, Segmented control, Data dill down, Dynamic loading of a list, Static list, Sliding layer
Android Patterns:
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- **Getting Input**
  - Let users enter a value
    - Slider, Spinner
  - Let user enter text
    - Soft keyboard – Pan & scan
    - Soft keyboard - Extract
  - Let users select a predefined value
    - Spinner
  - Let users select multiple items
    - Checkbox
  - Set time & date
    - Date & Time picker – Plus, Minus
    - Date & Time picker - Wheel

- **Navigation**
  - Highlight important functionalities
    - Action bar, Dashboard – Categories, Dashboard – Features
  - Let users find their way through a vast amount of contents
    - Drill down navigation, List navigation, Segmented control,
      Expandable list, Mode Selector, Tabs, Window shade,
      Scroll thumb, Slideable top navigation, Scrollable rows,
      Scrolling tabs, Horizontal scrolling – Page indicator
  - Let users move through content
    - Carousel, Stepping, Scroll thumb, Scrollable rows,
      Contextual navigation
Android Patterns: http://unitid.nl/androidpatterns/

- **Notifications**
  - Notify users of an activity in my app
    - Toast message
    - Progress bar dialog
    - Progress wheel dialog
    - Progress wheel
  - Request a response from users
    - Alert dialog
    - Status bar – Event driven notification
    - Status bar – Ongoing notifications

- **Personalize**
  - Let users manage their account
    - Login
    - Create account
    - Add account – Dedicated button
    - Add account – Options menu
  - Let users set favorite items
    - Favorites
    - Bookmark – Options menu
**Android Patterns:**
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- **Screen Interactions**
  - Let users move content around the screen?
    - Drag to move
  - Let users scroll through content
    - Slide to scroll
    - Fling to scroll
    - Scroll thumb
  - Let user zoom in on content
    - Double tap to zoom
    - Pinch & Spread

- **Social**
  - Let users respond to content
    - Comments
    - Rating – Stars
    - Thumb up/down
    - Share button
Android Design Patterns


- Patterns
  - Welcome Animation
  - Tutorial

Android Design Patterns: Home Screen

Android Design Patterns – Interaction Design Solutions for Developers, by Greg Nudelman

- Home Screen
  - List of Links
  - Dashboard
  - Updates
  - Browse
  - Map
  - History
**Android Design Patterns: Search**

**Android Design Patterns** – Interaction Design Solutions for Developers, by Greg Nudelman

- **Search – Patterns**
  - Voice Search
  - Auto-Complete & Auto-Suggest
  - Tap-Ahead
  - Pull to Refresh
  - Search from Menu
  - Search from Action Bar
  - Dedicated Search
  - Search in the Content Page

- **Anti-pattern**
  - Separate Search and Refinement

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**Android Design Patterns: Sorting and Filtering**

**Android Design Patterns** – Interaction Design Solutions for Developers, by Greg Nudelman

- **Sorting and Filtering - Pattern**
  - Refinement Page
  - Filter Strip
  - Tabs
Android Design Patterns: Avoiding Missing and Undesirable Results

Android Design Patterns – Interaction Design Solutions for Developers, by Greg Nudelman

- Patterns:
  - Partial Match
  - Local Results

- Anti-patterns:
  - Ignoring Visibility of System Status
  - Anti-pattern: Lack of Interface Efficiency
  - Anti-pattern: Useless Controls
  - Pattern: Did You Mean?

Android Design Patterns: Data Entry

- Slider
- Stepper
- Scrolling Calendar
- Data and Time Wheel
- Drop Down
- Multiple Select
- Free-Form Text Input & Extract
- Textbox with Input Mask
- Textbox with Atomic Entities
Android Design Patterns: Forms

- Pop-up Alert
- Callback Validation
- Cancel/OK
- Top-Aligned Labels
- Getting Input from the Environment
- Input Accelerators

Android Design Patterns: Mobile Banking

- Logic Accelerator
- Dedicated Selection Page
- Form First
- Dedicated Pages Wizard Flow
- Wizard Flow with Form
- Verification-Confirmation
- Near Field Communication (NFC)
Android Design Patterns: Navigation

- Patterns
  - Watermark
  - Swiss-Army-Knife Navigation
  - Integration – The Final Frontier

- Anti-Patterns
  - Pogo-sticking
  - Multiple Featured Areas
  - Carousel
  - Pop-over Menu

Summary