The Small Screens, Big Dreams: A Detail-Oriented Approach to BlackBerry Application User Interface Design

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February 16, 2010
Schedule

- Principles of Design and Case Studies
- Interface Library
- Master the Layout Engine
Elements and Principles of Design

Repetition                        Dominance
Contrast                          Whitespace
Information Density               Unity
Repetition
Repetition
Contrast

White House to Scrap Bush's Approach to Missile Shield
By PETER BAKER and NICHOLAS HULISH 2 minutes ago
WASHINGTON — The Obama administration plans to announce a reconfigured system that won't be based in Poland or the Czech Republic, and will be aimed at intercepting Iranian missiles.

Bomb in Kabul Kills 6 Italian Troops
By ABUBU LAYHEED REFAEE and RICHARD A. OPPEL, JR. 50 minutes ago
KABUL — A suicide bomber attacked an Italian military convoy, also killing at least 10 Afghan civilians. Above, a doctor treating the wounded at a Kabul hospital.

Indonesian Police Kill Alleged Terror Mastermind
By PETER GELLING and MARK MCDONALD 50 minutes ago
JAKARTA — Noordin Muhammad Top, the suspected mastermind of bombings in Bali and Jakarta, was killed in a raid.

Lab Technician Arrested in Death of Yale Student
By JAMES BARRON and SERGE F. KOVALEVIC 35 minutes ago
Raymond Clark III, 24, was arrested and charged on Thursday in the murder of Annie M. Le, the police said.
# Contrast

<table>
<thead>
<tr>
<th>Background</th>
<th>Foreground</th>
<th>Separators</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xF0F4F5</td>
<td>0x004276</td>
<td>0xE2E2E2</td>
</tr>
<tr>
<td>0xE6EFF8</td>
<td>0x808080</td>
<td>0xCBCBCB</td>
</tr>
<tr>
<td>0xF0F4F5</td>
<td>0x666666</td>
<td>0xD3D3D3</td>
</tr>
<tr>
<td>0xFAF9DC</td>
<td>0x333333</td>
<td>0xC0C0C0</td>
</tr>
<tr>
<td>0xFFFFFFFF</td>
<td>0x000000</td>
<td>0x000000</td>
</tr>
</tbody>
</table>

BlackBerry.
Contrast Tips

• Minimum 50% contrast between foreground text and background color
• No gradients behind text
• Less important text has less contrast
• Separators should not compete with content
• Changing one attribute of text is enough to show hierarchy (no need to bold, underline, and italic)
Information Density

Tufte example

82% of screen is administrative debris

53 Characters

Real books have thousands of characters

* From Tufte’s “Visual Confections” 1997
Case Study 1 – Options

Very dense screen
Can we apply some design principles without compromising information density?

<table>
<thead>
<tr>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>About</td>
</tr>
<tr>
<td>Advanced Options</td>
</tr>
<tr>
<td>Applications</td>
</tr>
<tr>
<td>Auto On/Off</td>
</tr>
<tr>
<td>AutoText</td>
</tr>
<tr>
<td>Bluetooth</td>
</tr>
<tr>
<td>Custom Dictionary</td>
</tr>
<tr>
<td>Date/Time</td>
</tr>
<tr>
<td>Language and Text Input</td>
</tr>
<tr>
<td>Phone Options</td>
</tr>
<tr>
<td>Screen/Keyboard</td>
</tr>
<tr>
<td>Security Options</td>
</tr>
</tbody>
</table>
Case Study 1 – Options – Whitespace

Text touches screen edges

Padding lets the eye identify letterforms

Options
About
Advanced Options
Applications
Auto On/Off
AutoText
Bluetooth
Custom Dictionary
Date/Time
Language and
Phone Options
Screen/Keyboard
Security Options
## Case Study 1 – Options – Dominance

### All elements look equally important

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### Chevrons denote importance and hierarchy

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# Case Study 1 – Options – Unity

## One set of Options

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## Highlights option groups further (at a cost)

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Case Study 2 – Facebook Header

The toolbar that appears on top of the Facebook® app.
Case Study 2 – Facebook toolbar
Case Study 2 – Facebook toolbar

Gradient is dramatic, and decreases effective space around letters

Bold font competes for attention. Titlebars are generally background noise

No separator between the toolbar and content below

Faux button border touches side of icon
Case Study 2 – Facebook toolbar
Case Study 2 – Facebook toolbar

Solid background is fast to draw, and doesn’t interfere with toolbar shape

Plain font is readable, and stroke width matches the surroundings

1px bevels give the toolbar depth

Border does not touch icons, aiding shape identification
Case Study 2 – Facebook toolbar
Schedule

Principles of Design and Case Studies

- Interface Library

Master the Layout Engine
Core Fields

- **ButtonField**
- **ChoiceField**
- **RadioButton**
- **Checkbox**
- **BitmapField**

TitleField

Set Up Wi-Fi

ListFields and TextFields

Email:

Find:
Add Contact:

Lookup:

#AUTO

411 - Assistance

Alex Williams
RIM Operating Canada

GaugeField

100%
Creating Custom Button Fields

BaseButtonField is an abstract class you can extend to create full featured button fields with all five states.

Plus three example implementations:

- BitmapButtonField
- HyperlinkButtonField
- EmbossedButtonField
ListStyleButtonField

Creating lists can be painful when you have a fixed number of elements.
The core GaugeField is plain. There are times when more rich presentation is called for.
SliderField

Similar to the BitmapGaugeField, but with a thumb that can be dragged to adjust a setting.

Slider Example

Slider. Composed of a background stretched to fit, and a thumb image. Divided into n positions.
SwitchField

The SwitchField and LabeledSwitchField offer an alternative to checkboxes. They also provide larger touch targets.
Schedule

Principles of Design and Case Studies
Interface Library
► Master the Layout Engine
The **best layout** for your app is the one that makes the most sense for your content.
The two keys to successful layout
1) Padding and Margins
2) A good set of Managers
The Box Model

The Box Model acts much like HTML

Field Content
Padding
Border
Margin

getWidth()

getContentWidth()
Padding and Margin

Balance information density and whitespace. Too much or too little can both have negative consequences.

### Status

<table>
<thead>
<tr>
<th>Status</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal</td>
<td>-40 dBm</td>
</tr>
<tr>
<td>Battery</td>
<td>100 %</td>
</tr>
<tr>
<td>File Free</td>
<td>168412896 Bytes</td>
</tr>
<tr>
<td>PIN</td>
<td>200000001</td>
</tr>
<tr>
<td>IMEI</td>
<td>123456.78.687091.3</td>
</tr>
<tr>
<td>WLAN MAC</td>
<td>B9:DF:11:1E:01:9A</td>
</tr>
<tr>
<td>IP Address</td>
<td>0.0.0.0</td>
</tr>
</tbody>
</table>
Padding and Margin

Which control does the hint text belong to?

Spatial proximity between elements can create logical groups or unfortunate think points.
boolean lowRes = Display.getWidth() <= 320;

if( lowRes ) {
    // Pearl, Flip, Curve, 8800
} else {
    // Bold, Tour, Curve 2, Storm
}

// or

int padding = lowRes? SMALL: BIG;
Padding and Margin

Field.setPadding( top, right, bottom, left );
Field.getPaddingTop();
Field.getPaddingRight();
Field.getPaddingBottom();
Field.getPaddingLeft();

The best way to separate content from the elements around it. Don’t use spacer fields!

Similarly for Margins

4.2+ Codelines
The two keys to successful layout
1) Padding and Margins
2) A good set of Managers
Core Managers

VerticalFieldManager
Respects Horizontal style bits

HorizontalFieldManager
Respects Vertical style bits

FlowFieldManager
Positioning - Horizontal

What happens when you put two things in a HFM and the first one uses USE_ALL_WIDTH?
Positioning - Horizontal

JustifiedHorizontalFieldManager lets you specify which field gets first choice at space.
Positioning - Vertical

Similarly for vertical alignment, the **JustifiedVFM** lets you specify which field is laid out first.

Useful for IM style screens
Field Sets
ListStyleButtonSets

UI Example

- Custom Buttons
- HyperlinkButtonField
- ListStyleButtonField

Sliders

- Gauge
- Slider

Switches

- Switch
- Labeled Switch

ListStyleButtonField Sets

Strong association between the elements. Good for grouping related objects in Options screens.

- About
- Owner
- Status

HorizontalListStyleButtonSet will stack the fields horizontally, giving each an equal amount of space.

The ListStyleButtonField also supports Drawstyle.LEFT | RIGHT | HCENTER style bits for text alignment

Shuffle  Stop
**VerticalButtonFieldSets**

**Default Behaviour**

**Desired Behaviour**

- **Message**: MeterBerry Notification
  - Mon 12:25 AM
  - Battery is below 20% (18%)
  - Options:
    - Open MeterBerry
    - Snooze
    - Dismiss

- **Contextual Menu**
  - Remind me in:
    - 30 min
    - 1 hour
    - 2 hours

- **Contact List**
  - Chantal
  - 604 555 1234
  - 08/08
  - +1604 555 1234
  - 07/31
  - CPSA
  - 07/30
  - Marc Tender
  - 778 389 3311
  - 08/04
  - 08/02
  - 07/30
  - 07/30

- **Application Menus**
  - Continue
  - New
  - Highscore
  - Highscore Shot
  - Awards
  - Switch User
  - Options
  - Help
  - Exit

- **OpenTable**
  - Make Reservations on the Move
  - Current Location
  - Select Location
  - Enter Address
  - Recent Locations
  - Boston / New England - Boston Suburbs
Vertical Button Field Sets

Solution: Custom Button Managers

If the USE_ALL_WIDTH style bit is used the buttons extend across the available area.

Otherwise, they expand to the width of the other largest button.

Otherwise, they expand to the width of the other largest button.
HorizontalButtonFieldSets

LaunchPad: Add Web Launcher

- Launcher Name:
- URL:
- Test Link
- Icon (max 72 x 72):
- Use Default
- Choose Icon
- Fetch Icon from Site

Restaurant Details

China Grill - Chicago

Downtown / Loop
Pan-Asian
$31 to $50

230 North Michigan Ave
Hard Rock Hotel
Chicago, IL 60601

Tuesday, July 14

- 6:45PM
- 7:00PM
- 7:15PM

OpenTable

BlackBerry
HorizontalButtonFieldSets

Large touch targets, and nicely aligned grids

The HorizontalButtonFieldSet will align the buttons horizontally with equal width.

It can handle any number of children

Save  Discard  Cancel

SMS  MMS
Toolbars
Toolbars

EquallySpacedHorizontalFieldManager

JustifiedEquallySpacedHorizontalFieldManager
Toolbars

EquallySpacedHorizontalFieldManager

JustifiedEquallySpacedHorizontalFieldManager
PillButtonSet
Thank You

Brian Zubert, Sr. Application Development Consultant
Questions & Answers