

Software Patterns

L10: Usability Patterns for Mobile



Prof. W. Maalej – @maalejw

O'REILLY®

2nd Edition



Mobile Design Pattern Gallery

UI PATTERNS FOR SMARTPHONE APPS

Theresa Neil
Foreword by Jenifer Tidwell

Overview

1

Usability

2

Usability Patterns

3

Usability Anti-Patterns

What is usability?

“The extent to which a product can be used by specified users to achieve specified goals with **effectiveness, efficiency** and **satisfaction** in a specified context of use.”

[ISO Standard 9241-11]

Example 1



Example 2

GangProg32 (MSP430 Flash Gang Programmer) - Optektrol Inc.

File View Setup Serialization About

Open Code File: test_32.nf path: E:\MSP430\TempCode\

Microcontroller Type: MSP430F140 Status: Pass

Total: 100 Balance: 70

Target: MSP430F140

Selected Device Information: RAM - 2048 bytes, FLASH - 48 kB

Report:

Reading Target Label	done
Erasing memory	done
JTAG communication initialization	OK
All memory blank checking	OK
Writing SN p1	20052126
Writing SN p2	20052127
Writing SN p3	20052128
Writing SN p4	20052129
Writing SN p5	20052130
Writing SN p6	20052131
Flash programming	done
Verifying check sum	OK
Reading Target Label	done
----- DONE ----- (run time = 5.7 sec.)	

Adapter: GangProg32 / FlashProg32 - Full Access

Interface: JTAG (5 MHz)

Next SN Format: YYYYMM

Power Device from Adapter: 1.2V Enable

Blow Security Fuse Enable

Device Action Reload Code File

VB Grid ActiveX - Advanced Grid Sample 1.0

Grid simple

From	Subject	Received	Size
Froze Cell 1	Subject Col 1	Received Cell 1	Size Cell 1
Froze Cell 2	Subject Col 2	Received Cell 2	Size Cell 2
Froze Cell 3	Subject Col 3	Received Cell 3	Size Cell 3
Froze Cell 4	Subject Col 4	Received Cell 4	Size Cell 4
Froze Cell 5	Subject Col 5	Received Cell 5	Size Cell 5
Froze Cell 6	Subject Col 6	Received Cell 6	Size Cell 6
This is a test of row body 6			
Froze Cell 7	Subject Col 7	Received Cell 7	Size Cell 7
This is a test of row body 7			
Froze Cell 8	Subject Col 8	Received Cell 8	Size Cell 8
This is a test of row body 8			
Froze Cell 9	Subject Col 9	Received Cell 9	Size Cell 9
This is a test of row body 9			
Froze Cell 10	Subject Col 10	Received Cell 10	Size Cell 10
This is a test of row body 10			

Add Edit Delete Add Flag Hot Track Row Mode

Remove Selected Read (Smooth) Remove Flag Grid Lines Full Headers

Enable Multi Select Self New Background Image

VBGrid ActiveX Advanced and Ready to use Grid for Visual Basic developers.

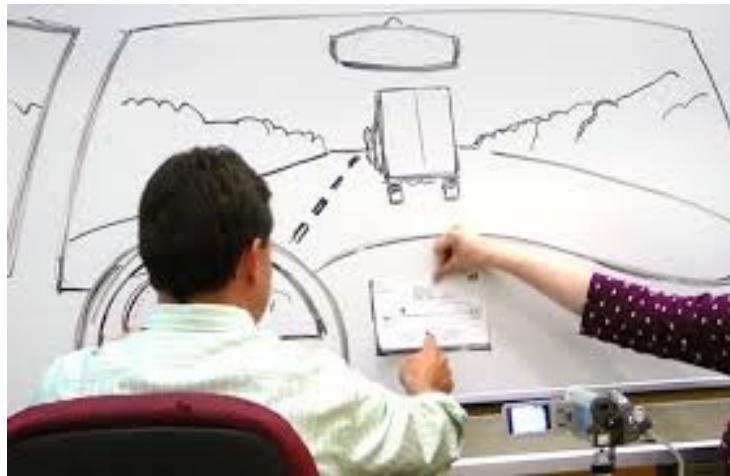
Example 3

The image displays two side-by-side screenshots of the VisualKPI mobile application interface, showing its evolution from 2011 to 2013.

Left Screenshot (2011): The interface is primarily light green and yellow. It features a top navigation bar with icons for search, refresh, and info. Below this is a toolbar with icons for filter, grid, list, and search. The main content area shows a list of items: "Home", "All Views", "Region-NE", "Region-SE", "Region-W", and "Calls". A red banner labeled "anti-pattern" is overlaid on the "Calls" item. At the bottom, there's a "Trend" section with "Multi Pen" and "Multi Scale" options, and a legend at the bottom with color-coded squares: purple, yellow, green, orange, red, grey, black, and white. A footer bar contains navigation icons.

Right Screenshot (2013): The interface has a more modern look with a pink and black color scheme. The top navigation bar includes icons for signal strength, battery, and time (12:30 PM). The toolbar below it has a different set of icons. The main content area lists "Home", "Group", "KPI Rollup", "All Groups", "Region NE", "Excel", and "Map Example". A red banner labeled "anti-pattern" is overlaid on the "Region NE" item. A legend at the bottom uses colored squares to represent categories like NIS, LL, L, G, H, HH, Unk, and NA. The footer bar is identical to the 2011 version.

Usability testing



Usability metrics

- Completion Rates (1 = Task Success, 0 = Task Failure)
- Task Time
- Errors
- Expectation
- Page Views/Clicks
- ... <https://measuringu.com/essential-metrics/>



Why usability design patterns

- Reuse of established UI design decisions
- Collections of UI Design Patterns
 - Easy to find and apply the proper pattern
- Improve user experience
 - Users recognize the patterns
- Software systems can be learned faster
- It is likely that users become confused by a new, complex UI design

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Type of usability patterns

Usability patterns based on types of UI elements

- Navigation
- Forms
- Search, Sort, and Filter
- Tables
- Charts

Others usability patterns:

- Tools, Tutorials, Invitations and Social Patterns

Navigation

Primary Navigation

Persistent

- List Menu
- Tab Menu
- Dashboard

Transient

- Side Drawer
- Toggle Menu
- Pie Menu

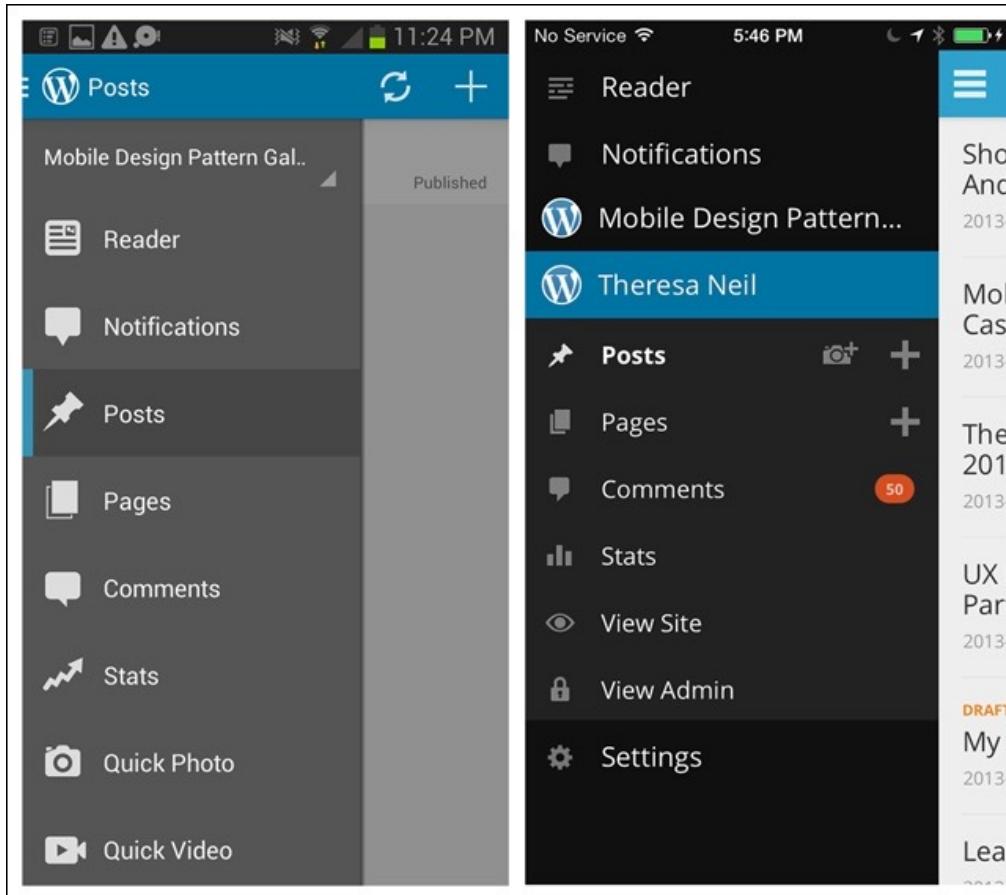
Secondary Navigation

- Page Swiping
- Scrolling Tabs
- Expand / Collapse Panel

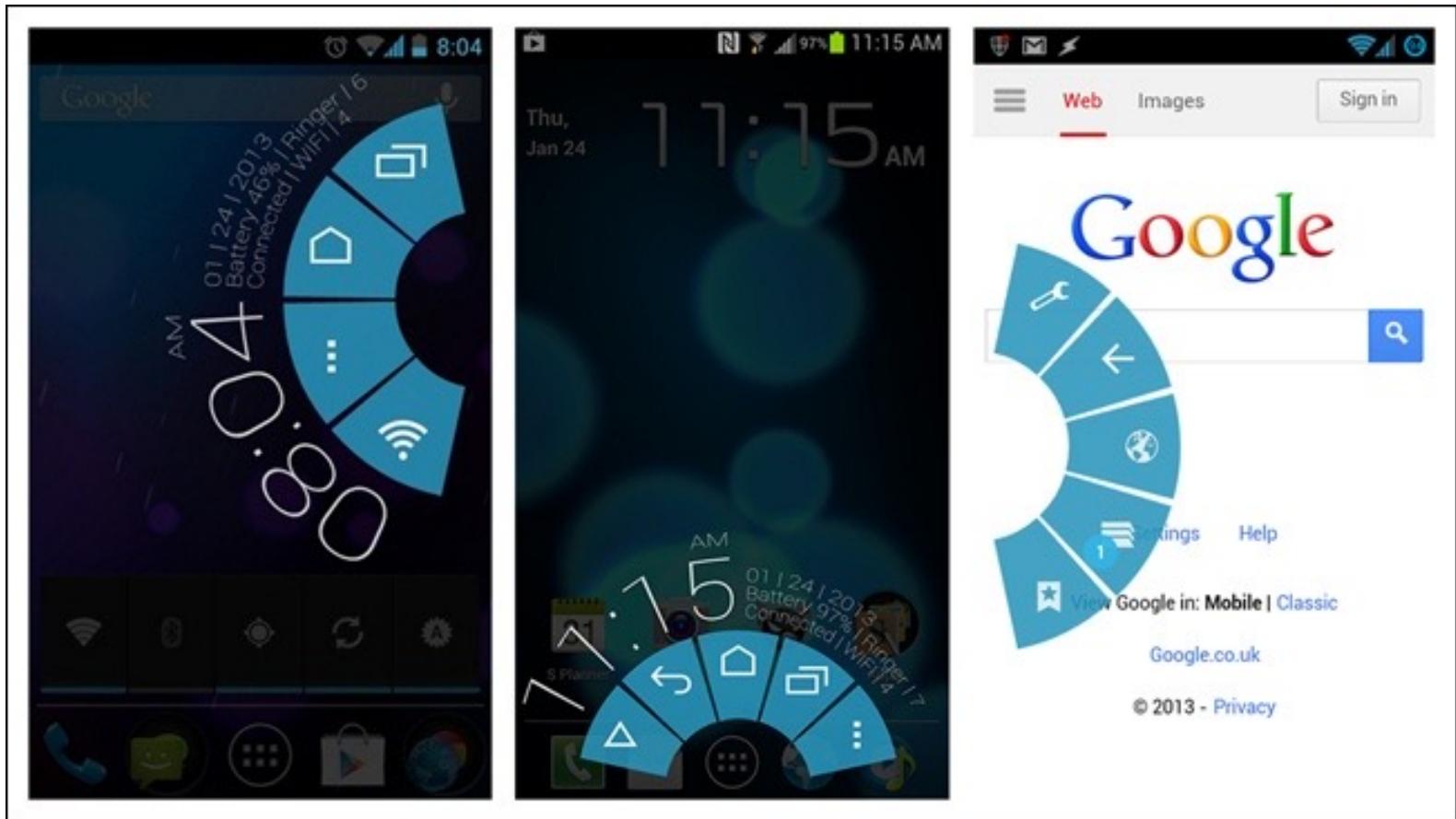
Note: Primary Navigation Patterns can also serve as a secondary level

Example: Side drawer

- One of the most popular primary navigation pattern (has its origins from “thinking out canvas”)



Another side drawer



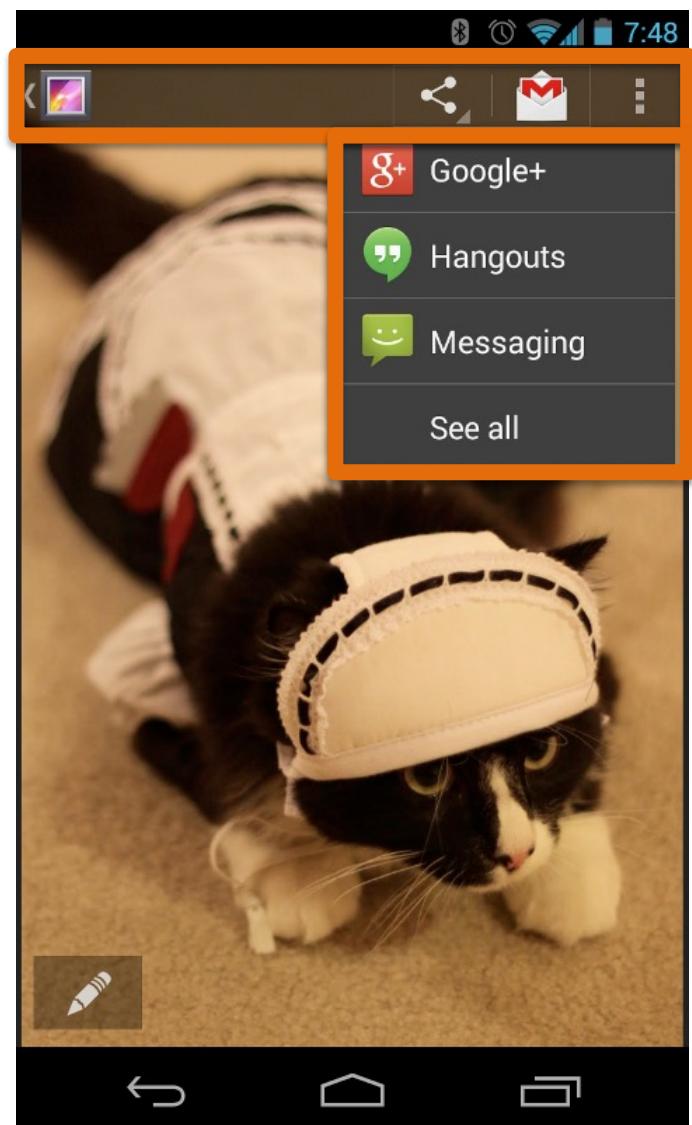
Primary & secondary navigation



Primary Navigation (Side Drawer)

Secondary Navigation (Gallery)

Action bar and navigation tabs



Forms

- Sign In
- Registration
- Registration with Personalization
- Multi-Step
- Checkout
- Calculator Forms
- Search Forms
- ...

Sign In

The image displays two side-by-side mobile application sign-in interfaces.

Left Application: Remember the Milk

- Header:** Icons for signal strength, battery, etc., followed by the time (9:22 PM).
- Top Left:** Logo of a white cow with the text "remember the milk".
- Top Right:** Orange "Sign Up" button.
- Middle Text:** "Never forget the milk (or anything else) again."
- Form Fields:**
 - Username:** Text input field labeled "Required".
 - Password:** Text input field labeled "Required".
- Buttons:**
 - Blue "Login" button.
 - Grey question mark icon in the bottom right corner.

Right Application: Groupon

- Header:** Icons for signal strength, battery, etc., followed by the time (4:01 PM).
- Top Left:** Green back arrow icon.
- Top Center:** Groupon logo.
- Text:** "Sign in to your Groupon account".
- Buttons:**
 - Blue "Sign In with Facebook" button featuring the Facebook "f" icon.
 - Text "or" below the Facebook button.
- Text Input Fields:**
 - Text input field containing "theresaneil@gmail.com".
 - Text input field for "Password".
- Large Buttons:**
 - Green "Sign In" button.
 - Green "Forgot Password?" link.
- Text:** "Need a Groupon Account? [Sign Up](#)".

Registration form

The screenshots illustrate a user flow for account creation:

- Step 1:** A registration screen showing an error message: "The username theresaneil is not available." The user has chosen the username "theresaneil".
- Step 2:** Another registration screen showing the same error message, with the user now choosing the username "theresaneilid".
- Step 3:** A third registration screen showing the same error message, with the user choosing the username "theresaneilid".
- Step 4:** A "Create Profile" screen where the user is asked to enter their email address ("theresaneil@gmail.com") and password. A red banner labeled "anti-pattern" covers the acceptance of terms and conditions.
- Step 5:** A second "Create Profile" screen showing the same fields. A red banner labeled "anti-pattern" covers the acceptance of terms and conditions. A modal dialog box appears, stating "Email already used" and "Somebody's already created an account using this email address. Perhaps it was you." at the bottom.
- Rightmost Screenshot:** A "Welcome New Account" screen. The user's details are listed:
 - First Name: Theresa
 - Last Name: Neil
 - Email: theresaneil@gmail.com
 - Password: [REDACTED] (Strength: Good)A numeric keyboard is visible at the bottom.

Search form

The image displays three side-by-side screenshots of flight search interfaces, each featuring a large red 'X' icon in the top-left corner.

Screenshot 1 (Left): American Airlines
Step 1 of 6
From: [Input field]
To: [Input field]
Show Results By: Price Schedule
Departure Date: Month: Early Morning Day: [Input field]
Return Date: [Input field]

Screenshot 2 (Middle): Another flight search interface
Step 1 of 6
Return Date: Month: Day: Early Morning
Passengers: 1 Adult (16-64)
Cabin Preference: Economy With Restrictions
Country of Residence: United States
Start Over Continue

Screenshot 3 (Right): A summary or confirmation screen
round-trip one
From: BOS: Boston
To: SFO: San Francisco
Depart: Thu, Jun 27, 2013
Return: Fri, Jun 28, 2013
Passenger: 1 Prefer Non-Stop Class: Economy
[Icons for edit, delete, and more]

Search form

◀ Map For Sale 277 Results

Listings Map Options

FOR SALE

PRE-MARKET i

RECENTLY SOLD

PRICE Any Price

Beds

Any

Baths

Any

See 277 Results Reset Save Search

◀ Map For Sale 54 Results

Listings Map Options

FOR SALE

PRE-MARKET i

RECENTLY SOLD

PRICE \$290K - \$600K

Beds

Any

Baths

Any

See 54 Results Reset Save Search

Rules for search, sort, and filter

Search Input

- Minimize the number of input fields
- Provide saved, recent and popular terms
- Make it easy to select previous terms

Search Results

- Display results on the same or a dedicated screen
- Display results in a table, on a map, satellite images or as thumbnails

Search patterns

Implicit Search

Apps are aware of user's needs

Explicit Search

Scan an item, type a search term

Auto-Complete

Complete search item while typing

Dynamic Search

Search in different categories at once

Scoped Search

Search in a specific category(e.g. audio)

Implicit search: google now

Lunch with Brad @ 12pm

2368 3rd Street, San Jose, CA 94107

Get directions / 33min via 101

Alternate route / 45min via 280

San Francisco

SUNNY 80°

TUE WED THU FRI

72°	82°	60°	84°
62°	72°	42°	78°

55 minutes to work

Light traffic on 101

Pacifica Airlines flight 2340

Status: Delayed / Wed, June 27, 2012

Depart San Francisco

SFO 7:09pm (sched. 5:20pm)
Terminal 4, Gate A3

Arrive Taipei

TPE 10:32pm
Terminal 2, Gate 50

Navigate to SFO / 34 min

The Connaught Hotel

Carlos Place, Mayfair, London W1K 2AL, United Kingdom

Check-out in 1 hour

Get directions

La Gavroche

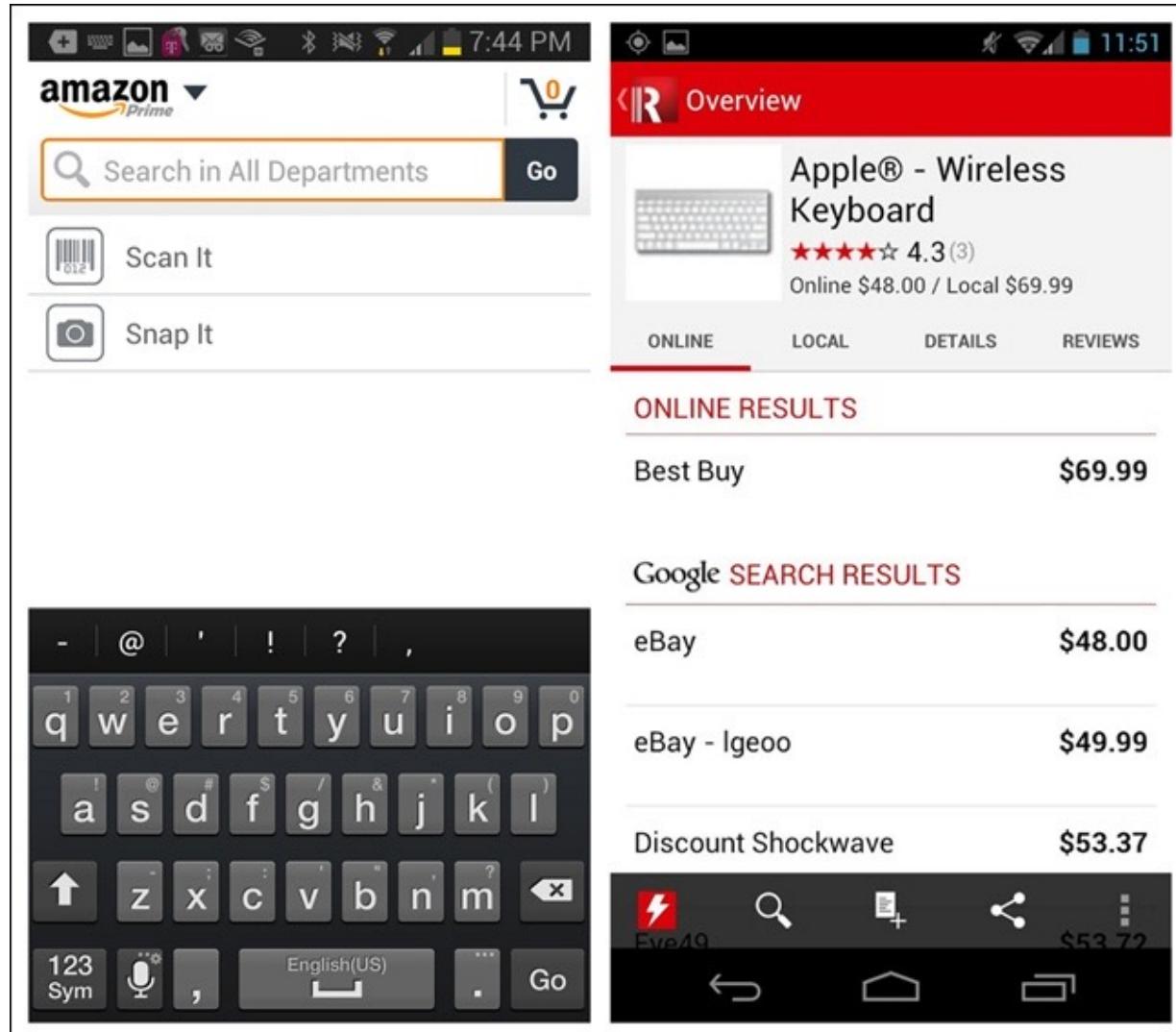
43 Upper Brook Street, London, W1K 7QR

Reservation in 1 hour
Journey time walking 45 minutes

Get directions

View email

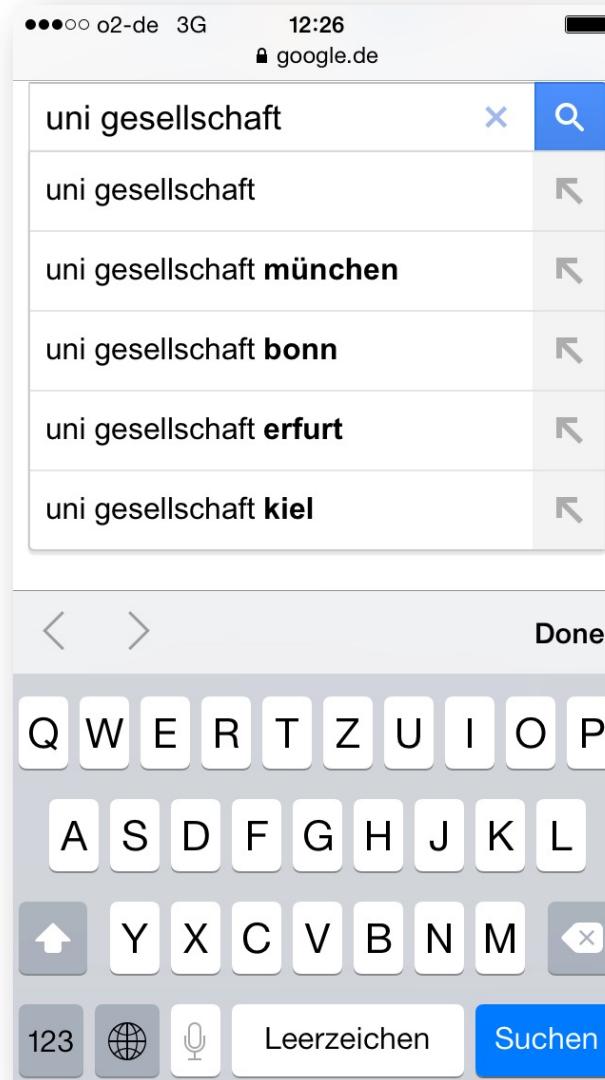
Explicit search via barcodes or photo scan



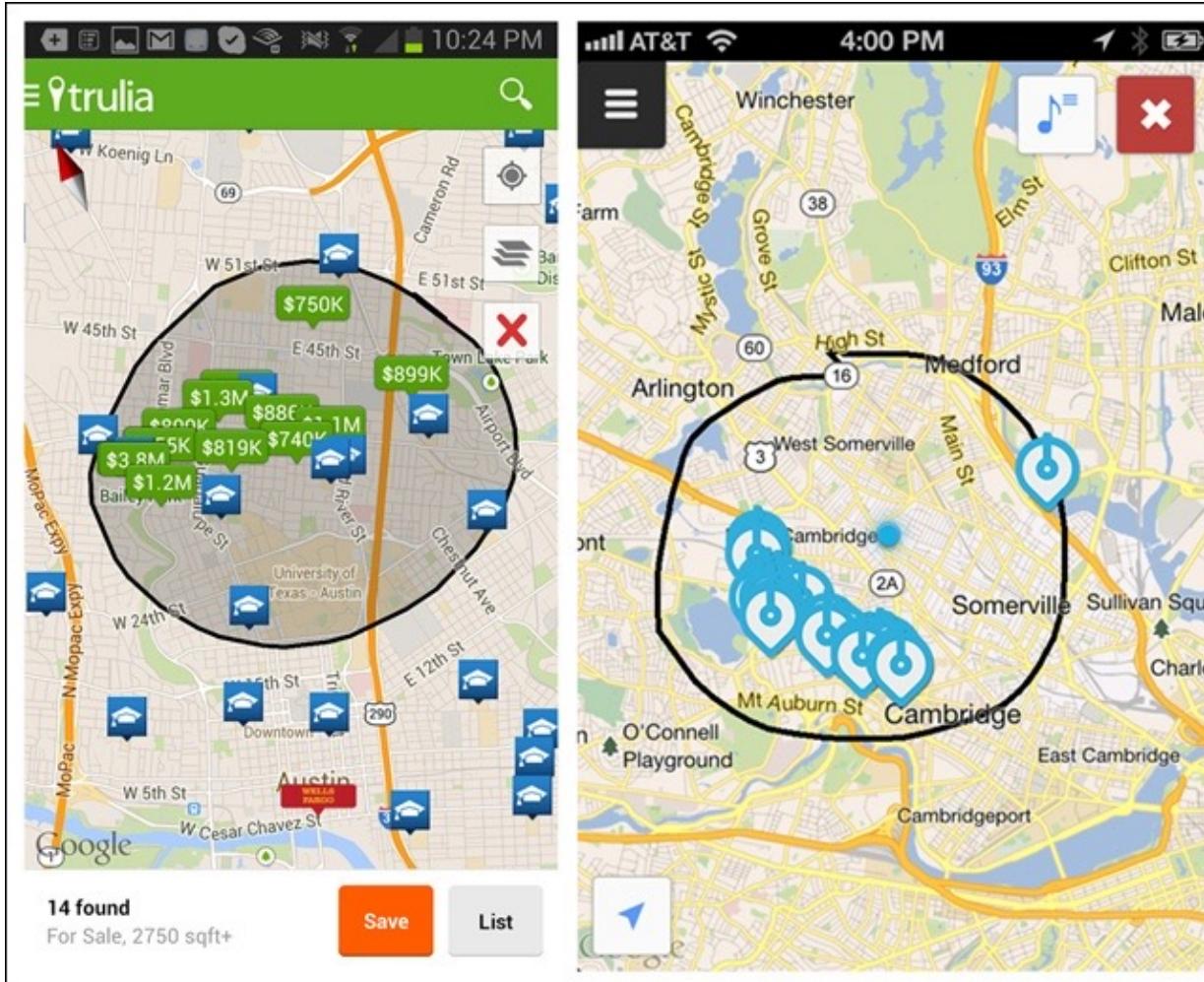
Explicit search via voice



Explicit search via auto complete



Explicit search via manipulation of a map



TABLES

Readability for basic tables

The image displays two screenshots of mobile applications illustrating the design of basic tables.

Left Screenshot: ESC MLB Scores App

This app shows the standings for the AL East division of Major League Baseball. The interface includes a navigation bar with SCORES, VIDEOS, HEADLINES, and STANDINGS. The STANDINGS section is currently active, showing the following data:

Team	W	L	GB
*-BOSTON	97	64	-
TAMPA BAY	90	71	7
NY YANKEES	84	77	13
BALTIMORE	84	77	13
TORONTO	74	87	23

Right Screenshot: Stock Trainer App

This app displays a portfolio of stocks. The header shows "Stock Trainer" with a red X icon. The table lists the following stocks:

Ticker	Name	Price	Cost	Num	Value	% CHG
EZPW	EZCORP, Inc.	\$16.90	\$18.68	20	\$338.00	9.53%
AMAT	Applied Materials, Inc.	\$17.60	\$15.00	100	\$1760.00	17.33%
GOOG	Google Inc.	\$876.39	\$886.43	15	\$13145.85	1.13%
PFE	Pfizer, Inc. Comm	\$28.88	\$27.65	50	\$1444.00	4.45%
SSNLF	Sing Electronics Co. Ltd.	\$1300.00	\$1140.00	2	\$2600.00	14.04%
TGT	Target Corporatio	\$63.94	\$69.38	15	\$959.10	7.84%

At the bottom of the screen are four icons: Portfolio (bar chart), Find Stocks (chart with arrow), Top Movers (chart with arrow), and My Account (stacked coins).

Headerless tables with fat rows

The image displays two side-by-side screenshots of mobile real estate applications. Both screens show a grid of house listings.

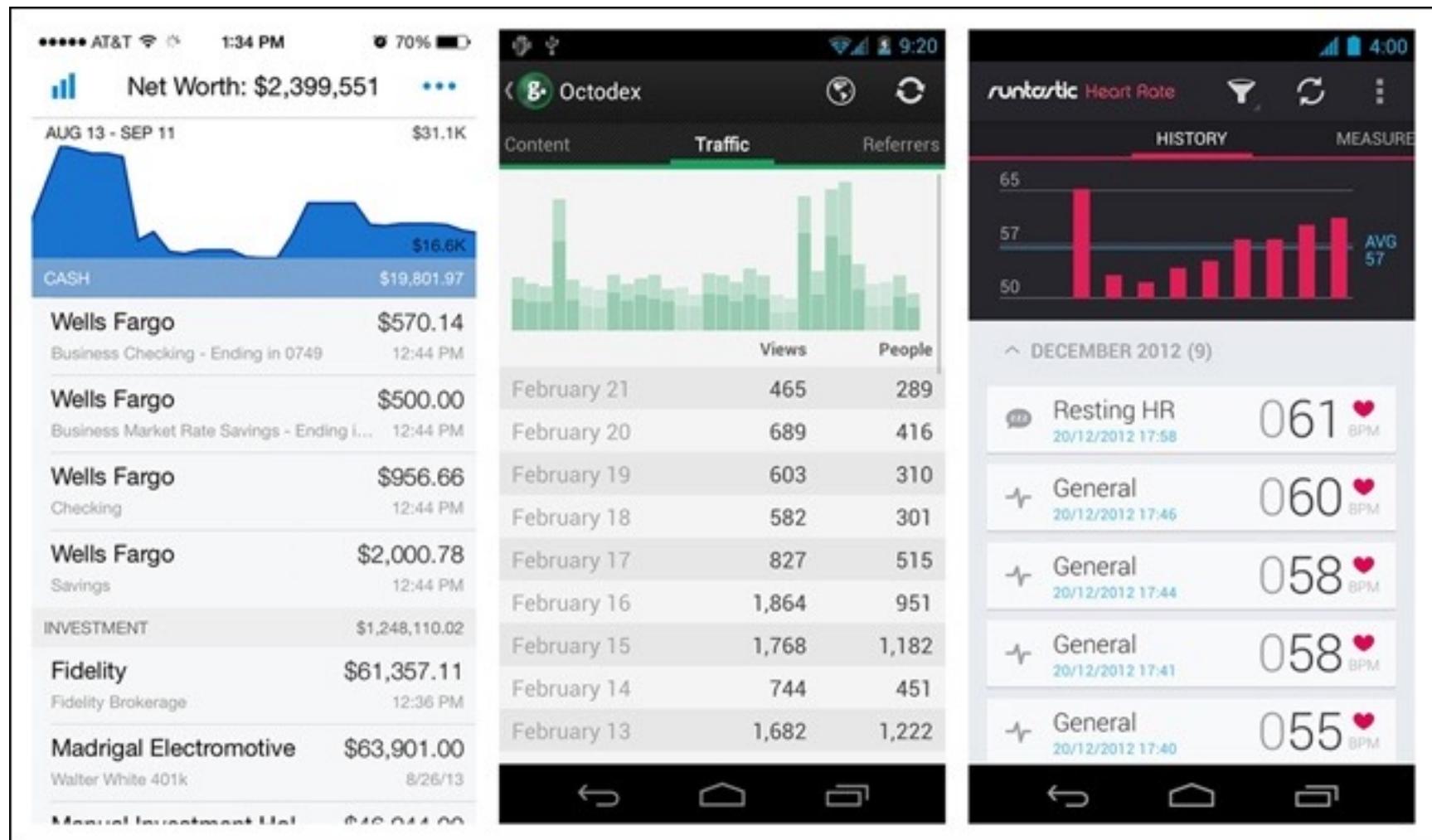
Left Screen (realtor.com):

- Header:** Realtor.com logo, search bar, and location indicator "165 Homes for Sale - Area in 17900-18084 Ranch Road 12, Wi..."
- Row 1:** New listing for \$6,500,000, Winters Mill Pkwy, Wimberley, TX. Details: 0 Bd, 0 Sq Ft, 0 Ba, 200 acres.
- Row 2:** Listing for \$3,900,000, 18059 Fm 1826 Unit A, Driftwood, TX. Details: 6 Bd, 5,314 Sq Ft, 5 Ba, 17.1 acres.
- Row 3:** Listing for \$3,800,000, 690 Autumn Ln, Dripping Springs, TX. Details: 3 Bd, 12,095 Sq Ft, 4 Ba, 17.4 acres.
- Section Separator:** "2 listings for 1224 River Mountain Rd"
- Row 4:** Listing for \$2,900,000, 1224 River Mountain Rd, Wimberley, TX. Details: 4 Bd, 7,948 Sq Ft, 5 Ba, 12.4 acres.
- Bottom Row:** Placeholder for another listing with a large green "FIND" button.

Right Screen (Another App):

- Header:** Current Location indicator, search bar, and location indicator "23 Marina Cir".
- Row 1:** Listing for 23 Marina Cir, 0.1 miles away. Details: 4 Beds, 5.0 Baths, 2,343 Sq. Ft., \$176,900.
- Row 2:** Listing for 35 Champion Cir, 0.3 miles away. Details: 3 Beds, 2.0 Baths, 1,722 Sq. Ft., \$199,900.
- Row 3:** Pending listing for 2 CHAMPION Cir, 0.3 miles away. Details: 3 Beds, 2.5 Baths, 1,990 Sq. Ft., \$245,000.
- Row 4:** Listing for 85 Woodcreek Dr, 0.4 miles away. Details: 6 Beds, 3.5 Baths, 4,532 Sq. Ft., \$397,500.
- Row 5:** Listing for 81 Woodcreek Dr, 0.4 miles away. Details: 3 Beds, 2.5 Baths, 2,738 Sq. Ft., \$274,500.
- Row 6:** Listing for 71 Woodcreek, 0.5 miles away. Details: 3 Beds, 2.5 Baths, 2,557 Sq. Ft.

Overview + data pattern: show trends over time



Tables with group rows

The image shows two screenshots of mobile applications illustrating the use of group rows in tables.

Left Screenshot: Amortization Table

This screenshot shows an amortization table for a loan. At the top, it displays "Your payment \$2,322/mo". Below this is a section titled "AMORTIZATION". The table has four columns: Mo., Principal, Interest, and Balance. It is divided into two main sections: "Year 2" and "Year 3".

Mo.	Principal	Interest	Balance
Year 2	\$550.53	\$1,269.05	\$361,862.02
8	\$552.46	\$1,267.12	\$361,309.56
9	\$554.39	\$1,265.19	\$360,755.17
10	\$556.33	\$1,263.24	\$360,198.84
11	\$558.28	\$1,261.30	\$359,640.55
12	\$560.24	\$1,259.34	\$359,080.32
Year 3			
1	\$562.20	\$1,257.38	\$358,518.12
2	\$564.17	\$1,255.41	\$357,953.95
3	\$566.14	\$1,253.44	\$357,387.81
4	\$568.13	\$1,251.45	\$356,819.68
5	\$570.11	\$1,249.46	\$356,249.57

Right Screenshot: Transaction History

This screenshot shows a transaction history for "Accounts". At the top, it says "All Accounts \$784,123". Below this is a "CASH" section containing a single entry for "Plus Checking". Further down is a "Money Market" section with one entry. A "Regular Savings" section follows. At the bottom, there are sections for "CREDIT CARDS" and "LOAN".

All Accounts	\$784,123
CASH	
Plus Checking	\$2,062
University FCU (TX)	1 minute ago
Money Market	\$1,526
University FCU (TX)	1 minute ago
Regular Savings	\$5
University FCU (TX)	1 minute ago
CREDIT CARDS	
CREDIT CARD	-\$18,231
Problem signing in!	3 months ago
Discover	-\$15,121
Discover Card	1 minute ago
CREDIT CARD	-\$107
Problem signing in!	3 months ago
LOAN	
Cons - New Auto	-\$9,915

Overloaded tables with chart junks

The image shows two side-by-side screenshots of the Sleep as Android mobile application. Both screens feature a red banner at the top with the text "anti-pattern" written in white.

Left Screen (Sleep Log):

- Top status bar: Signal strength, battery level, time (07:24).
- App header: Sleep as Android.
- Navigation tabs: STATS, NOISE, ADD-ON.
- Main area:
 - Graphs showing sleep patterns for five nights (12/06, 11/06, 10/06, 09/06, 08/06) with notes like "#snore" and "#work and #sport".
 - Bottom text: "Party and a lot of #alcohol" and "Should have not drink #caffeine before sleep".
 - Bottom buttons: Filter, 416 records.

Right Screen (Summary):

- Top status bar: Signal strength, battery level, time (00:46).
- App header: Sleep as Android.
- Navigation tabs: STATS, NOISE, ADD-ON.
- Main area:
 - Summary statistics:

Duration Deficit	Deep sleep Cycles	Noise Snoring
8:10 +0:10	40% 3:14 5x	17% 0:05
Total deficit +1:51		
 - Table of daily statistics:

Day	Duration Deficit	Deep sleep Cycles	Noise Snoring
08/08 Thursday	5:41 -2:19	31% 1:44 4x	24% 0:01
07/08 Wednesday	8:22 +0:22	41% 3:27 7x	27% -
06/08 Tuesday	7:44 -0:16	51% 3:55 8x	-
05/08 Monday	6:14 -1:46	33% 2:03 5x	15% 0:01
04/08	11:40	-	-
 - Bottom buttons: Detailed statistics, Charts and advice for better sleep.

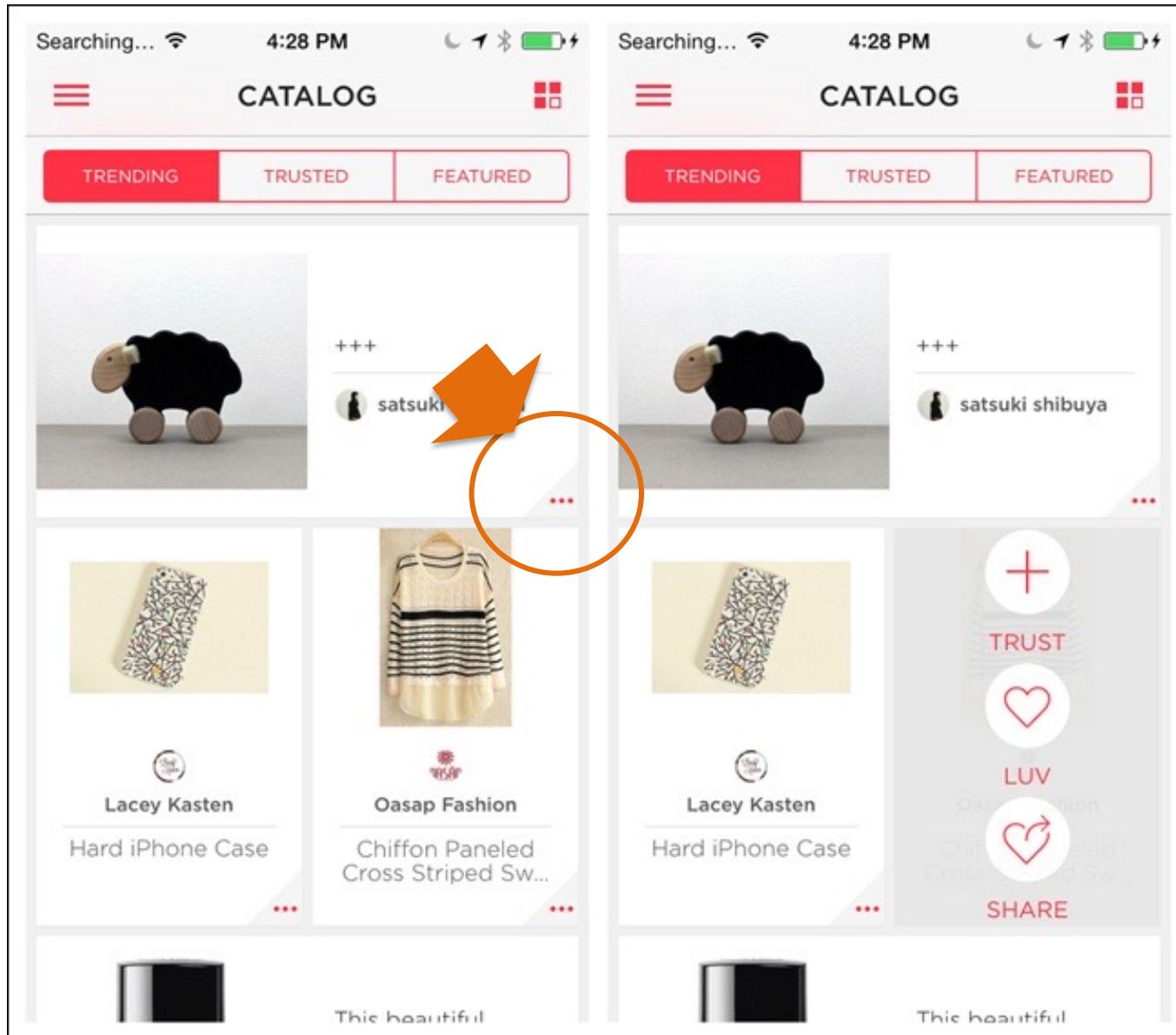
Tables: summary

- **Readability** is important when using tables on mobile devices
- With the **fixed column** pattern you can show a high amount of information
- With the **overview plus data** pattern you can show total trends over time (via a summary above the table)
- **Group rows** make it easier to read data
- **Editable tables** are not appropriate for extensive data entry

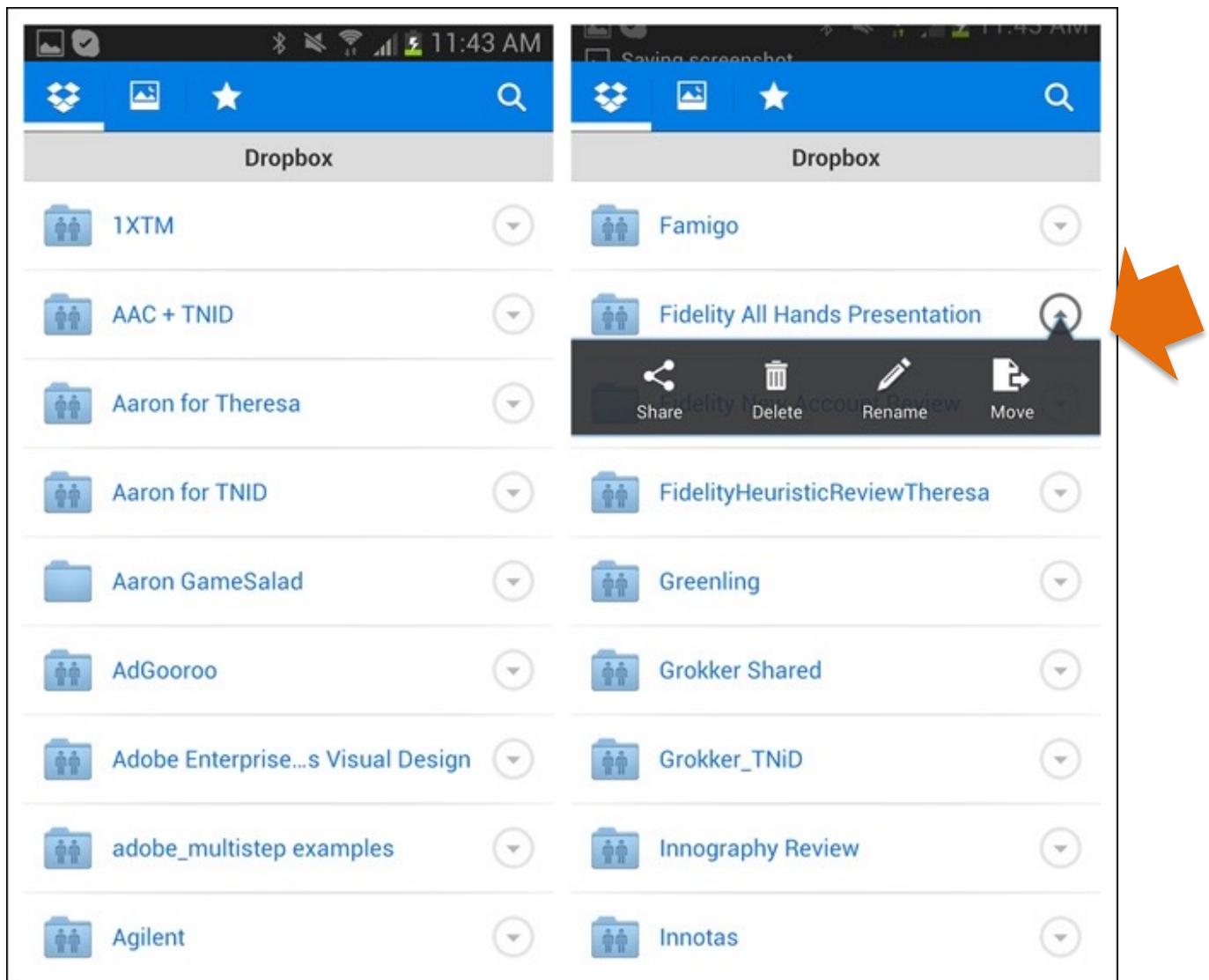
Types of tools and action buttons

- Toolbar
- Toolbox
- Call to Action Button
- Inline Actions
- Multi-State Button
- Contextual Tools
- Bulk Actions
- Lock Screen Controls

Task or object specific contextual tools



Contextual tool box



Types of charts

- Charts with Filters
- Interactive Timeline
- Data Point Details
- Drill Down
- Overview plus Data
- Interactive Preview
- Dashboard
- Zoom, Sparklines, Integrated Legend, Thresholds, Pivot Table, Pulling it All Together

Charts

Tip #1

Learn the basics

- A chart should just include necessary information
- Minimum: title, labeled axes, data

Tip #2

Keep it simple

- The simpler the chart, the better
- Do not spice up the chart with extra data and visual effects that decrease their effectiveness

Tip #3

Surprise – Math Quiz

- Ask the participants specific questions about the data
- If they can't answer, the chart is either wrong, too complicated, or misses labels

Charts: Learn the basics



Charts: Keep it simple



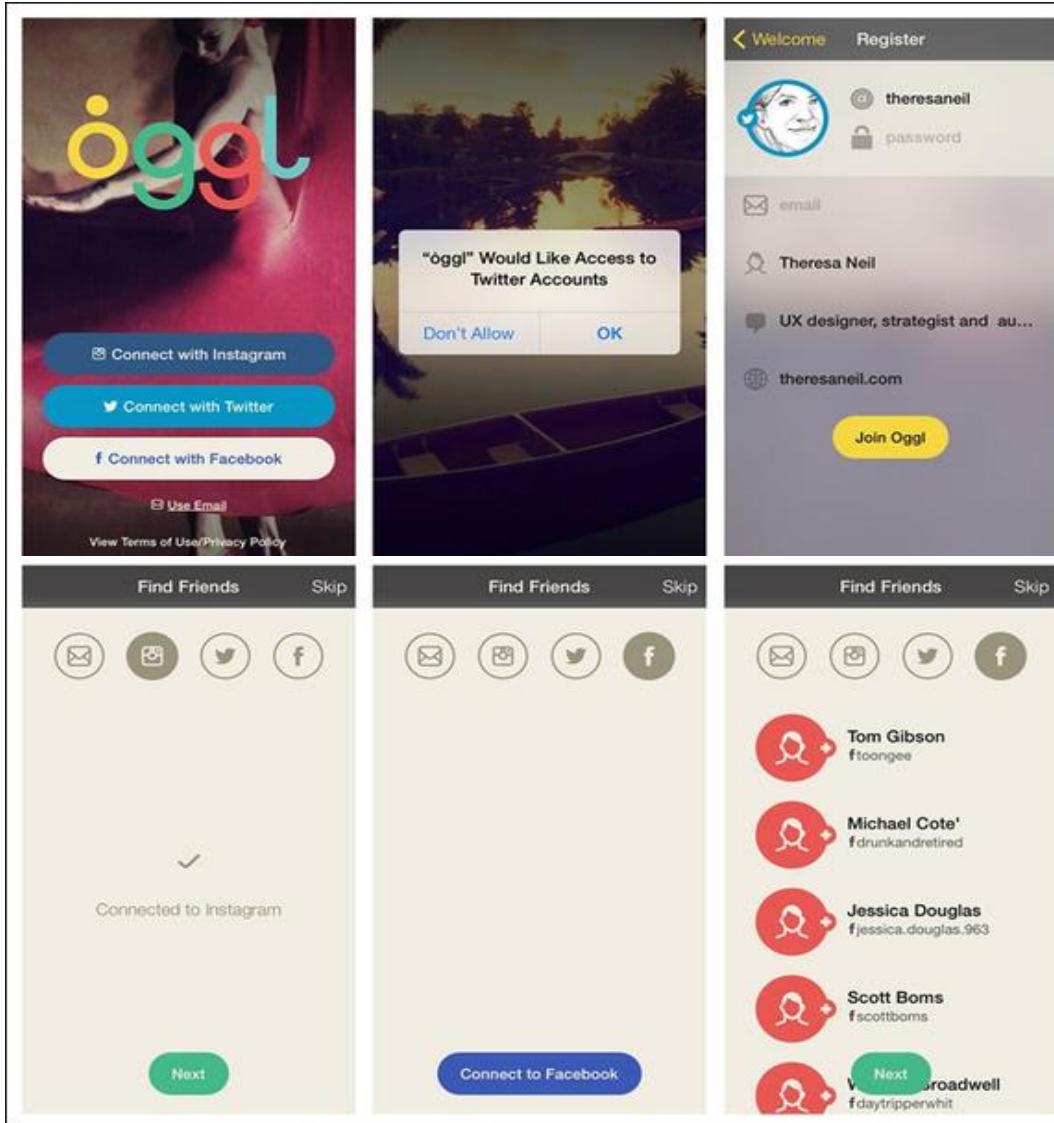
Weather for android



Social patterns

- Social Registration
- Connecting People
- Following People
- Profiles
- Groups
- Gamification

Connecting people



Connecting people

The image displays three screenshots of a mobile application interface, likely from an iPhone, illustrating the process of connecting users:

- Screenshot 1: Friends Screen**
 - Top status bar: AT&T, 2:34 PM, battery level.
 - Header: Friends, +Add (with a person icon).
 - Content: A large button with a plus sign and a dashed outline of a person icon, labeled "ADD FRIENDS". Below it, text says "Tap the +Add in the top right corner".
- Screenshot 2: Find Friends Screen**
 - Top status bar: AT&T, 2:34 PM, battery level.
 - Header: Friends, Find Friends.
 - Search bar: Search by name.
 - Options:
 - Facebook**: Find friends on Facebook.
 - Twitter**: Find friends on Twitter.
 - Contacts**: Find friends in your contacts.
- Screenshot 3: Facebook Friends List**
 - Top status bar: AT&T, 2:36 PM, battery level.
 - Header: Back, Facebook, Next.
 - Section header: Add, 14 friends use MapMyFitness, Add All.
 - List of friends:
 - Abby Scholz
 - Bobbi Krieg Sudholt
 - Cheryl Ouellette Costantini
 - Chris Jensen
 - dalton HOGGGG
 - Hillary Jenson
 - Jereme Altendorf
 - Each friend entry includes a small profile picture and an "Add" button.

Gamification

Lesson Complete! +10 XP
Heart bonus! +2 XP

You Earned 5 Lingots

Learned the skill Basics 2

Reached level 3

You're **on track** today. Good job!

Continue

Spanish Skills

Shop CLOSE

Earn lingots for achievements. Get fun things with them.

Balance 12

Basics 1

Phrases

Basics 2

Food 0/5

Animals 0/4

Plurals 0/1

Heart Refill

Allows you to regain one heart lost during a lesson.

4 LINGOTS

Formal Attire

Learn in style, sporting accoutrements that any gentleman or lady would admire.

20 LINGOTS

Champagne Tracksuit

Learn in luxury. Duo will love the feel of 24 carat gold silk on his feathers.

30 LINGOTS

Practice Weak Skills

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Usability Anti-Patterns

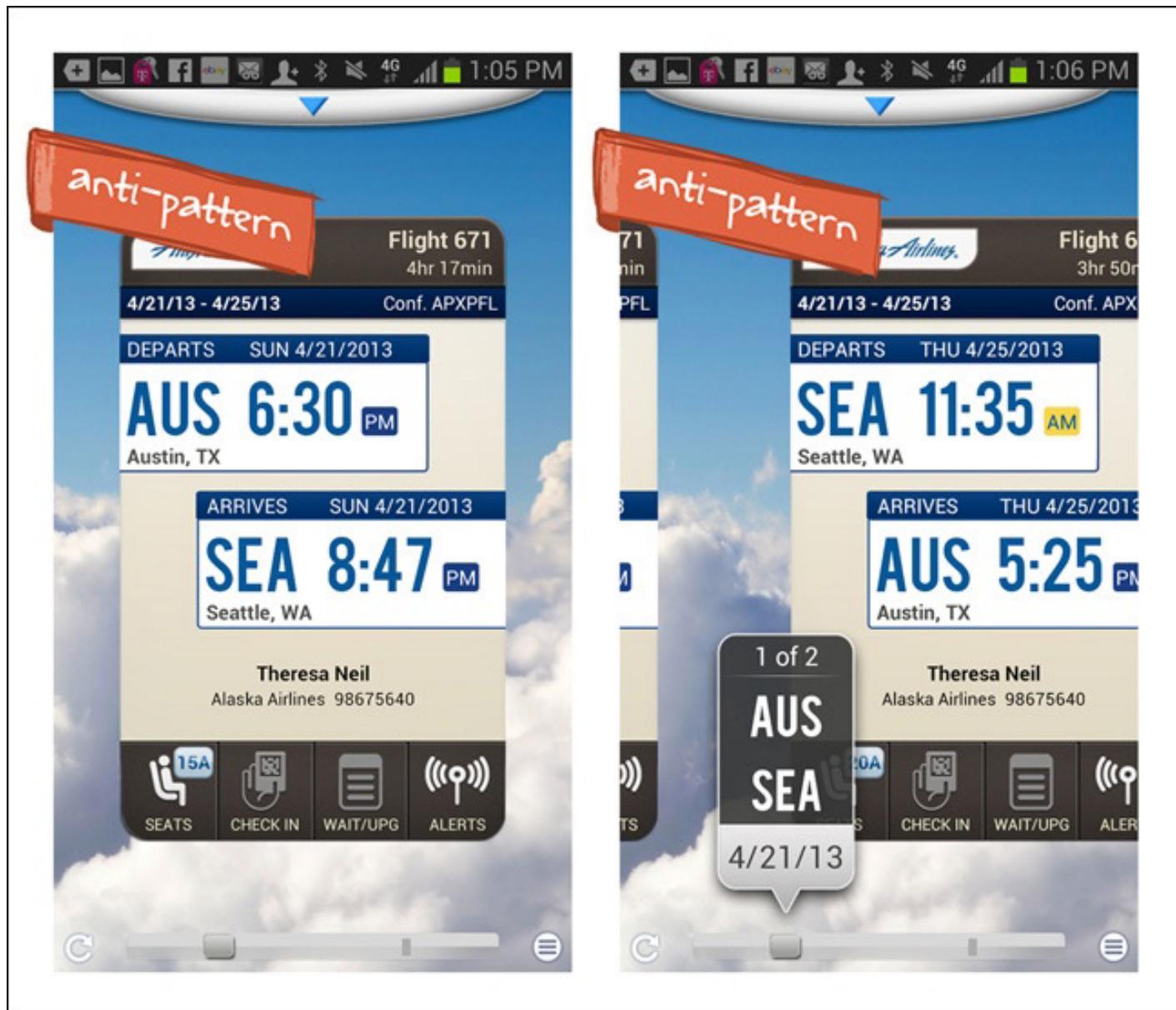
Anti-patterns for mobile UI design

- Novel Notions
- Needless Complexity
- Metaphor Mismatch
- Idiot Boxes
- Chart Junk
- Oceans of Buttons
- Square Peg, Round Hole

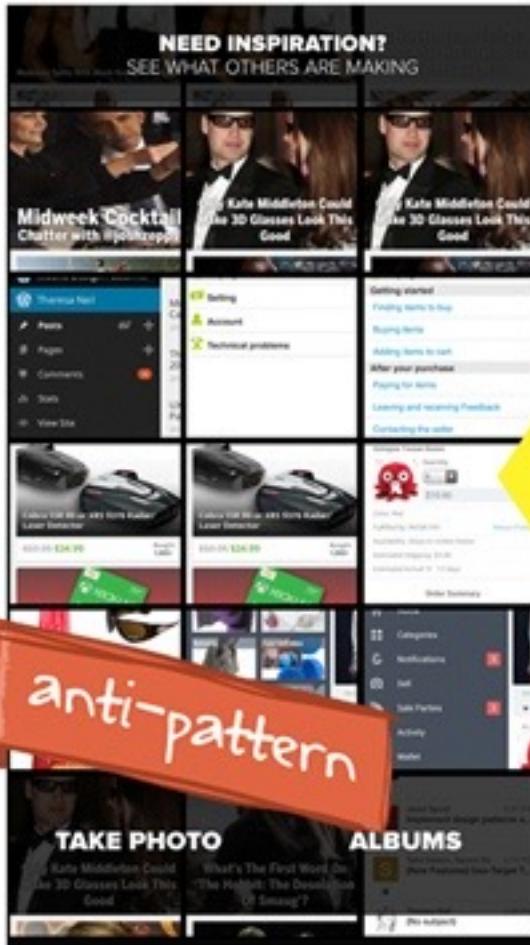
Novel notions



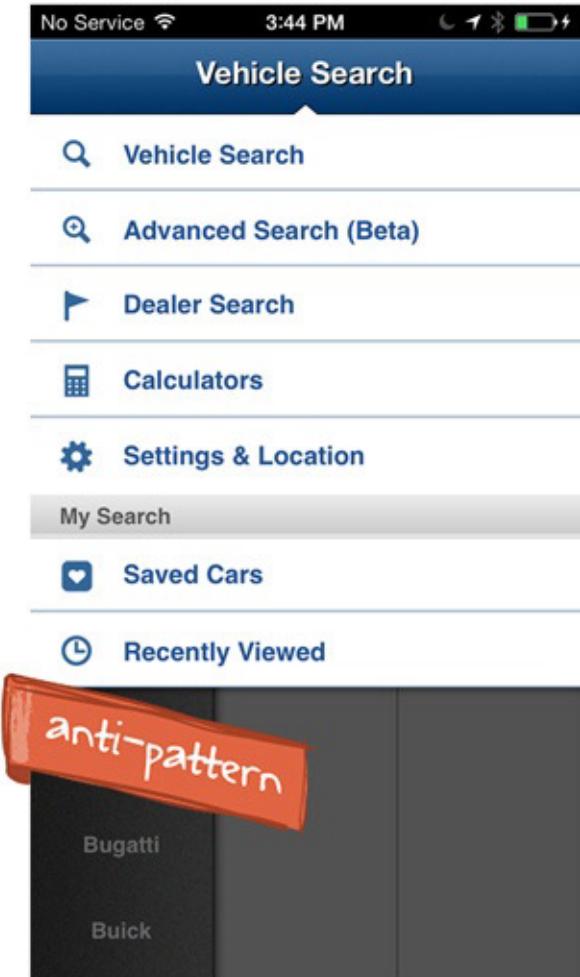
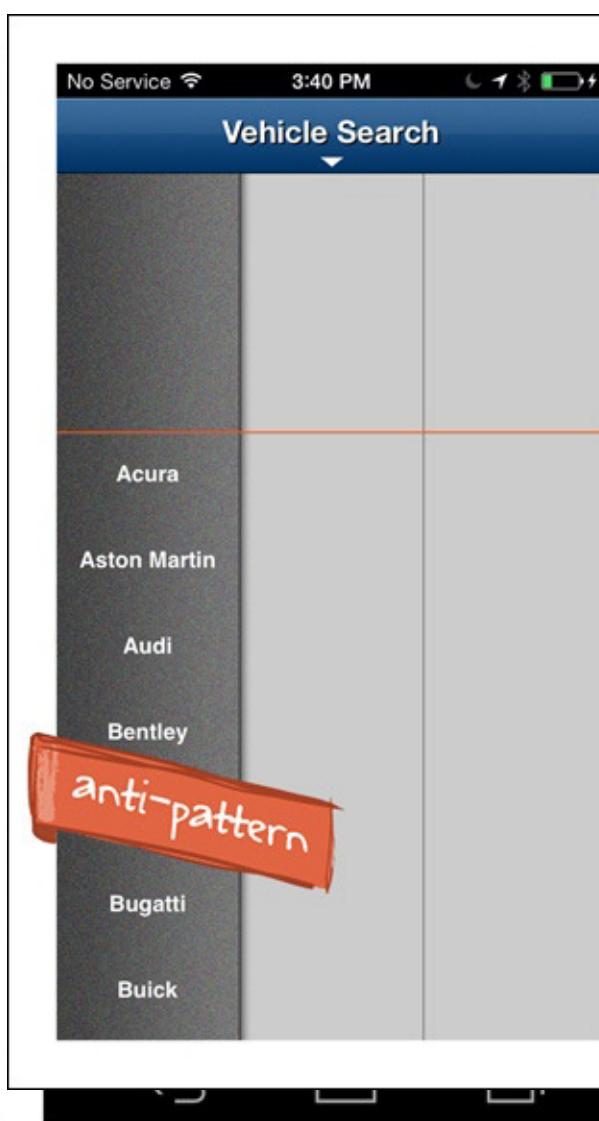
Novel notions



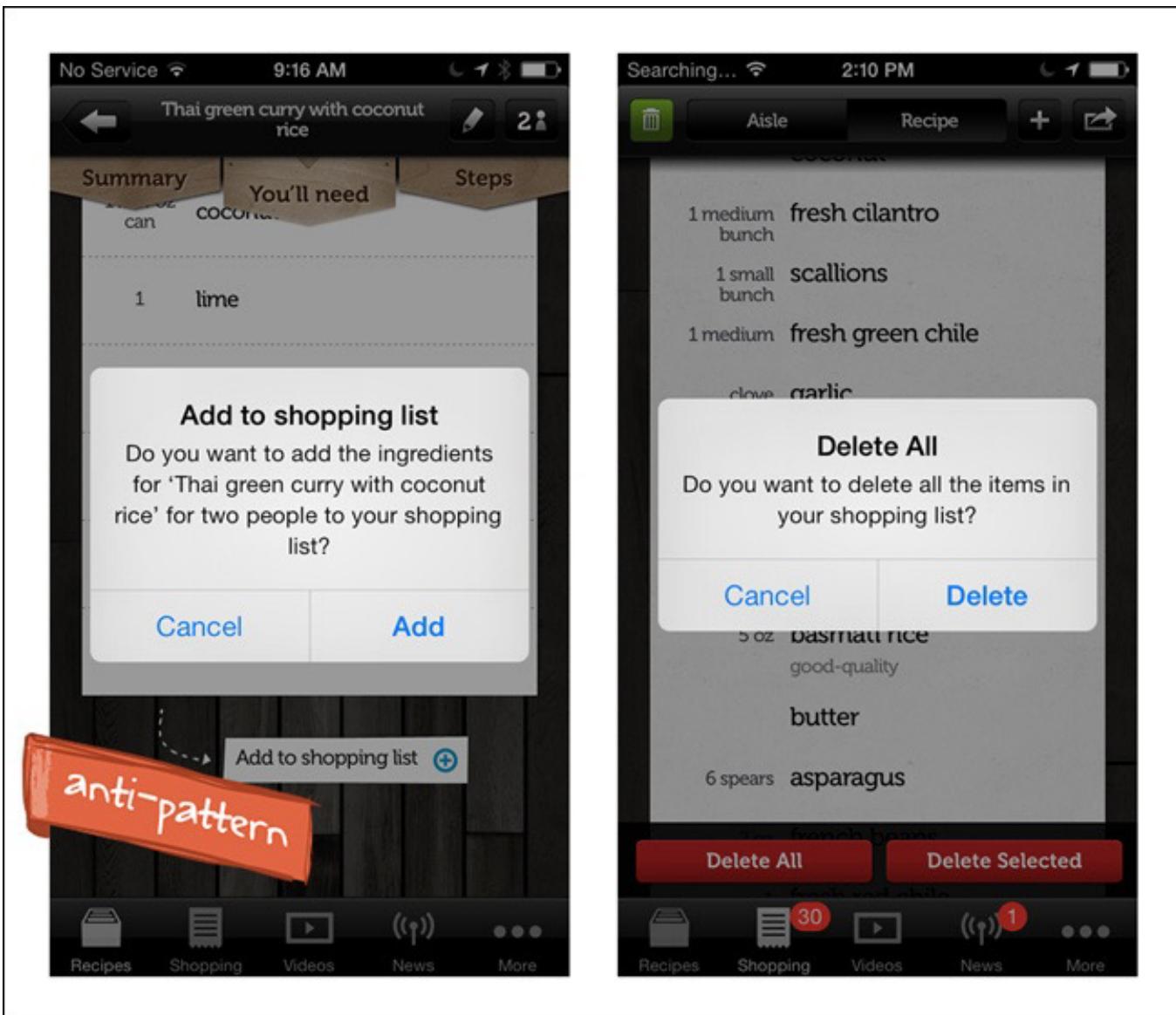
Needless complexity



Metaphor mismatch



Idiot boxes



Idiot boxes

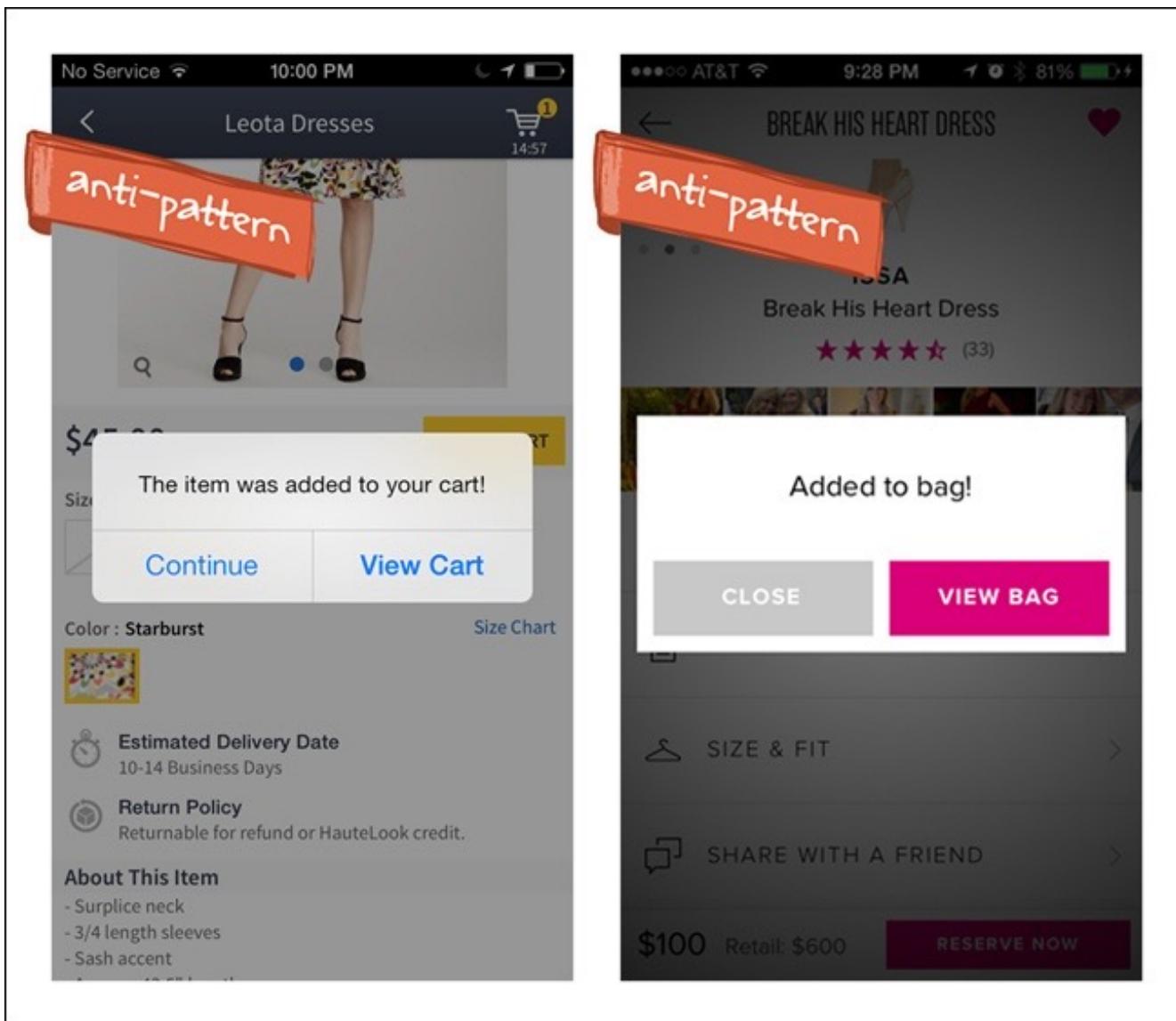


Chart junk

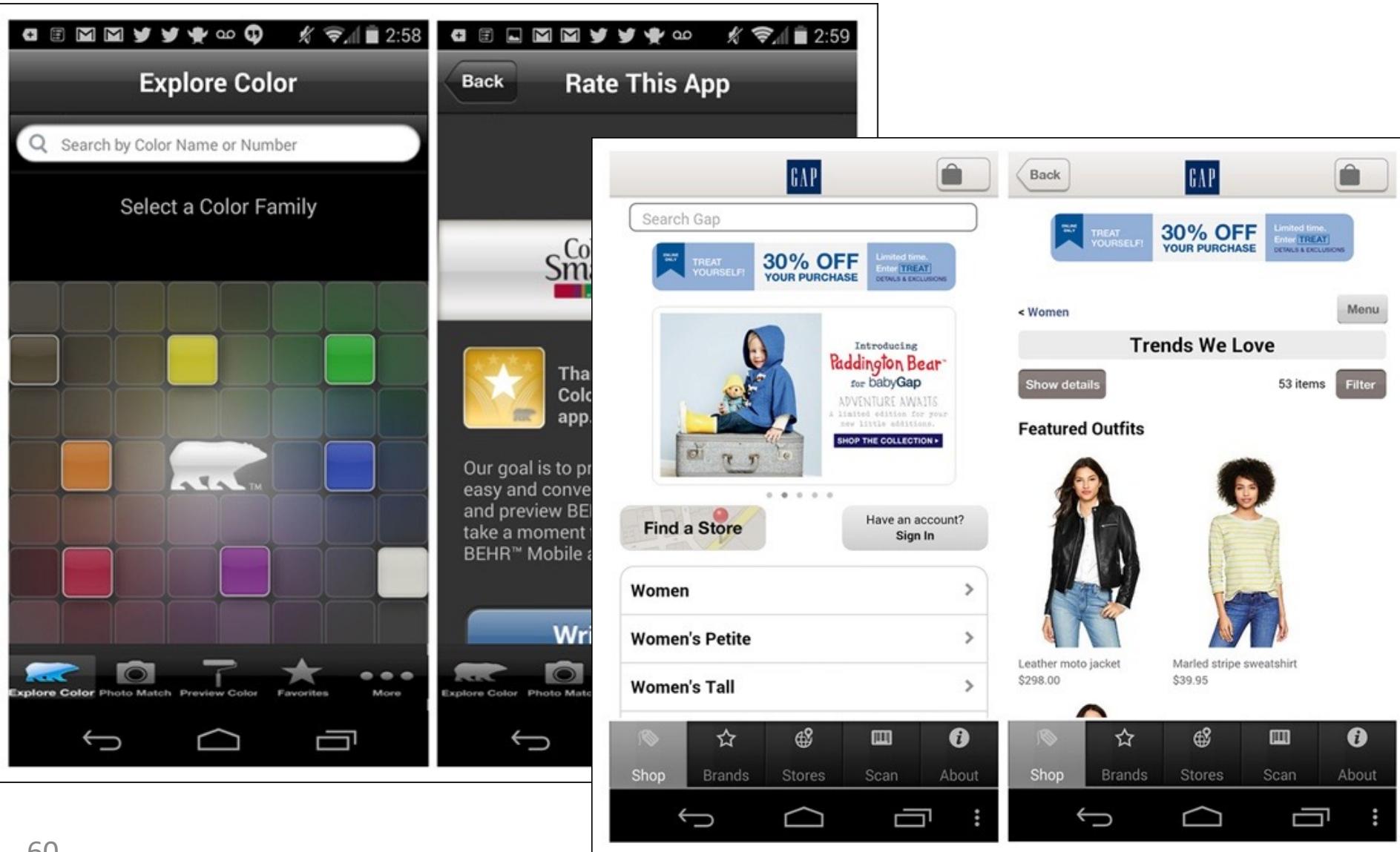


Oceans of buttons

The image displays three mobile application screenshots illustrating the concept of "Oceans of buttons".

- Real Estate App (Left):** A screenshot of a real estate application showing a property listing for 5106A Caswell Ave, Austin, TX 78751. The screen includes a navigation bar at the top, a header "5 of 36", a detailed property card, a "Sign in to See More Listing Information" button, a 3D house preview, and a footer with social sharing icons (Favorite, X-Out, Notes & Camera, Share) and descriptive text about the property.
- Car Details Page (Middle):** A screenshot of a car details page for a 2009 MINI Cooper John Cooper Works. The page shows the car's price (\$19,599*), mileage (57K miles), and a large image of the silver Mini Cooper. It features a "Save" button, a "Share" button, and two green call-to-action buttons at the bottom: "Call Us" and "Email Us".
- Mobile Car Listing (Right):** A screenshot of a mobile car listing for a 2009 MINI Cooper John Cooper Works. The listing includes the car's price (\$19,599*), mileage (57K miles), and a photo of the car. It also includes a "Car Details" section with the car's model and year, and a "Features" section. The bottom of the screen shows a "Locate At" button and a "Car Details" section with additional information.

Square peg, round hole



Summary

- 1 Usability is a measure of effectiveness, efficiency and user satisfaction for performing a specific task with a system
- 2 Usability patterns help to increase the user experience by reusing well tested concept that are well known to users
- 3 There are patterns for navigation, forms, search, and tables on mobile devices to deal with screen size restriction
- 4 Novel notions, needless complexity, metaphor mismatch, chart junk, and oceans of buttons are common anti-patterns for mobile

Additional readings

Mobile Design Pattern Gallery: UI Patterns for Smartphone Apps

Theresa Neil

Scenario-Based Design

John M. Carroll, Scenario-Based Design: Envisioning Work and Technology in System Development, John Wiley, 1995

Usability Engineering: Scenario-Based Development of Human Computer Interaction, Morgan Kaufman, 2001

David Parnas

A rational design process: How and why to fake it, IEEE Transactions on Software Engineering, Volume 12 , Issue 2 (February 1986)

Blogs and articles about the Heathrow system failure:

<http://blogs.zdnet.com/projectfailures/?p=610>

<http://www.bloomberg.com/apps/news?pid=conewsstory&refer=conews&tkr=FDX:US&sid=aY4lqhBRcytA>

<http://www.guardian.co.uk/travel/2008/apr/02/heathrowterminal5.transport>

<http://www.telegraph.co.uk/news/uknews/1583627/Heathrow-Terminal-5-bags-to-be-sorted-in-Italy.html>

<http://www.dailymail.co.uk/news/article-553588/BA-bags-flown-America-FedEx-sorting-Terminal-5-chaos.html>