COMP 150-04

User Interfaces for Mobile Platforms

Instructor:

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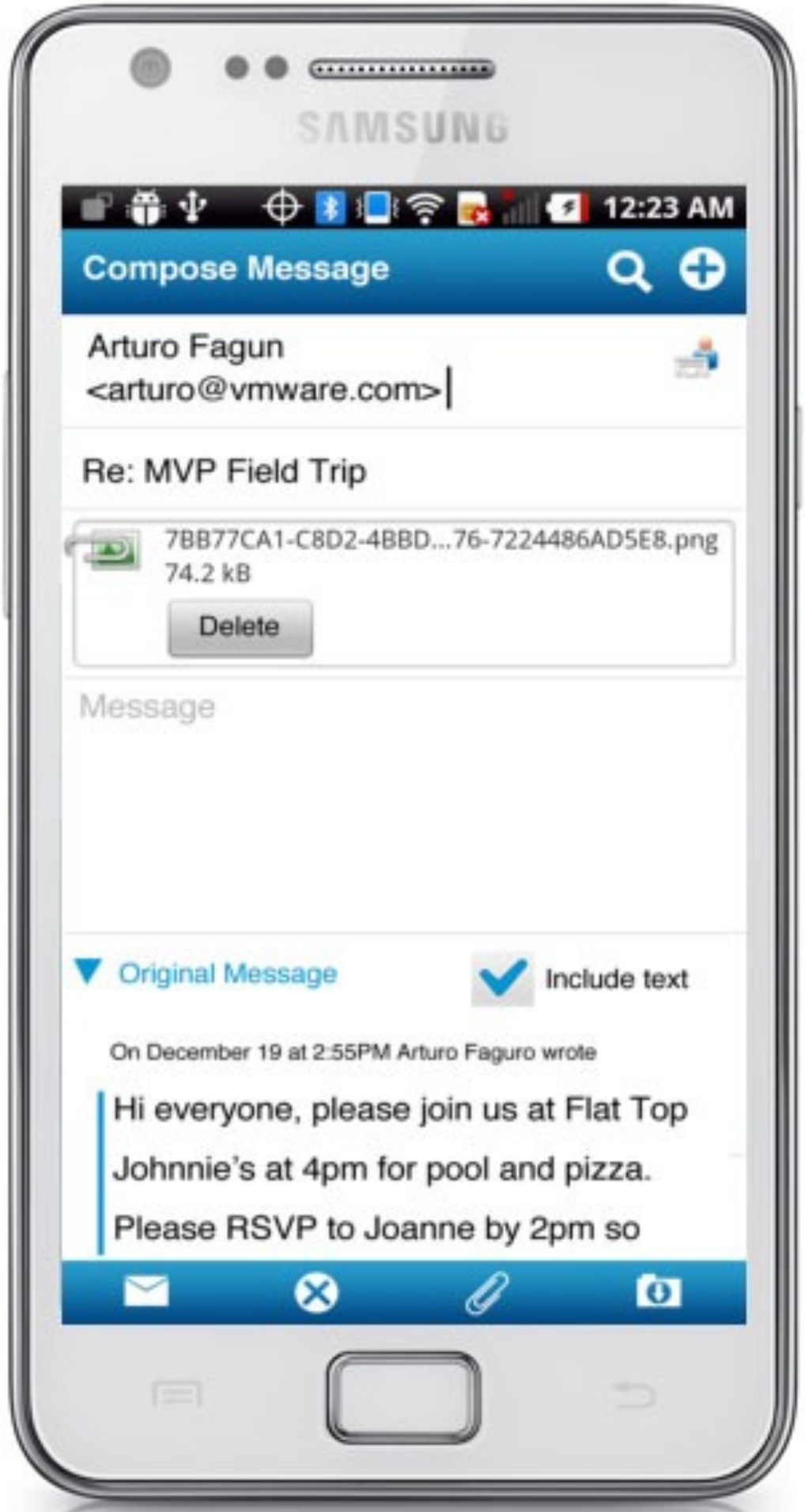
Teaching Assistant:

Aaron Wishnick Aaron_B.Wishnick@tufts.edu

SAMSUNG
9:42
Inbox (1)
Steve Cook
Jan 9, 3:30pm
[FormosaMobile] Let me know how you are usi...
- reply above this line to post a comment - The fo...
(3) Ju-chuan Johnson
Jan 9, 3:24pm
Re: Review Request: L10n: App: linguistic bug f...
Hi Chitong, Happy New Year! I have pushed the fi...
Ju-chuan Foster
Jan 9, 3:24pm
Re: Review Request: L10n: App: linguistic bu...
Hi Chitong, Happy New Year! I have pushed the...
Chitong Griffin
Jan 7, 4:16pm
Re: Review Request: L10n: App: linguistic bu...
Hi,Have those changed been pushed to server...
Vincent Allen
Jan 7, 4:07pm
RE: Review Request: L10n: App: linguistic bu...
Hi Chitong, Can you please generate a new buil...
Maire Alexander
Jan 9, 3:09pm
Fwd: UI Platform Team Meeting: 1-866-715-...
The following meeting has been forwarded: Subje...
(3) Chitong Morris
Jan 9, 2:32pm
Fwd: [Bug 977342: App-EmailApp: other] New...
Hi, Tony When you get a chance, could you take l...


SAMSUNG
12:23 AM
Compose Message
Arturo Fagun
<arturo@vmware.com>
Re: MVP Field Trip
7BB77CA1-C8D2-4BBD...76-7224486AD5E8.png
74.2 kB
Delete
Message
Original Message
Include text
On December 19 at 2:55PM Arturo Faguro wrote
Hi everyone, please join us at Flat Top
Johnnie's at 4pm for pool and pizza.
Please RSVP to Joanne by 2pm so

Applications

Calendar

Phone

Weather

Maps

UI components

Button

List

Combo

Theme

OS Services

Location Data

Streaming Video

Core OS

Bluetooth

USB

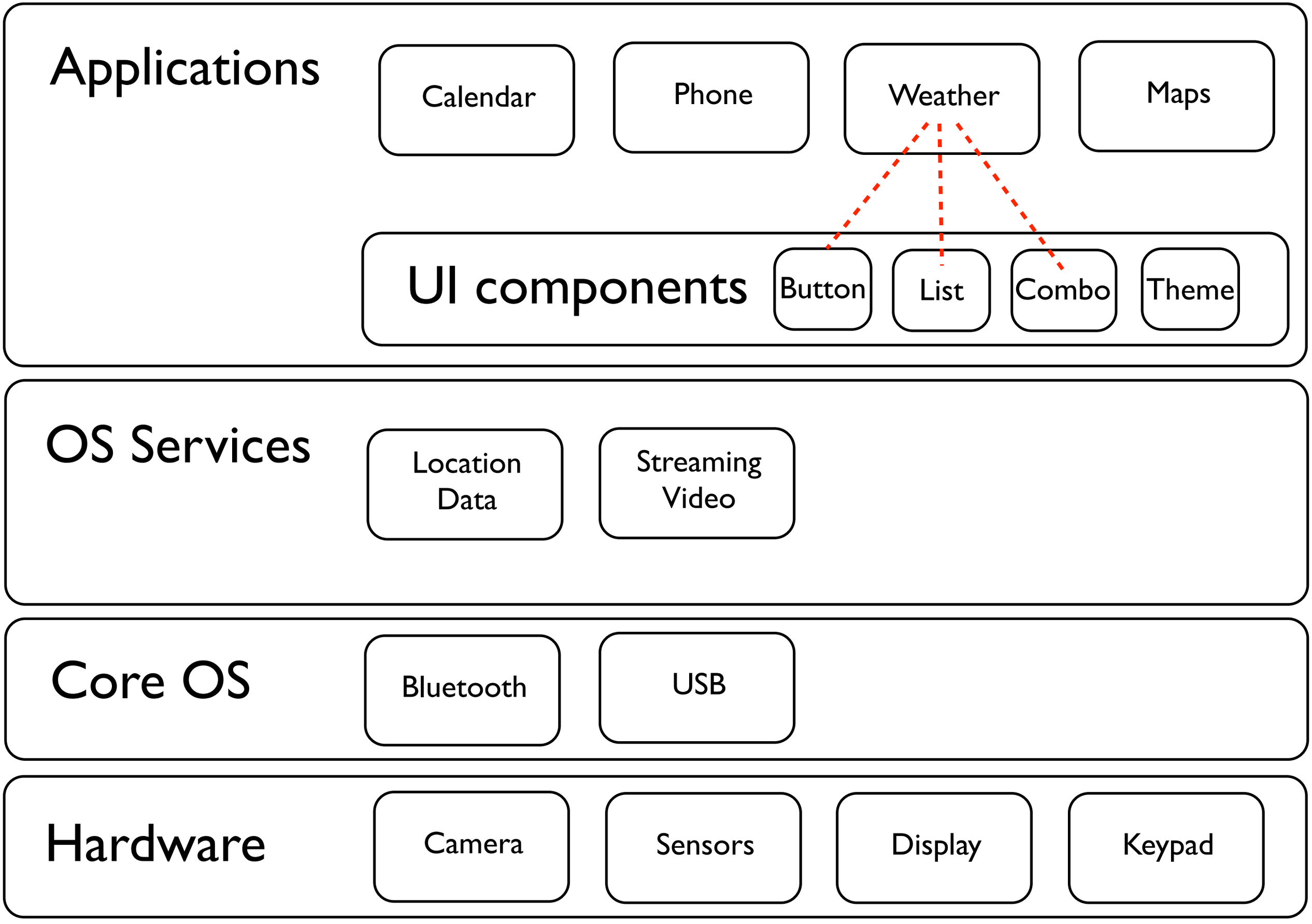
Hardware

Camera

Sensors

Display

Keypad


Applications
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Phone
Weather
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Location Data

Streaming Video

Core OS

Bluetooth

USB

Hardware

Camera

Sensors

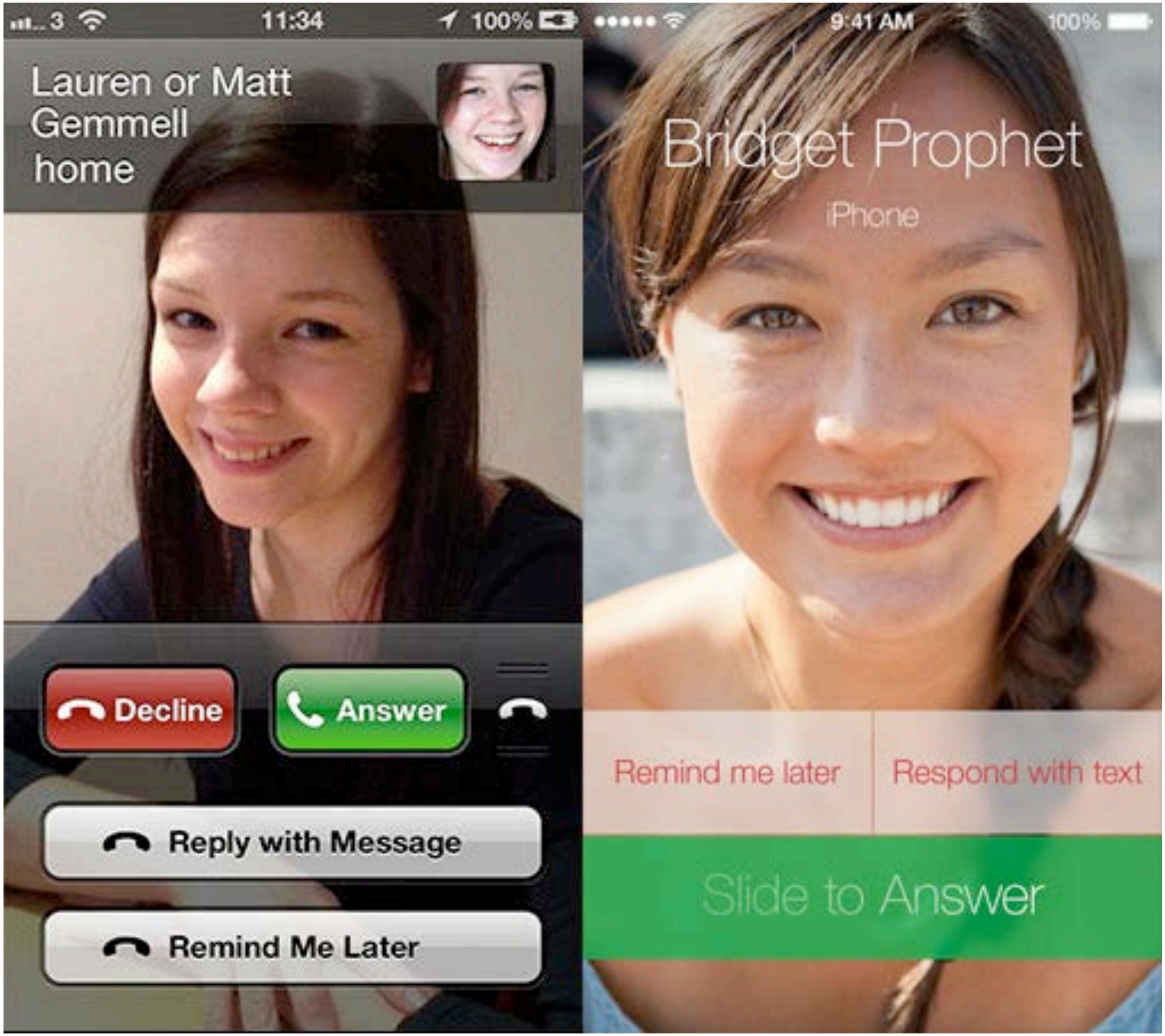
Display

Keypad

Mobile Platforms

Apps Showcase

What is unique about mobile phone UX?


3
11:34
100%
Lauren or Matt Gemmell home
Decline
Answer
Reply with Message
Remind Me Later
9:41 AM
100%
Bridget Prophet
iPhone
Remind me later
Respond with text
Slide to Answer

Gestures

Table 1-1 Gestures users make to interact with iOS devices

Gesture	Action
Tap	To press or select a control or item (analogous to a single mouse click).
Drag	To scroll or pan (that is, move side to side). To drag an element.
Flick	To scroll or pan quickly.
Swipe	With one finger, to reveal the Delete button in a table-view row, the hidden view in a split view (iPad only), or the Notification Center (from the top edge of the screen). With four fingers, to switch between apps on iPad.
Double tap	To zoom in and center a block of content or an image. To zoom out (if already zoomed in).
Pinch	Pinch open to zoom in. Pinch close to zoom out.
Touch and hold	In editable or selectable text, to display a magnified view for cursor positioning.
Shake	To initiate an undo or redo action.

Touch

Triggers the default functionality for a given item.

Long press

Enters data selection mode. Allows you to select one or more items in a view and act upon the data using a contextual action

Swipe

Scrolls overflowing content, or navigates between views in the same hierarchy.

Drag

Rearranges data within a view, or moves data into a container (e.g. folders on Home Screen).

Double touch

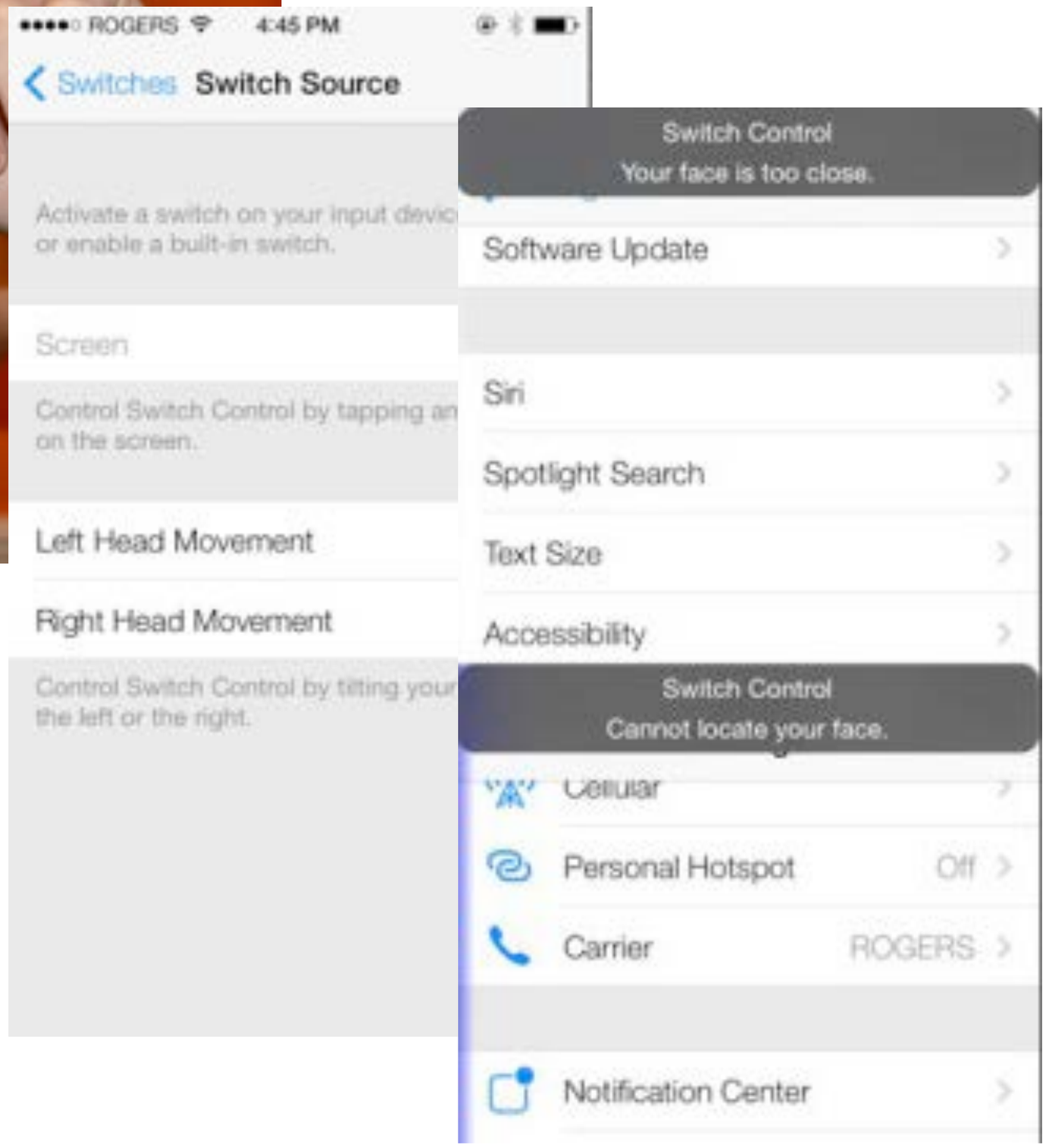
Zooms into content. Also used as a secondary gesture for text selection.

Pinch open

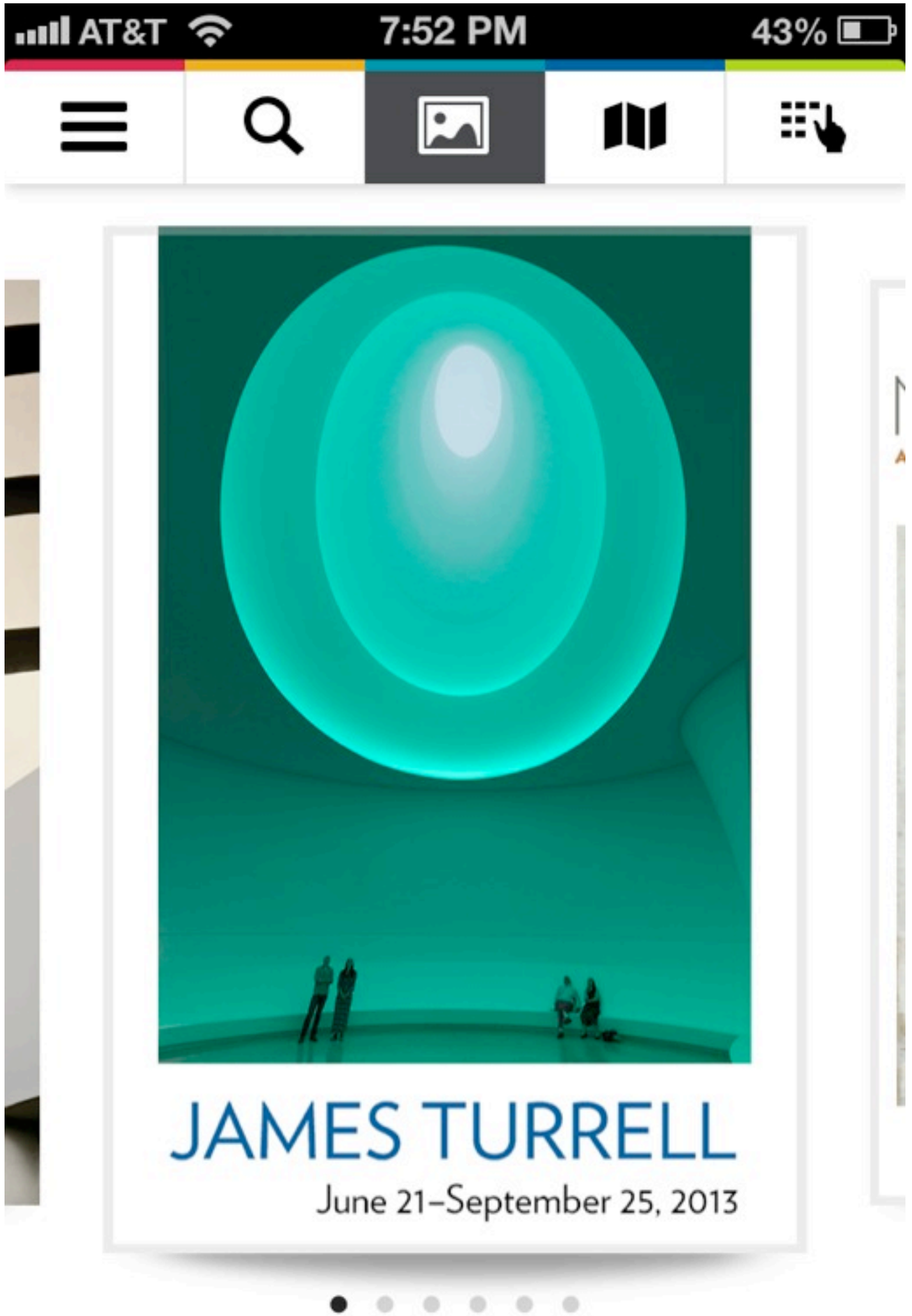
Zooms into content.

Pinch close

Zooms out of content.


ROGERS 4:45 PM
Switches
Switch Source
Activate a switch on your input devic
or enable a built-in switch.
Screen
Control Switch Control by tapping an
on the screen.
Left Head Movement
Right Head Movement
Control Switch Control by tilting your
the left or the right.
Switch Control
Your face is too close.
Software Update
Siri
Spotlight Search
Text Size
Accessibility
Switch Control
Cannot locate your face.
Cellular
Personal Hotspot
Off
Carrier
ROGERS
Notification Center

iOS

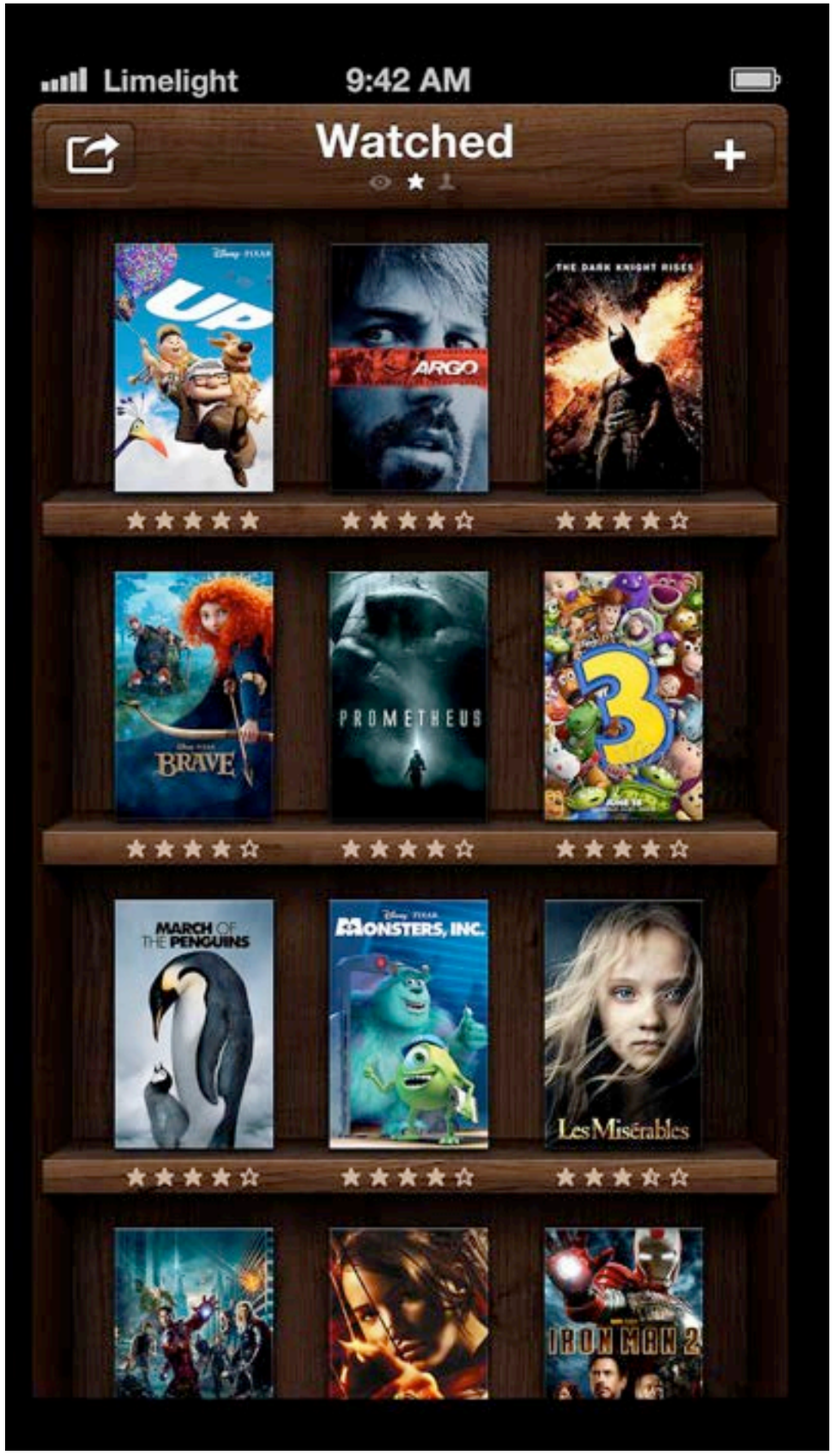


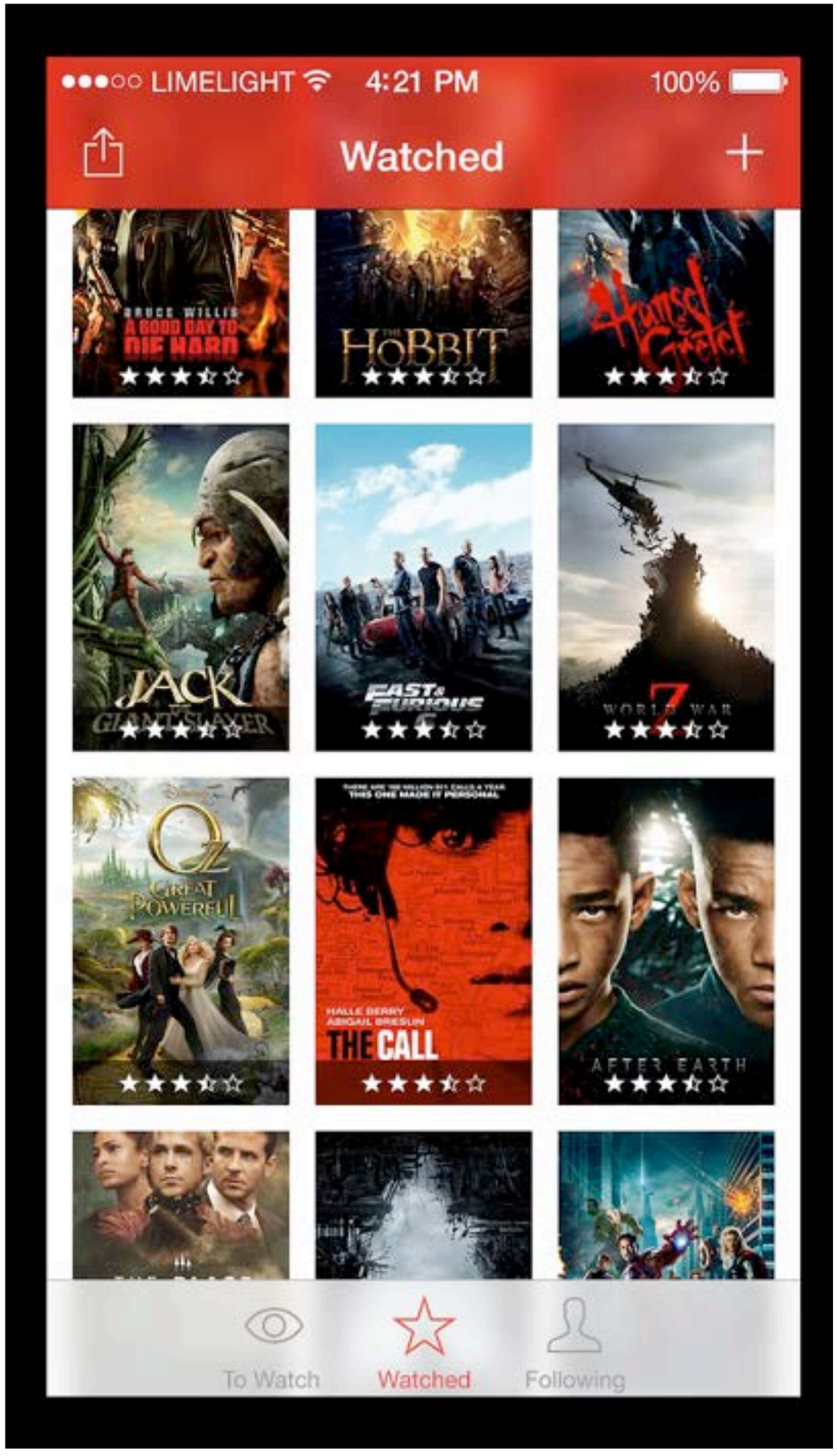
AT&T
4:21 PM
22%
51.9 mph
14,936 ft
13.6 mi
2/23
3/1
3/9
3/10
3/11
2012 / 2013 Season
105.3k ft
129.3 mi
March 11
Killington Ski Resort
March 10
Killington Ski Resort
March 9
Killington Ski Resort
March 1
Blue Mountain Ski Area & Resort
February 23
Track
Activities

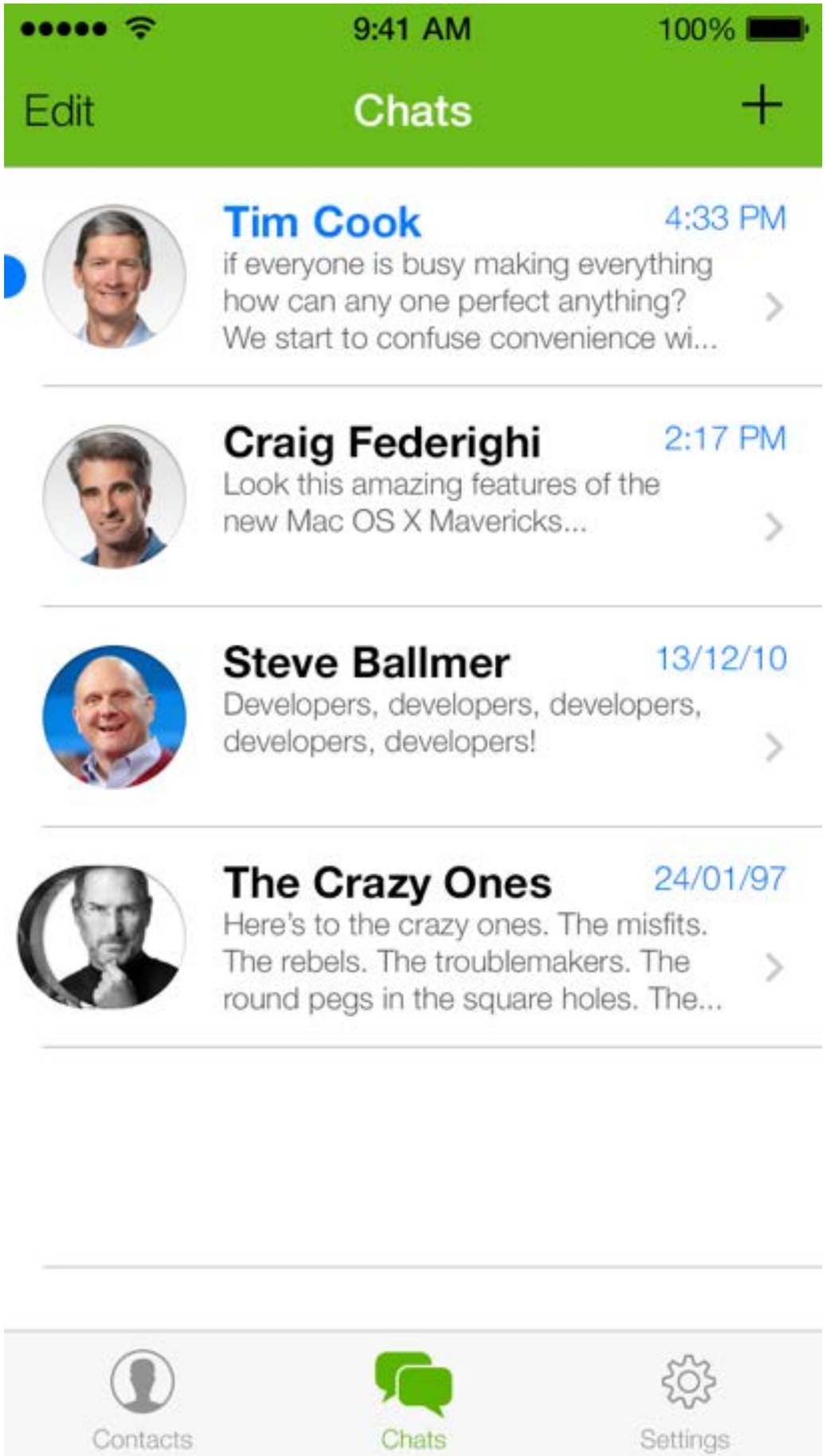
Carrier
4:20 PM
2/23
3/1
3/9
3/10
3/11
2012 / 2013 Season
105.3k ft
129.3 mi
March 11
Killington Ski Resort
March 10
Killington Ski Resort
March 9
Killington Ski Resort
March 1
Blue Mountain Ski Area & Resort
February 23
Track
Activity
Me

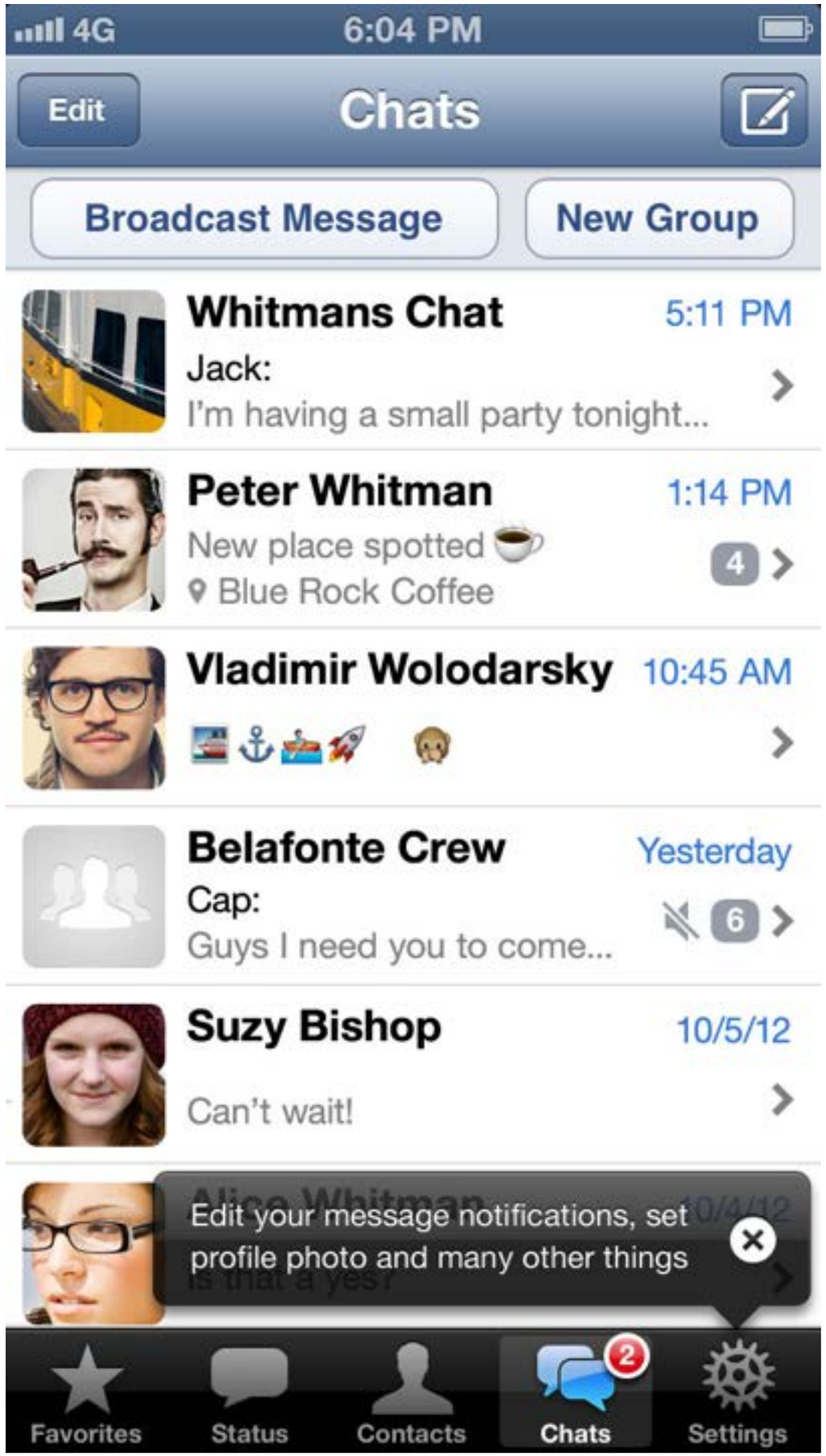
●●●○○ BELL
4:21 PM
100%
Monday, June 17
2 PM
3 PM
Grades
Design
3:10
Hours
Design
1:00
2:00
Hours
Prototype
1:00
Hours
Design
3:10
Grades
Design
0:50
Languages
Marketing
2:15
Grades
Prototype
Add New Task

Bell
2:48 PM
April
25
Thursday
0:37 hrs - $54
2 PM
3 PM
signed
Hours
Design
0:37
0:37
Hours
Design
1:00
Hours
Interaction Design
1:45
Languages
Design
2:50
Grades
Design
3:15
Grades
Marketing
Add New Task


Limelight
9:42 AM
Watched
UP
ARGO
THE DARK KNIGHT RISES
BRAVE
PROMETHEUS
3
MARCH OF THE PENGUINS
MONSTERS, INC.
Les Misérables
IRON MAN 2


LIMELIGHT
4:21 PM
100%
Watched
BRUCE WILLIS
A GOOD DAY TO DIE HARD
THE HOBBIT
Hansel & Gretel
JACK THE GIANT SLAYER
FAST & FURIOUS 6
WORLD WAR Z
OZ THE GREAT AND POWERFUL
HALLE BERRY
ABIGAIL BRESLIN
THE CALL
AFTER EARTH
To Watch
Watched
Following


9:41 AM
100%
Edit
Chats
Tim Cook
4:33 PM
if everyone is busy making everything how can any one perfect anything? We start to confuse convenience wi...
Craig Federighi
2:17 PM
Look this amazing features of the new Mac OS X Mavericks...
Steve Ballmer
13/12/10
Developers, developers, developers, developers, developers!
The Crazy Ones
24/01/97
Here's to the crazy ones. The misfits. The rebels. The troublemakers. The round pegs in the square holes. The...
Contacts
Chats
Settings


4G
6:04 PM
Edit
Chats
Broadcast Message
New Group
Whitmans Chat
5:11 PM
Jack:
I'm having a small party tonight...
Peter Whitman
1:14 PM
New place spotted
Blue Rock Coffee
4
Vladimir Wolodarsky
10:45 AM
Belafonte Crew
Yesterday
Cap:
Guys I need you to come...
6
Suzy Bishop
10/5/12
Can't wait!
Edit your message notifications, set profile photo and many other things
Favorites
Status
Contacts
Chats
Settings

Verizon LTE 5:47 PM 98%

"Washington is a study in juvenile petulance," writes @AlexCast for @CNNOpinion. on.cnn.com/Ywrxsr Do you agree?

Rebecca Hains @RCHains 7m
Many thanks to Toward The Stars for recommending my book! fb.me/2eogATGj6

The New York Times @nyti… 8m
Skepticism Surrounds Resumption of Nuclear Talks With Iran nyti.ms/ZEVx84

broadwayworld @broadway… 8m
STAGE TUBE: Oscar Winners Hathaway & Lawrence Chat with GMA...
bit.ly/XX1DKg

runDisney @runDisney 8m
Thanks for attending #PrincessHalf Weekend and #PrincessHalfMeetup,

Home Connect Discover Me

AT&T 9:23 AM

Emanuel Sá @emanuelsa 6m
Playing a bit with Android… any widgets you can recommend? Play Store is basically just lots of ugly clocks/weather widgets.

Dave Shea @mezzoblue 7m
Read an article. Agreed with the first comment. Time to shut down the internet.

Federico Viticci @viticci 7m
"If you like…" - interesting idea by App Store team this week:
pic.twitter.com/ub5axAAKhf

Geoff Teehan @gt 8m
Great image showing just how little the home screen for iOS has progressed. Surely they have some killer concepts.
http://twitpic.com/cwyz3s

Emanuel Sá @emanuelsa 8m
Playing a bit with Android… any

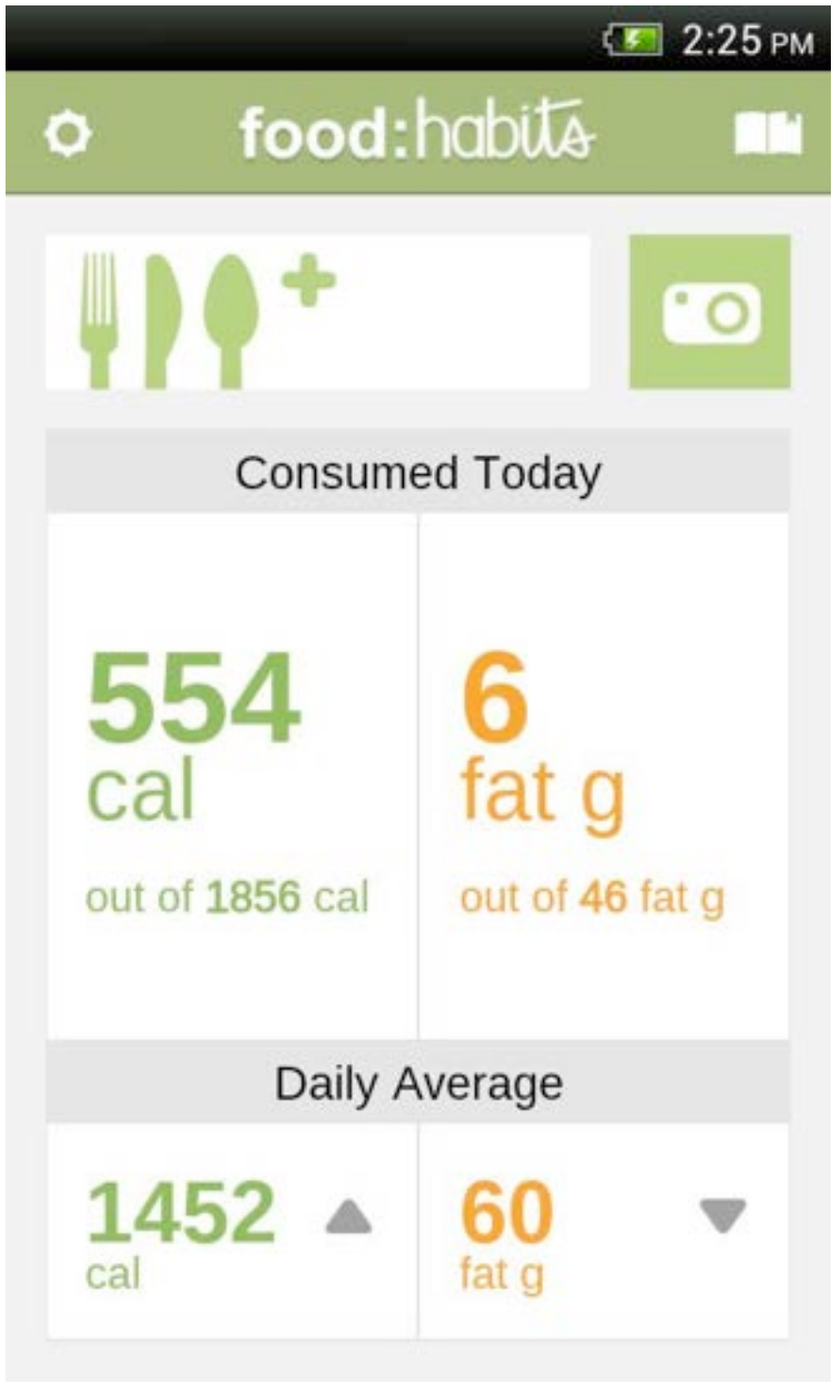
Jana care

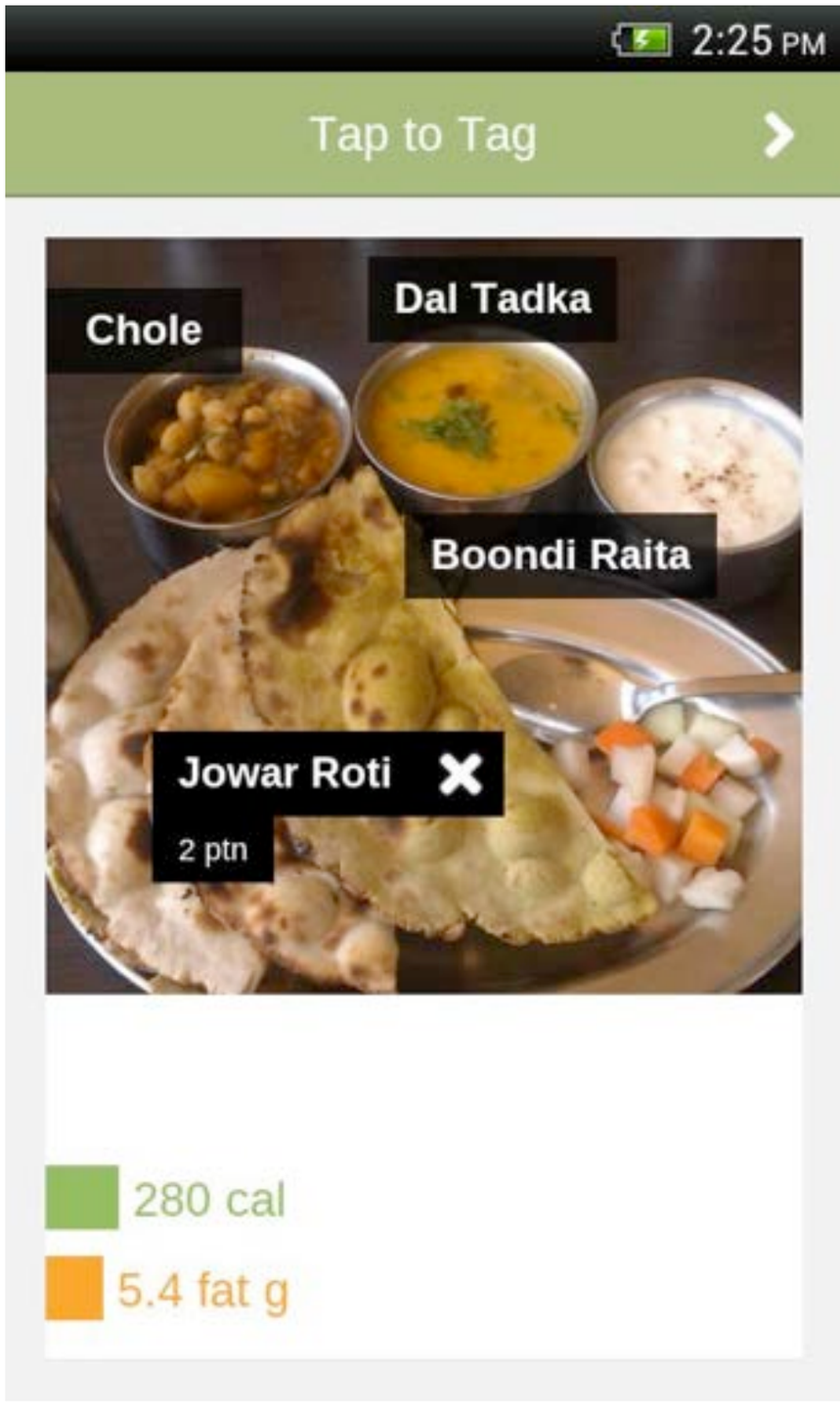
Jana Care
problem: no affordable glucose monitoring

Jana Care
Jana Care
solution: cut down glucose monitoring costs by 80%

Jana care

Android





Windows Phone

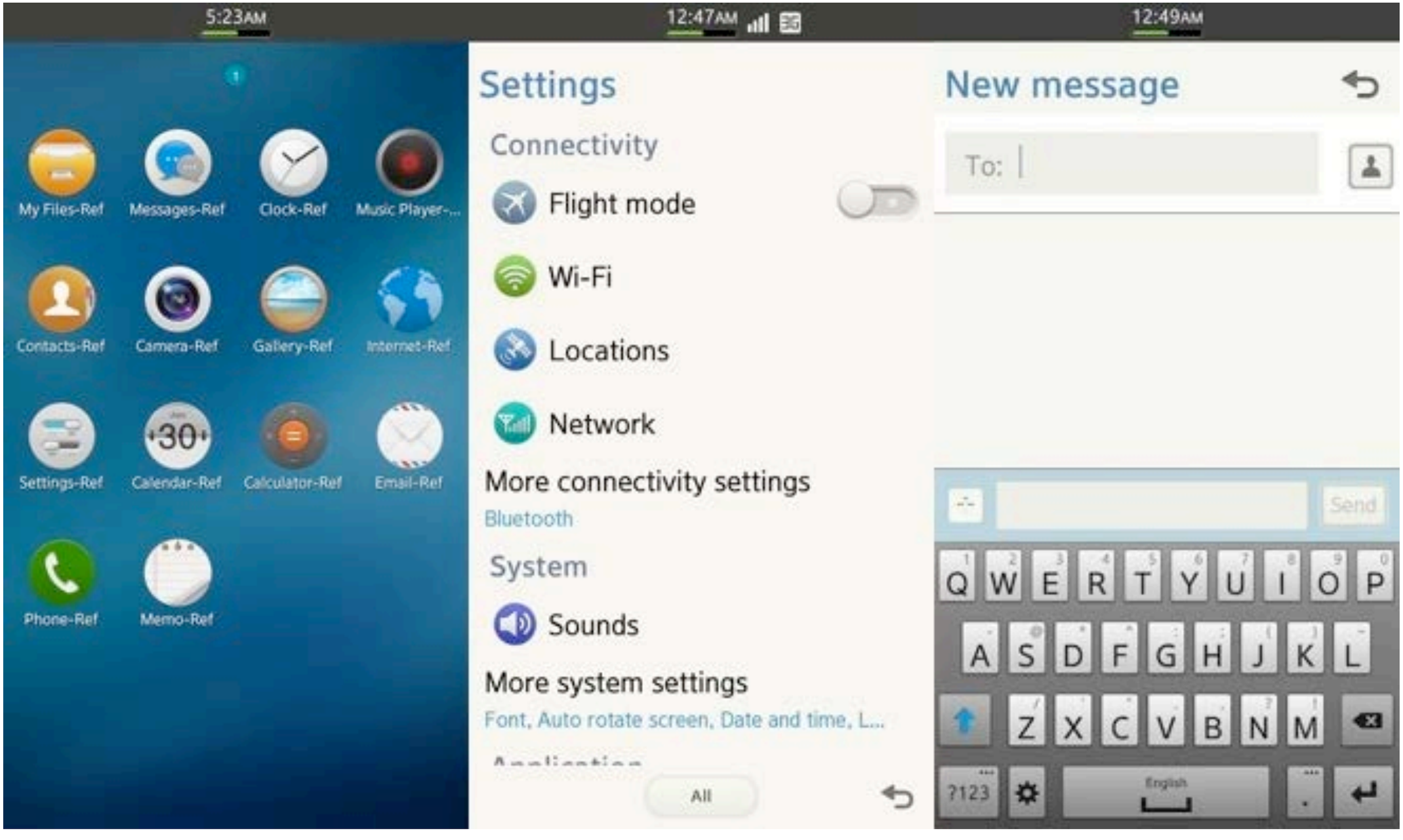
Windows Phone

http://www.youtube.com/watch?v=Fi1JUykQBKw

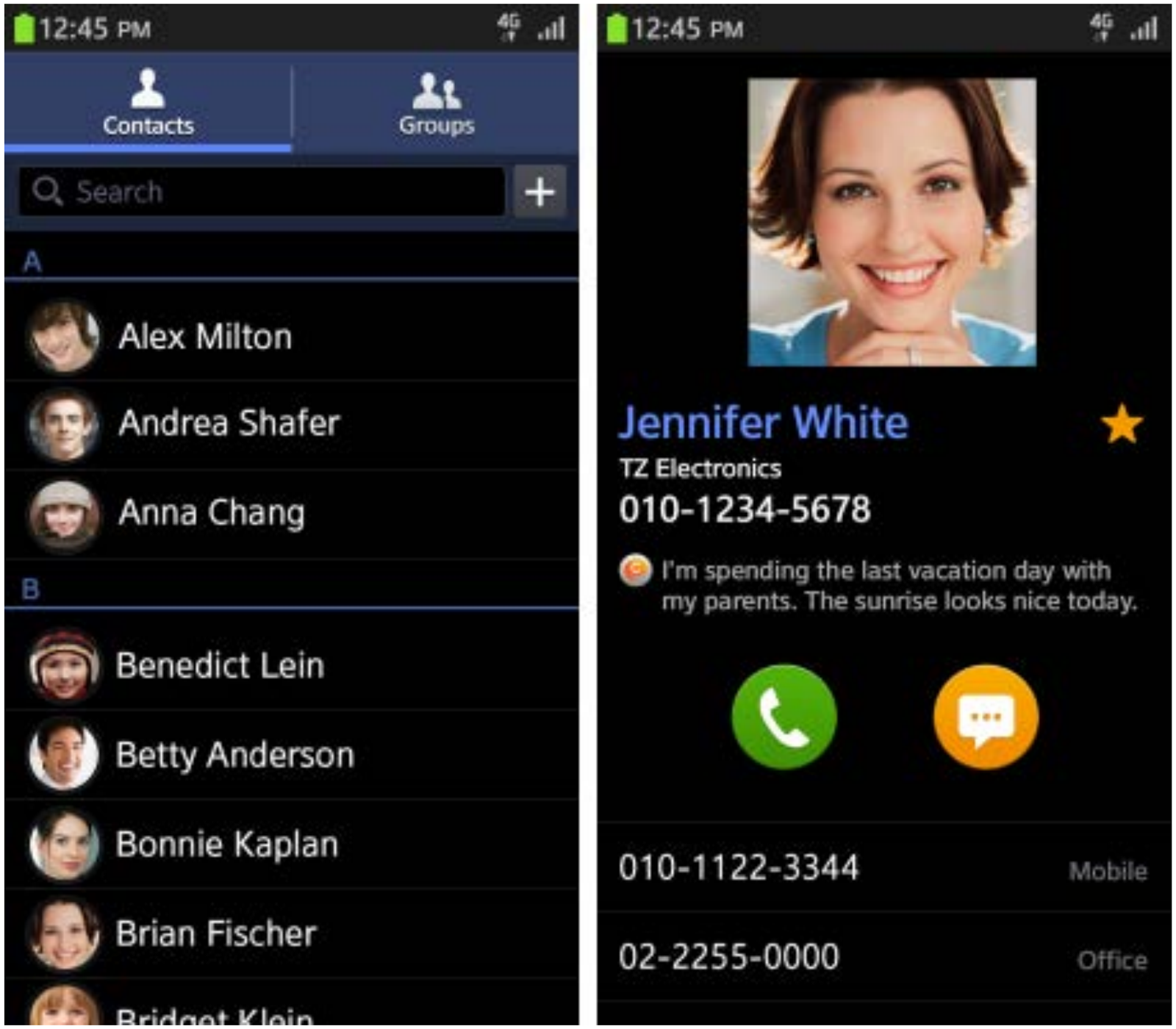
ubuntu

SEARCH
12:10
Music
Recently played
Lana Del Ray
Born To Die - The Paradise Edition
Kylie Minogue
Impossible Princess
Ciara
Gimmie Dat
Marina and the Diamonds
Obsessions
+ View all (135)
People
Favourites
Anna Olson
Anyone up for ice skating tonight?
Julia Santos da Silva
Reading emails in the cafe and people watching. LOL!
Aaron Kleinberg
I'm in Far East Shopping Centre, Orchard. 4sq.com/roPQoi
Recently contacted
Toomas Vilms
RT @slipsum Well, the they make shows is, they make one at a...
Hui Wang
RT @slipsum Well, the they make shows is, they make one at a...
Apps
Running apps
Facebook
Camera
Gallery
Maps
Angry Birds
The Hobbit
Frequently used
Videos
Recently watched
OFFF Barcelona
Summer holidays
Winter trip video
Adventure time
+ View all (35)
Recently added

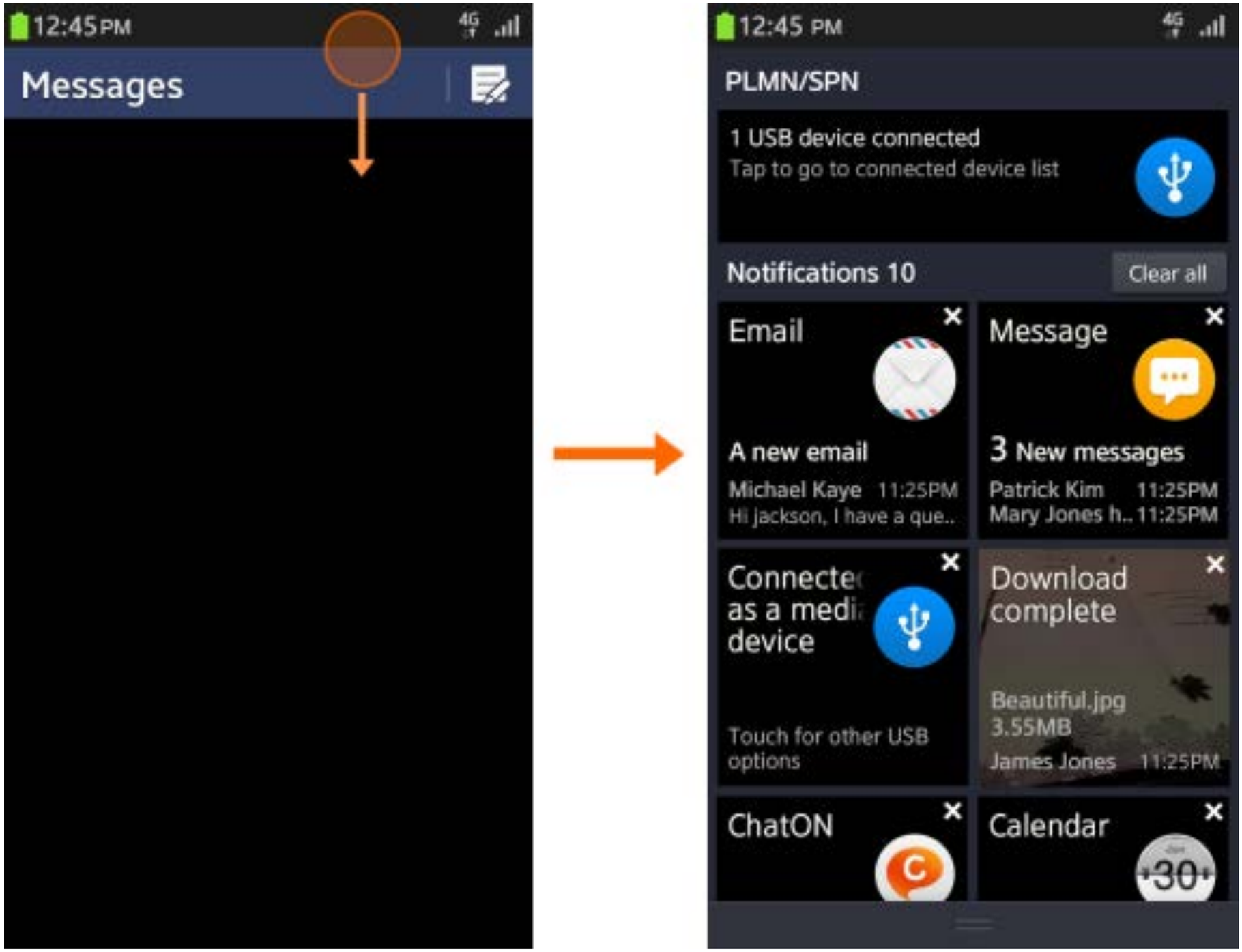
Tizen


5:23AM
My Files-Ref
Messages-Ref
Clock-Ref
Music Player-...
Contacts-Ref
Camera-Ref
Gallery-Ref
Internet-Ref
Settings-Ref
Calendar-Ref
Calculator-Ref
Email-Ref
Phone-Ref
Memo-Ref
12:47AM
Settings
Connectivity
Flight mode
Wi-Fi
Locations
Network
More connectivity settings
Bluetooth
System
Sounds
More system settings
Font, Auto rotate screen, Date and time, L...
All
12:49AM
New message
To:
Send
Q W E R T Y U I O P
A S D F G H J K L
Z X C V B N M
?123
English

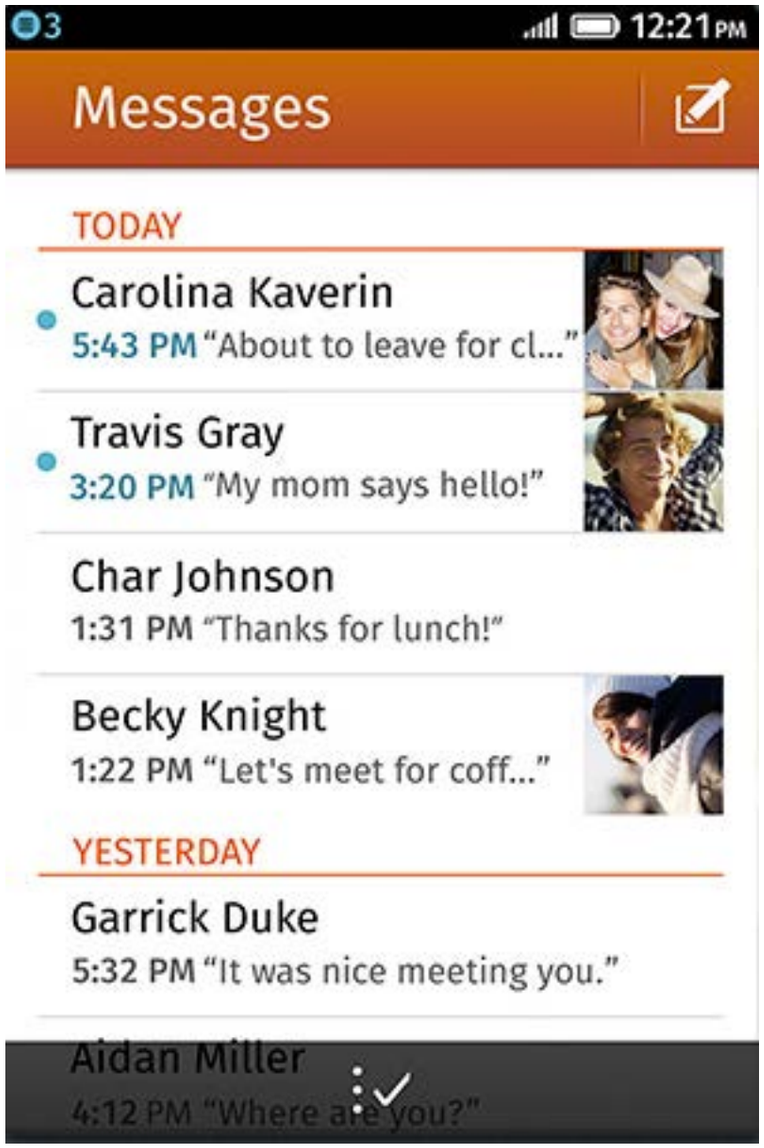
Tizen

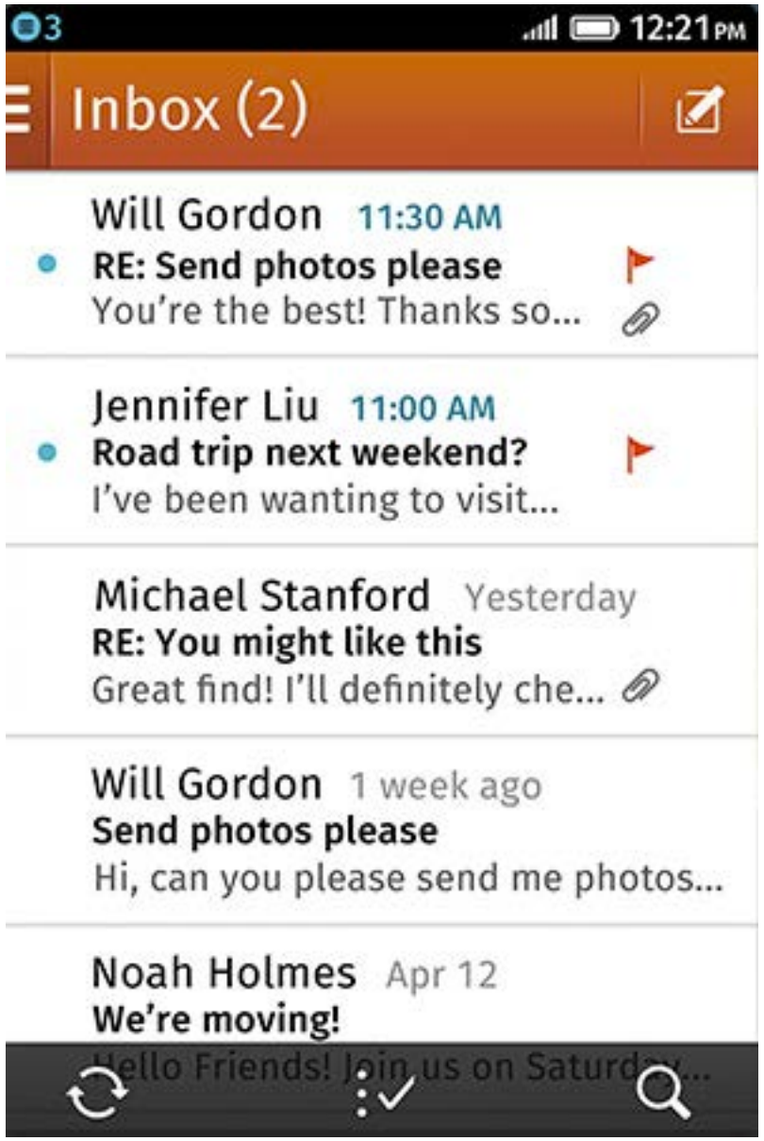

12:45 PM
Contacts
Groups
Search
A
Alex Milton
Andrea Shafer
Anna Chang
B
Benedict Lein
Betty Anderson
Bonnie Kaplan
Brian Fischer
12:45 PM
Jennifer White
TZ Electronics
010-1234-5678
I'm spending the last vacation day with my parents. The sunrise looks nice today.
010-1122-3344
Mobile
02-2255-0000
Office

Tizen


12:45 PM
Messages
12:45 PM
PLMN/SPN
1 USB device connected
Tap to go to connected device list
Notifications 10
Clear all
Email
A new email
Michael Kaye 11:25PM
Hi jackson, I have a que..
Message
3 New messages
Patrick Kim 11:25PM
Mary Jones h.. 11:25PM
Connecte
as a medi
device
Touch for other USB options
Download complete
Beautiful.jpg
3.55MB
James Jones 11:25PM
ChatON
Calendar

Firefox Mobile OS





Equipment

- Laptop
- Internet connection
- SW Dev tools
- Headphones
- Smartphone(s) and USB cables for them (if you have them)

Class structure

- 6:30pm start
- please turn off ringer of your cell phone and please don't IM during class. No recording.
- Class format
  - Lecture & Discussion
  - Break
  - "hands on working on mobile apps"
  - TBD guest speaker

Grading

- (80%) Designing and building apps on your own and being able to explain UI design choices for features, UI navigation methods as part of assignments. Being able to demo your application clearly (on a device or emulator), explaining the features and how the UI components you have chosen enable the use cases and features. **Your application does not have to work perfectly.**
- (20%) Class participation, two written quizzes

Housekeeping

- Class schedule & holidays
- Decide on a final exam week schedule
- How to reach me
- Create a class mailing list
- Any other issues?

Lessons to learn

- Understand the interaction models of different mobile platforms (and UI components)
- Be able to think about, design and build native mobile apps (one *or more* platforms)
- Understand the impact of data modeling and unique challenges in mobile app development
- Exposure to Agile development and product design & development processes & practices
- Practical skills in design, flow, wireframing
- Exposure to mobile product user testing

Course Outline

- See syllabus
- note it is Draft V1 (it will be updated)

Apps deconstructed (Android)

Navigation structure

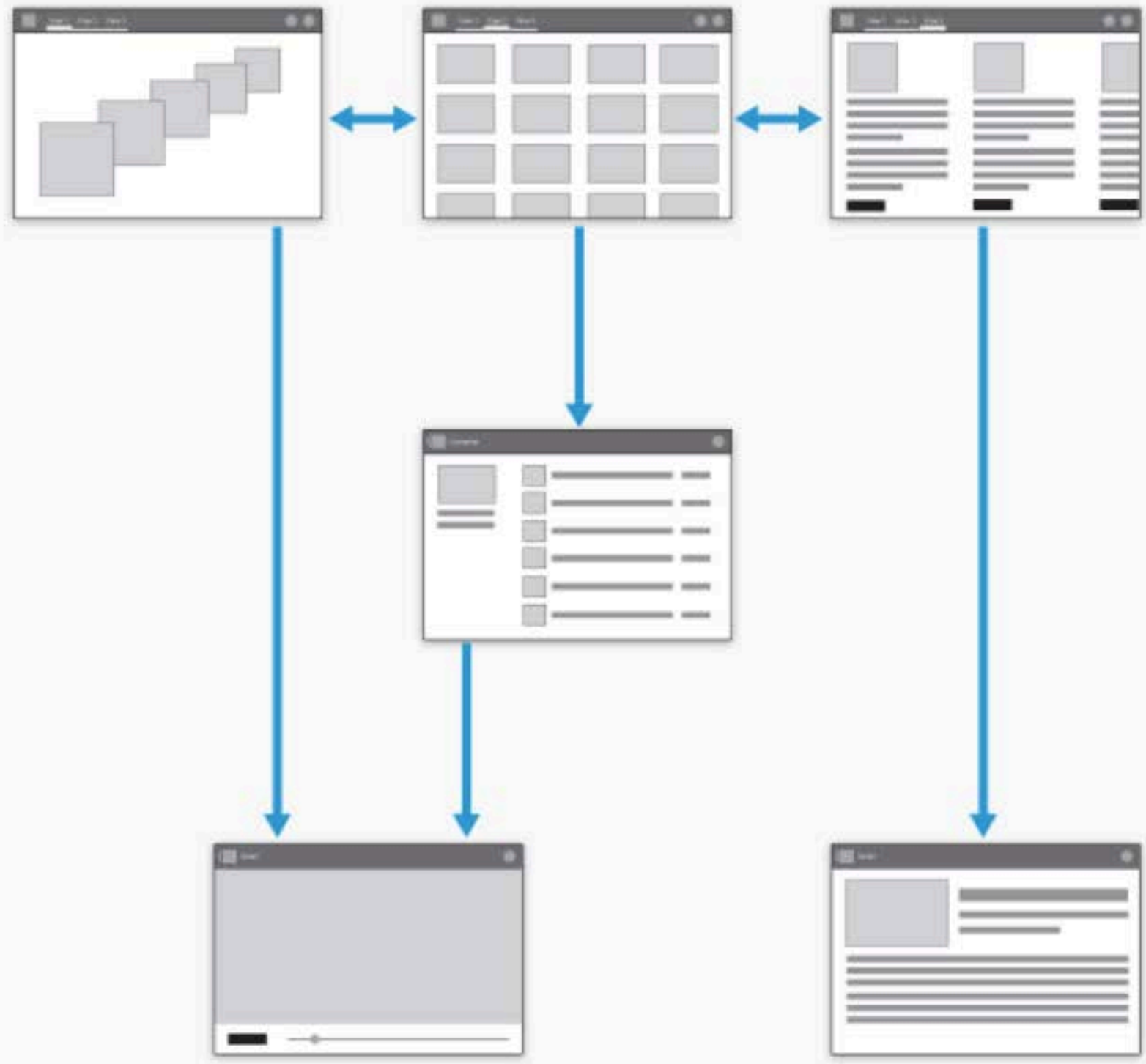
- Please view this video over the next week:
- **Structure in Android App Design**
- https://developers.google.com/events/io/sessions/326301704
- PDF for reference:
  - 118 - I_O 2013- Structure In Android App Design.pdf

Portions of these pages are reproduced from work created and shared by the Android Open Source Project and used according to terms described in the Creative Commons 2.5 Attribution License.

General Structure

See http://developer.android.com/design/patterns/app-structure.html

A typical Android app consists of top level and detail/edit views. If the navigation hierarchy is deep and complex, category views connect top level and detail views.



Top level views

The top level of the app typically consists of the different views that your app supports. The views either show different representations of the same data or expose an altogether different functional facet of your app.

Category views

Category views allow you to drill deeper into your data.

Detail/edit view

The detail/edit view is where you consume or create data.

Good bones

- “Bones before skin”

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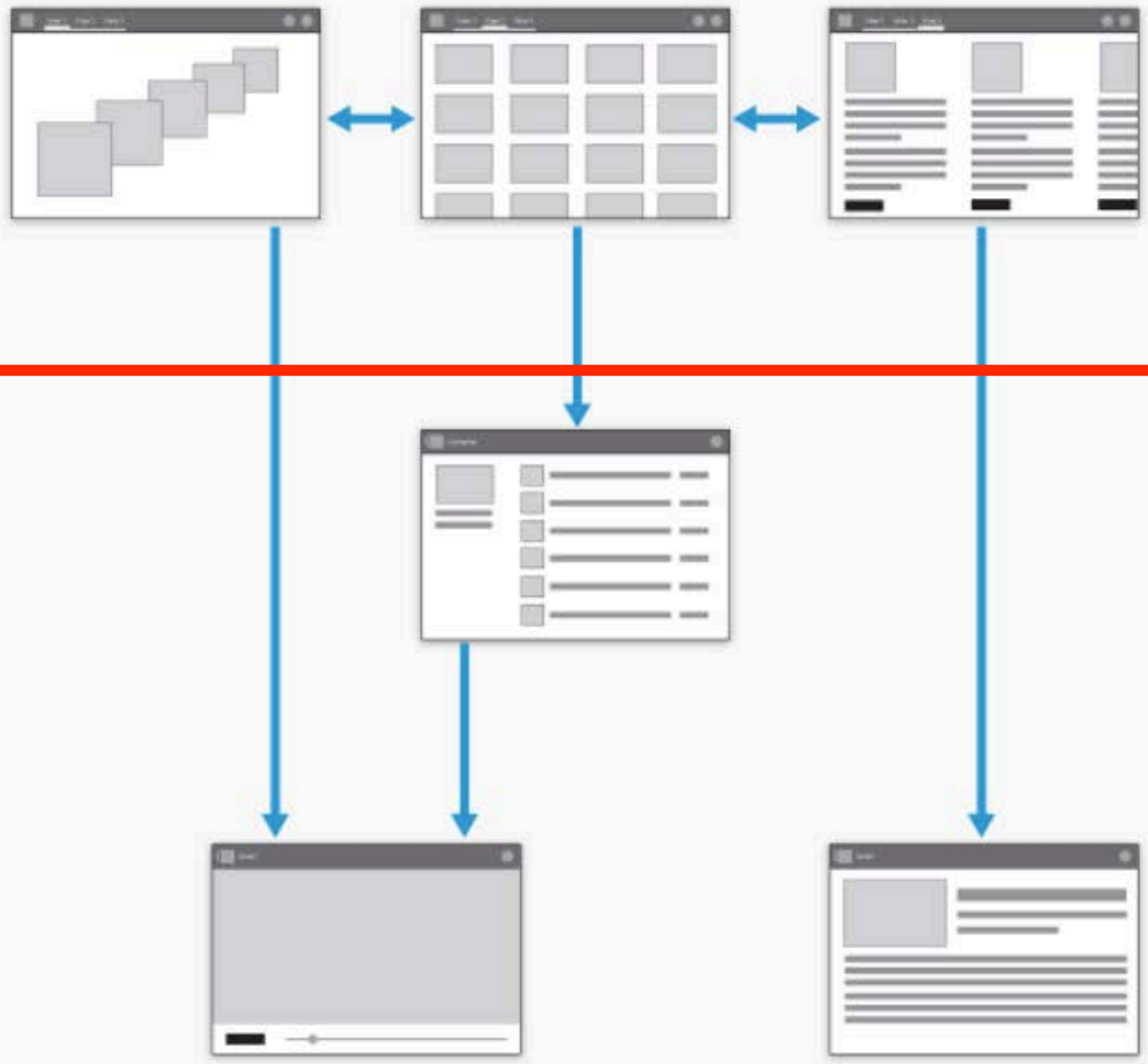

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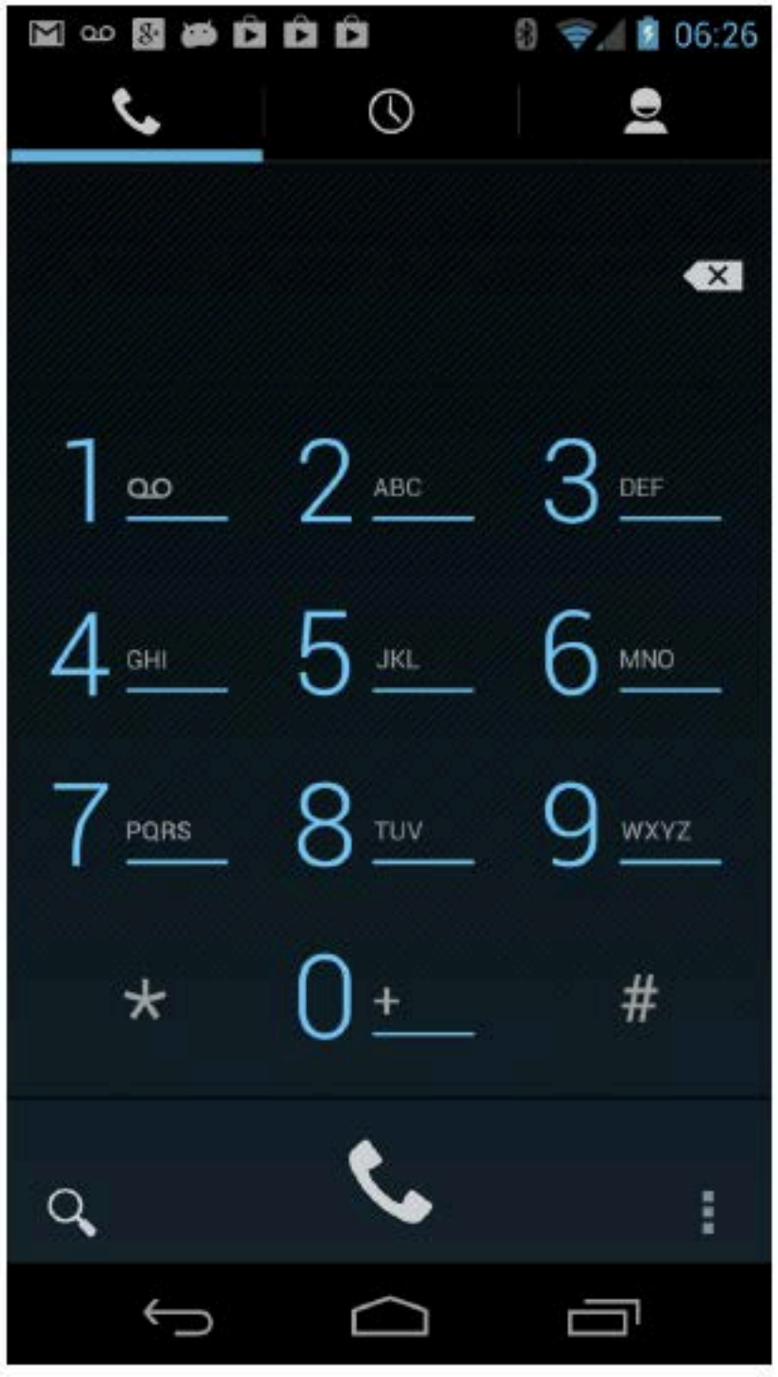
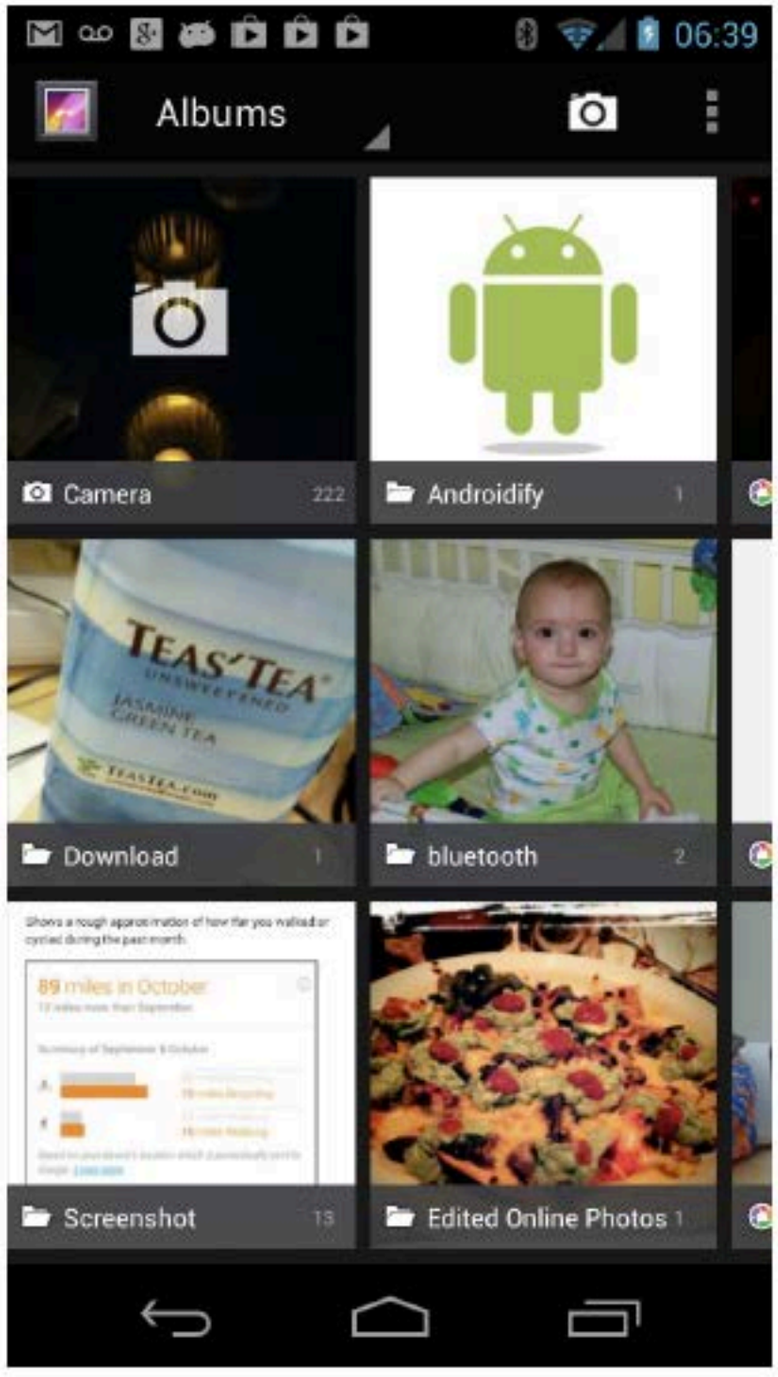
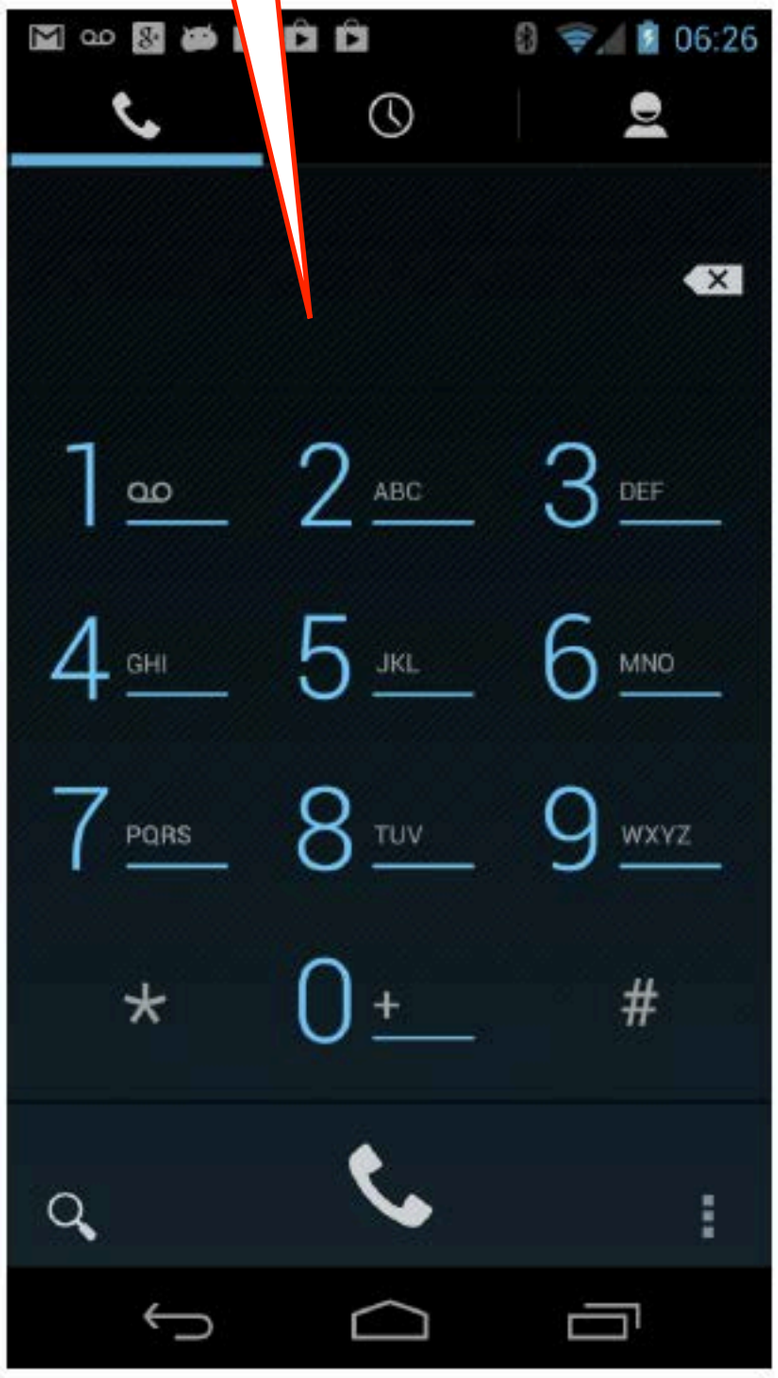

06:26
1
2 ABC
3 DEF
4 GHI
5 JKL
6 MNO
7 PQRS
8 TUV
9 WXYZ
*
0 +
#

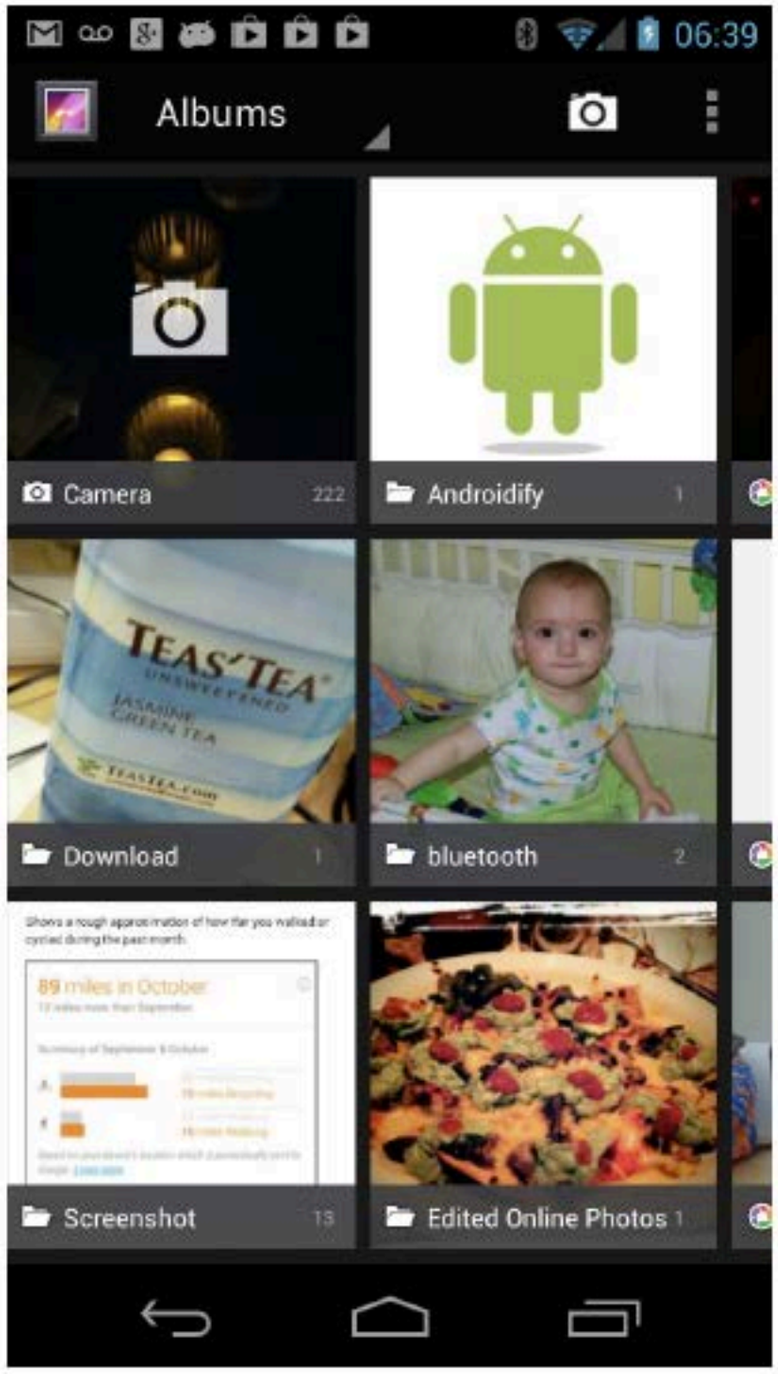

06:39
Albums
Camera 222
Androidify 1
Download 1
bluetooth 2
89 miles in October
Screenshot 13
Edited Online Photos 1

Communicates the app's primary purpose

"I am a calling app"

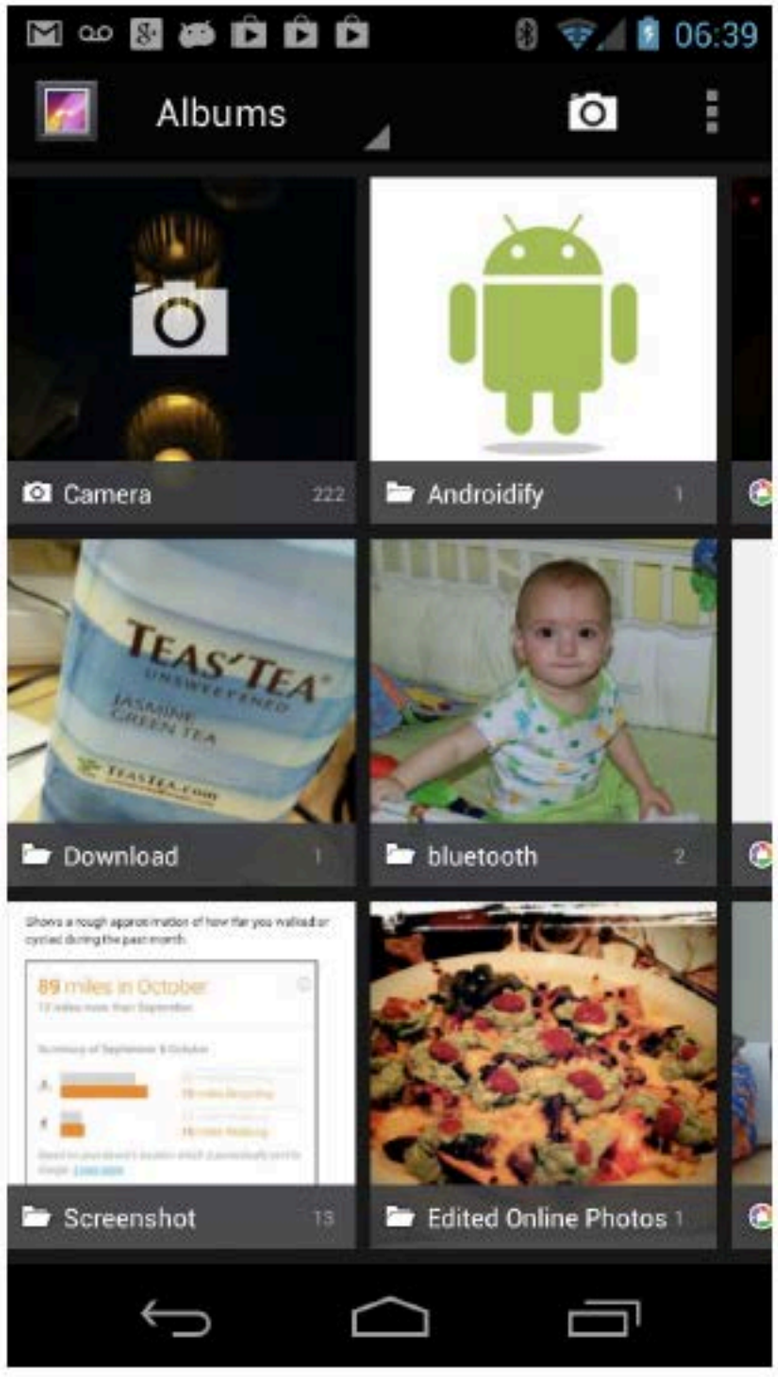
Top level





"I also allow for other features of this calling app"

Top level



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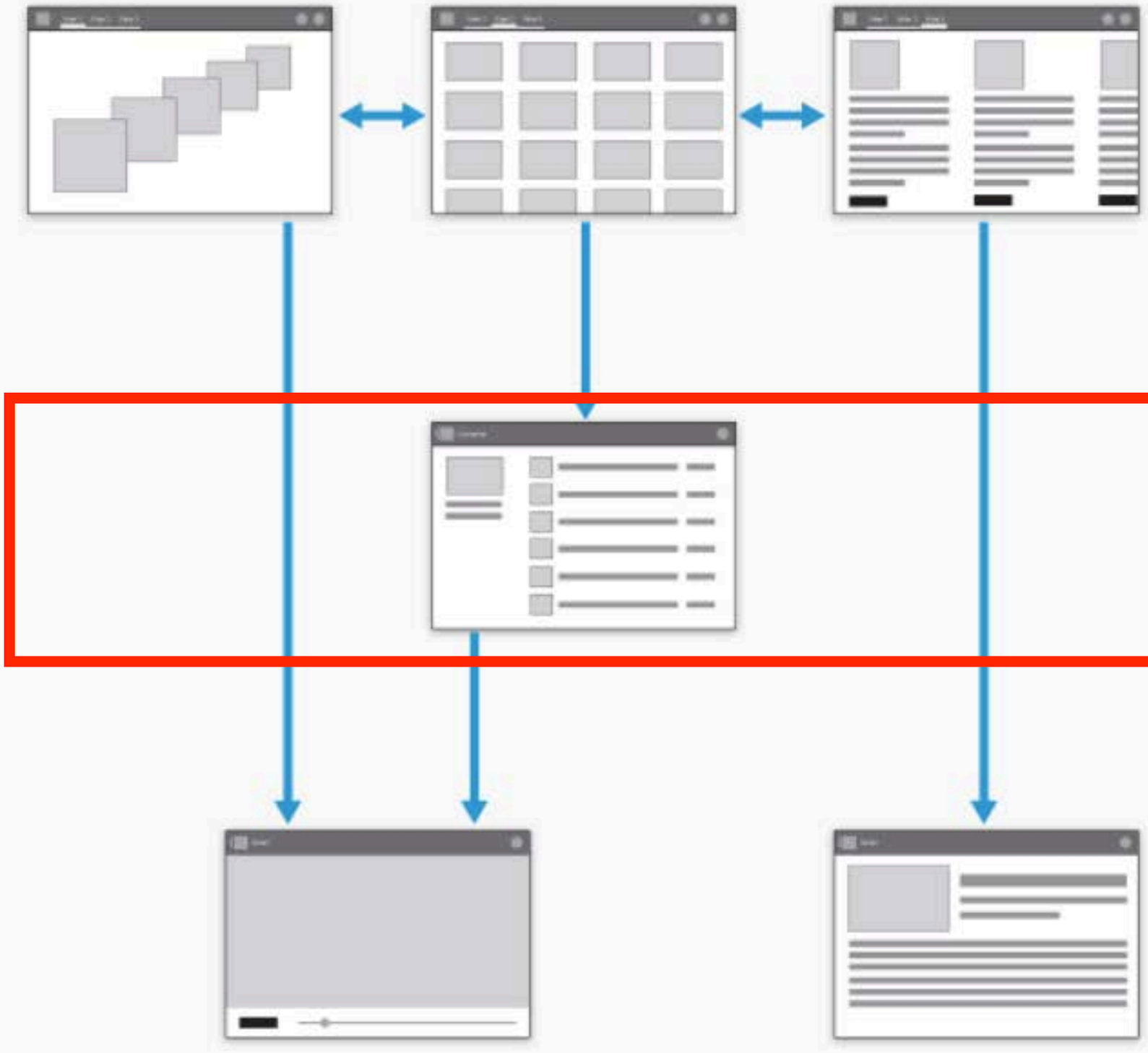

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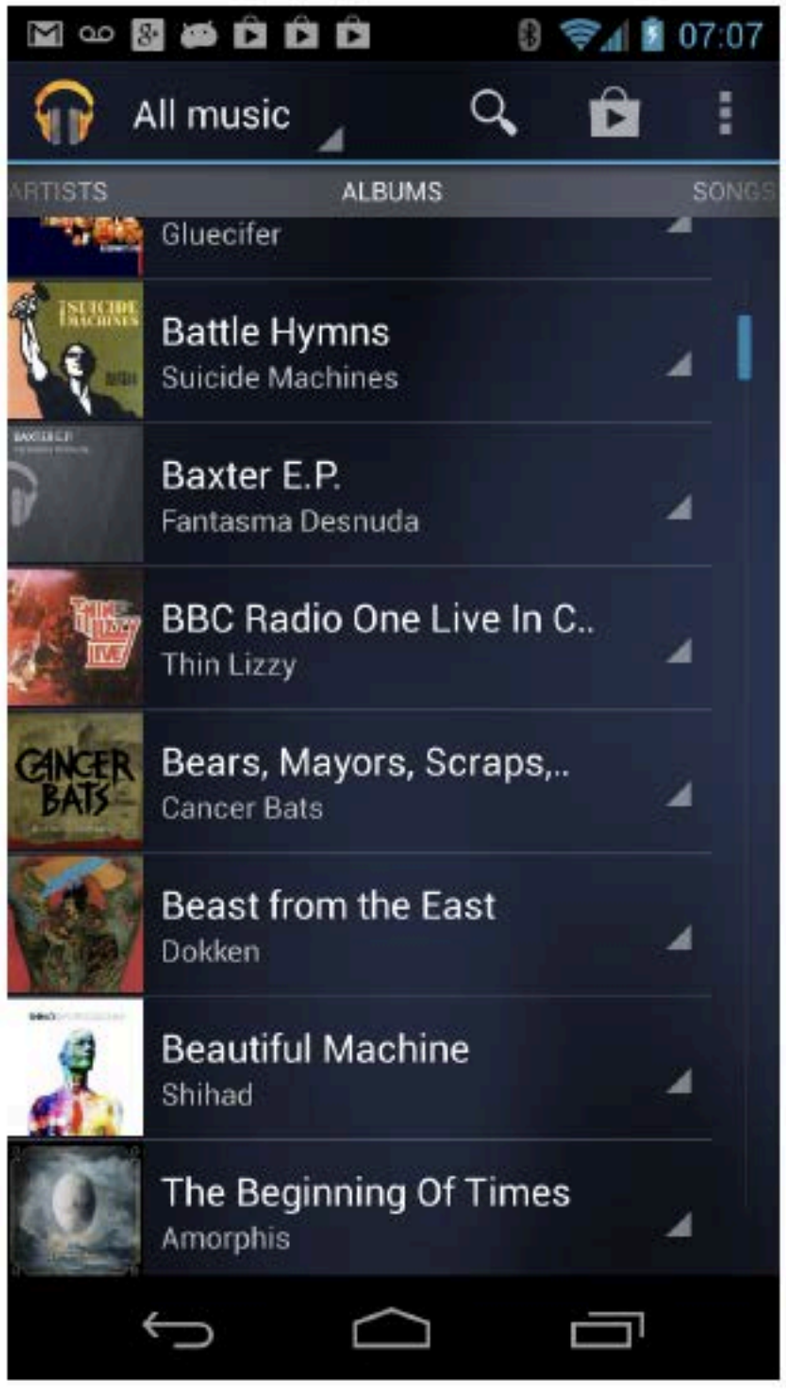
The detail/edit view is where you consume or create data.

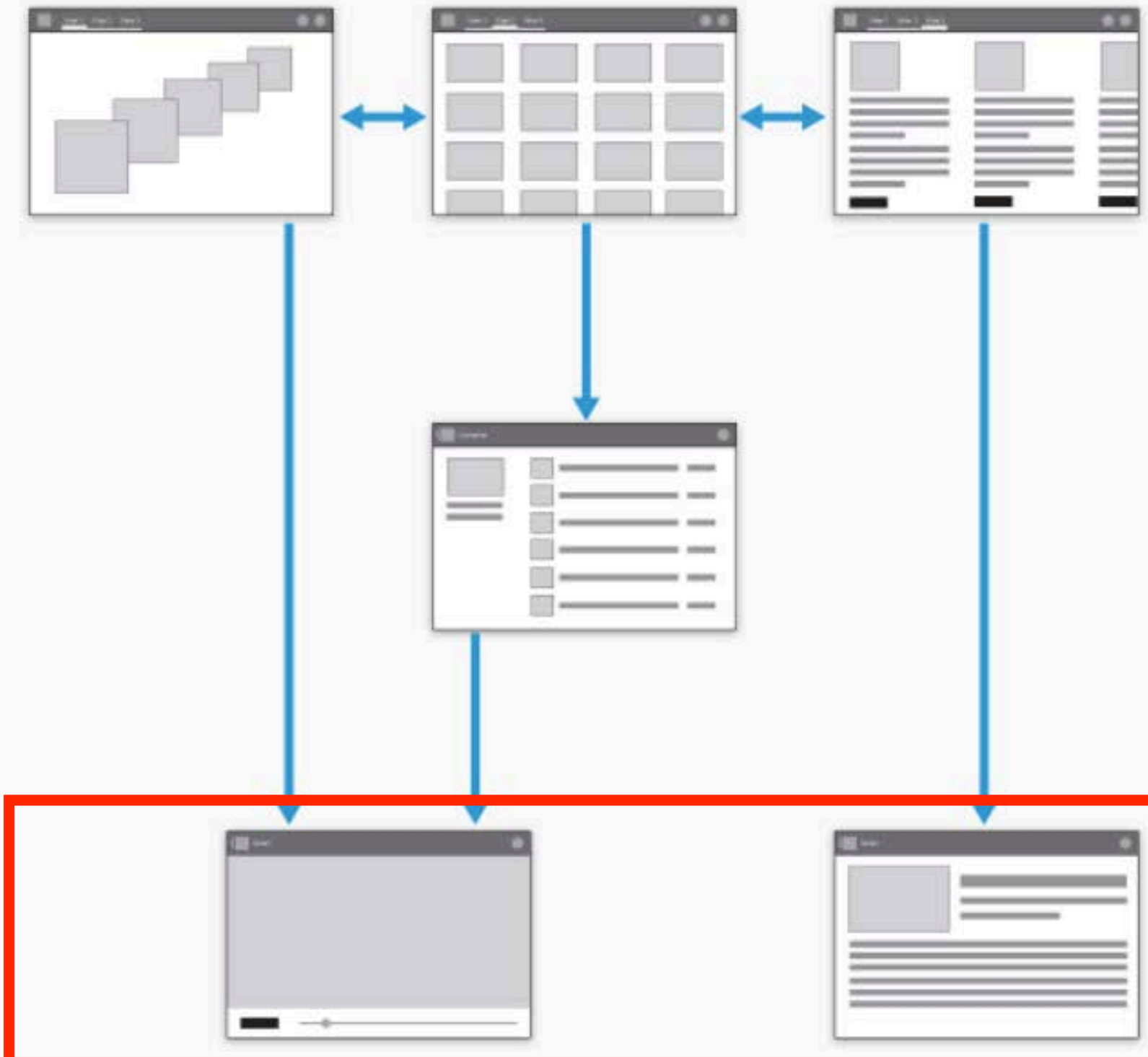
Category Views



General Structure

See http://developer.android.com/design/patterns/app-structure.html

A typical Android app consists of top level and detail/edit views. If the navigation hierarchy is deep and complex, category views connect top level and detail views.



Top level views

The top level of the app typically consists of the different views that your app supports. The views either show different representations of the same data or expose an altogether different functional facet of your app.

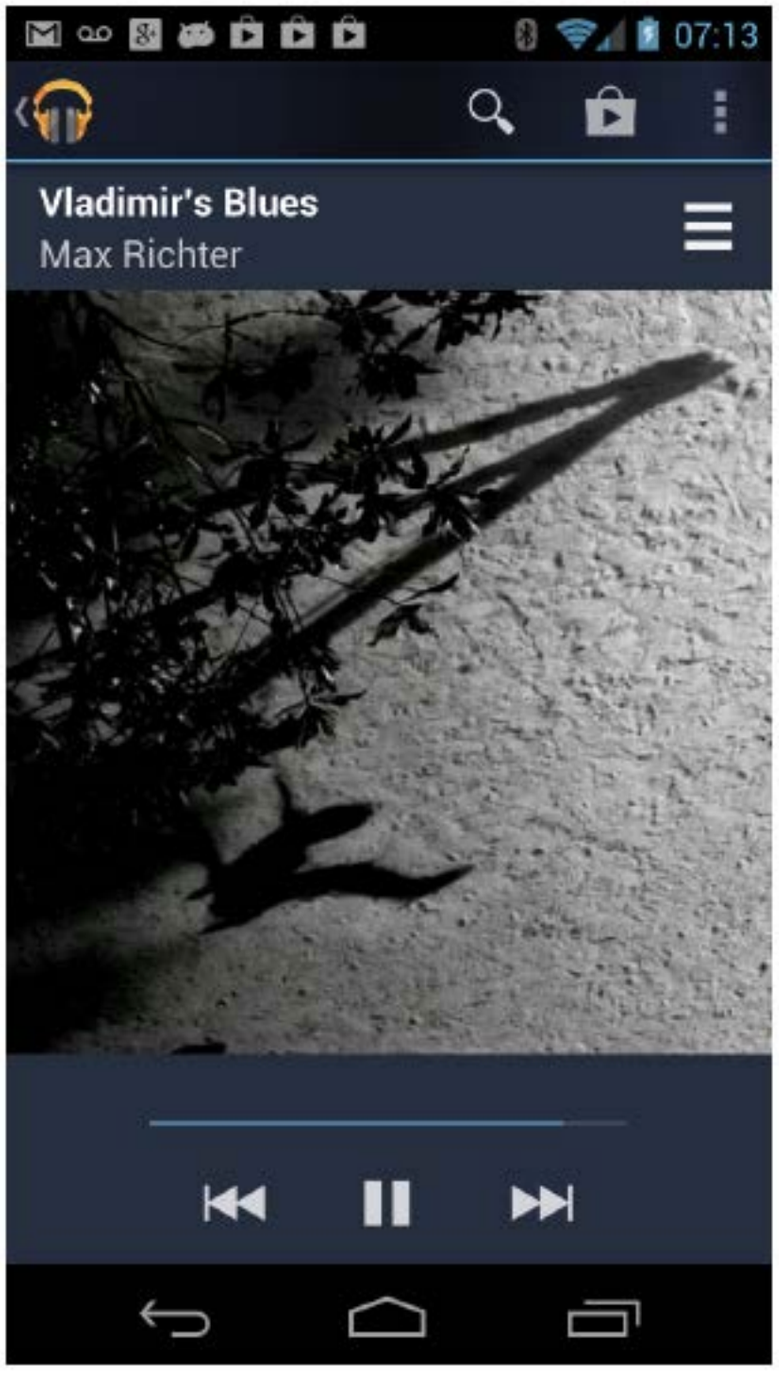
Category views

Category views allow you to drill deeper into your data.

Detail/edit view

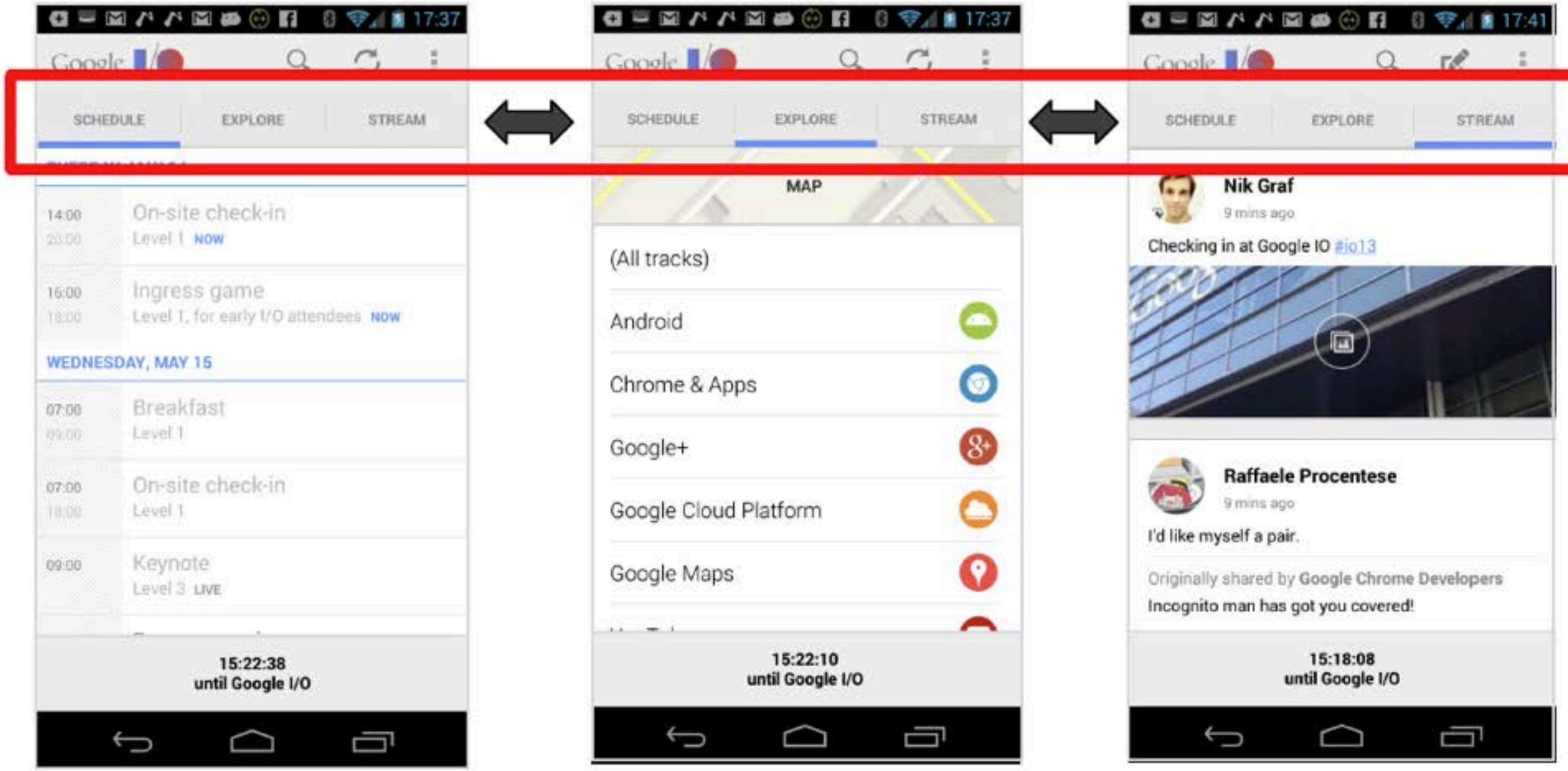
The detail/edit view is where you consume or create data.

Detail/Edit view

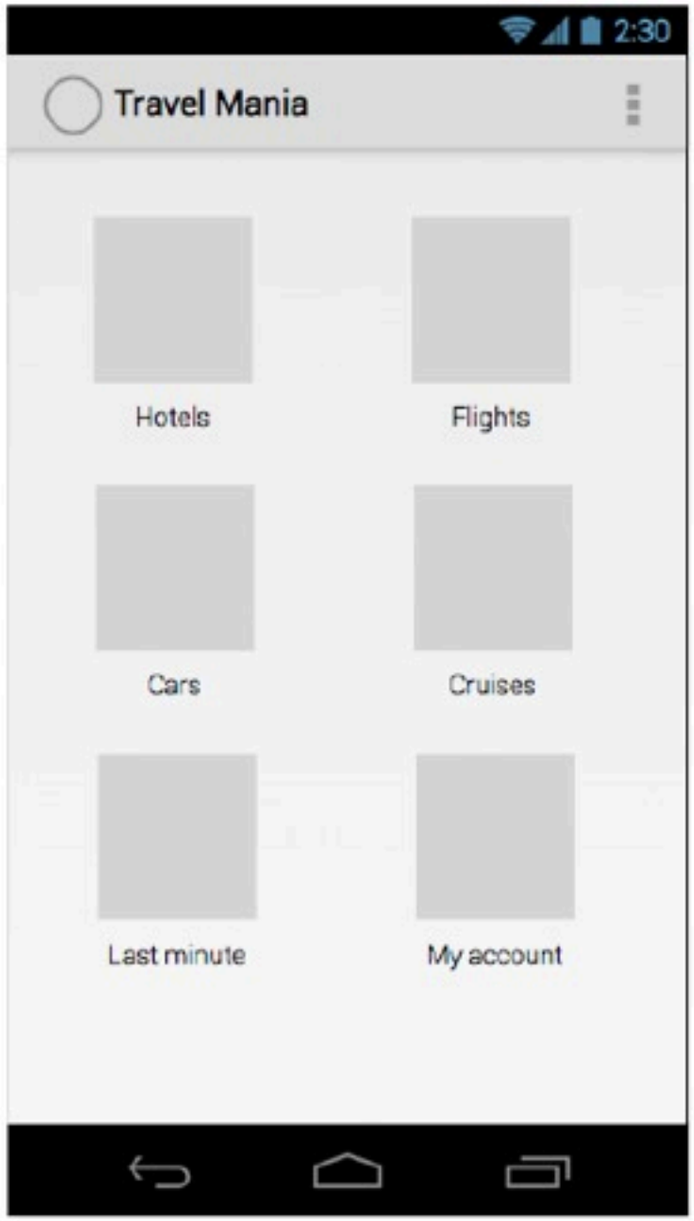


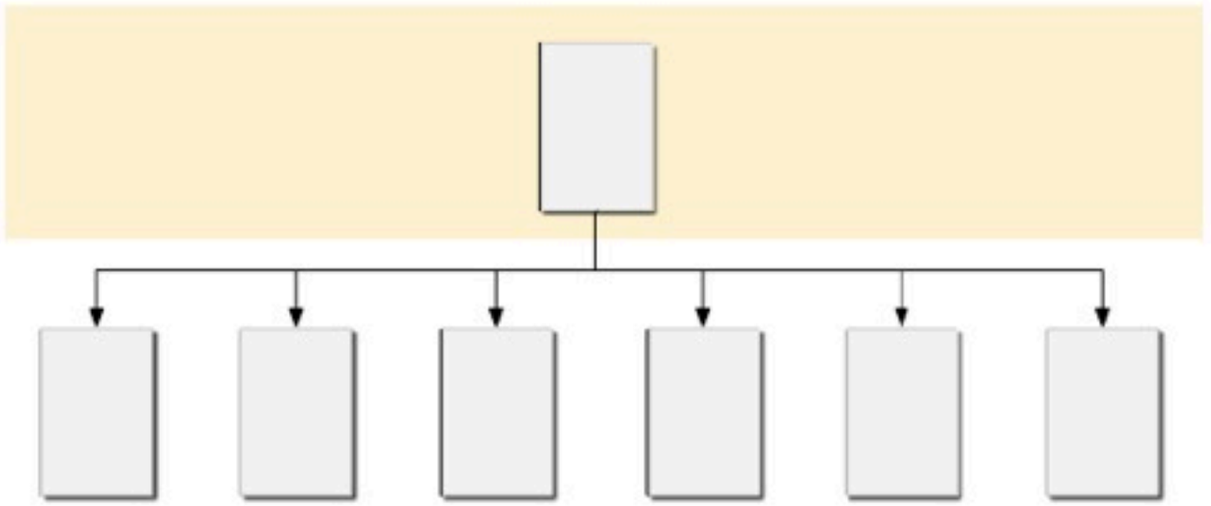
Design Patterns for Navigation controls

Top-level navigation

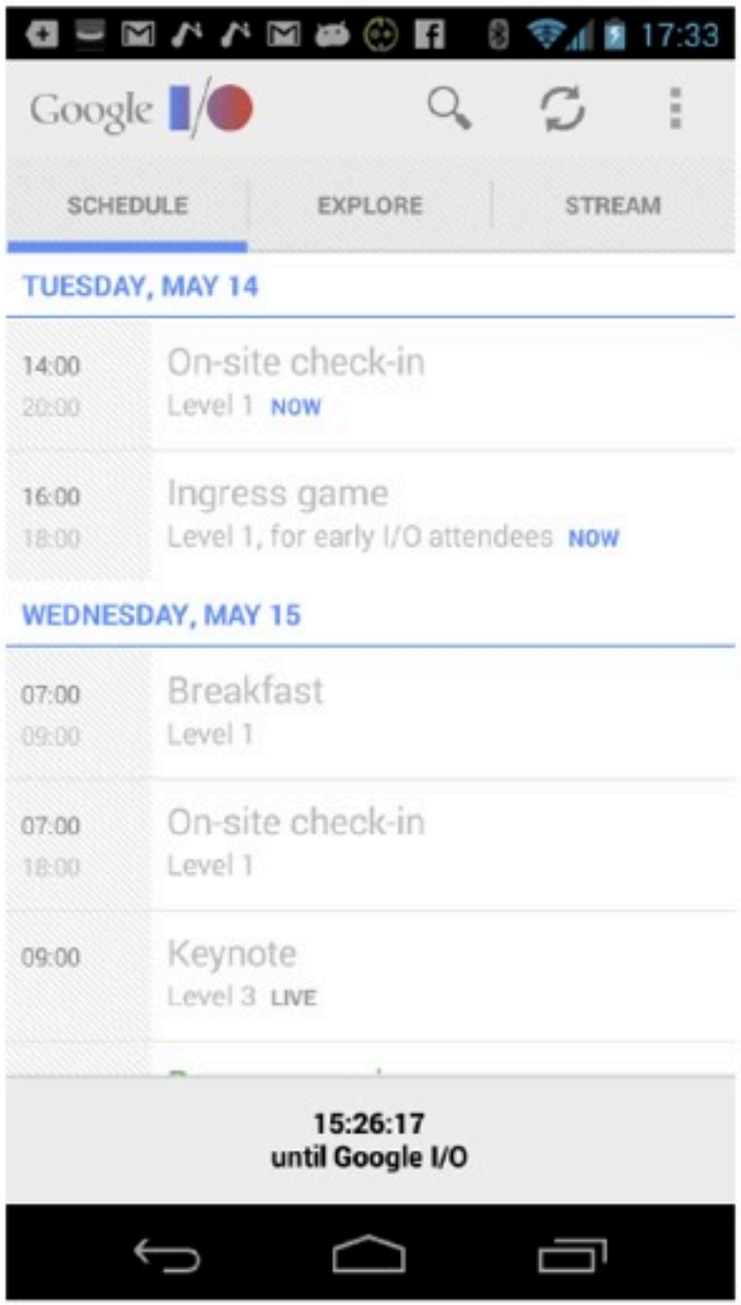


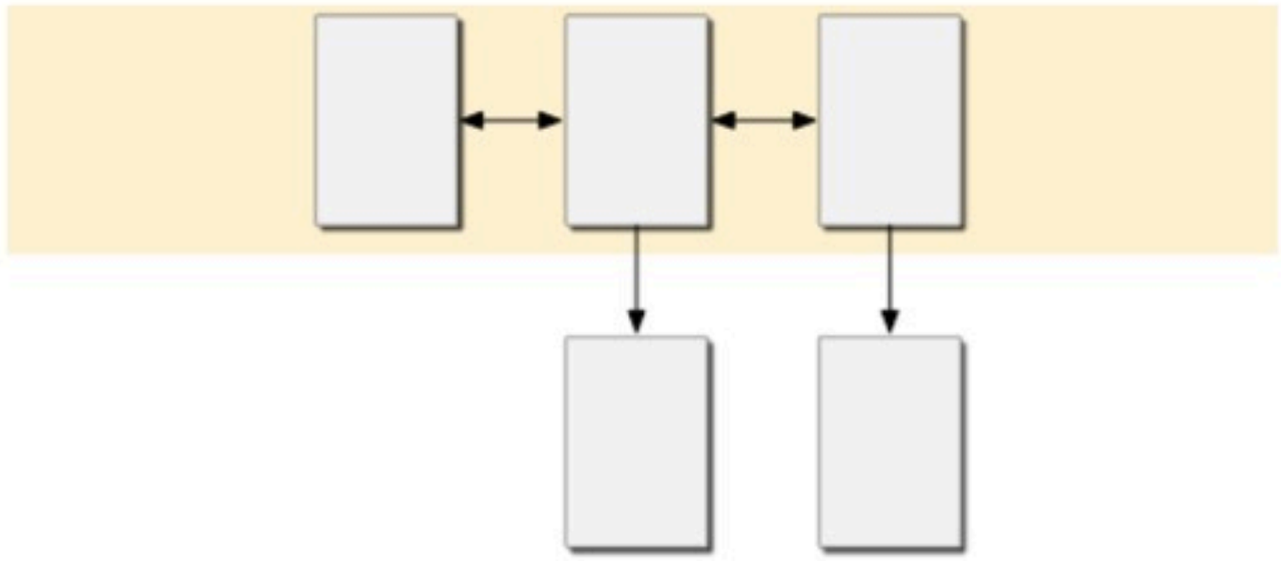
Six Pack


2:30
Travel Mania
Hotels
Flights
Cars
Cruises
Last minute
My account

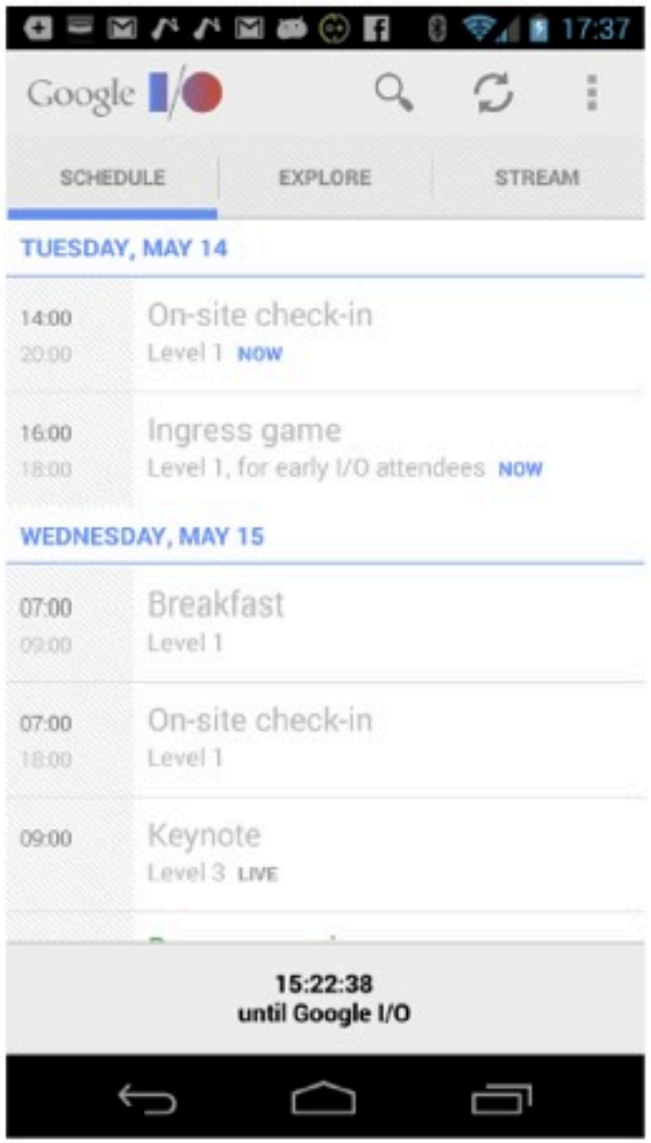


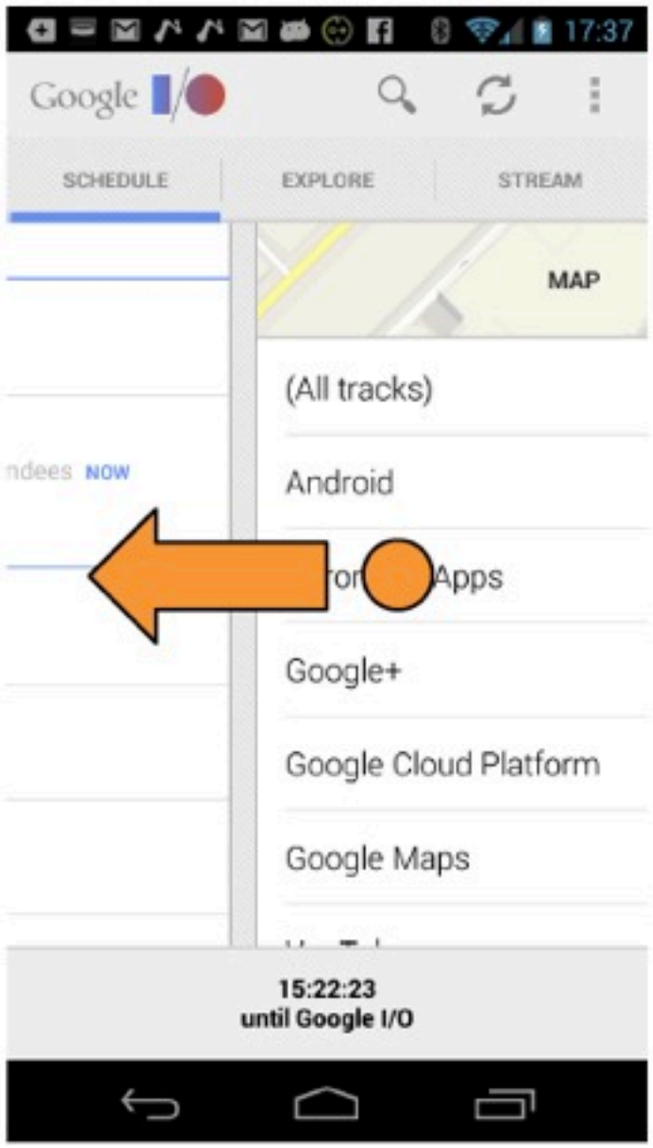
Fixed tabs

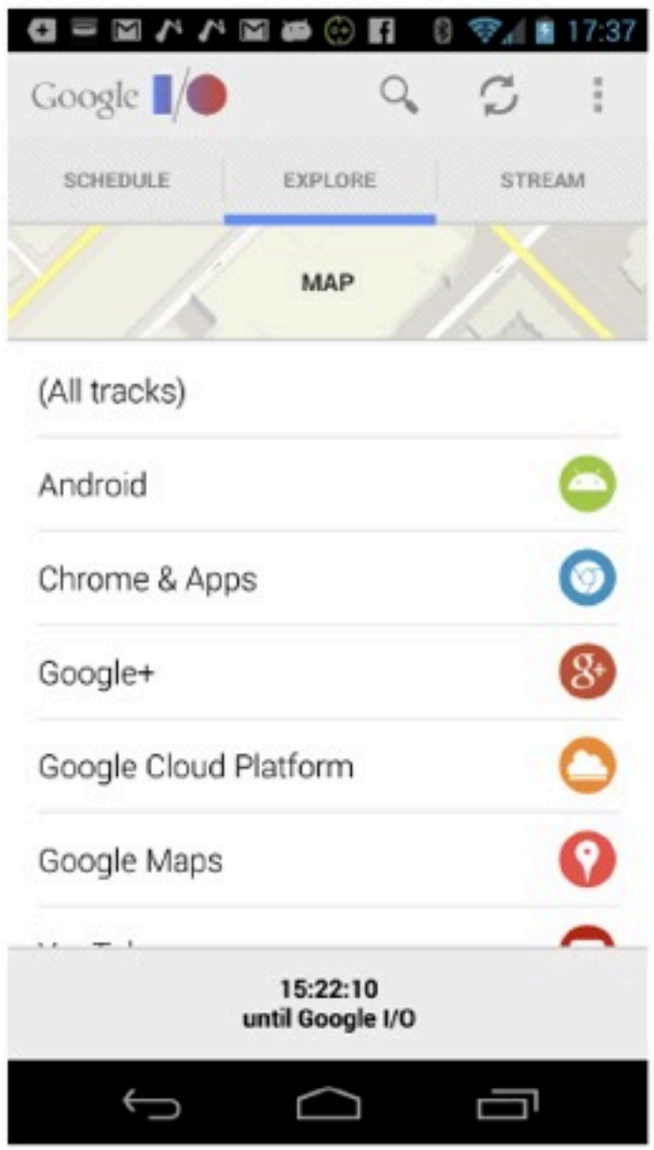

17:33
Google I/O
SCHEDULE
EXPLORE
STREAM
TUESDAY, MAY 14
14:00
20:00
On-site check-in
Level 1 NOW
16:00
18:00
Ingress game
Level 1, for early I/O attendees NOW
WEDNESDAY, MAY 15
07:00
09:00
Breakfast
Level 1
07:00
18:00
On-site check-in
Level 1
09:00
Keynote
Level 3 LIVE
15:26:17
until Google I/O



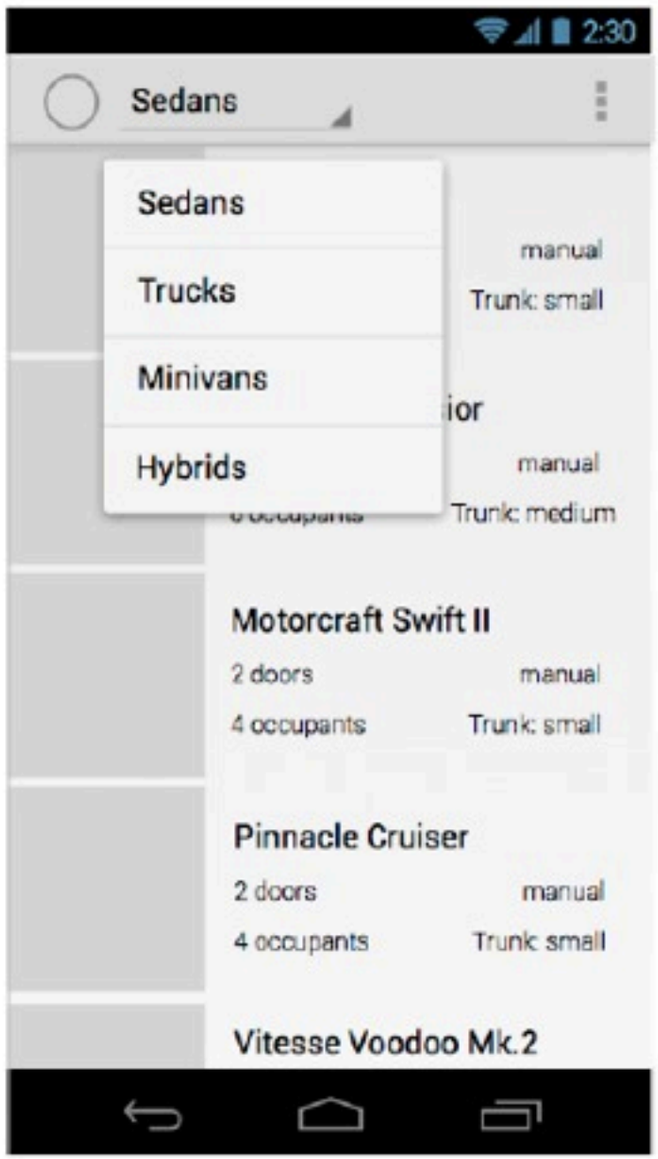
Fixed tabs: support side swipe

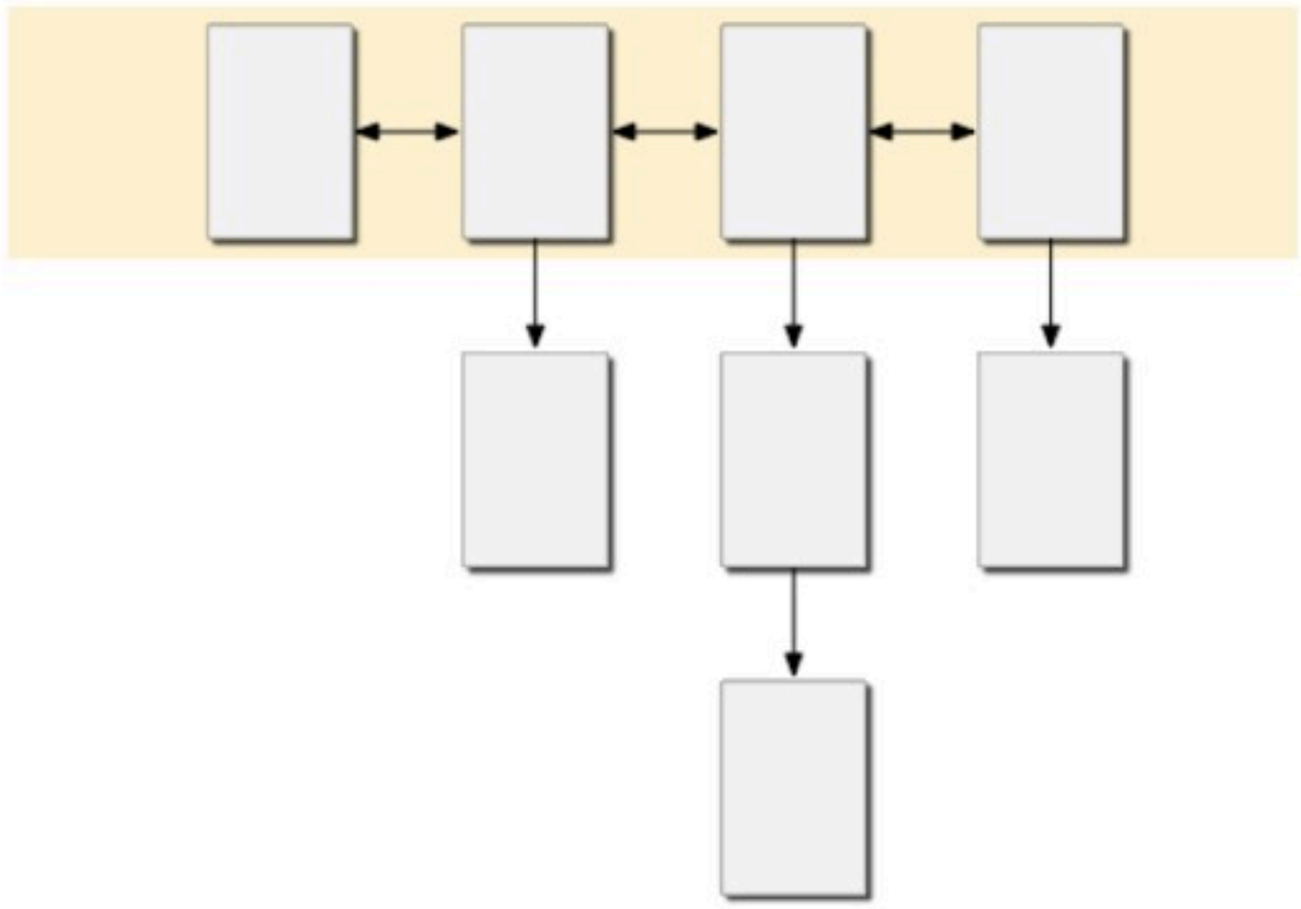




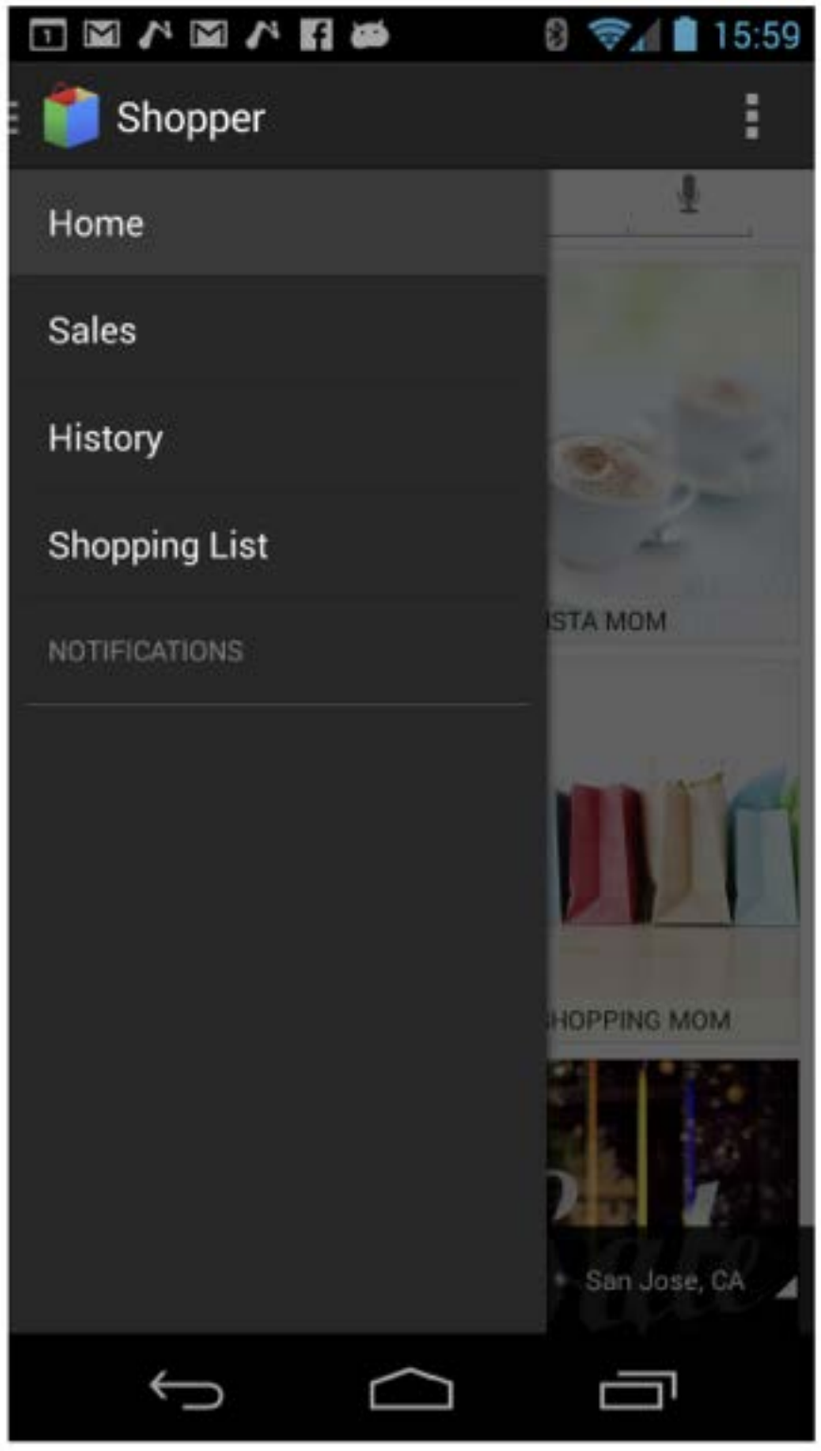


Spinners

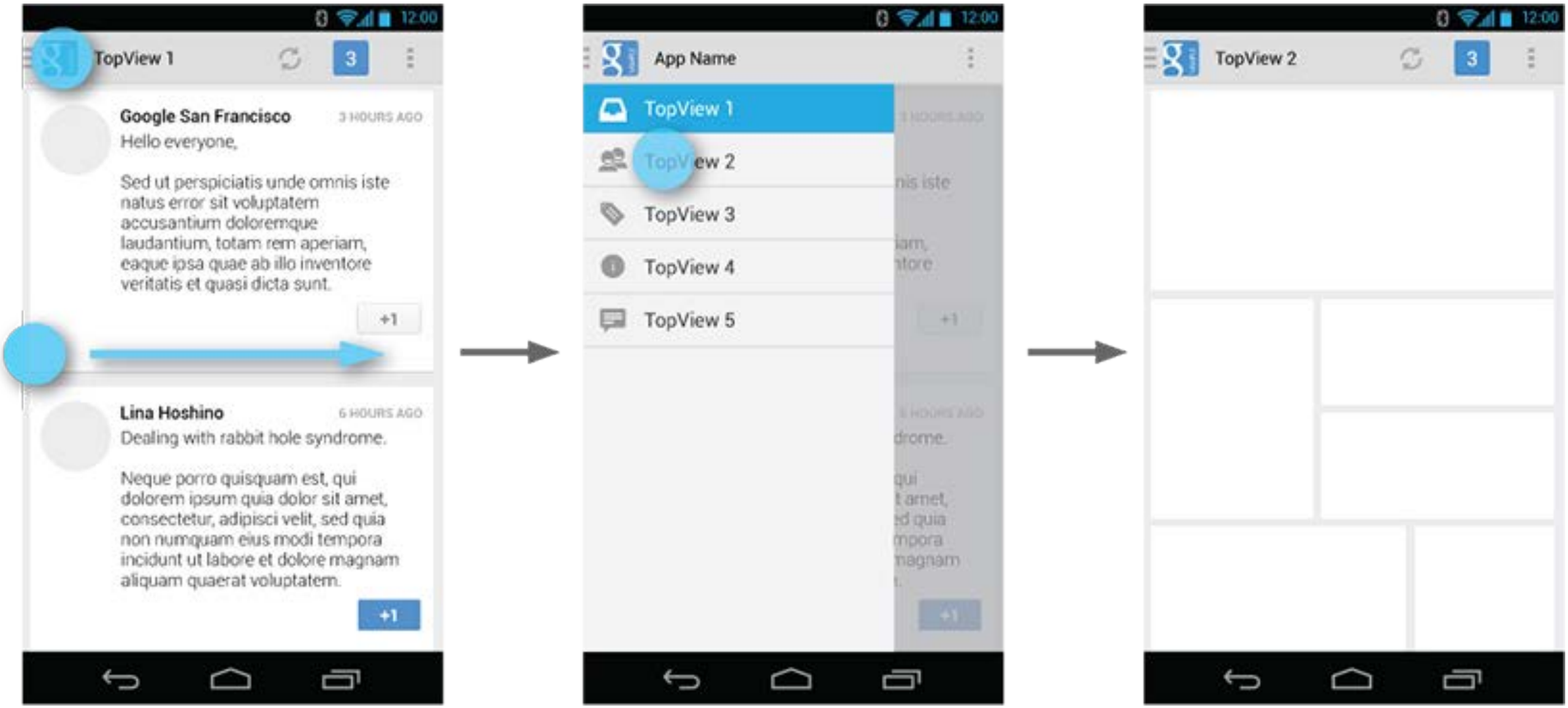

2:30
Sedans
Sedans
Trucks
Minivans
Hybrids
manual
Trunk: small
ior
manual
Trunk: medium
Motorcraft Swift II
2 doors
manual
4 occupants
Trunk: small
Pinnacle Cruiser
2 doors
manual
4 occupants
Trunk: small
Vitesse Voodoo Mk.2



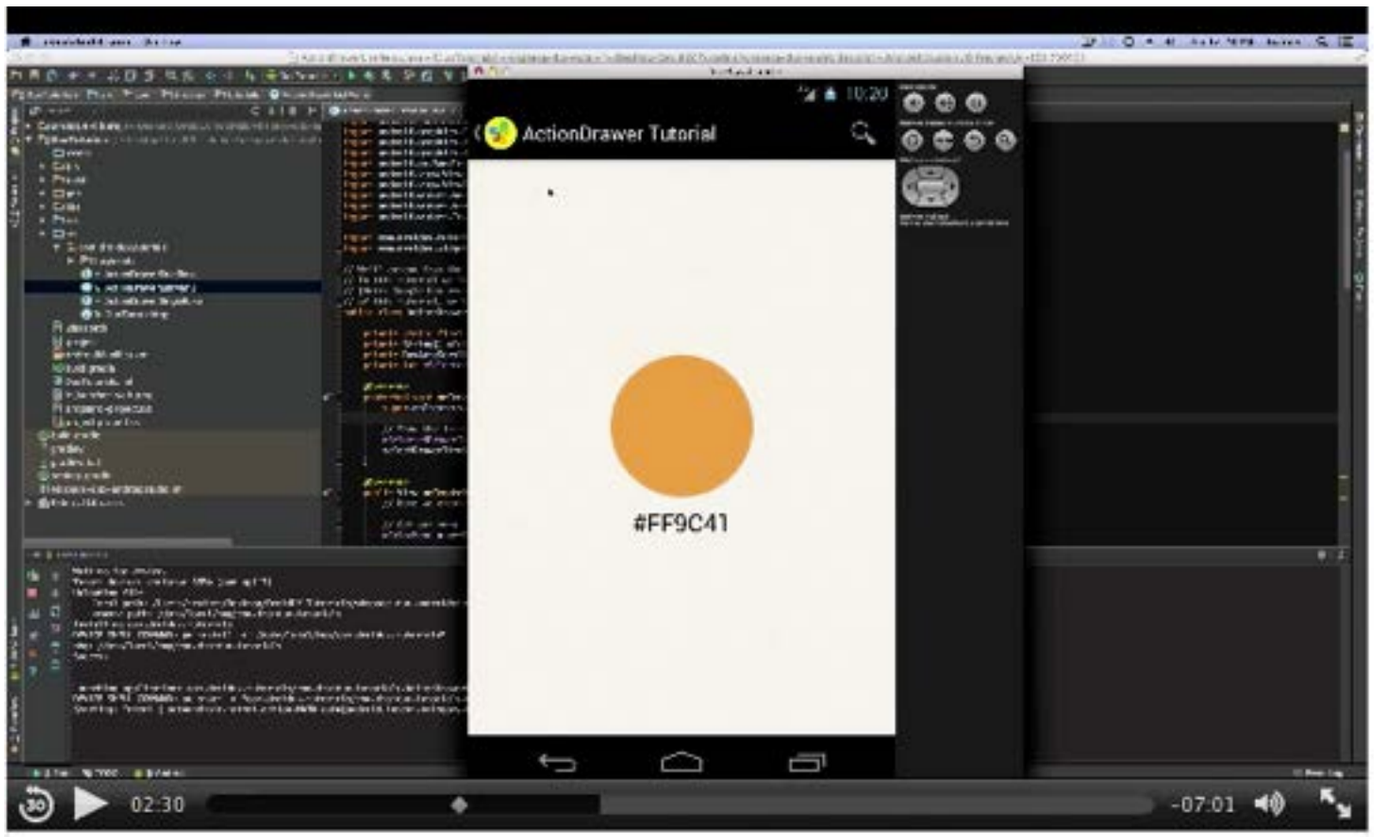
Navigation Drawer



Navigation Drawer



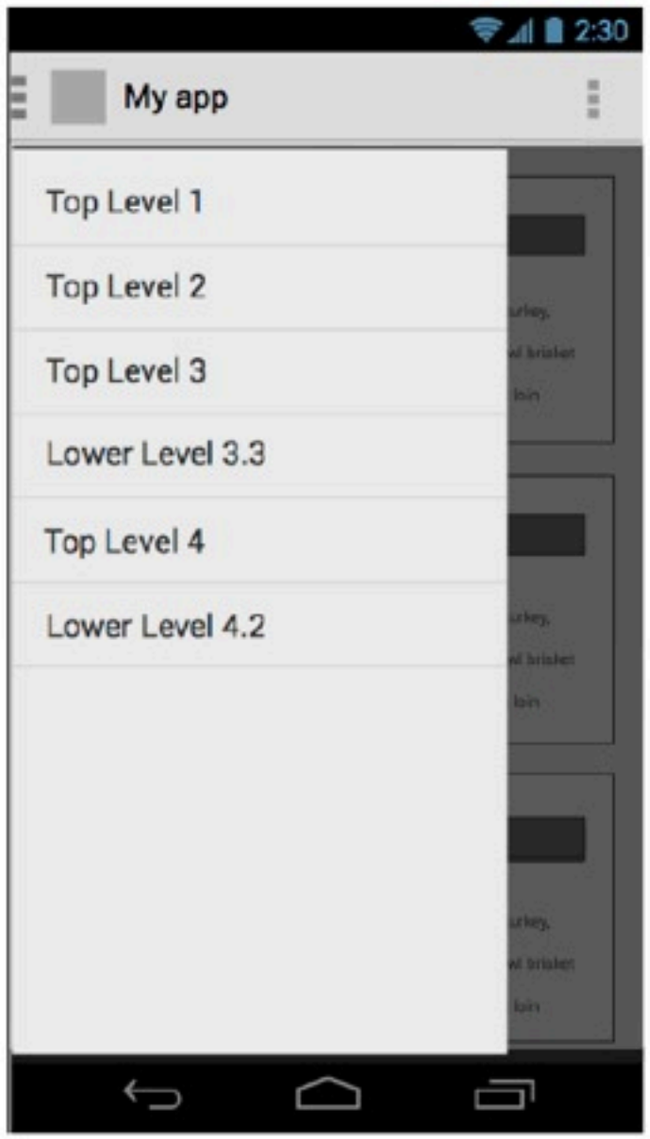
Demo

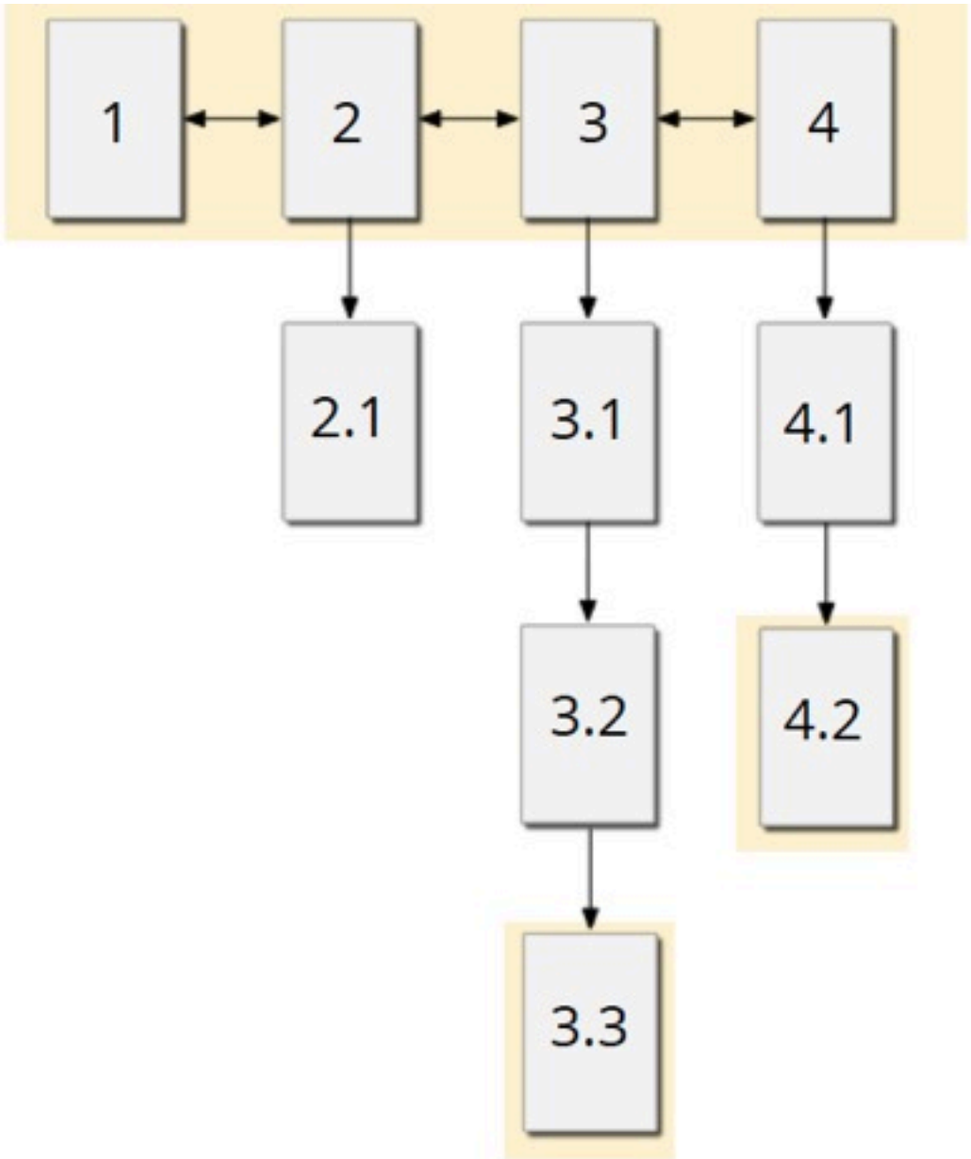


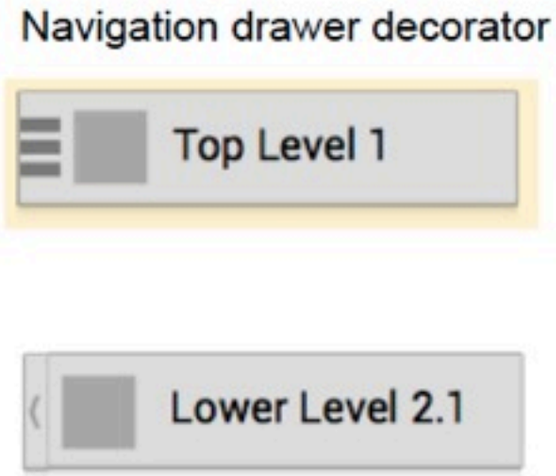
Codecast: List Menu In Android Navigation Drawer

- Good tutorial at http://www.youtube.com/watch?v=D7Cn1-9LZO0
- See demo at 2:30

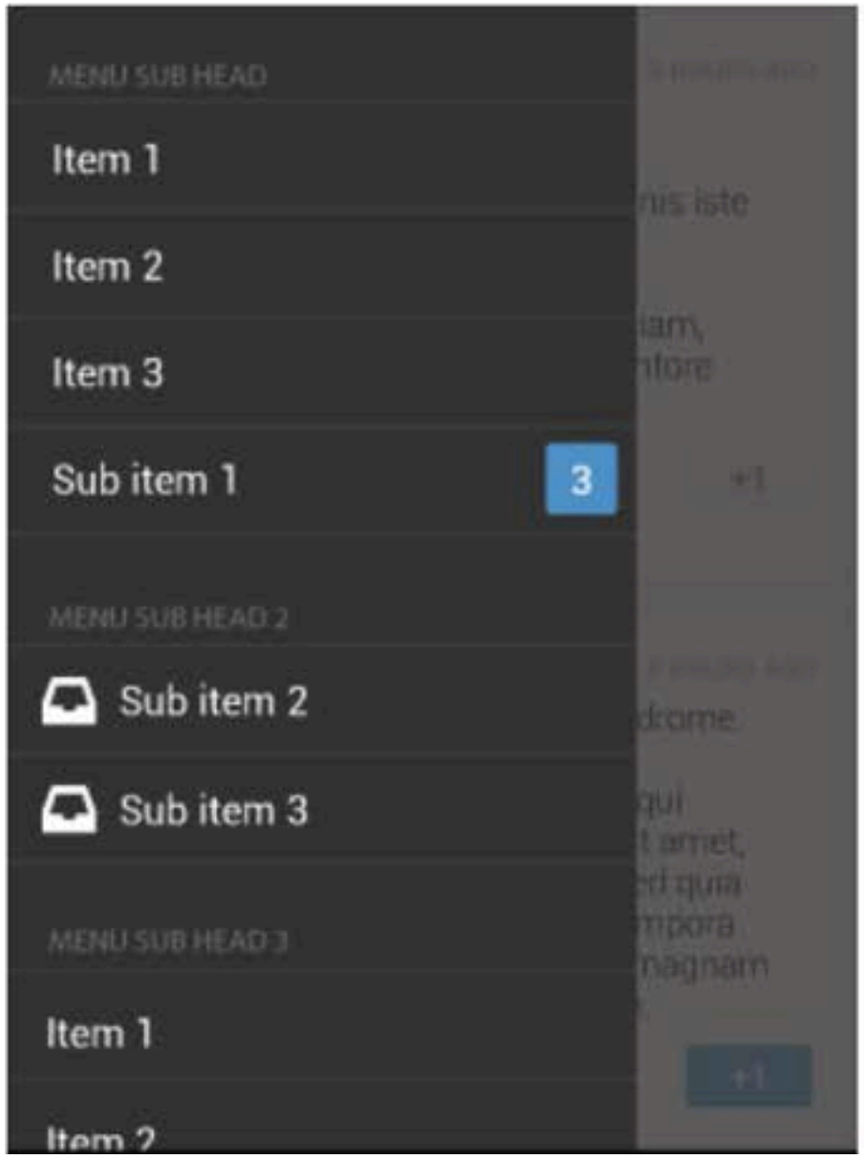
Navigation hubs



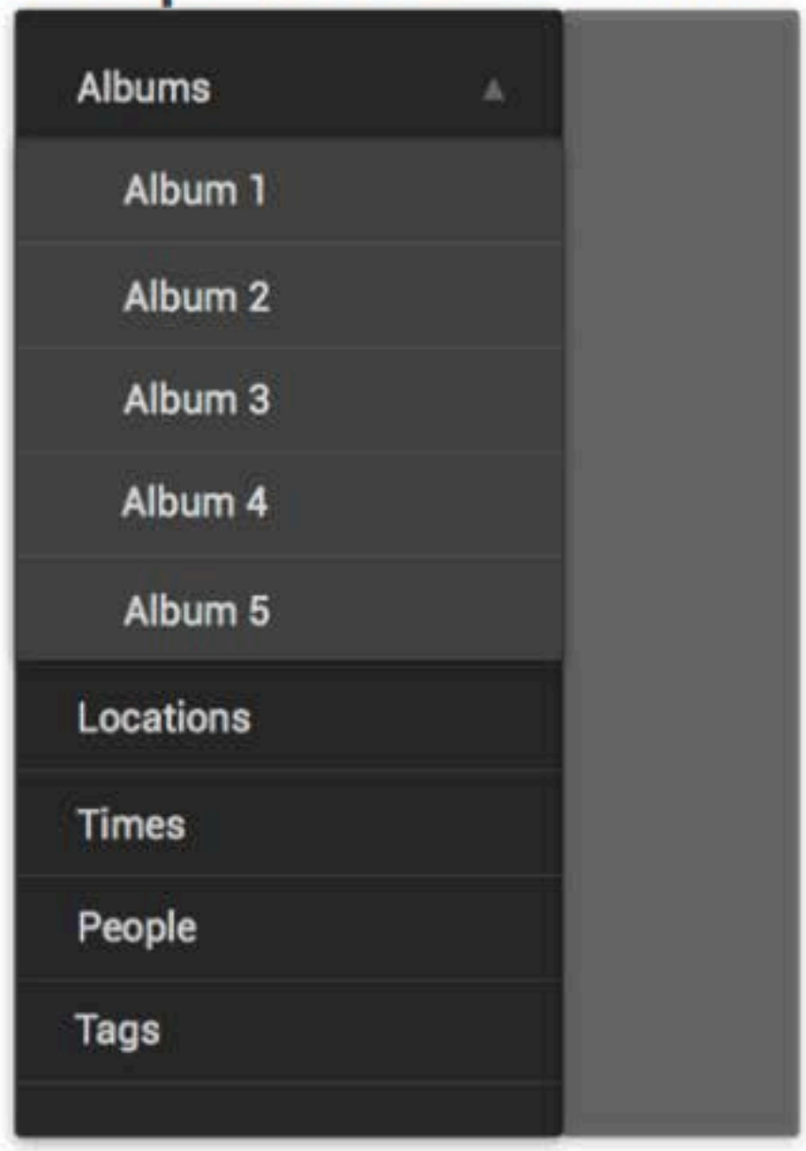




Dividers, icons, counters



Collapsible items

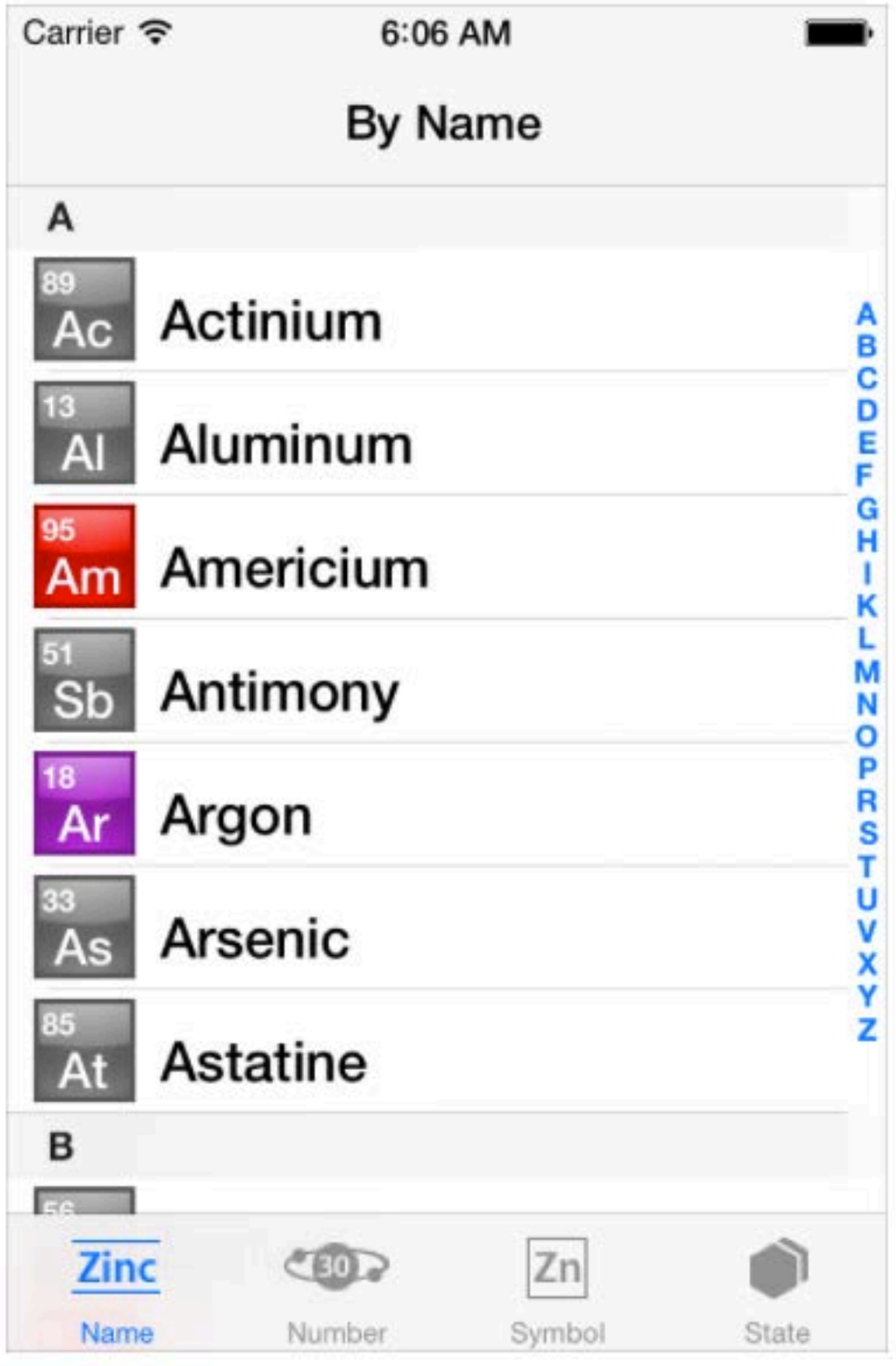


Apps deconstructed (Apple iOS)

iPhone app

- Views
- Controls

Transition from iOS6 to iOS 7



Mobile Dev Environment

- Android Studio
  - Studio: http://developer.android.com/sdk/installing/studio.html
- iOS - Apple Developer tool **Xcode IDE**
  - https://developer.apple.com/technologies/tools/
- Windows Phone
  - http://msdn.microsoft.com/library/windowsphone/develop/ff402526(v=vs.105).aspx

Android

- What we will use: Studio - http://developer.android.com/sdk/installing/studio.html
- You can also see: SDK + ADT plug in:
  - http://developer.android.com/tools/index.html

Android app consists of

- Activity - the Java code that does something
- Intent

Activity and UI

- http://www.i-programmer.info/programming/android/5914-android-adventures-activity-and-ui.html
- Activity is the code that works with a UI screen defined by the View
- The Activity is the Java code that does something and the View provides the user interface (UI)

Assignment #1

- Design a simple (native) mobile application

Step 1: View this video online

- Structure in Android App Design

- https://developers.google.com/events/io/sessions/326301704

Class List App

- **CS 150 Class List app**
- An Android app that when launched lists the students and teachers in the class
- The app allows the user to browse filtered lists of all members of the class, students & teachers
- The app allows the user to view a detailed screen of a member of the class including a photo, name, email and phone number

Class List App

- **Logistics**
- To start, we will work on the design
- Submit your work in whatever format you choose: can be PPT or Word document, or hand sketches

A. List the actors (users)

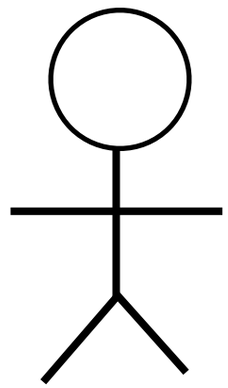
- Users should be the end user, not the creators of content

B. Write the use cases

- Limit to the top 3-5 use cases

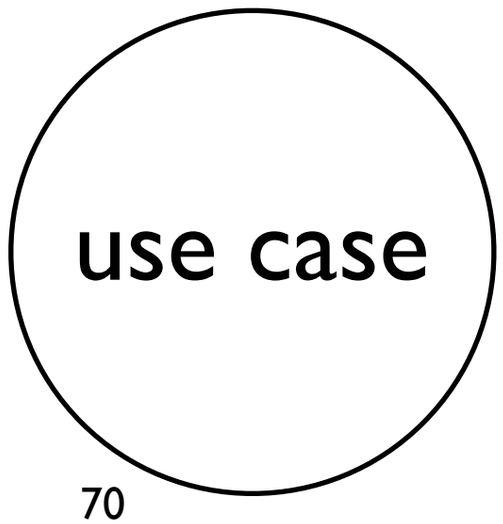
C. Create the use case diagram

- Include
  - actor(s)



  - relationships

  - use cases



D. List the use cases in sequence

- Define the sequence in which the top 3-5 use cases occur

E. Decomposition

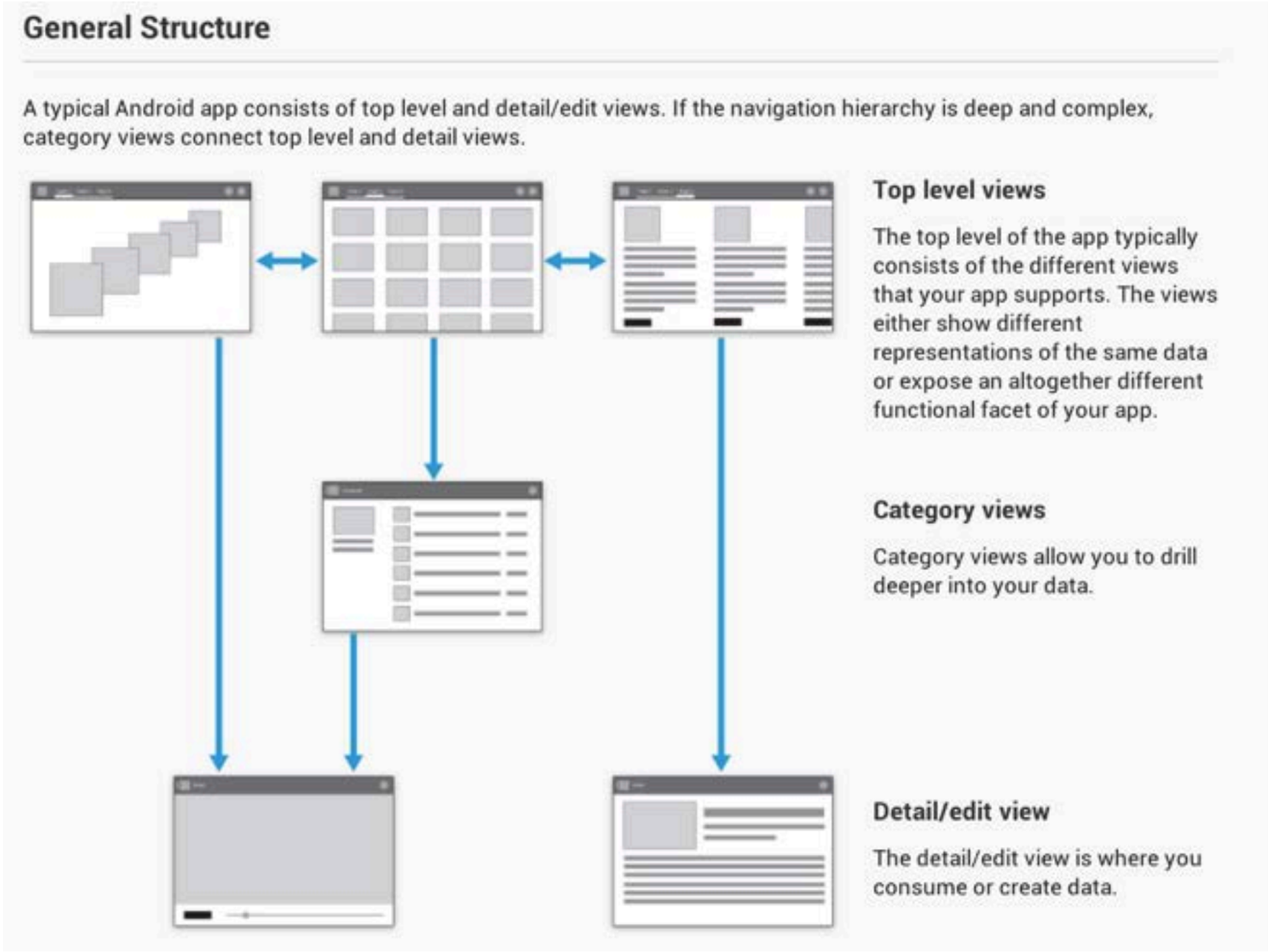
- List what are the most frequently used pathways through your app?

F. What happens when...?

- What should your app do if the user receives a phone call while using it?

G. Define the app hierachy

- For the major use cases, map each use case in the diagram to the application categories of data (refer to diagram at right for application categories)
- For example, the topmost category, the detailed category, etc



H. Define the major screens

- For the major use cases, map each use case in the diagram to an application screen and the UI components that are needed to support the use case

Bring your homework with you to class