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UNIVERSITI
TEKNOLOGI
MARA

MOBILE DESIGN PRINCIPLES

TOPIC 3a

Review

- General & Targeted Devices
- Ubiquitous computing
  - Principles & Vision
  - Examples of Applications in various industries
- Location & Context-Awareness
  - Differences & Examples

Topic Outline

1. Concept of Mobility
2. Native vs Web-based User Interface
3. Mobile User Interface and Design patterns
4. Elements of Mobile User-interface Design

1. Concept of Mobility

Concept of Mobility

"The concept of mobility is not limited to hardware and communication only, but it must extend to ***software implementation*** *and* ***user experience****."*

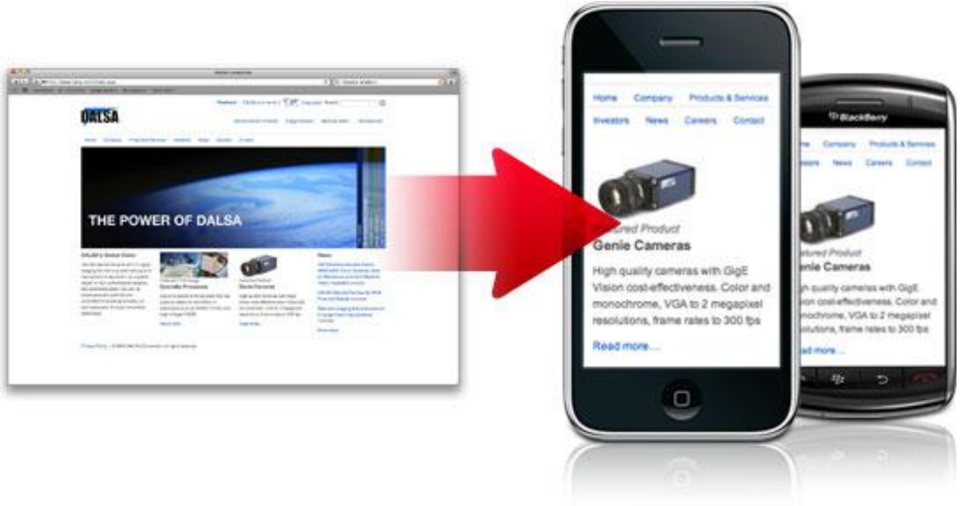
Concept of Mobility

- Mobilizing Application
- The Carry Principle

Mobilizing Application

- Many developers and designers have been exposed with of end-user applications designed for desktop computer and the web.

- This led them to assume that **mobile application is a subset of a web application** (or a subset of desktop application) and proceed to miniaturize it on the mobile screen.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BlackBerry

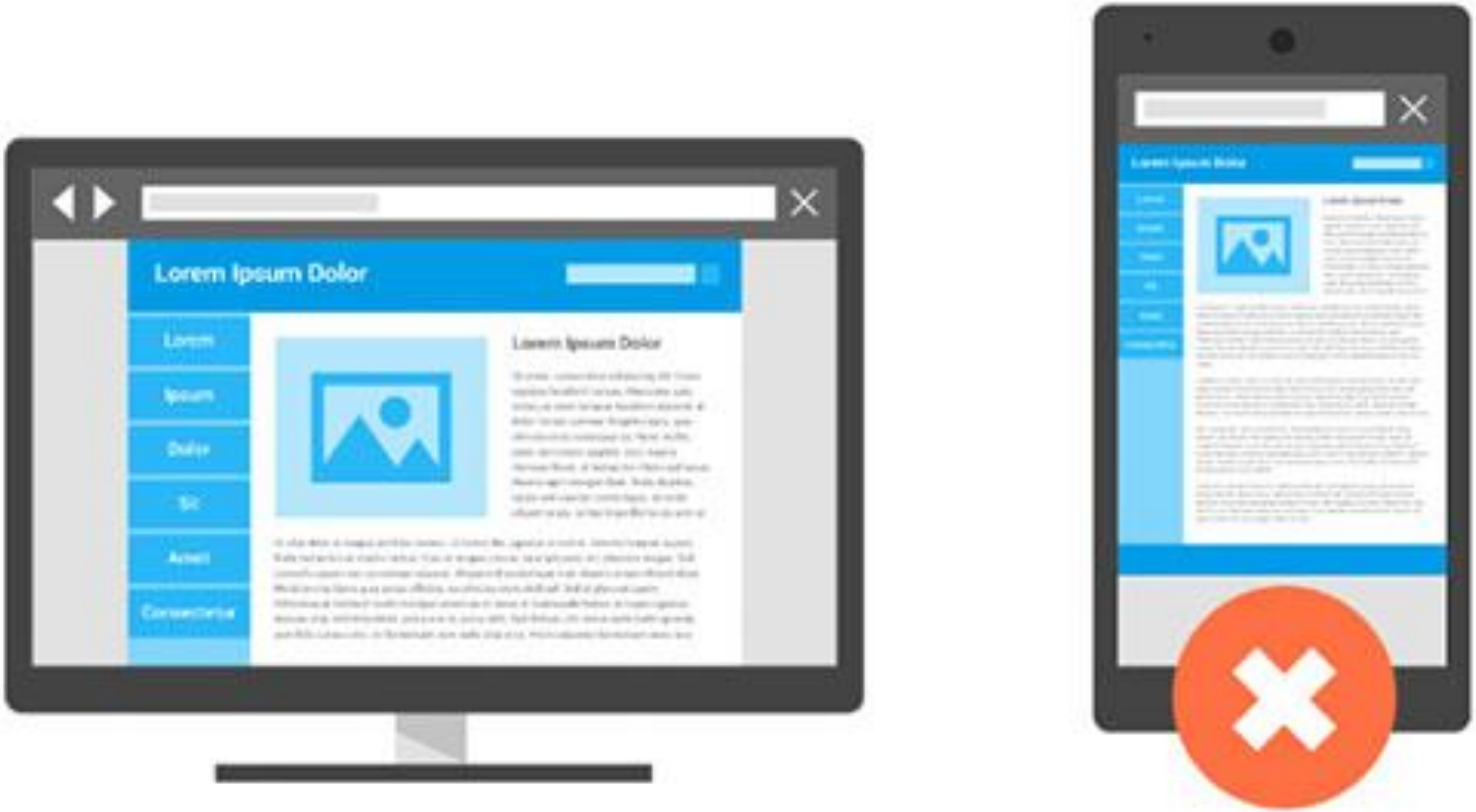
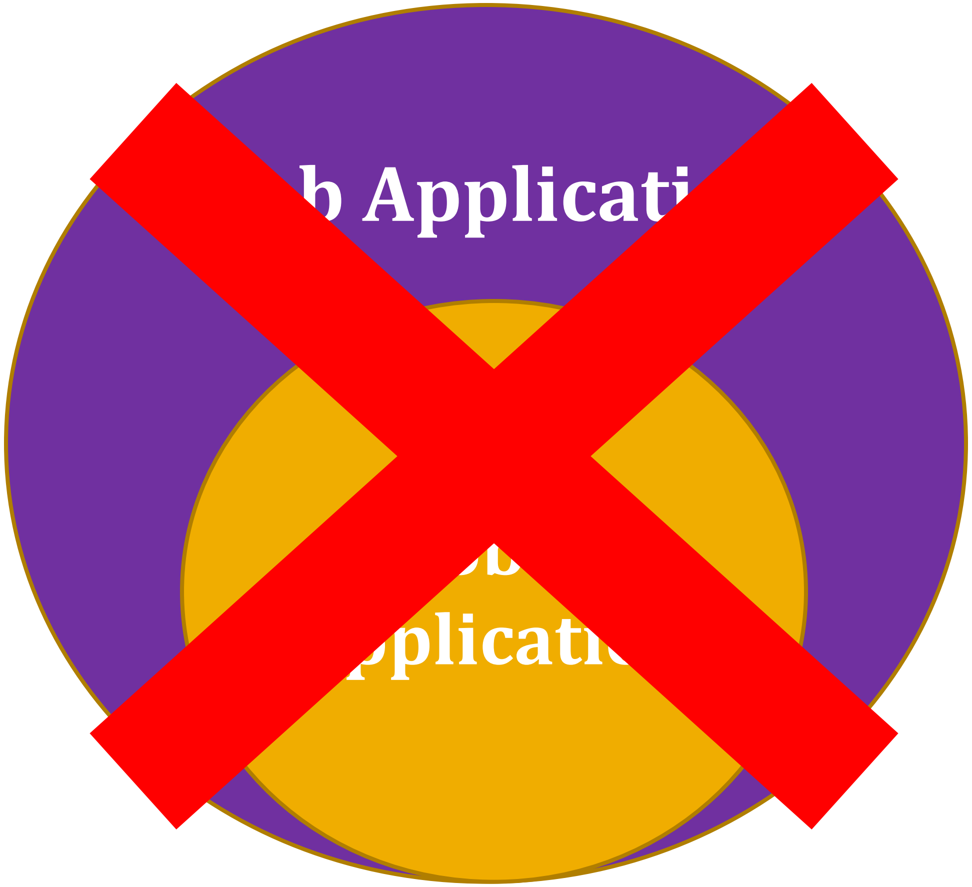


Image Source: Google

Mobilizing Application



Mobilizing Application

Do not **miniaturize**, but instead **mobilize!**

Mobilizing Application

Mobilizing vs Miniaturization

- Miniaturization - **shrinking** web user interface to mobile screen-size without taking account of "Mobile Device Characteristics"
- Miniaturization
  - Does not factor-in mobile device unique environment.
  - Does not take advantage of the mobile platform features.
- Miniaturization introduce **drawbacks** present in web application and combines it together with mobile device weaknesses

Mobilizing Application

"Miniaturizing treats the mobile environment and technology as a subset of the desktop environment"

"Mobilizing on the other hand, precisely targets mobile user needs, making the best possible use of technology"

- Barbara Ballard

LIFE IS MOBILE!

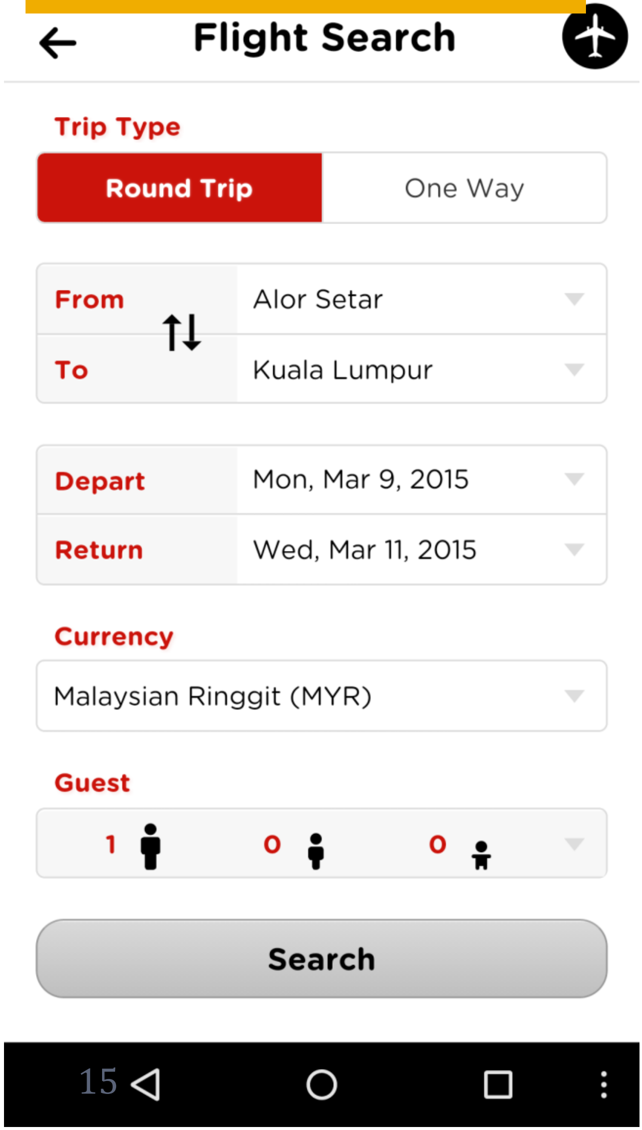
User want custom content that enables a mobile lifestyle, where their content and their entertainment ***move with them****.*
– Ken Olewiler, Punchcut

Snacking, not a meal

http://www.flickr.com/photos/ajcmcohen/1116082777/

Miniaturizing? Mobilizing?

Mobilize



Flight Search

Trip Type

Round Trip | One Way

From: Alor Setar

To: Kuala Lumpur

Depart: Mon, Mar 9, 2015

Return: Wed, Mar 11, 2015

Currency

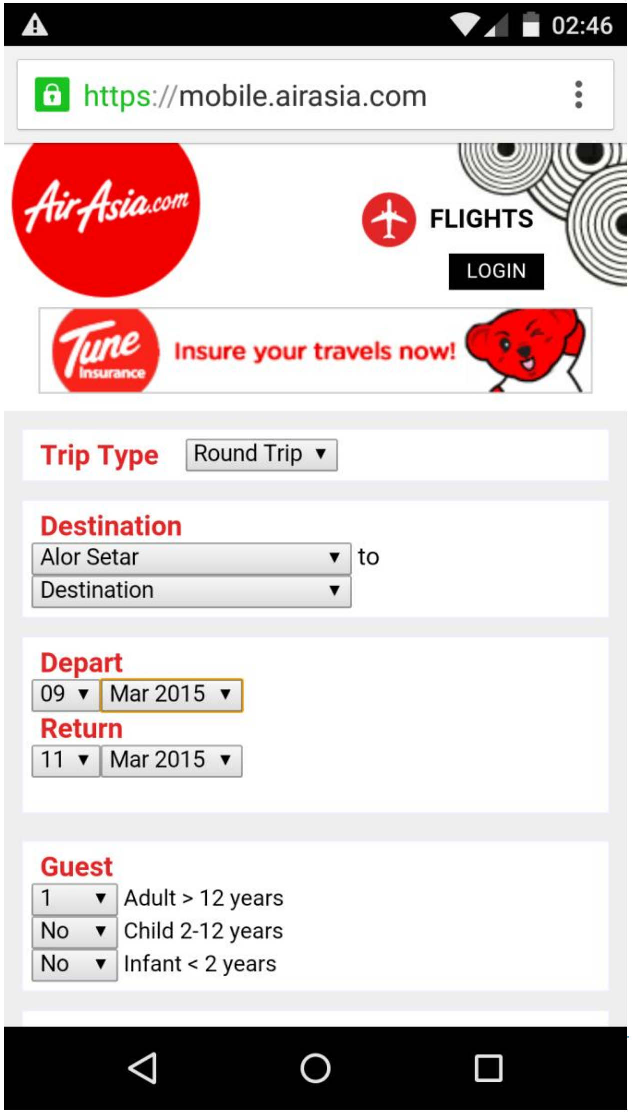
Malaysian Ringgit (MYR)

Guest

1 0 0

Search

Miniaturize



https://mobile.airasia.com

Trip Type: Round Trip ▾

Destination

Alor Setar ▾ to

Destination ▾

Depart

09 ▾ Mar 2015 ▾

Return

11 ▾ Mar 2015 ▾

Guest

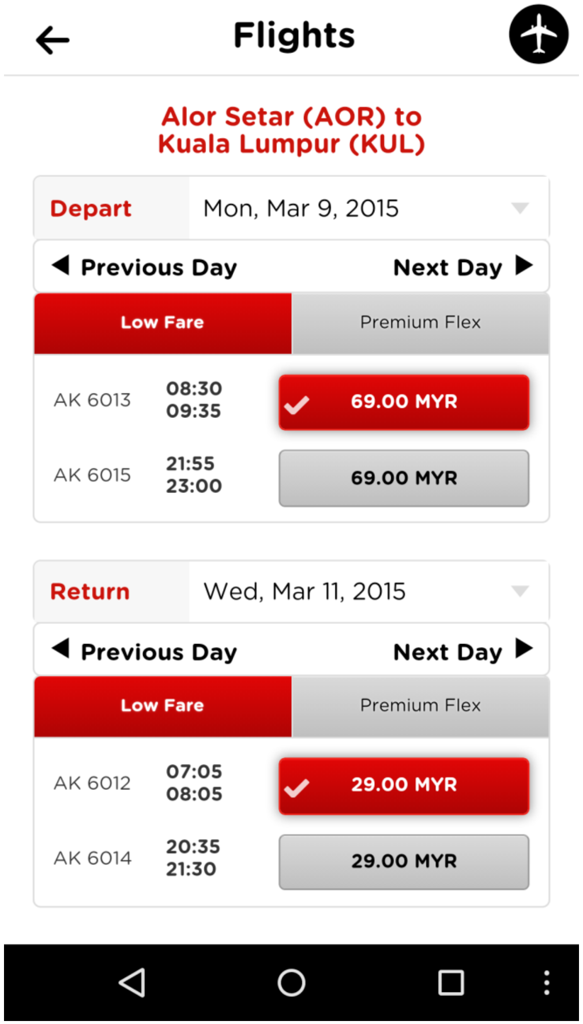
1 ▾ Adult > 12 years

No ▾ Child 2-12 years

No ▾ Infant < 2 years

Mobilizing Application

Mobilize



Flights

Alor Setar (AOR) to Kuala Lumpur (KUL)

Depart | Mon, Mar 9, 2015

◀ Previous Day | Next Day ▶

Low Fare | Premium Flex

AK 6013	08:30 09:35	✓ 69.00 MYR
AK 6015	21:55 23:00	69.00 MYR

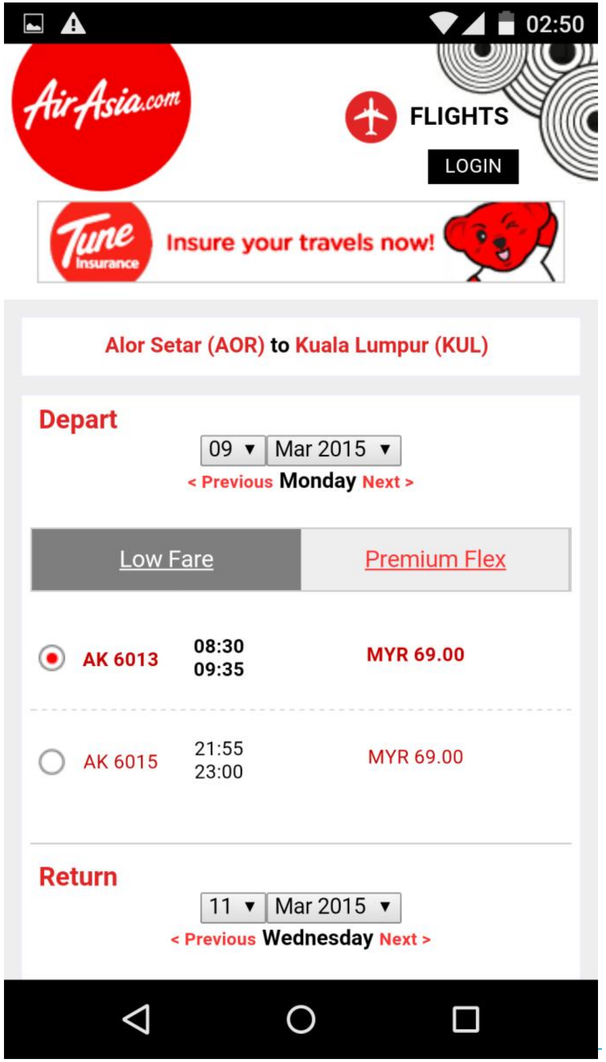
Return | Wed, Mar 11, 2015

◀ Previous Day | Next Day ▶

Low Fare | Premium Flex

AK 6012	07:05 08:05	✓ 29.00 MYR
AK 6014	20:35 21:30	29.00 MYR

Miniaturize



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Alor Setar (AOR) to Kuala Lumpur (KUL)

Depart

09 ▼ | Mar 2015 ▼

< Previous Monday Next >

Low Fare | Premium Flex

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○	AK 6015	21:55 23:00	MYR 69.00

Return

11 ▼ | Mar 2015 ▼

< Previous Wednesday Next >

Mobilizing Application

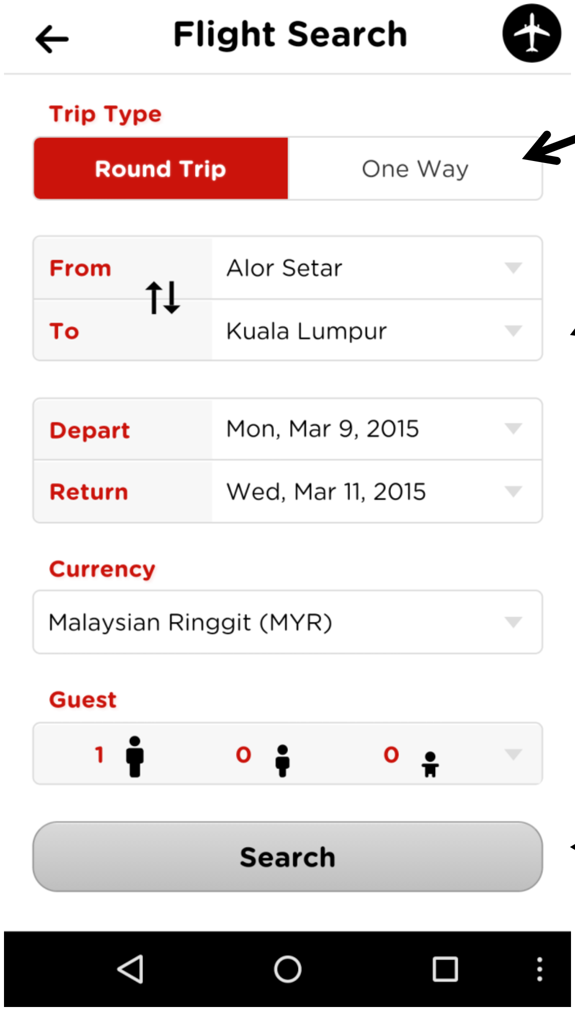
- Can you spot the differences between the screenshots?
- Mobilizing has the advantage of taking account of Mobile Platform features which are not present in web or desktop application :
  - Multitouch and touch gesture
  - One handed operation feature
  - Sociability features
  - Location-Awareness & Context Awareness
  - Access to Mobile Device Hardware Sensors

Mobilizing Application

- For example:
  - A developer who miniaturize a web application would not take account into advantages of phone having **camera**, **GPS sensor** and **connectivity**
  - Can you think what **camera**, **GPS sensor** and **remote connectivity** can do for an AirAsia application?
    - □ Scan QR code via camera
    - □ Perform remote check-in via set QR code with remote connectivity
    - □ GPS /LBS can detect the nearest airport and provide suggestion or map to take the shortest route to airport.
    - □ User can 'easily swipes' information to Map interface if the application is properly "Mobilize"

Mobilizing Application

Mobilize



Flight Search

Trip Type

Round Trip | One Way

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Currency

Malaysian Ringgit (MYR)

Guest

1 0 0

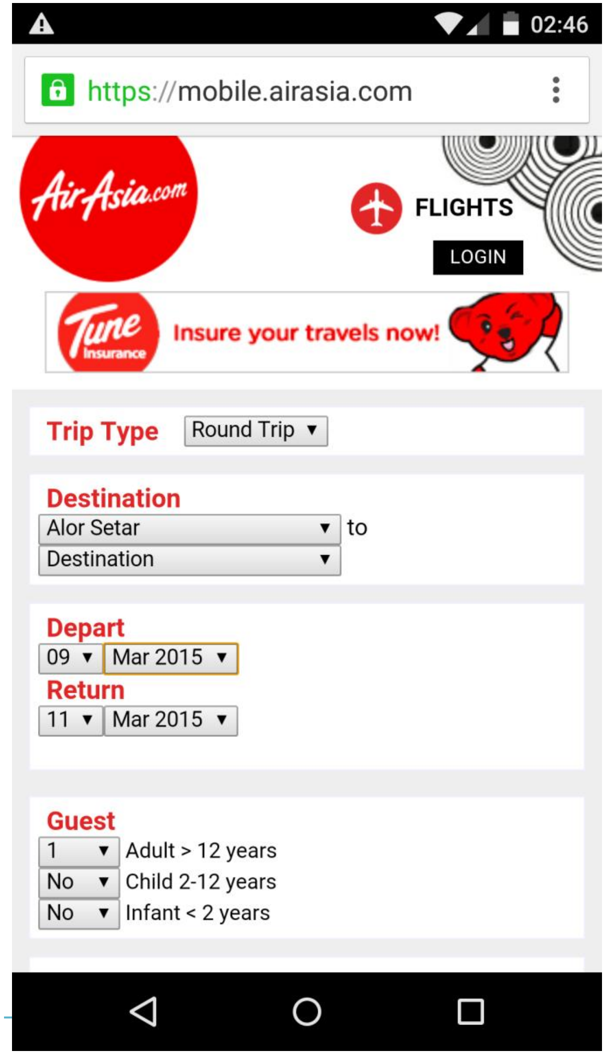
Roundtrip and one way option on tab

Easily switch between destination

Use of icons to select Guest types

Button affixed at the bottom – easily accessible by mobile users

Miniaturize



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https://mobile.airasia.com

Trip Type: Round Trip

Destination

Alor Setar to

Destination

Depart

09 | Mar 2015

Return

11 | Mar 2015

Guest

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No Child 2-12 years

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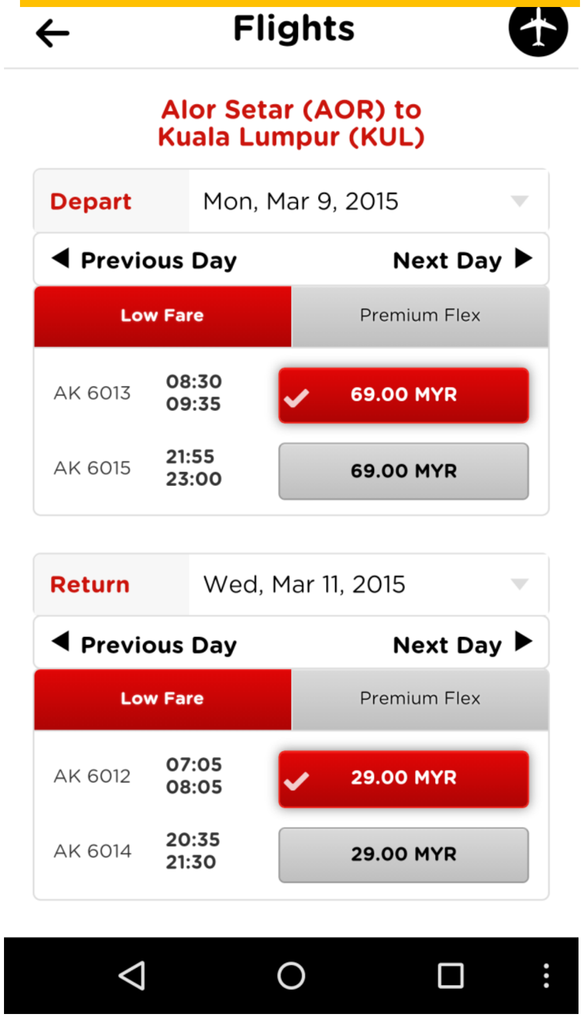
Mobilizing Application

Mobilize



← Flights

Alor Setar (AOR) to Kuala Lumpur (KUL)

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◀ Previous Day Next Day ▶

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Return Wed, Mar 11, 2015

◀ Previous Day Next Day ▶

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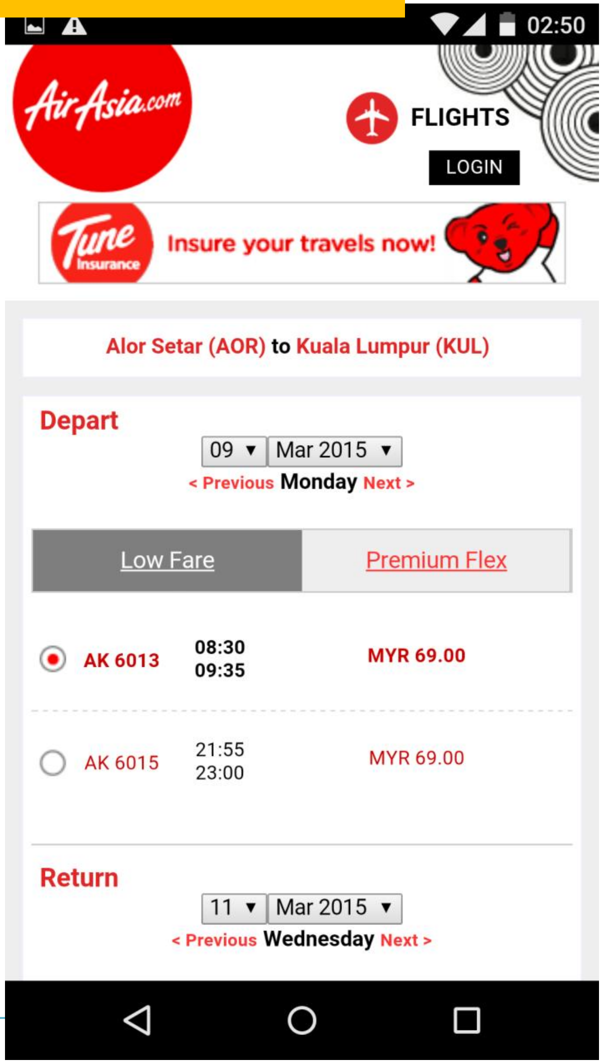
AK 6012	07:05 08:05	✓ 29.00 MYR
AK 6014	20:35 21:30	29.00 MYR

Discuss

Which screen tends to be easier to use for a mobile user?

Miniaturize



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AirAsia.com FLIGHTS LOGIN

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Alor Setar (AOR) to Kuala Lumpur (KUL)

Depart

09 ▼ Mar 2015 ▼

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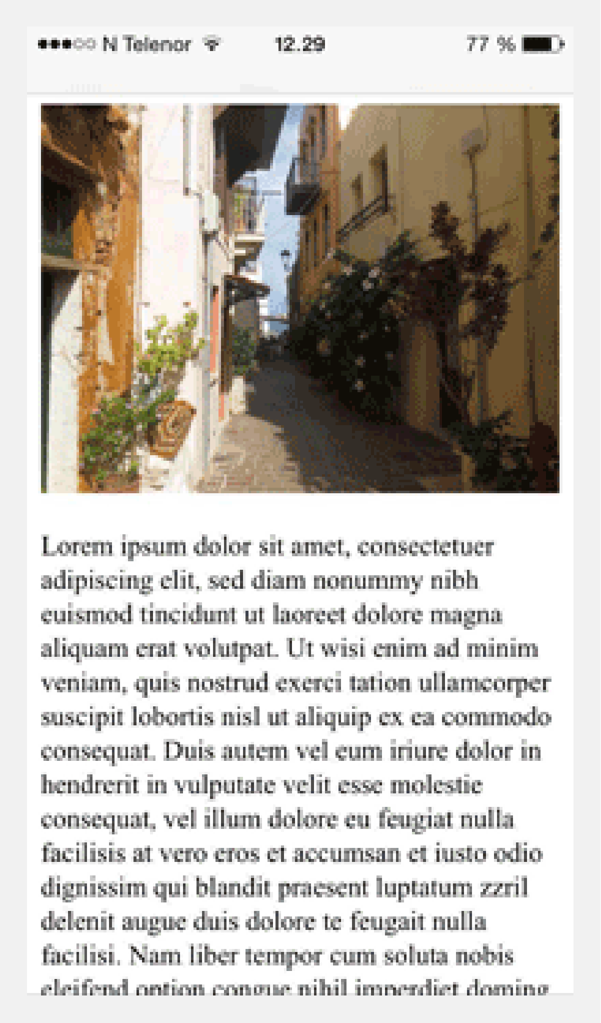
Mobilizing Application

Mobilize



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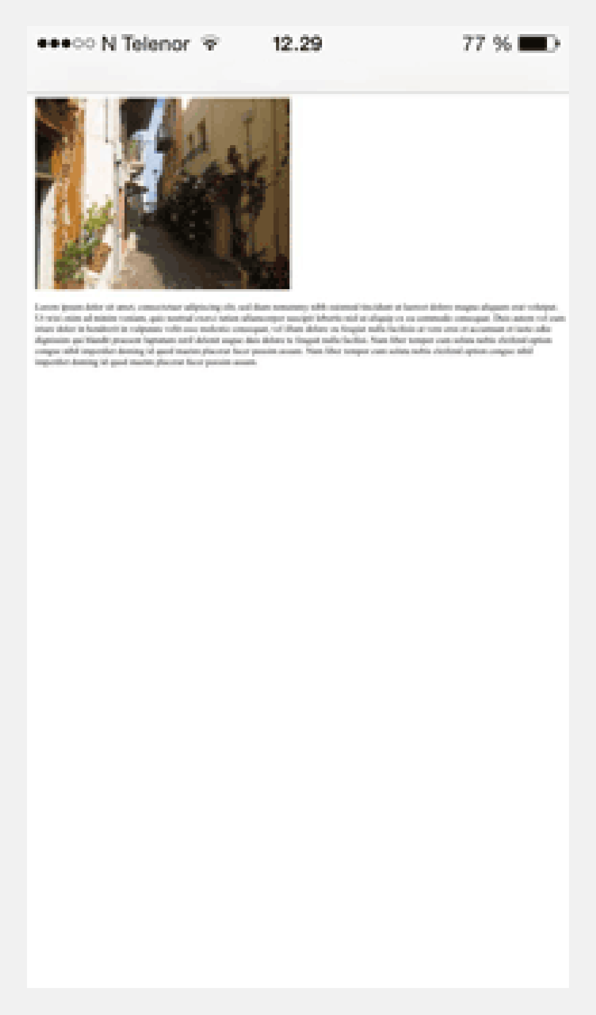
Miniaturize



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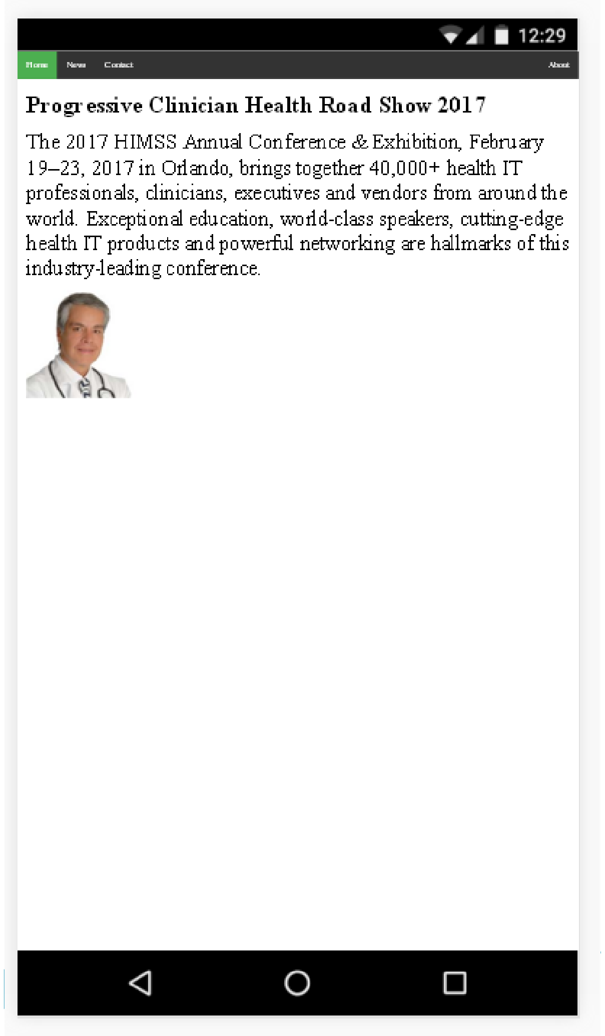
Mobilizing Application

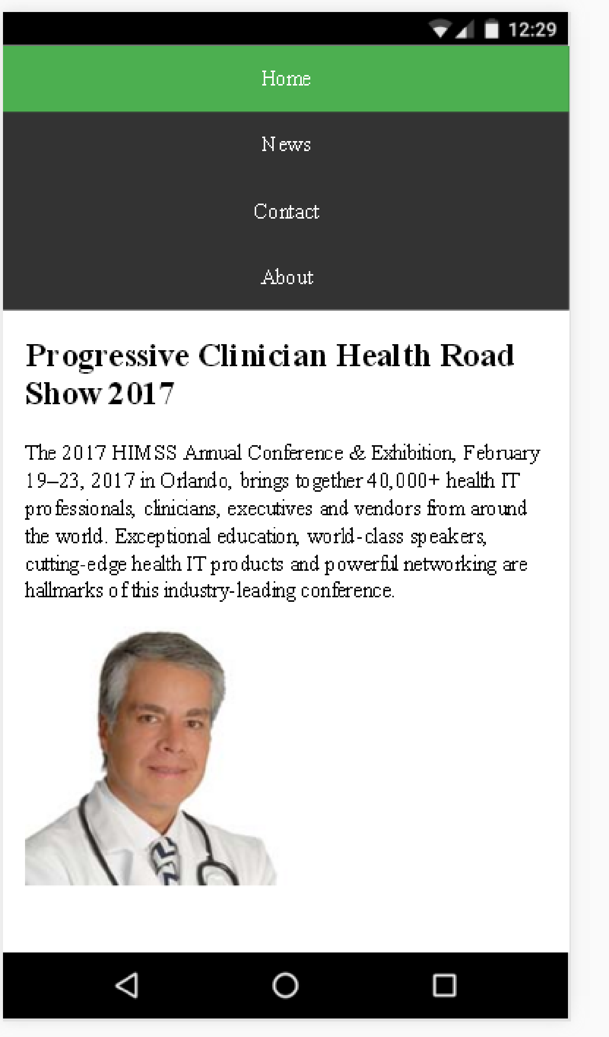
Miniaturize



Progressive Clinician Health Road Show 2017

The 2017 HIMSS Annual Conference & Exhibition, February 19–23, 2017 in Orlando, brings together 40,000+ health IT professionals, clinicians, executives and vendors from around the world. Exceptional education, world-class speakers, cutting-edge health IT products and powerful networking are hallmarks of this industry-leading conference.

Mobilize



Progressive Clinician Health Road Show 2017

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Live Example: Mobilization vs Miniaturization

1. Use your **mobile device** and access https://ict650.mobilepit.com/sample/
2. Access the page **miniaturize.html** and **mobile.html**
3. Can you describe the differences?
4. Repeat step 1 with a **Desktop Computer** web-browser

+ Describe the differences between **miniaturize.html** and **mobile.html** among your group.

+ Is there any differences when accessing the pages using Mobile Device compared Desktop Computer?

+ Describe the qualities which makes mobilization better than miniaturization.

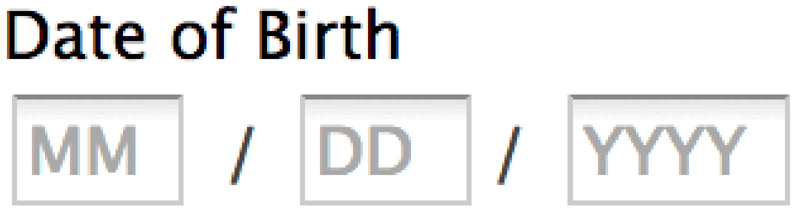
Tips to avoid Miniaturization

2. Use mobile facility (or sensor) to guess user details
    - Certain input field could be inferred from mobile phone app
        - **Country / State**
          can be automatically detected from GPS
        - **Language**
          can be detected from phone settings
        - **Email Address**
          Through Social Login (Facebook login, Google+, or iCloud login)

- A user is not supposed to key-in every detail in mobile application.

Tips to avoid Miniaturization

3. Display Hints in TextFields



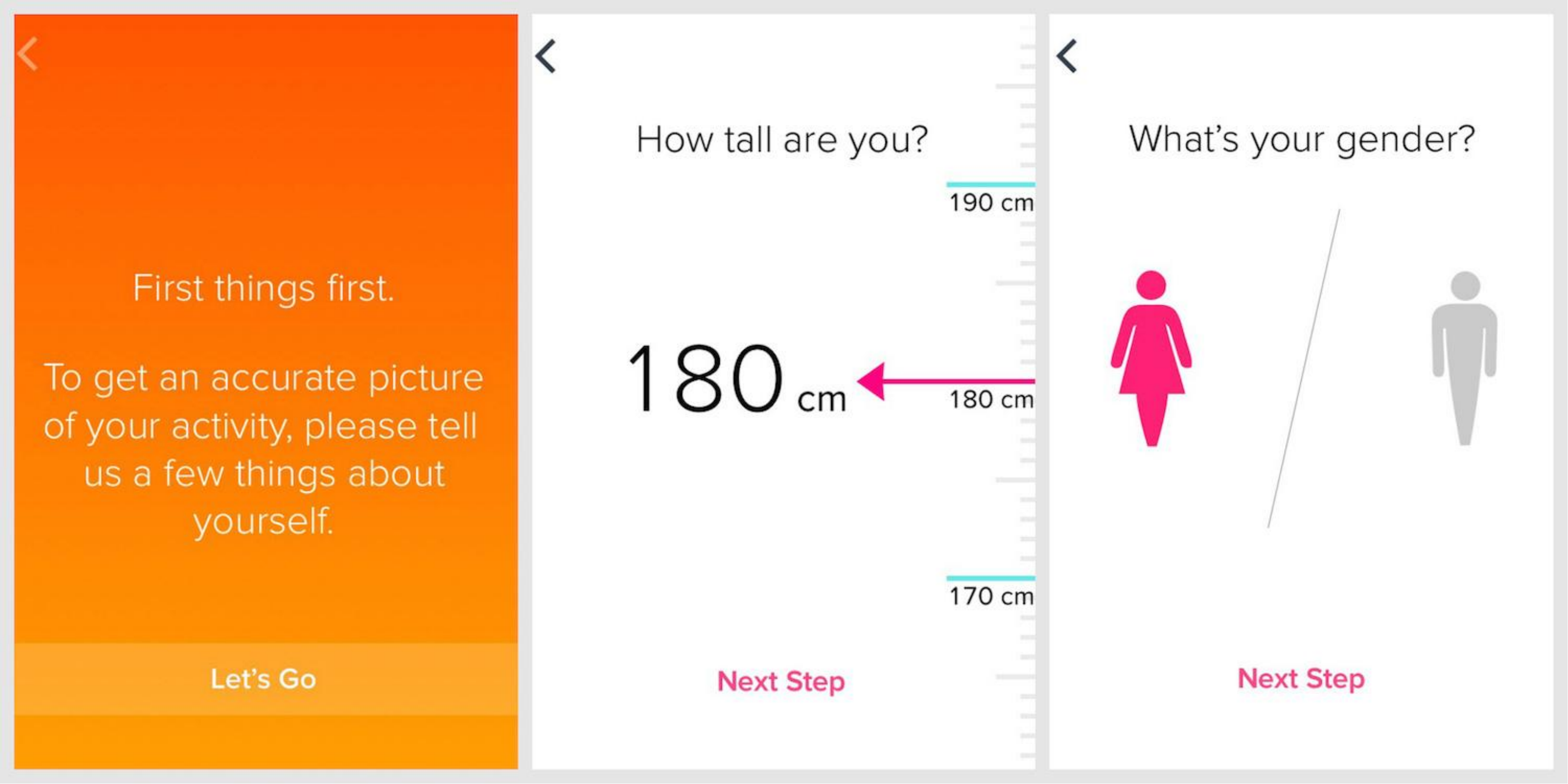
Date of Birth

MM / DD / YYYY

4. Split long entry forms into multiple screens
   - Users attention span would be better with multiple screen rather than scrolling down

Tips to avoid Miniaturization

- Good example of splitting user entry over multiple screen
- Users only needs to click “Next” each time they key in data



First things first.

To get an accurate picture of your activity, please tell us a few things about yourself.

How tall are you?

180 cm

What’s your gender?

Mobilizing Applications

- Miniaturized application will have tendency of having “too many forms” or too many input fields to be filled out by
  users
- Mobilized application can auto detects the user details from previously recorded information (see “Identifiable” characteristics in Topic 2).
- Username, name, profile photos can be obtained automatically from device profile on a mobilized application
- Mobilize application can also detect user current location and can scan the user’s calendar to fill in the information.

Mobilizing Application

- In short
  - When developing for mobile application, **do not miniaturize.**
  - Take advantages of mobile platform features
  - Miniaturizing will annoy mobile users and make mobile application less useful

Quiz

- What are the **pros and cons** of mobilizing and miniaturizing application?

Mobilizing Application

- Miniaturized application will have tendency of having "**too many forms**" or "too many input fields" to be filled out by users
- Mobilized application **can auto detects the user details** from previously recorded information
- Username, name, profile photos can be obtained automatically from device profile on a mobilized application
- Mobilize application can also detect user current location and can scan the user's calendar to fill in the information.

The Carry Principle

“The user typically carries the device everywhere, all the time”

Ballard, 2009

The Carry Principle

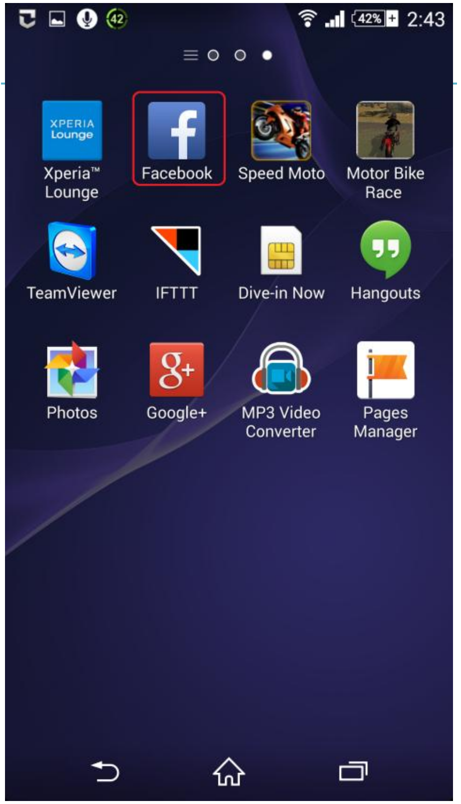
- Because users would carry the device everywhere, all the time… "

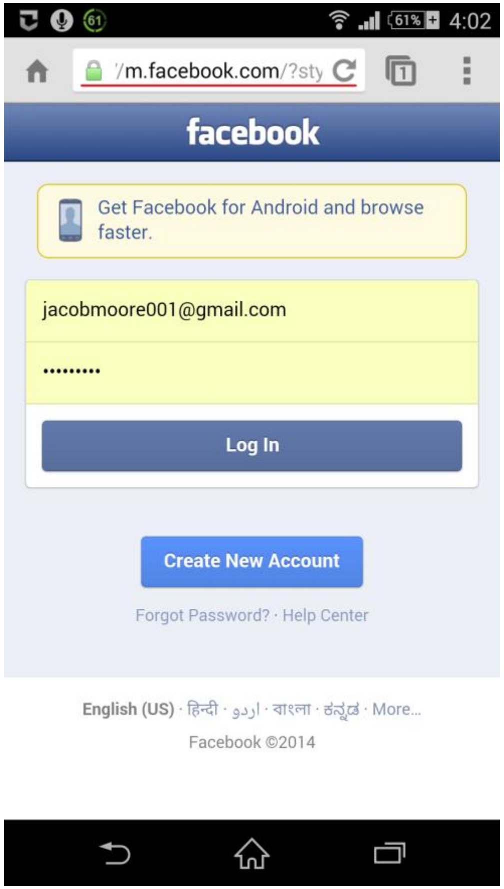
- "The Carry Principle" implication on Device:
  - **Form** – the form-factor of device must be small to ease **portability** and makes it easy to carry. Battery-powered with integrated keyboard/keypad or touch screen.
  - **Features** – Features in device are usually **tightly integrated** in a single board, this includes Every sensors, equipment (such as camera) which the users might use
  - **User Interface** – Small screen drives device to a **single window UI**, showing a single page at a time. UI tends to be able to 'fold' or slides into view in order to save space and increase readability.

2. Native vs Web-based User Interface

In-class Activity

- On your mobile device,
  - Open Facebook application from home screen
  - Open Facebook via browser
- Try to play around.
- Can you spot the differences?





facebook

Get Facebook for Android and browse faster.

jacobmoore001@gmail.com

•••••••••

Log In

Create New Account

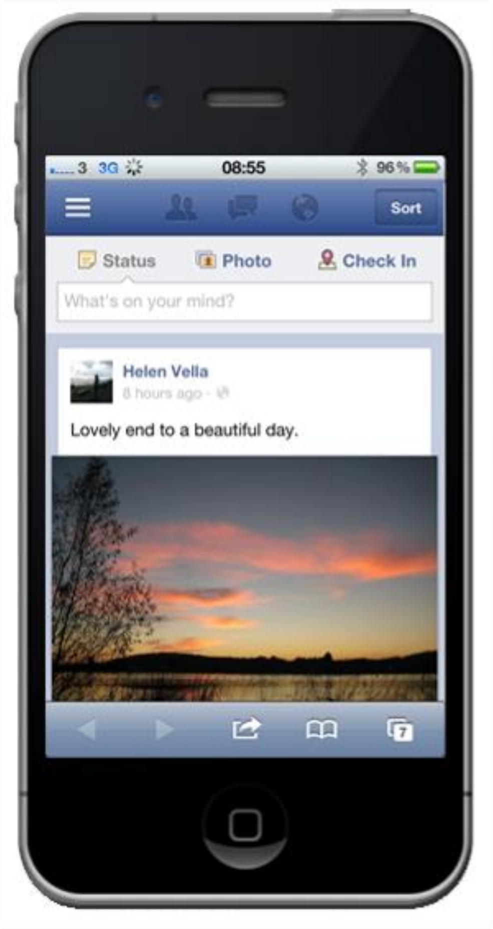
Forgot Password? · Help Center

English (US) · हिन्दी · اردو · বাংলা · ಕನ್ನಡ · More...

Facebook ©2014

Native? Web?

WEB



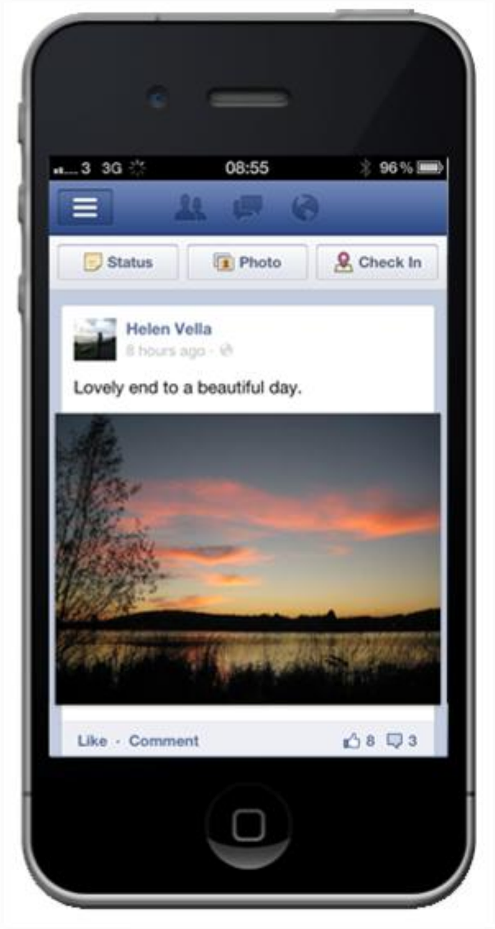
What's on your mind?

Helen Vella

8 hours ago ·

Lovely end to a beautiful day.

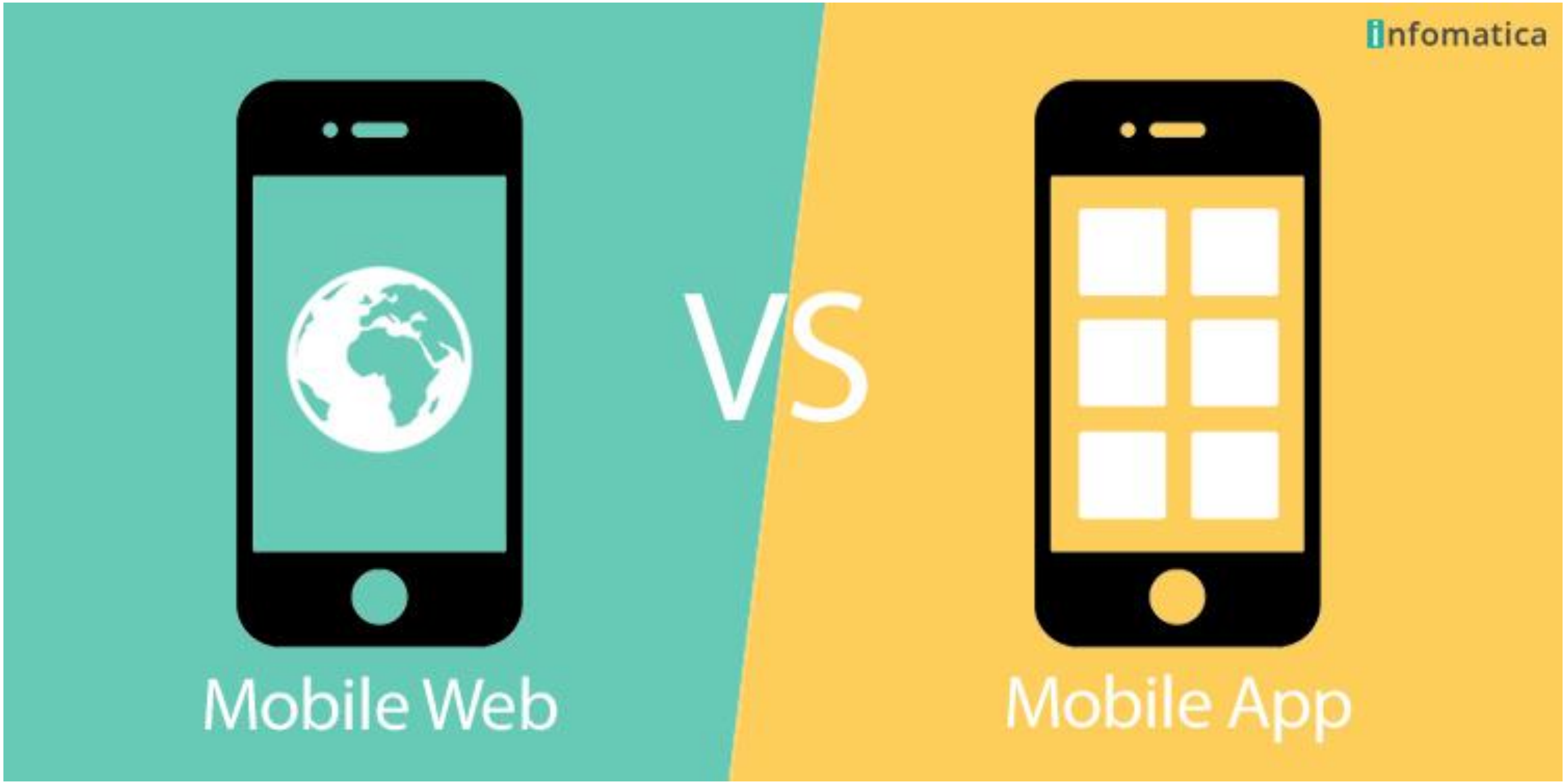
NATIVE



Helen Vella

8 hours ago ·

Lovely end to a beautiful day.


infomatica
Mobile Web
VS
Mobile App

Native vs Web-based Application

- A **Native App** is an app developed essentially for one particular mobile device and is **installed directly onto the device** itself. Users of native apps usually download them via app stores online or the app marketplace, such as the Apple App Store, the Google Play store and so on. An example of a native app is the Camera+ app for Apple's iOS devices.

- A **Web App**, on the other hand, are basically **Internet**-enabled apps that are accessible via the mobile device's Web browser. They **need not be downloaded** onto the user's mobile device in order to be accessed. The Safari browser is a good example of a mobile Web app.

Native vs Web-based Application

- **Mobile Web Application**
  - Easiest to learn
  - Cheapest to produce
  - Uses (and depends on) Internet and HTTP
  - Based on W3C standards*

*http://www.w3.org/standards/techs/mobileapp#w3c_all

Native vs Web-based Application

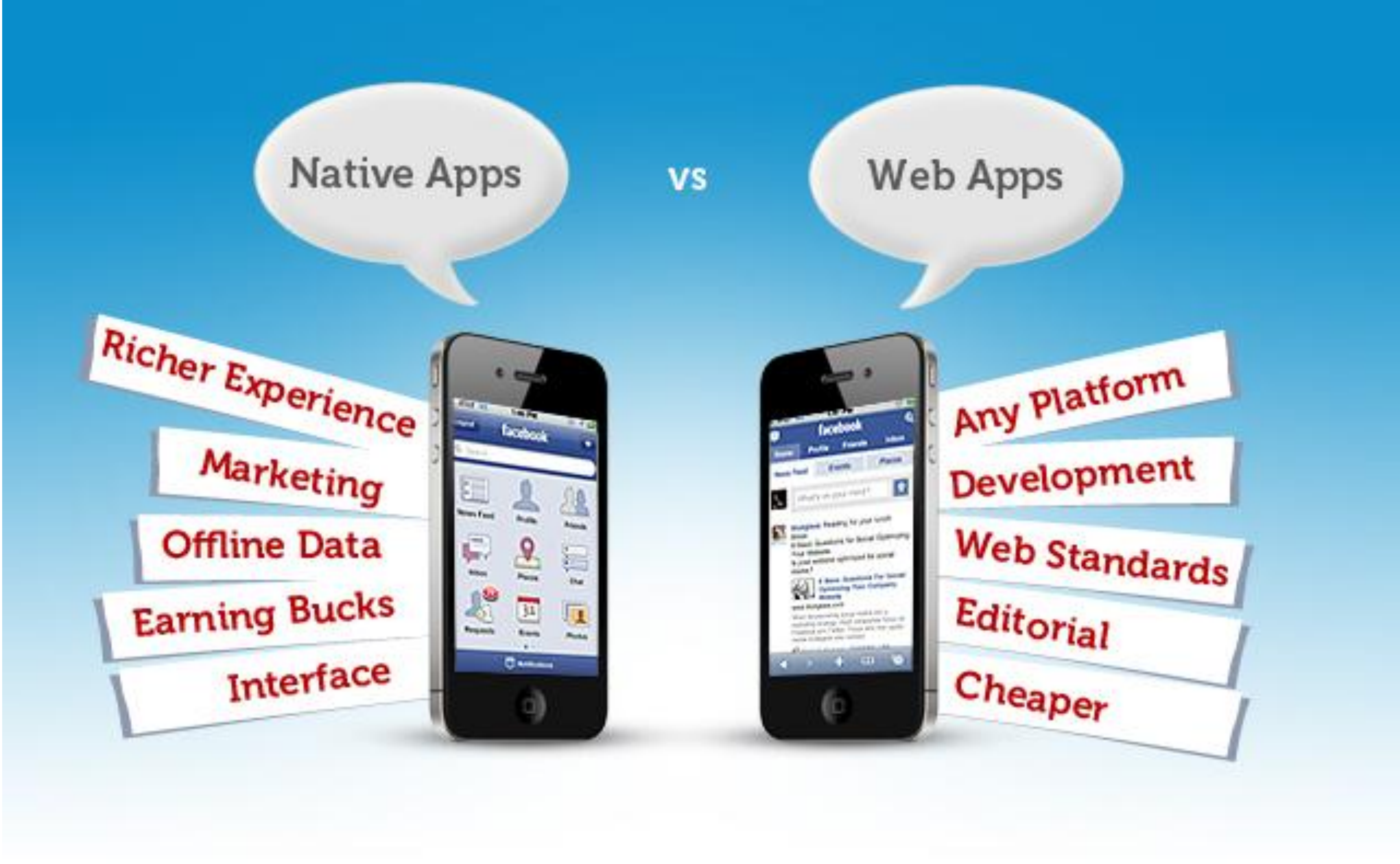
- **Native Application**
  - Has steeper learning curve
  - Usually tied to Mobile SDK device platform
  - May use the internet (but does not depends on it)
  - Have (fully) access to device’s hardware features and sensors

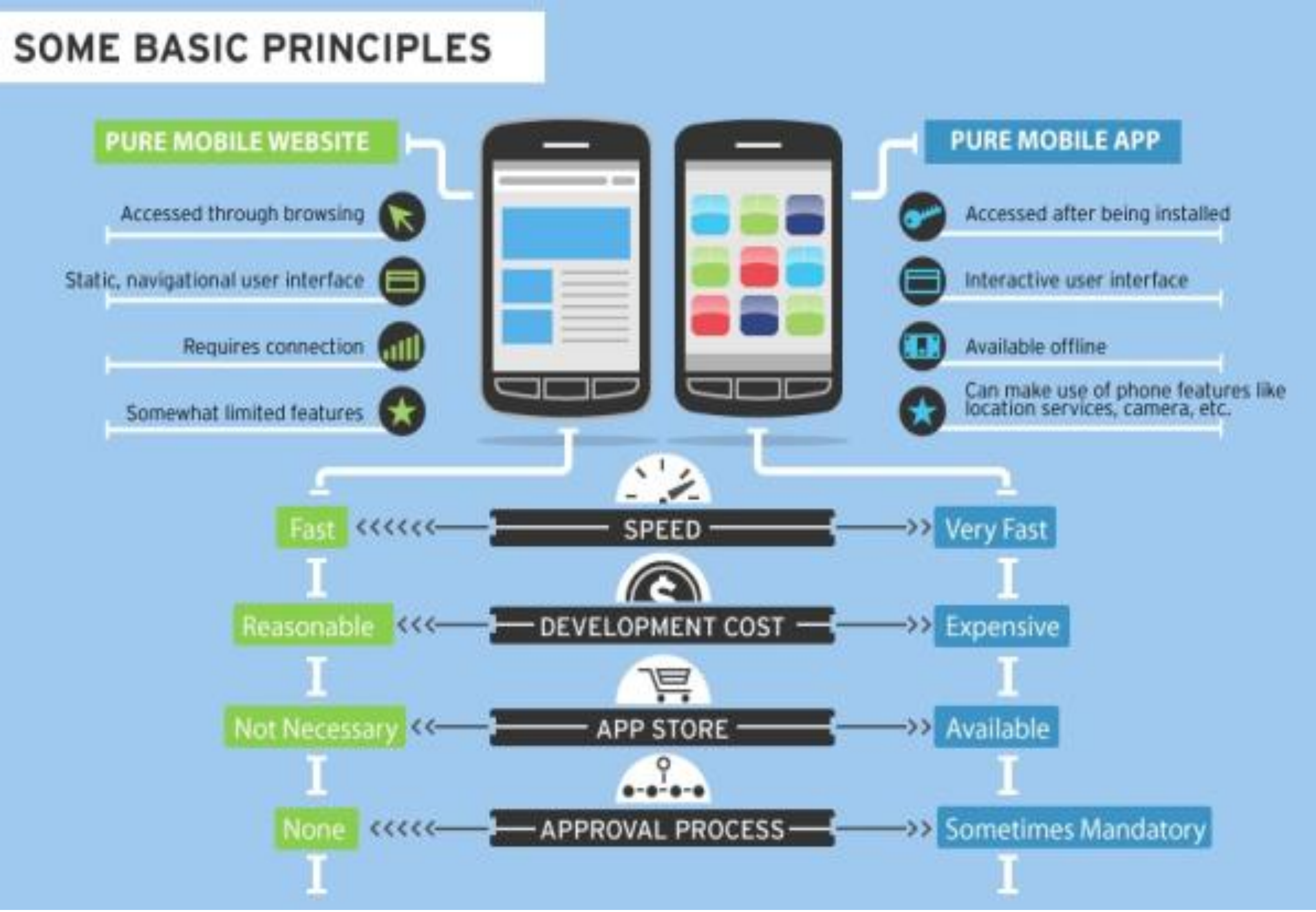
Advantages of Web-based Application

- Portable, all user need is internet connection and mobile browsers
- Uses open W3C Web API
- Developers are not tied to a single mobile platform
- Easier to develop and manage

Advantages of Native Applications

- Fast and uses Native API
- Tightly integrated with mobile platform
- Support offline uses, does not depends on data connection
- Can access hardware sensor and features (Camera, light sensor, Barometer, temperature sensor, etc
- Generally Native application is superior than Mobile Web Application


Native Apps
vs
Web Apps
Richer Experience
Marketing
Offline Data
Earning Bucks
Interface
Any Platform
Development
Web Standards
Editorial
Cheaper
facebook
facebook



SOME BASIC PRINCIPLES

PURE MOBILE WEBSITE

- Accessed through browsing
- Static, navigational user interface
- Requires connection
- Somewhat limited features

PURE MOBILE APP

- Accessed after being installed
- Interactive user interface
- Available offline
- Can make use of phone features like location services, camera, etc.

PURE MOBILE WEBSITE		PURE MOBILE APP
Fast	SPEED	Very Fast
Reasonable	DEVELOPMENT COST	Expensive
Not Necessary	APP STORE	Available
None	APPROVAL PROCESS	Sometimes Mandatory

When to make a Mobile Web Application?

- When launching an application to a **new platform** with a small user base
- To provide a ‘fallback’ option to users who does not own native applications (e.g. Facebook)
- To put focus solely on application **services and connectivity** instead of mobile device platform
- To separate application from native mobile platform. Mobile web application are **guaranteed to work on any device** that has a compatible web browsers

HYBRID APP
NATIVE APP
HTML
HTML
WEB APP

Crossplatform & Hybrid Mobile Application

- A mobile hybrid web application is derived from heterogeneous sources.
- Hybrid app is a combination of mobile native application and mobile web application.
- A hybrid app is **written with the same TECHNOLOGY FOR WEB IMPLEMENTATION, but it runs within a NATIVE APPLICATION CONTAINER**
- Therefore, a hybrid app **can access native mobile platform features** such as camera, sensors and can receive or make calls on behalf of the user.

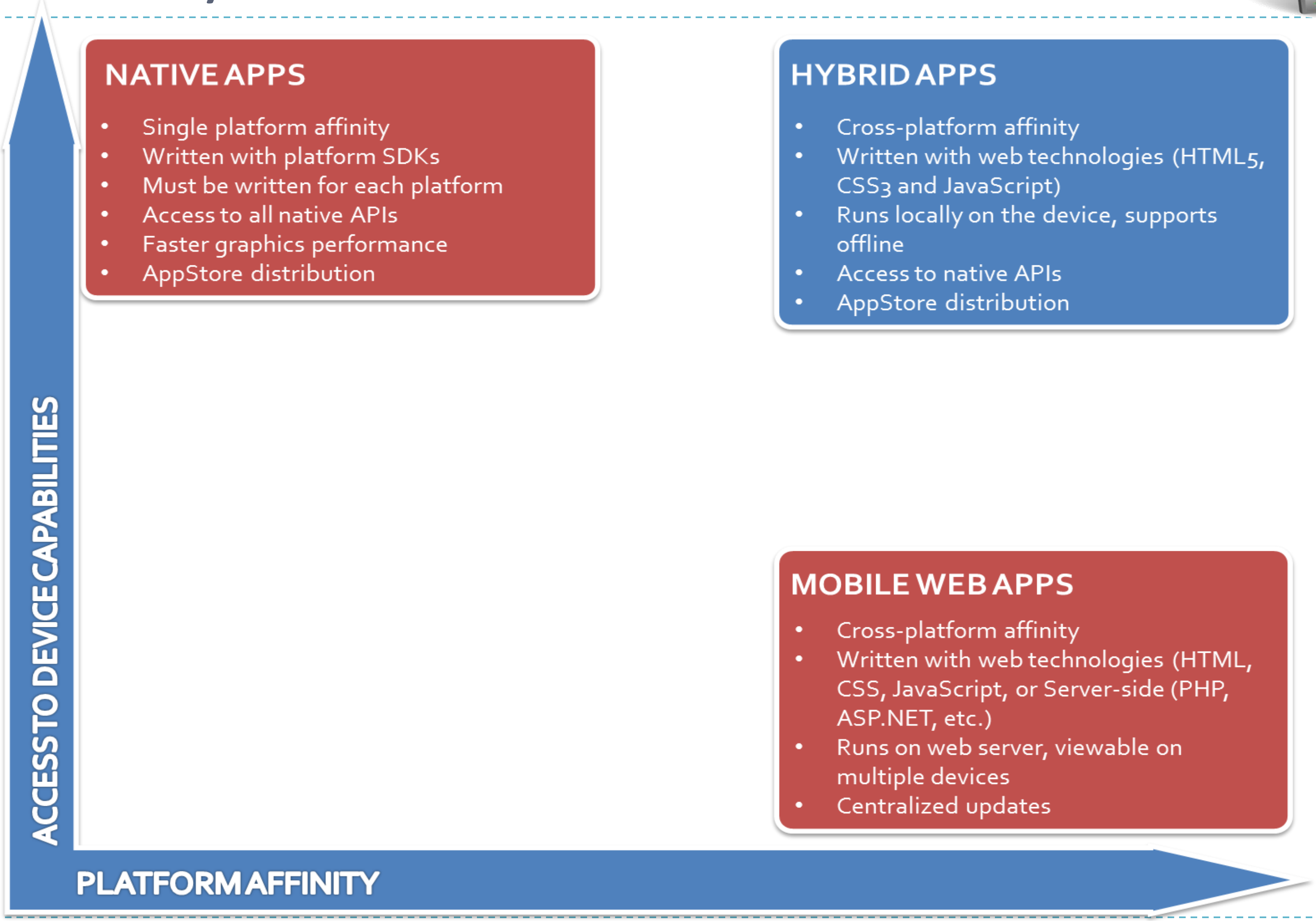
Crossplatform & Hybrid Mobile Application
Hybrid Mobile Application

- A hybrid app is also designed to be portable in source code form, in which it can be compiled to produce several different binaries for other mobile platform

- Example of Hybrid Mobile framework:
  - Ionic - http://ionicframework.com/
  - Phonegap/Cordova - http://phonegap.com/
  - Flutter
  - React Native

- Hybrid applications uses web technologies such as HTML5, Javascript and CSS to build hybrid mobile application.

Summary



ACCESS TO DEVICE CAPABILITIES

PLATFORM AFFINITY

NATIVE APPS

- Single platform affinity
- Written with platform SDKs
- Must be written for each platform
- Access to all native APIs
- Faster graphics performance
- AppStore distribution

HYBRID APPS

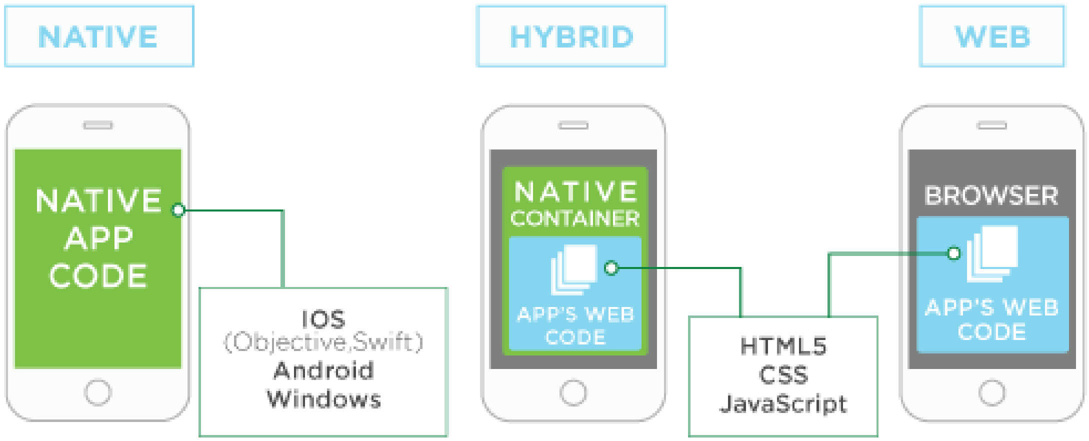
- Cross-platform affinity
- Written with web technologies (HTML5, CSS3 and JavaScript)
- Runs locally on the device, supports offline
- Access to native APIs
- AppStore distribution

MOBILE WEB APPS

- Cross-platform affinity
- Written with web technologies (HTML, CSS, JavaScript, or Server-side (PHP, ASP.NET, etc.)
- Runs on web server, viewable on multiple devices
- Centralized updates

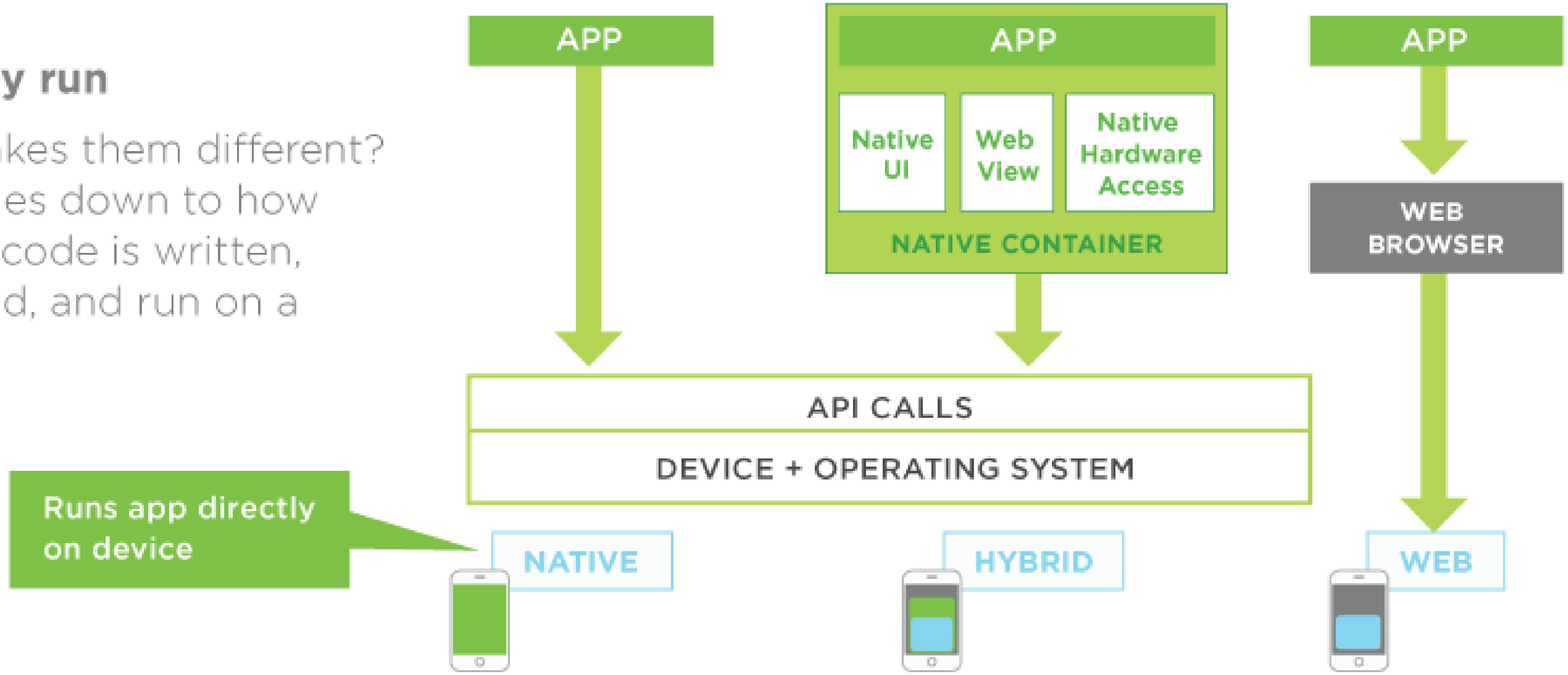
How they’re structured

When it comes to building your mobile app, you have three options: native, web, or hybrid.



How they run

What makes them different? It all comes down to how an app's code is written, structured, and run on a device.



Runs app directly on device

When to make a Crossplatform & Hybrid Mobile Application Mobile Application?

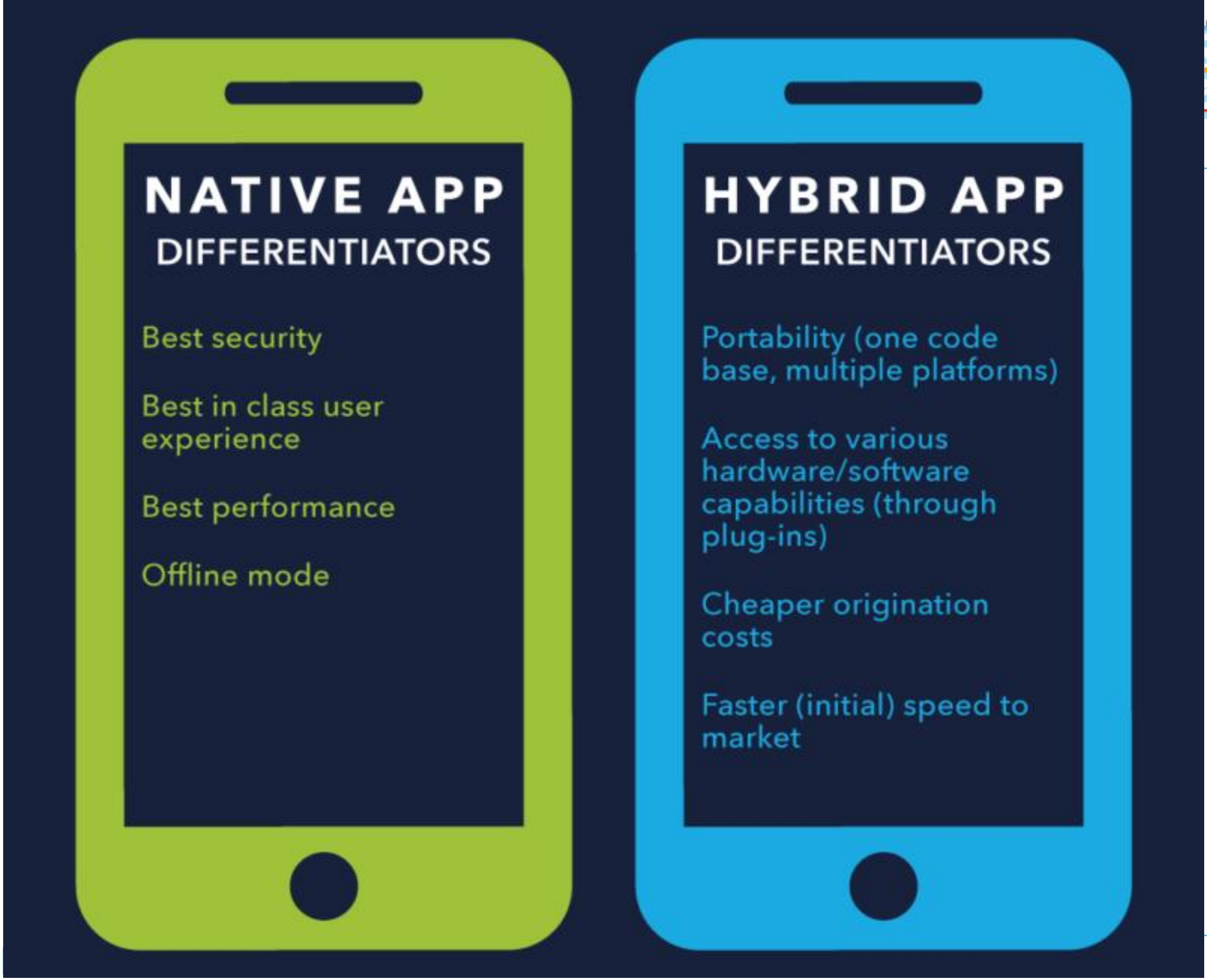
- Portability – one code base, multiple platforms
- ~~Cheaper Cost~~ Lower maintenance cost, because of single code base / single development team
- Learning curve - You can use your existing web talent and don’t need to bring on additional resources.
- Faster (initial) speed to market
- Web app dev code reuse

Crossplatform & Hybrid Mobile Application
Mobile App Drawbacks

- Limited User Interface – does not have a native feel
- Hardware/sensors/mobile features access limitation
- Slower Performance and transition between pages
- Dependency on browser speed

Examples of Cross-Platform tools for Hybrid Mobile Application

- Ionic Framework
- React Native
- Flutter
- Adobe PhoneGap



NATIVE APP DIFFERENTIATORS

Best security

Best in class user experience

Best performance

Offline mode

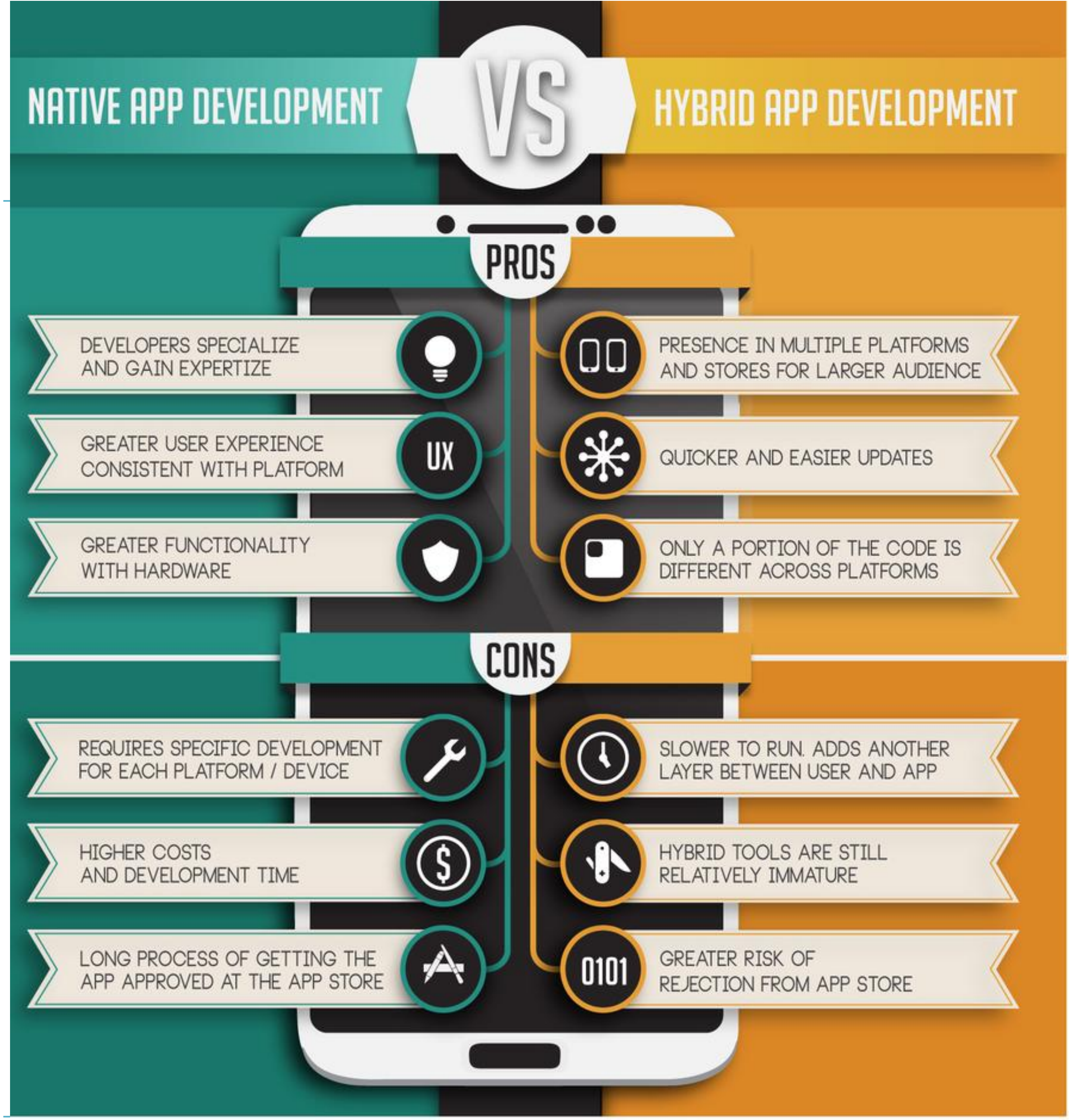
HYBRID APP DIFFERENTIATORS

Portability (one code base, multiple platforms)

Access to various hardware/software capabilities (through plug-ins)

Cheaper origination costs

Faster (initial) speed to market



NATIVE APP DEVELOPMENT VS HYBRID APP DEVELOPMENT

PROS

Native app development

- DEVELOPERS SPECIALIZE AND GAIN EXPERTIZE
- UX GREATER USER EXPERIENCE CONSISTENT WITH PLATFORM
- GREATER FUNCTIONALITY WITH HARDWARE

Hybrid app development

- PRESENCE IN MULTIPLE PLATFORMS AND STORES FOR LARGER AUDIENCE
- QUICKER AND EASIER UPDATES
- ONLY A PORTION OF THE CODE IS DIFFERENT ACROSS PLATFORMS

CONS

Native app development

- REQUIRES SPECIFIC DEVELOPMENT FOR EACH PLATFORM / DEVICE
- HIGHER COSTS AND DEVELOPMENT TIME
- LONG PROCESS OF GETTING THE APP APPROVED AT THE APP STORE

Hybrid app development

- SLOWER TO RUN. ADDS ANOTHER LAYER BETWEEN USER AND APP
- HYBRID TOOLS ARE STILL RELATIVELY IMMATURE
- 0101 GREATER RISK OF REJECTION FROM APP STORE

CES:
lishingtechnology.com/2013/06/going-native-the-pros-and-cons-of-native-apps-and-web-s-for-publishers/

{Application Developers Alliance} EMERGING TECH WORKING GROUP

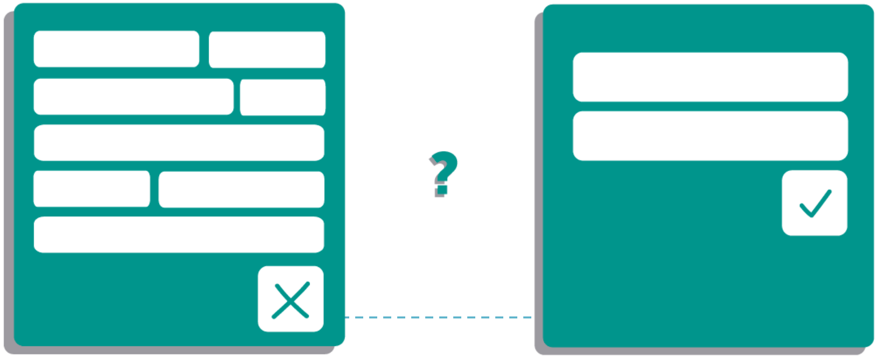
3. Mobile UI and Design Patterns

UI Design Patterns

- UI design patterns are **good solutions** to standard UI design problems.
- UI patterns provide a good starting point for specific parts of an application
- There are endless UI patterns example to be discussed in this class
- However, the objective of this sub-topic is to illustrate the most common UI pattern and to **differentiate how mobile design is different from Web or Desktop application**.

UI Design Patterns

- A **design pattern documents** known good solutions to frequently occurring design problems.
- In most cases, the patterns themselves become encoded as user expectations.
- An application that **VIOLATES common design patterns** could jar and negatively impacts user expectation

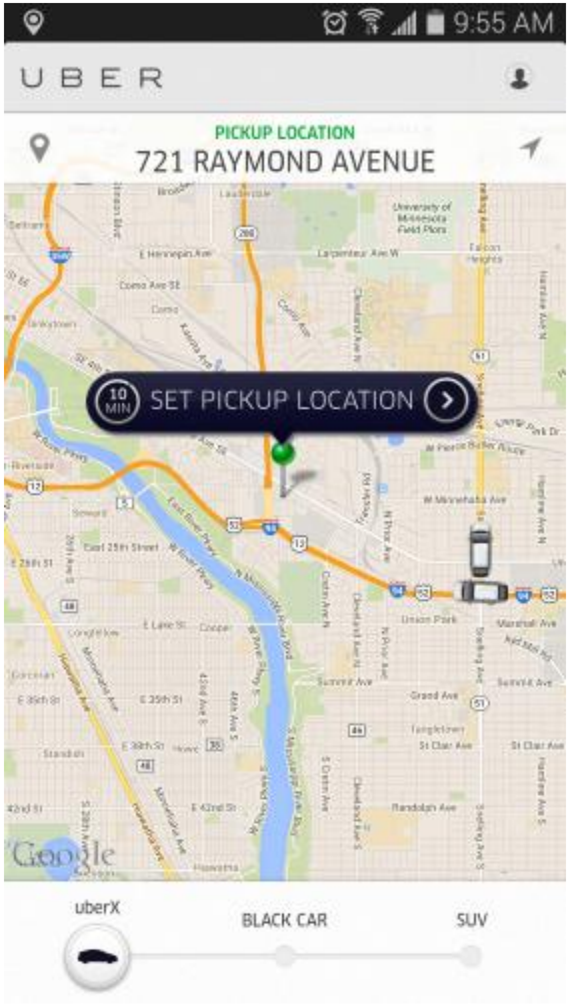


Mobile UI Design principles

- In order to be useful, mobile apps should be **user-centric.**
- To be effective using an interface you’ve designed, people must be able to recognize what it’s for and how to use it. There is simply no room for confusion.

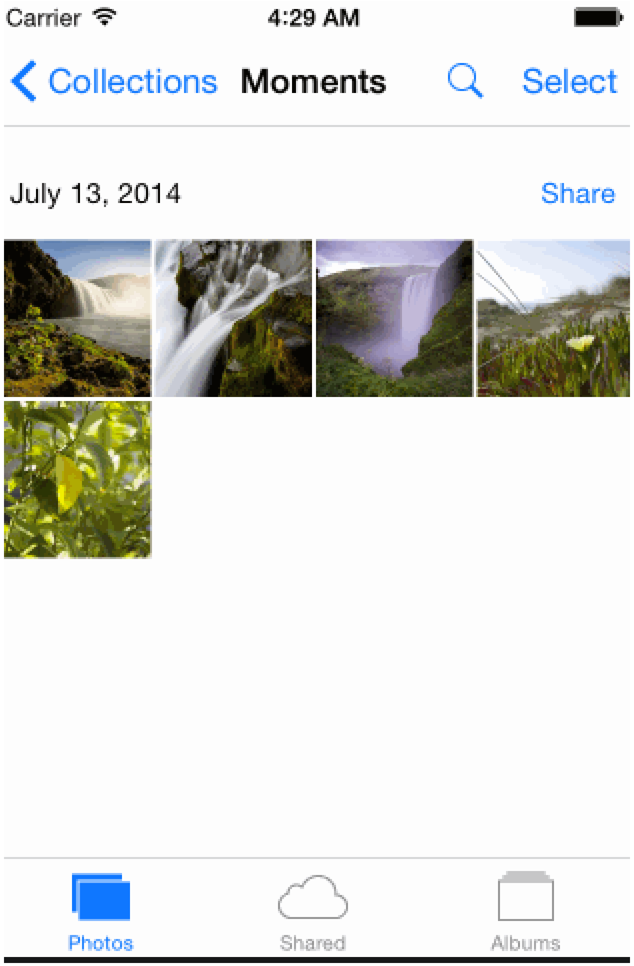
Mobile UI Design principles

- **one primary action per screen.**
  - One hundred clear screens is preferable to a single cluttered one.
  - Example: Uber - Uber knows that the goal of the user who uses the app is to take a cab. The app does not overwhelm the user with other information: it automatically detects users location based on GEO data and the only thing users have to do is to select a pickup location



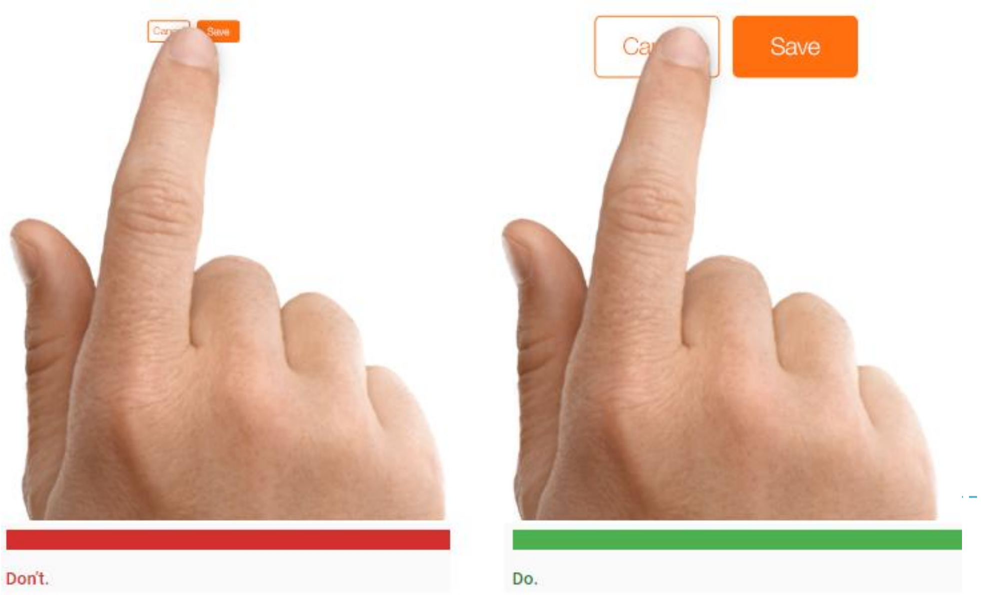
Make Navigation Self-Evident

- Mobile navigation must be **coherent.**
- Mobile navigation must be **consistent** for the app.
- Mobile navigation should **communicate the current location.**



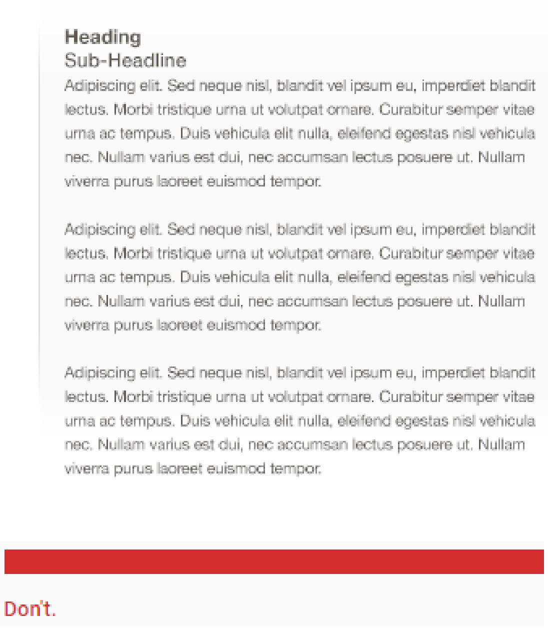
Design Finger-friendly Tap-targets

- When you’re designing mobile interfaces, it’s best to make your targets big enough so that they’re easy for users to tap.
  - The edges of the target are visible when the user taps it. This provides them with clear visual feedback that they’re hitting the target accurately.



Text Content Should Be Legible

- When compared with desktops, smartphones have relatively small screens,
  - one of the challenges of mobile design is to fit a lot of information on a small UI.
- A rule of thumb for mobile: text should be at least 11 points so it’s legible at a typical viewing distance without zooming.



Heading

Sub-Headline

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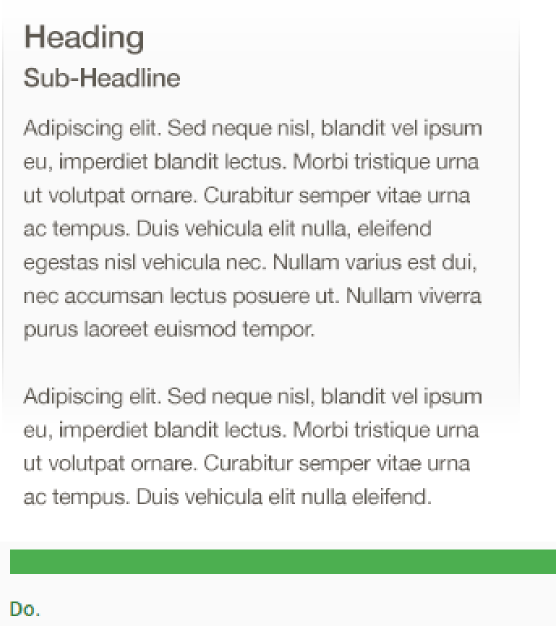
Don't.



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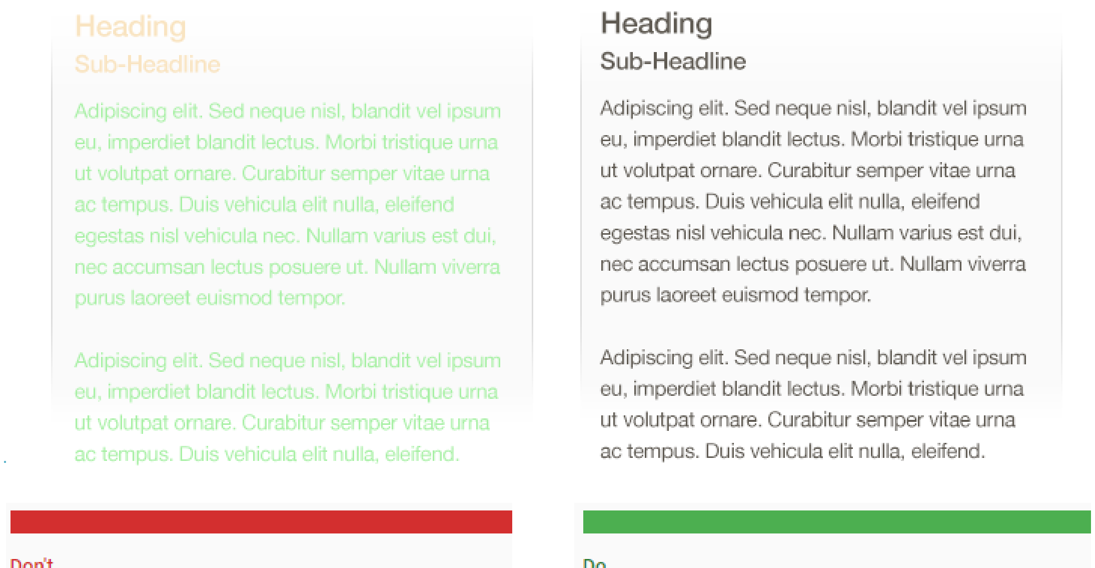
Do.

Make Interface Elements Clearly Visible

- You should use *color* and *contrast* to help users see and interpret your content.
  - Choose primary, secondary, and accent colors for your app that support usability. Ensure sufficient color contrast between elements so that users with low vision can see and use your app.
- Make sure there is ample contrast between the font color and the background so text are legible



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Don't

Heading

Sub-Headline

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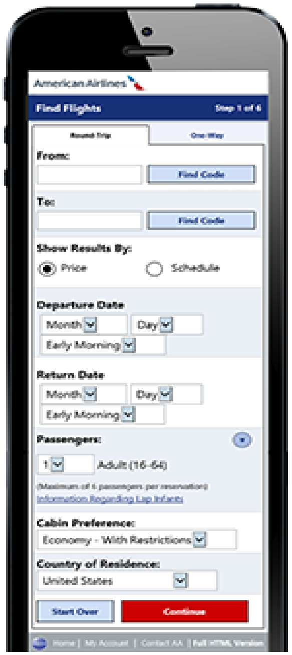
Do

Minimize Need For Typing

- Typing on a mobile is a slow and error-prone process. It’s therefore best to always try to minimize the amount of typing required to use a mobile app.
  - Keep forms as short and simple as possible by removing any unnecessary fields.

“This is going to be painful.”



American Airlines

Find Flights Step 1 of 6

Round Trip | One Way

From: Find Code

To: Find Code

Show Results By:

● Price ○ Schedule

Departure Date

Month Day

Early Morning

Return Date

Month Day

Early Morning

Passengers:

1 Adult (16-64)

(Maximum of 6 passengers per reservation)

Information Regarding Lap Infants

Cabin Preference:

Economy - With Restrictions

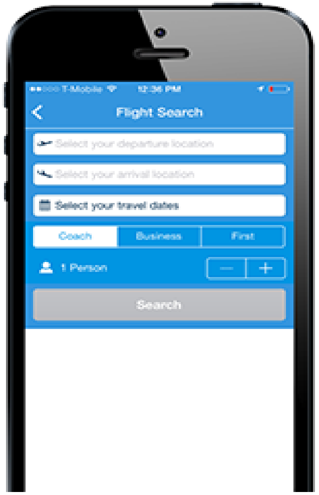
Country of Residence:

United States

Start Over | Continue

Home | My Account | Contact AA | Full HTML Version

“This will be a breeze.”



T-Mobile 12:36 PM

Flight Search

Select your departure location

Select your arrival location

Select your travel dates

Coach | Business | First

1 Person − +

Search

Examples of UI Design Patterns Gallery

- Android UI Pattern document for designing Notifications

https://developer.android.com/design/patterns/notifications.html

Other Mobile UI Design Pattern galleries

- http://www.mobile-patterns.com/
- http://android.inspired-ui.com/

4. The Elements of Mobile UI Design

Elements of Mobile UI Design

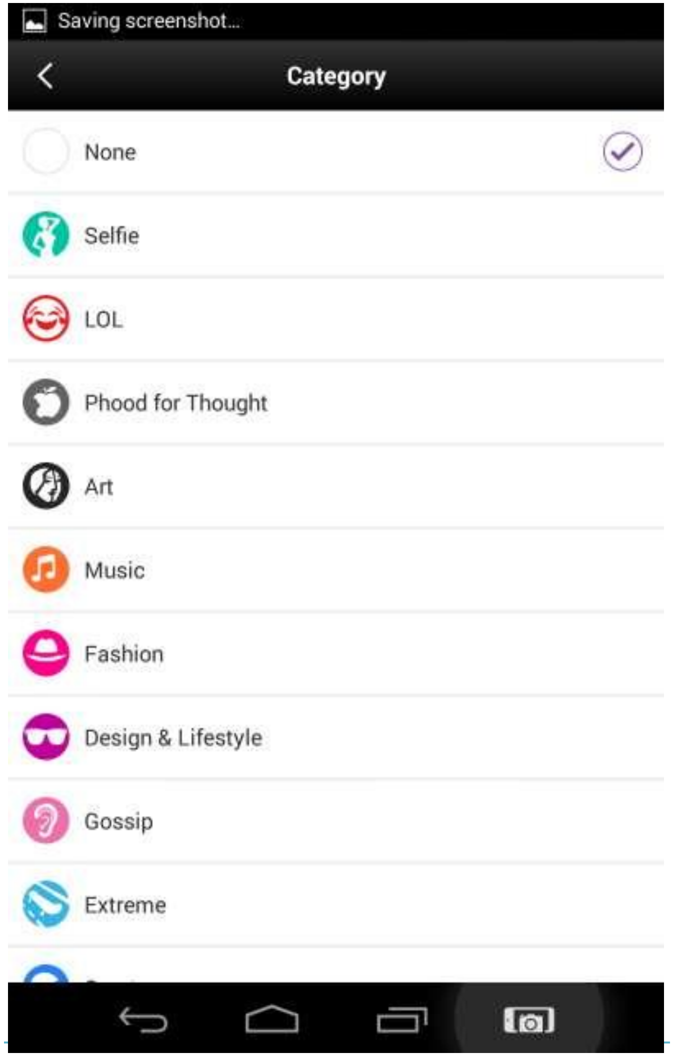
- **Screen Design**
  - List-based Layout
  - Grid-Based Layout

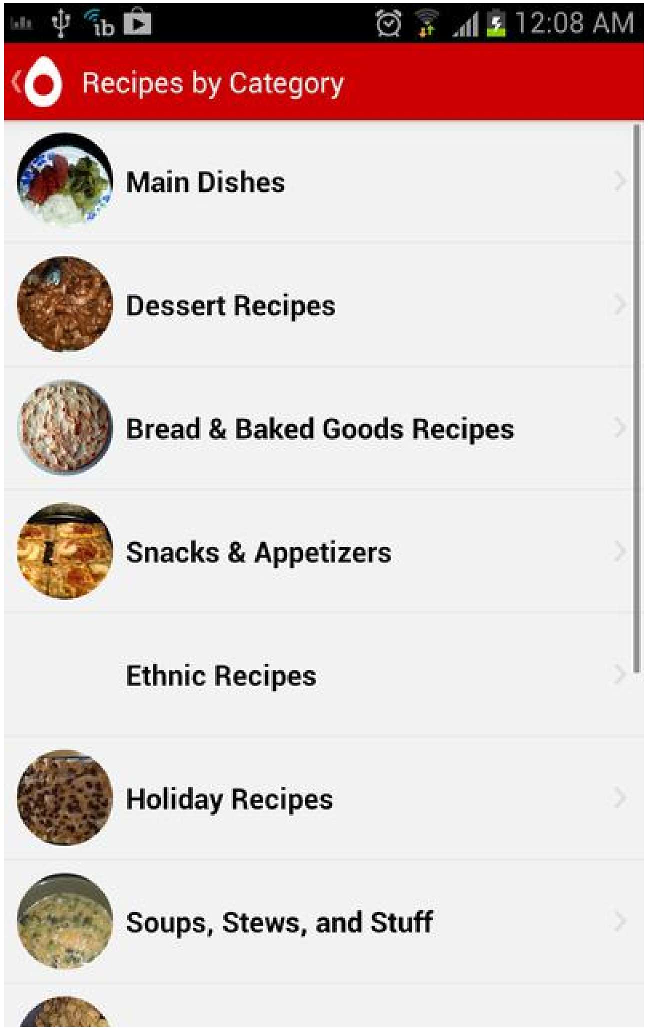
- **Application Navigation**
  - Tab Navigation
  - ViewPager Navigation
  - Navigation Drawer
  - Dropdown Navigation

Screen Design: List-based Layout

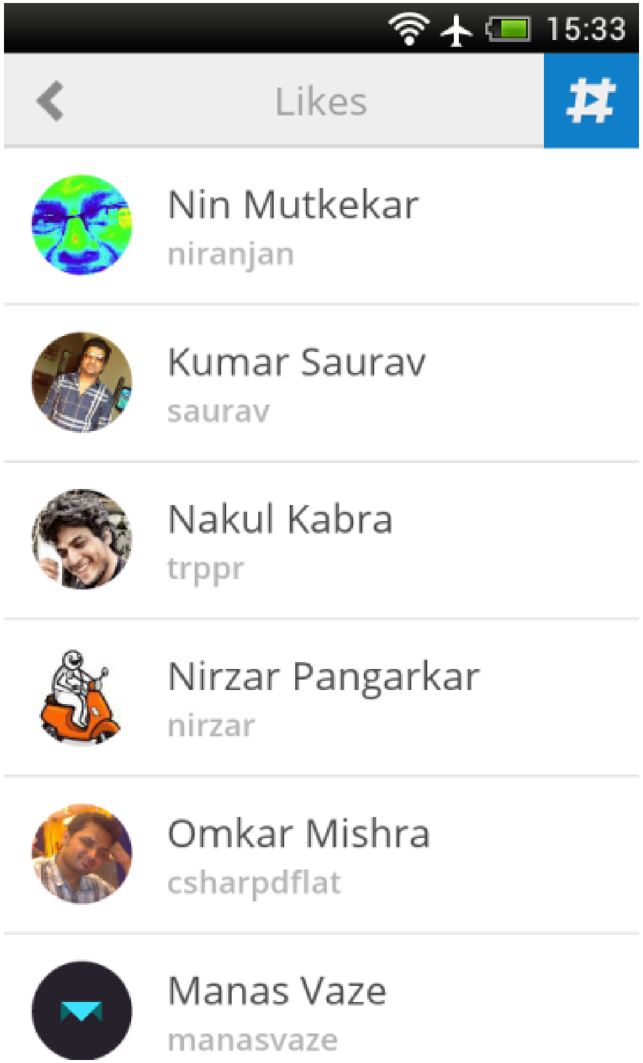
- List-based Layout is the most common screen in any mobile application designed to display **a lot of data**
- Rationale for using List-based Layout:
  - Most mobile phones are oriented **vertically**, with screens taller than they are wide
  - Horizontal layout mechanisms as used on Desktop are not efficient when used in mobile device
  - List is more natural to use by users as they can **scroll down** to search for data more efficiently, and can view data at a glance without much efforts

Examples of List based Layouts





Examples of List based Layouts



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Likes

Nin Mutkekar
niranjan

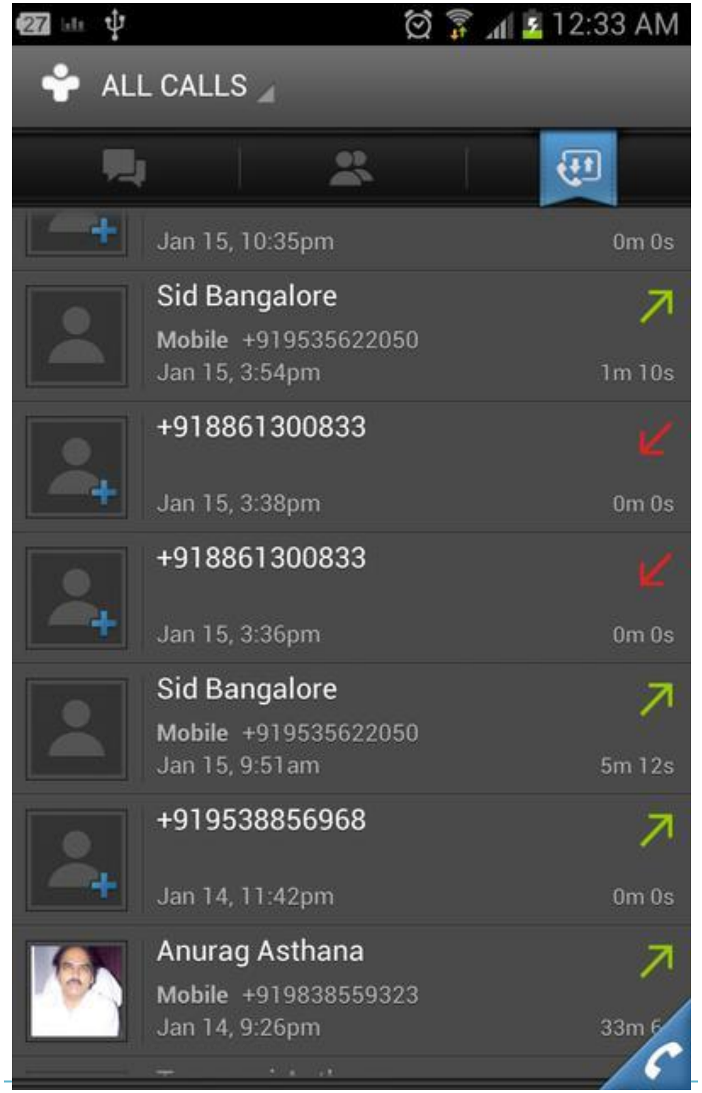
Kumar Saurav
saurav

Nakul Kabra
trppr

Nirzar Pangarkar
nirzar

Omkar Mishra
csharpdflat

Manas Vaze
manasvaze



12:33 AM

ALL CALLS

Jan 15, 10:35pm 0m 0s

Sid Bangalore
Mobile +919535622050
Jan 15, 3:54pm 1m 10s

+918861300833
Jan 15, 3:38pm 0m 0s

+918861300833
Jan 15, 3:36pm 0m 0s

Sid Bangalore
Mobile +919535622050
Jan 15, 9:51am 5m 12s

+919538856968
Jan 14, 11:42pm 0m 0s

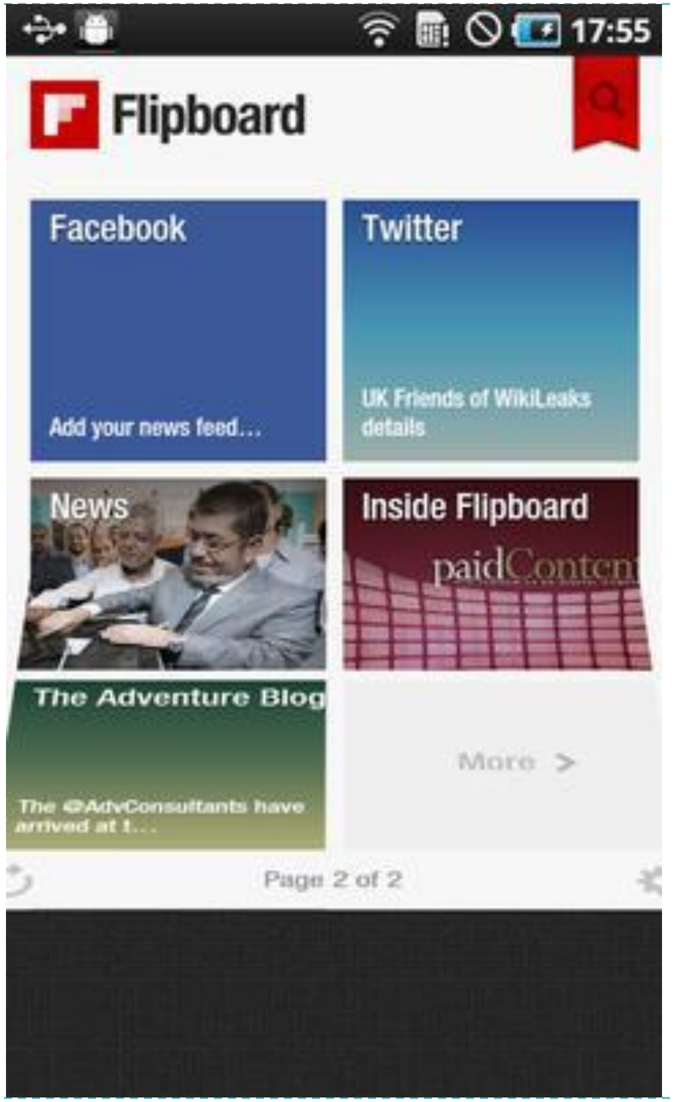
Anurag Asthana
Mobile +919838559323
Jan 14, 9:26pm 33m 6

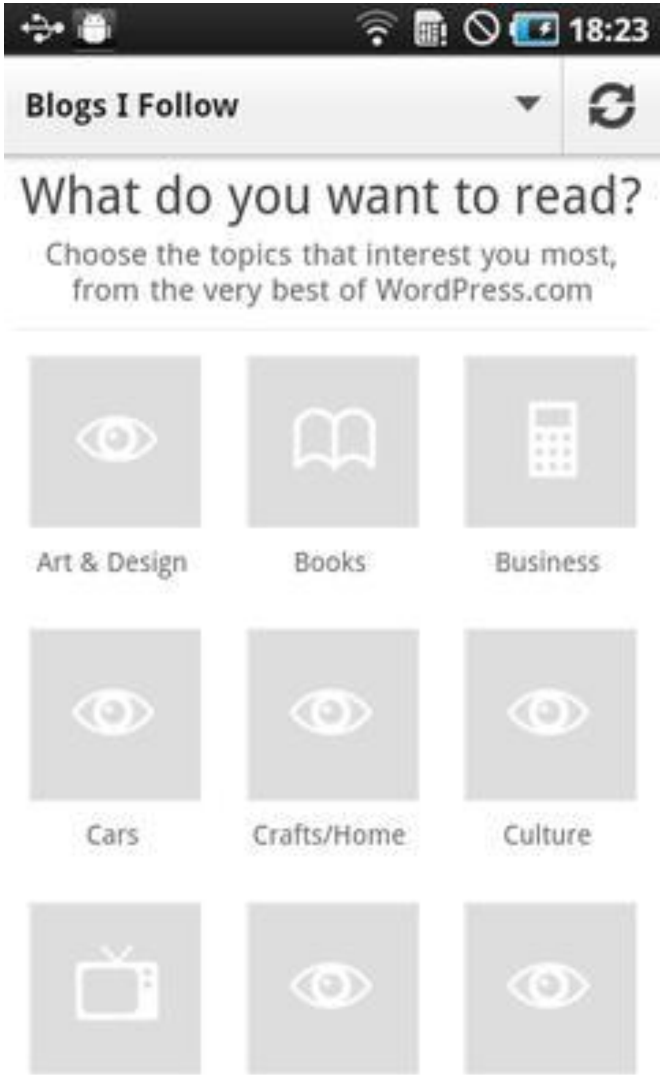
Screen Design: Grid based Layout

- Grid based layout is and alternative to standard list-views.
- Suited for showing data sets that represent themselves through **images or icons**.
- Unlike Lists Grid list may scroll either **vertically or horizontally**
- Rationale for using Grid-based Layout:
  - Images/Icon can caught user attention more effectively
  - In some situation, GridList can convey more meaning in images

*http://developer.android.com/design/building-blocks/grid-lists.html

Grid Layout Examples





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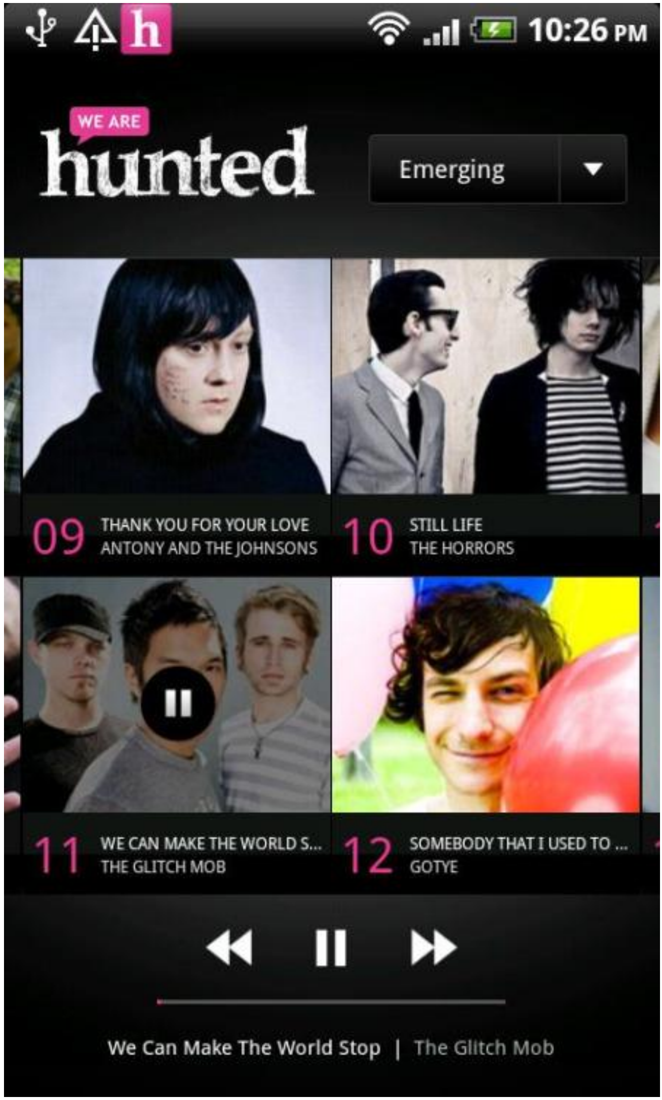
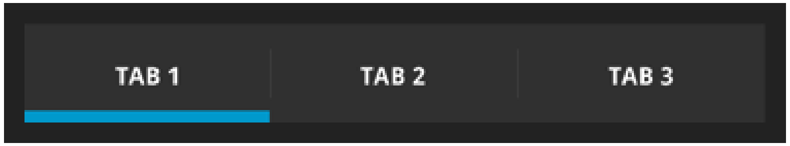
Grid Layout Examples

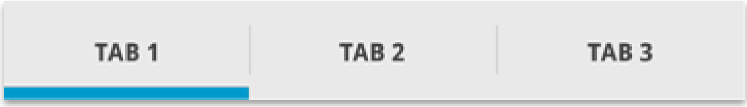


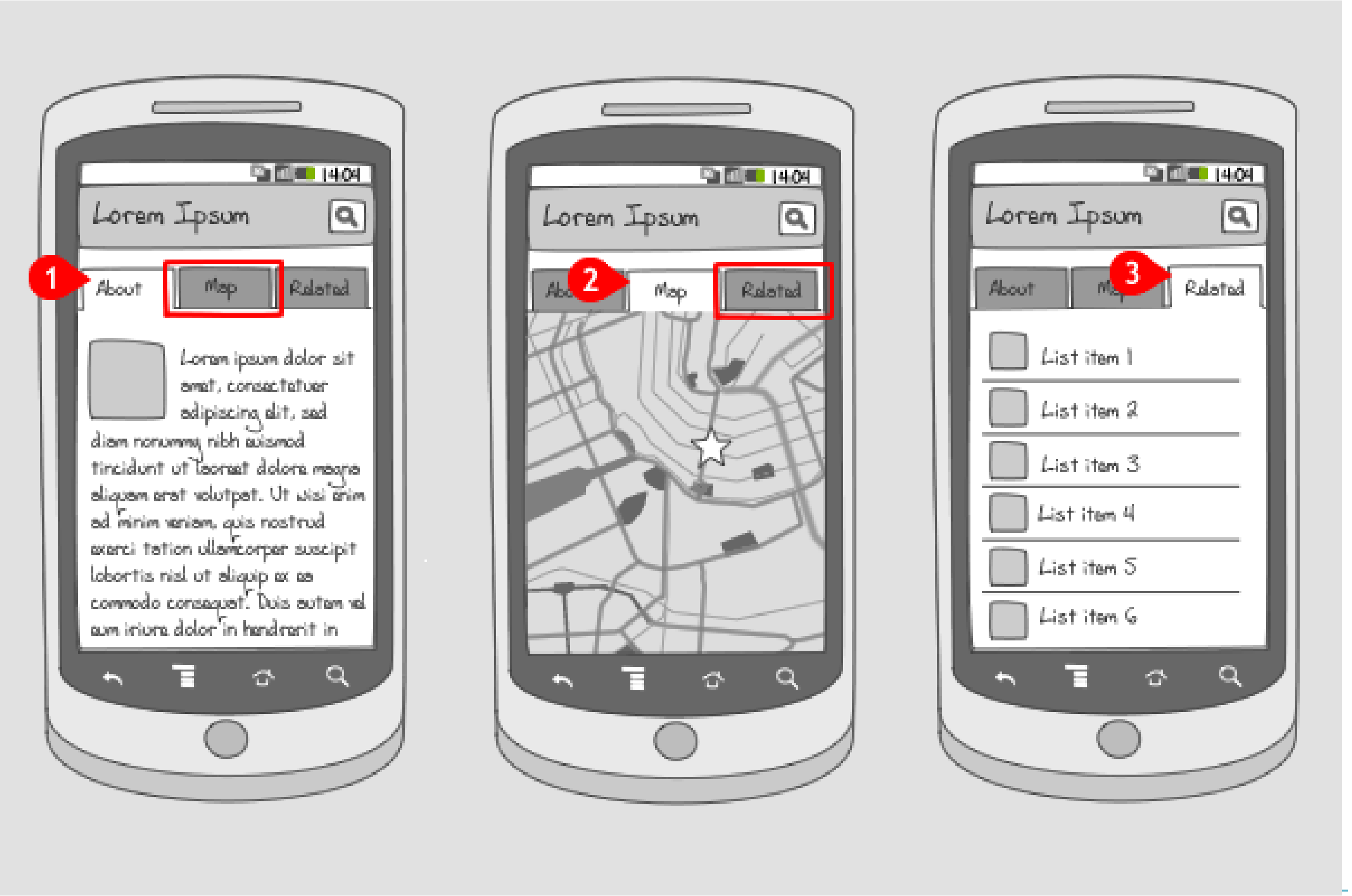
Application Navigation: Tab

- Tab makes it easy for users to explore and switch between views or functional aspect of application
- Tab is also used to browse **categorized data sets**
- Tab can either be **scrollable or fixed**
- Tab is often used to enable user to **quickly navigate** between different part of your application without going “deeper” into navigational structure

Tab Examples







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List item 1
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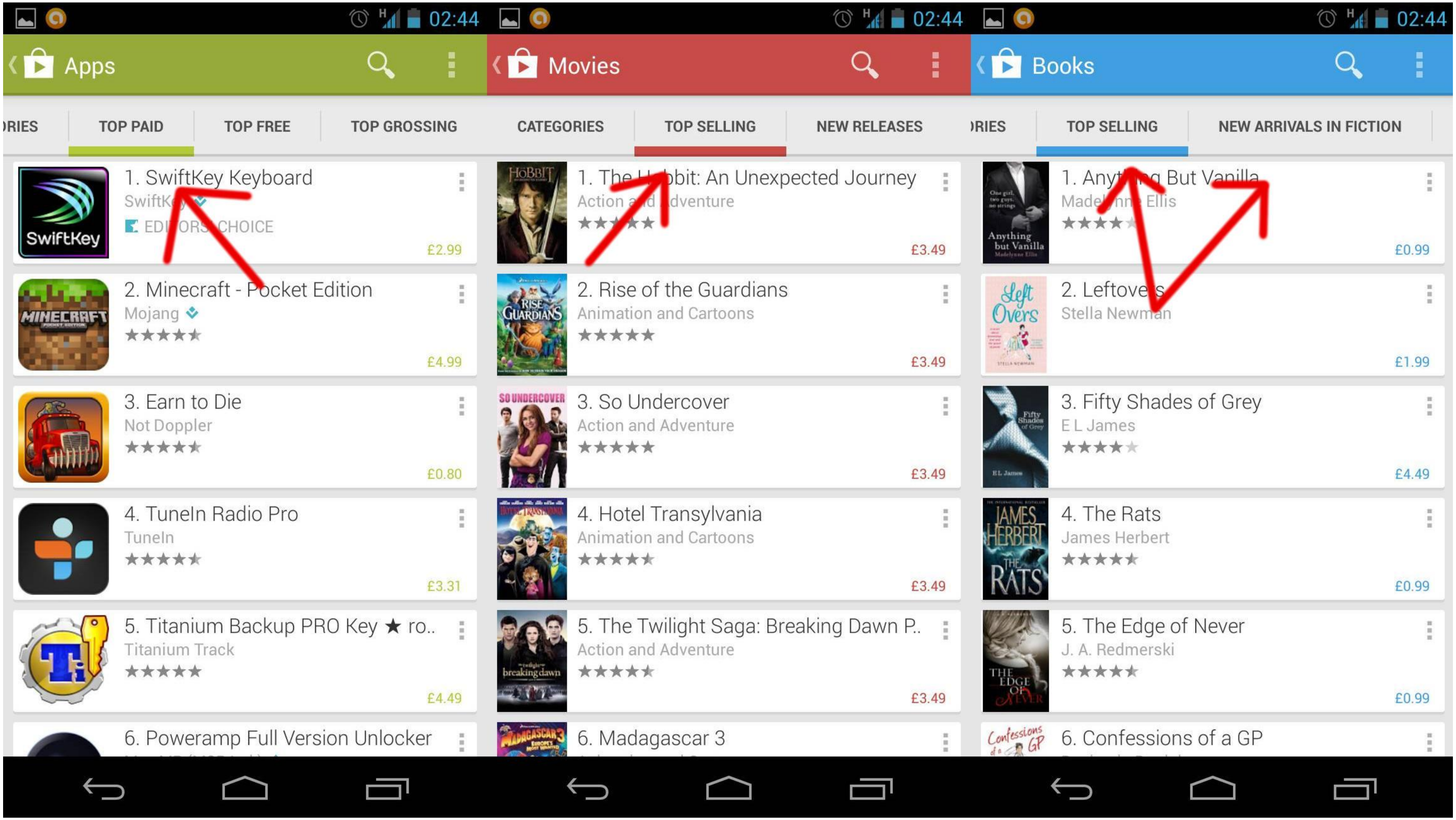
List item 6

Tab Examples



02:44

Apps

RIES | TOP PAID | TOP FREE | TOP GROSSING

1. SwiftKey Keyboard
SwiftKey
EDITORS' CHOICE
£2.99

2. Minecraft - Pocket Edition
Mojang
£4.99

3. Earn to Die
Not Doppler
£0.80

4. TuneIn Radio Pro
TuneIn
£3.31

5. Titanium Backup PRO Key ★ ro..
Titanium Track
£4.49

6. Poweramp Full Version Unlocker

02:44

Movies

CATEGORIES | TOP SELLING | NEW RELEASES

1. The Hobbit: An Unexpected Journey
Action and Adventure
£3.49

2. Rise of the Guardians
Animation and Cartoons
£3.49

3. So Undercover
Action and Adventure
£3.49

4. Hotel Transylvania
Animation and Cartoons
£3.49

5. The Twilight Saga: Breaking Dawn P..
Action and Adventure
£3.49

6. Madagascar 3

02:44

Books

RIES | TOP SELLING | NEW ARRIVALS IN FICTION

1. Anything But Vanilla
Madelynne Ellis
£0.99

2. Leftovers
Stella Newman
£1.99

3. Fifty Shades of Grey
E L James
£4.49

4. The Rats
James Herbert
£0.99

5. The Edge of Never
J. A. Redmerski
£0.99

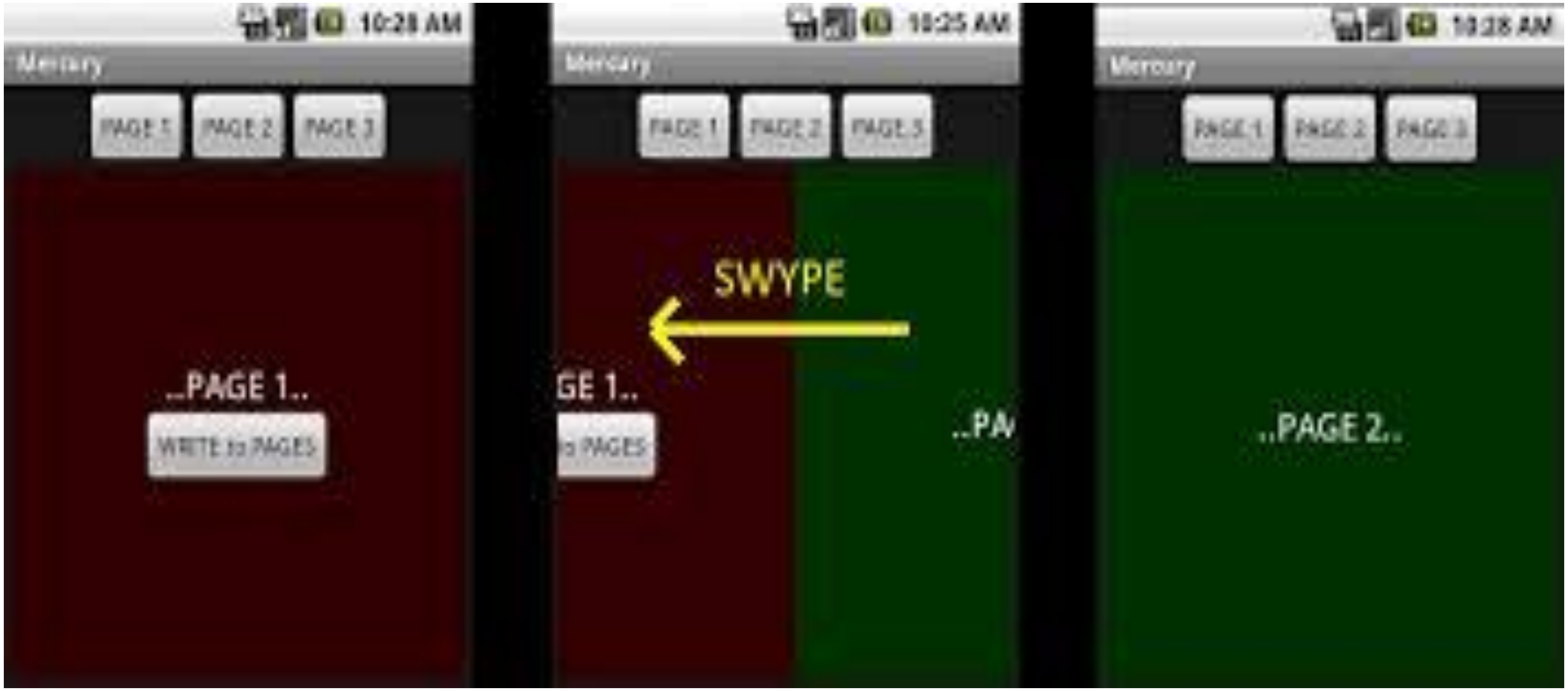
6. Confessions of a GP

View Pager Navigation

- Like tab, View Pager navigation do not have labeled tab, instead it relies on **navigation indicator** (represented in circles or dots)
- View Pager makes it easy for users to explore and **switch between views** or functional aspect of application with a finger swipe
- Usually represents information in a **full screen view**
- Some applications use it in “Walkthrough” page or “Tutorial” start up screen

ViewPager Example

- Uses swipe gesture to switch between view
  *click to play video

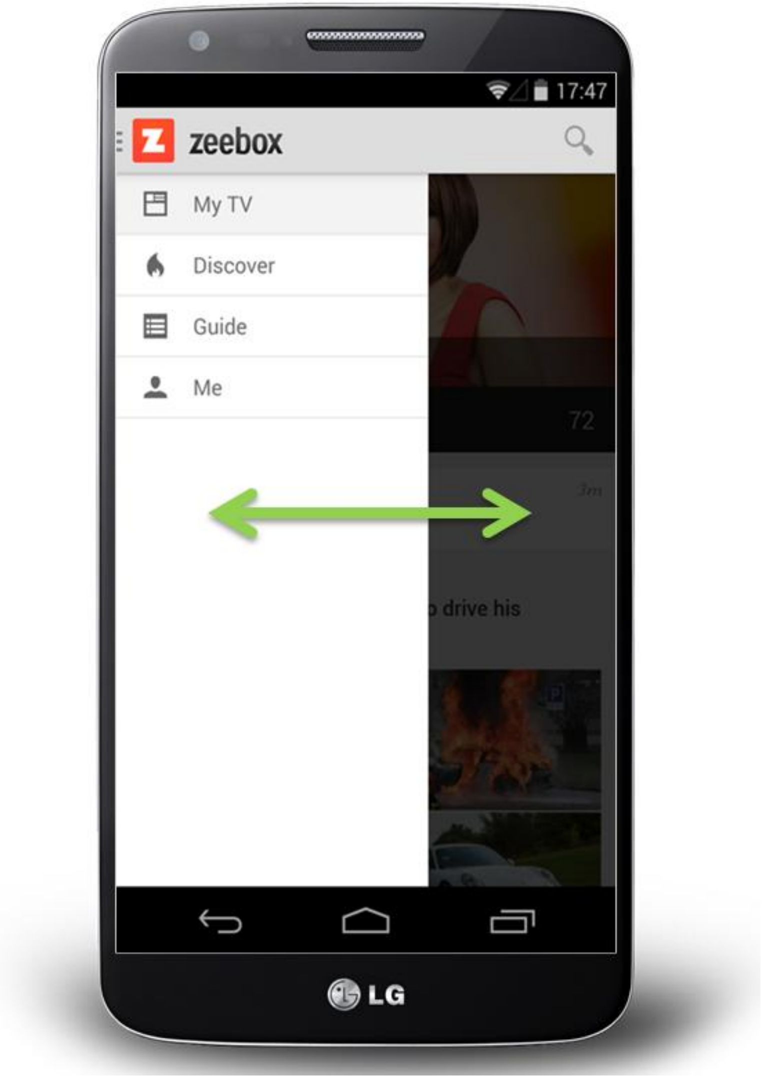


Application Navigation: Navigation Drawer

- Navigation drawer is **a panel that displays the app main navigation options on the left edge of the screen**
- It is **hidden** most of the time but is revealed when the user swipes the finger from the left edge of the screen.
- Navigational drawer **does not consume spaces**
- It **provides a quick way for user to navigate from one view to another view** without having to press the “Back” button

Navigational Drawer example

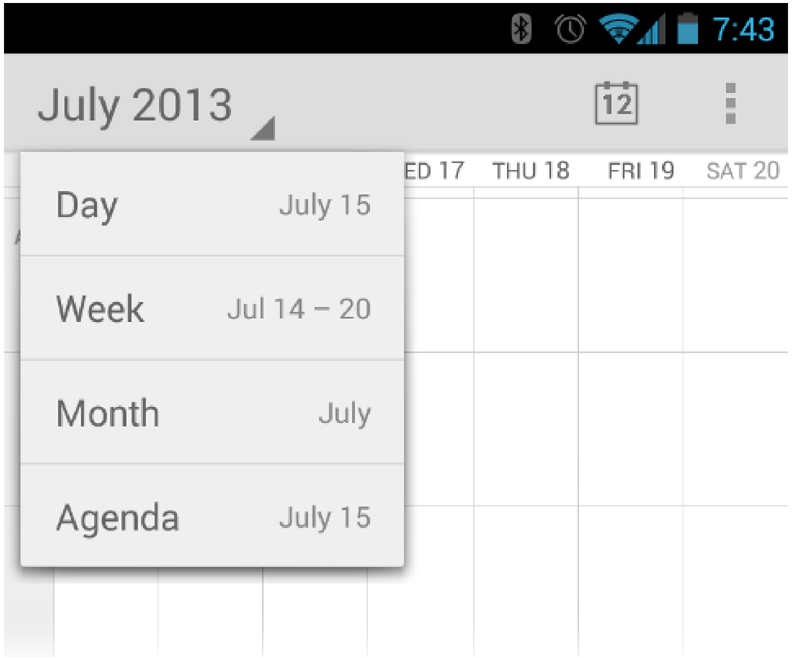
- Uses swipe gesture
  *click to play video

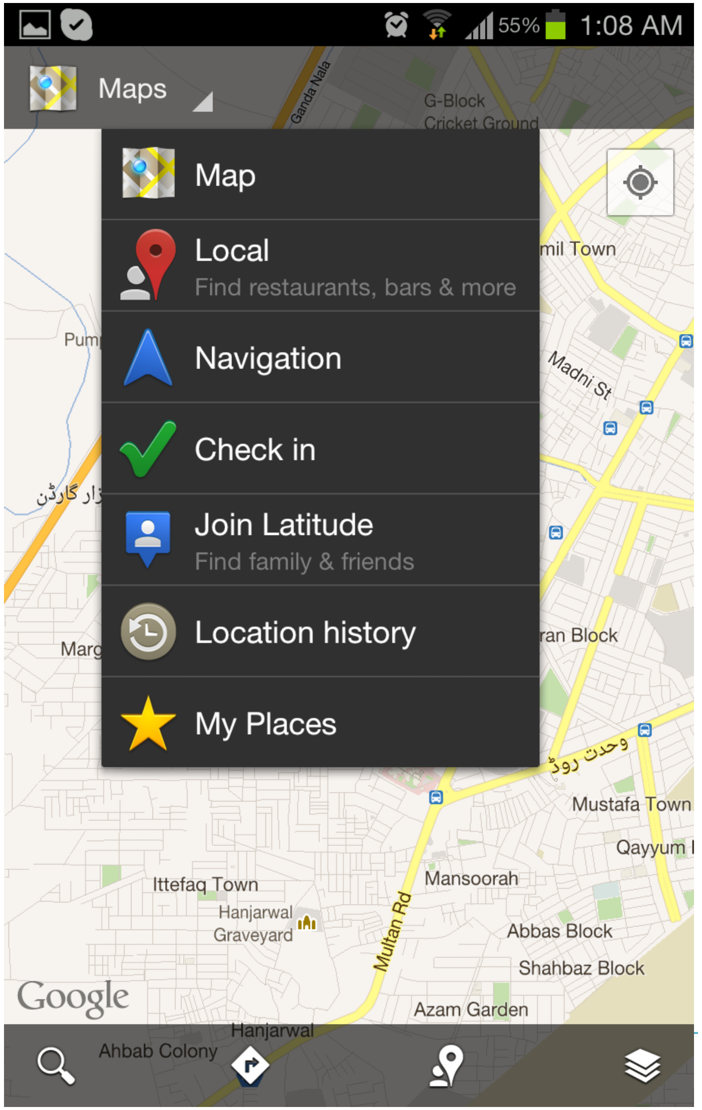


Application Navigation: Drop Down

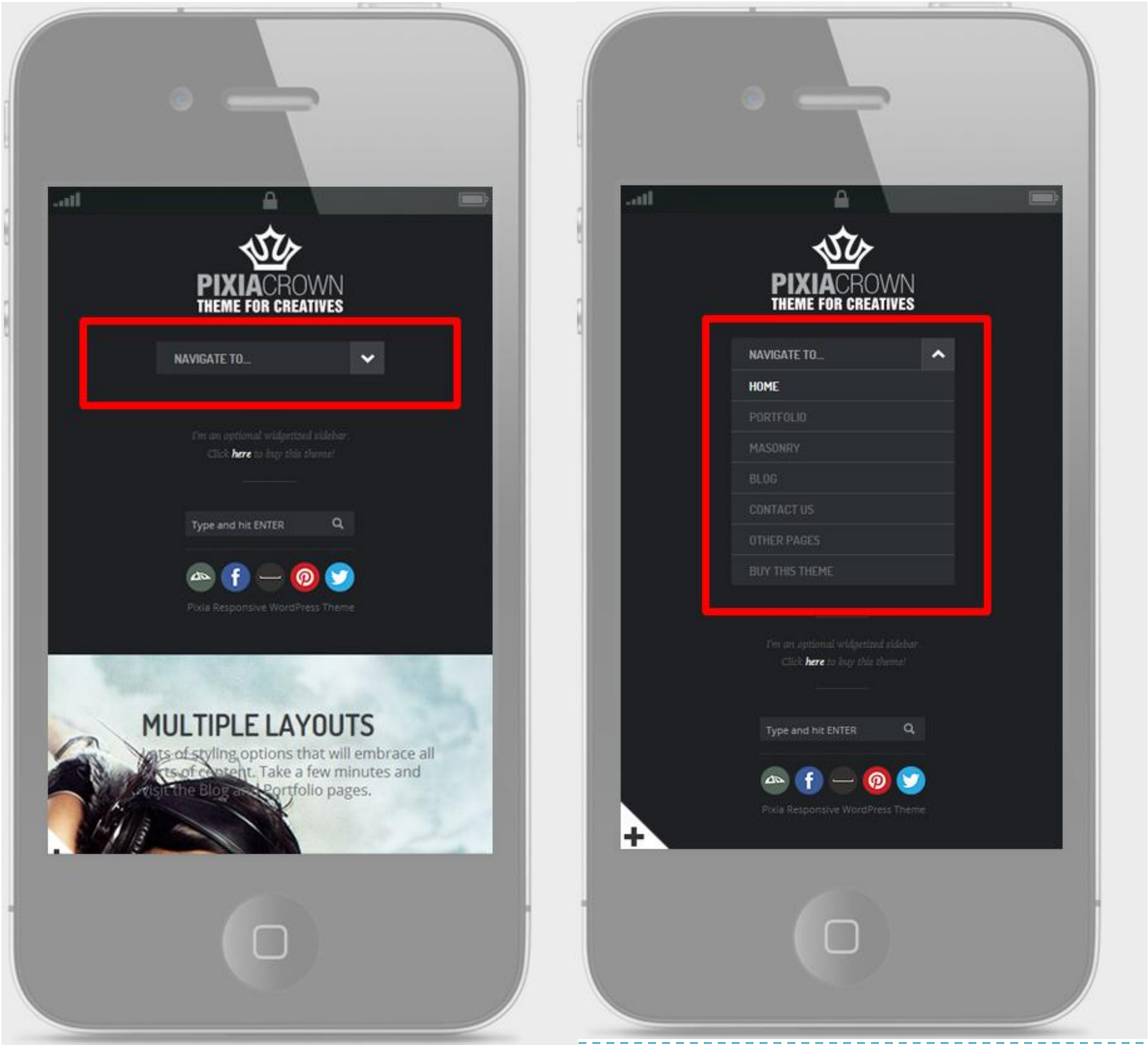
- Dropdown Navigation (also known as spinner) is useful when changing the content is important but not necessarily frequent occurrence.
- Dropdown Navigation is more preferred where **switching the content is more frequent**
- Dropdown navigation do not changes with the rest of screen, thus providing user with an anchor point to switch content
- Drop down occupies small area on the toolbar / action bar on an application.

Dropdown Navigation example





Dropdown Navigation example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THEME FOR CREATIVES
NAVIGATE TO...
I'm an optional widgetized sidebar.
Click here to buy this theme!
Type and hit ENTER
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MULTIPLE LAYOUTS
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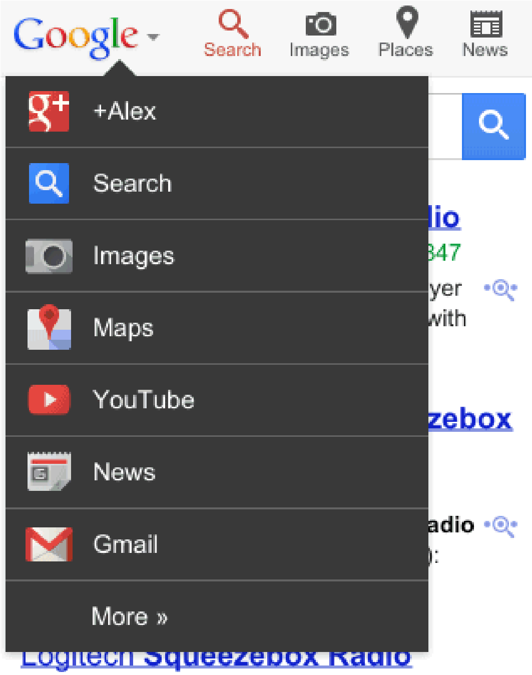

End of Lecture