Birkbeck
UNIVERSITY OF LONDON

Mobile Application Design

Mobile Application Development

Session 2

Mobile App Design

- Poorly designed desktop apps are *difficult* to use.
- Poorly designed mobile apps are more often than not *impossible* to use.
- To help us create mobile apps that users can use with ease, we need to work to:
  - A clear set of GUI design principles
  - A set of mobile specific design principles
  - Web standards

General GUI Design Principles

- The overarching principles for developing usable mobile apps are no different from those that guide development for desktop applications:
  - Navigability
  - Consistency
  - Readability
  - Accessibility
  - Visibility
  - Conformity (to web standards)
  - Etc.
- Because we are working in a mobile context, it does not mean we can abandon or water down these principles. If anything, we need to follow them with even greater rigour.

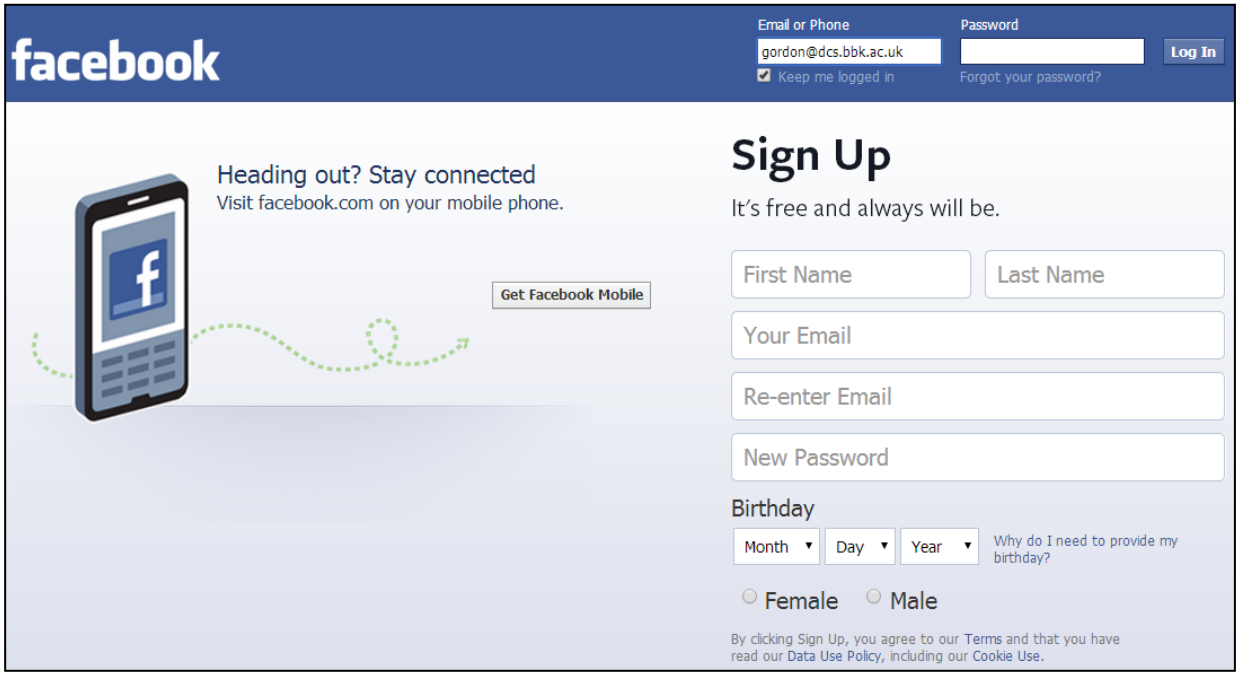
Mobile Specific Design Principles

- We also need to follow some guiding principles which are specific to the mobile context.
  - Simplify (Make the layout as simple as possible. Cut the content to the bare bones).
  - Prioritize (Allow the user to perform priority tasks without distraction).
  - Atomize (Divide tasks into self-contained units)
  - Remove (Take away any functionality or feature that is not fundamental to user needs).
  - Hide (Put out of sight any feature that is important, but not priority).
  - Displace (Move advanced features that are not suited to mobile to the desktop (but let your users know, of course)).

Wikipedia

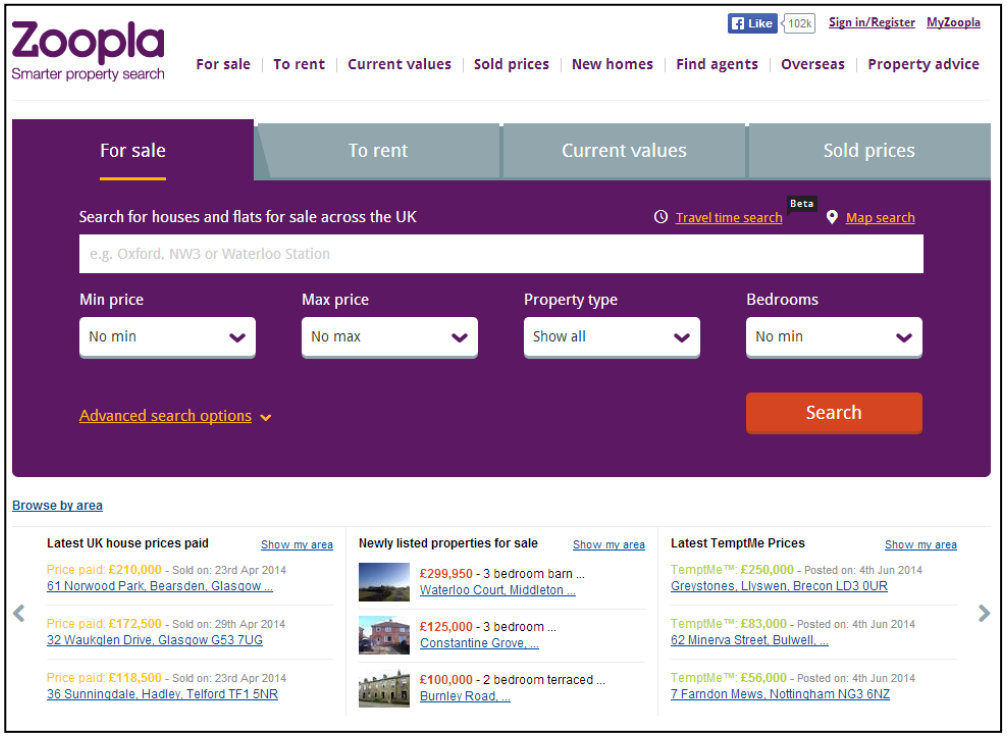
- Search task prioritized
- Search task atomized
- Images removed
- Features removed
- Functionality removed
- Layout simplified
- Content simplified

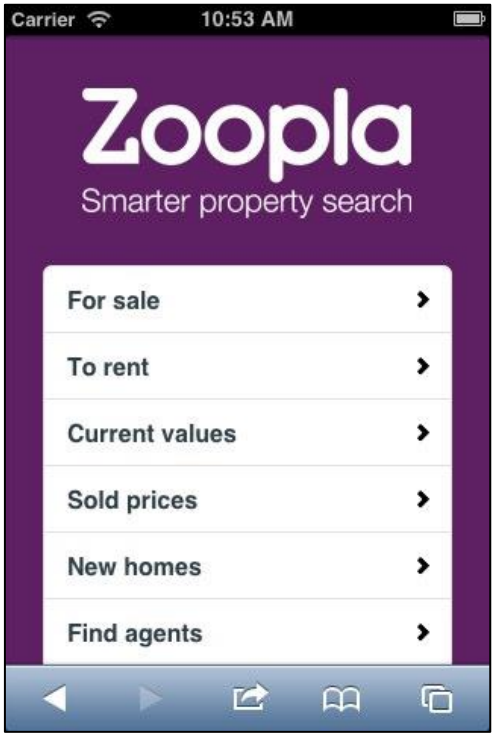
Facebook



- Log in task prioritized
- Log in task atomized
- Secondary content removed
- Secondary features removed

Zoopla

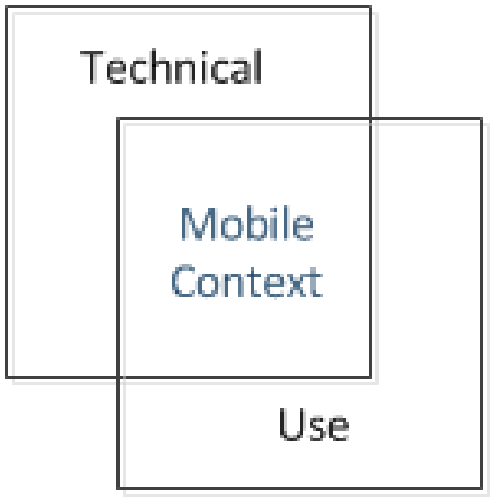




- Navigation prioritized
- Navigation atomized
- Functionality hidden
- Secondary features removed
- Secondary content removed

Design for Mobile

- Design for mobile needs to be significantly different than for desktop because the context in which mobiles are used is different than that in which desktops are used.
- The mobile context has two distinct elements:
  - The use context
  - The technical context



The Use Context

- The use context of mobile devices refers to the different areas of our lives in which mobile devices are used:
  - Work
  - Leisure
  - Travel
- Within any of these contexts a user may be:
  - Mobile or stationary
  - Focused or distracted
  - Busy or relaxed
- Or any combination of the above (e.g. mobile, distracted and busy).

The Use Context

- Designing an effective GUI for a user who is mobile, busy and distracted obviously presents a different set of challenges than designing for a user who sitting at a desktop, and is stationary, focused and/or relaxed.
- A busy, mobile user has no time to think about how to find something, or how to perform a task. He/she does not want to waste valuable seconds searching for a login page, or wondering if a transaction has been completed successfully.
- He/she needs his/her experience of an application to be as *simple* and *transparent* as possible.

The Technical Context

- The technical context of mobile use refers to the specific features of the hardware, software and communications capabilities of mobile computing devices
- This includes:
  - Smaller display size
  - Non-traditional input methods (touch, stylus)
  - Slower connection speeds
  - Restricted storage
  - Slower CPUs
- Each of these features places significant constraints on what we can achieve in terms of mobile app design, and we need to be fully aware of each one.

Display Size

- Average display sizes:

Desktop	23 inches
Notebook	17 inches
Tablet	8 inches (in landscape orientation)
Smartphone	4 inches (in landscape orientation)

Display Size and Orientation

- The difference in display size between desktop and mobile is clear, and it is clear we need different designs for these devices.
- However, we should also note the significant difference in display size between tablet and smartphone. This difference means that we will also often need different designs (or variations on the same design) for these devices too.
- In addition, we also need to be aware of the differences in screen width engendered by changes in device orientation in the same device, and factor this into our designs (e.g. 1024 (landscape) x 768 (portrait) in iPad).

Display Size

- Smartphone displays are an average of 480 x 320 pixels.
- These restrictions mean that when designing for smartphone displays, it is recommended that you:
  - Use a single column layout.
  - Have no need for horizontal scrolling.
  - Organise content vertically rather than horizontally (e.g. navigation).
  - Do not use tables.
  - Keep images to an absolute minimum, and size them for the context using appropriate, responsive web design methods.

Display Size

- Tablet displays (e.g. 768 x 1024) offer more space in which to work than smartphone displays.
- We can thus make some concessions to the more rigorous rules governing layout for smaller displays.
  - Multiple columns acceptable (usually two max).
  - More scope for horizontal organisation of content.
  - Tables acceptable (for data only).
  - Larger images possible.
  - Space for more images.
- However, even with tablets, we still need to be mindful of the fact that portrait orientation is still significantly more narrow than notebook, or desktop displays, and design accordingly.

Display Size

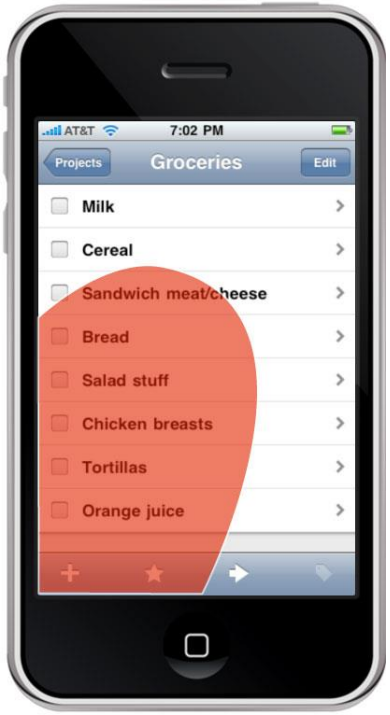
Tablet (iPad)
2 Column

Smartphone (Android)
1 Column

Touch Screens

- Most (but not all) newer generation mobile devices employ touch screen input.
- Touch, however, is inherently less accurate that clicking with a mouse or touching with a stylus.
- To accommodate finger touch screens we need to:
  - Make buttons, links, or other *clickable* elements large enough to be hit accurately (Apple recommends min 44px x 44px for buttons).
  - Space clickable elements to avoid user hitting the wrong target (The closer clickable elements are to each other the larger they should be).
  - Position clickable elements in finger and thumb *hot zones*:

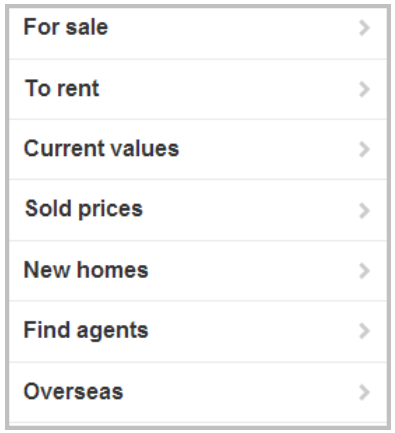
Touch Screens

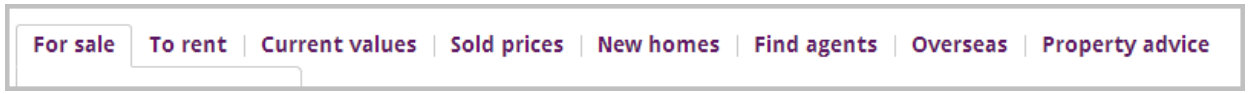


Thumb hot zones on iPhone and iPad

Navigation

- Mobile app navigation needs to be as simple and intuitive as possible, and ideally should not extend beyond two levels (primary & secondary).
- In smaller (phone) displays, primary navigation elements are much better organised vertically, rather than horizontally.
- In tablets, the navigation can be organised horizontally; however, this will depend on factors such as the complexity of the navigation schema, and the device orientation.



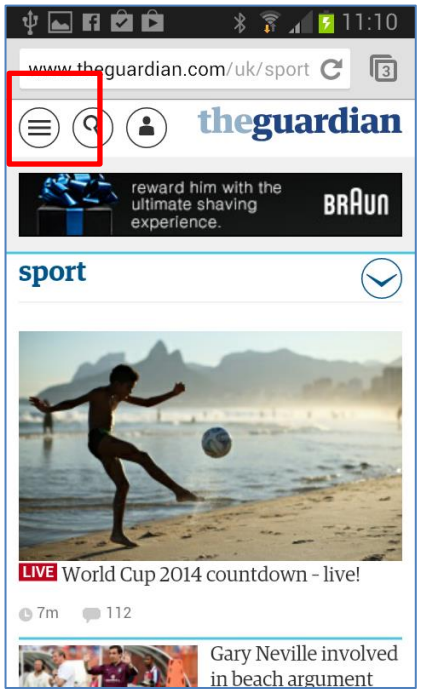


← Smartphone and tablet in portrait mode

↑ Tablet in landscape, notebook and desktop

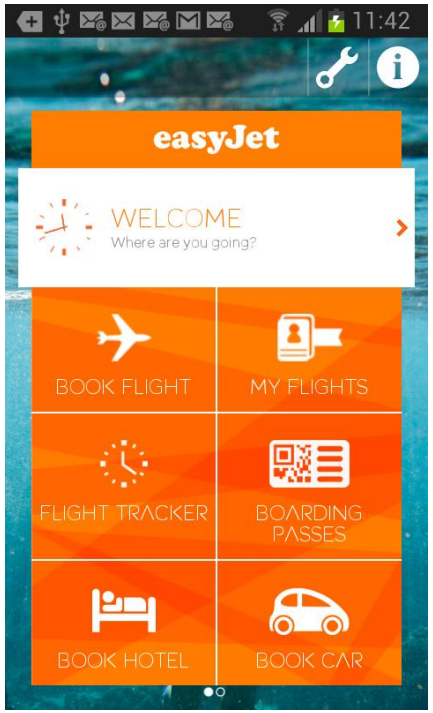
Navigation

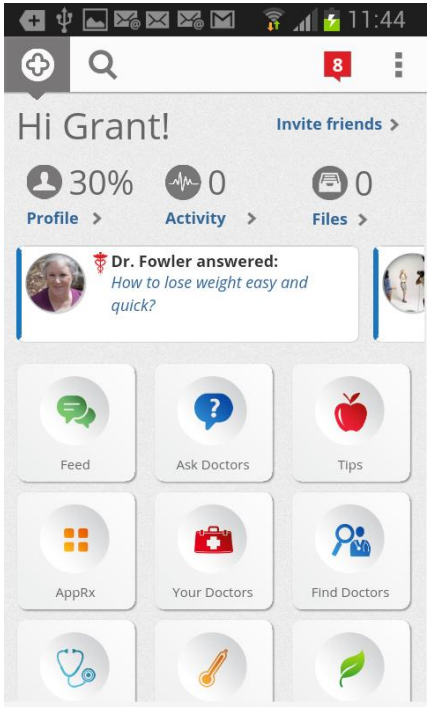
- In smaller screens, complex navigation with many elements is difficult to present vertically without recourse to extensive scrolling.
- In such situations, many designers prefer to hide the navigation entirely using panels.



Navigation

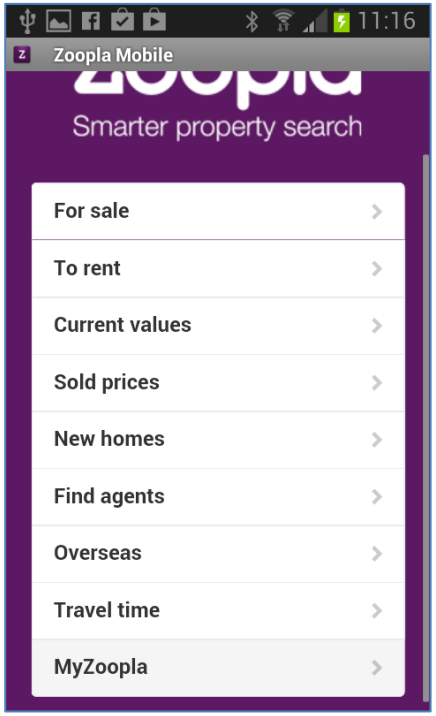
- Where there are few navigation choices, and an app is functionality driven, a dashboard approach to navigation may be preferred.

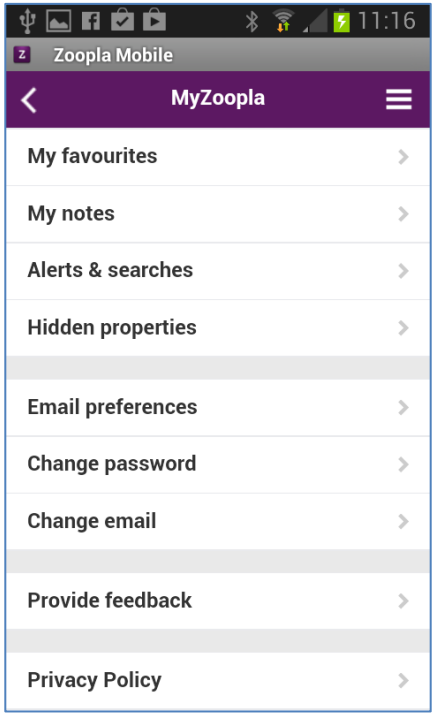




Secondary Navigation

- On smaller screens, secondary navigation should be displaced to a separate page (e.g. Zoopla).
- Tertiary navigation is best avoided entirely. It is difficult to organise in small screens, and adds undue burden to the cognitive load of the user.





Content for Mobile

- Obviously, reading from smaller screens is more difficult than reading from larger screens.
  - Users can see less at any given time.
  - Users need to scroll more
- To compensate for this, we need to make several adjustments from existing desktop strategies for content.
  - Leave out anything unnecessary.
  - Defer secondary information to secondary screens.
  - Make extensive use of lists.
  - Optimize font sizes, line spacing, etc. for mobile friendly reading. Do not miniaturize fonts (e.g. use a smaller font size than you would for desktop).
  - Adhere to standards compliant semantic organisation guidelines.

Content for Mobile

Desktop	Mobile
Welcome to WebPics	*WebPics*
Here are some people you might enjoy following.	*Who to follow*
There are several advantages of full membership: 25% discount; free downloads for 2 days per month; regular news bulletins, free image processing (e.g. cropping, resizing, effects, etc.).	*Why Join?* • *25% off* • *2 days free downloads* • *News bulletins* • *Free image processing*

Images

- Because of bandwidth constraints, images should be used only when absolutely necessary in mobile apps (e.g. No banners, wallpaper or anything else solely decorative).
- Users should not have to scroll to see parts of an image.
- Images should be included using responsive web design techniques (e.g. adaptive images).These techniques detect your visitor's screen size and automatically create, cache, and deliver device appropriate re-scaled versions of your images.

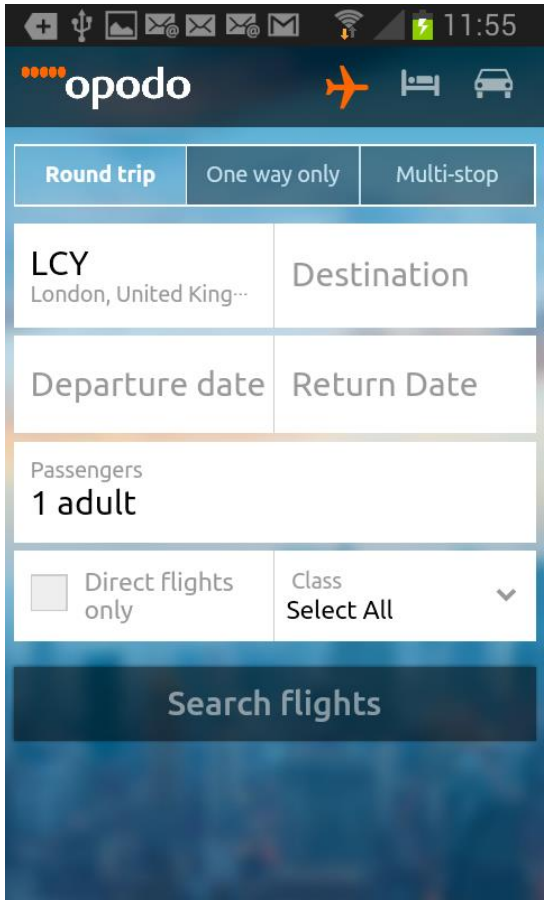
Icons

- An icon is a graphic that provides a quick, representation of an action, or a status,
- They allow users intuitive access to hidden elements.
- Android and IOS native apps have their own specific icon sets.
- However, a set of generic web apps, standard icons have emerged for common task and navigation choices.

Forms

- Smaller screens and smaller keyboards mean that is more difficult to fill out a form on a mobile.
- To facilitate the user experience, we need to make some adaptations from desktop practice.
  - Minimize the number of fields (Do you need *Title*?)
  - Avoid splitting fields (e.g. telephone number)
  - Do not require any extensive user input (e.g. textareas)
  - Organize forms vertically (for smaller screens)
  - Reposition labels above fields (or use contextual tips as an alternative)
  - Break down forms into manageable chunks
  - Allow users to select rather than type (e.g. dates)
  - Focus the user on one field at a time (e.g. Expedia)
  - Use autofill

Forms


11:55
opodo
Round trip
One way only
Multi-stop
LCY
London, United King···
Destination
Departure date
Return Date
Passengers
1 adult
Direct flights only
Class
Select All
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AT&T
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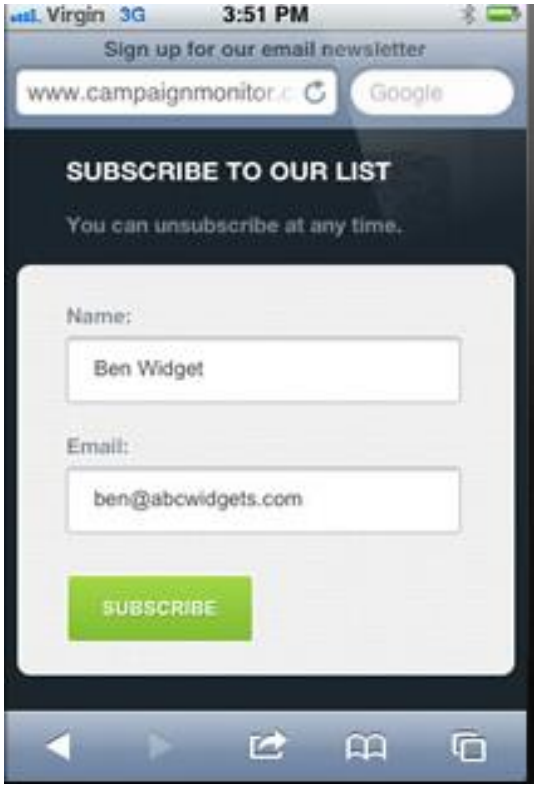
November 30 1973
December 31 1974
January 01 1975
February 02 1976
March 03 1977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Platform Specific Mobile App Design Guidelines

- IOS
- Android