

# Usability and Small Screens

SE444



iPhone



Android



Windows Phone 8

**“The phrase ‘mobile usability’ is pretty much an oxymoron. It's neither easy nor pleasant to use the Web on mobile devices.”**

**“designing for mobile is hard”**

**“It’s not enough that a site will display, can the user get things done?”**

Jacob Nielsen, useit web site

# Small Screens

- We will focus on **consumer mobile devices** such as smartphones and tablets
- However, there is another large category of **embedded devices** to be considered as well
- Design guidelines apply equally to those devices with more constraints such as safety



GPS



Digital Camera



Airplane Control

# Designing for Mobile Devices

- Form factors

	Handhelds	Tablets	Min-tablets
Screen size	4 - 6"	9-10"	7-8"
Aspect ratio	16:9	4:3 and 16:9	4:3 and 16:9

- OS's support **full screen** apps instead of windows
  - Especially for handhelds
  - Tablets borrow more interface patterns from the desktop

*About Face*, Cooper, Reimann, Chapter 19

# Mobile Usability Problems (Opportunities)

- **Small screens** (inherent)
- **Awkward input (“fat finger syndrome”)**
- **Network performance and reliability**, especially for downloads (but getting better)
- **Mis-designed web sites** – designed for the desktop just makes it worse (but getting better)

# Class Activity (Cont)

**For your RIT Library or SIS website design:**

- **Reference the mobile app design guidelines described in this lecture ...**
- **Critique the responsive design of the existing website**
- **What are your design concepts for a mobile app?**
- **How would you change your web app design to be responsive to a small screen?**
- **Dropbox – “Class Activities>Website Design”**

# Guidelines for Mobile Design

- Design goal - **mitigate the constraints** but **exploit device features**
- **To preserve screen real estate ...**
  - Use **transparency**; e.g., widgets
  - **Vertical or horizontal screen navigation**
  - Use **images sparingly**
  - Minimize use of footers, breadcrumbs, progress indicators, menu bars
- **Screen layout:**
  - Important information at top
  - Most frequently used controls at bottom



# Guidelines for Mobile Design (cont)

- **Limit navigational hierarchy**, especially global to contextual transition, to avoid losing the user
- Apply **Fitt's Law**: large objects for navigation (touch) versus hypertext
  - Tradeoff?
- Apply screen **layout design patterns**; E.g.....
  - Carousels
  - Stacks
  - Lists
  - Grids
  - Cards
  - Tab bars
  - Drawers

# Guidelines for Mobile Design (cont)

- **Rapid serial presentation of text**, important information first (**progressive disclosure**);

however...

- **Short text lines slows down reading speed** - disrupt the normal pattern of eye movements
- **Minimize** extended **scrolling or paging**
- **Optimize reading** - lower screen resolution degrades information retrieval and interpretation
  - **14pt fonts**
  - **Organize text** with headings

# Guidelines for Mobile Design (cont)

- Consider the **physical feel** – ergonomics, UX
  - The **use** of the (one) **hand** – fingers, particularly for thumb convenience
  - E.g., screen layout to **accommodate thumb span**
- **Finger tip area** guides standard tap target size (e.g., iPhone 44 pixels)

# Searching and Sorting

- Mobile apps are **better at browsing**, **complex data entry is not easy** or practical so ...
- **Minimize search** effort
  - Voice
  - Auto-complete, auto suggest
  - Recent/frequent searches
- **Sort** – provide a visible control to allow the user to specify and refine sorting criteria

*About Face*, Cooper, Reimann, Chapter 19

# References

- Lari Kärkkäinen and Jari Laarni, "Designing for Small Display Screens", NordiCHI, October 19-23, 2002
- uxmmatters.com: [Usability for Mobile Devices](#)
- Josh Clark, *Tapworthy – Designing Great iPhone Apps*, O'Reilly Media, 2010
- Alan Cooper, Robert Reimann, et al, "About Face", Wiley, 2014