

CS 194H: dt+UX² - User Experience Design Project
 Winter 2017
 Prof. James A. Landay
 Stanford University

dt+UX²: USER EXPERIENCE DESIGN PROJECT

Mobile Computing & Mobile UI Design

Prof. James A. Landay
 Computer Science Department
 Stanford University

Winter 2016

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* Some slides based on slides of Prof. Scott Klemmer, UCSD

Hall of Fame or Hall of Shame?

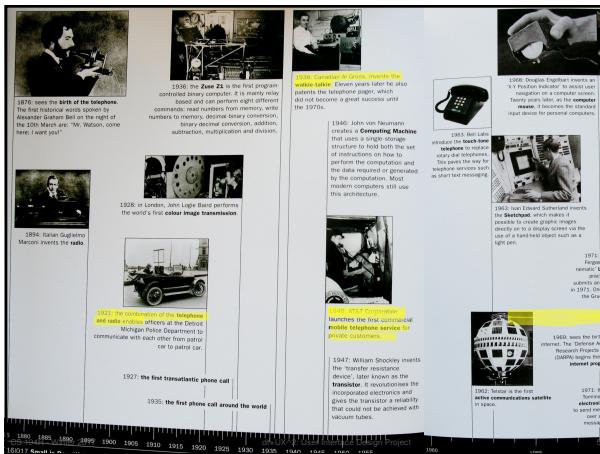
- Weight Watchers app

Hall of Shame!

- Weight Watchers app
- What app am I in?
- Icon mappings?
- Menu non-standard
- No overview+detail
- How do I do "My Friends" w/o Log In?

Outline

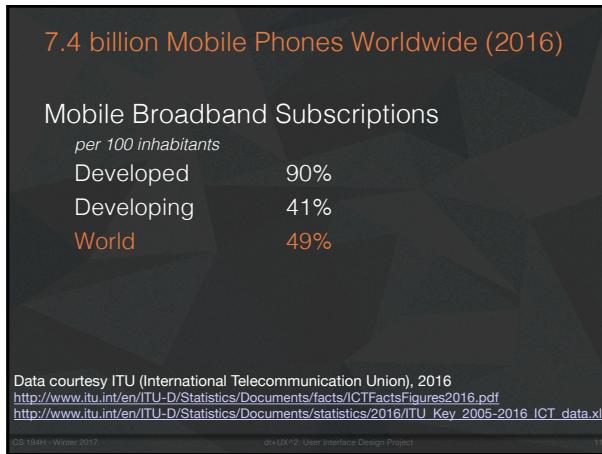
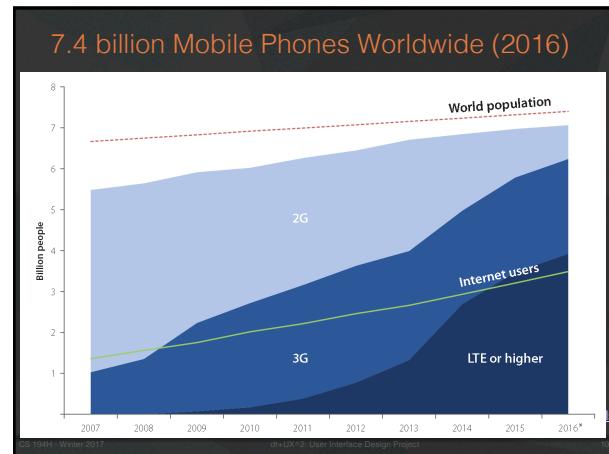
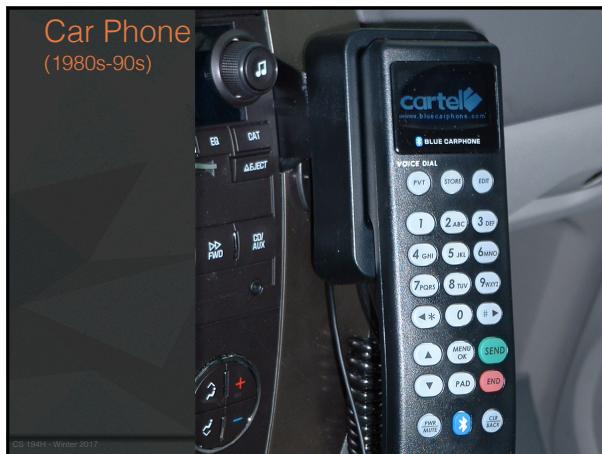
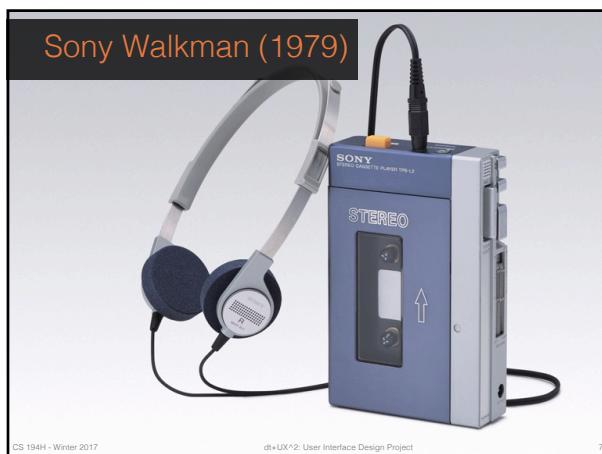
- History of Miniaturization & Mobility
- Palm Pilot
- iPhone
- Mobile UI Design



In 1954 Harold S. Osborne, the recently retired chief engineer for AT&T, made the following prediction (quoted in Conly 1954, p. 88):

Lets say that in the ultimate, whenever a baby is born anywhere in the world he [sic] is given at birth a number that will be his telephone number for life. As soon as he can talk, he is given a watchlike device with 10 little buttons on one side and a screen on the other [see Figure 8.1]. Thus equipped, at any time when he wishes to talk with anyone in the world, he will pull out the device and punch on the keys the number of his friend. Then, turning the device over, he will hear the voice of his friend and see his face on the screen, in color and in three dimensions. If he does not see him and hear him, he will know that the friend is dead.

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Mobile Design Evolving Rapidly!



Apple Watch (2015)

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There was the Newton ... (1993)



Apple Newton MessagePad

The Newton OS GUI

Newton screen displaying Checklist, some bullet points checked and/or "collapsed"

Newton screen displaying a Note with text, "ink text", a sketch, & vectorized shapes

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The Newton Had Problems...

Design Issues

- Physical size
 - too big
- Connectivity
 - not much
- Recognition
 - relied on it too much, didn't work well enough



"Hey, Take a memo on your Newton"
 "Beat Up Martin"
 "Paul, we need you."
 "Lisa vs. Mania"
 "Baahh!"

The Original Apple Newton's handwriting recognition was made light of in The Simpsons episode [Lisa on Ice](#)

Source: The Simpsons, Wikipedia

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The Palm Pilot Improved...

- Design Wins
- Physical size: fits in the front pocket
- Connectivity: easy sync
- Recognition: simple graffiti single stroke



Jeff Hawkins, Palm

Rob Haitani, Palm OS [Designs] what should be most prominent based on frequency of use, and makes most often used interactions accessible in a single step.

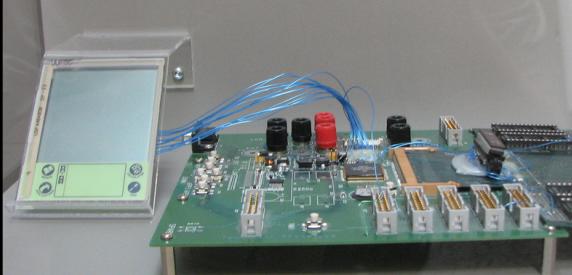
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Palm Pilot Prototypes



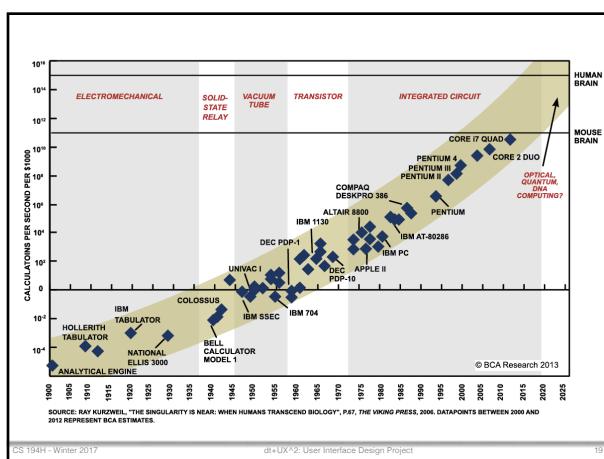
<http://www.computerhistory.org/collections/accession/102746282>

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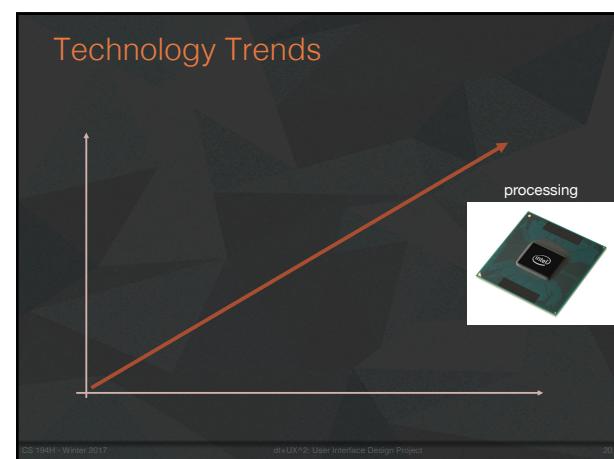


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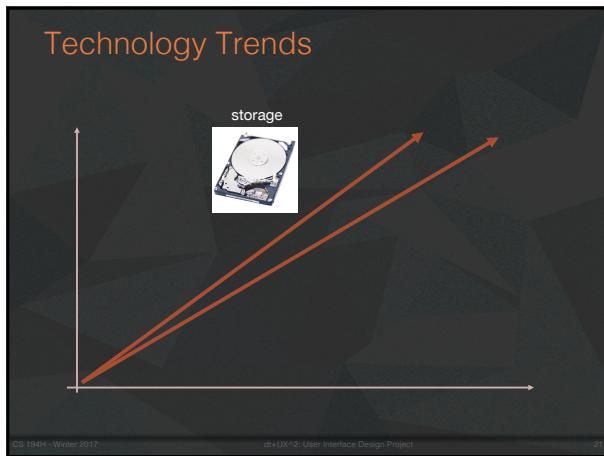
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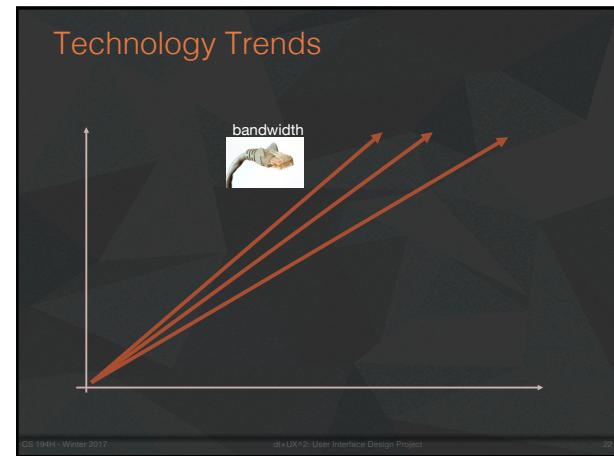
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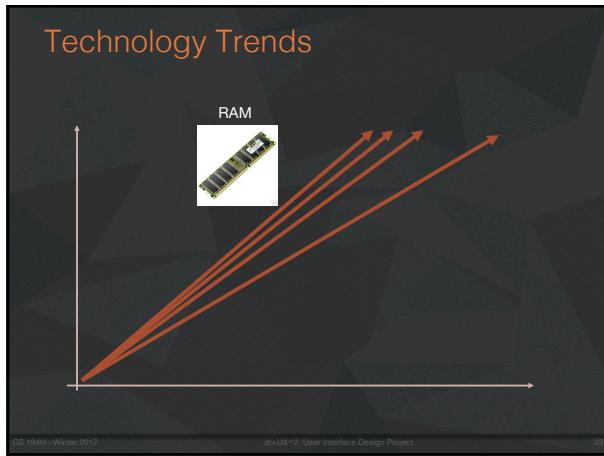
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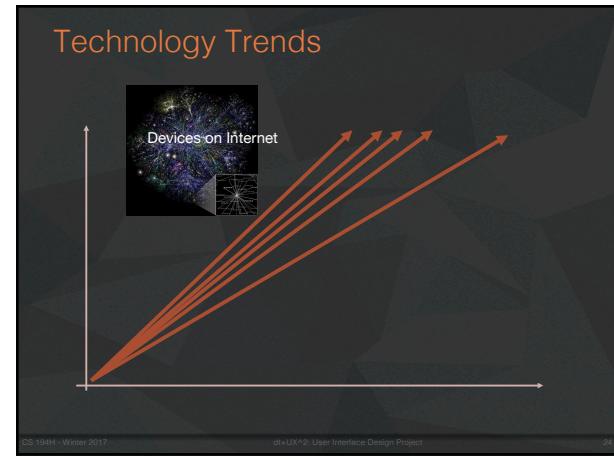
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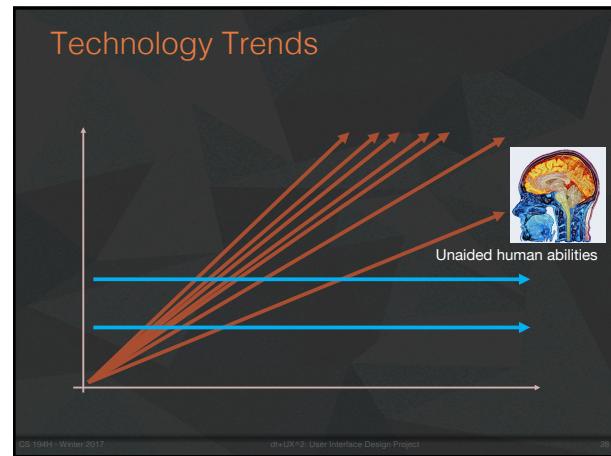
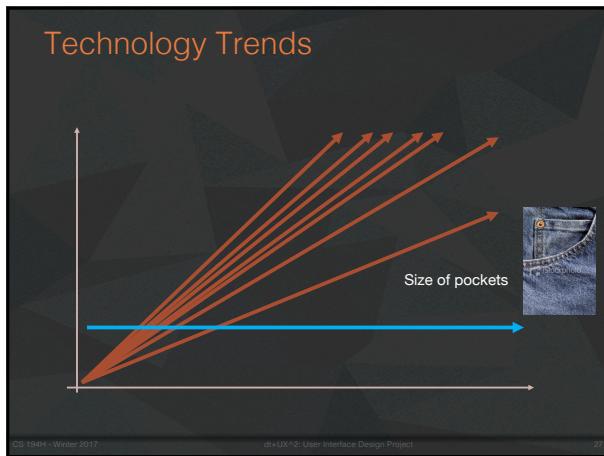
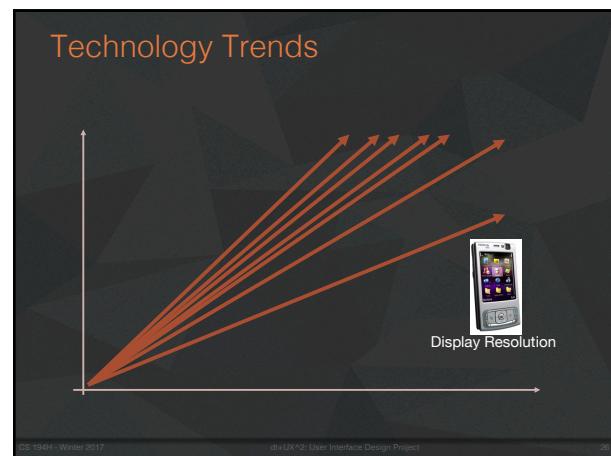
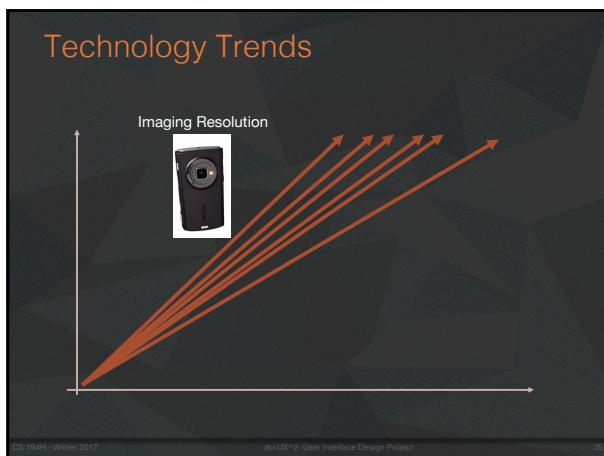
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- ### Why Mobile First?
- Market size & changing demographics!
 - many people do not have internet access beyond their mobile phone
 - Constraints force focus on most important features/tasks of customers
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What Makes Mobile Design Exciting?

Many Design Choices

- Think different from GUI/Web
- Swiss army vs. dedicated
- Pen/speech/touch/gesture/vision modalities
- Integrate with other real-world tasks
- Social apps

Always in your pocket* or w/ you!

*often not true for women

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What Makes Mobile Design Difficult?

Design constraints

- Limited attention/Interactions bursty
 - sometimes not true (people increasingly use phones stationary sometimes for long times)
- Screen size small (**size** not resolution)
- Form factor / input devices
- Limited network connectivity
- Speech / pen / multimodal

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Limited Attention & Input Interaction

- Minimize keystrokes
- Provide overview + detail
- Understandable interface at a glance
- Design with tasks
- Minimum set of functions

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Mobile Design Constraints ...

Design constraints

- limited attention/interactions bursty (sometimes untrue)
- form factor/screen size small (independent of resolution)
- natural (ambiguous) input modalities



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Leverage Context

Mobile usage context

- mobile device with user & on
- use gives clues to context...
 - apps give cues (e.g., calendar or job schedule)
 - location gives cues
 - activity inference (e.g., adapt to walking)

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Design for Limited Attention

- Minimize keystrokes
- Understandable at a glance
 - overview + detail
- Task-oriented w/ minimum set of functions

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Initial Impressions Matter

- If people don't "get it", they won't download or they'll quit after quick look
 - need to have clear "value proposition" in both app store title, blurb, & app design

Instagram
By Burbn, Inc.
Open iTunes to buy and download apps.

Description
★★★★★ Instagram
15 million users love Instagram! It's a free, fun, and simple way to make and share gorgeous photos on your iPhone.
Pick from one of several gorgeous filtered effects or tilt-shift blur to breathe a new life into your mobile photos. Transform everyday moments into works of art you'll want to share with friends and family.

Share your photos in a simple photo stream with friends to see – and follow your friends' photos with the click of a single button. Every day you open up Instagram, you'll see new photos from your closest friends, and creative people from around the world.

Initial Impressions Matter

- If people don't "get it", they won't download or they'll quit after quick look
 - need to have clear "value proposition" in both app store title, blurb, & app design
- Give "getting started info", annotate the UI, or provide an *optional* demo

Google currents
Free magazines for your tablet and smartphone—personalized just for you!

Google currents
TAP HERE TO BEGIN

taptivate postman

Personalize User Experience

- Name
 - use it if known & integral
- Settings
 - common ones in app
 - not a dumping ground for extra features
- Favorites/Bookmarks
 - save item for viewing later (sync across platforms)
- Behavior
 - access based on app history (e.g., recent searches)

foursquare
10:18 Wednesday, October 12

Recaprice Check out the Pony Factory? It's ready and on your To-Do List!
slide to view

Radar
Close
Tale Modern
33 Barside
0.3 miles away

Bingo by the Tale Modern? 3 of your friends checked in recently!

188 PEOPLE HERE | FRIENDS

Let the Content Shine

- Immersive applications focus on content
 - "*The idea is that the content is the interface, the information is the interface — not computer administrative debris.*"
— Edward Tufte
- Access controls via tap screen, tap button, & scroll up

Kindle reader

Make Selections Fast & Error Free

- Provide smart defaults
- Suggest matches during text entry
- Store recent activity / selections

iPhone Maps
Start: Current Location
End: Ste. King, Washington 98113
Route

Google search
cse 417 uw
cse 451
cse 403
cse 455
cse 421 uw

Provide Appropriate Feedback

- Animations
 - Downloading, moving, end of content...
- Transitions
 - when users move between related screens
 - e.g., flip (settings/views), slide left/right (lists), slide up/down (secondary panel), fade in/out, curl (e.g., maps)
- Text alerts
 - If visual not enough (inline or overlay-modal)
- Sound
 - use sparingly as can be annoying

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"Good Artists Borrow, Great Artists Steal"
– Pablo Picasso(?)

- What apps do you like?
- Why?
- Borrow good features/styles