

# CHAPTER 3:

## Guidelines, Principles, and Theories

### *Designing the User Interface: Strategies for Effective Human-Computer Interaction*

*Sixth Edition*

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Addison Wesley  
is an imprint of



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# Introduction to Guidelines, Principles, and Theories

- **Guidelines:** Low-level focused advice about good practices and cautions against dangers.
- **Principles:** Mid-level strategies or rules to analyze and compare design alternatives.
- **Theories:** High-level widely applicable frameworks to draw on during design and evaluation, as well as to support communication and teaching.
  - Theories can also be predictive, such as those for pointing times by individuals or posting rates for community discussions.

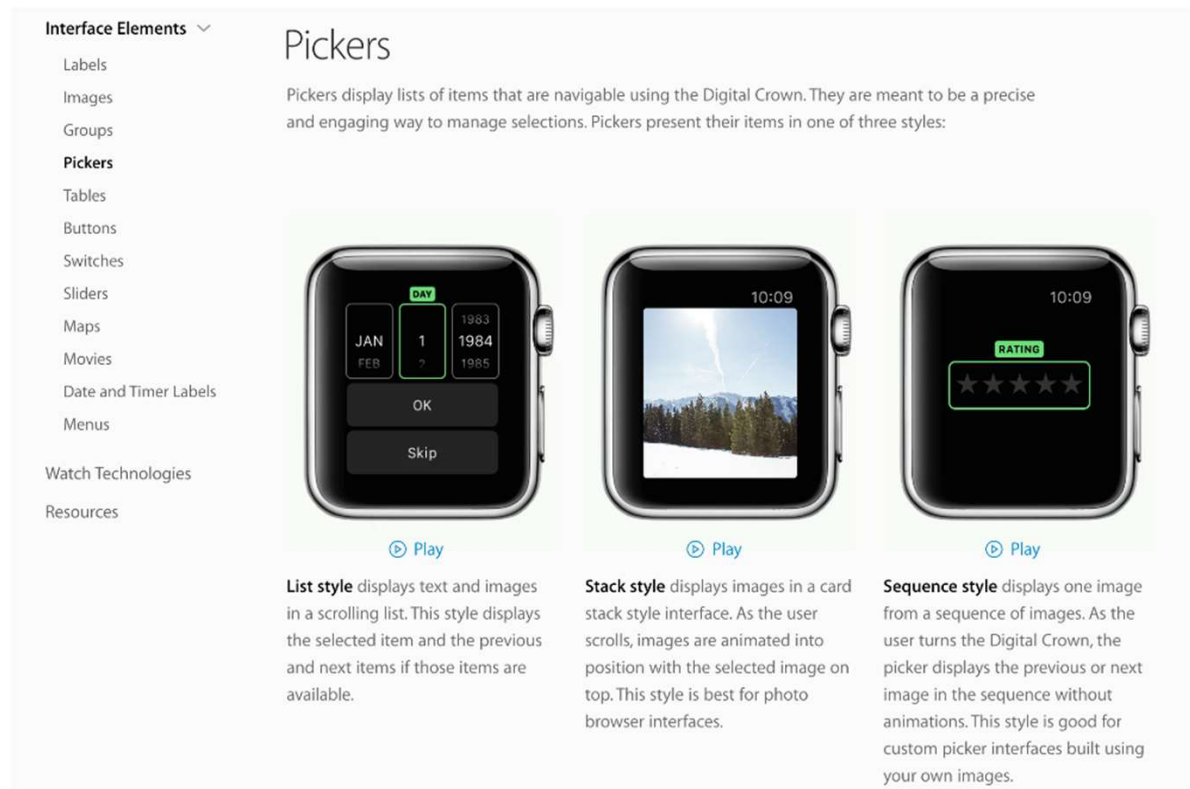
# Guidelines

- Shared language to promote consistency among multiple designers in terminology usage, appearance, and action sequences
- Based on best practices
- Critics
  - Too specific, incomplete, hard to apply, and sometimes wrong
- Proponents
  - Encapsulate experience

# Guidelines (continued)

- The early Apple and Microsoft guidelines, which were influential for desktop-interface designers, have been followed by dozens of guidelines documents for the Web and mobile devices

Example of Apple guidelines for designing menus for the iWatch:



# Navigating the interface

- Sample of the National Cancer Institute's guidelines (see [www.usability.gov](http://www.usability.gov)):
  - Standardize task sequences
  - Ensure that embedded links are descriptive
  - Use unique and descriptive headings
  - Use check boxes for binary choices
  - Develop pages that will print properly
  - Use thumbnail images to preview larger images

# Accessibility guidelines

- Sample Guidelines:
  - Provide a text equivalent for every non-text element
  - For any time-based multimedia presentation, synchronize equivalent alternatives
  - Information conveyed with color should also be conveyed without it
  - Title each frame to facilitate identification and navigation
- References:
  - U.S. Access Board
    - <http://www.access-board.gov/508.htm>
  - World Wide Web Consortium (W3C)
    - <http://www.w3.org/TR/WCAG20/>

# Organizing the display

- Smith and Mosier (1986) offer five high-level goals
  - Consistency of data display
  - Efficient information assimilation by the user
  - Minimal memory load on the user
  - Compatibility of data display with data entry
  - Flexibility for user control of data display

# Mobile HCI Design

## Constraints/Guidelines

### Design constraints

- Smaller screen size
- Touch data entry can cause errors
- Battery-power limitations
- Data download speed or access

### Design Guidelines

- Spatial consistency
- Show high-level information
- Minimize number of steps (taps)
- Minimize data entry
- Focus on goals and optimize tasks
- Emerging standards from manufacturers



# Getting the user's attention

- Intensity
- Marking
- Size
- Choice of fonts
- Inverse video
- Blinking
- Color
- Audio

# Facilitate data entry

- Similar sequences of actions speed learning
- Fewer input actions mean greater operator productivity, and usually less error
- Users should not be required to remember lengthy lists of codes
- The format of data-entry information should be linked closely to the format of displayed information, such as dashes in telephone numbers
- Experienced users prefer to enter information in a sequence that they can control, such as selecting the color first or size first, when clothes shopping

# Facilitate data entry (concluded)

- The guidelines website for Cerner designers and developers
- This particular guideline describes the three sizes of icons or glyph that should be used in all electronic health record products (each consisting of hundreds of screens) (<https://design.cerner.com/>)

