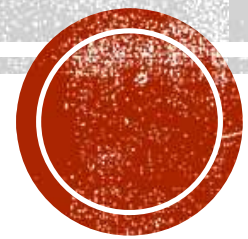
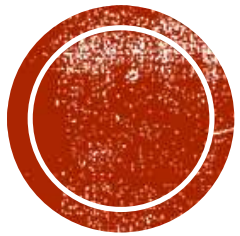
WEB AND MOBILE UI





DESIGNING WEB INTERFACES

WEB DESIGN PRINCIPLES

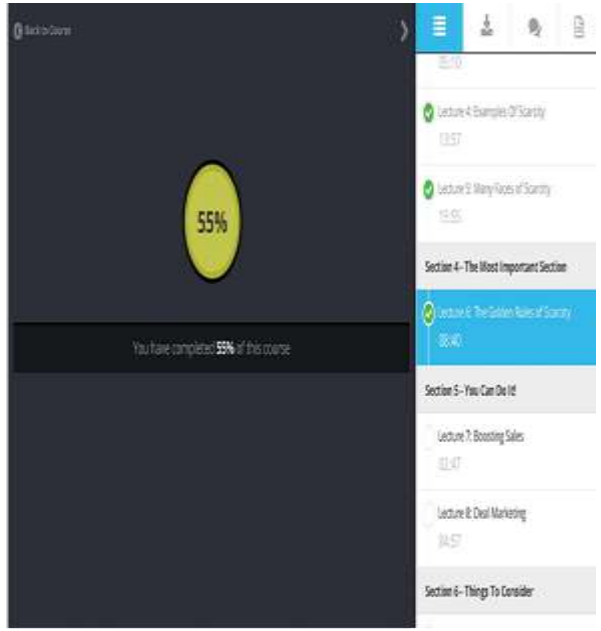
- **Interface is not simply buttons, menus, colors and fonts. It is a set of tools that help users solve their problems.**
  - Know your users
  - Use patterns that look familiar
  - Be consistent
  - Create visual hierarchy
  - Provide feedback and protect user from accidental actions
  - Don’t show all controls at once
  - Give more control to experienced users
  - Never show a blank page to your users
  - Don’t overcomplicate
  - Test

KNOW YOUR USERS

- The more details you know about them, the better.
- Understanding who your users are, why and how they act is vital for creating working UI website design.
- Make decisions based on who your users are and implement them in your desktop

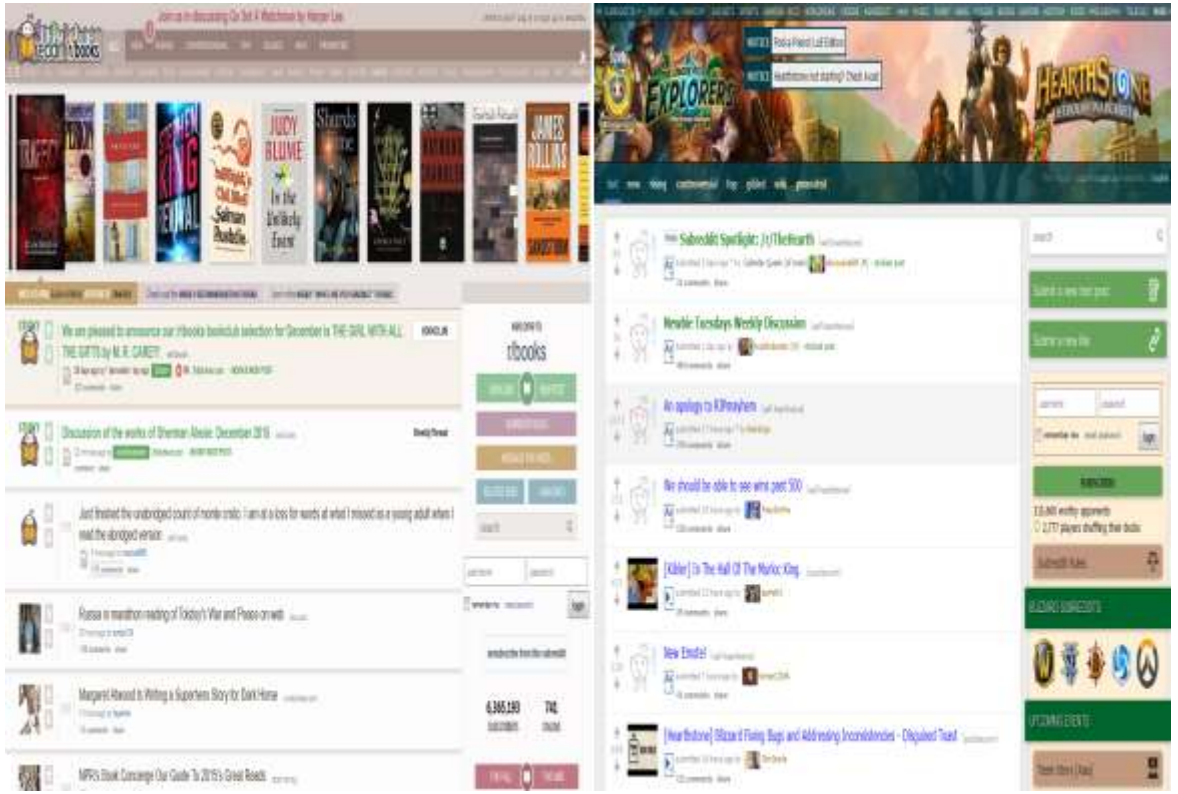
USE PATTERNS THAT LOOK FAMILIAR

- It is easy to forget but most of your users already spend a fair amount of time in other interfaces, from Facebook and Gmail to Flickr.
- Check UIs of websites popular among your users and figure out what you can learn from them.
- By using already known patterns you will help users easily understand how a new service works and simultaneously earn their trust.



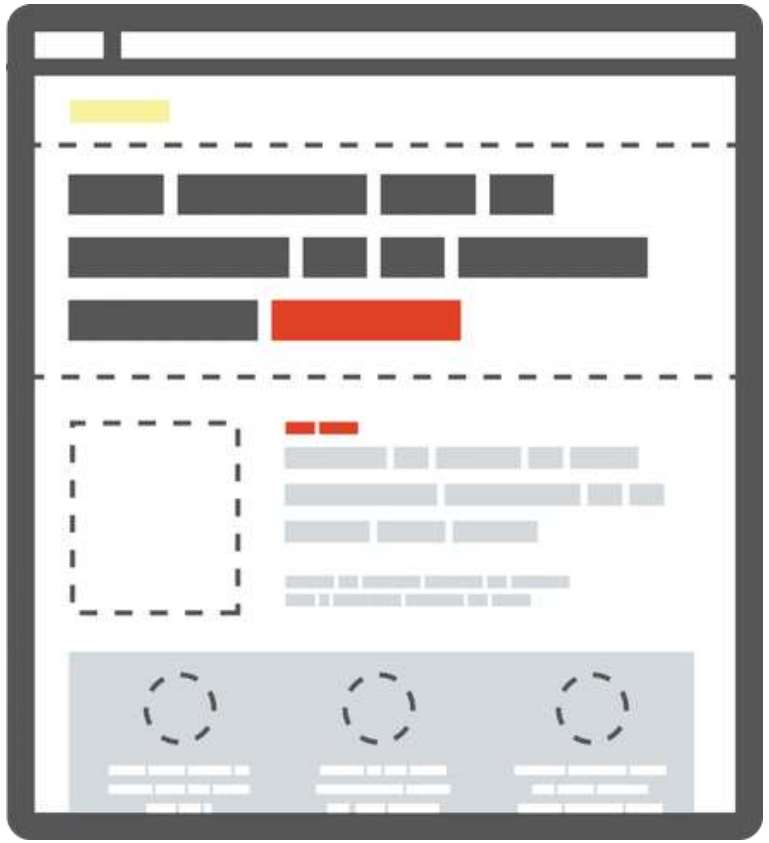
BE CONSISTENT

- After doing something in a certain way user expects similar actions to be done identically.
- Just imagine if the interface for opening a new file was different for all Google Docs products! No user would be happy about it.
- Different sections of the website can have their own features and even use another color scheme but user still understands that it's the same website:



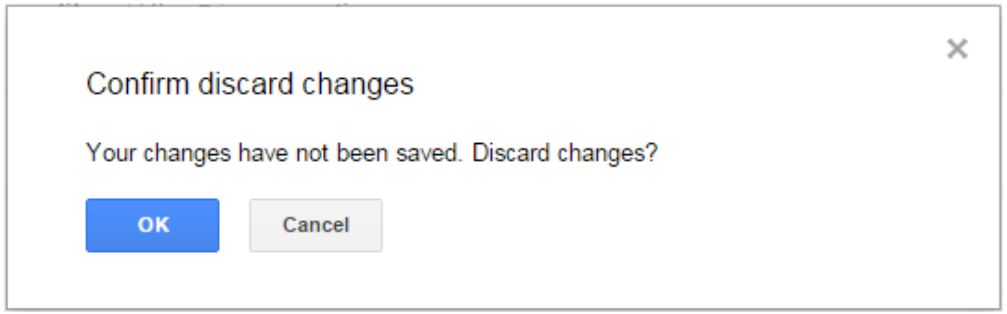
CREATE VISUAL HIERARCHY

- User has to understand what parts of the page are the most important.
- Size, color, location and negative space around every element should communicate its role (primary or secondary) to the user.
- Correctly build hierarchy allows to present complex concepts in an easy to understand way.



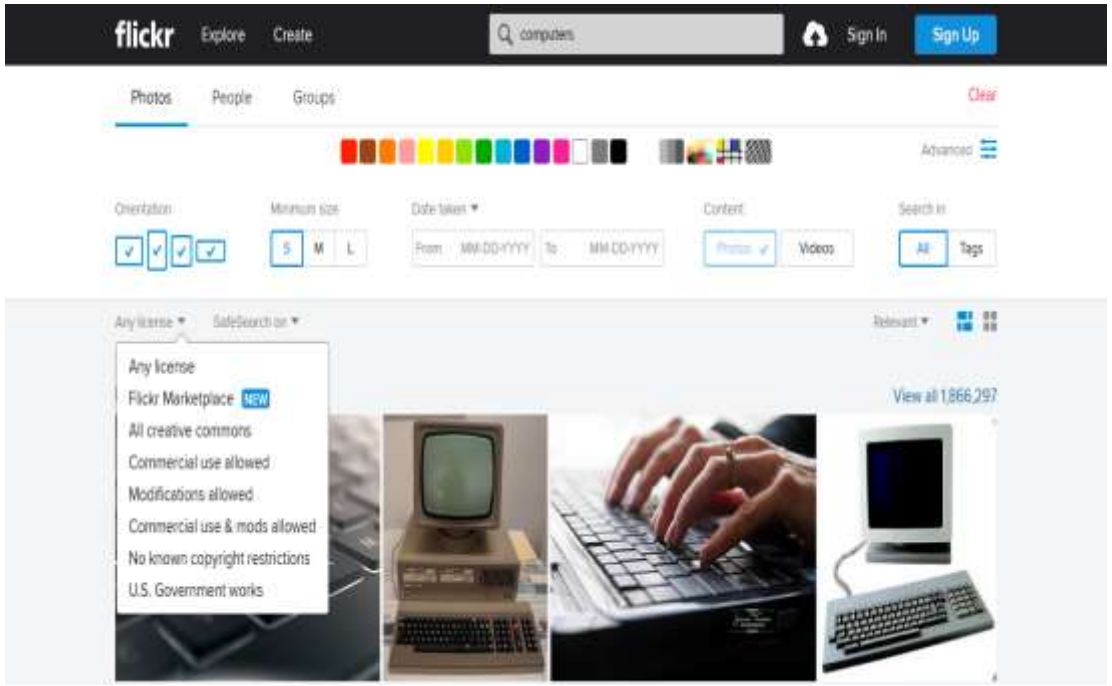
PROVIDE FEEDBACK AND PROTECT USER FROM ACCIDENTAL ACTIONS

- Tell user what's going on.
- Has the letter been successfully sent? Was the download completed? Is this file type supported or not? Make sure you can't delete everything with just one button and no confirmation.
- Users want to know that they aren't left alone with their problems.
- Make them feel comfortable.



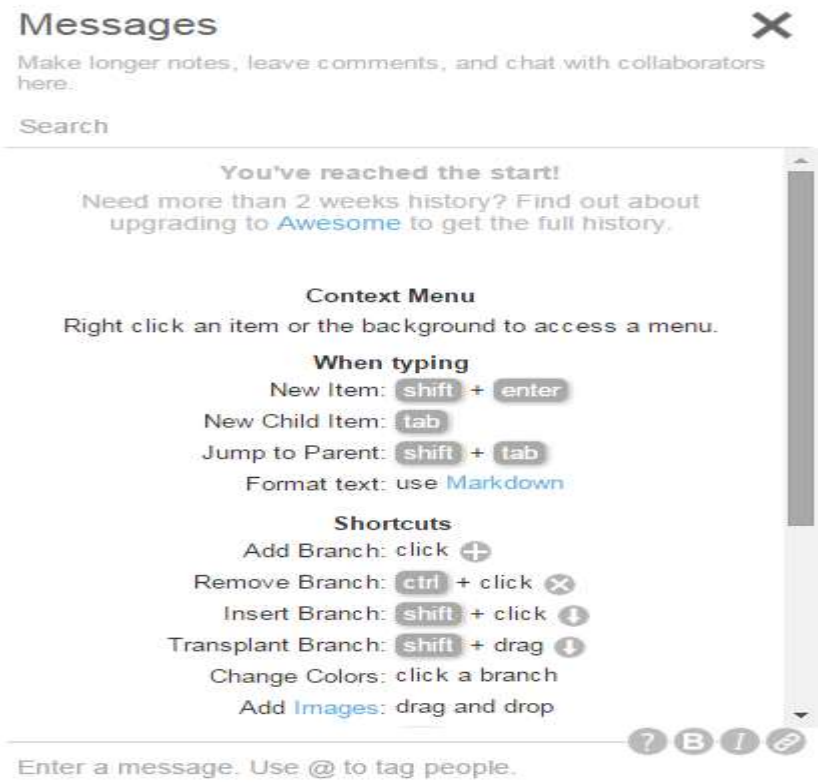
DON'T SHOW ALL CONTROLS AT ONCE

- They can scare away less experienced users.
- A great idea is to put all advanced functions ordinary users won't need on Advanced tab or hide them in a special menu.



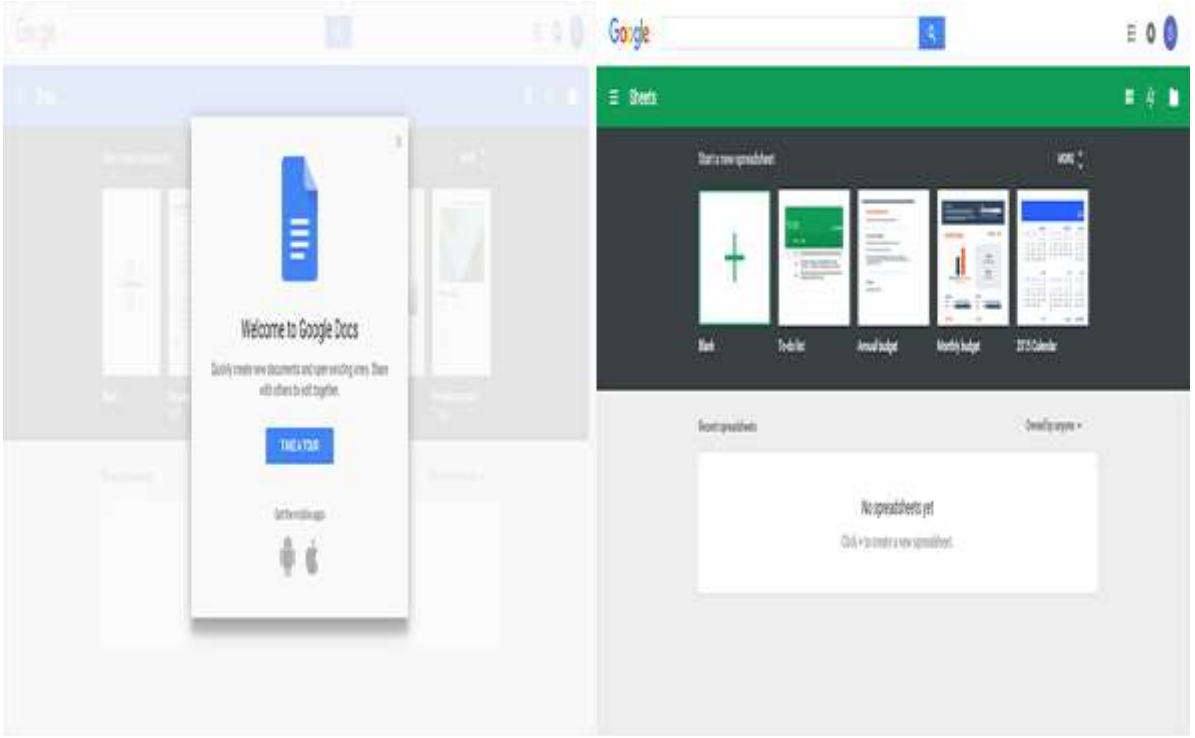
GIVE MORE CONTROL TO EXPERIENCED USERS

- Those who are extremely experienced with your product would love to use shortcuts for routine operations.
- Many popular services provide this function to their users, Google Docs and Github included.



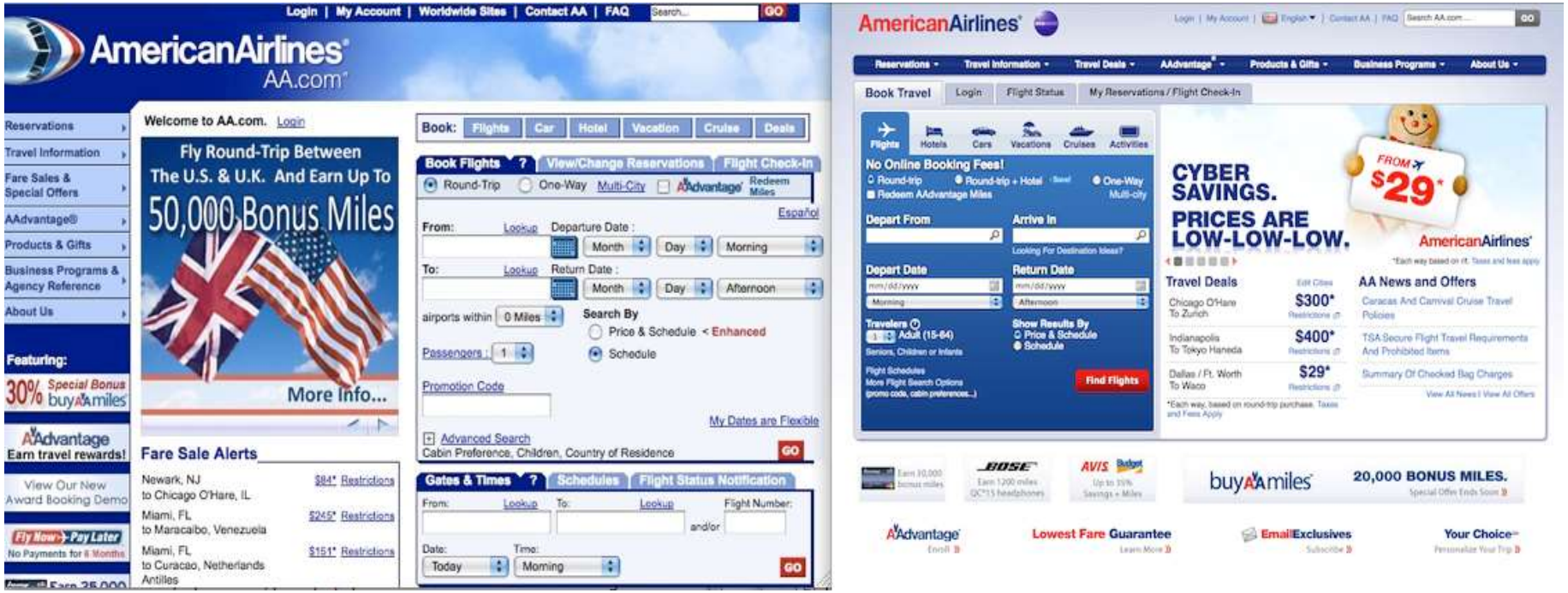
NEVER SHOW A BLANK PAGE TO YOUR USERS

When users see the new tool for the first time, show them how to use it, what can be achieved with it and demonstrate some example projects. Be ready to inspire them to work with your product.



DON'T OVERCOMPLICATE

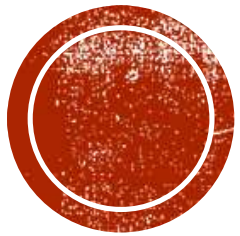
- Before adding yet another UI element ask yourself, whether it simplifies the life of the user or simply eats away the time.
- Here's how American Airlines site looks after redesign (on the right):



TEST

- The earlier you start and the more tests you perform, the better will be the quality of the end product.

- Don’t rely on your own instincts only — test your interface on people who haven’t participated in its development.



MOBILE USER INTERFACE

MOBILE USER CHARACTERISTICS

- Interruptible and Easily Distracted
- Available
- Sociable
- Contextual
- Identifiable

A DEVICE TAXONOMY

The devices will fall into four classes:

- General-purpose **work**: multi-purpose devices
- General-purpose **entertainment**: multi-purpose devices with an entertainment
- General-purpose **communications** and control
- **Targeted**: devices intended for one or a very small number of tasks.

GENERAL-PURPOSE DEVICES

- Personal computer – laptops or tablet computers
- Tablet form, with a keyboard available.
  - It might have multiple screens, detachable from the device.
  - It might readily connect with various environmental displays, ranging from projections and wall displays to private desk displays.
- Speech recognition is useful for predictable text entry and commands.
- It will be best used in word processing situations and limited command set situations

ENTERTAINMENT

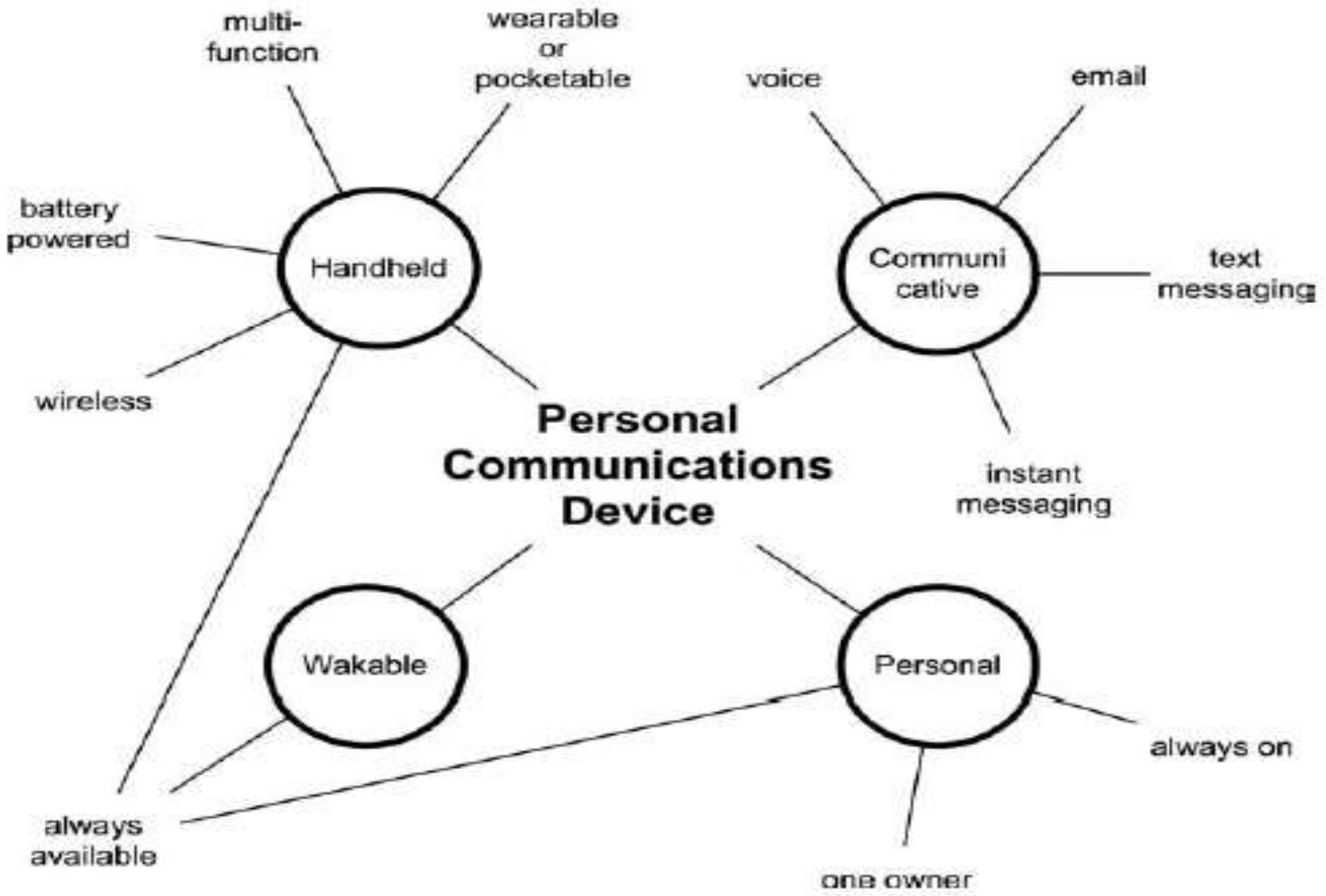
- One device might be media based, with video and music prominently displayed.
- Another device might be game-based, with music and video as a secondary feature.
- A third device might be based on the written word, allowing the user to work pencil puzzles, read e-books, and browse the Internet.

COMMUNICATIONS AND CONTROL: THE PCD

The mobile communications device has a special role.

- Personal. The device generally belongs to one person, who will carry it
- Communicative. The device sends and receives messages.
- Handheld. The device can readily be put in a pocket
- Wakable The device can be awakened at a single touch by either the user or the network.

COMMUNICATIONS AND CONTROL: THE PCD



TARGETED DEVICES: THE INFORMATION APPLIANCE

- These devices include cameras, watches, televisions, radios, music players, credit card machines, automatic teller machines, and bar code scanners.
- Data transfer is required
- Add-on features
- Fewer size issues
- Input mechanisms can be limited

ANATOMY OF THE PERSONAL COMMUNICATION DEVICE (PCD)

- **The Carry Principle**

  A PCD is always with the user.

- **Input Mechanism**
  - focus (cursor) control,
  - commands, text or character entry,
  - environmental data entry,
  - other-computer data entry or access.

FOCUS (CURSOR) CONTROL

- Stylus

  - It is similar to a mouse, but has no cursor and does not have the ability to access multiple commands without complex actions like press-and-hold or the very difficult double-tap.

- Scroll-and-select

  - A scroll-and-select mechanism has up and down and usually left and right controls and a select button.

COMMANDS

- **Nokia-style Options/Back softkeys.** Any contextual controls are in a menu launched by the Options button. Back becomes Cancel in certain contexts. These phones do not have separate back buttons.

- **Simple soft keys,** with two or three virtual buttons and the corresponding number of hardware buttons. The virtual buttons have labels indicating what actions the hardware button will initiate. Some phones have separate select buttons, others do not.

- **Samsung-style OK/Menu soft keys.** Samsung has used its OK and Menu hardware buttons to access soft keys. The OK button is also the device's select button, so this is essentially a one-soft key design.

TEXT AND CHARACTER ENTRY

- standard 12-button keypad
- A one-handed text entry mechanism will not be a keyboard-based device
- Normally, triple tap is used to access letters on each key: a ‘r’ requires three presses of the 7 button.
- Two-handed text input solutions fall into the categories of thumb keyboards, handwriting recognition, and virtual keyboards
- Thumb keyboards are found on the BlackBerry and Palm Treo devices
- Virtual keyboards operated by stylus vary widely. Some are merely

  QWERTY layouts
- Word prediction or character prediction can be used to assist the user

ENVIRONMENTAL DATA

- The camera is the most prevalent such input mechanism

Other Computers

- When the phone rings, the iPod would pause the music, switch to phone headset mode, and allow the user to answer the call without changing earpieces.
- when live television from the home is viewed on a mobile device

OUTPUT MECHANISMS

- OLEDs
  - The OLED pixels emit light directly,
  - visibility in sunlight,
  - reduced power consumption,
  - and no polarization issues.
  - broader range of color choices
  - Shorter life
- Electronic paper displays
  - set of balls as pixels
  - require low power to change,
  - no power to maintain the display
  - good readability as newspaper

OTHER OUTPUT DEVICES

- Speakers
- Vibrators

TECHNOLOGIES

- Browsers
- Messaging
  - **SMS**
  - **MMS**
  - Voice SMS
- Application Platforms
  - Java ME
- Media Players
  - Video distribution

CONNECTION CHARACTERISTICS

- Power consumption concerns
- Inconsistent coverage
- Speeds slower than prevalent land line speeds
- Limited coverage area and hence potential roaming charges
- Latency in connection

STANDBY SCREEN

- Application platforms such as uiOne allow for significant customization of the standby screen.

- Can download themes

MOBILE UI DESIGN PRINCIPLES

1. Mobile mindset
   - Be focused:
   - Be unique
   - Be charming
   - Be considerate

2. Mobile contexts
   - Bored: Facebook, Twitter
   - Busy: email, calendar, banking
   - Lost: Maps

MOBILE UI DESIGN PRINCIPLES

3. Global Guidelines
   - Responsiveness
   - Polish
   - Thumbs
   - Content
   - Controls
   - Scrolling:

4. Navigation Models
   - Tab bar: Three to six distinct content areas (eg Twitter for iPhone)
   - Drill down: List and detail content hierarchy (eg Settings app on iPhone)

MOBILE UI DESIGN PRINCIPLES

5. **User input**
   - keyboard variations
   - Auto-correct and auto complete can be used
   - support landscape orientation
6. **Gestures**
   - Invisible : scrollable
   - Two hands : Zoom
7. **Orientation**

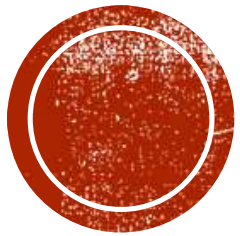
MOBILE UI DESIGN PRINCIPLES

8. Communications

- Provide feedback
- Modal alerts
- Confirmations

9. Launching

10. First impressions - icons



MOBILE USER INTERFACE DESIGN PATTERNS

UI patterns

Mobile UI design has different challenges than for large screen + mouse + keyboard:

Tiny screen No sidebars, long header menus, tree controls

Variable screen *width* Scrolling is easy ⇒ width matters the most.

Controls automatically resized when turning the mobile 90°

Touch screenMain interaction mode. Targets must be large enough (≥ 0.7 or 1 cm) and/or well separated

Some challenges of mobile design:

It's hard to type text Make typing unnecessary or very limited. Auto complete fields and pre-fill with good default values.

Challenging environments People use their phones in all kinds of places ⇒ large ambient lighting and noise differences. Tiny text difficult to read and tap in motion.

Limited attention Users look at the interface while doing other things : walking, eating, talking to other people, *driving*. Design for distracted users: easy, quick interaction, self-explanatory UI.

UI PATTERNS

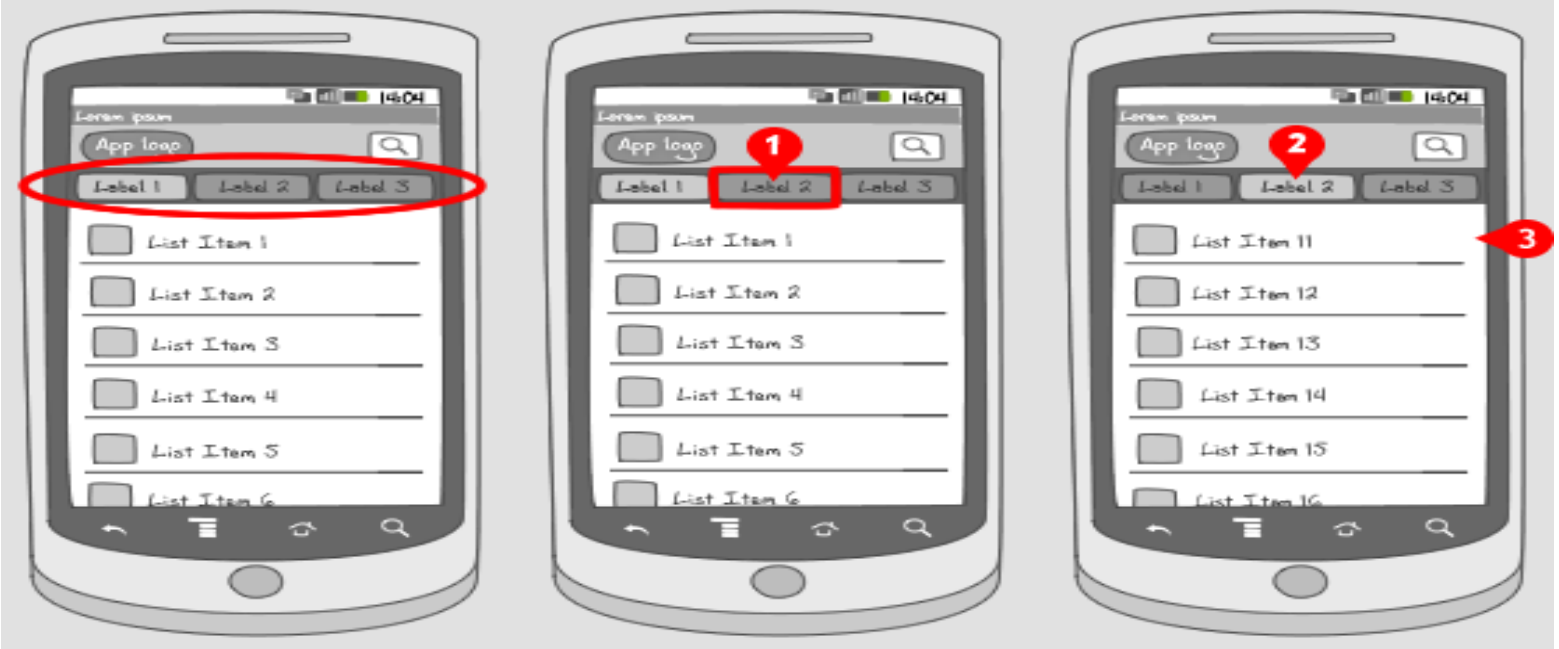
A user interface is well-designed when the program behaves exactly how the user thinks it will."

"The applications that are easy to use are designed to be familiar"

parts are recognizable enough so that people can apply their previous knowledge to a novel interface.

UI PATTERNS

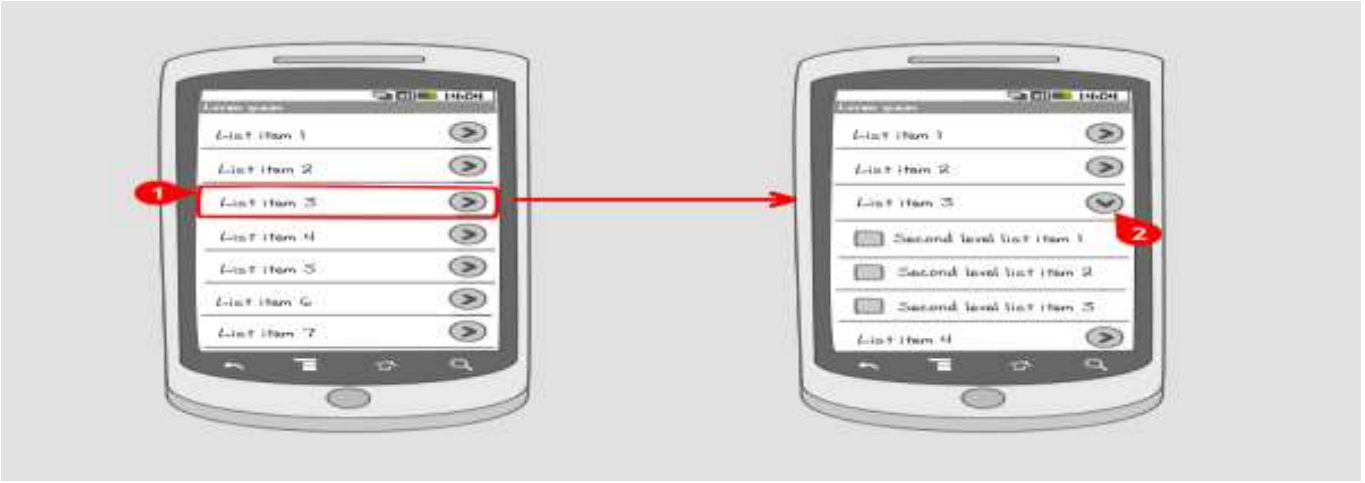
- Q: How to show many elements at the same level of importance and search them quickly ?
  - Segmented control: place 2-5 buttons or tabs horizontally aligned, that act as filters.



UI PATTERNS

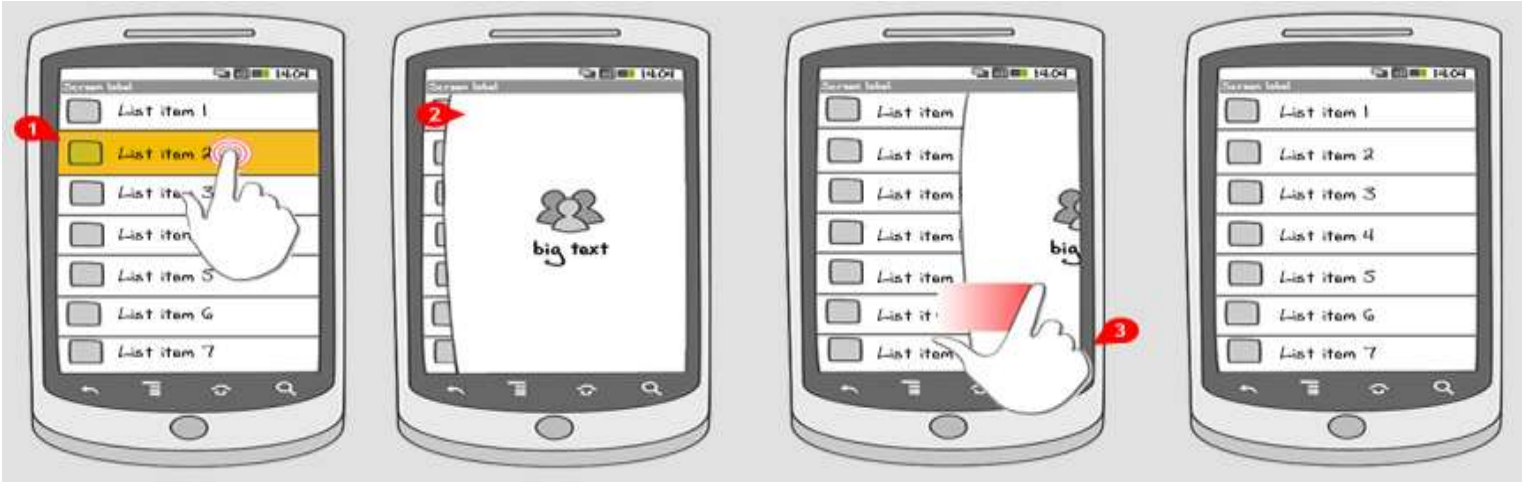
Q: How to show a vast amount of hierarchical data ?

Expandable list: Items are organized in a two-level list. A first level item can be expanded to show its children. An indicator shows the state, collapsed or expanded.



UI PATTERNS

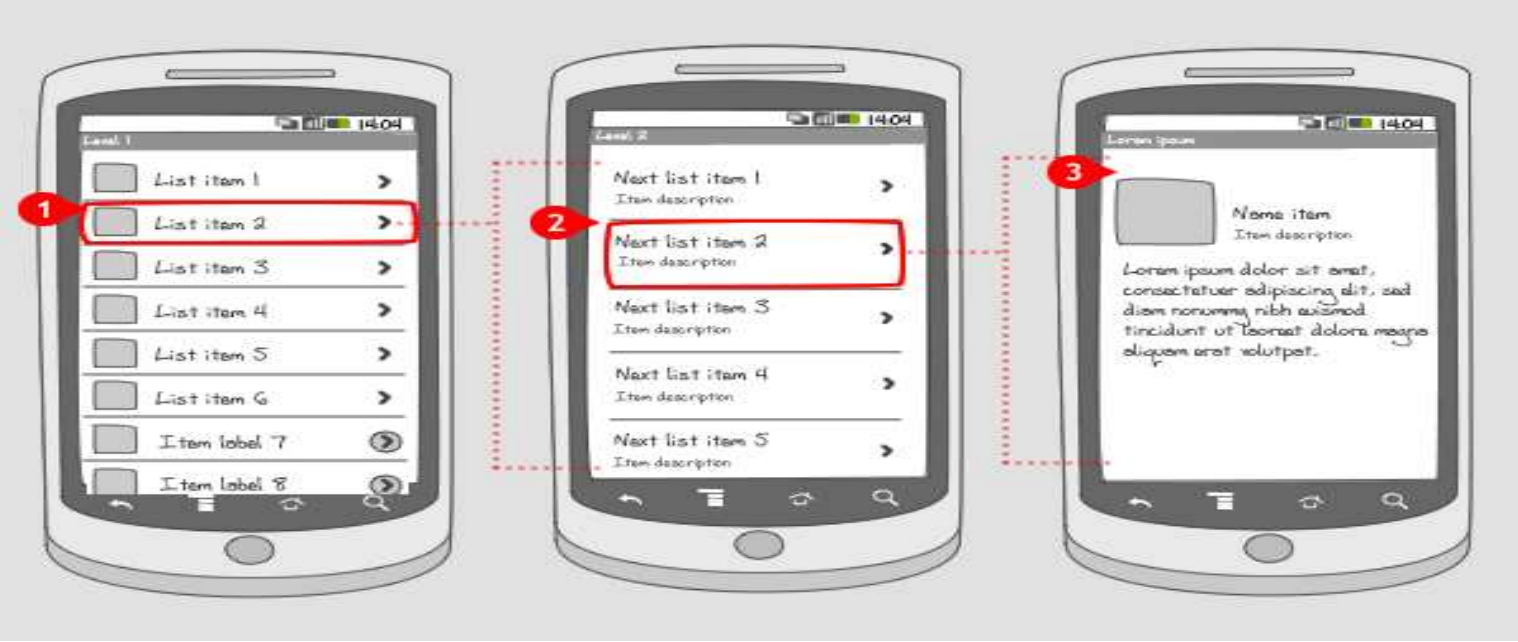
- Q: How to show a vast amount of hierarchical data ?
- A:Sliding layer: after a certain trigger (button click, item selection, etc), a sticky container will slide from any side of the screen. Shall be dismissed or closed by swiping it away or tapping.



UI PATTERNS

Q: How to show a vast amount of hierarchical data ?

A:Drill down: tapping on an item in the list opens its children in next level



NAVIGATION PATTERNS

- Navigation : how to move across the application screens, functionality, content . . .
- Poor navigation means "can't go back", "can't find things", "don't know how to do *X* ", "don't know where I am".
- Good navigation, like good design, is invisible. Applications with good navigation just feel intuitive and make it easy to accomplish any task.

Navigation in a shopping app,

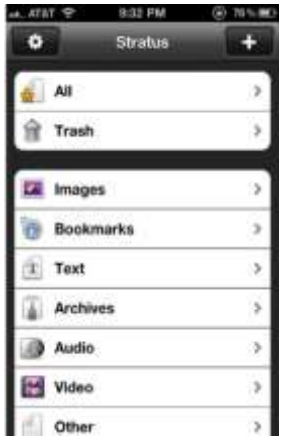
- Primary: presentation of the main application options. Primary navigation might be tabs like " Home," "Shop," "Cart," and "Profile."
- Secondary: presentation of additional choices derived from some/each primary navigation choice. When you tap "Shop," the Secondary navigation could be a menu showing categories like "Electronics," "Clothing," and "Books."

PRIMARY NAVIGATION

Landing page of menu options that act as a jumping off point into the application. Use a grid layout for items of equal importance

PRIMARY NAVIGATION

- List of items representing the main choices. Enhanced lists are simple list menus with additional features for searching, browsing or filtering.
- Work well for long titles or those that require sub text.



PRIMARY NAVIGATION

- Partition application functionality or views in different screens reachable with a single click. Horizontally scrolling tabs. Bottom tabs are more thumb friendly.

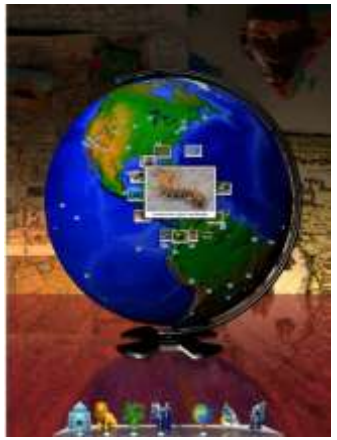
PRIMARY NAVIGATION

- Landing page modeled to reflect the applications metaphor. Used primarily in games, but also in applications that help people catalog and categorize items, like notes, books. . .

PRIMARY NAVIGATION

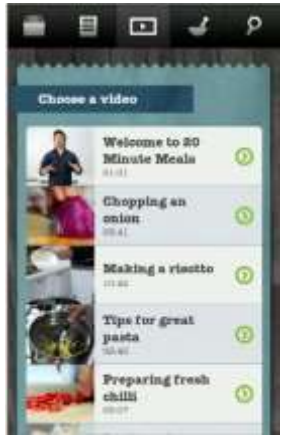
Beware of using a wrong metaphor:

- left: educational application for exploring facts from around the globe
- right: a globe for navigating news content? Stories are **not** surfaced from specific geographic locations. The globe is just a spinning sphere that is hard to read and harder to browse.



SECONDARY NAVIGATION

- Secondary Navigation
- Navigation within a page or module. Any of the primary Navigation patterns can be reused as secondary navigation patterns.

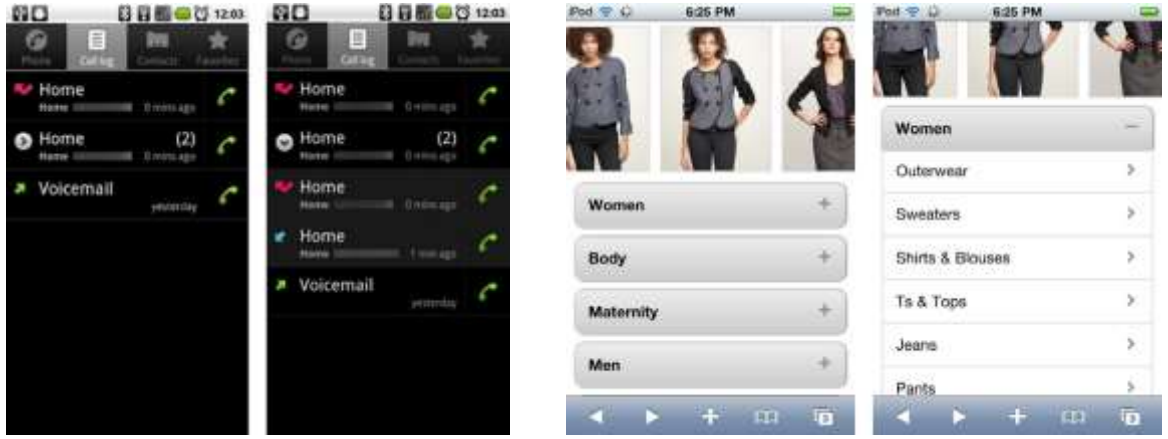


SECONDARY NAVIGATION

- Used to quickly navigate an *small* set of pages using the flick gesture. Add always a page indicator to displays how many pages are in the carousel. The two examples use the page carousel within a selected tab.

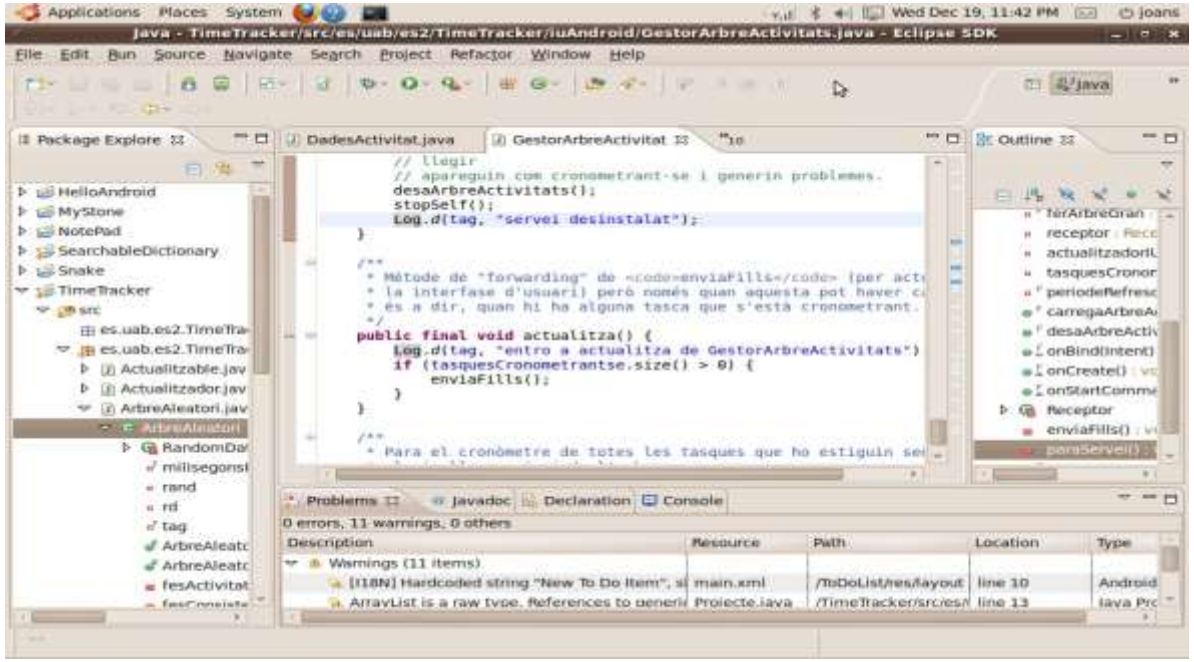
SECONDARY NAVIGATION

Allows a single screen drill down to reveal more information. Tapping the > icon expands/collapses the list to show the individual instances. No further expandable.



INVITATIONS

- Remember the first time you run Eclipse ? Tens of buttons, several panels, multiple menu and submenu options, five tabs . . . “I’ll never manage to use it!” But there was no choice.



INVITATIONS

- Helpful tips that are displayed the first time a user opens an application or arrives at a new place. They suggest actions and guide the user to the intended functionality.
- dialog
- tip
- tour
- transparency
- first time through

DIALOG

- A plain dialog with text instructions. Most common type of invitation probably because it is the easiest to program. It is also most likely to be dismissed and ignored. Keep instructions short

TIP

- Small globe with text. Can be implemented anywhere in the screen, making it more contextually relevant than a dialog. Keep the content short, and remove the tip once screen is touched.

TOUR

- Provides the ultimate invitation by offering a screen-by-screen, feature-by-feature exploration. Offered on the home screen.
- Highlights key features of the application. Keep it short and visually engaging.
- Problem with short term memory

TRANSPARENCY

- See through layer with an usage diagram over the actual screen. Not meant to compensate for poor screen designs. Remove the transparency once the screen is touched.

FIRST TIME THROUGH

- Unlike the other invitations, don't precede the screen they refer to but are built into the screen design. They remain in the interface until they are overwritten with content or the action is performed. Clearly differentiate the invitation from other content : with icon, color, text size different from regular content.

SORTING

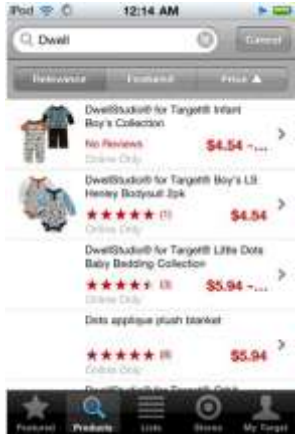
- Content like lists, search results etc. need to be sorted to be visually searched in a fast way. Choose a reasonable default sort and offer sorting according to other criteria.

- onscreen sort
- sort order selector
- sort form

SORTING CONTENT

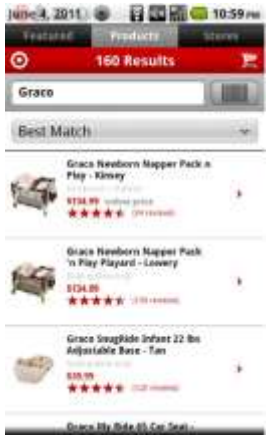
Onscreen sort

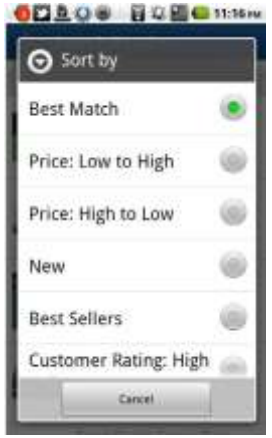
- A row with a few toggle buttons placed horizontally at the top or bottom, each corresponding to a sorting criterion. Clearly show which option is selected or “on”. Also, distinguish ascending from descending.



SORT ORDER SELECTOR

- When the number of sorting options is 5 or more, use some OS selection control like the spinner or the contextual menu in Android. The option titles can be longer ,more explicit, and more options can be displayed.





Sort form

- Some applications have fused the sort and filter functionality into one screen form. This is the most effort intensive sort pattern, requiring the user to 1) open the form, 2) select two options, 3) tap a “done” button.

ANTI PATTERNS

- Classes of commonly-reinvented *bad* solutions to design problems. They are studied as a category so they can be avoided in the future.

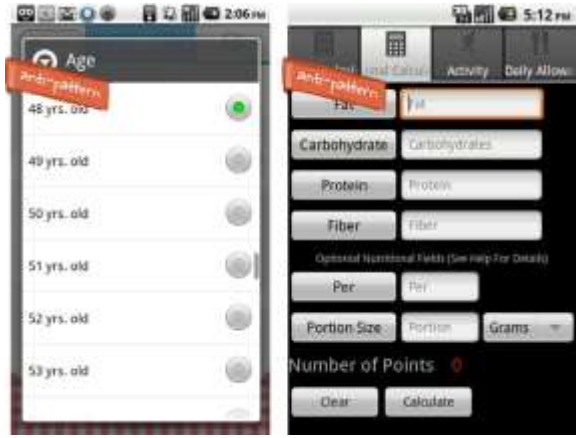
- Novel notion
- Metaphor mismatch
- Idiot box
- Oceans of buttons

NOVEL NOTION

- Novel designs intended to be creative and innovative. But they're just hard to understand and use. Can be found anywhere in an application, from primary navigation down to an individual control, or gesture.

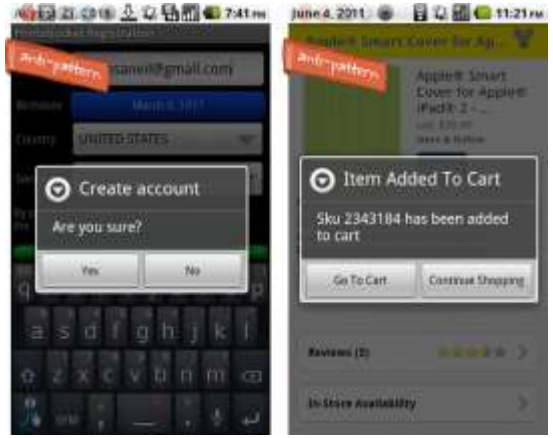
METAPHOR MISMATCH

- Picking the wrong metaphor for the interface. Can occur at a low level, when a control or icon is used inappropriately, or at a high level, where the conceptual model for the application doesn't match the user's mental model.



IDIOT BOX

- Disrupting the user interaction when not really necessary. Avoid disrupting the user's workflow, only show a confirmation dialog when an irreparable action is being taken (like a permanent delete).



OCEANS OF BUTTONS

- Very long button bars or grid. All the buttons of the same size and color so it is difficult to determine which one to click without reading them all.
- Use contextual tools when you find yourself repeating the same buttons.