

Mobile Programming and Multimedia Mobile Design

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Differences with Desktop apps

User interface design for mobile applications must consider several aspects

Main differences:

- Device size
- Computational capabilities
- Operating system
- Interactions!
 - Touchscreen
 - Sensors (movements)
 - Vocal input/Output
 - More direct/natural interaction



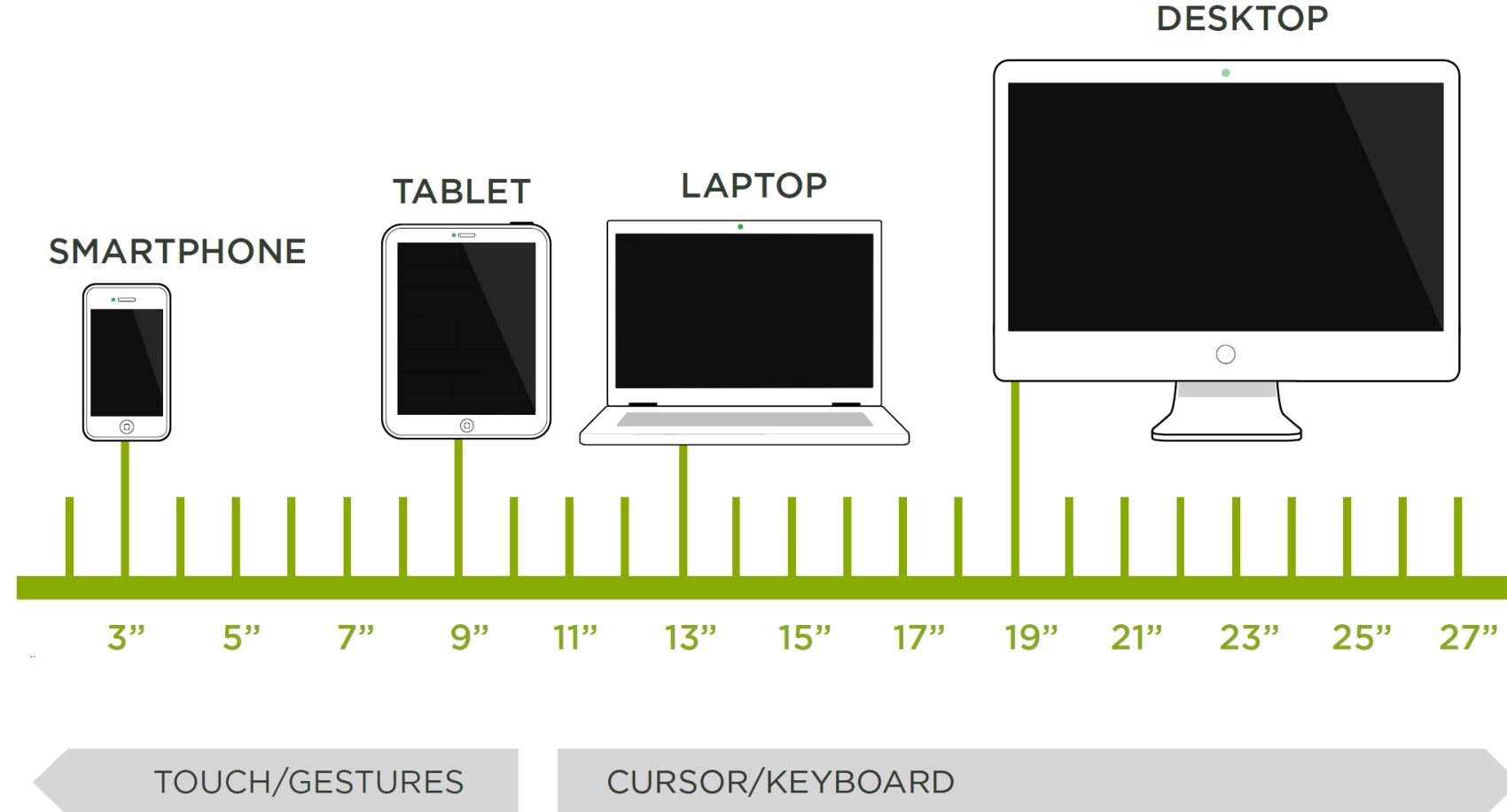


Touchscreens are available in several different situations:

- ATM, machines for electronic sell
- Informative panels (ex: museums)
- Mobile computer
- Tablet/smartphone
- Smartwatches

In 2011 Apple sold more iPads in one year than all the other products in 20 years

Interfaces and interactions



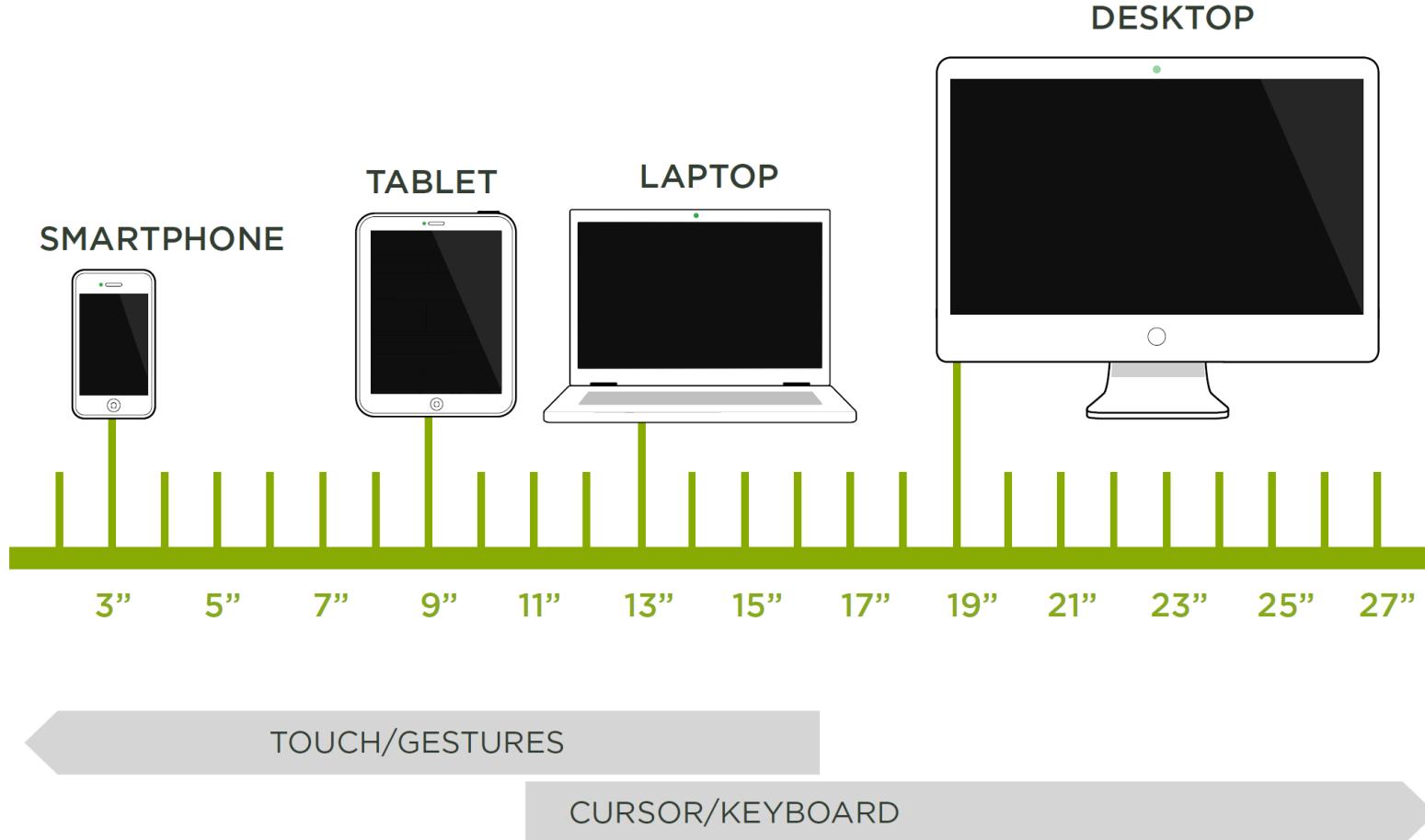
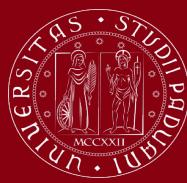
Interfaces variability



Touch is used even with desktops



Interfaces and interactions



How to design a good user interface?



Problem

Responsive interfaces
are one step forward
but not the answer

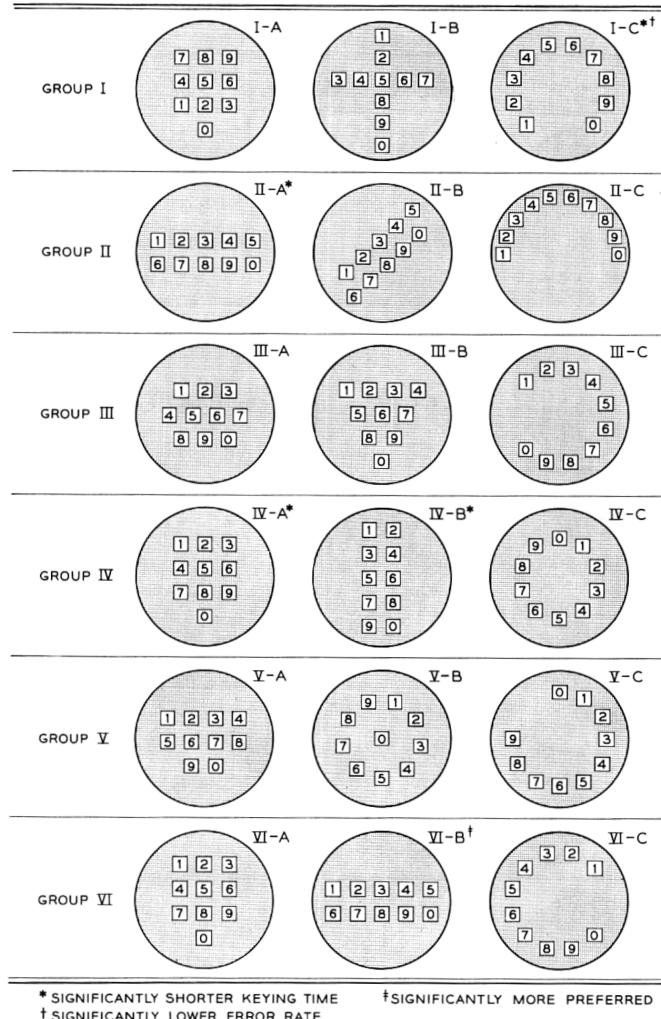
An old but effective story

In 1963 Bell's labs designed the new Touch Tone phone

They tested 16 different keyboards to find the best design, comparing them 3 by 3 with 16 users' groups.

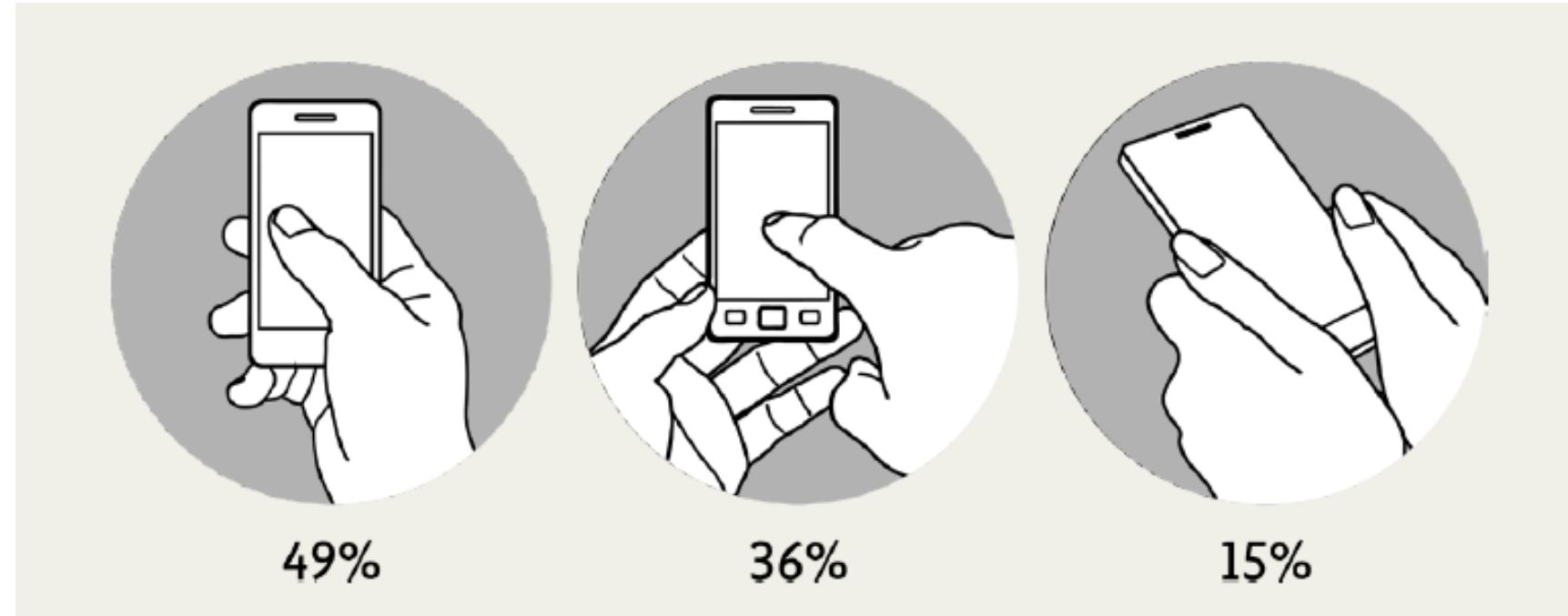
Objective:

- improve:
 - speed and
 - accuracy
- User preferences

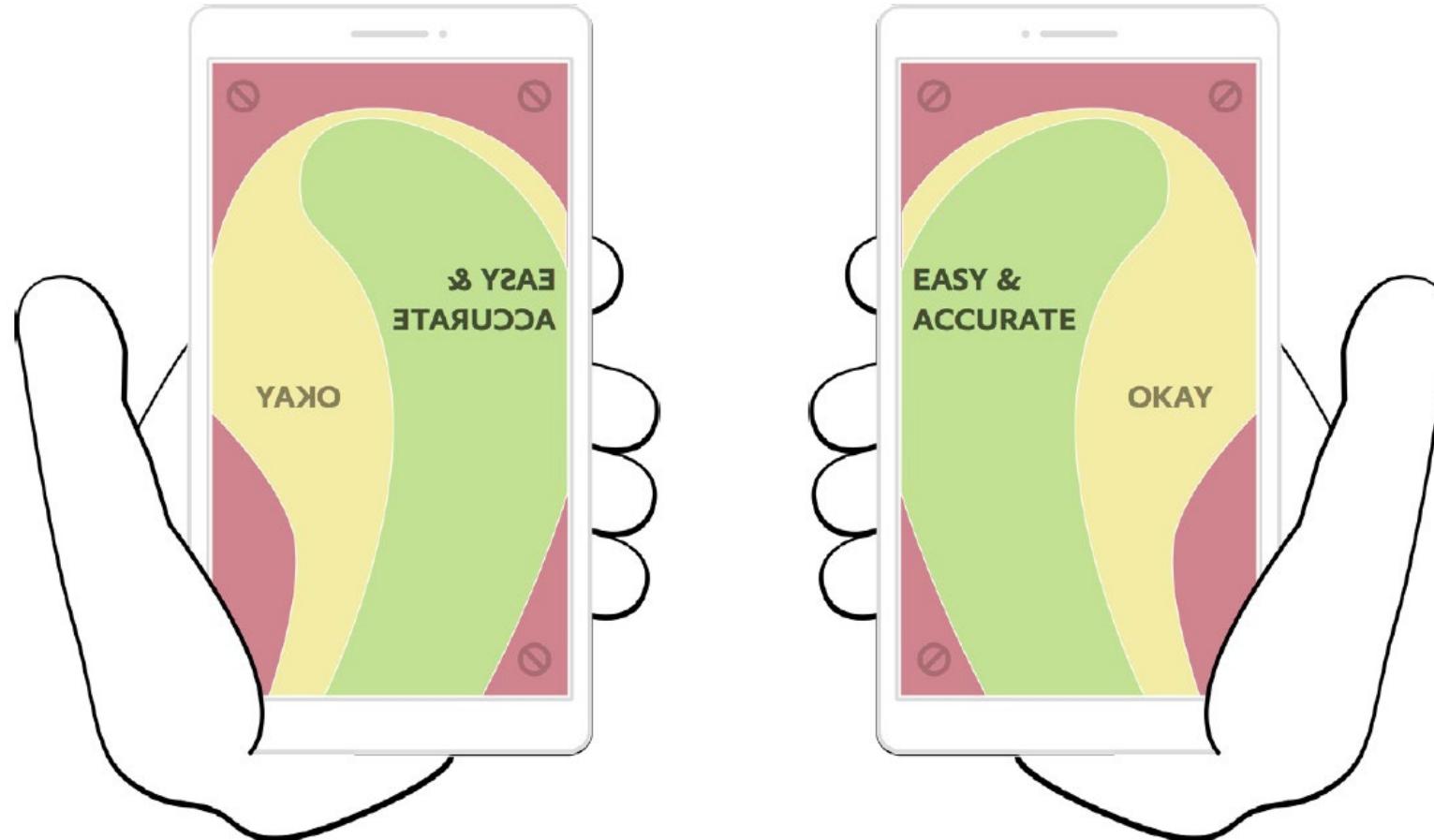


First consideration

The reachability of different components of the interface depends on how we hold the device



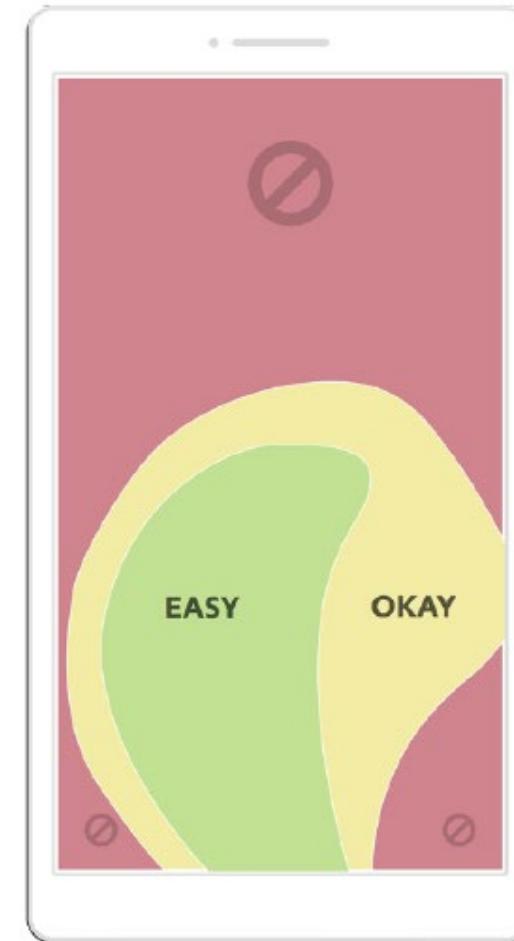
Comfort zone



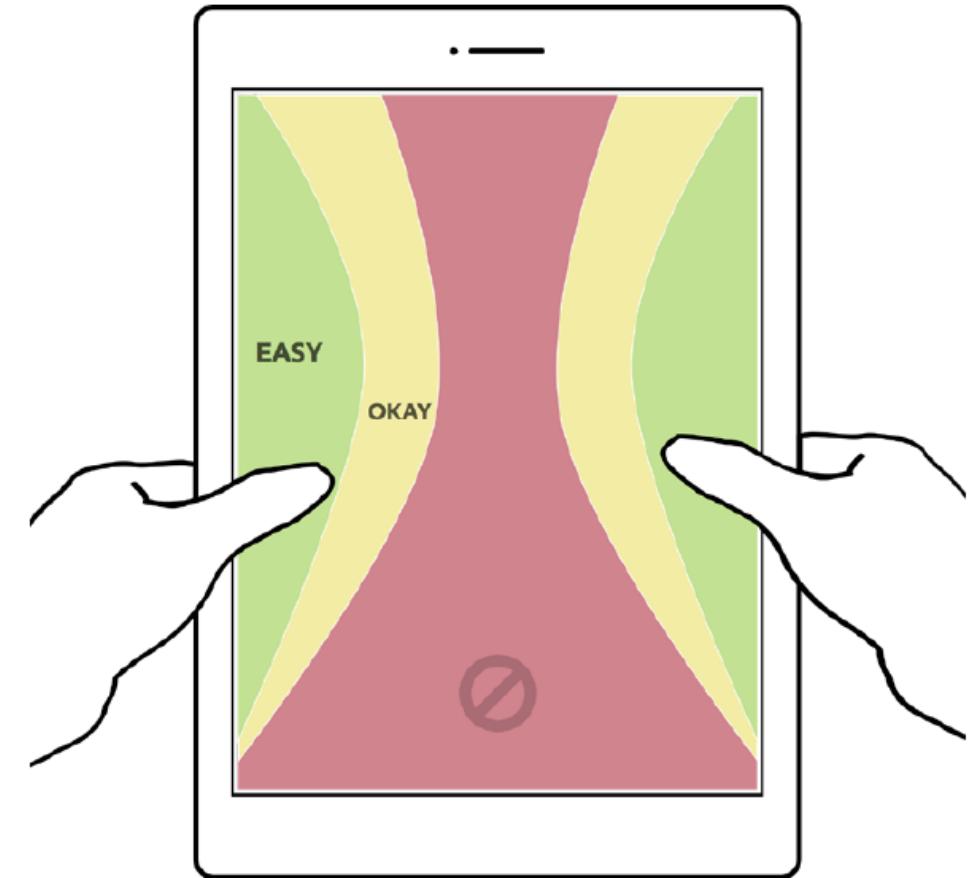
Screen size



THE PINKY BOUNDARY



With the increasing size of the screen, users tend to use the device with two hands for a better holding



The Gorilla arm problem

“Touch interfaces don’t want to be vertical, it gives great demo, but after a short period of time, your arm wants to fall off.”

Steve Jobs





Increasing device dimension means increasing weight

- 88% of tablets usage occurs while seating, against 19% of smartphones
- Tablets are used on a holding surface two out of three times

Big devices are used in a similar way to laptops but

- Mouse is usually moved easily, whereas fingers are moved by the hand and require a higher effort
- It is essential to group controls together to avoid user's tiredness



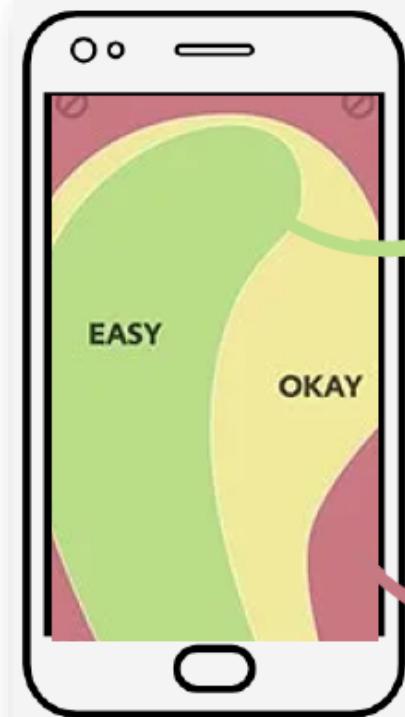
Thumb rule

Identify the most frequently used controls and put them in the comfort zone (*thumb zone*)

It is also very important what to put *outside* this zone

- Controls for data modification to avoid unwanted edits or data loss

Comfort zone & interaction



Most frequent interactions inside the confort zone

For the critical actions have some part of the screen difficultly reachable can be a resource

Content always on top

With classic interfaces (ex: websites), priority is given to interaction elements

Touch interfaces change interaction tool

The mouse cursor is tiny

Hands can hide part of the interface

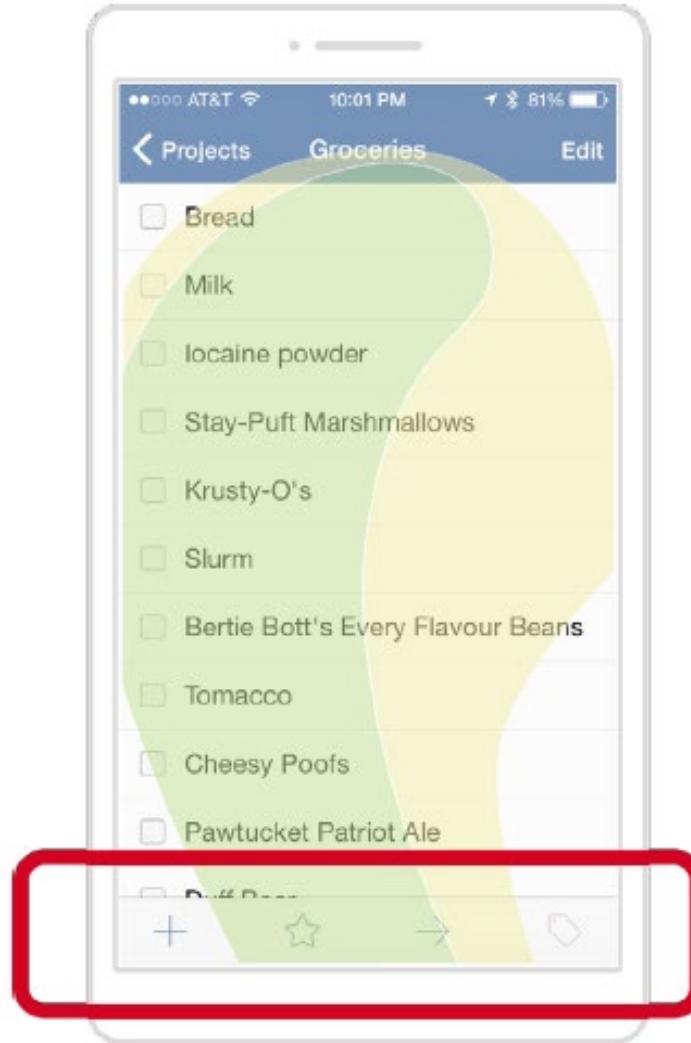
- It is important to calculate their encumbrance
- Important data must remain visible
- If necessary, they can hide the controls



Operational guidelines

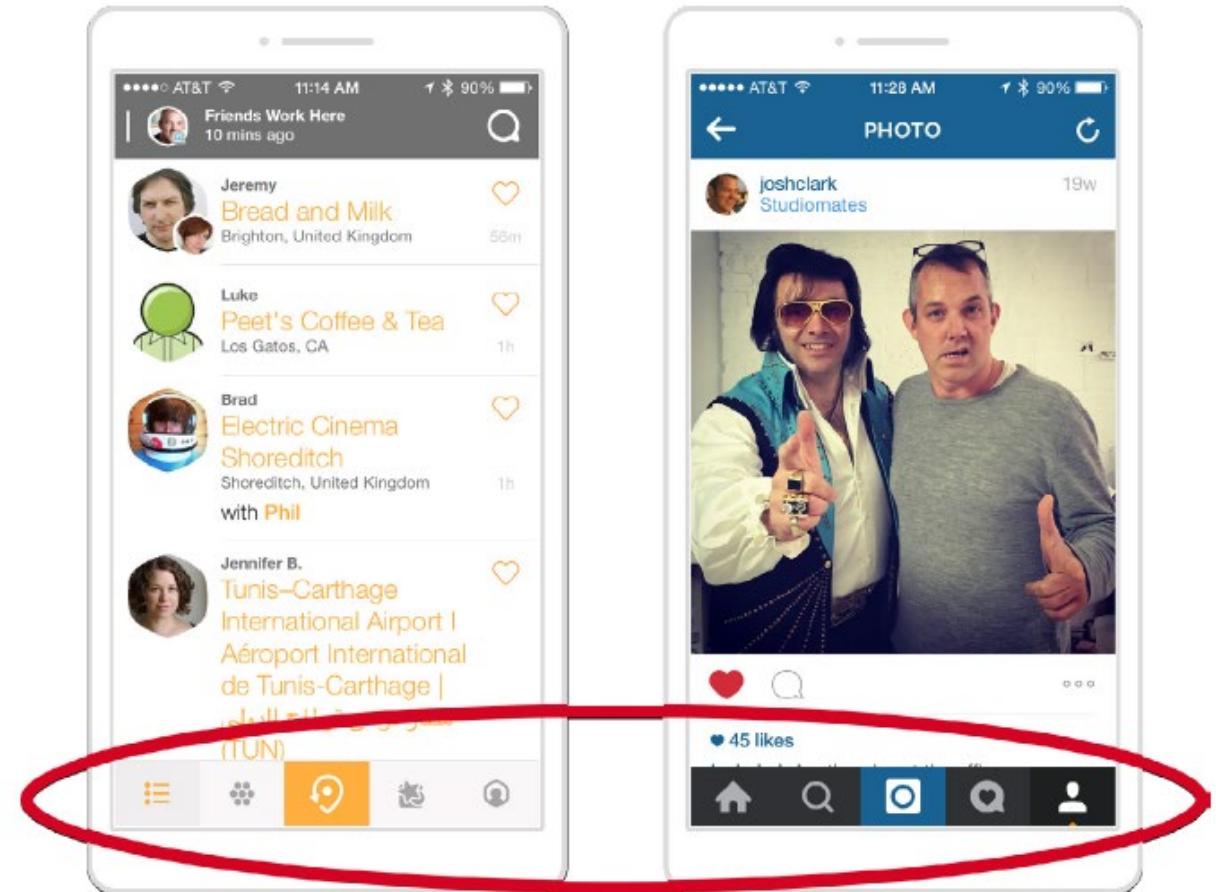


The «*Content always on top*» rule forces to leave the content in the center and move controls above, below, or on the sides

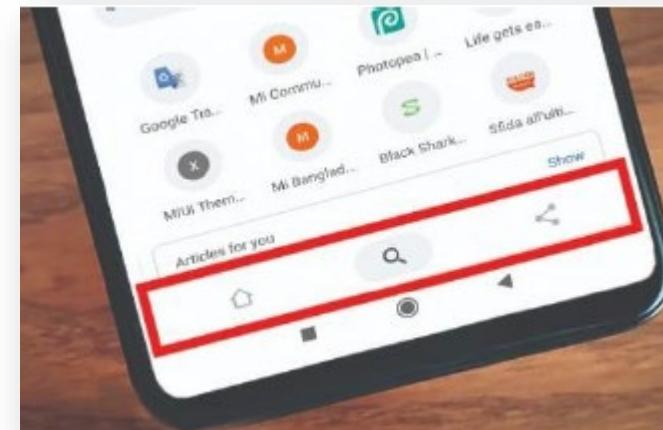
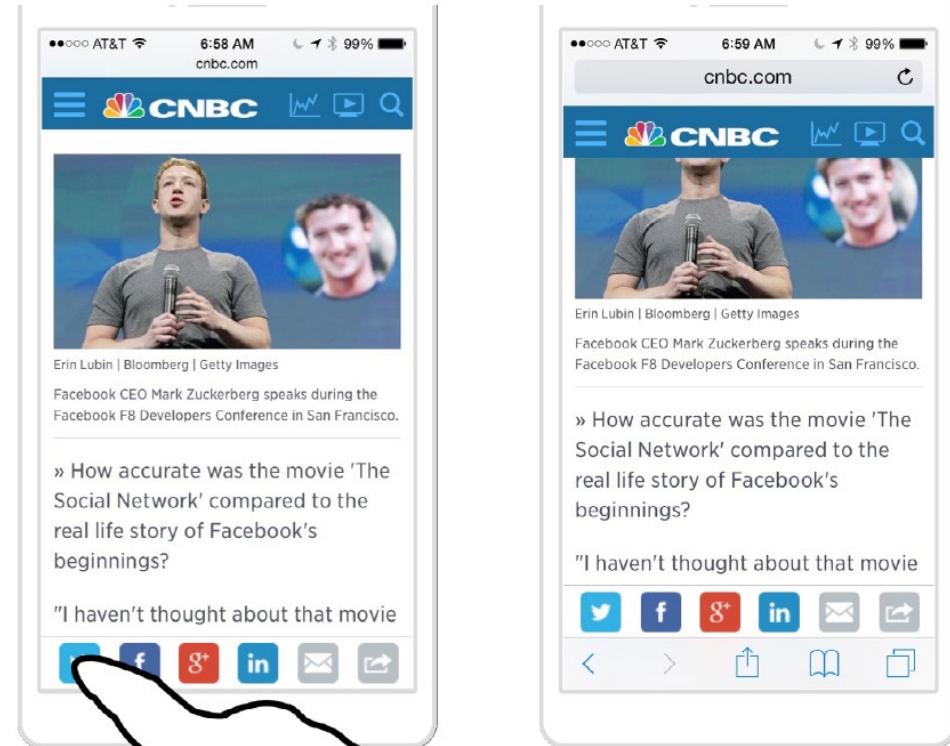


Attention!

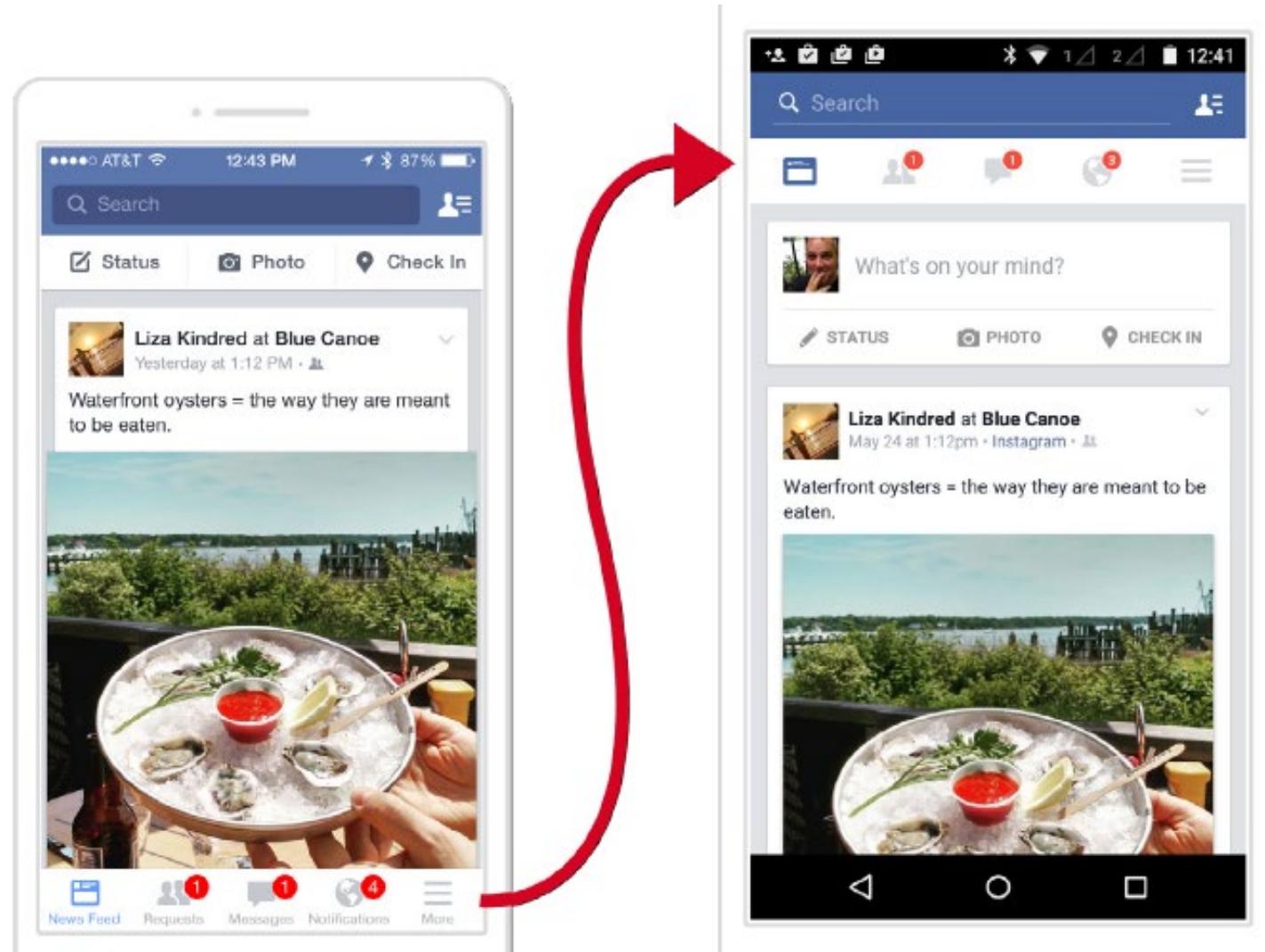
If an application requires to modify data frequently, then controls must be inside the comfort zone

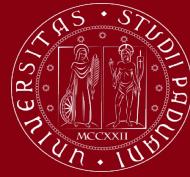


Problem



Different rules





Android

- Controls must be on the *upper* side of the screen

iOS

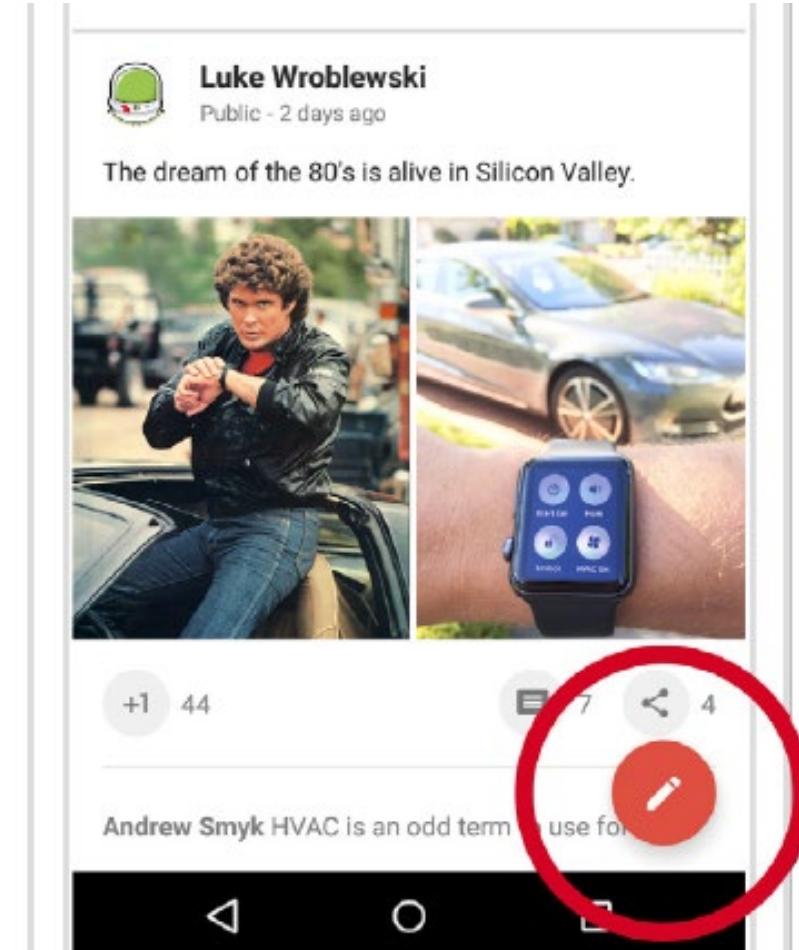
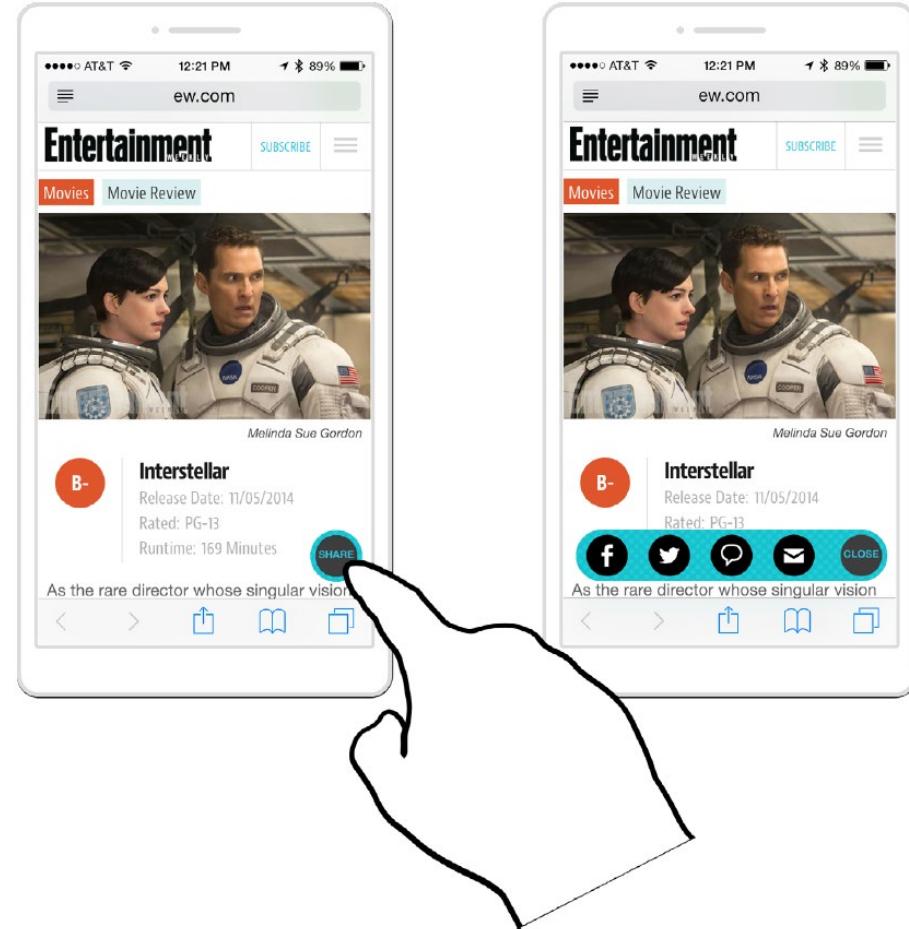
- Controls must be on the *lower* side of the screen

Phablet

- Controls must be on the *lower* side of the screen
- It is possible to introduce a *floating trigger button* for frequent operations
- *Swipe* usage, especially for the tabbed layout

Pay attention to the
last iOS versions

Floating trigger button



Tablet Layout

With bigger screens, it is difficult to have a unique overview, but designer must consider that eyes move from top to bottom

- Buttons for interaction must be at the top or on the sides of the device
- Prefer corners at the top and not the center position
- If an element controls the content, it must be below or on the side of the content, **never** above





Big screens

The bigger is the screen, the more precision and physical activity is required during interaction

- It is crucial to reduce the number of interactions
- Group together interaction elements

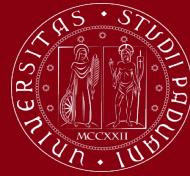


Hover problem

With exception to several proprietary solutions (ex: the pen of the Surface or the Stylus pen by Samsung), the hover event is not available on touch interfaces

Adopted Solution: the first tap is the hover event, the second is the real click

For the web, the CSS3 **hover** property allows more appropriate solutions

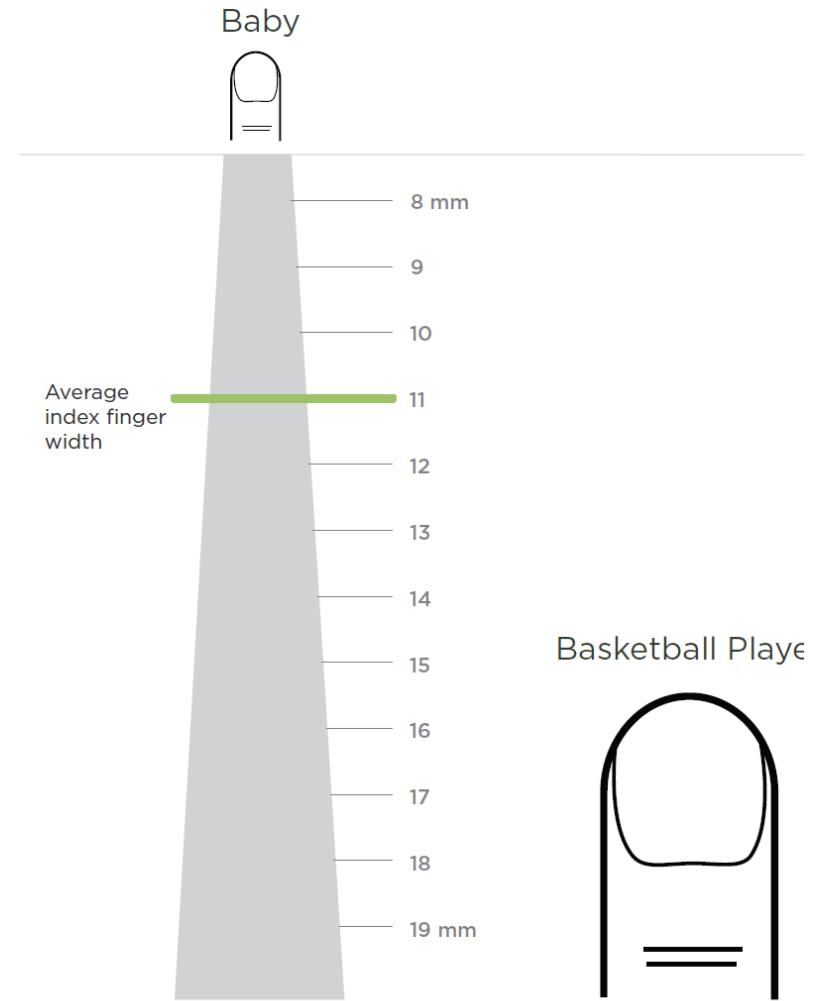


According to a Google study of 2013, 83% of websites provide interaction buttons too small to be used with fingers

How big is a human thumb?

- The minimum is 8 millimeters for a child; the maximum is 18 millimeters of an adult

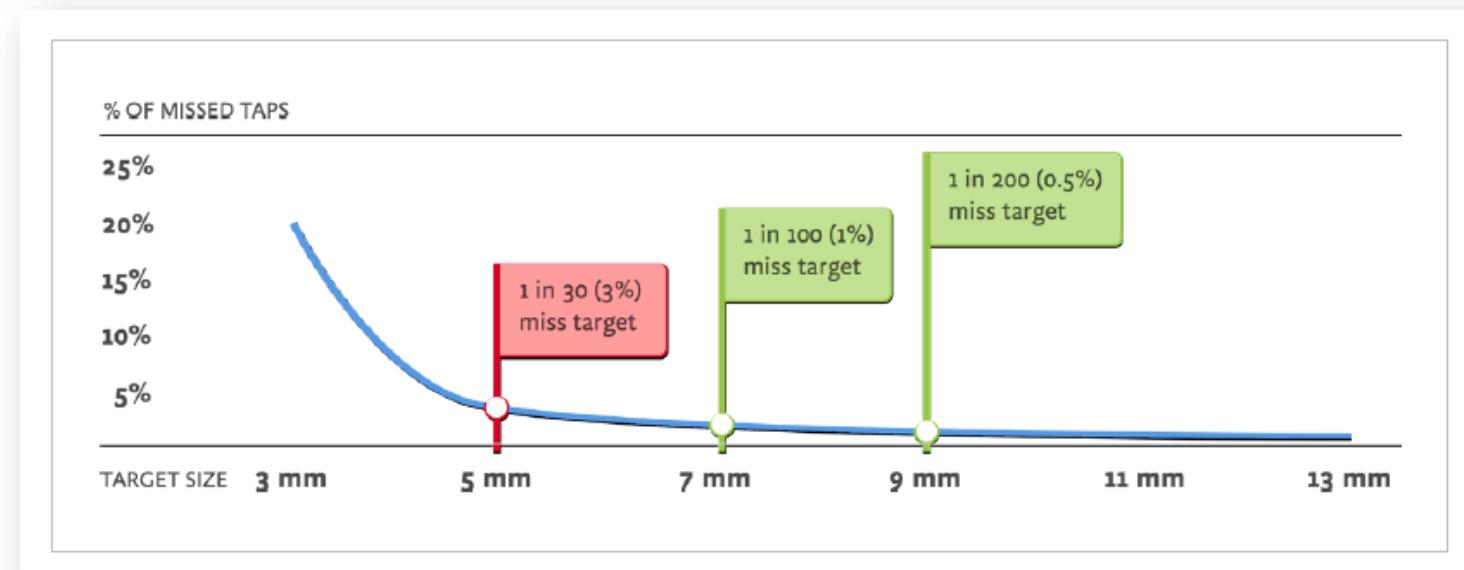
Thumb size



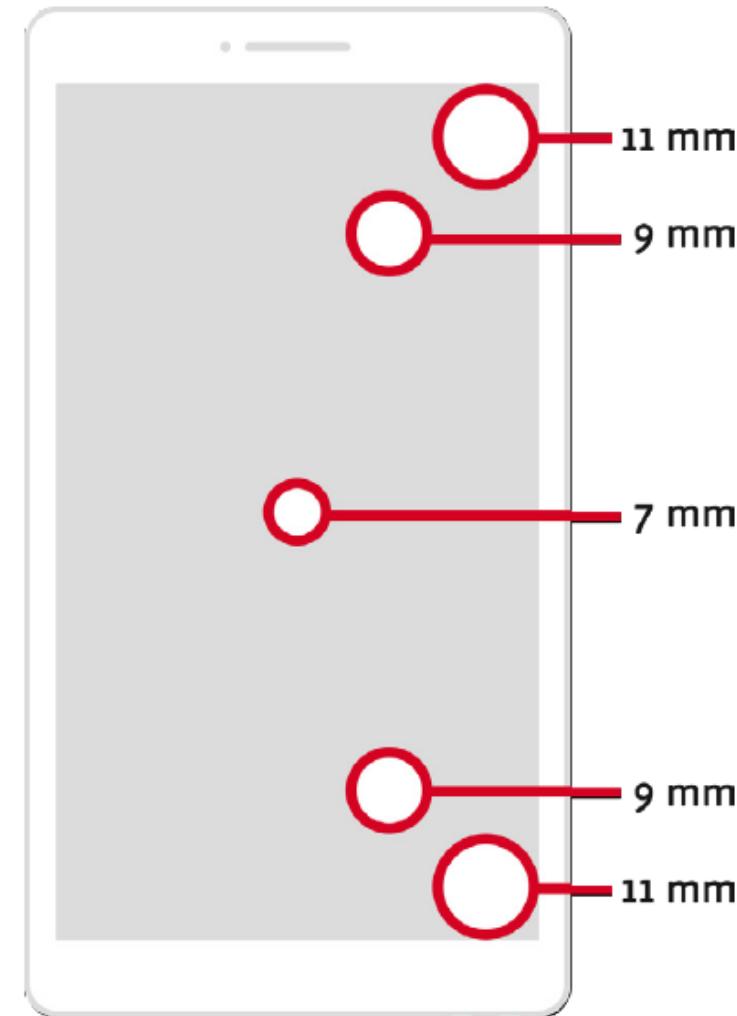
Controls size

It is a good idea to increase controls' dimension if an error requires more than 2 interactions, 5 seconds or a context switch to be corrected

The minimum size to use is 7 millimeters, which can be increased to 9 mm with big tablets



Size vs position





From mm to pixels

The dimension of the thumb is in millimeters, but this unit of measurement is not the best one for interfaces design

Millimeters	Pixel	Em (16px)
7mm	44px	2.75em
9mm	57px	3.5625em
10mm	63 px	3.9375em
11mm	69px	4.3125em

Do not crowd interfaces



Even proximity between elements is a crucial element:

- If controllers are too close, they must be bigger to avoid errors
- If the elements are small, they must be far away to avoid errors
- Two buttons of 7 millimeters must be at least 2 millimeters away

Generally speaking, it is a good idea to *not crowd* interfaces

Just-in-time interfaces



A good interface must provide only what is necessary at that moment

- The main operations must be available and selectable from a list (ex. menu, products list)
- The primary information must be easily available, with further details available with another interaction (*progressive disclosure*)
 - This approach allows clarity of the provided information
- Try to foresee users' needs (ex: Context menu)

Example - 1





Example - 2

The screenshot shows a mobile application interface for "The Session".

Header: Log in or Sign up and MENU button.

Main Content:

- Section:** THE SESSION
- Title:** Fáilte
- Search Bar:** Search for [text input field] SEARCH
- Recent Activity:**
 - Moulouf edited a set of tunes. 57 minutes ago
 - Moulouf added a set of tunes. 58 minutes ago
 - David50 left a comment on the discussion Is it ok to change tunes to make them easier?. one hour ago

Sidebar (TUNES): TUNES, RECORDINGS, SESSIONS, EVENTS, DISCUSSIONS.

Footer: HELP, CONTACT, LINKS, DONATE.

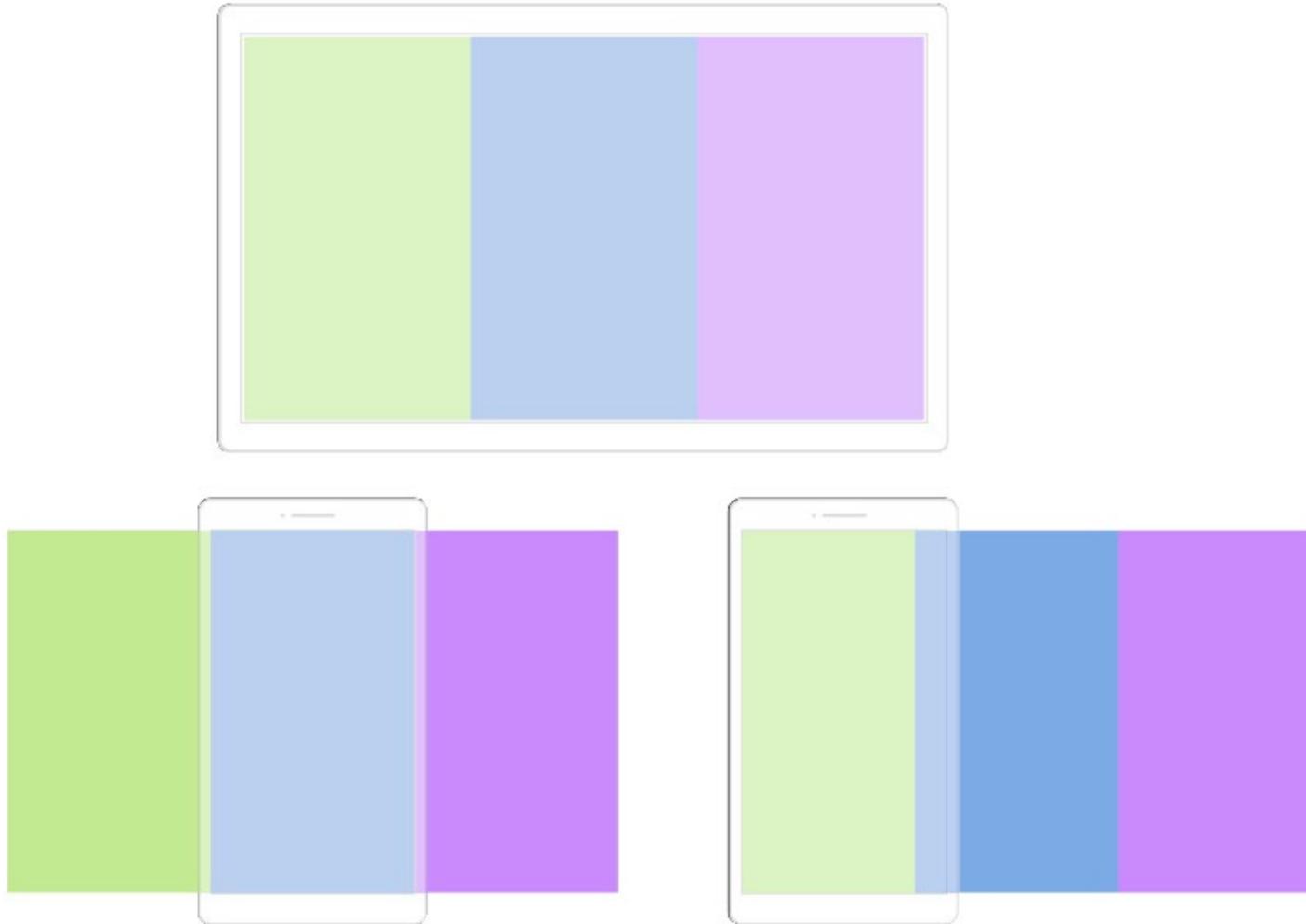


Number of interactions

With increasing bandwidth available, and the availability of a local database, the number of taps is less critical:

- There aren't only tap!
- Distinguish between useless and quality taps
 - A quality tap is a tap that adds new information, completes a task, or simply adds a smile
 - The garbage taps are taps that could be eliminated with better interface design or substituted with gesture
- It is possible to add taps if they provide a better interface organization

The problem of long pages



The carousels



Carousels must be used with particular attention, or avoided:

- Loss of overall vision in favor of details
- If it is not clear the connection between different objects, users do not understand what comes before or after and lose interest
- A study shows that 84% of the clicks occur on the first page
- Instead of forcing the user to make several swipes for finding the information, it is better to ask for a single tap to open a page with more details

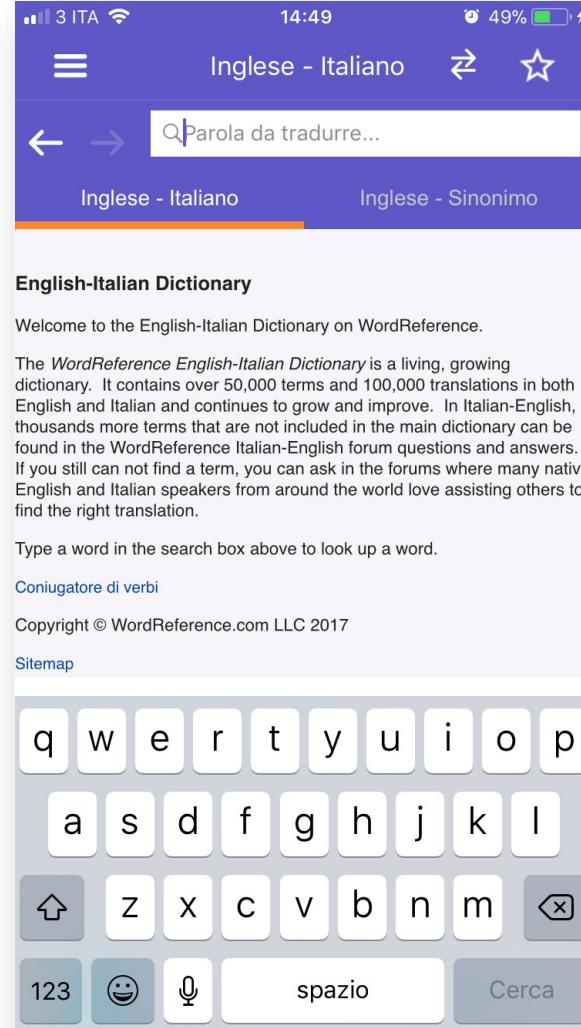
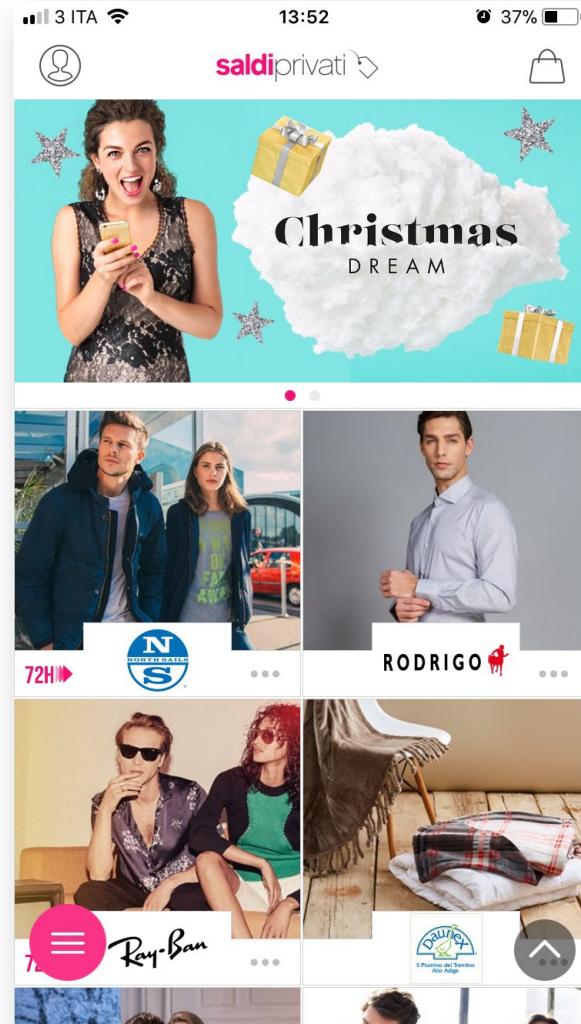
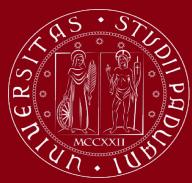


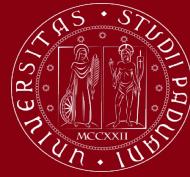
Carousels: when?

Carousels work very well in these cases:

- Linear data: user knows what to expect (ex: weather)
- Random browsing on interesting items for the user: pictures, slide show. They work better if the user knows what to expect, for example, in a known context
 - <http://shouldiuseacarousel.com/>
- To break up very long forms: in this case, they cannot advance automatically

Correct usage





The problem of long forms

21% of online shopping, that are not completed with the purchase, comes from the excessive complexity of forms necessary to complete all the steps (1 over 5)

Each field makes the difference: a study shows that for a contact form, decreasing from 4 to 3 fields increases contacts of about 50%

Decreasing the number of fields

With touch interfaces there is not the tab control, hence each field requires one tap more and interrupts the flow

Do not ask for more information

Credit Card Information

* required field

*Card type:

Select Credit Card

*Card number:

*Name on card:



* First Name:

Middle Initial:

* Last Name:

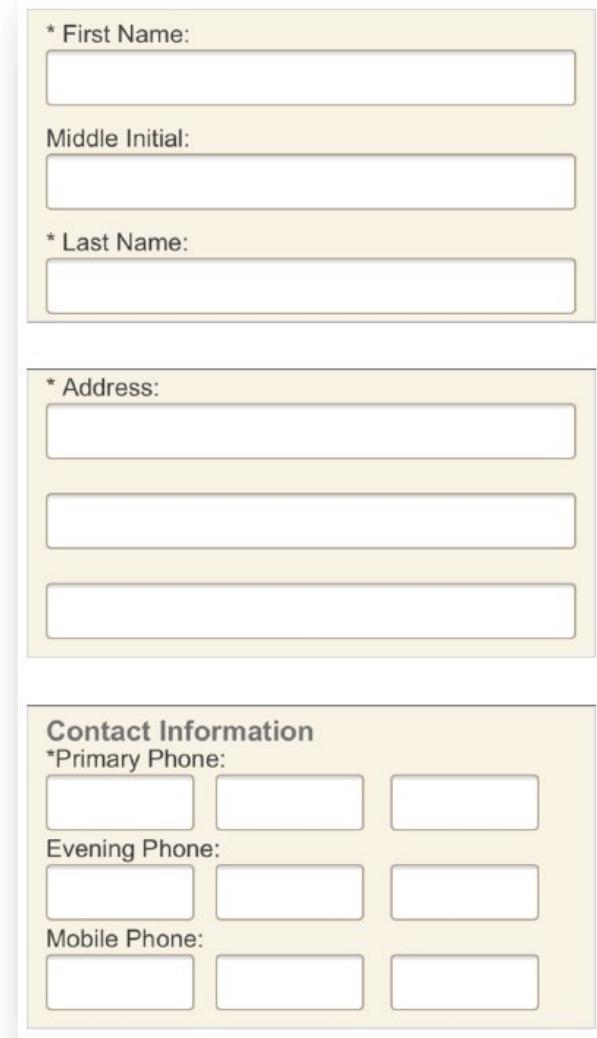
* Address:

Contact Information

*Primary Phone:

Evening Phone:

Mobile Phone:

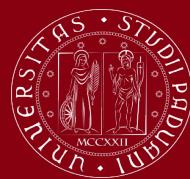




Avoid keyboard usage

The user is not fast when digitizing

- Provide the correct keyboard for a specific input
- Prefer a list of buttons to a menu if this one is short
- Avoid too long drop-down menu (a dataset is better)
- For numbers insertion, it is preferable to show an average value with +/- buttons if the real value will not be far away from the average



Guidelines for the forms

Don't forget the label!

Label above the input

Instruction between the label and the input

Example under the input

First and Last Name

RIGHT

Label element that stays constantly visible

First and Last Name

WRONG

Placeholder used instead of a label

Field label

Help text

Field label

User input

Help text

Password *

Password must be at least 8 characters.



Confirmation dialogs were introduced to let the user think about the answer, but today do not work anymore and slow down the user

It is better to use specific gestures, e.g., a *swipe* to answer calls or to unlock the device

- It is sufficiently difficult to be only intentional
- It is sufficiently easy to be fast and avoids context lost
- Provides *undo* option
- To ask more attention to the user, increase gesture complexity

Gestures

Gestures



Tap



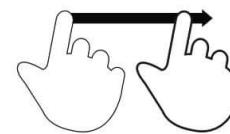
Briefly touch surface with fingertip

Double tap



Rapidly touch surface twice with fingertip

Drag



Move fingertip over surface without losing contact

Flick



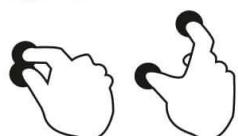
Quickly brush surface with fingertip

Pinch



Touch surface with two fingers and bring them closer together

Spread



Touch surface with two fingers and move them apart

Press



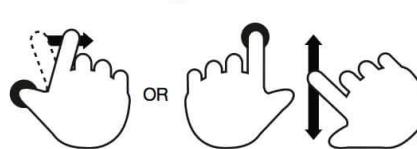
Touch surface for extended period of time

Press and tap



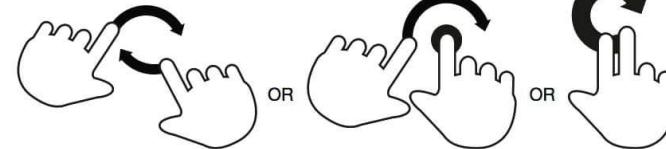
Press surface with one finger and briefly touch surface with second finger

Press and drag

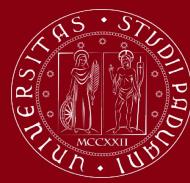


Press surface with one finger and move second finger over surface without losing contact

Rotate



Touch surface with two fingers and move them in a clockwise or counterclockwise direction



Vocabulary - 1

tap: click for the “touch world”. Interpreted as the hover event

Swipe: frequently used for scrolling, view change, or show hidden panels

Long press: used for context menu or detailed information

- on MS Windows is equal to the right-click with the mouse
- on Android opens the ***contextual action bar*** to select several entries from a list and fire events on all of them simultaneously
- on iOS does not have a standard behavior, usually opens a contextual menu
- Only expert users use it



Vocabulary - 2

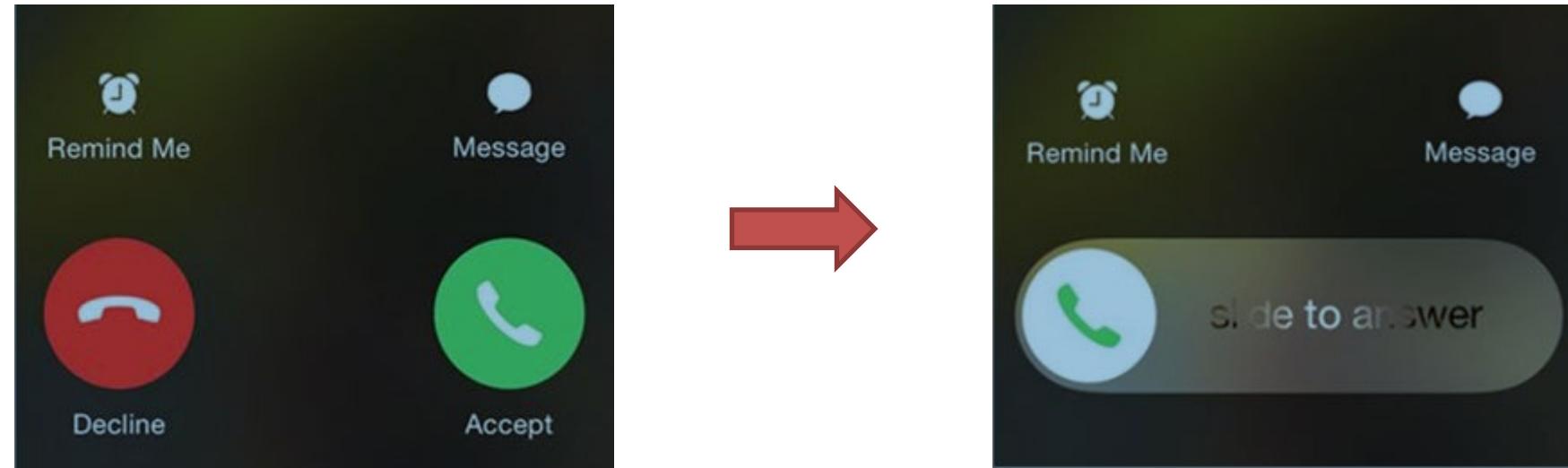
Long press + drag: equals to drag&drop

Pinch/spread: zoom in/out. Semantic zoom uses pinch gesture as alternative of back button

Double tap: zoom in/out, but can be used for other purposes (ex. Select an element and apply an action)

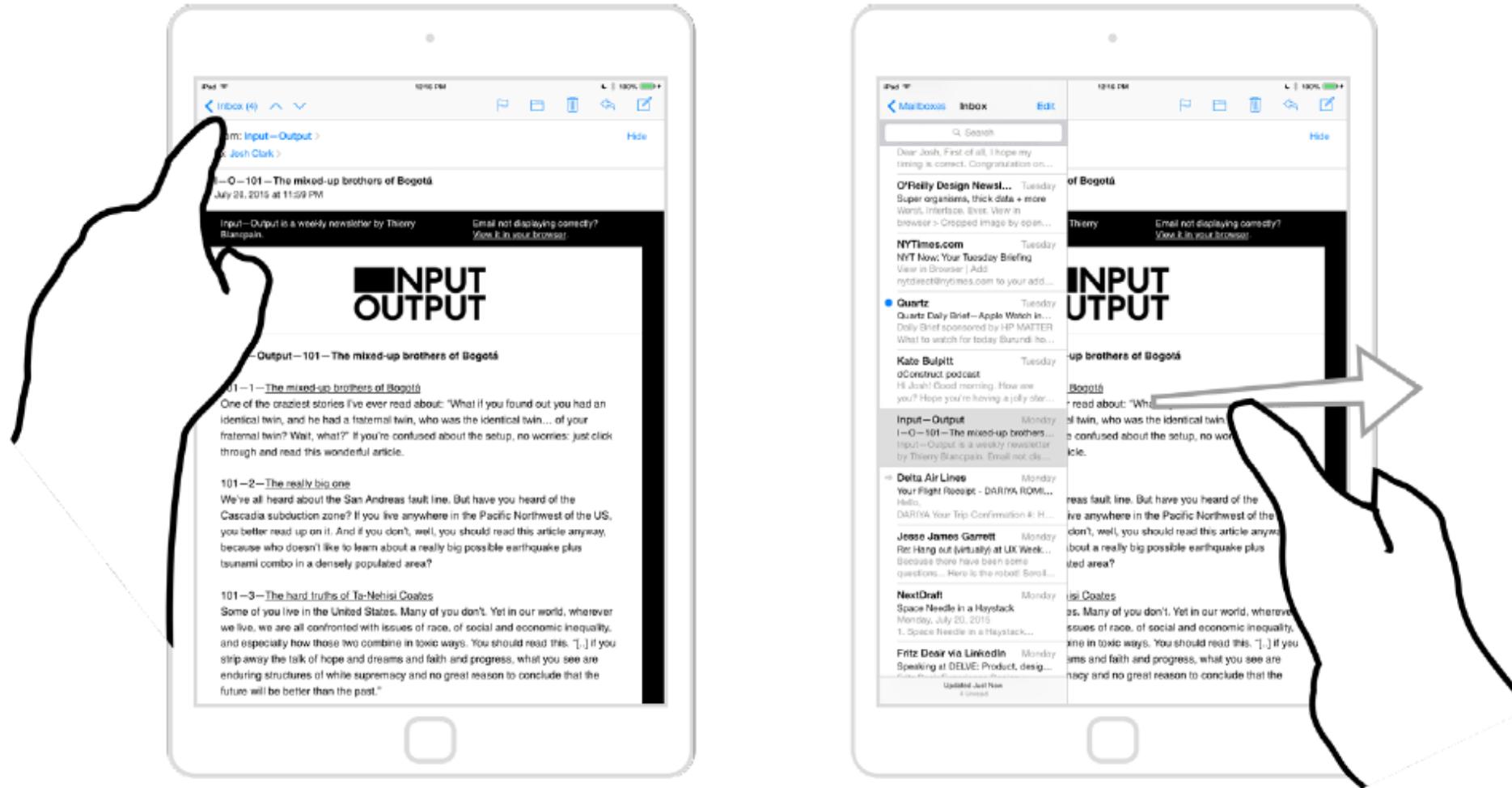
Good example

Specific gestures are sufficiently “difficult” so that the action that is always intentional



Gestures do not cover content, as compared to a button

Do we really need buttons?



Buttons must not cover the content





Accessibility

Gestures improve interface accessibility because they tolerate less precision. This is important in different situations:

- The elderly and children
- When the user cannot pay close attention to the interface
- Situation where it is necessary a fast interaction with no errors
- If the user knows the gestures, there is no need to watch the screen

Big gestures tend to become reflexes

- Traditional interfaces are based on visual memory
- Touch interfaces use muscle memory

Interaction with real objects

In real world, buttons are used to control things, using them, always check the content directly

- Consider the content
- Pay attention to extension (image gallery)



Buttons are used to control



are a good way to manipulate

object
and pepper, pictures



Use gestures!

Angry Birds use natural and intuitive
gestures and not buttons



Card metaphor

The card metaphor is frequently used and deeply understood by users:

- It is natural with business cards, plane tickets, coupons, etc.

Suggest several natural interactions:

- Flip the card
- Put them in a stack

Sometimes there is no direct correlation

- In the real world, we do not flip the card clicking on a button
- Gestures are not always easy to find: help the user!



How to help the user? - 1

A good rule is to get help from the real world: if the gesture we want to use is the same as the real world, there is no need for instructions

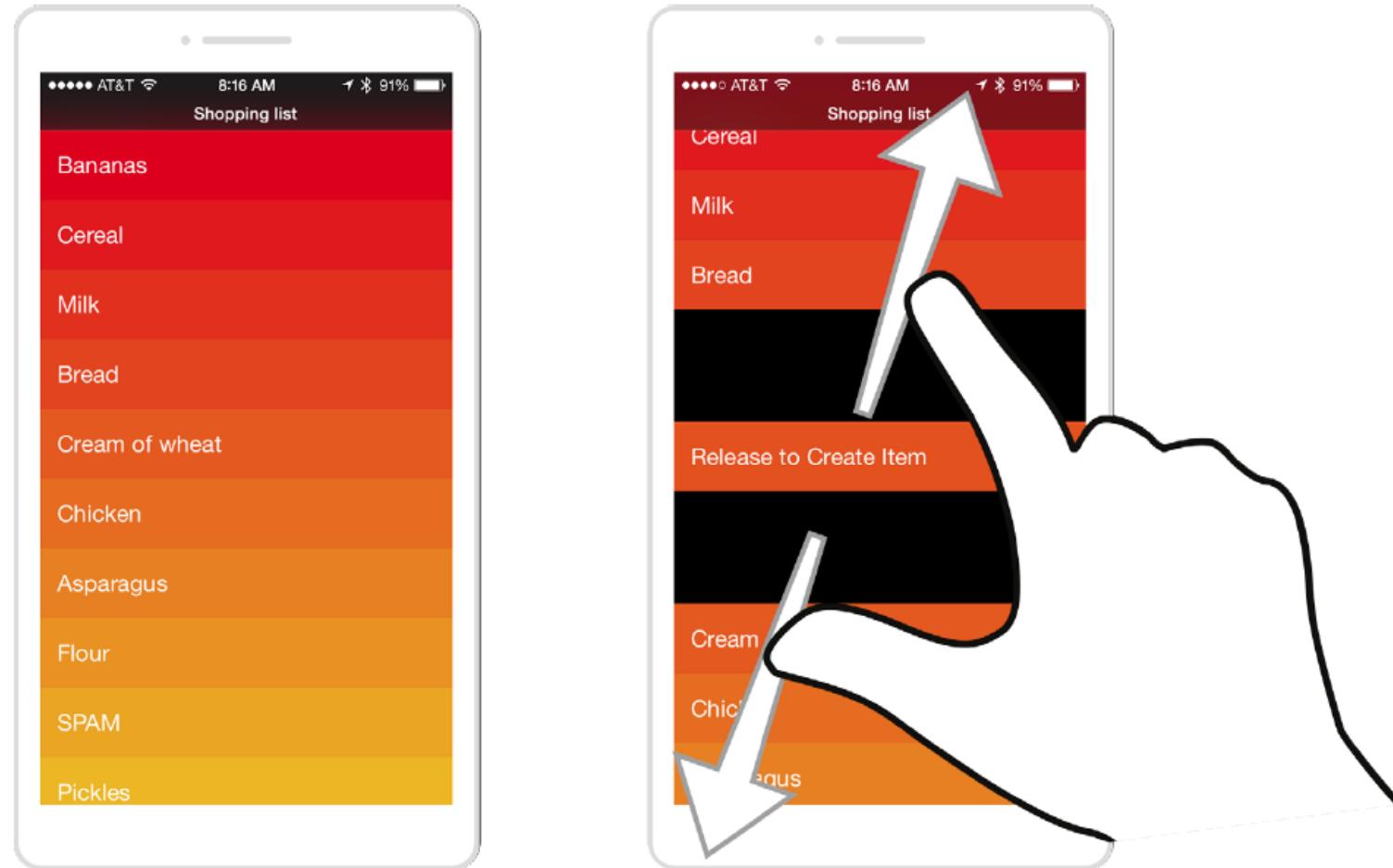
- Always necessary to follow physical constraints
- If we follow the real world, no explanations are necessary
- Example: drawing apps

Everything must follow conventions (do not betray user expectations)

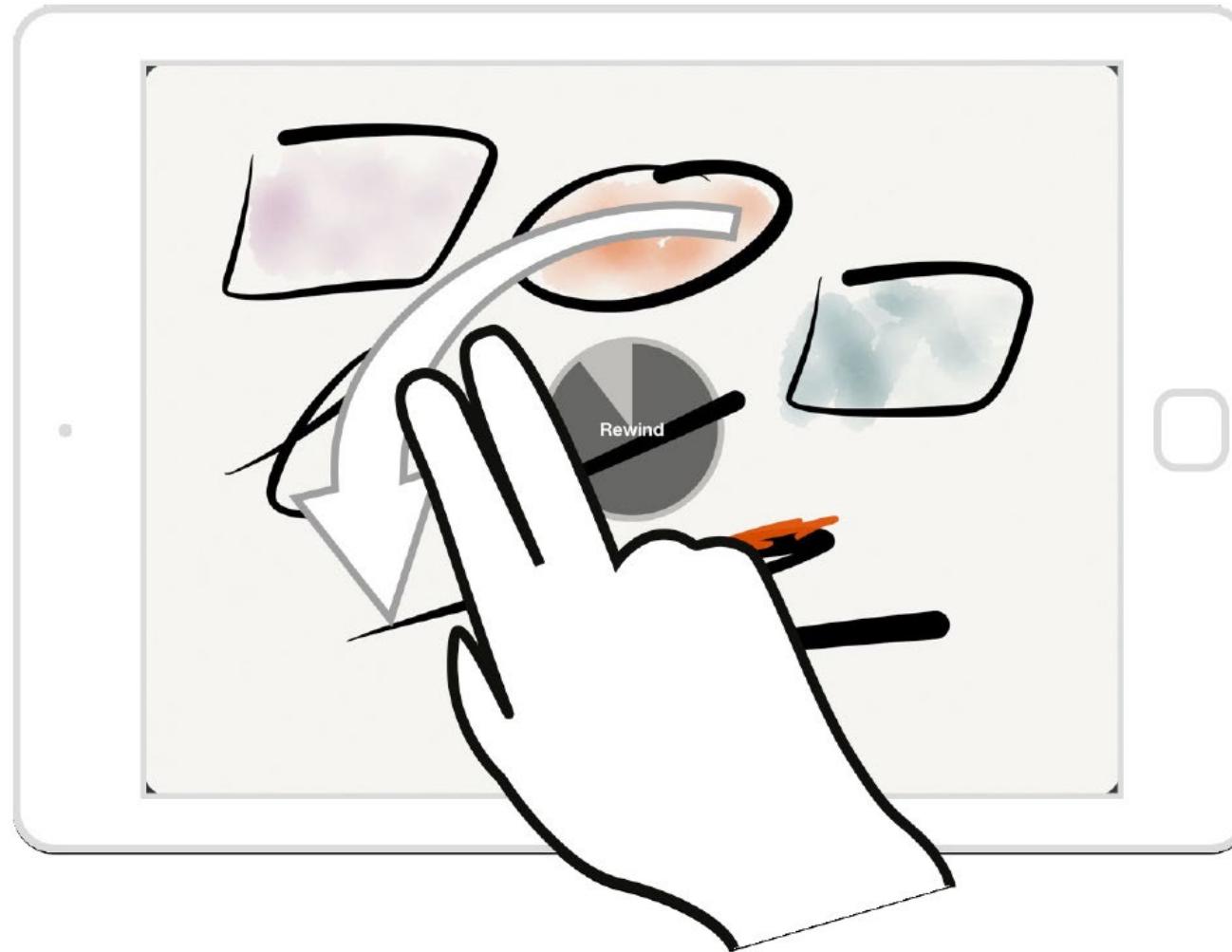
- Context is important

Use single movements from well-known interaction tools

How to help the user? - 2



Knob movement





Shortcuts

Even if it is important to use natural gestures, it is possible to introduce complex gestures that can be used as the keyboard shortcuts

- Swipe to delete something instead of tap on the bin icon

In this case, the design must prefer more natural but longer gesture

It is possible to use gestures with more fingers

- Display space
- Multitouch support is not always optimal
- More complex
- Accessibility



Follow the operating system

The operating system has the priority: gestures used by the OS cannot be used by the application

Gestures are different depending on the OS:

- With Android always start from the sides
- With iOS can be completely inside the space dedicated to the app

The override should be avoided



Circle menus

Circle menus are frequently a good way to reduce conflicts between gestures

Easy to learn because they use muscle memory, and fast to use

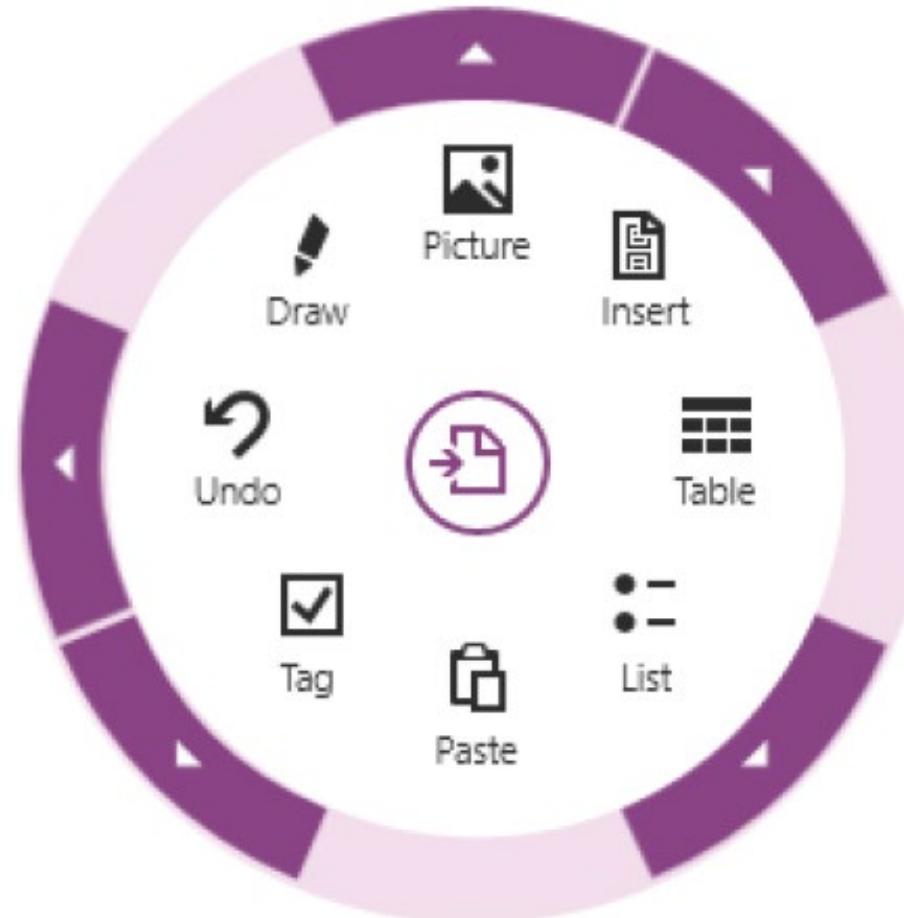
Frequently used with games

Useful for primary navigation, context menu, or tools

Disadvantages:

- Require more precision
- Not scalable (on phones, 3 or 4 options)
- Not easy to use the first time
- Cannot change over time

Example: MS OneNote



How to teach gestures?



Problems

Unlike buttons and widgets used with the mouse, gestures are almost always invisible

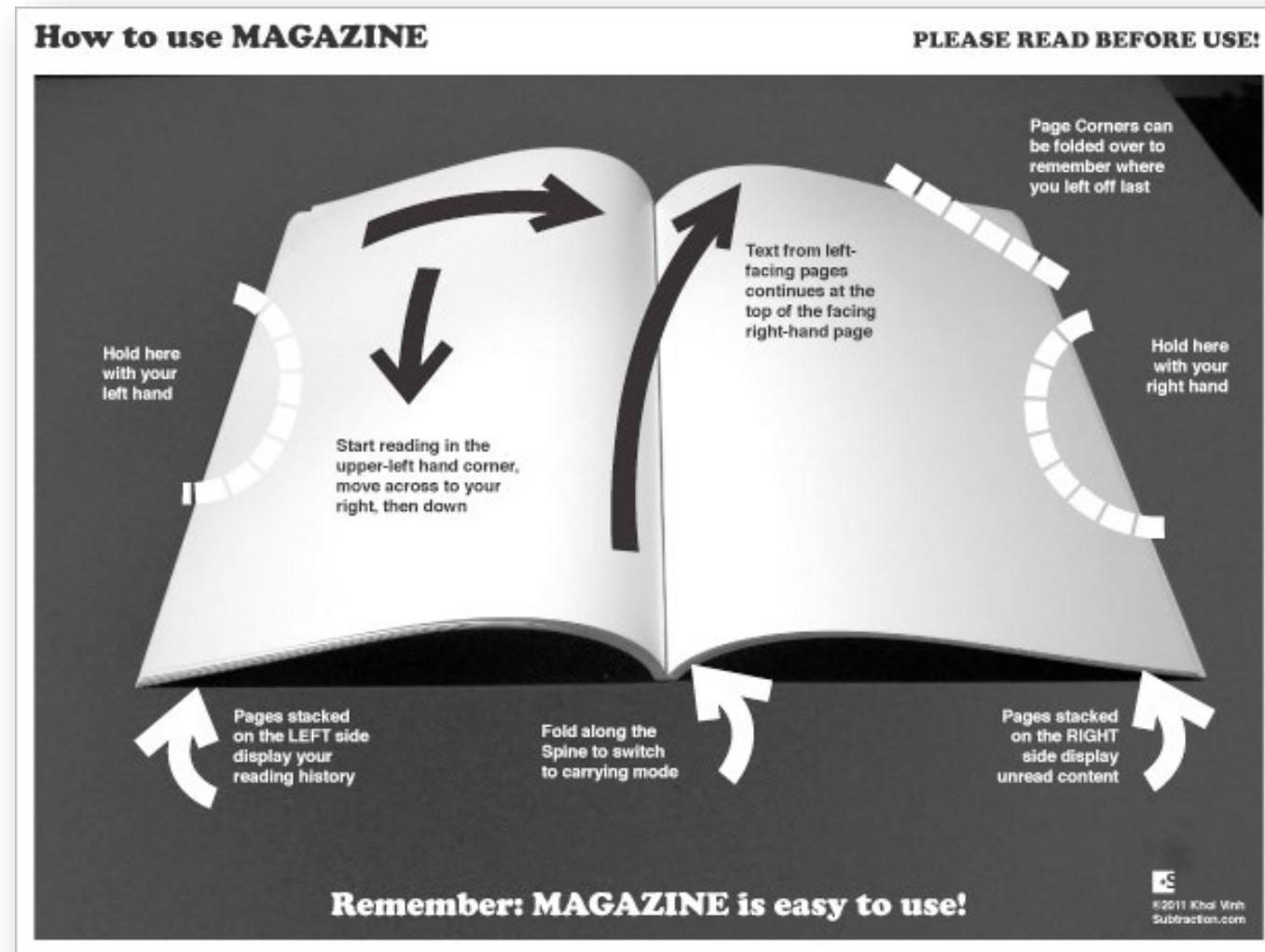
Introduction of manuals is not effective (as well as impractical)

- Who uses an application for the first time has a precise goal (he simply wants to do something), that usually is not reading the instructions

Some gestures are trivial, but often after having discovered them

Solution: *just-in-time* education

Journal metaphor



HOW TO USE THIS APP

The new and improved *Vanity Fair* iPad app is so intuitive that you can probably skip this tutorial. In case you find yourself a little lost, though, feel free to check the following diagrams as you touch and swipe your way through the current issue

READING

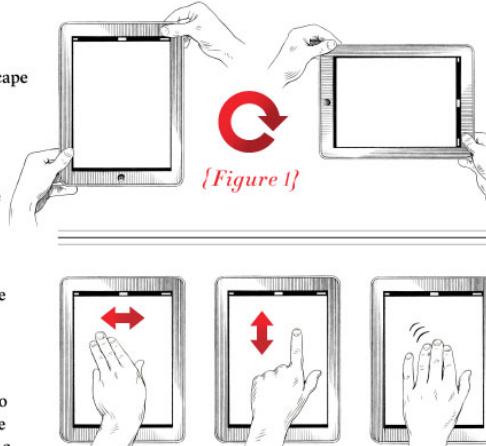
{Figure 1}
Rotate your iPad from vertical (portrait mode) to horizontal (landscape mode) to see the same content presented in a different format.

{Figure 2}
Give the screen a gentle swipe to the left or right to move from one story to another in the issue.

{Figure 3}
Flick a fingertip up or down to make your way through the article you're currently reading.

{Figure 4}
Need larger print? With three fingertips, double-tap the screen to enable the zoom function. Exit the zoom function the same way, with a three-fingered double-tap.*

* You will need to set Zoom to "On" in your iPad's Settings under General/Accessibility.





Skeuomorphic design

The principle is: «*I know this object and I know how to use it*»

The critical point is to choose the correct metaphor and not betray it

The *Skeuomorphic Design* is not suited for gestures' teaching

Metaphors



The use metaphors

The use of metaphor shapes the idea we have and how we communicate them

We use metaphors to be better understood, and the way we seek to be understood affect the way we think

Interface design is full of metaphors: they was the first tool designers used to teach how to use a computer. Metaphors speed up and simplify the ways interface makes that argument



Good reasons to use metaphors

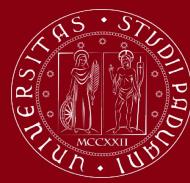
- Metaphors bring the abstraction of software closer to life, making interface feel real
- A good design focuses on a special attribute of a feature
- Thinking in metaphors helps you thinking in systems
- Metaphor is a great simplifier

... But metaphors use language!



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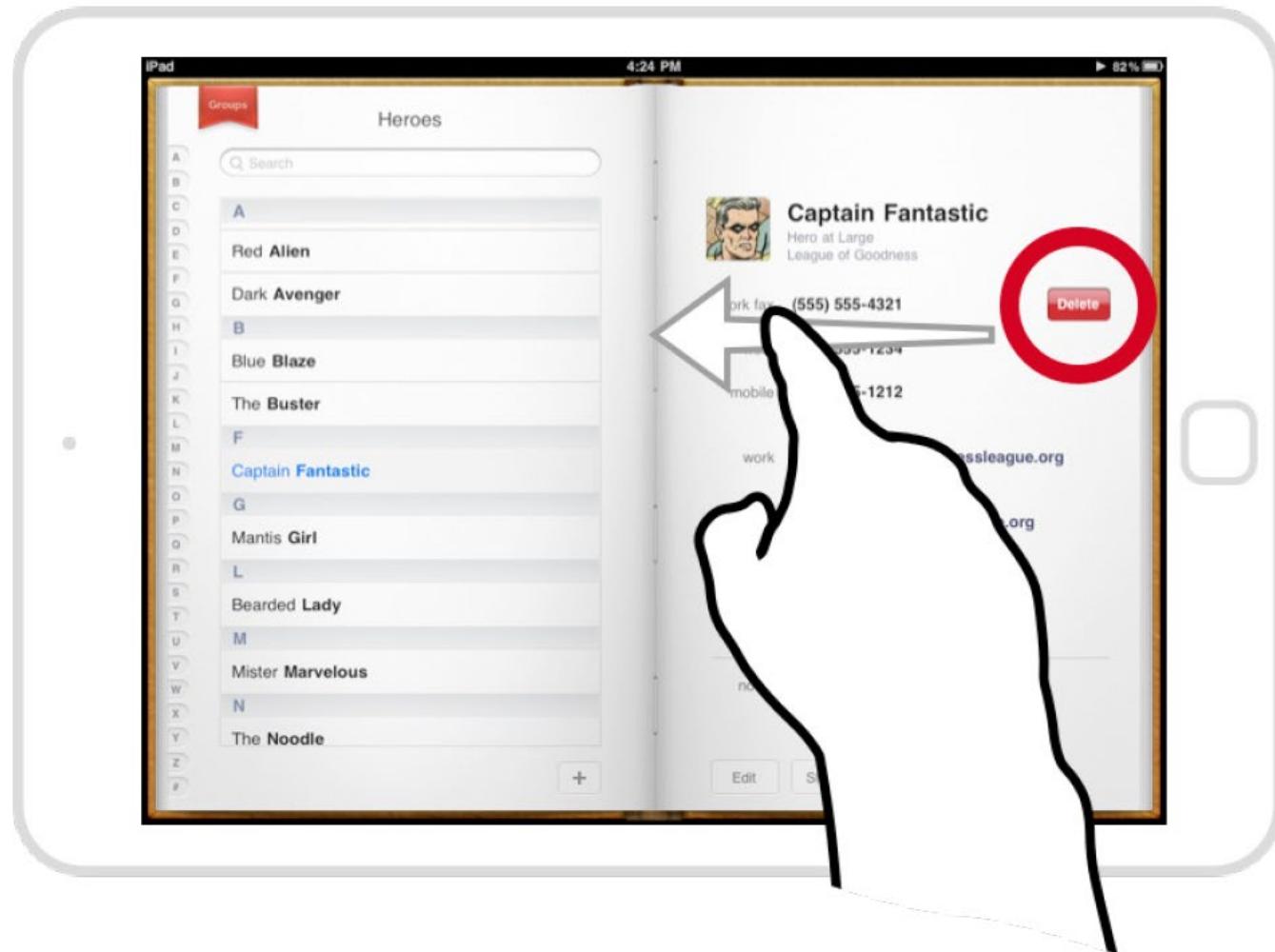


Types of metaphors

Design metaphors show up in different contexts and formats:

- **Visual metaphors** look like something in real word and help to understand how to interact with a tool
- **Linguistic metaphors** create a relationship between two ideas through words (often names given to features)
- **Structural metaphors** can help to understand how something is made or to simplify something complex

Wrong example - 1



Wrong example - 2





Too much realistic interfaces

Making interfaces too much real can be dangerous, because usually the following equation stands:

Looks like* \Rightarrow *Acts like

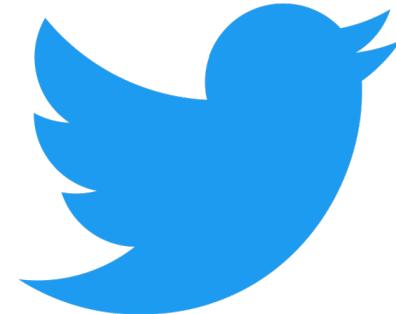
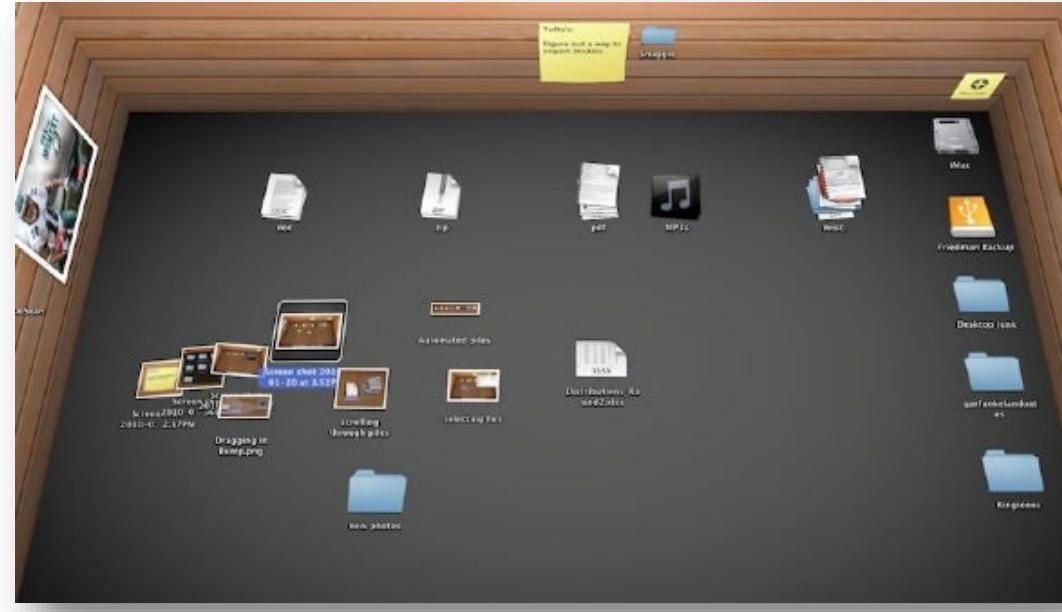
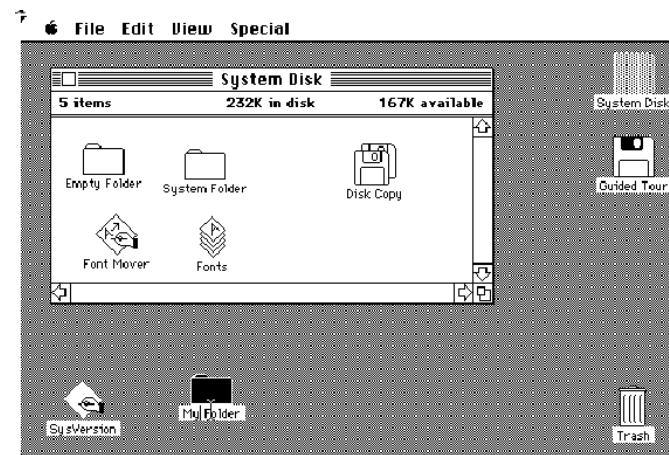
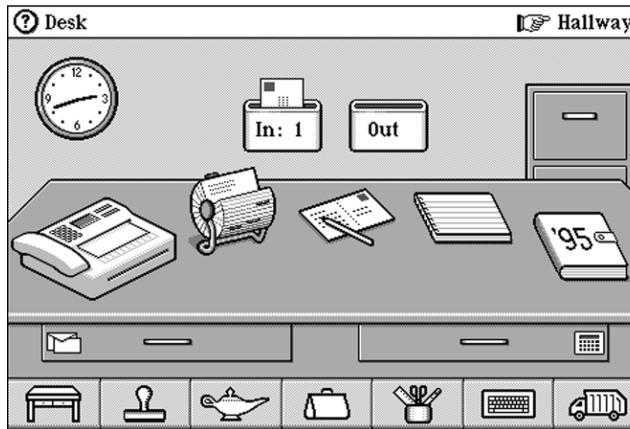
If this does not happen, the user will be confused

Differently, if an object *acts like*, it does not mean that it must *look like*

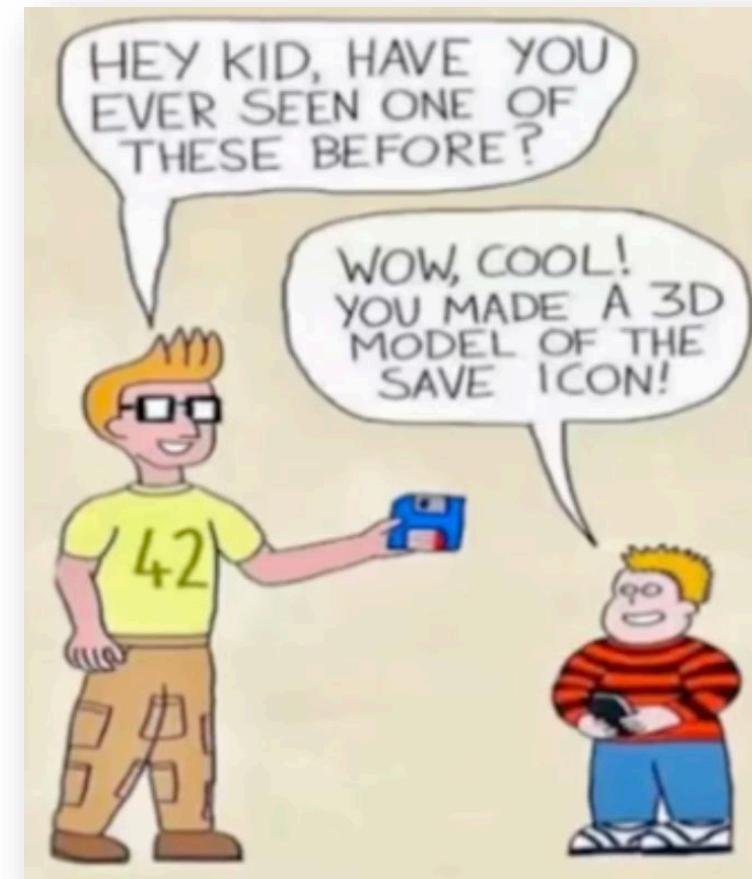
Excessive realism can limit the possibilities

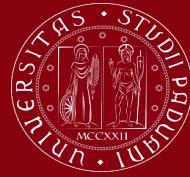
- Initial newspaper applications were not far away from simple PDF readers

From Visual Metaphors to Linguistic Metaphors



Linguistic or visual?





Structural metaphors

Structural metaphors are used to rethink a design problem

Sometimes they are not used in the app but during the design process

They help to avoid using too technical language

Teaching



Instructions

It is not true that if the user needs instructions, the designer has failed to design the interface

- Better learning when doing
- Teach gradually the gestures during the interaction
- Videogames solve this problem very well: the user usually does not know what to do but learns while playing
 - Coaching
 - Leveling up
 - Power-up



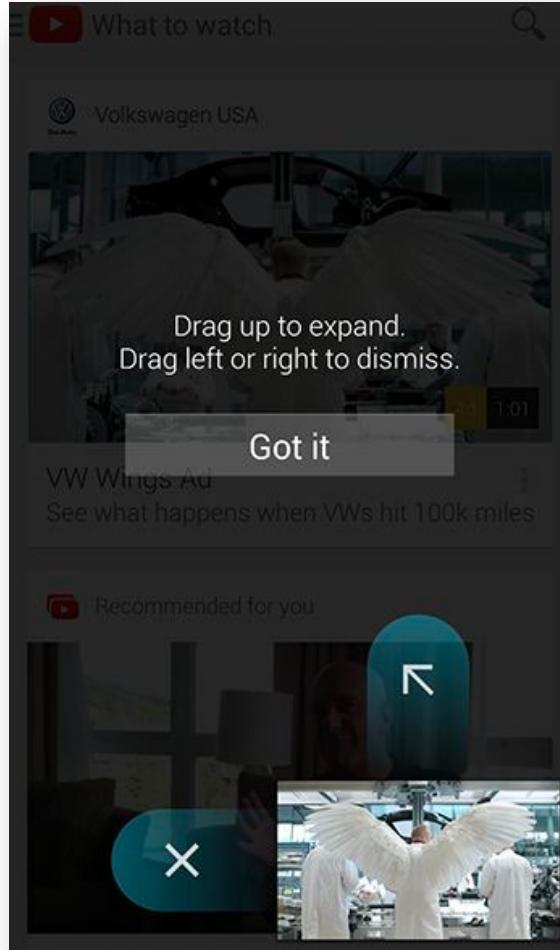
To tell someone what to do is not as effective as showing what to do

Coaching provides easy instructions when the problem shows up for the first time

The key point is to understand if and when the skill has been learned, from that point instructions are a nuisance:

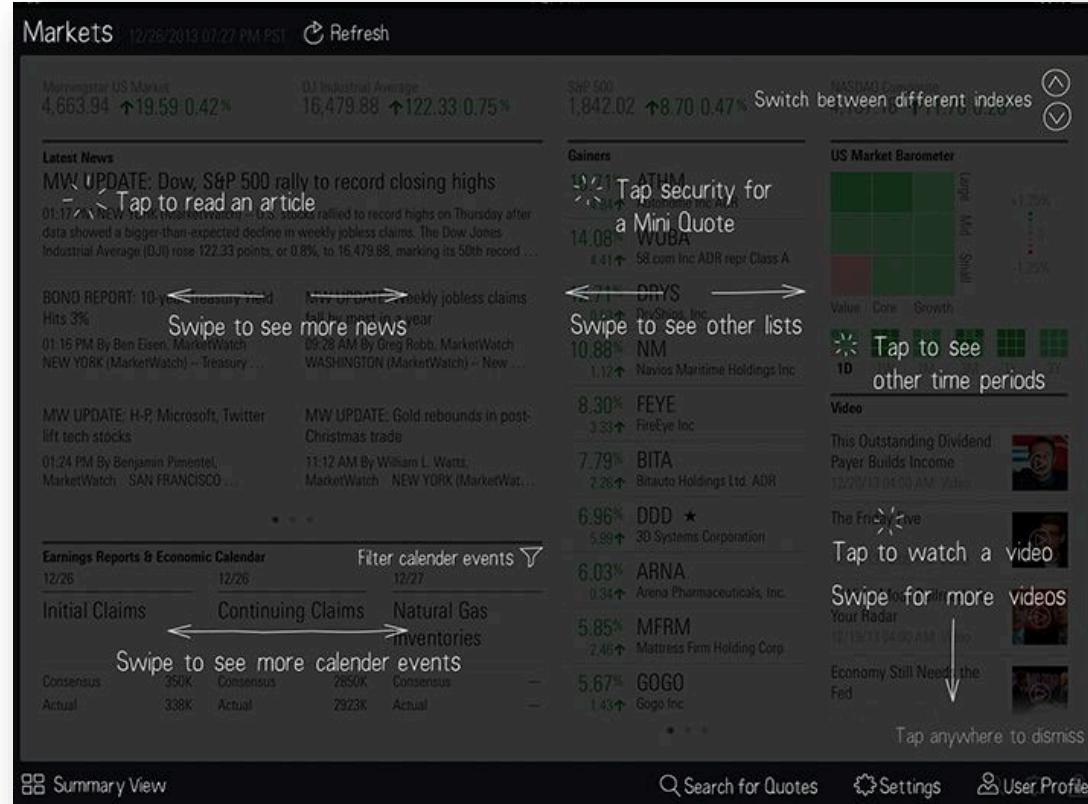
- Ask the user to make a gesture
- Ask several repetitions of the gesture

A good example



- Give instructions for just a single element / task /step
- Very short text and simple instructions
- Ask the user to try

A wrong example



- ✗ Many features taught at the same time**
- ✗ Too much text**
- ✗ Discouraging**



Mistakes as resources

Users' mistakes help to understand what users have *not* learned and so that instructions are still necessary

If the user stops during the interaction, this could be a warning:

- An animation can help the user to complete the interaction

The best interfaces record when the user interacts, do not interact and the learning process, adapting hints and suggestions to the latter

Leveling up

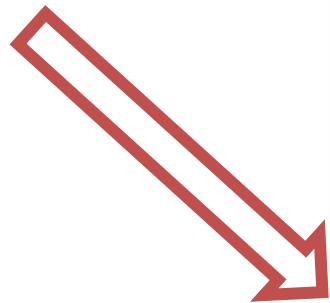


Current guidelines for modern teaching suggest not to teach everything from the beginning, but to provide small-steps knowledge. The leveling up mechanism works in the same way:

- Teaches only basic interactions at the beginning once the user needs them
- Let the users use the complex gestures if they autonomously find them
- Users are more motivated to learn something more complex when they need them
 - App must be organized in different levels
- Provide the necessary time to learn

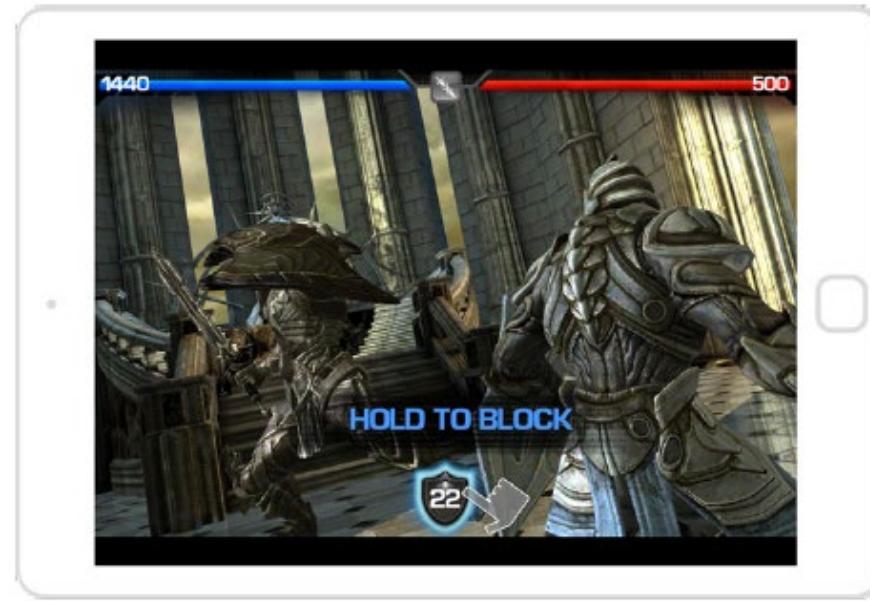
Leveling Up example

Standard approach to like a photo



Level up and double tap on the photo to like!

Games example



Power-up

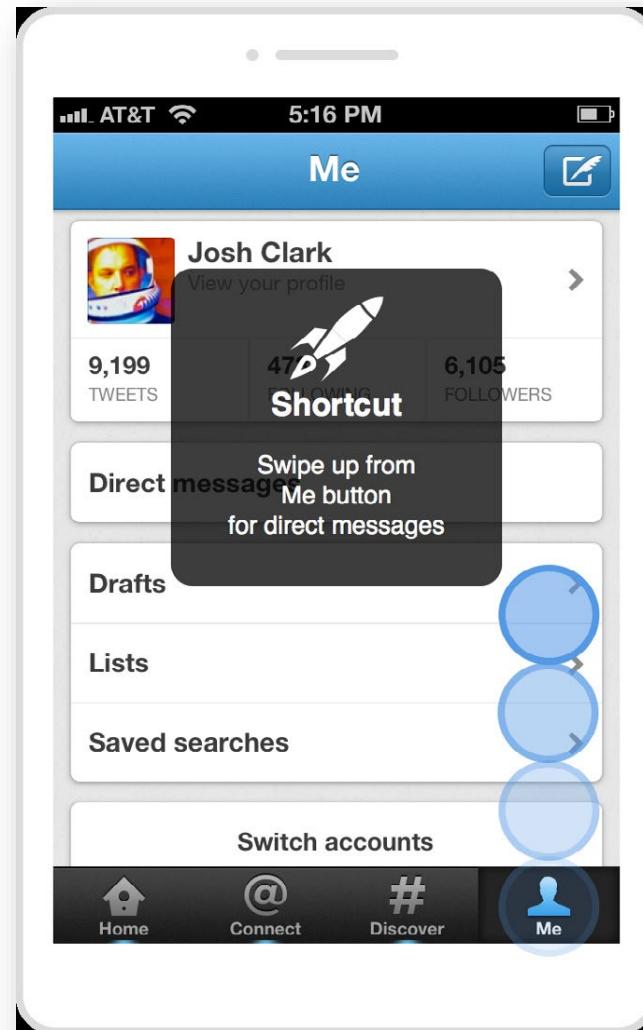


Typical of videogames, power-ups provide facilitations to the user. In videogames, power-ups are gained, hence providing great satisfaction to the user

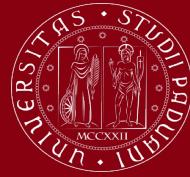
With mobile applications, power-ups are gestures that make interaction faster or easier. Teaching a new way to interact in an easier way provides the same satisfaction as with the power-up in a game

- Think as a videogame designer and provide facilitating gestures as a reward

Power-up example



Open research



Good touch interfaces design is still an open research problem.
There are no standards or precise guidelines, and these
guidelines come from the experience of different designers and
from what has been learned with errors

Suggestion:

... experiment, test, experiment ...

Not only touch!



Other type of interactions

Mobile devices also allow other types of interactions besides touch

- GPS can provide user's location (ex: maps)
- Accelerometer, compass, and gyroscope can recognize the movements of the user
- Other sensors can provide several data (ex: luminosity sensor)
- The camera can be used to collect data (ex: translator, QR code reader, accessibility for blind people)
- Fingerprints reader
- ...

Subway example

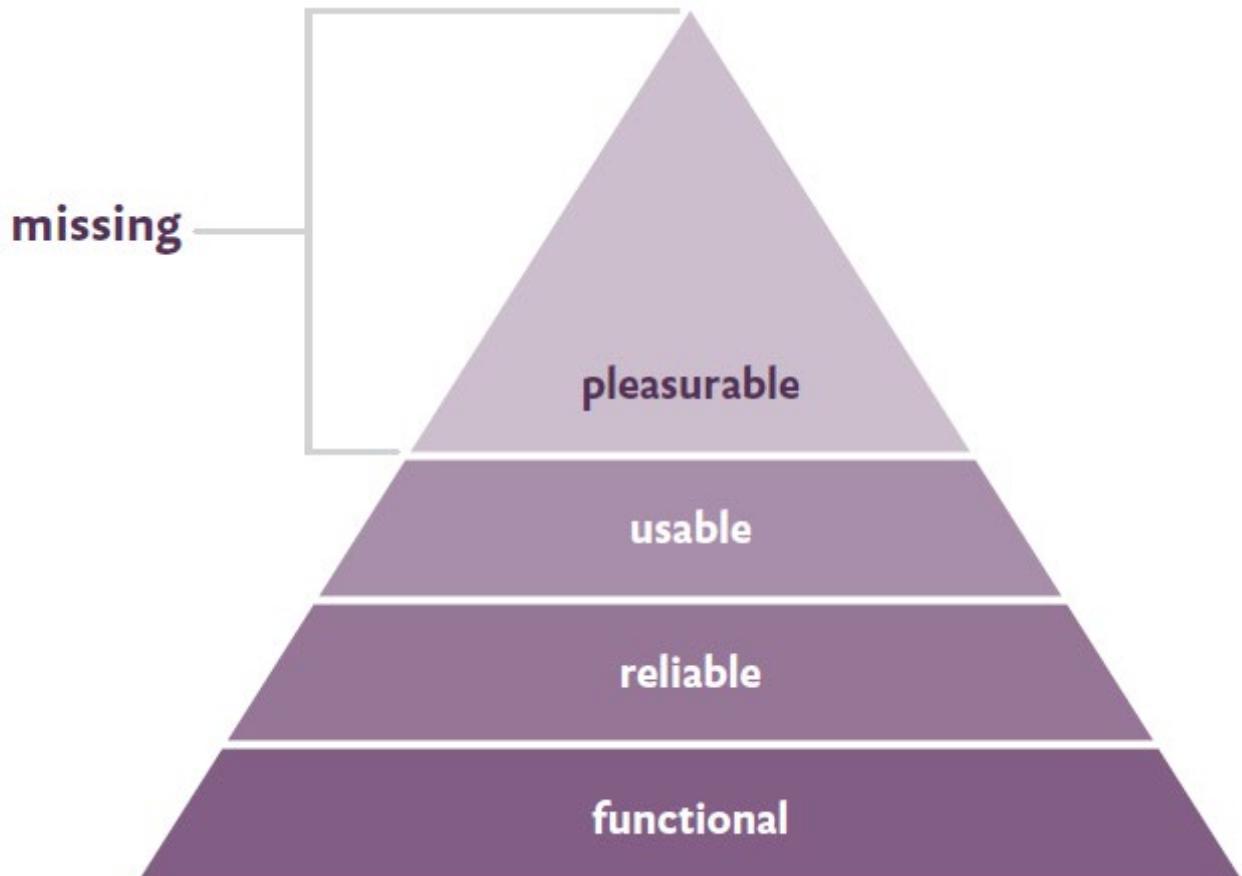


Emotional Design

Maslow's pyramid



... remapped on users' needs



Designing for Emotion, Aarron Walter, 2011

Users' needs

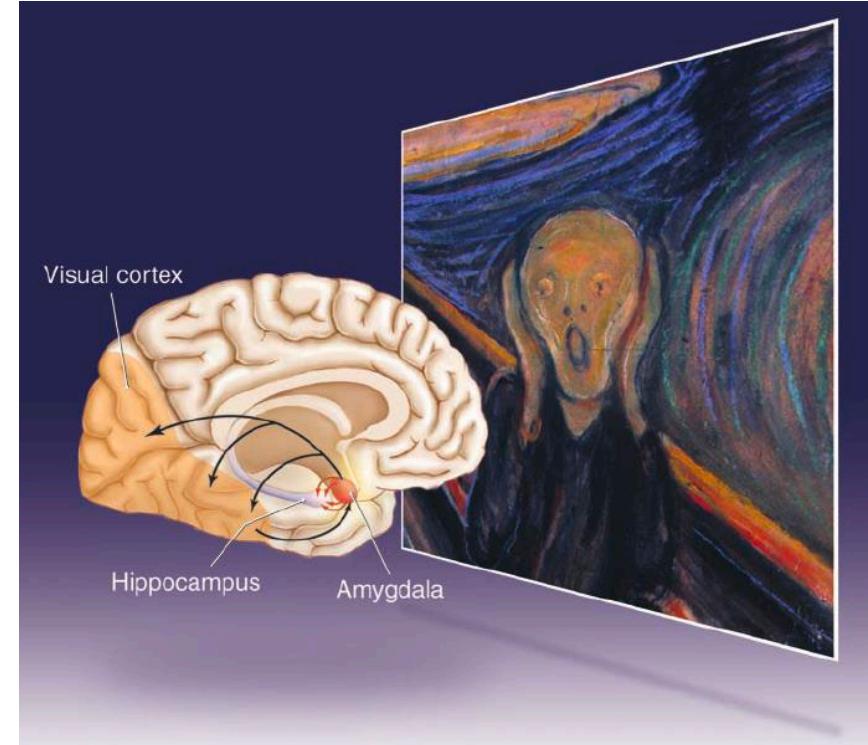
- ***Functional***: user must be able to complete the assigned task
- ***Reliable***: the system must work, failures of every kind are unwelcomed
- ***Usable***: it must be easy for the user to learn how to use the system and its functionalities
- User experience must be ***pleasant***

Our brain



Amygdala is the oldest component of our brain whose job is to answer to our needs such as hungry or thirsty.

The stimulation of this part of the brain, make easier for us to make our application more acceptable.



Emotions and memory



Emotions are essential for memory management because they are a sort of reminder, like using a post-it or a bookmark on a page of a book



What's happening?

Timeline @Mentions Retweets Searches Lists

tweets mentioning @stop

c Coley Wupperer @stop @zhanna Correction: Three-PERSON design team. from Potrero, San Francisco 33 minutes ago

@ozanlibey Ozan libey Yilmaz Dear #NewTwitter, "good proportion" is one of the main design principles. Remember? @stop @design 1 hour ago

ashley ashley Veselka Right? LOVE #newtwitter! Great job @stop @Zhanna RT @jostoval: man, twitter. you really know how to do webz 1 hour ago

Zhanna Zhanna Shamis @goldman @stop right on! from SoMa, San Francisco 1 hour ago

oldidea oldidea

close x

@ozanlibey Ozan libey Yilmaz Dear #NewTwitter, "good proportion" is one of the main design principles. Remember? @stop @design 1 hour ago via web Favorite Retweet Reply

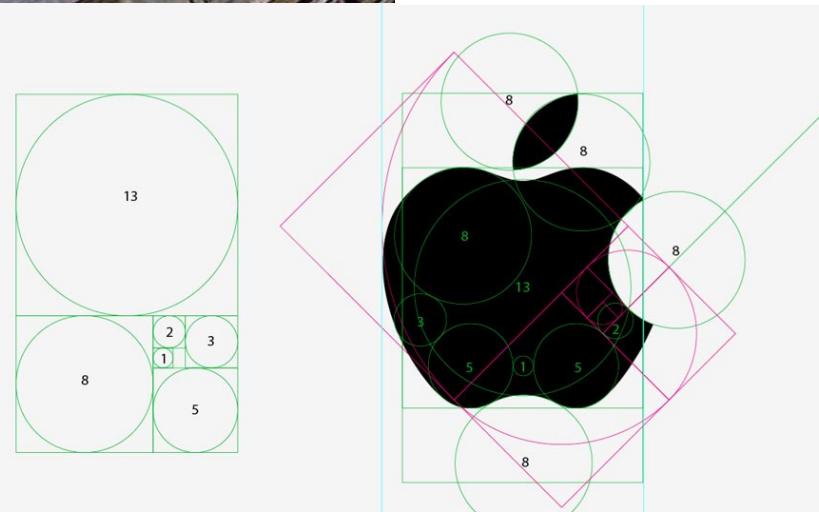
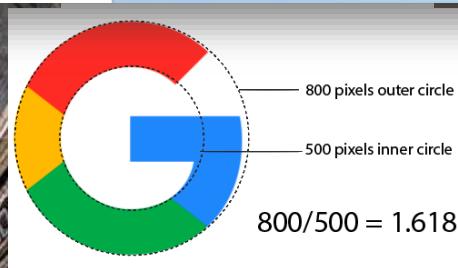
Mentioned in this tweet

design Twitter Design Tweets from the Twitter Design Team.

Replies to this Tweet

ozansener ozansener @ozanlibey ya o proportion bazein ise varyo :p ama gerektiginde buyumesi daha guzel olurdu. from Princeton North, NJ 1 hour ago

Tweets tagged with #NewTwitter



A simple example



Apple patent (2002) for a status led following the human breath. It helps to relax the user

Humanization



UNIVERSITÀ
DEGLI STUDI
DI PADOVA



Another example



A good technique is to imagine the brand as a person with a personality, and imagine how this person could speak, answer, act, etc.

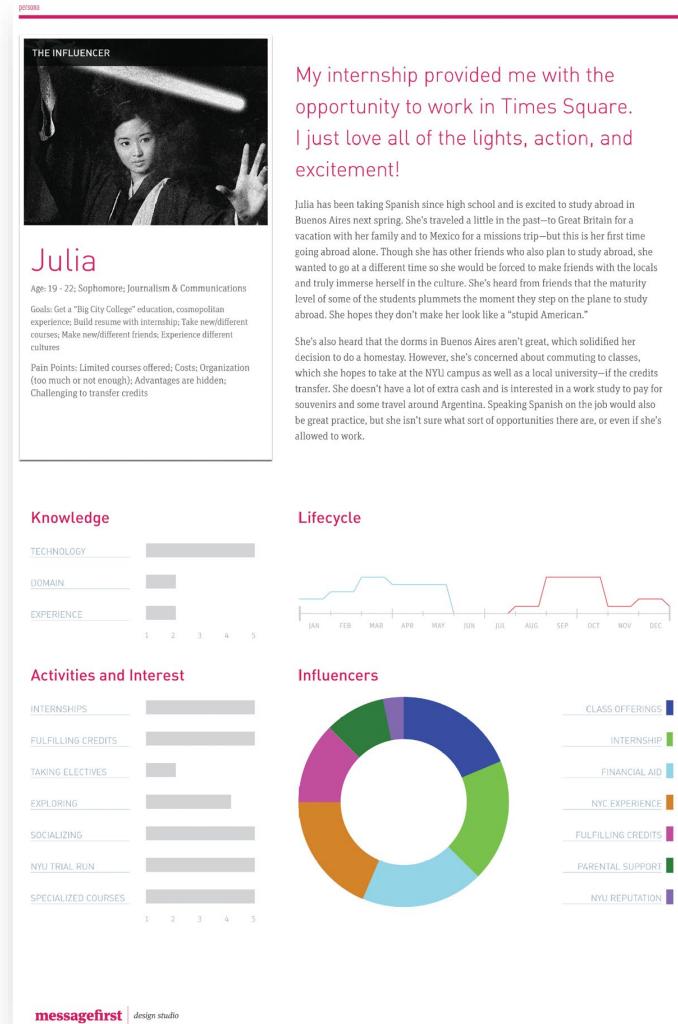


*If your app were a
person, who would it
be?*

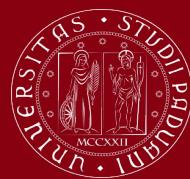
User archetype

Persona is a dossier of an archetypal user who represents a larger group

Persona helps designer to remain aware about their target audience and stay focused on their needs

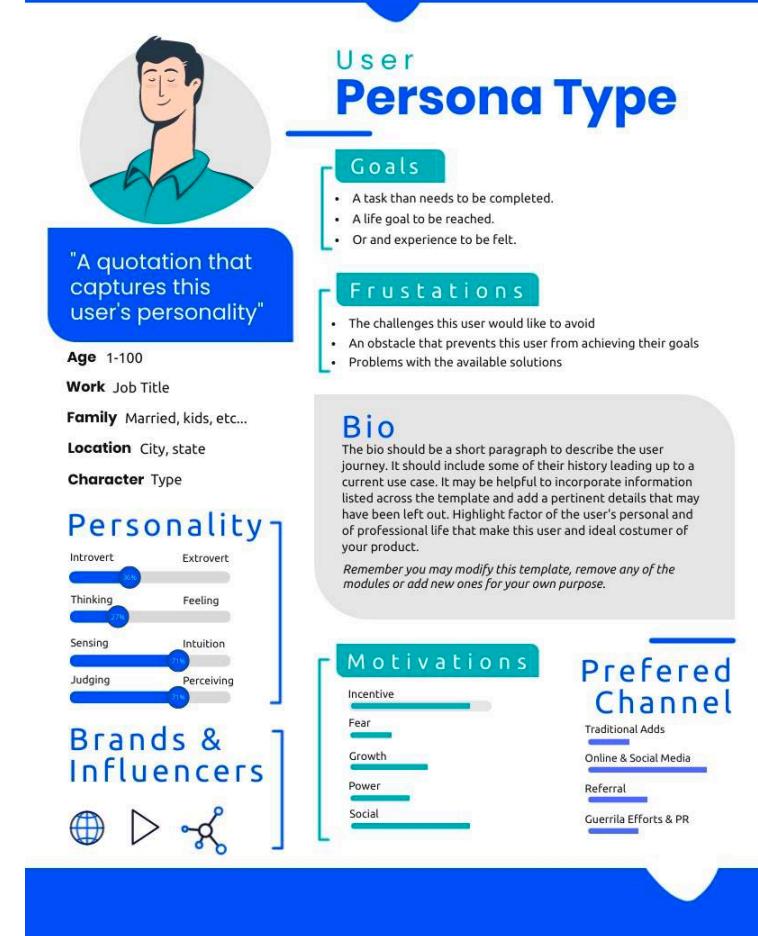


Persona



Data to collect:

- Name and brand image
- Personality
- Language used
- Visual lexicon (font, type of icons, colors, etc.)
- How can I get their attention? Which emotions is the user more sensitive to?



Which emotions can we use?

There are no rules, but we can use different emotions depending on the context. Generally speaking, the most effective are:

- Surprise
- Pleasure
- Preview
- Status/Exclusivity
- Rewards



Never force the user to change!

How to use emotions



The screenshot shows a product page for 'The Dreamy Diana Lens' on the Photojojo! Store. At the top, there's a banner with 'FREE Shipping! On USA orders over \$50' and a 'Cart 1 item' button. The main title is 'The Dreamy Diana Lens' with the subtitle 'Adds a retro mode to your DSLR!'. Below the title is a large image of a woman smiling while holding a camera. Below the image are six smaller thumbnail images showing various photos taken with the lens. To the right of the image, there are two price options: 'Nikon Lens + Adapter \$60.00' and 'Canon Lens + Adapter \$60.00'. Below these are buttons for 'Add to Cart'. There's also a section for 'Just the Adapter \$15.00' with a dropdown menu labeled 'Pick one...' and an 'Add to Cart' button. A vertical orange line with a hand icon points down to a quote from 'Dave Johnson PC World': 'I'm never disappointed by Photojojo.' Below the quote, it says 'In stock! Ships in 24 hours' and 'Shipping starts at \$2.50 for most items (pick USPS 1st Class) with easy returns and exchanges!'. At the bottom, there are tabs for 'Description' and 'FAQ'.

FREE Shipping!
On USA orders over \$50

All Products

* Photojojo! STORE *

The Dreamy Diana Lens

Adds a retro mode to your DSLR!

Nikon Lens + Adapter \$60.00

Canon Lens + Adapter \$60.00

Add to Cart Add to Cart

Just the Adapter \$15.00

Pick one... Add to Cart

In stock! Ships in 24 hours

Shipping starts at \$2.50 for most items (pick USPS 1st Class) with easy returns and exchanges!

I'm never disappointed by Photojojo.

Dave Johnson
PC World

Description FAQ

You've got libraries full of flawless, uber professional, kick-ass magazine worthy photographs.

But despite the hundreds of dollars spent on whotzits and whatzits galore

- Adds a soft and dreamy focus to your photos
- Includes Canon or Nikon adapter

Another example

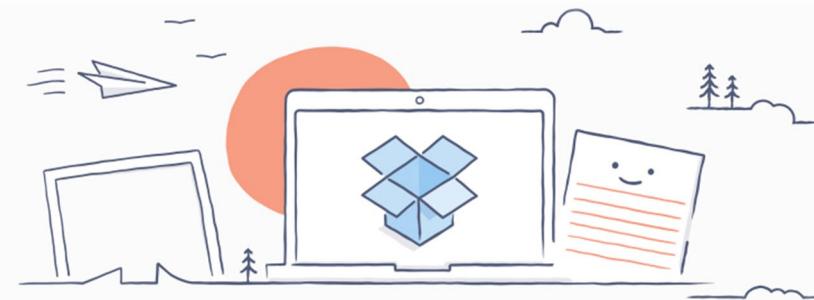


Follow the instinct

When users must decide something, they consider the pros and cons. When it is not possible to measure everything accurately, instinct prevails.

Major obstacles:

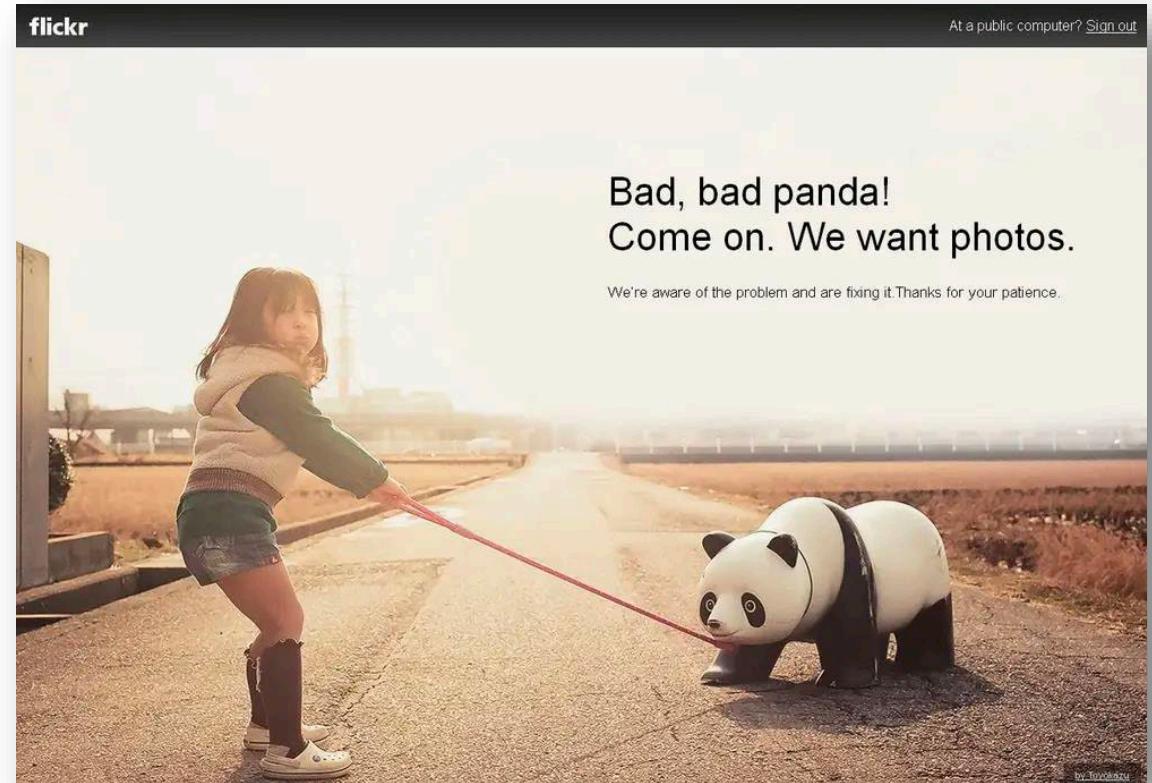
- Laziness
- Skepticism



A good design or the use of games/incentives can help for a good decision

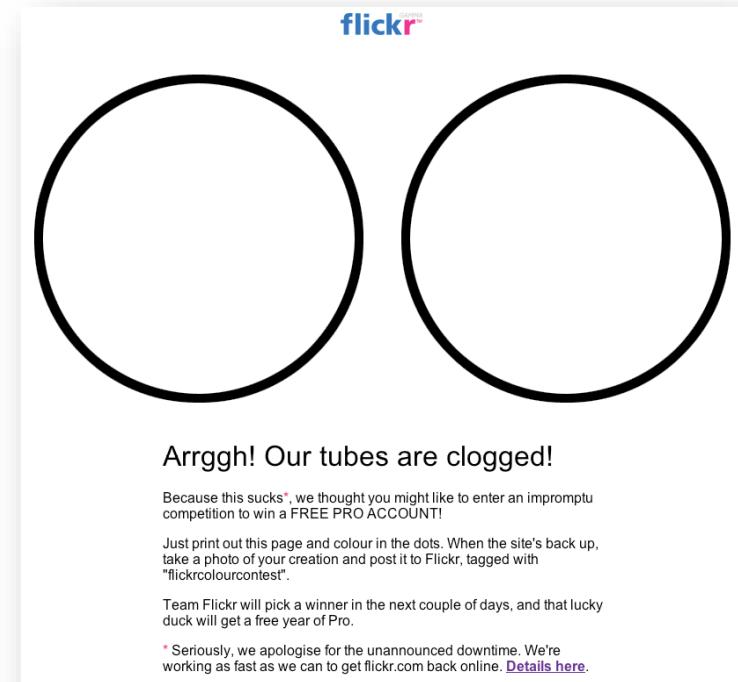
What if it doesn't work?

- Is the persona created for the brand, correct?
- Is it too similar to other competitors?
- User needs?
- Is the language correct?
- Is my application still usable, enjoyable, reliable?



When it is not possible to use

It is not always possible to use informal language, but generally it is a good idea in case of disruptions. Tell always the truth!



*Putting all together:
the app as an overall narrative*



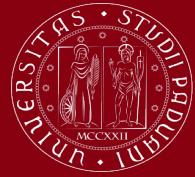
When you are thinking about how it might show up an app, remember that narrative is all about perspective

A story brings ideas to life by relating them to other ideas, thus finding relationships

Relationships can be:

- **Sequence**: which idea comes first, and what comes later
- **Theme**: how ideas are understood when looked at as a group

If you consider the design of an app as a *storytelling*, this is a good way to discover *interactions*



Storytelling

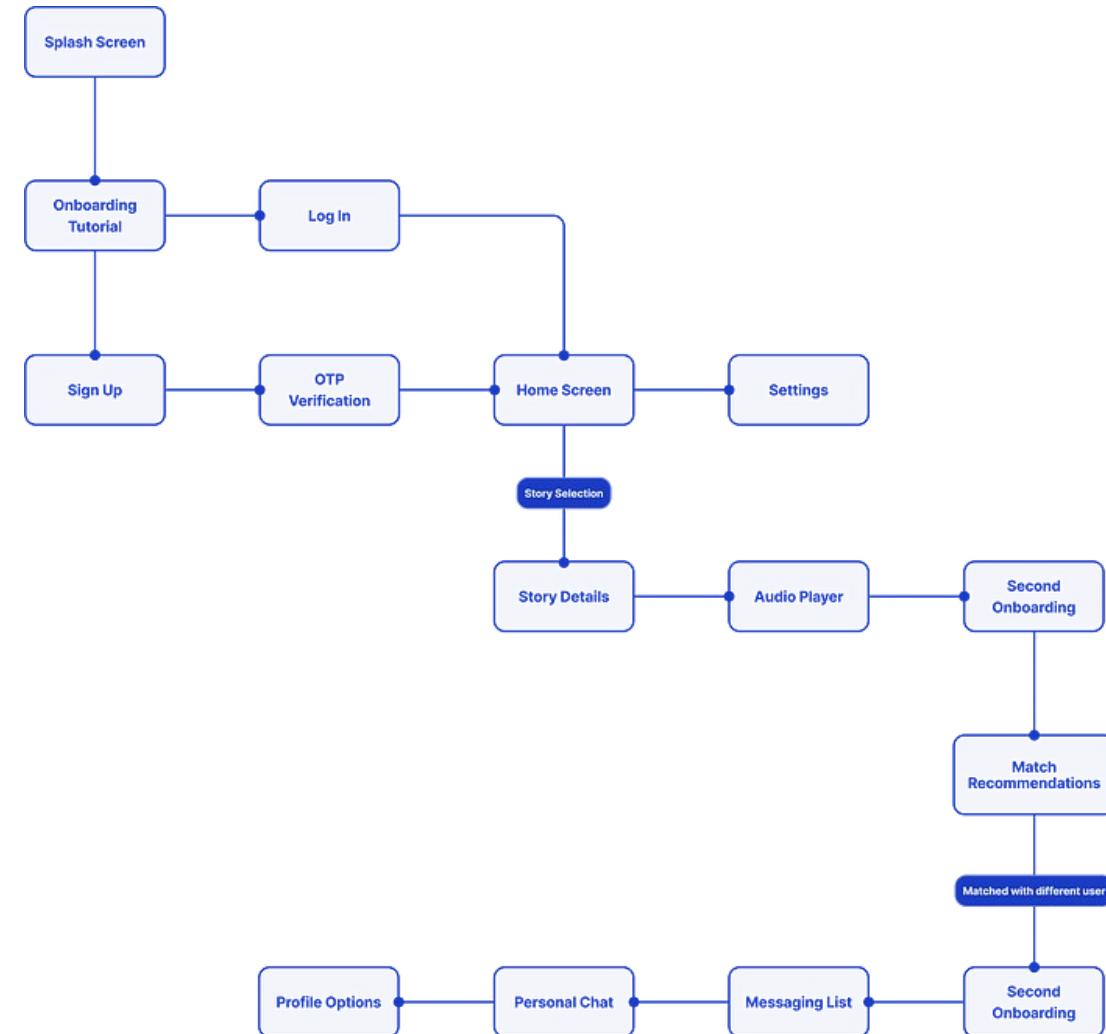
A story can help to find some design elements:

- The app's information architect
- The repetition of words or themes across the app → keep the language consistent (same concept = same name)
- The user's journey
- The stories visual patterns tell

How to find pieces of your app story

It's a process of visualizing a concept beyond a single interface or flow and imaging all the other places where the concept may appear

- Examine nouns (→ objects) and verbs (→ user's actions)
- Consistency in the descriptive content
- Call to action
- Test different ways of expressing an idea
- Count how many step the user must do

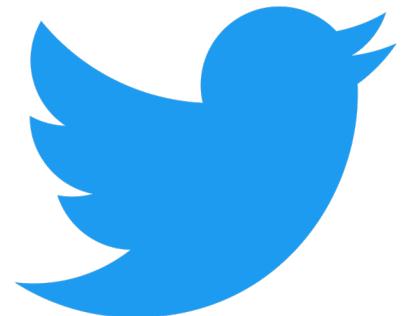


Exercise



Describe Twitter flow as you were giving directions to someone who was lost:

- On the first screen, you can see all the tweets that have been sent lately. One of them can catch your eye
- You click on that tweet. It is an article. Now you can see that tweet with all the replying tweets
- You can also see where you can reply. Click on a reply
- Now you can see that reply with all the replying tweets
- Those replies can have their own replies...



*Have you finished?
The icon!*



Don't underevaluate the icon!

The icon is really important because it is what users will see in the screen of their smartphones. It is the ***most seen*** element of the app

It is like a ***post-it*** to remember to use the app

Good icons usually:

- are built on existing brand iconography
- contain the functionality of the application in a single image
- show the name to strengthen the identity

Some examples





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 - <https://material.io/guidelines/material-design/introduction.html>
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 - <https://developer.microsoft.com/en-us/windows/apps/design>