

Introduction to Human-Computer Interaction

Designing Interactive Systems

Lecture 3 – Sketching & Prototyping

Nadia Boukhelifa

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with acknowledgements to:

Petra Iseberg, Anthony Tang, Nic
Marquardt, Raimund Dachsel, Saul
Greenberg

last time you learned

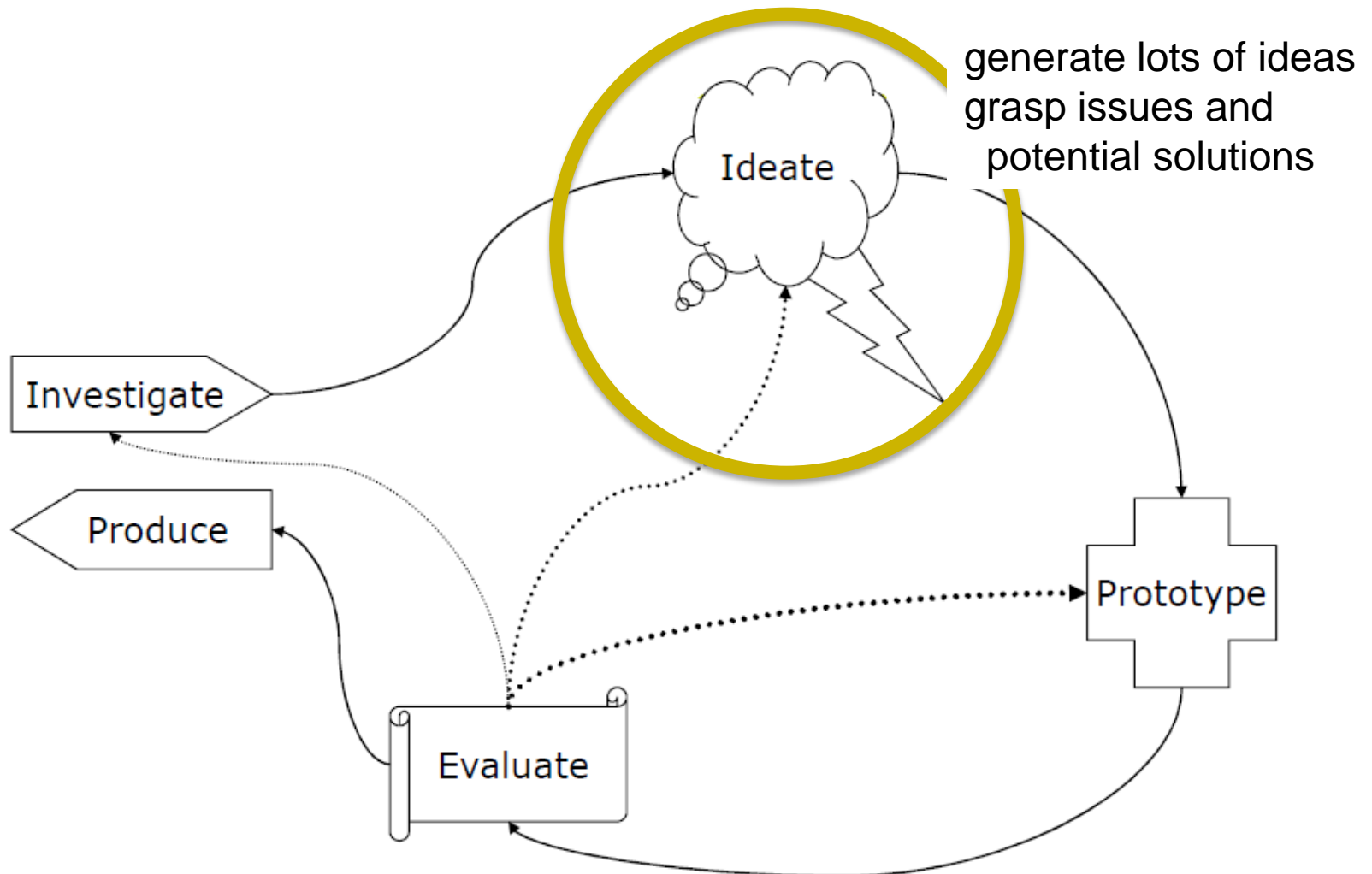
how to elicit requirements for your system:

- from a user's perspective
- using observation
- by speaking with people
- by doing data analysis

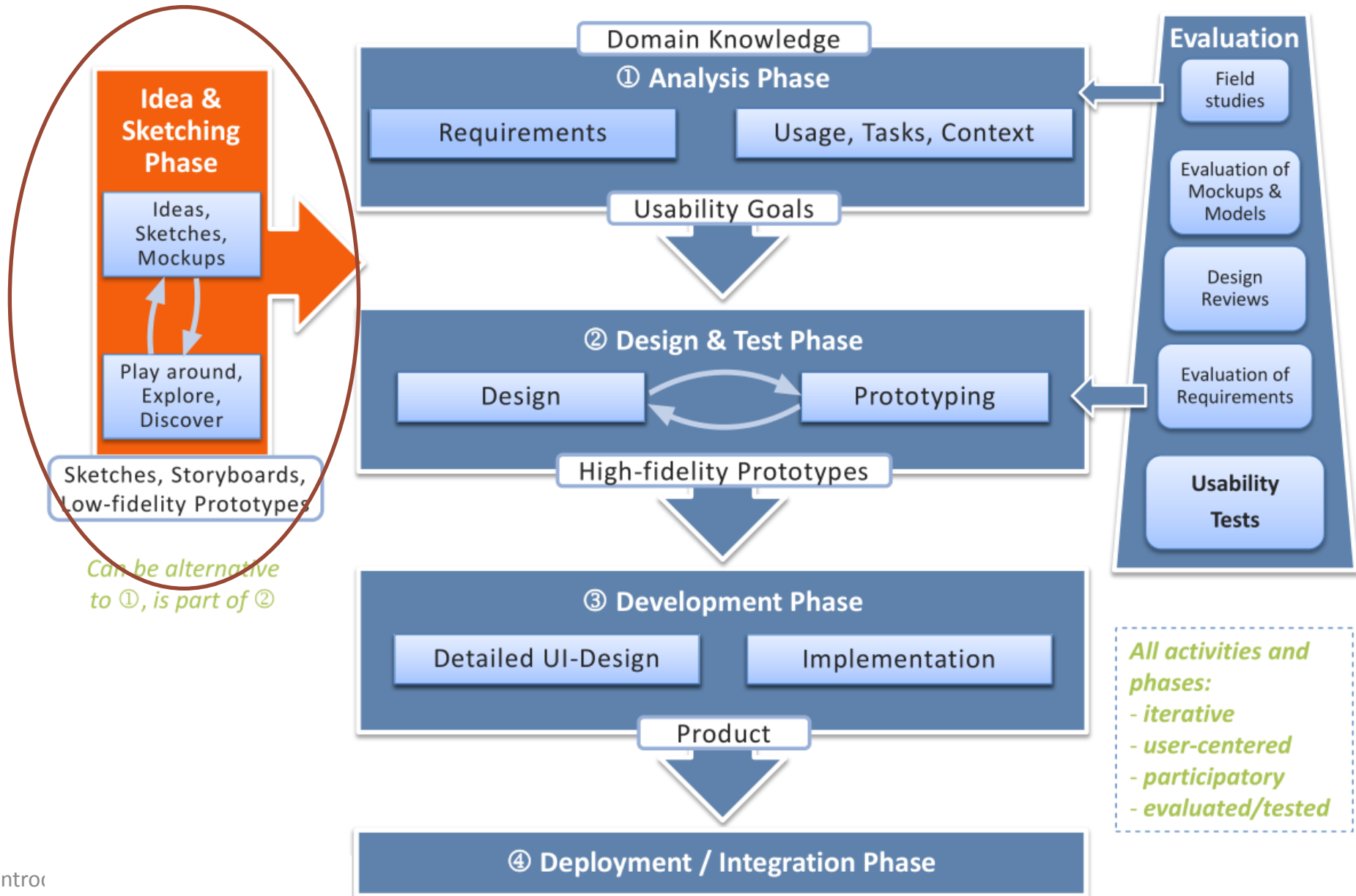
still we need ideas for final solutions



user centered design process



a more detailed view



ideation

- how do we come up with great ideas?
- how do we come up with lots of ideas?
- how do we come up with big ideas?

- how do we refine ideas?
- how do we organize ideas?

criteria for evaluation of ideas

1. Have you considered all the advantages or benefits of the idea? Is there a real need for it?
2. Have you pinpointed the exact problems or difficulties your idea is expected to solve?
3. Is your idea an original, new concept, or is it a new combination or adaptation?
4. What immediate or short-range gains or results can be anticipated? Are the projected returns adequate? Are the risk factors acceptable?
5. What long-range benefits can be anticipated?

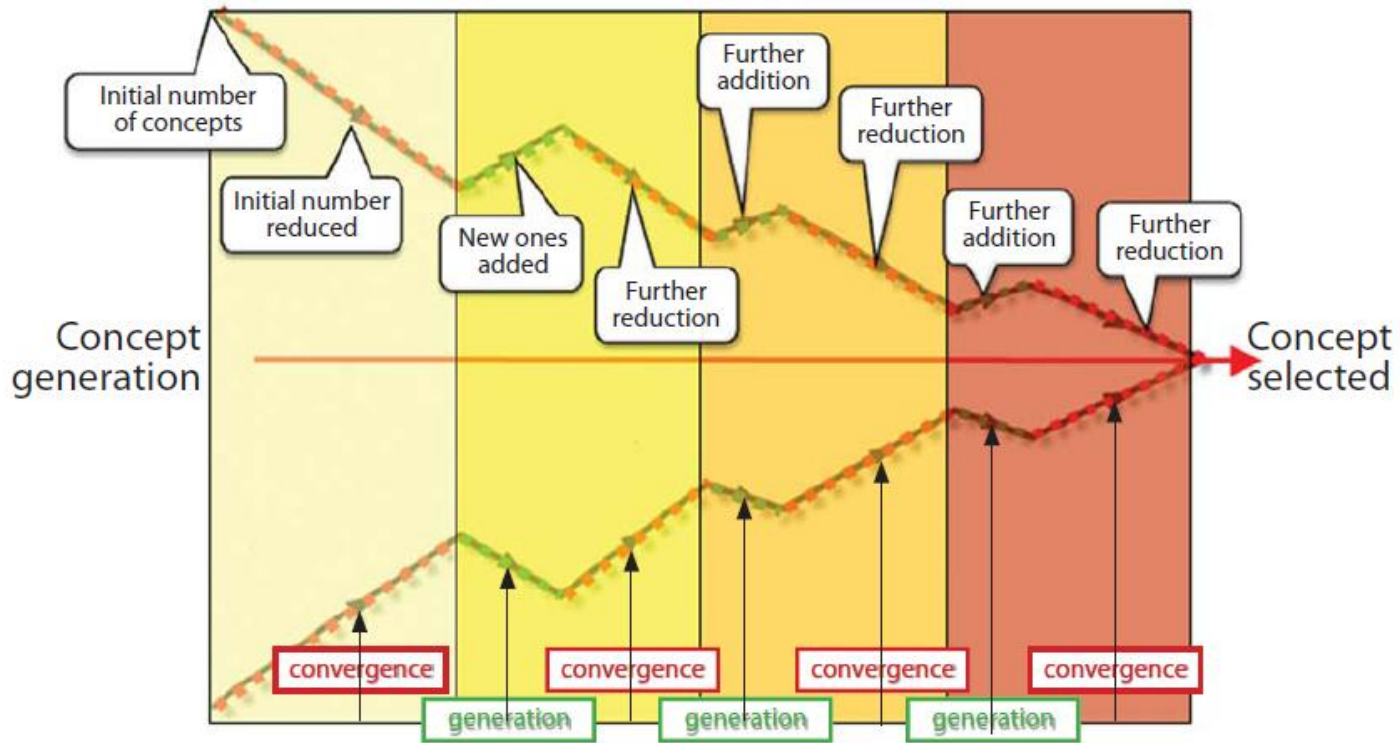
Read more: <http://www.entrepreneur.com/article/81940#ixzz2s4siMMA2>
Princeton Creative Research

criteria for evaluation of ideas

6. Have you checked the idea for faults or limitations?
7. Are there any problems the idea might create? What are the changes involved?
8. How simple or complex will the idea's execution or implementation be?
9. Could you work out several variations of the idea? Could you offer alternative ideas?
10. Does your idea have a natural sales appeal? Is the market ready for it? Can customers afford it? Will they buy it? Is there a timing factor?
11. What, if anything, is your competition doing in this area? Can your company be competitive?
12. Have you considered the possibility of user resistance or difficulties?
13. Does your idea fill a real need, or does the need have to be created through promotional and advertising efforts?
14. How soon could the idea be put into operation?

Princeton Creative Research

design funnel



Iterative:	General overall concepts	Iteration 1 exploratory	Iteration 2 clarification	Iteration 3 resolution
Granularity:	General overall concepts	Course significant alternatives	Medium intermediate development	Fine detailed refinement

Pugh, S. (1990) Total design: Integrated methods for successful products engineering. Addison-Wesley. P. 75

a lot of your ideas will end in the garbage



design is choice

there are two places where there is room for creativity:

1. the creativity that you bring to enumerating meaningfully distinct options from which to choose
2. the creativity that you bring to defining the criteria, or heuristics, according to which you make your choices.

Bill Buxton

creativity as a designer

immerse yourself in the world you are designing for
(gathering inspiration)

- collect examples from existing systems
- collect things that irritate you
- collect things that seem really good
- sample things that inspire you



IDEO tech box

<http://www.ideo.com/work/tech-box/>

exercise: articulate what makes something good

Bandeja de e... (99+) Otros (13) Más ▾

Buscar

Claudia del Rio 22:54
45% le interesa y sigue el tema de ...

Aimel Rios 22:52
la comunidad virtual son un peun... 2 nuevos

Alexis Romay 22:50
oye, jaba'o, estas en vela aún?

Blanca Esperanza Gutiérre... 22:49
✓ he trabajado todo el dia en la int...

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☺

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Gracias a ti, asere (palabra que ... 1 nuevos

Claudia del Rio ●

+ Nuevo mensaje * Acciones 🔍

con mucho gusto
viste e; mensaje que te envíe esta mañana

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Qué crees que logra la comunidad activa de facebook en favor de los activistas cubanos de ntro de la isla? Tomate unos minutos, me la escribes en word, con calma y me la copias aqui en el buzón de mensajes, te voy a esperar

no, no vi nada he estado desconectado, trabajando la interfaz del blog y me tiene medio jodio eso

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Primeramente , la comunidad activa se compone de muchas edades y diferentes intereses , aunque por estadísticas podría creer que el 45

Claudia del Rio 22:54

45% le interesa y sigue el tema de Cuba y la disidencia se informan llegan a comparti la noticia pero no pasa de ahí . hay un 15 % que si le intereza ayudar y llevar un poco de interes a organizarse para hacer algo y le queda ya la inquietud de que algo hay que hacer pero no saben como hacerlo Se podri hacer mucas cosas para ayudar y crear un red extremadamente fuerte que puede llegar hacer hasta incontrorable para el Gobierno de Cuba pero hace falta encender esa chispa de decco y disciplina y trabajar en un solo proyecto para llevar a cabo una solución que se que esta en nuestras manos .

Escribe una respuesta...

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35 amigos en común
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Claudia del Rio + Nuevo mensaje Acciones

con mucho gusto
viste e; mensaje que te envíe esta mañana

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fox Generacion Y Claudia del Rio - Mensajes Recibidos (2.081) - alambra... Personalizar Pilcrow — W... Delta Search

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10:54 PM

what is the general problem that it solves?

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Primera mente , la comunidad activa se compone de muchas edades

where else could I use it?

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Alexis Romay Aimel Rios Blanca Esperanza Gutiér... Claudia del Rio

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imagines Being


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Start at:

things that irritate

- articulate and understand what makes something irritating
- why are mistakes happening
- how can it be done better

things that irritate

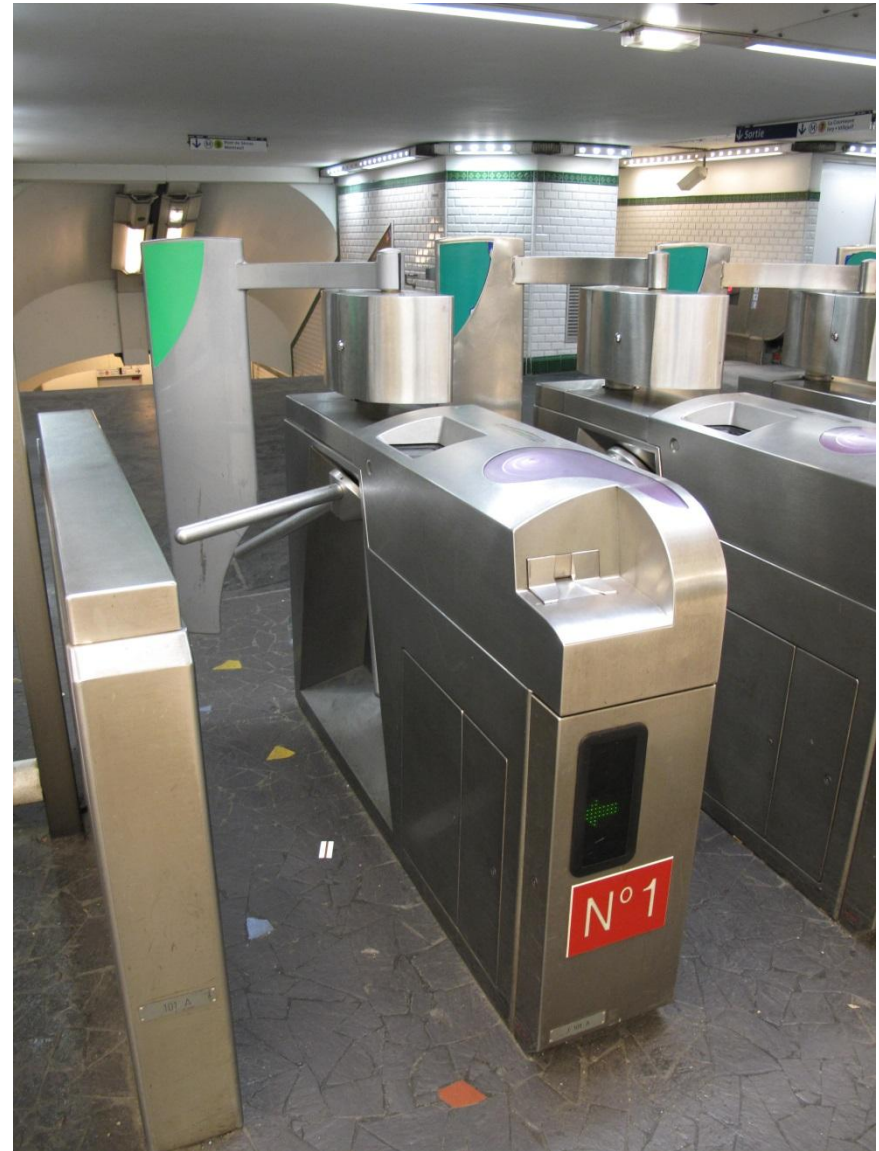
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Image: Wikimedia Commons

things that irritate

- articulate and understand what makes something irritating
- why are mistakes happening
- how can it be done better



creativity as a designer

- practice explaining ideas to others (it's hard!)

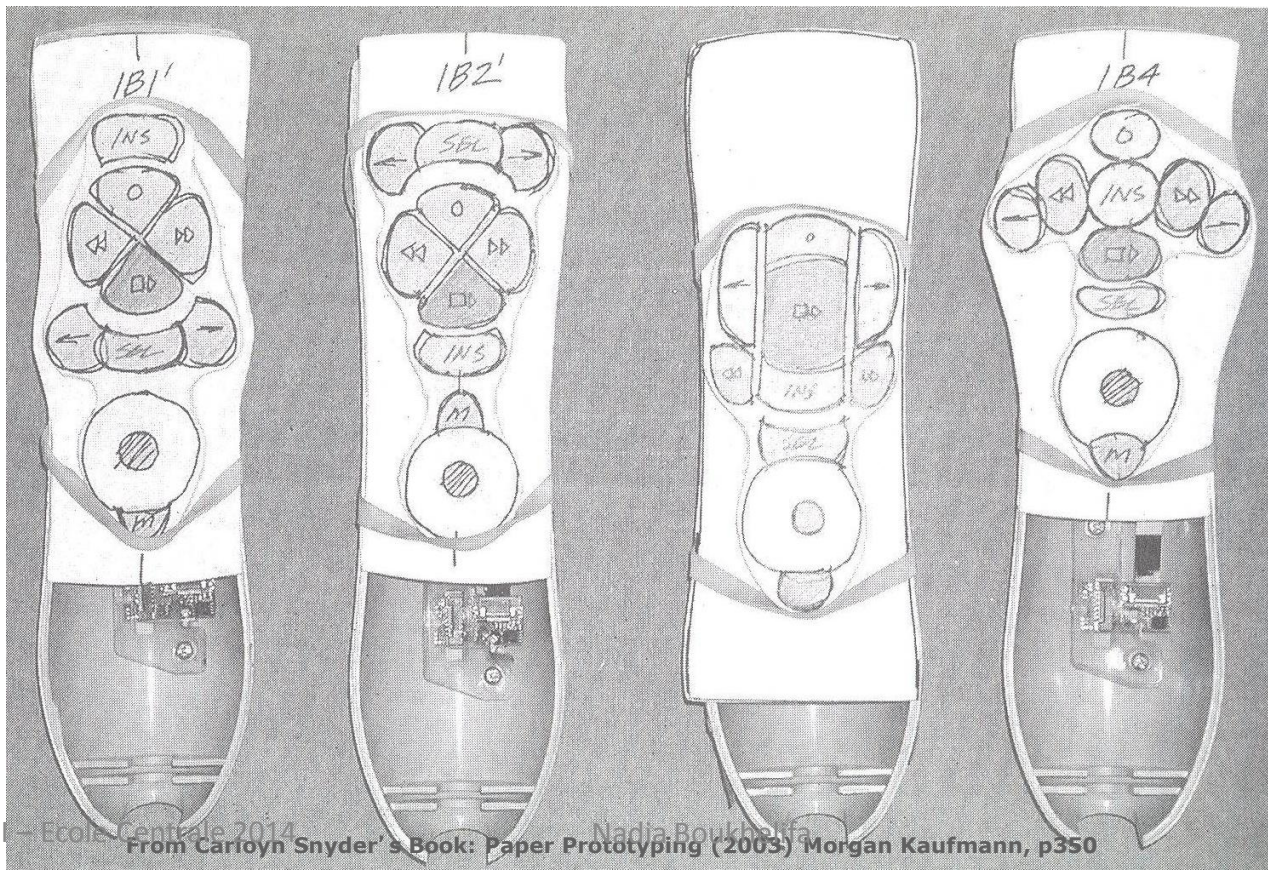


creativity as a designer

- take an outsider's perspective on something you know well
 - helps to simplify your language/understanding
- take an insider's perspective you don't know well
 - helps you to identify your assumptions

sketch constantly

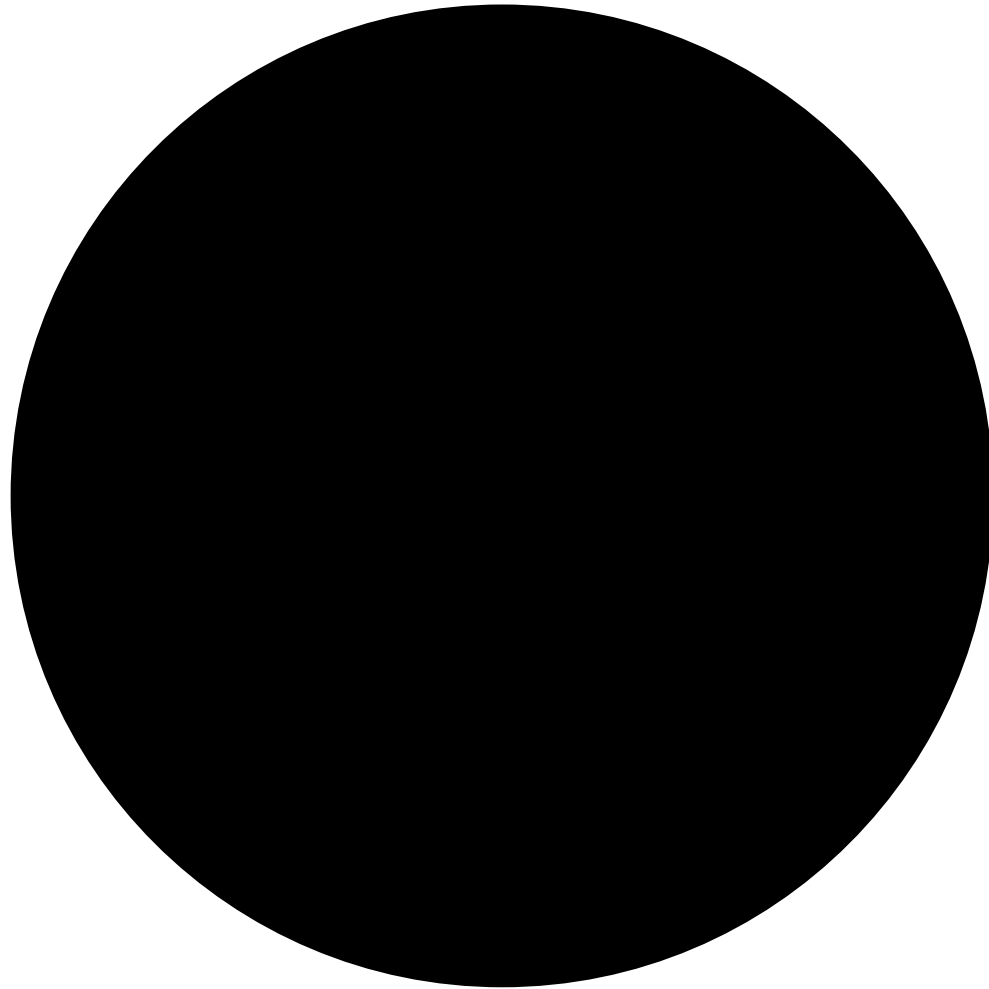
- generate ideas constantly (keep a sketchbook)
- sketch vague ideas to help think more clearly



creativity as a designer

take risks (early on, it doesn't hurt!)





answers

- a dot
- a black dot
- a squashed bug with no legs
- a ball
- the top of a telephone pole
- a hole in a golf course
- a black moon in a white sky

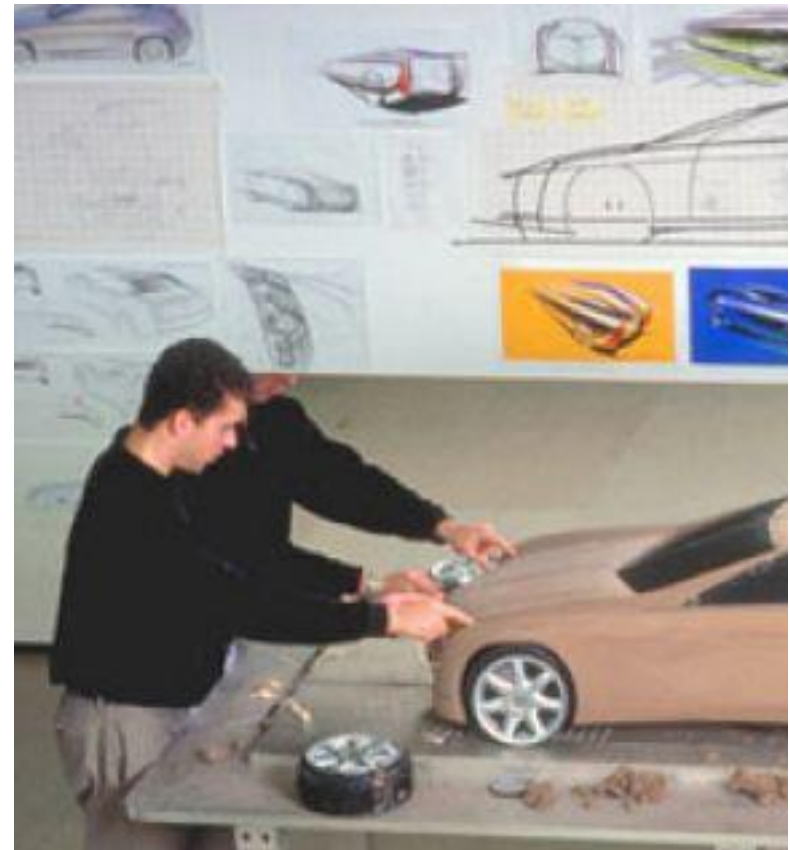
kids and creativity

- don't know what is / isn't possible
- don't know the world and invent it
- take risks, ...



what to do with your collection of ideas

- keep a sketchbook
- wallpaper it



brainstorming

- works best in groups
- can be useful and fun
- keep the results of user research handy during the process (e.g. scenarios, lists of design requirements, etc.)

brainstorming for design

- be visual
- defer judgment
- encourage wild ideas
- build on others
- go for quantity
- one conversation at a time
- stay focused on topic

summary so far

- find things that x you
 - where $x = \{ \text{inspire, interest, irritate, amuse} \}$
- find things that you y
 - where $y = \{ \text{can improve, relate to} \}$
- break the rules, and think freely

today

- sketching – introduction
- sketching workshop
- prototyping – introduction
- lab – sketching for your project

Introduction to

SKETCHING

sketches are...

- quick, freehand drawings
- can include labels or captions
- don't need to be pretty

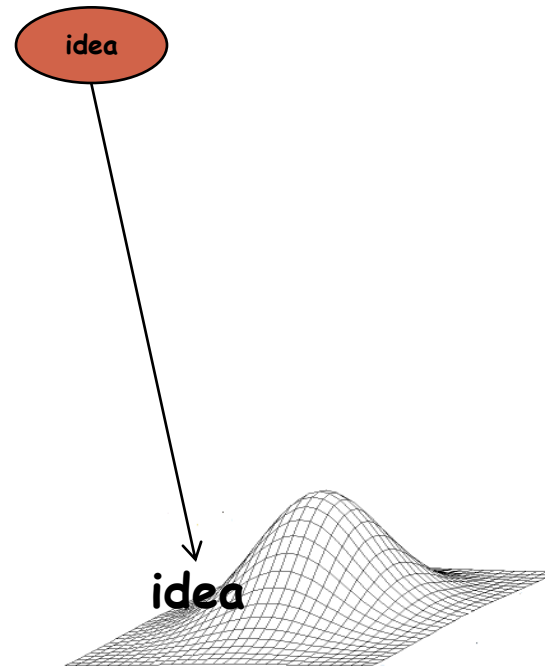
- goal:
 - for communication
 - for brainstorming

*try to communicate ideas
with as few lines (as little
“ink”) as possible!*

why sketch

getting the design right

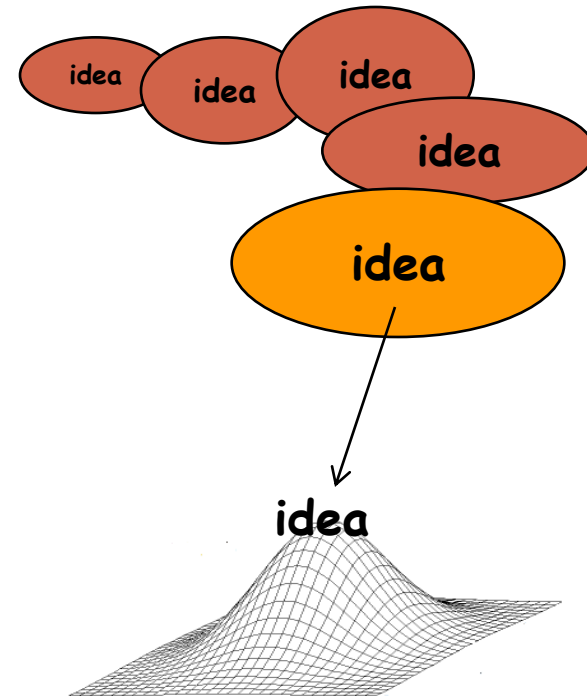
- generate an idea



why sketch?

getting the design right

- generate an idea
- iterate and develop it

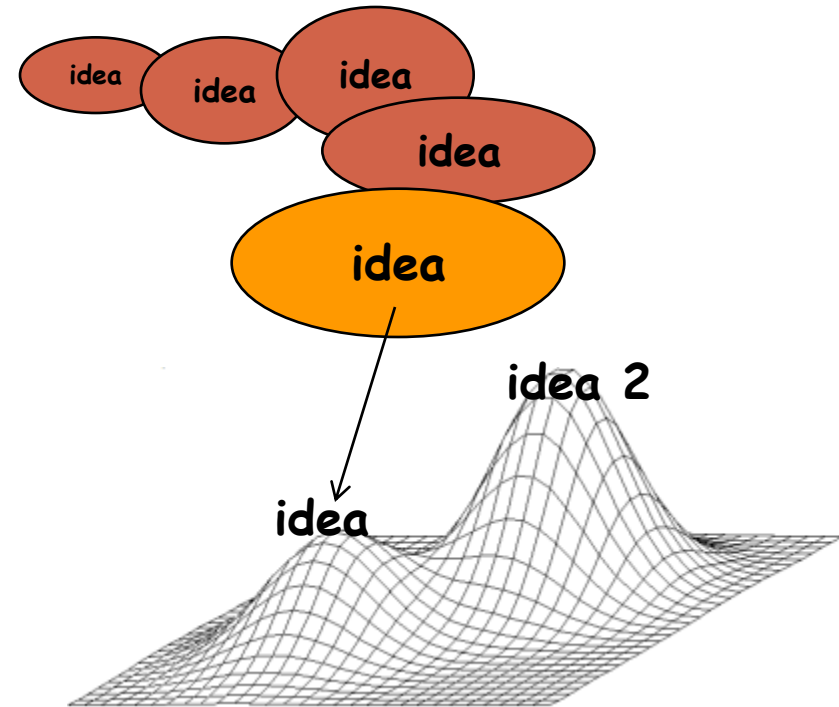


but is it the best idea?

why sketch?

getting the design right

- generate an idea
- iterate and develop it



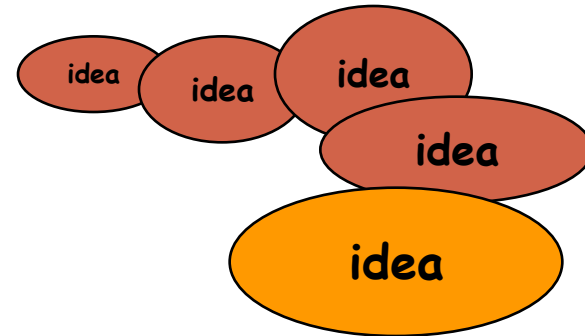
The problem

- other better solutions may be available in different ideas
- local vs. global maxima (local hill climbing)
- often results from fixating on a single idea

why sketches?

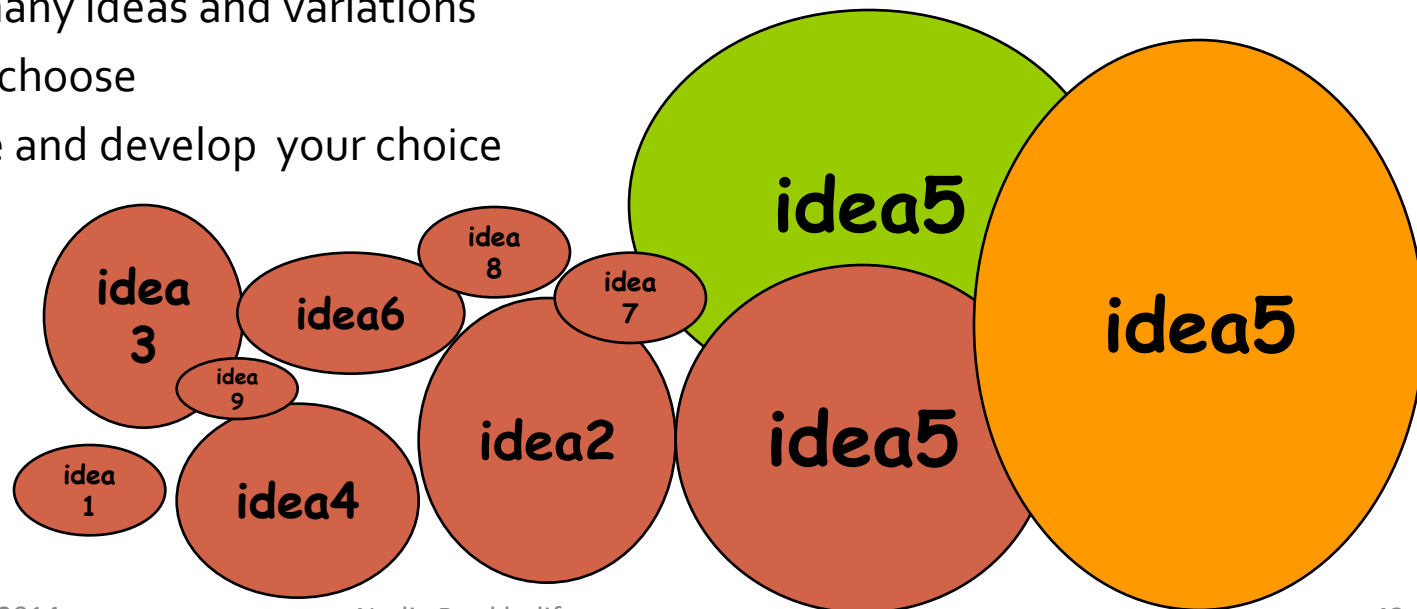
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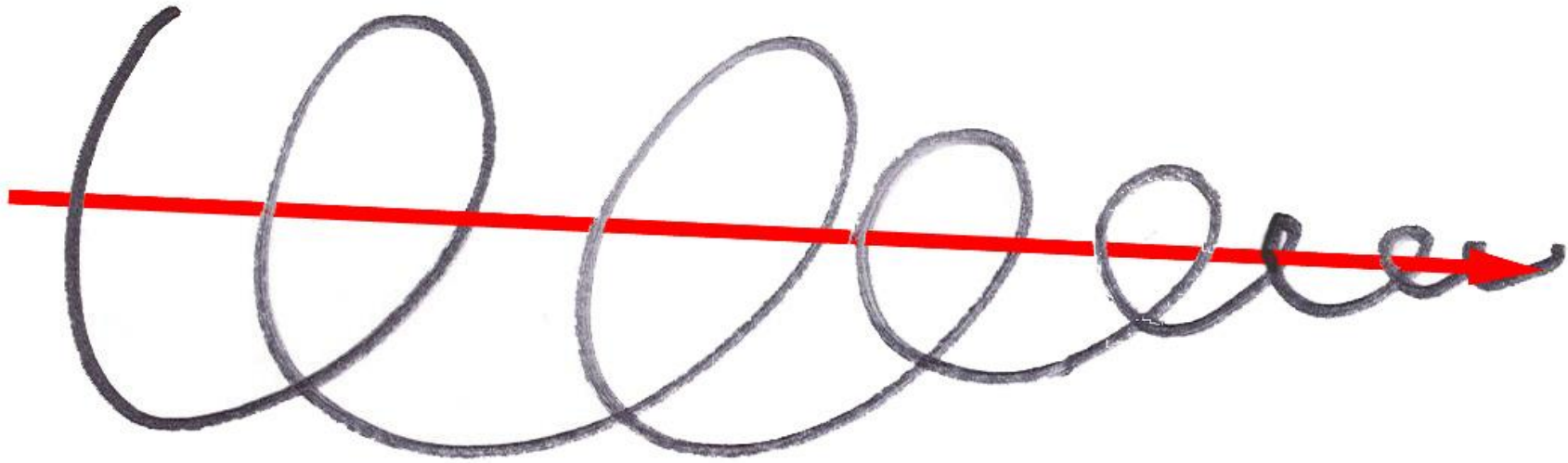


getting the right design

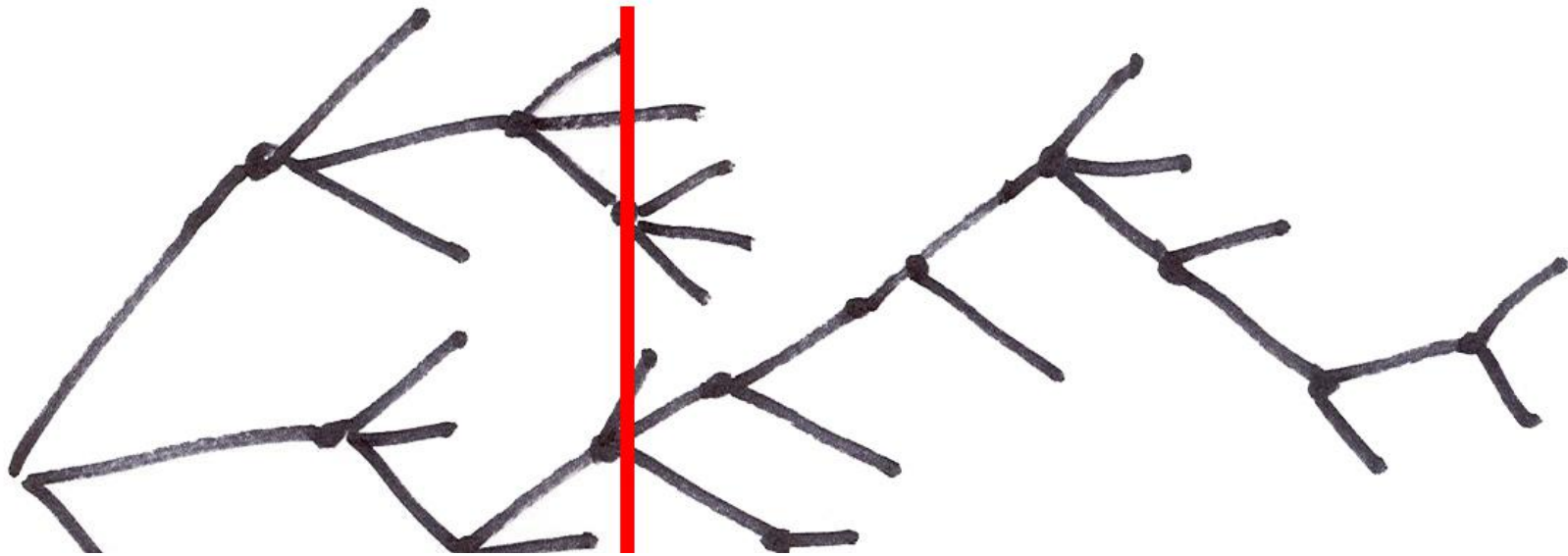
- generate many ideas and variations
- reflect and choose
- *then* iterate and develop your choice



exploration of a single idea



exploration of alternatives



... a designer that pitched three ideas would probably be fired. I'd say 5 is an entry point for an early formal review (distilled from 100's) ... if you are pushing one you will be found out, and also fired ... it is about open mindedness, humility, discovery, and learning. If you aren't authentically dedicated to that approach you are just doing it wrong!

Alistair Hamilton

VP Design

Symbol Technologies

the attributes of sketches

quick

- to make

timely

- provided when needed

disposable

- investment in the concept, not the execution

plentiful

- they make sense in a collection or series of ideas

clear vocabulary

- rendering & style indicates it's a sketch, not an implementation

constrained resolution

- no higher than required to capture its concept

consistency with state

- refinement of rendering matches the actual state of development of the concept

suggest & explore rather than confirm

- value lies in suggesting and provoking what could be i.e., they are the catalyst to conversation and interaction

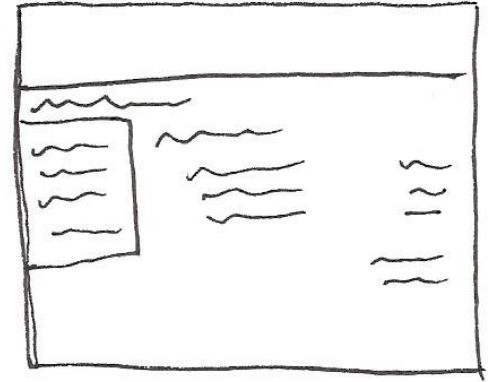
a catalyst

- evokes conversations and discussion

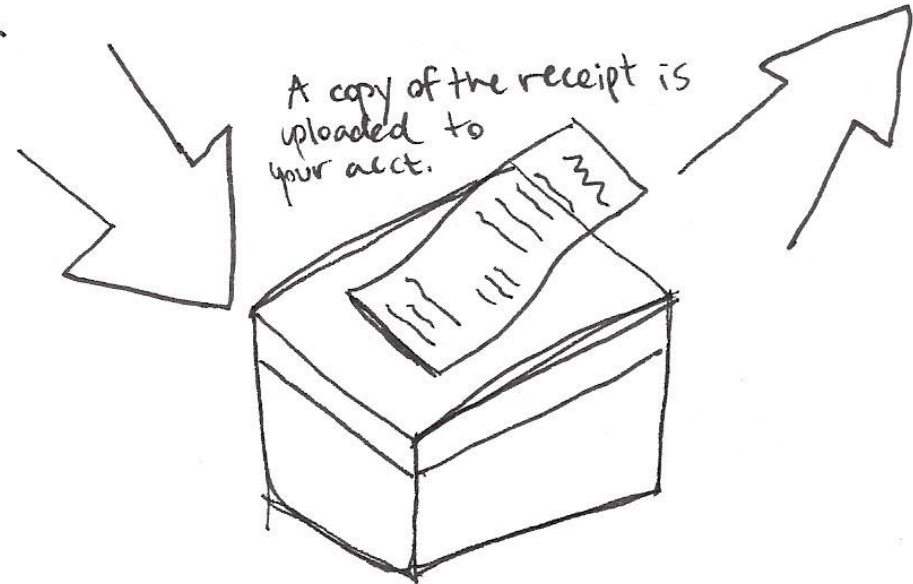
example sketches



You may view and print your receipt by accessing acct

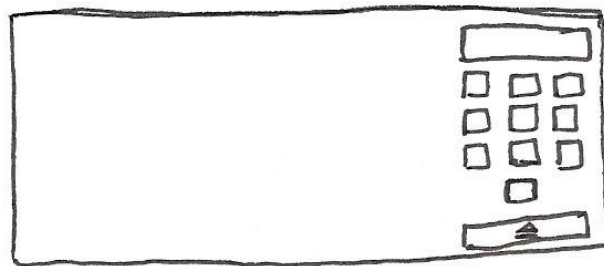


A copy of the receipt is uploaded to your acct.



example sketches

UBIQUITOUS RICE COOKER

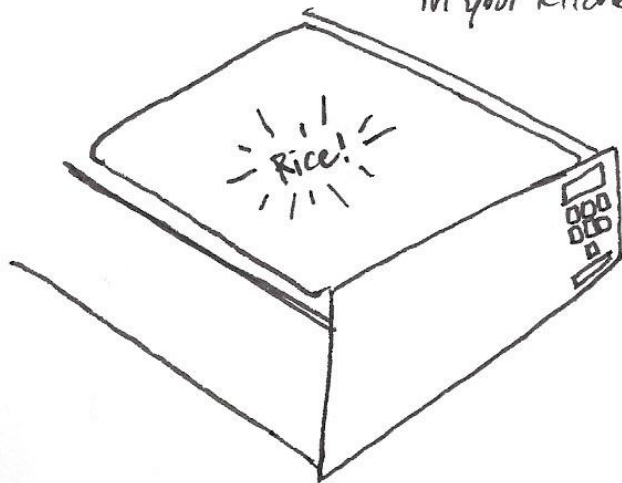


← LCD display shows number of cups + time remaining

← # pad for cups of rice input

← eject button opens drawer

“ Just another drawer ”
in your kitchen



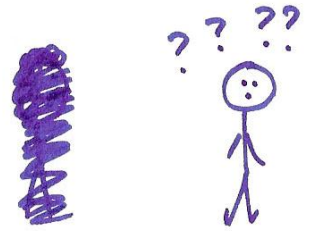
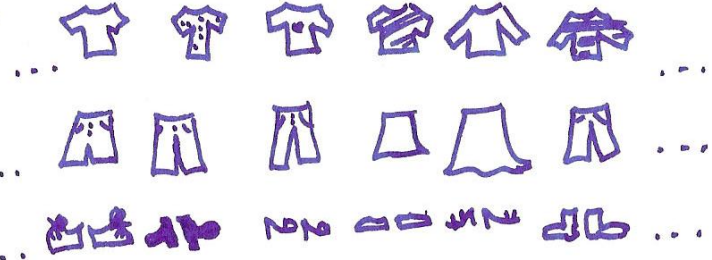
The uncooked rice is stored in a hidden reservoir.
Water is acquired through a hose attached to
your water source (similar to an espresso machine).



example sketches

STORE FOR THE STYLE-CHALLENGED

As is...



As it should be...



(pre-selected to match so you don't have to choose.)

Workshop

SKETCHING

getting started: some best practices

imitate sketching styles you like

add date, time (+context)

sketching with fast, long strokes

keep mistakes

analog before digital

3D is not necessary (most of the time)

sketching practice activity (20 mins)

- sketch a number of different things
- *DO NOT* put your name on your sketches
 - One page per sketch
- we will then tape these sketches up together, explore them, and discuss

some principles for sketching

- use as few lines as you can
- communicate the essence of the idea
- details only if they are important
- choose the detail you put in deliberately
- one piece of paper per sketch!!!!!!

Sketching

Principles

- Use as few lines as you can
- Communicate the essence of the idea
- Details only if they are important
- Choose the detail you put in deliberately
- One piece of paper per sketch!!!!

Exercise

Sketch a
cellphone
(30s)

30



Sketching

Principles

- Use as few lines as you can
- Communicate the essence of the idea
- Details only if they are important
- Choose the detail you put in deliberately
- One piece of paper per sketch!!!!

Exercise

Paris (30s)

30



Sketching

Principles

- Use as few lines as you can
- Communicate the essence of the idea
- Details only if they are important
- Choose the detail you put in deliberately
- One piece of paper per sketch!!!!

Exercise

Computer
(30s)

30



Sketching

Principles

- Use as few lines as you can
- Communicate the essence of the idea
- Details only if they are important
- Choose the detail you put in deliberately
- One piece of paper per sketch!!!!

Exercise

Gas
station
(30s)

30



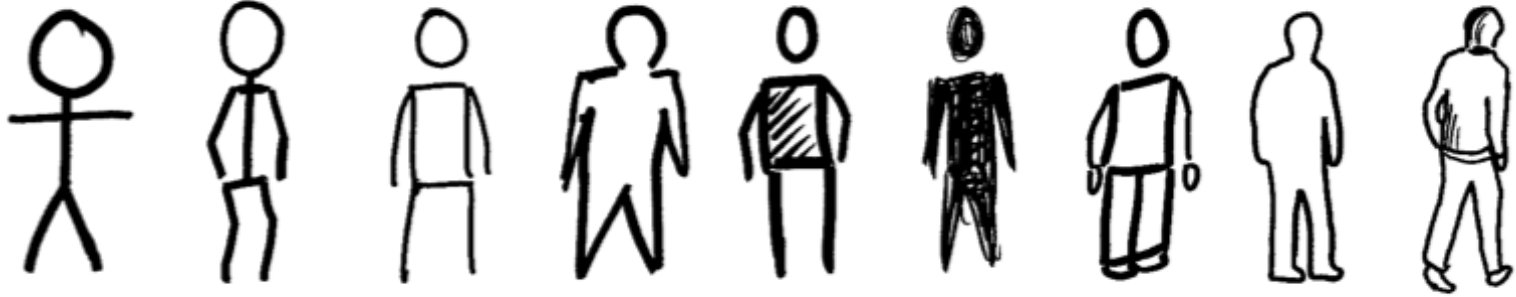
discussion (10-15 mins)

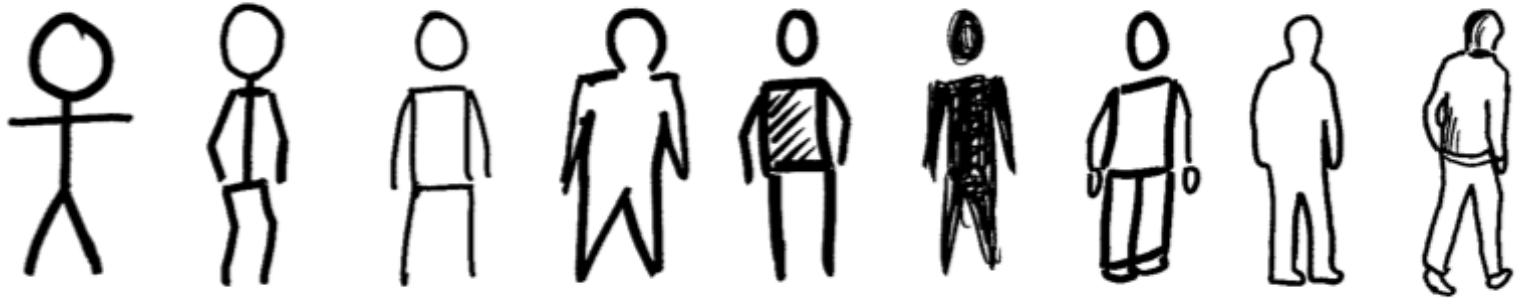
- post up your sketches
- what worked well?
- what didn't work well?
- what things were important to communicate the idea?
- what wasn't important to communicate the idea?

- Note: DO NOT "defend" your sketch (better yet: don't identify it is yours). Remember that your peers are the "users" of your sketch. If they find something incomprehensible, this is telling you something.

Sketching People

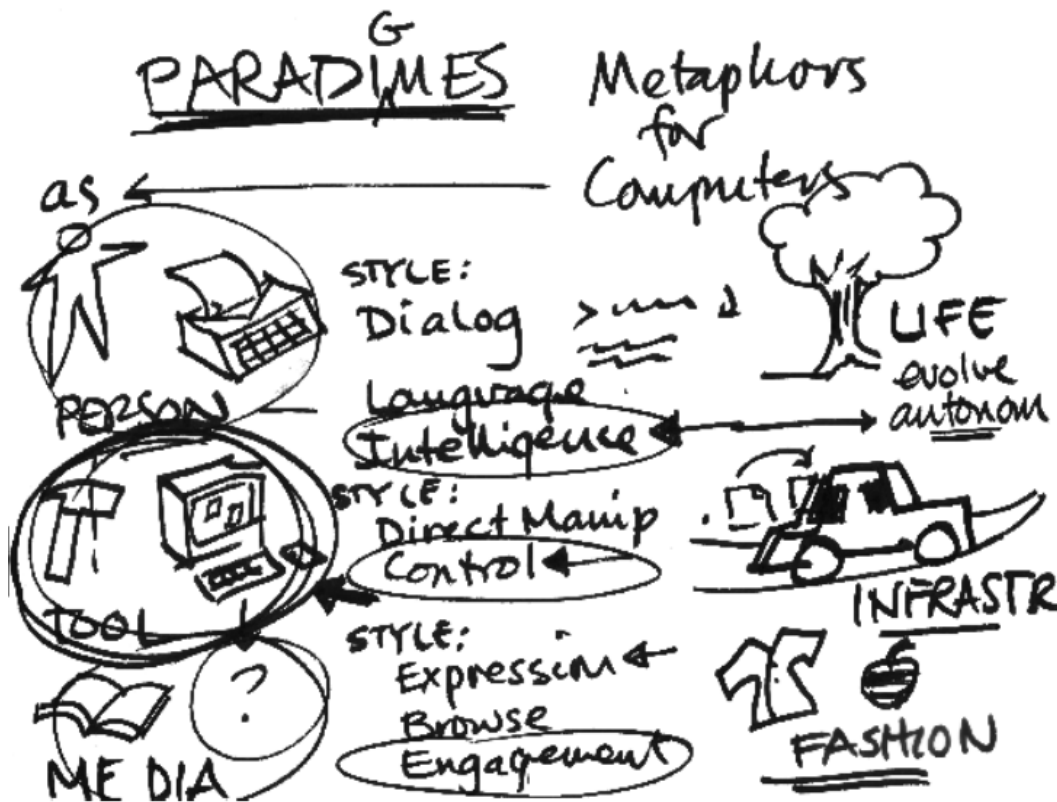






exercise

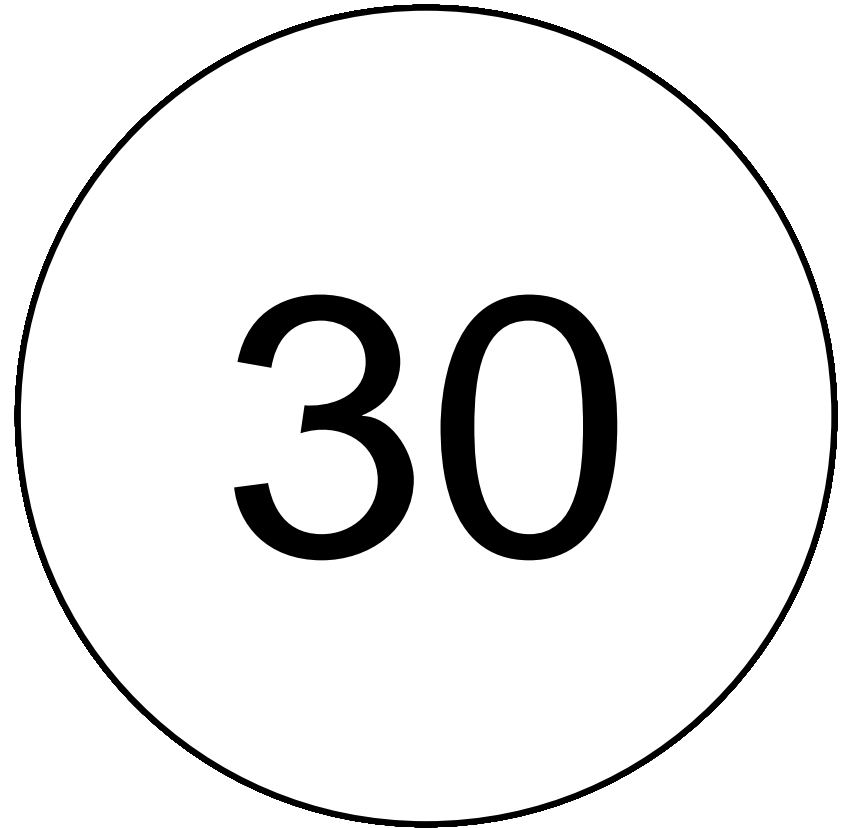
star people (Bill Verplank)



acknowledgements Scott Klemmer

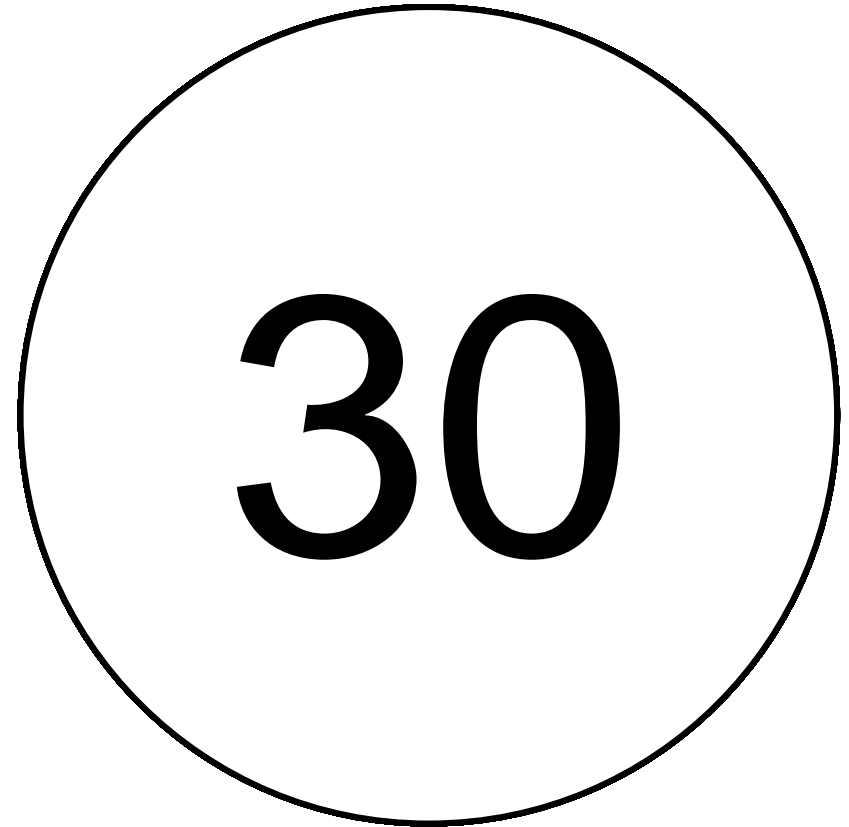
30s drawing exercise

- draw 10+ star people

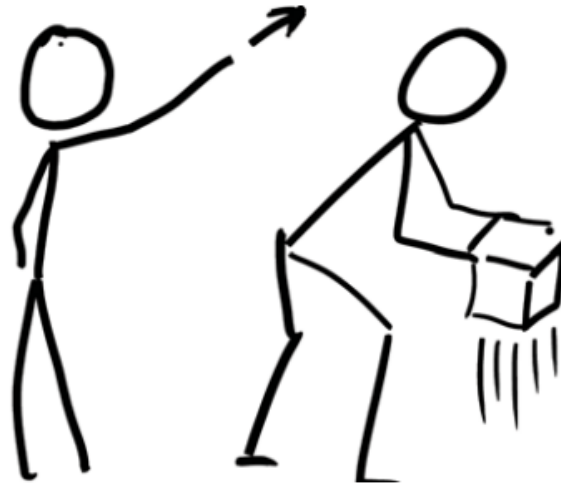


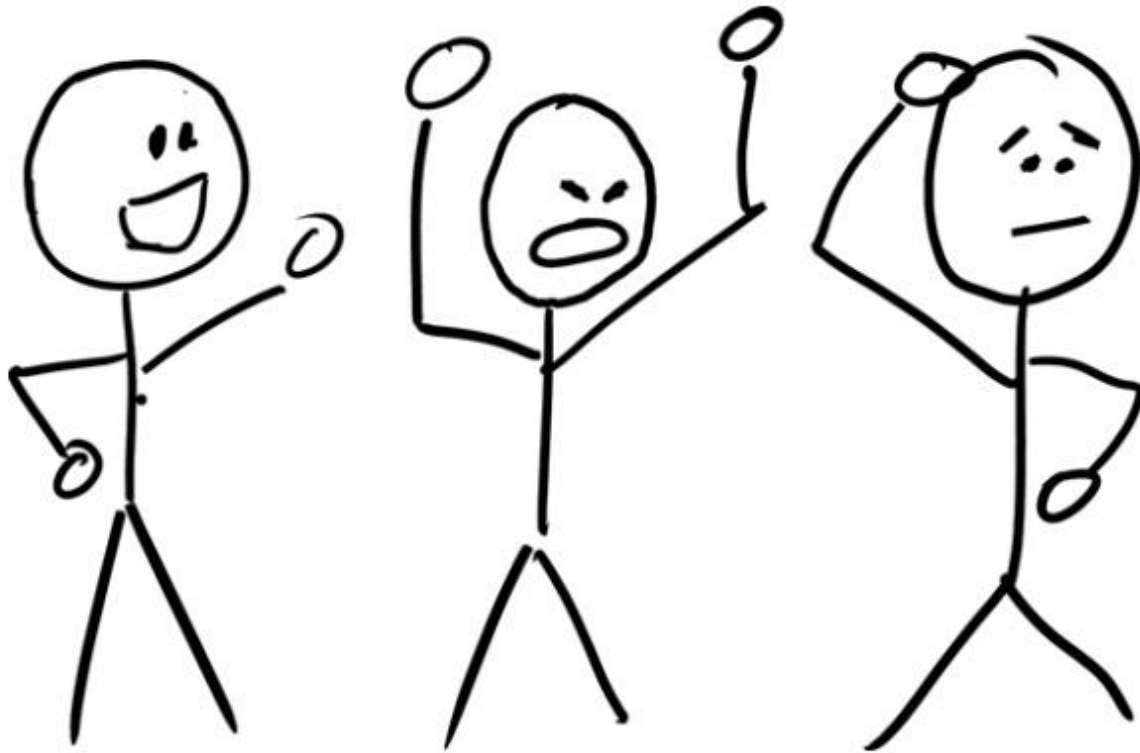
30s drawing exercise

- draw three star people of these, one:
 - holding a lollipop
 - pointing to the sky
 - looking at a screen



Sketching Actions and Emotions

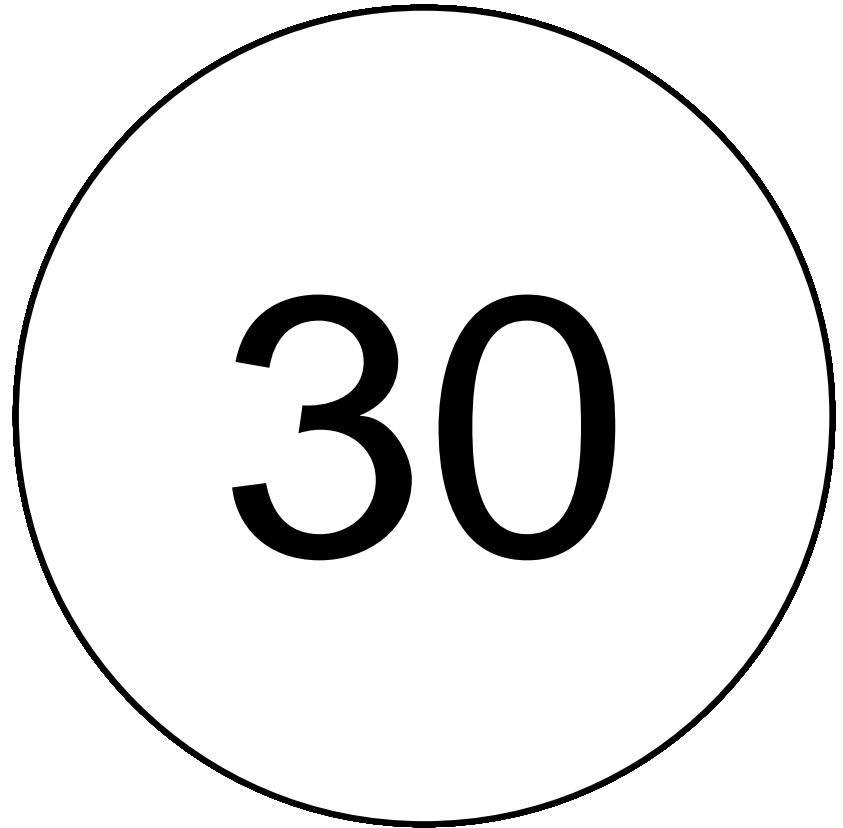




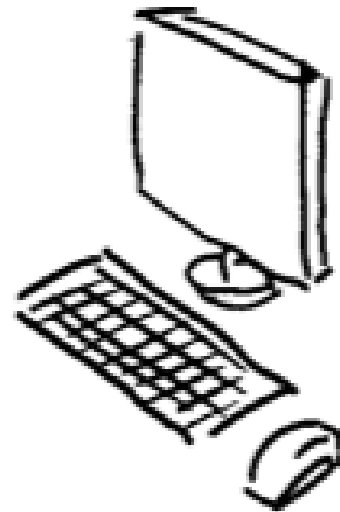
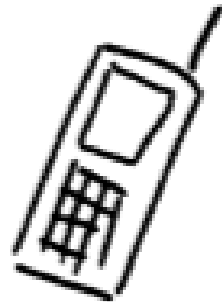
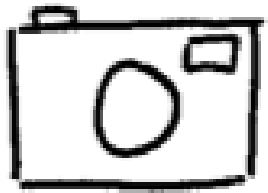
30s drawing exercise

draw 3 star people,
of these one:

- confused
- waving at you
- jumping

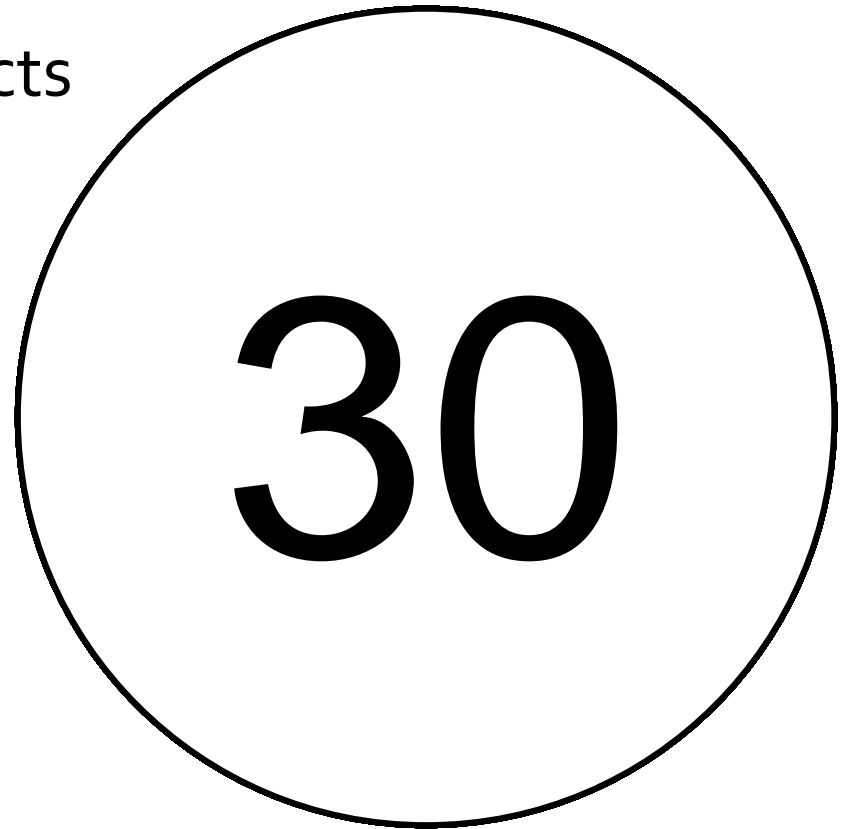


Sketching Devices and Objects

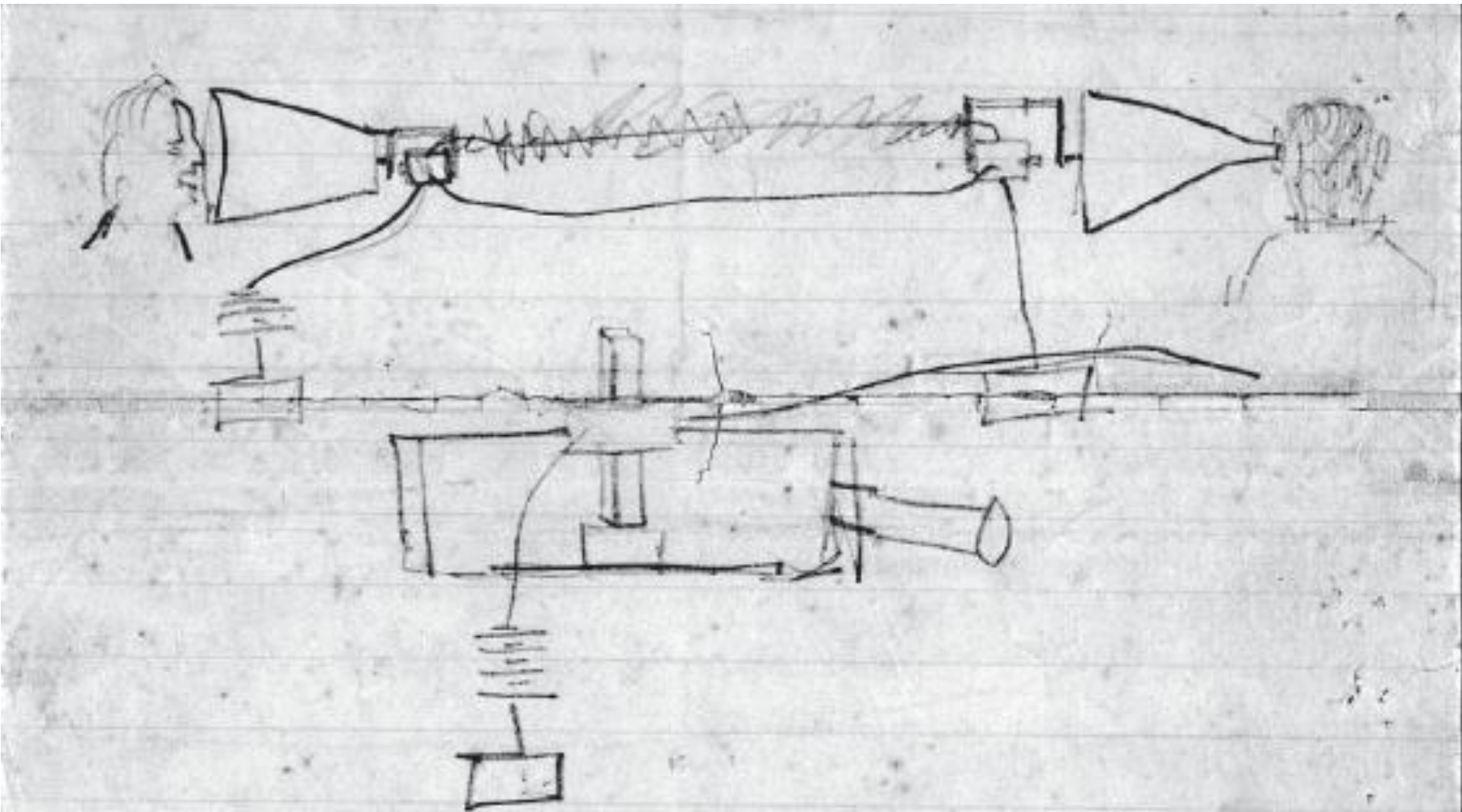


30s drawing exercise

- draw the following objects
 1. web browser
 2. travel guide
 3. cash receipt
 4. shopping cart

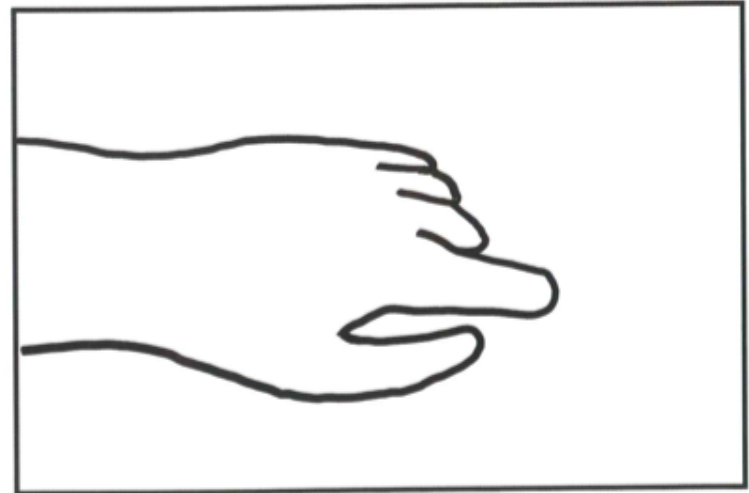


But: “I can’t draw...”

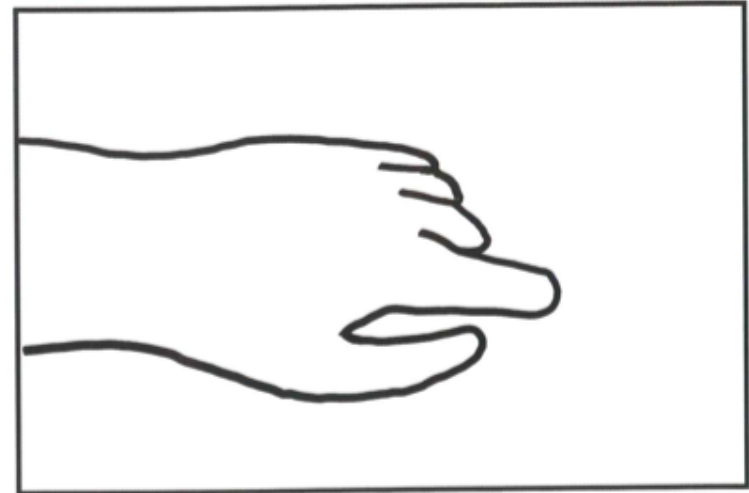
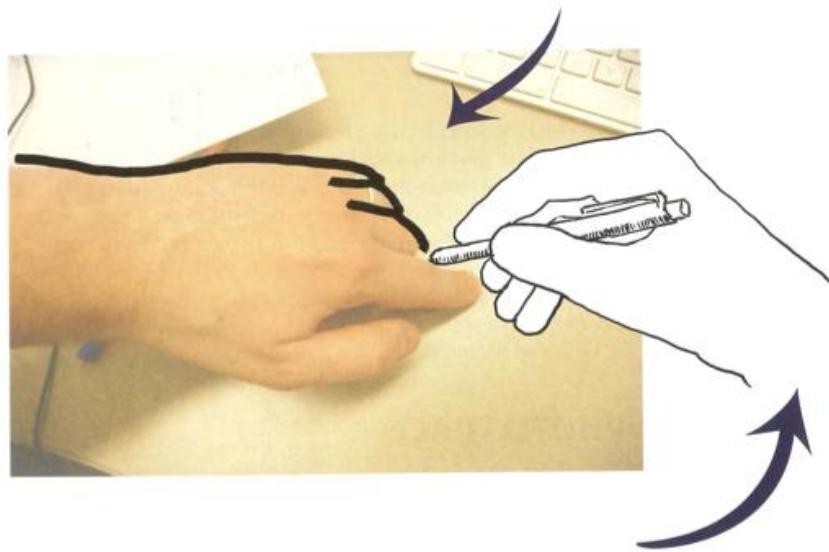


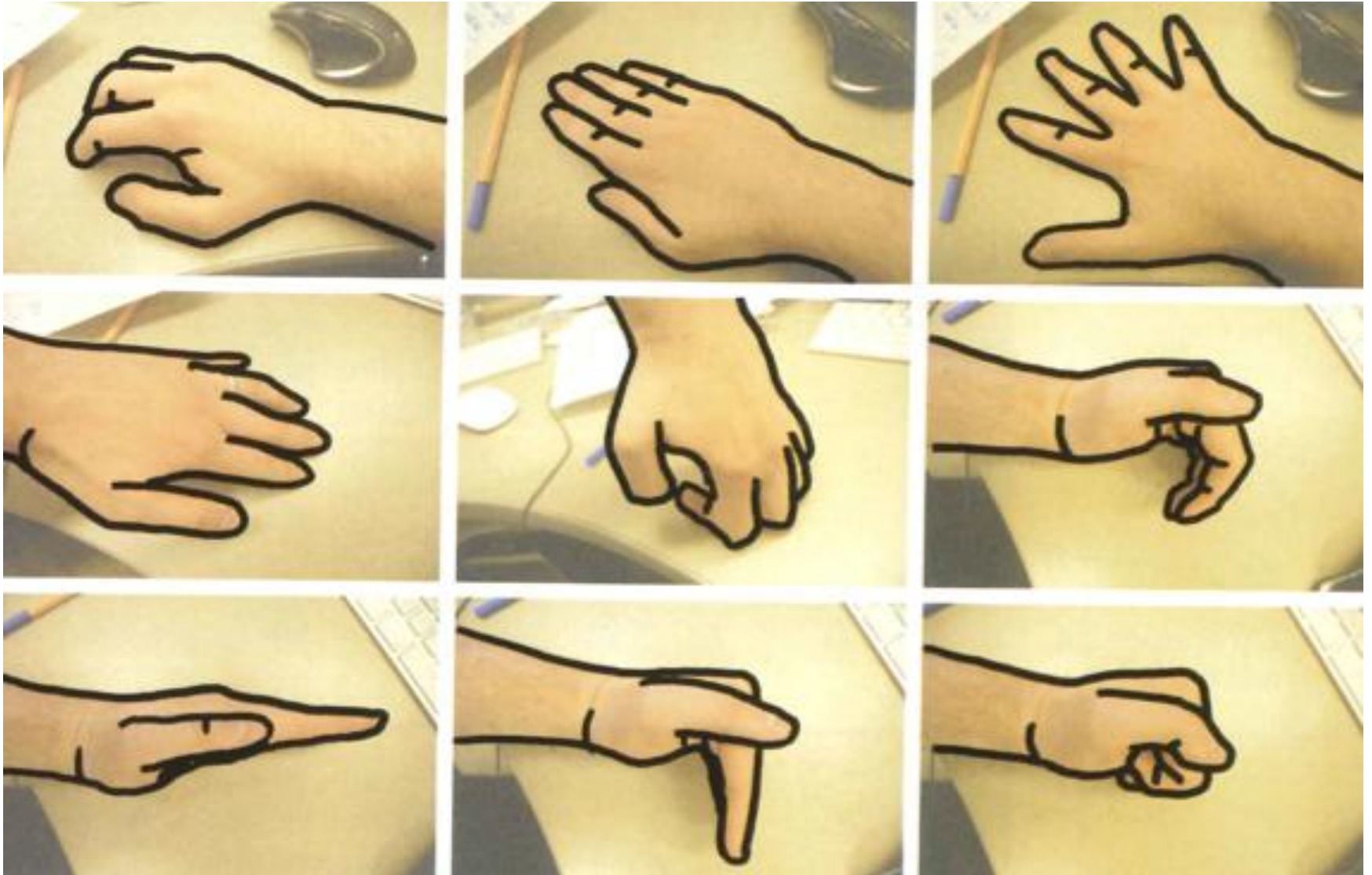
sketching technique: photo tracing

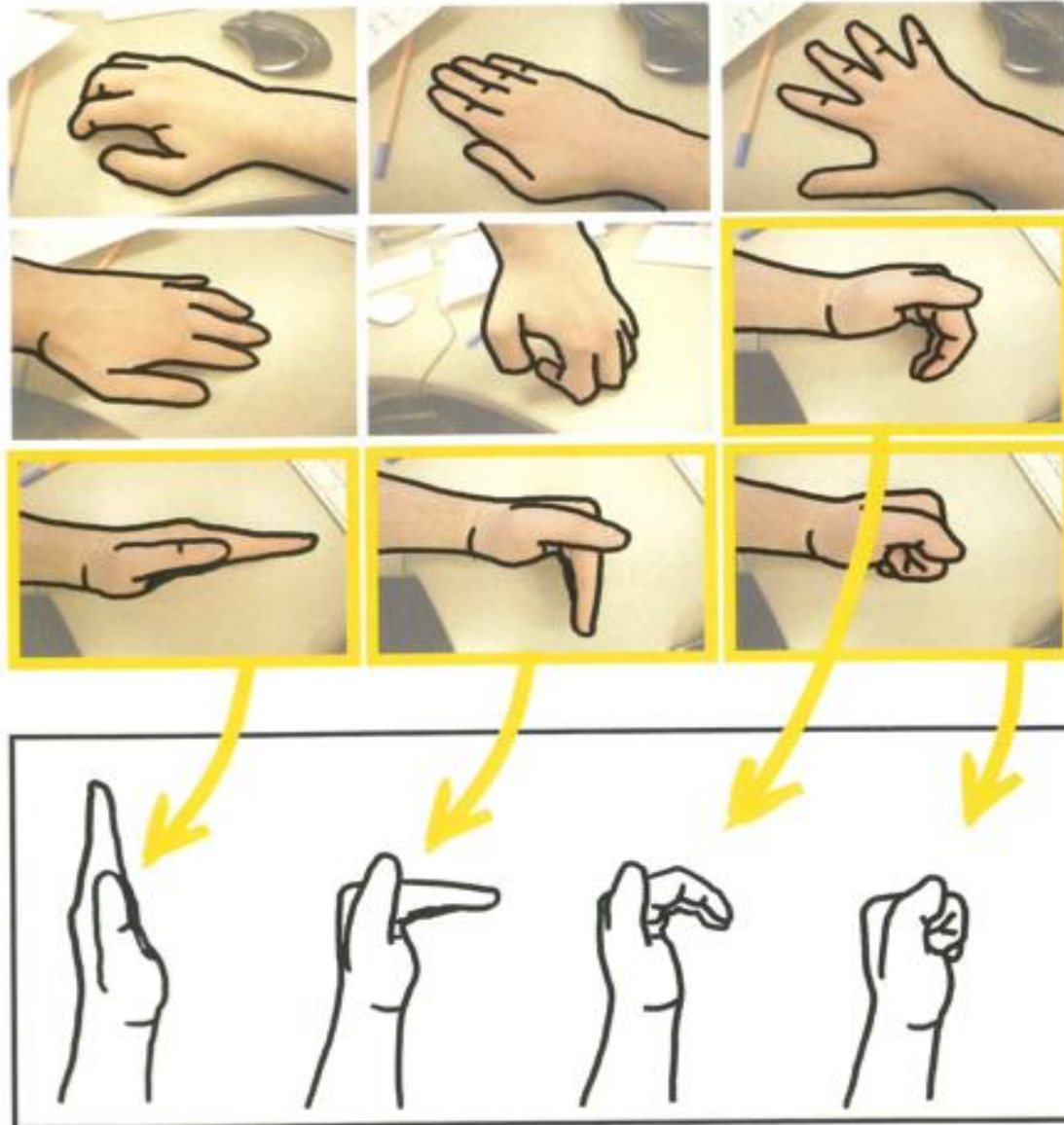
sketching technique: photo tracing



sketching technique: photo tracing



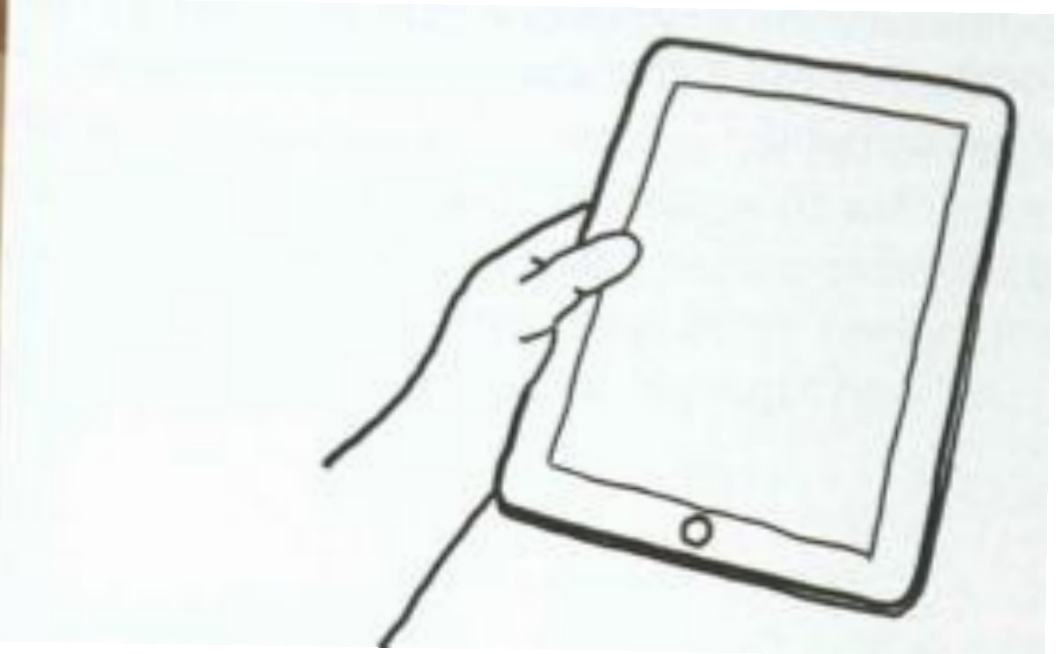




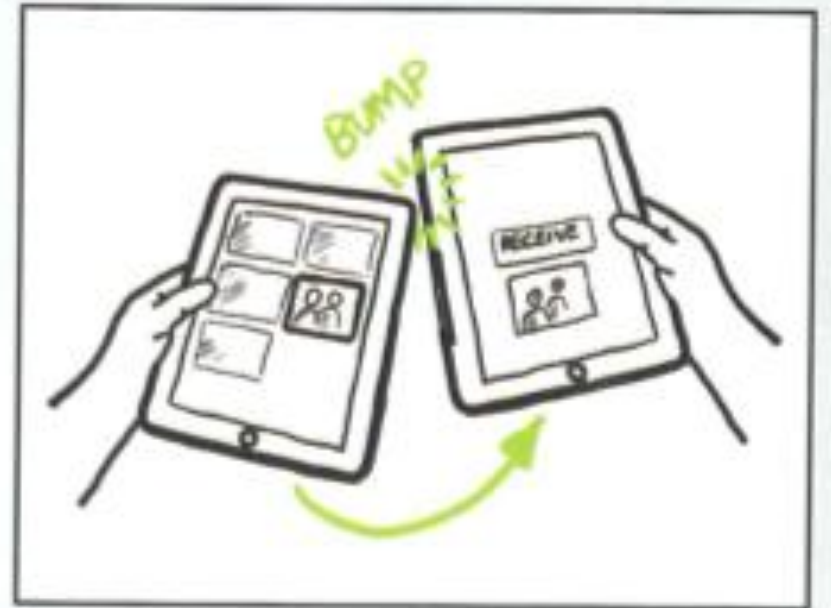
sketching technique: templates

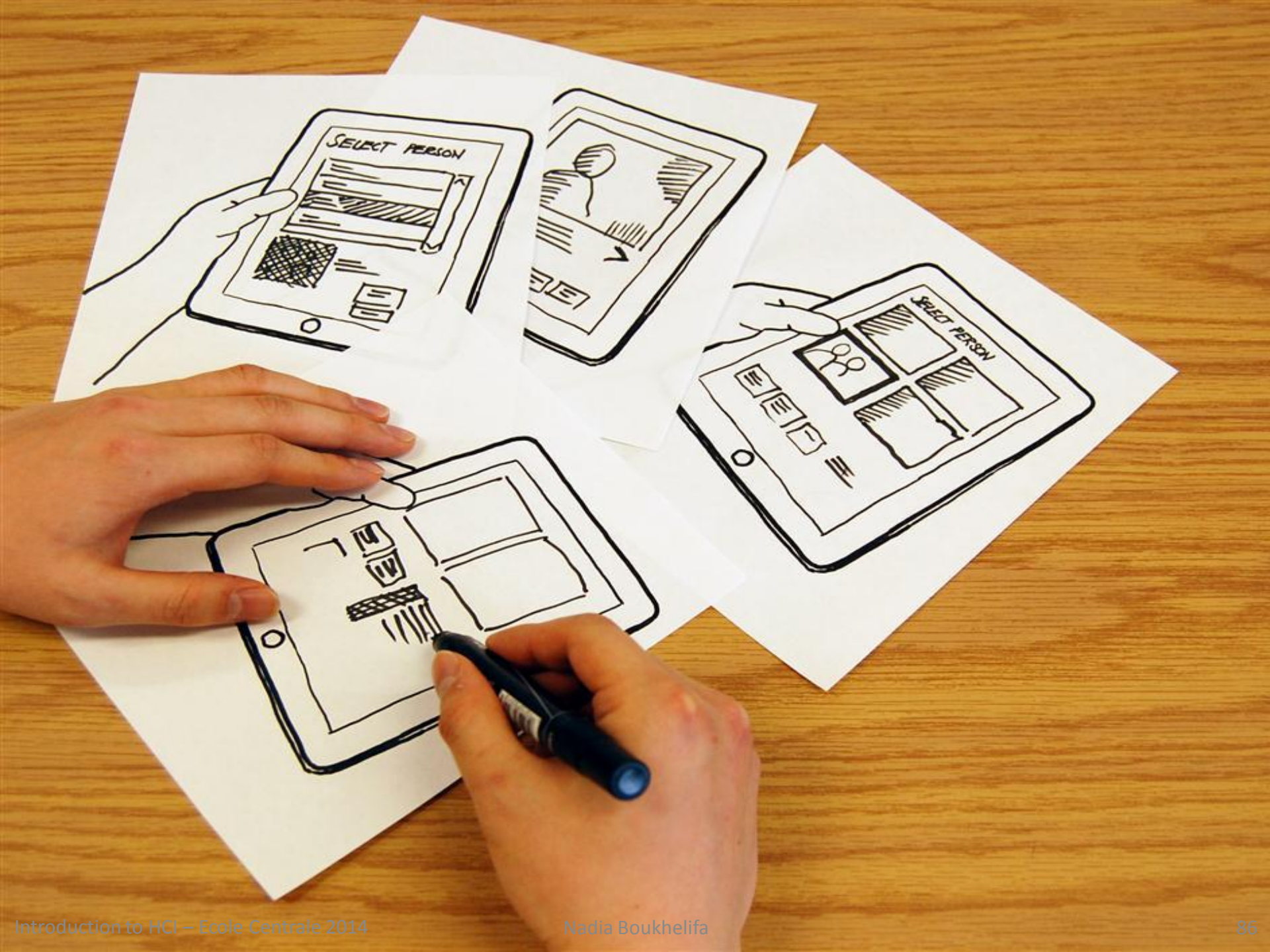


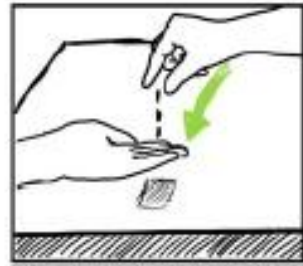
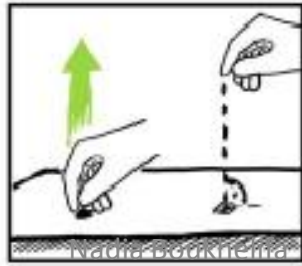
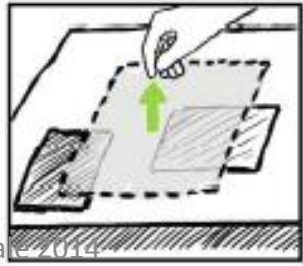
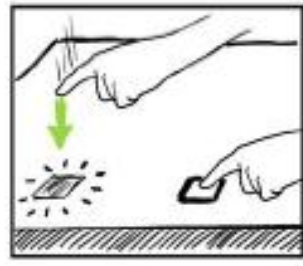
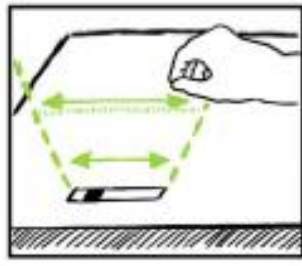
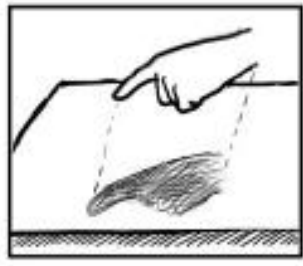
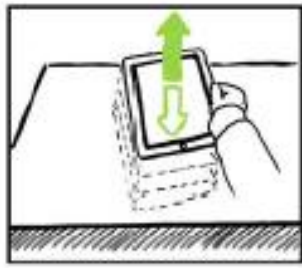
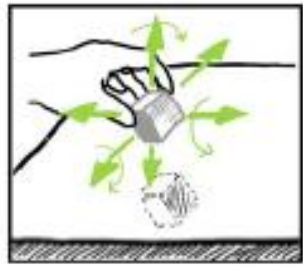
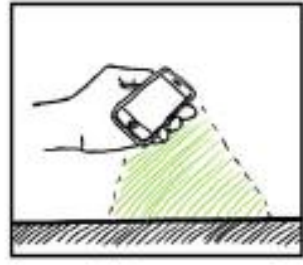
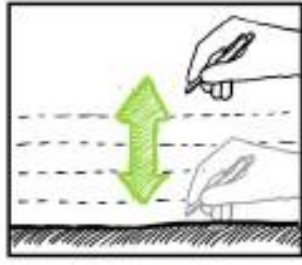
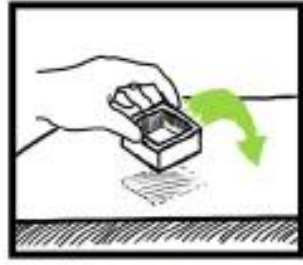
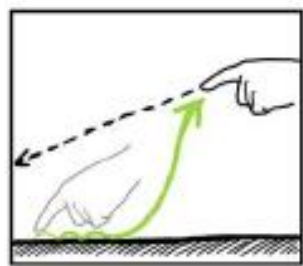
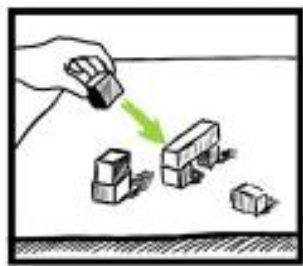
sketching technique: templates

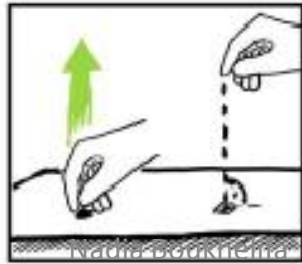
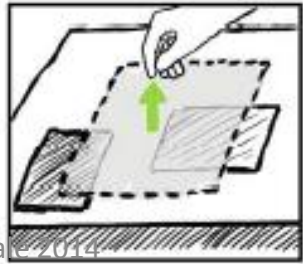
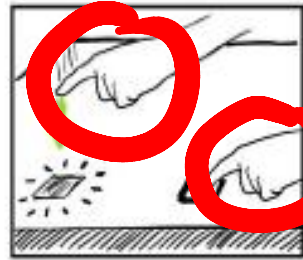
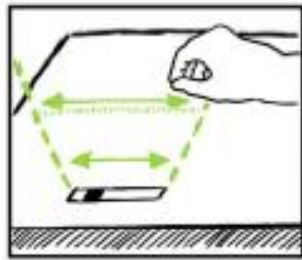
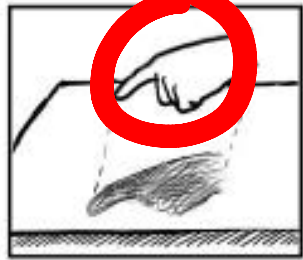
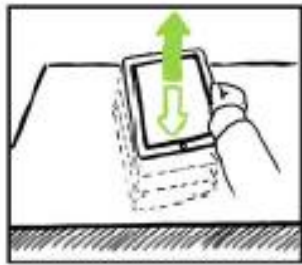
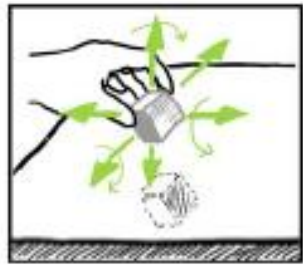
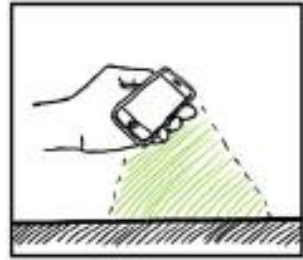
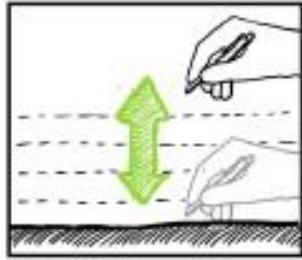
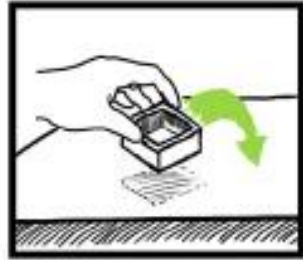
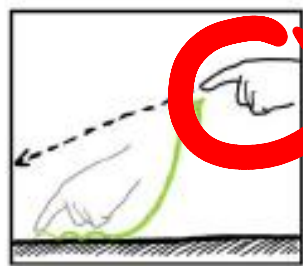
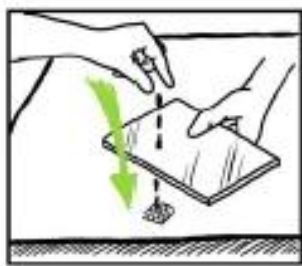
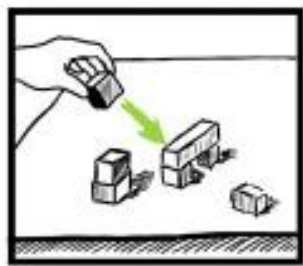


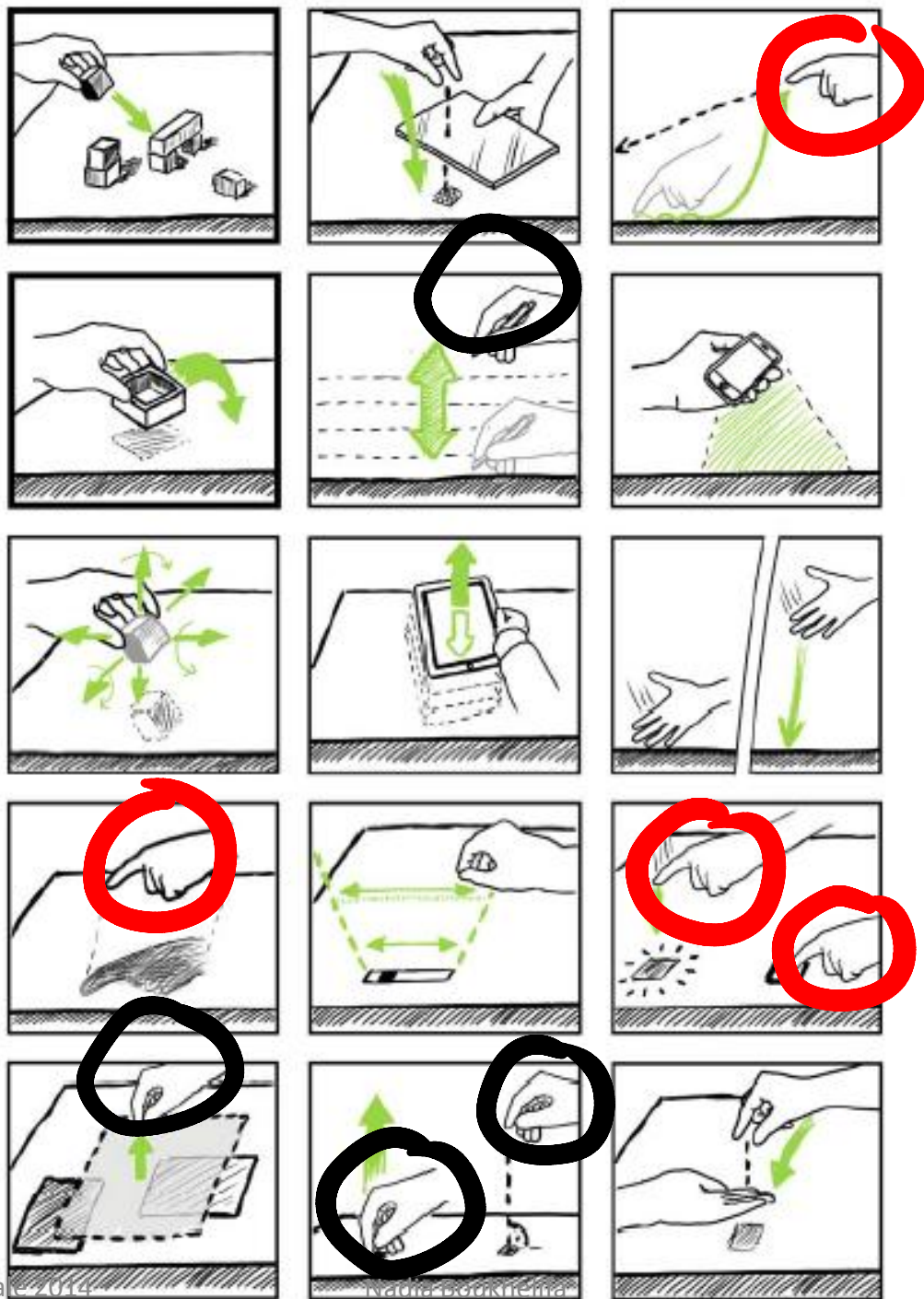
sketching technique: templates

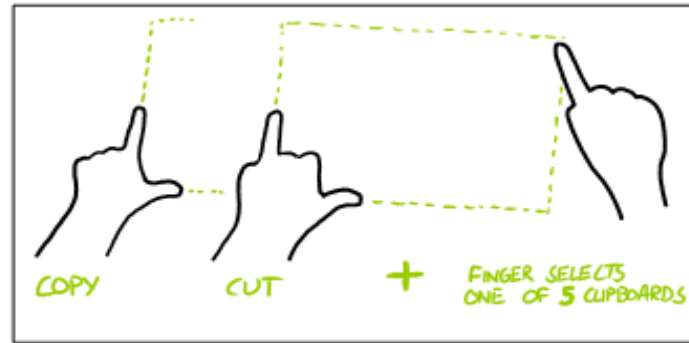
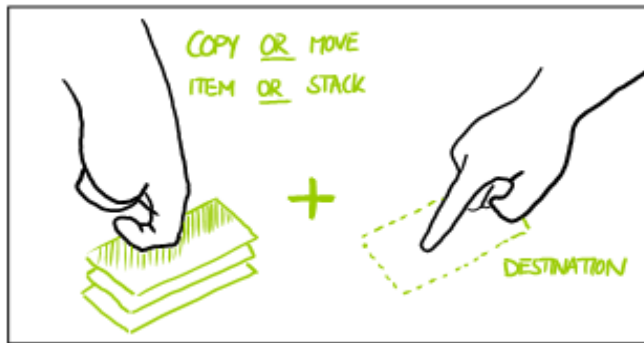
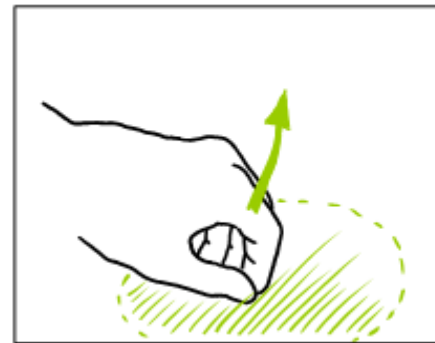
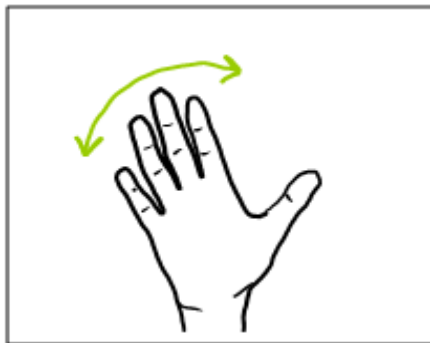
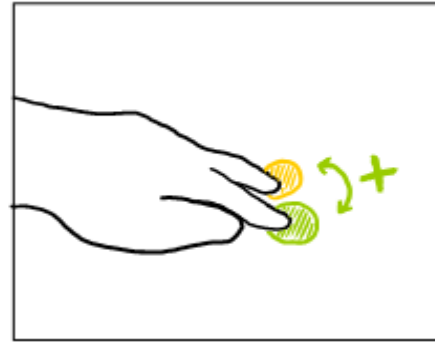
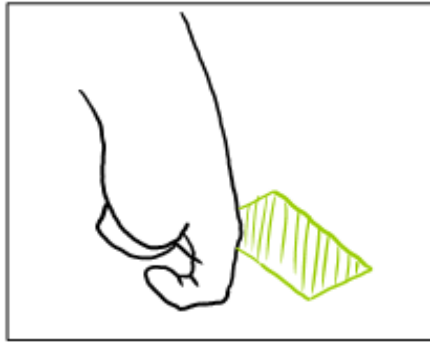




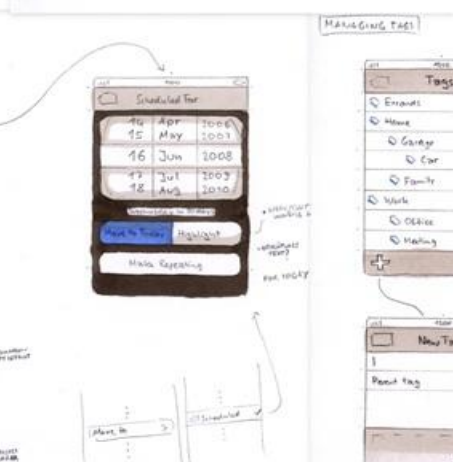
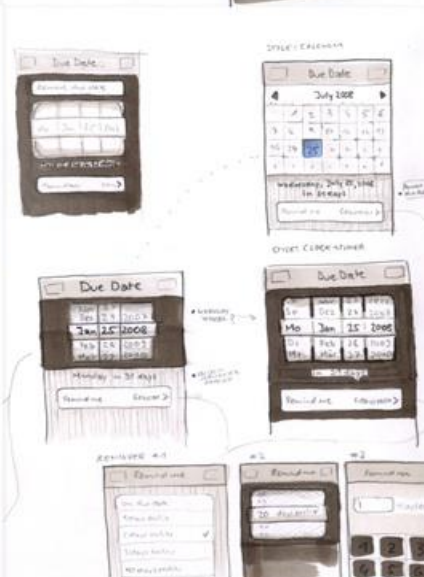
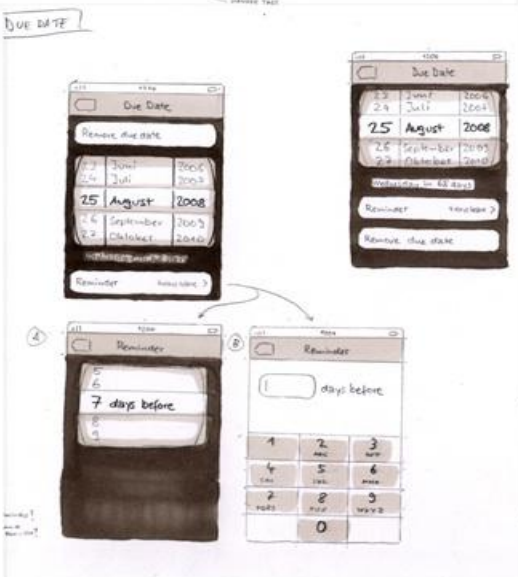
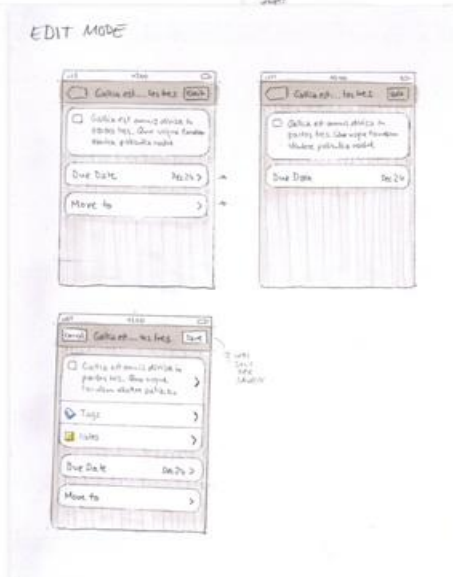
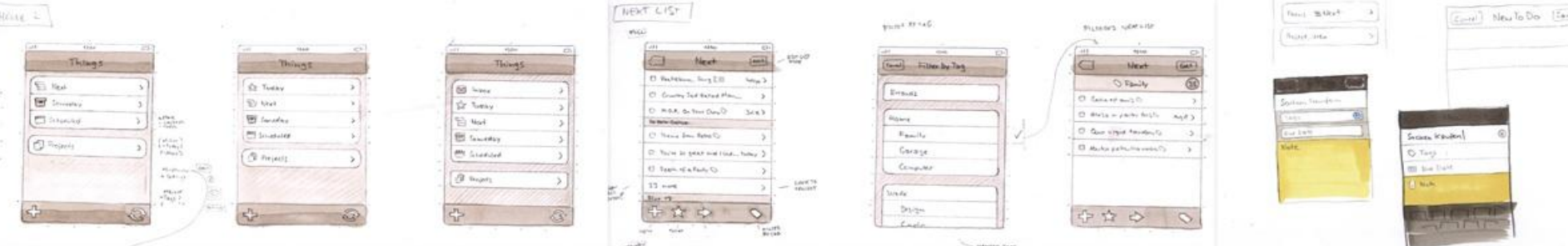




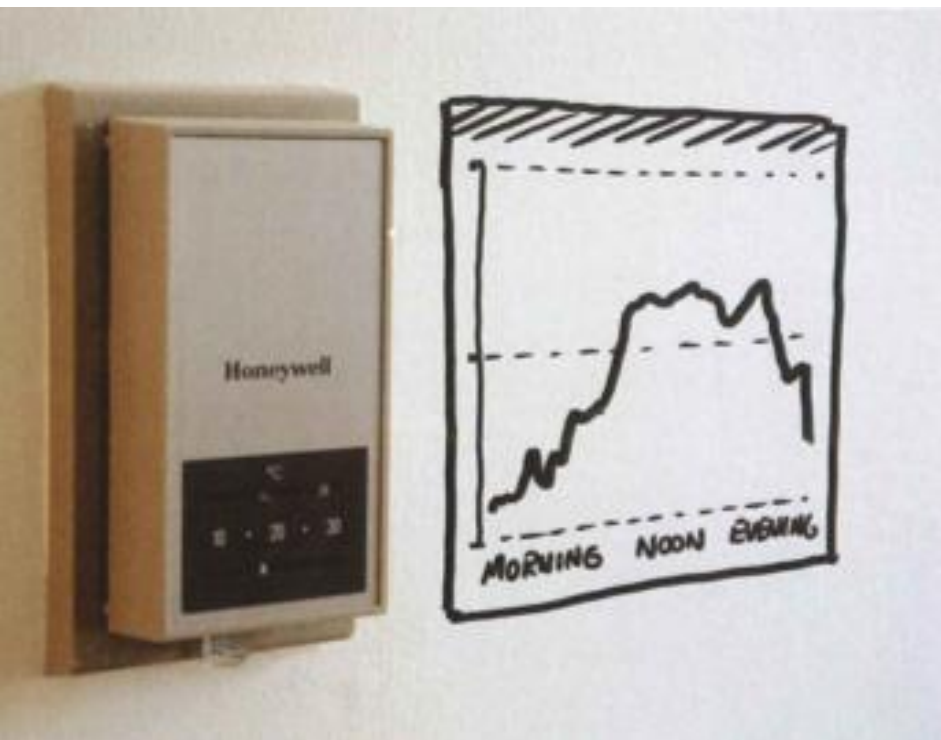




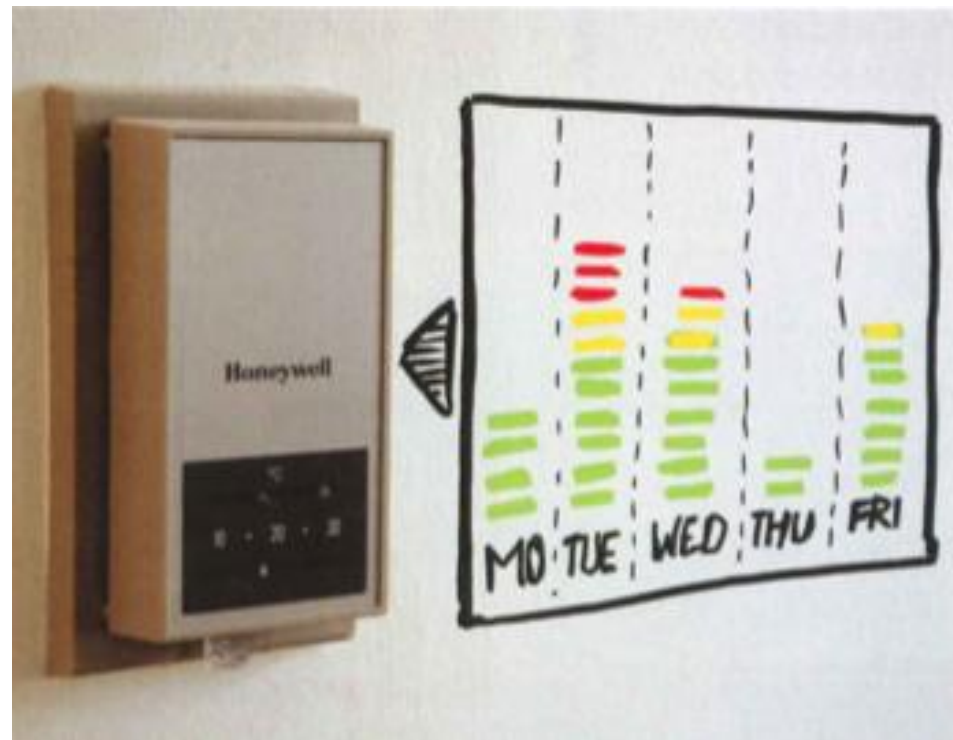
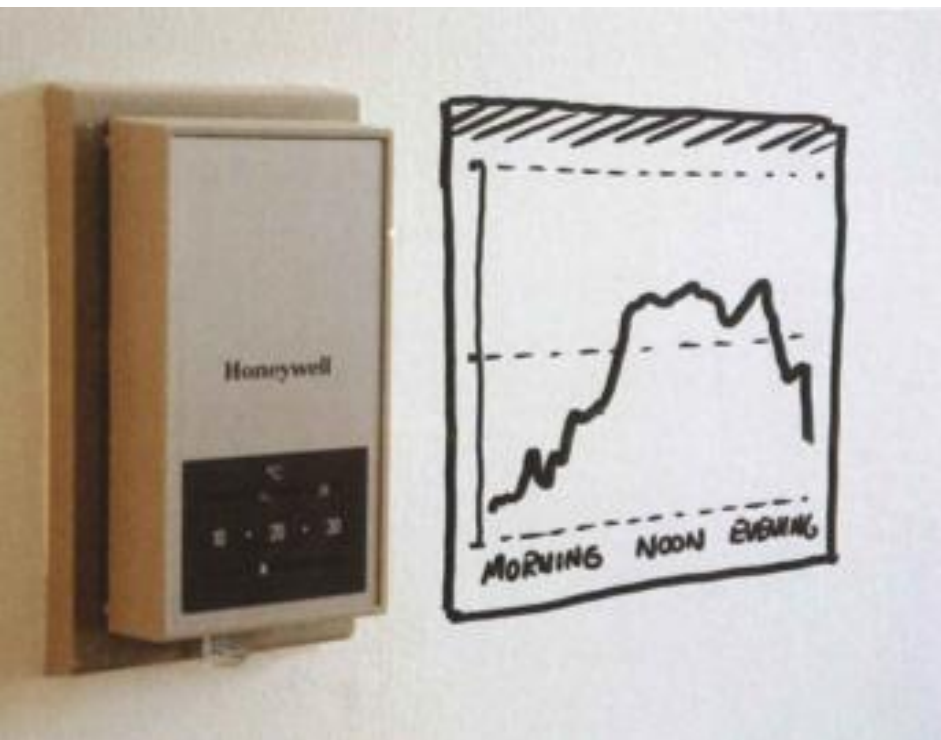




sketching technique: hybrid sketches



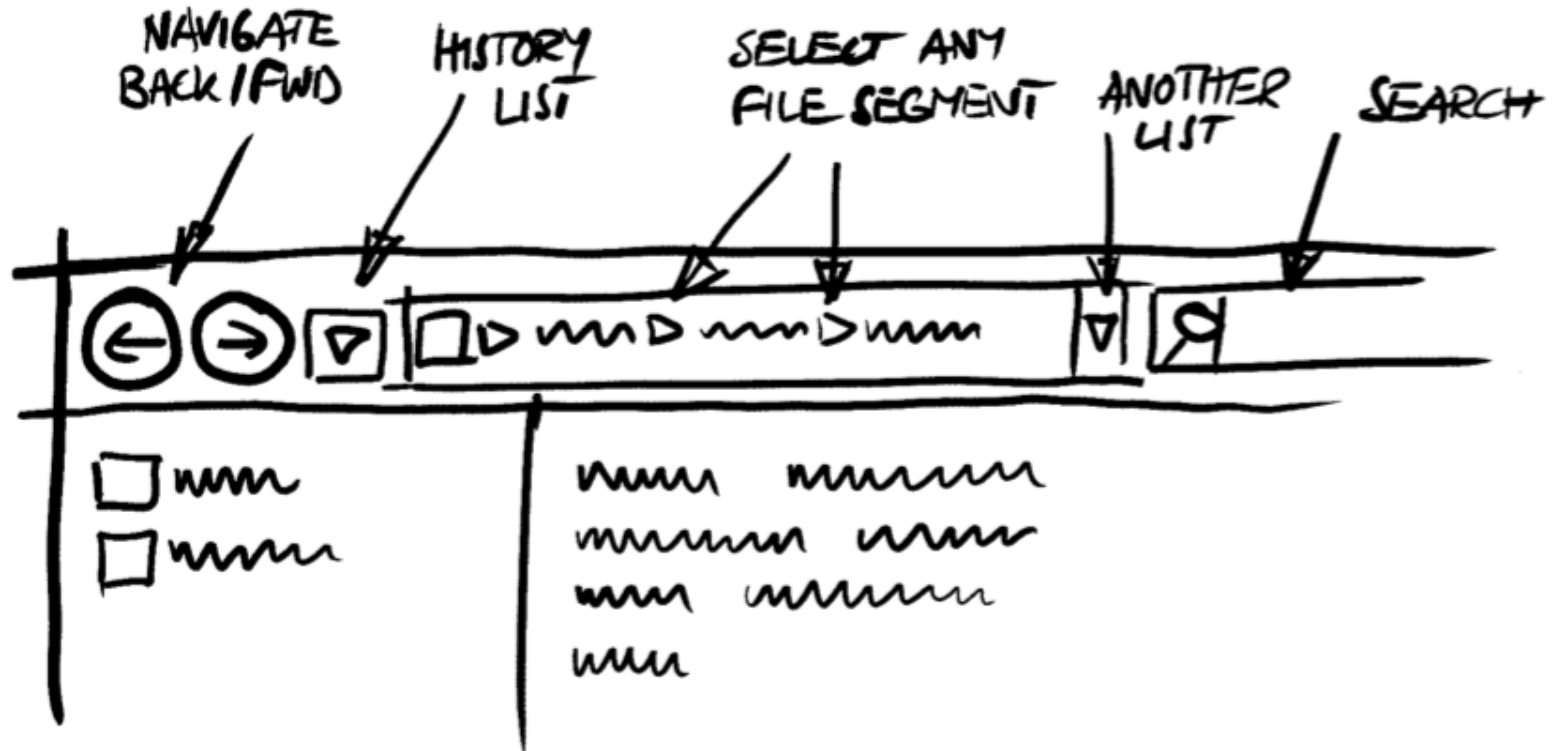
sketching technique: hybrid sketches



sketching technique: reduce to essentials



sketching technique: reduce to essentials



sketching technique: reduce to essentials

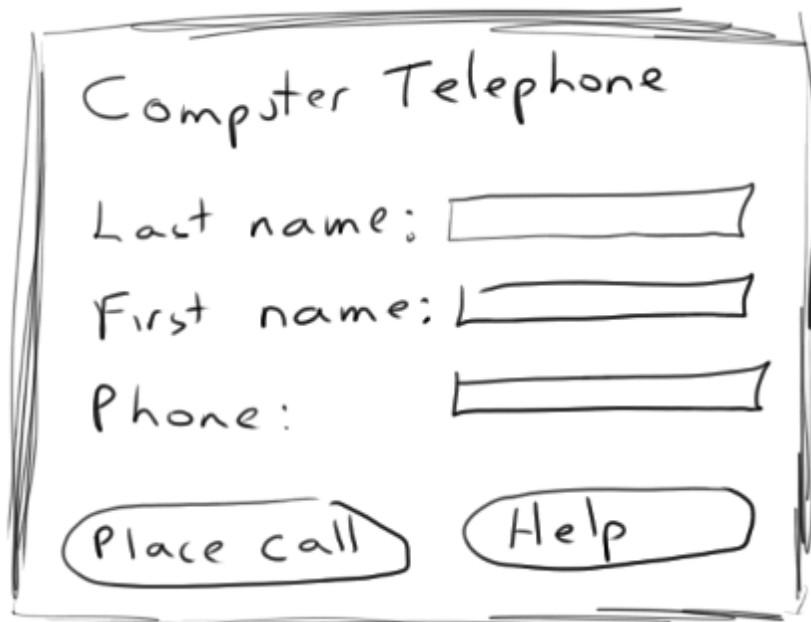
Computer Telephone

Last Name:
First Name:
Phone:

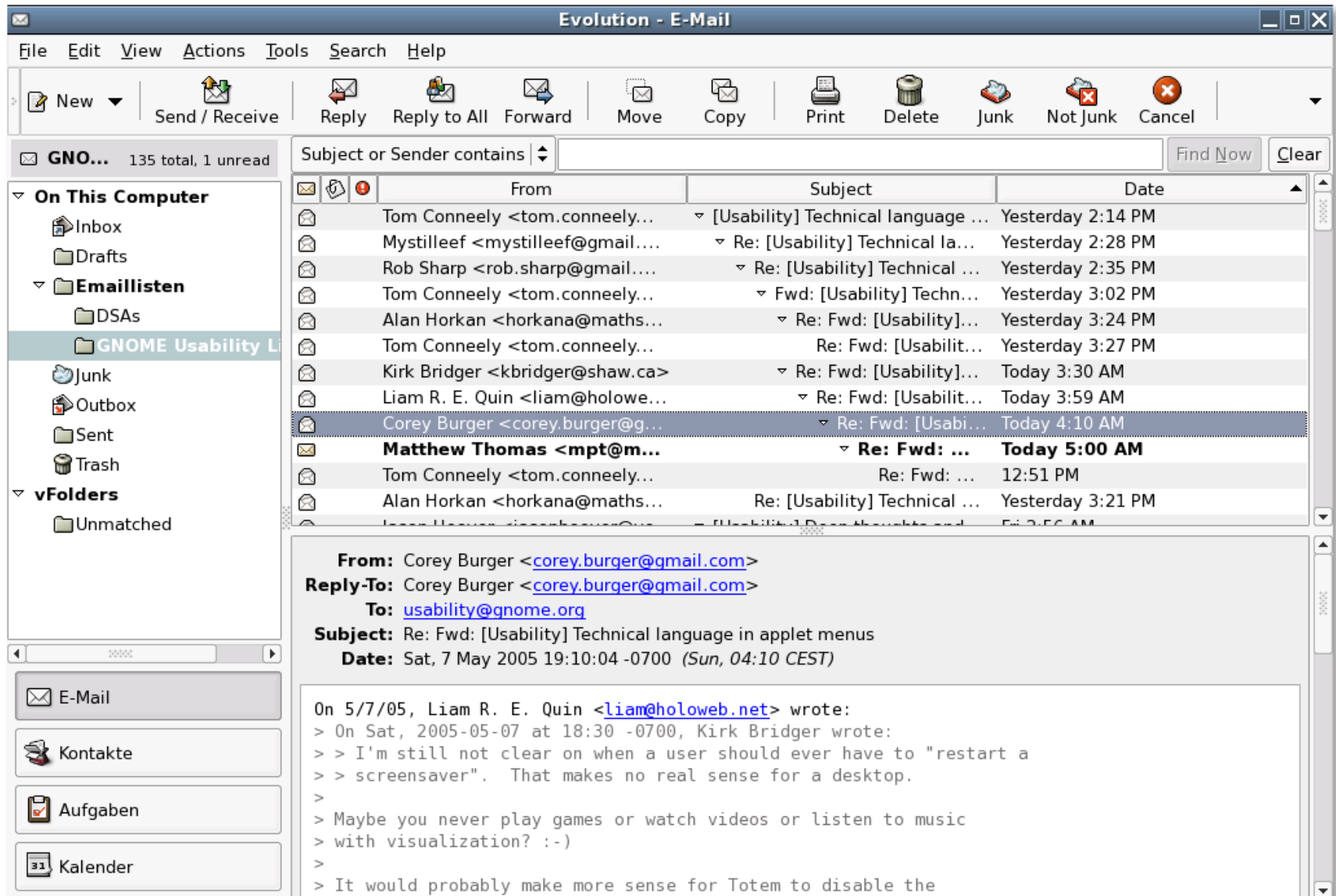
CALL **HELP**



sketching technique: reduce to essentials



1 minute: sketch the essential elements of the following interface



Lecture

PROTOTYPING

Sketches

Prototypes

Evocative

Didactic

Suggest

Describe

Explore

Refine

Question

Answer

Propose

Test

Provoke

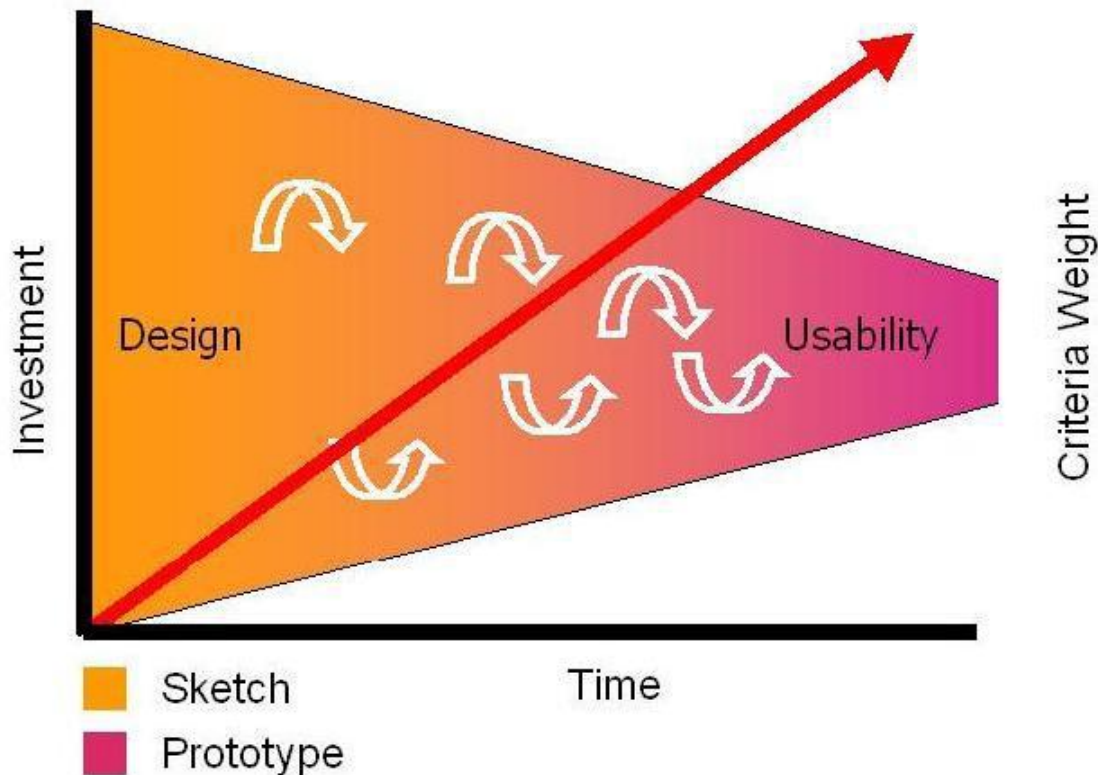
Resolve

Tentative

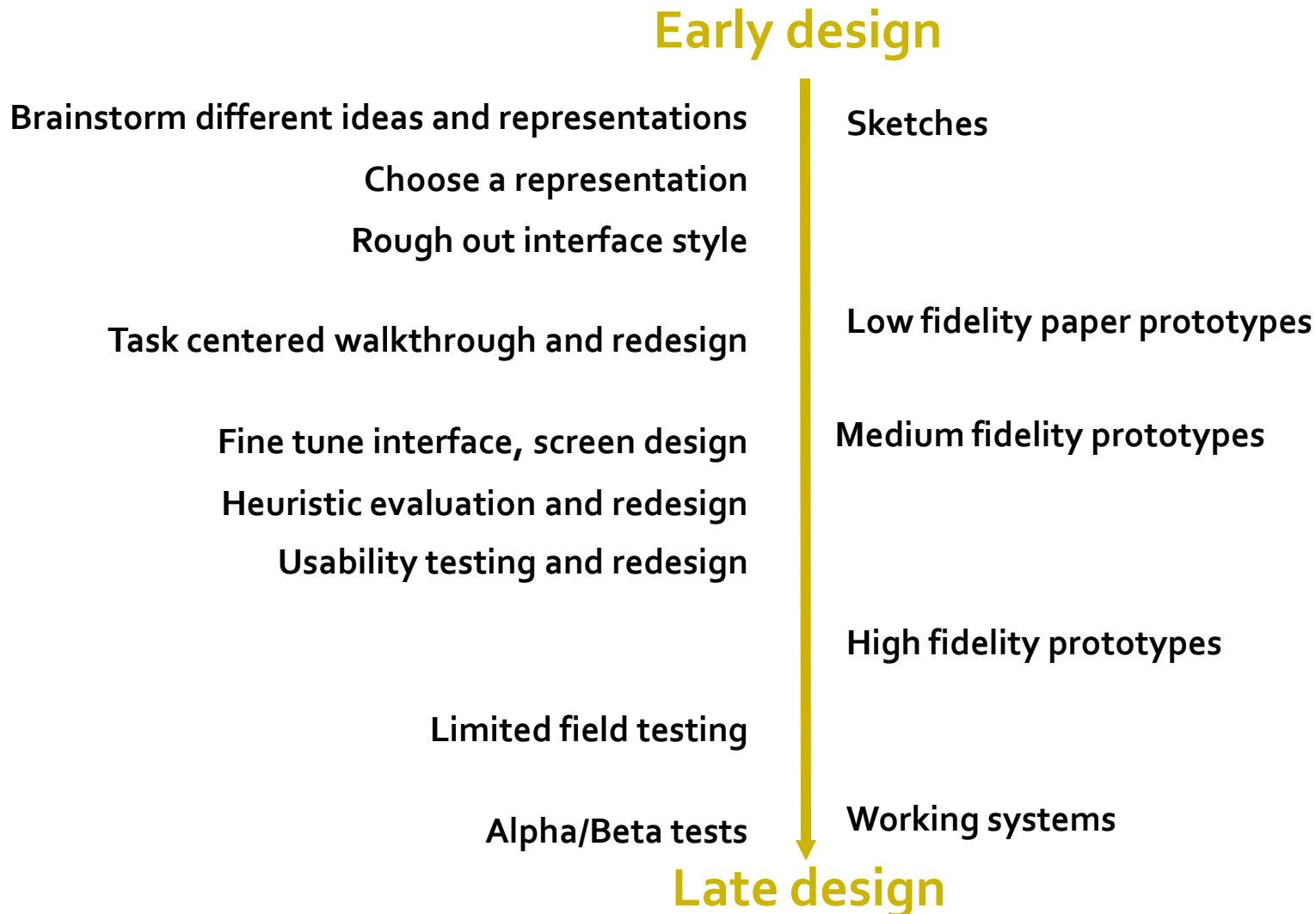
Specific depiction

sketches vs. prototypes

- sketches: early ideation stages of design
- prototypes: capturing /detailing the actual design



sketching and prototyping



low-fidelity prototypes

STORYBOARDS

single sketch

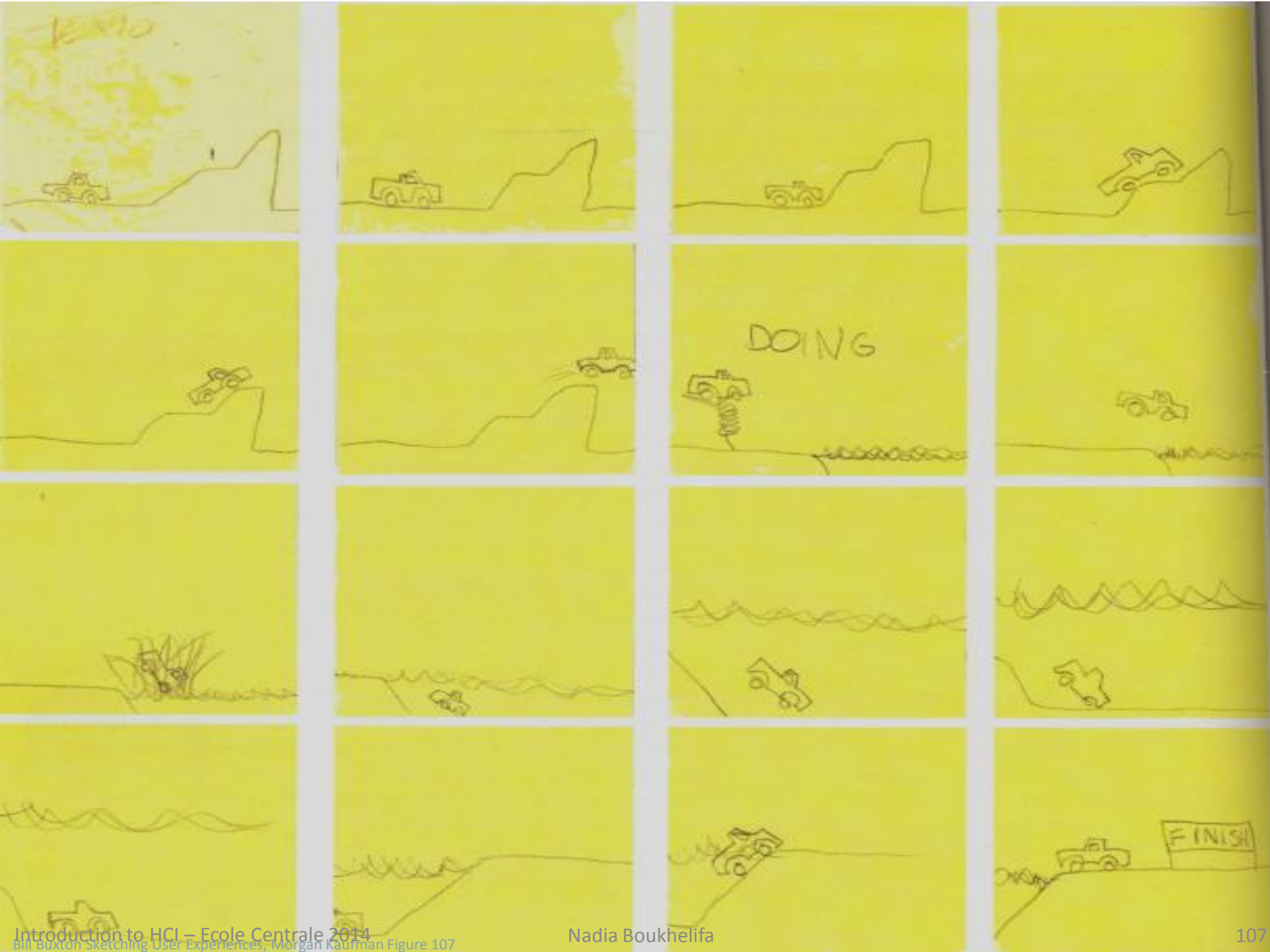
- captures user interface, but not user behaviour
- excludes dynamics of interaction over time
 - user actions
 - system responses
 - context
- **doesn't tell a story**



sequential storyboard: a visual narrative

- series of key frames as sketches
 - interface snapshots at points in the interaction
- portrays
 - key scenes in the interface
 - transitions that caused the changes

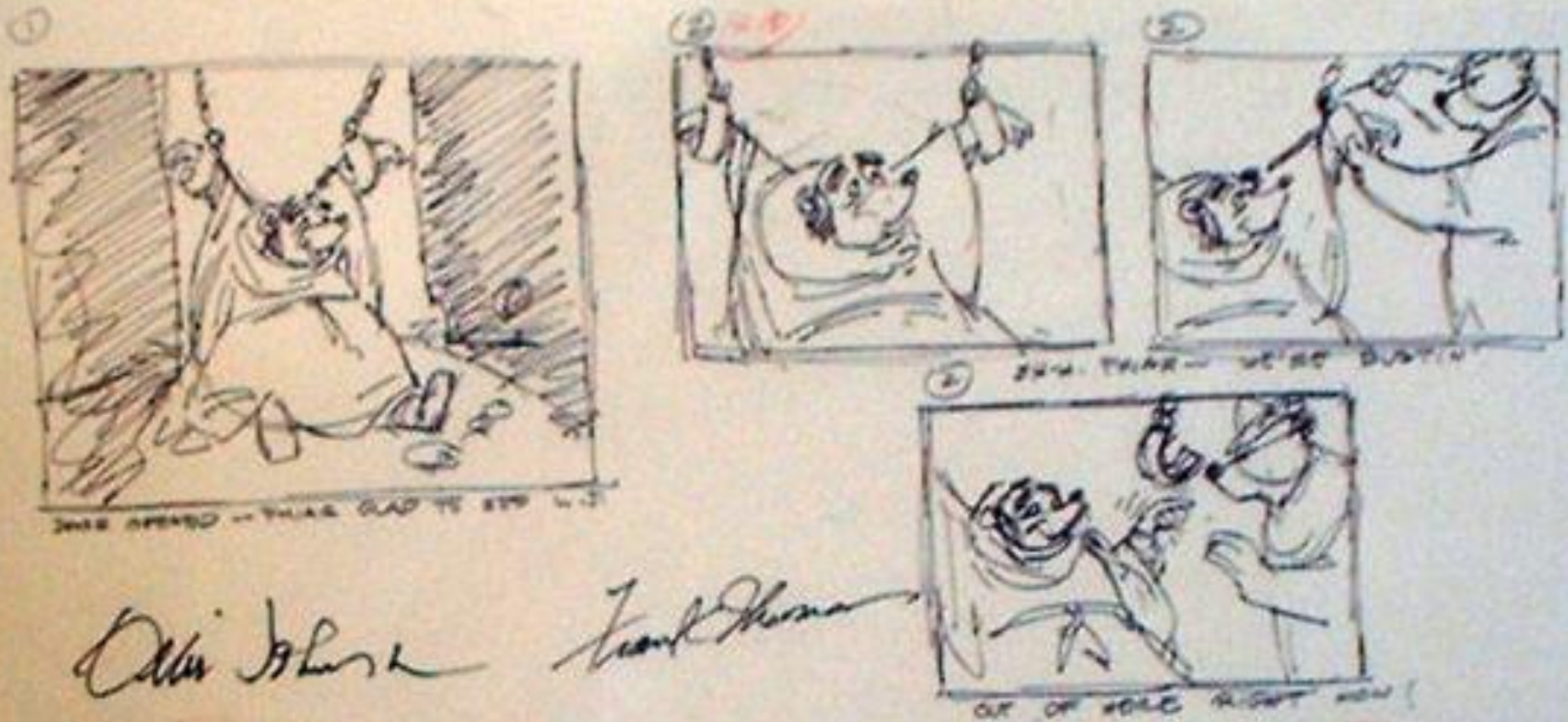




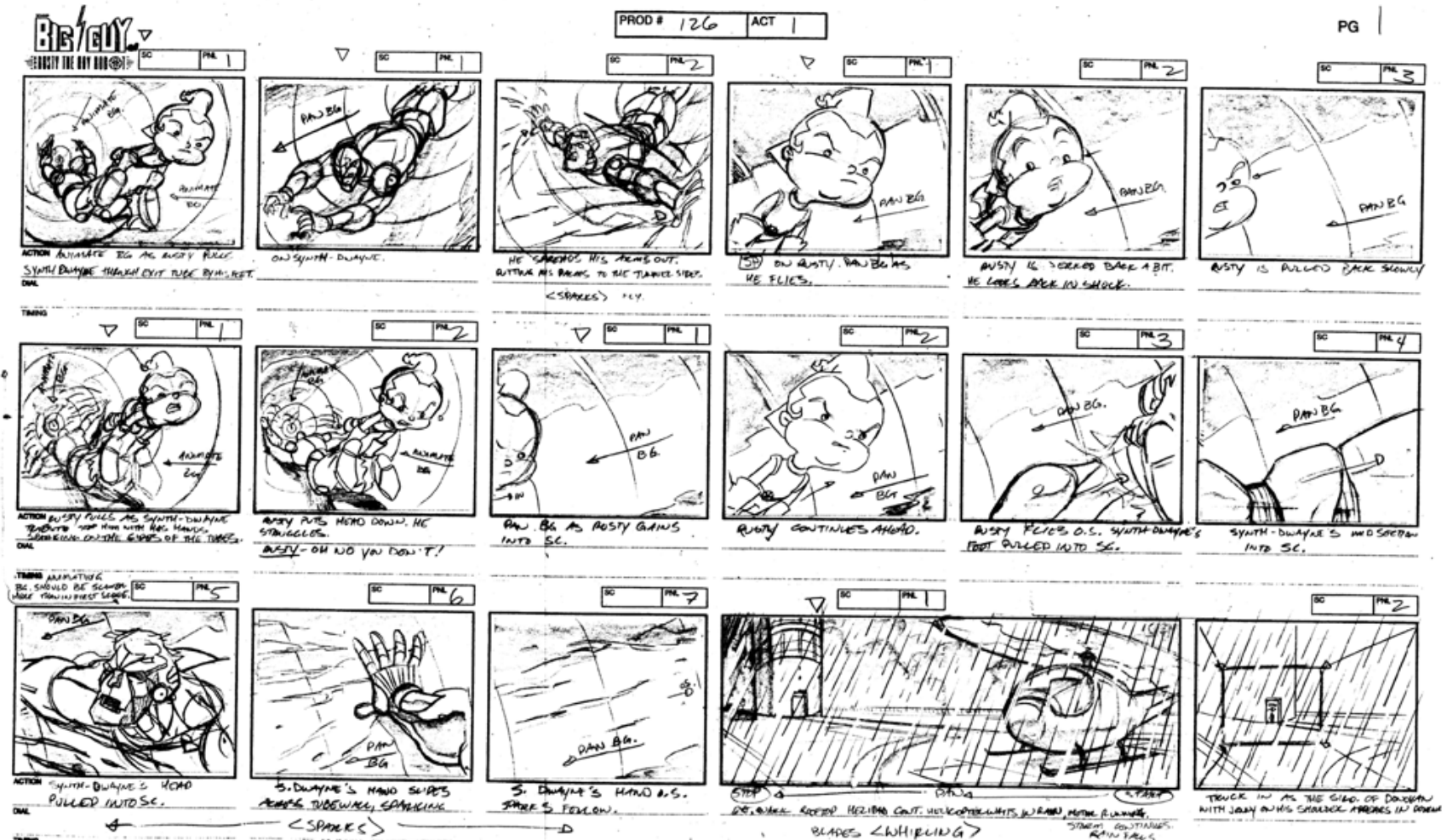
pitfalls in interface design

- focus on UI before you focus on tasks to support
- storyboards are all about tasks
 - they are NOT about pretty pictures
 - they are about communicating ideas
 - they should illustrate a goal (show how a task unfolds)

a long tradition – animation



a long tradition – animation





HOW I WOULD FEEL

AND LIVE HERE...

MARY ANN!
MARY ANN!

THE RABBIT!
OH DROT THAT
GIRL!

WHERE COULD SHE
HAVE PUT THEM?

MARY ANN!
MARY ANN!

NO USE -
CAN'T WAIT -
OH ME! OH MY!

SO LATE -
SO VERY VERY
LATE!

EXCUSE ME
SIR...

BUT I'VE BEEN
TRYING TO...

...I'M VERY LATE!

BUT LATE FOR
WHAT?
THAT'S JUST
WHAT I...

GO! GO!
GO-GO-GO!
GET MY GLOVES!
AT ONCE!

BLEE-EE-EEP!

DO YOU HEAR?

GOODNESS -
I SUPPOSE I'LL
BE...

...TAKING ORDERS
FROM DINAH NEXT.

HM'M - NOW
LET ME SEE...

IF I WERE
A RABBIT

WHERE WOULD I
KEEP MY GLOVES?

(HUMMING) -

OOOH!

(GASPS) -
OH NO - NO!
NOT AGAIN!

OH - THIS
IS TERRIBLE!

I MUST GET OUT -
QUICK!

--OF ALL THE
BRAINLESS,
BUNGLING
BLUNDERING...

OOOH!

ON MY FUZZY
PIL AND WHISKERS!

H-E-L-P!

BL-EE-EE-EEP!

OH DEAR -

WHAT'LL I DO?

A M-MONSTER!
A MONSTER, DODO -
--IN MY HOUSE,
DODO!

OH MY HEAD, LITTLE
BITTY MOOSE -
B-STeady - SNOBY
DAN CHIMP -

P-CAN'T BE AS BAD
AS ALL THAT, YOU
KNOW -
R- ON THE TERRACE AND -

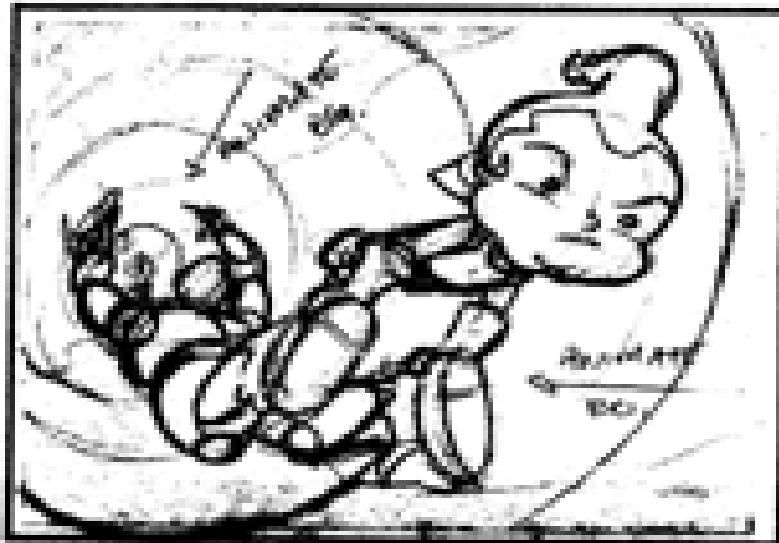
THERE IT IS!

BY GOVE!

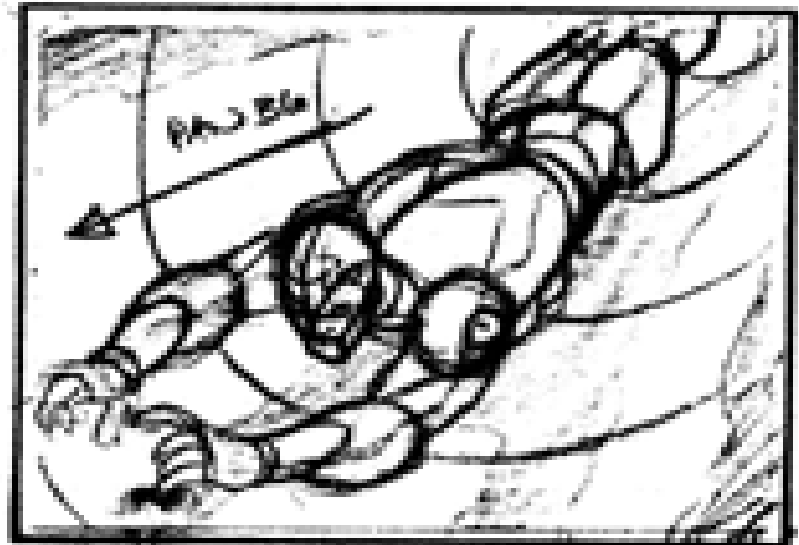
IT JOLLY WELL
IS - ISN'T IT?

key elements: annotations

key elements: annotations



ACTION ANIMATE EG AS ENJOY RIDE
SYNTH BATTLE THROUGH CUT RIDE BY HIS FEET.
DIAL.



END SYNTH - DIALOGUE.

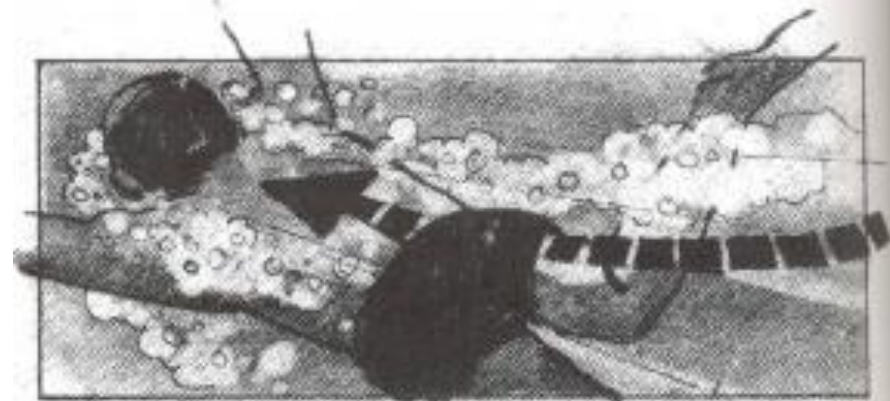
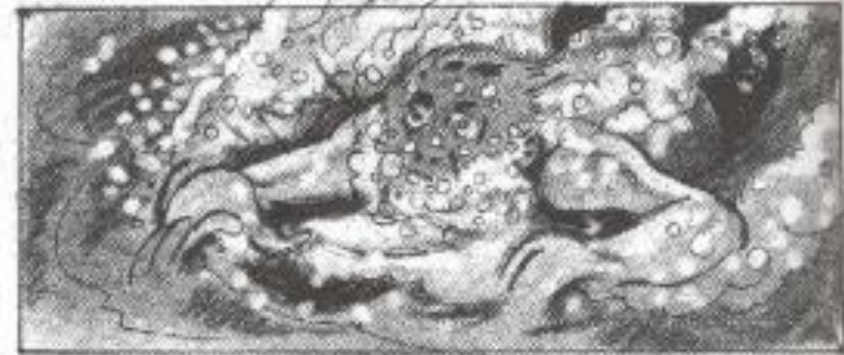
key elements: annotated actions



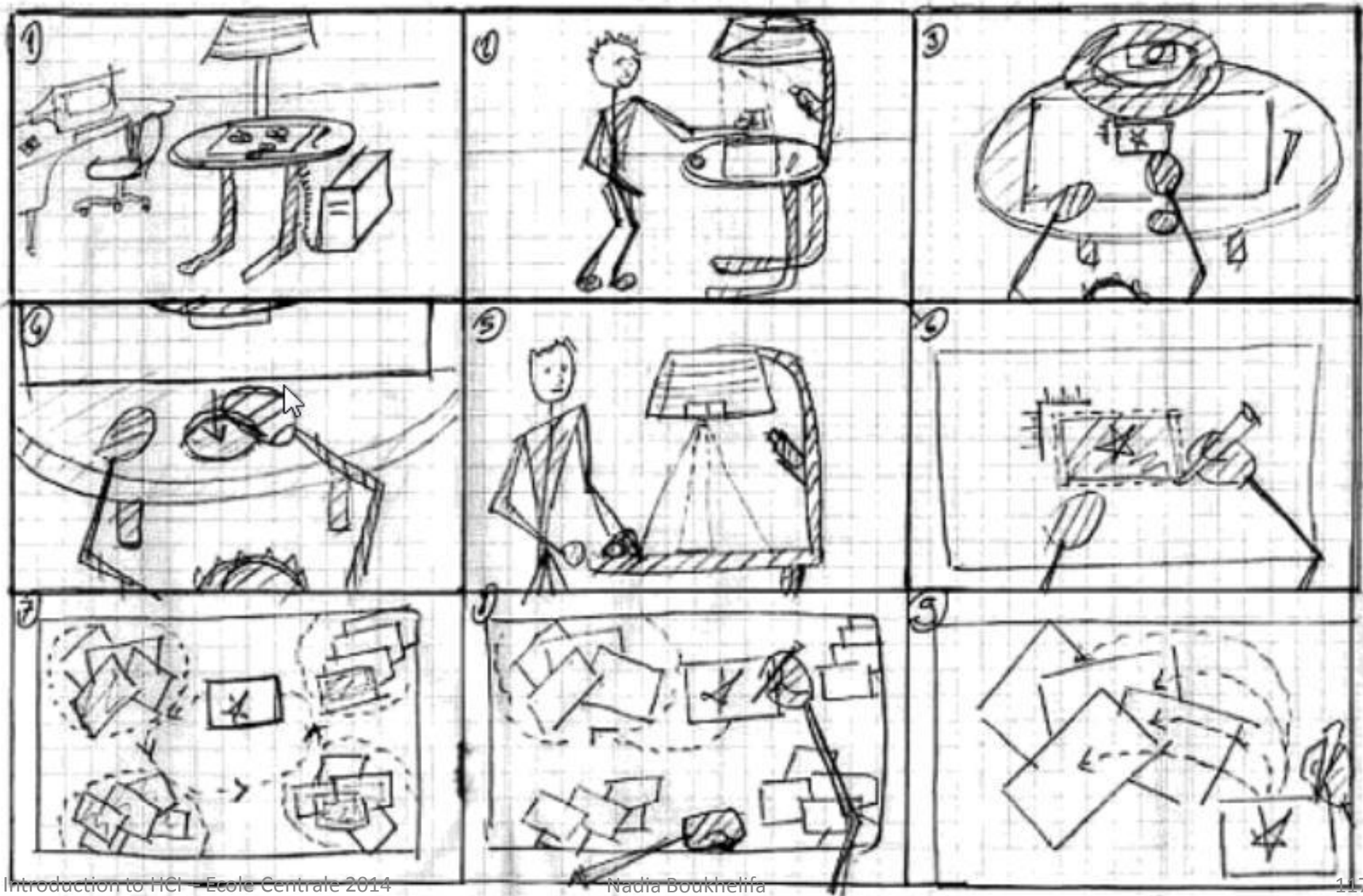
key elements: transitions



*key elements:
transitions*



result

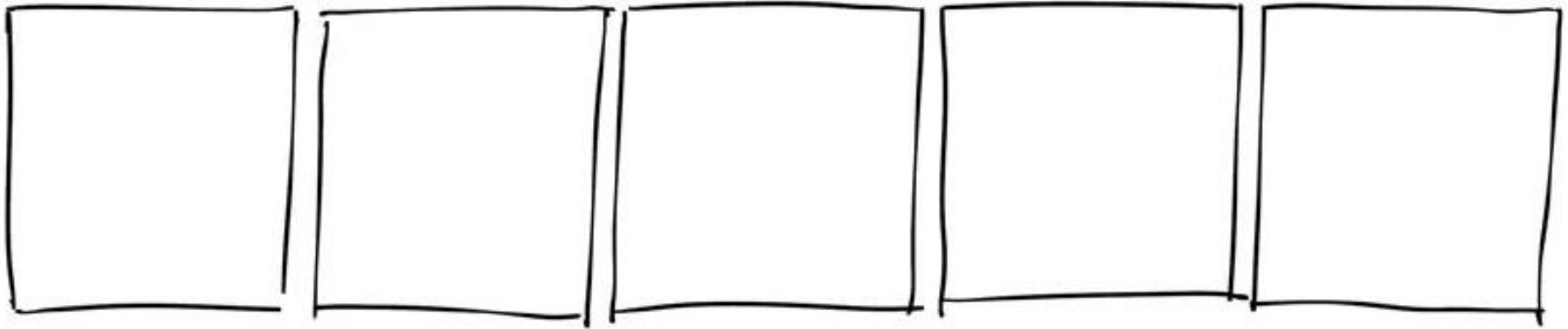


Creating Storyboards Step-by-Step

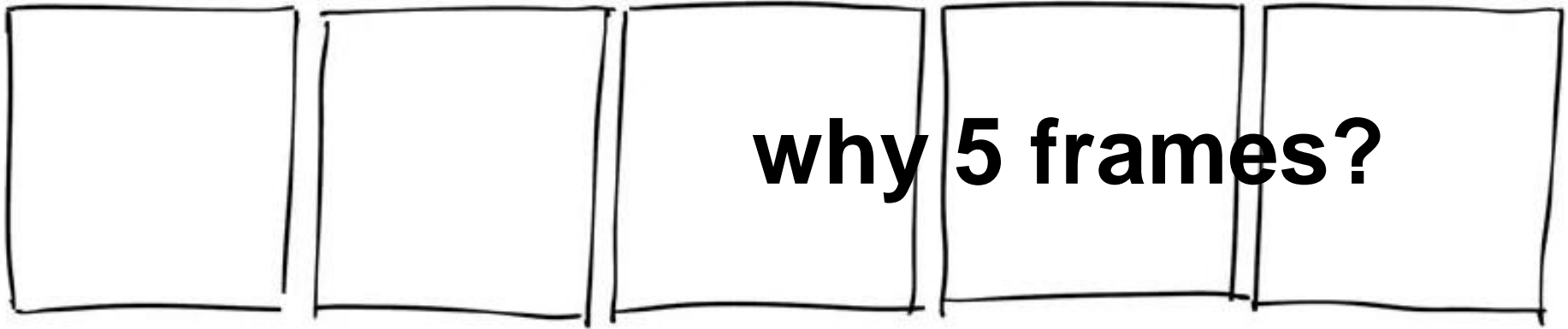
the goal



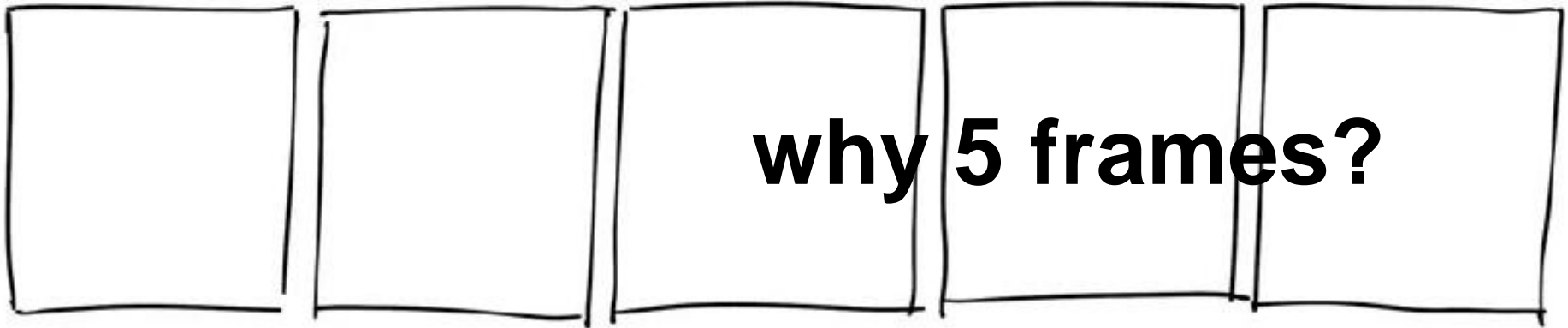
begin with 5 empty frames



begin with 5 empty frames

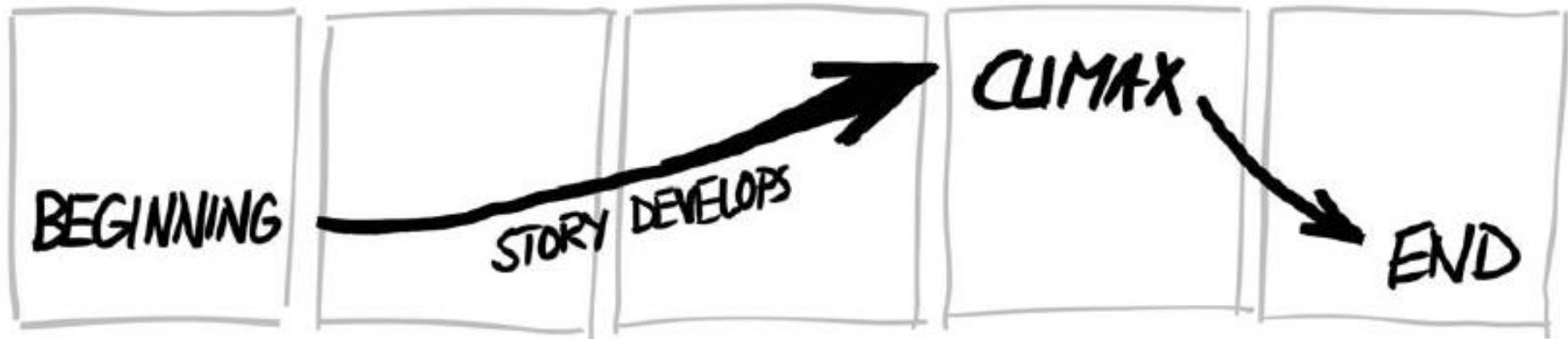


begin with 5 empty frames



- range between 3 and 7
- if more: try to split it up

develop a story



write script: 1 sentence per frame

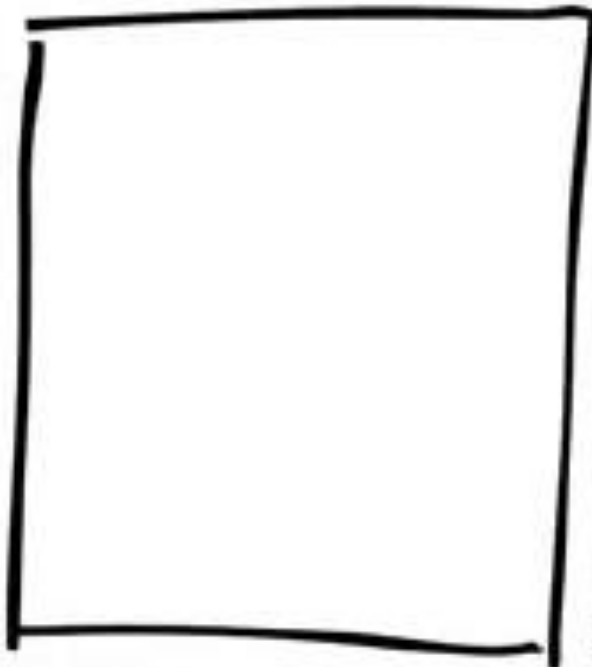


*A. Person passing by
an advertisement board*

write script: 1 sentence per frame



*1. Person passing by
an advertisement board*



*2. Notices one announcement
and is interested in more
information*



*3. Taking a photo of a board
on the poster.*

sketch the individual frames



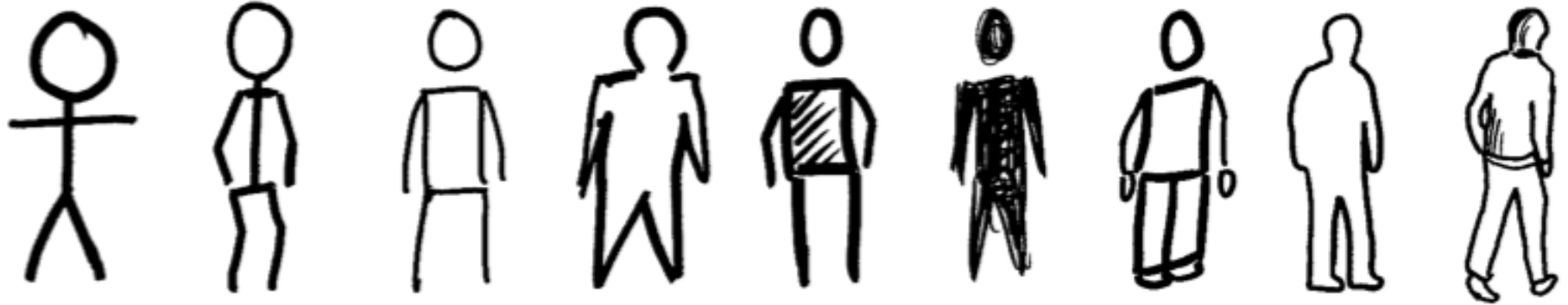
*1. Person passing by
an advertisement board*

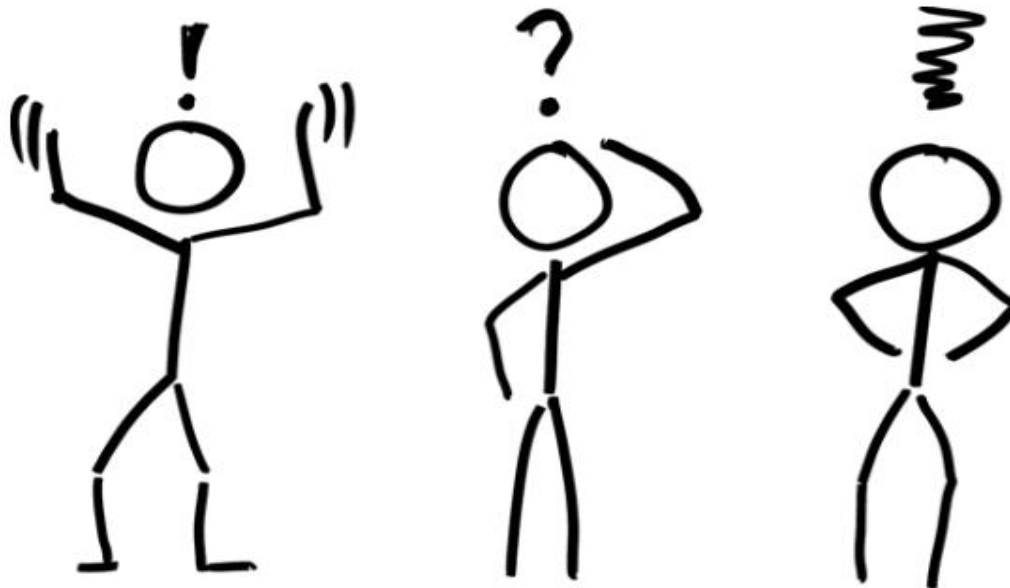
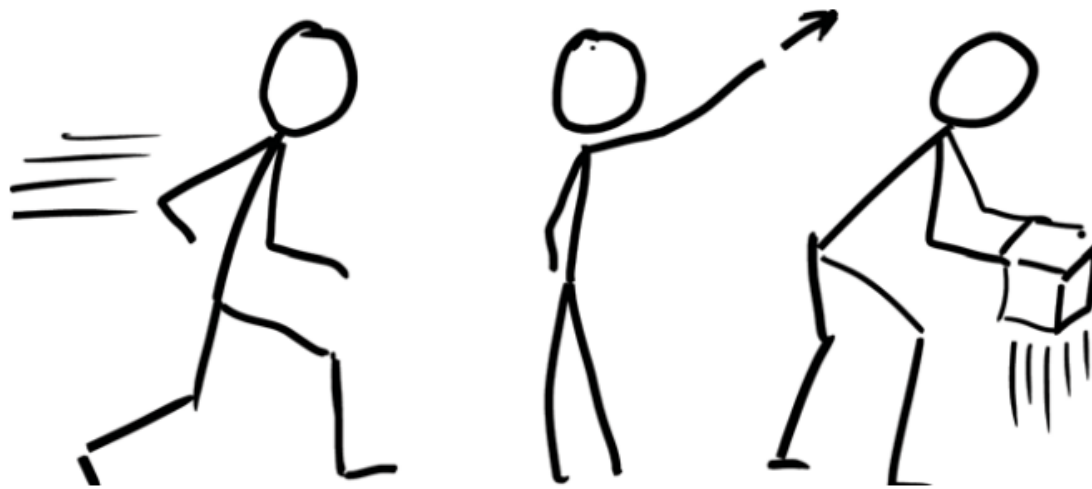
sketch the individual frames

remember: use sketching vocabulary and other sketching techniques we learned earlier



*A. Person passing by
an advertisement board*





*select appropriate camera shots
(learning from film making)*

select appropriate camera shots (learning from film making)



**Extreme long shot
(wide shot)**

A view showing details of the setting, location, etc.



Long shot

Showing the full height of a person.



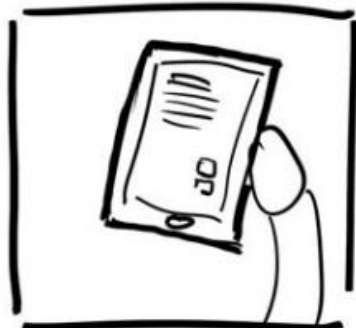
Medium shot

Shows a person's head and shoulders.



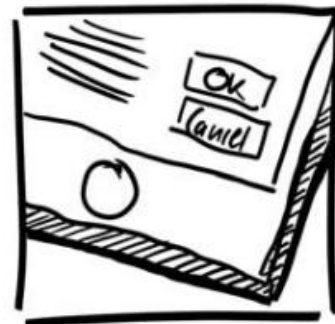
Over-the-shoulder shot

Looking over the shoulder of a person.



**Point of view shot
(POV)**

Seeing everything that a person sees themselves.



Close-up

such as showing details of a user interface device the person is holding.



Extreme long shot (wide shot)

A view showing details of the setting, location, etc.



Long shot

Showing the full height of a person.



Medium shot

Shows a person's head and shoulders.



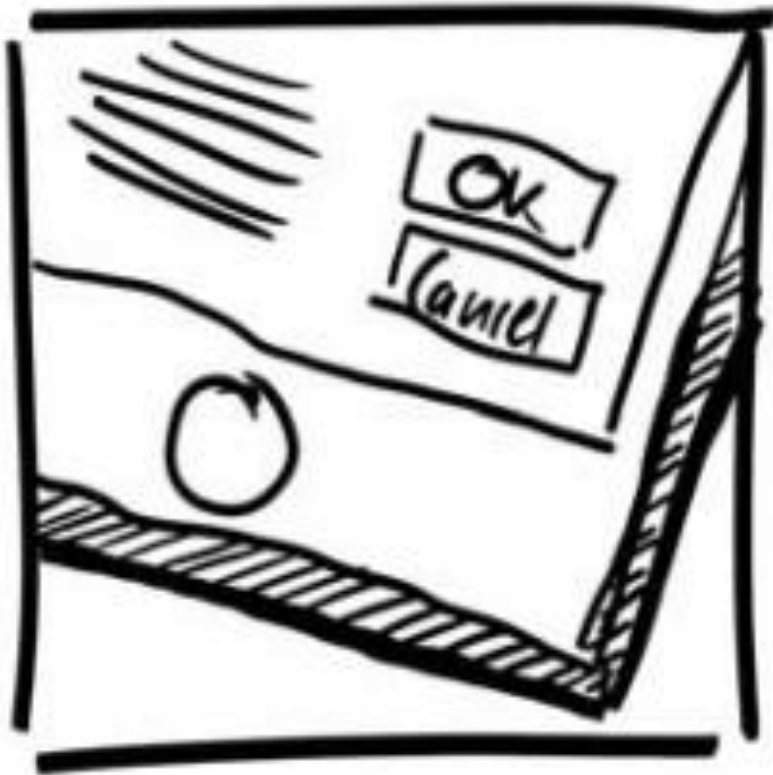
Over-the-shoulder shot

Looking over the shoulder
of a person.



Point of view shot (POV)

Seeing everything
that a person sees
themselves.



Close-up

such as showing details of a user interface a device the person is holding.

select appropriate camera shots



**Extreme long shot
(wide shot)**
A view showing details of
the setting, location, etc.



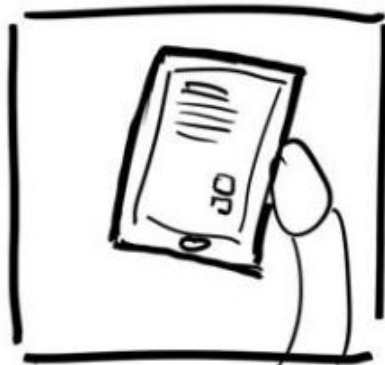
Long shot
Showing the full height
of a person.



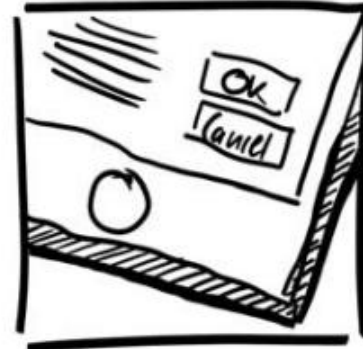
Medium shot
Shows a person's head
and shoulders.



Over-the-shoulder shot
Looking over the shoulder
of a person.

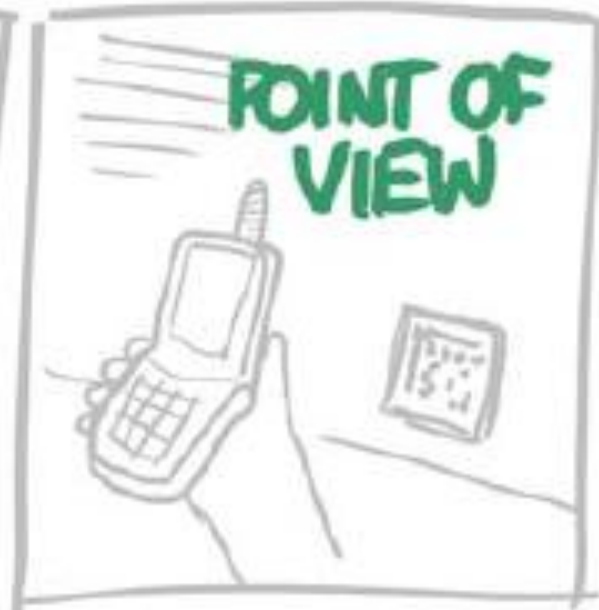


**Point of view shot
(POV)**
Seeing everything
that a person sees
themselves.



Close-up
such as showing details of
a user interface a device
the person is holding.

*select appropriate camera shots
(learn from film making)*



key decisions

- **should I show the user in the scene?**
- **what key frames** should I use to create the sequence?
 - capture the essence of the story
 - people can 'fill in' the rest
- **what key transitions** should I show?
 - actions to get from one frame to the next?

key decisions

- **how explicit do you need to be?**

depends on what you are trying to explain

- are the missing parts important?

depends on the audience

- can your audience fill in the missing bits?

*emphasize actions
and motions*



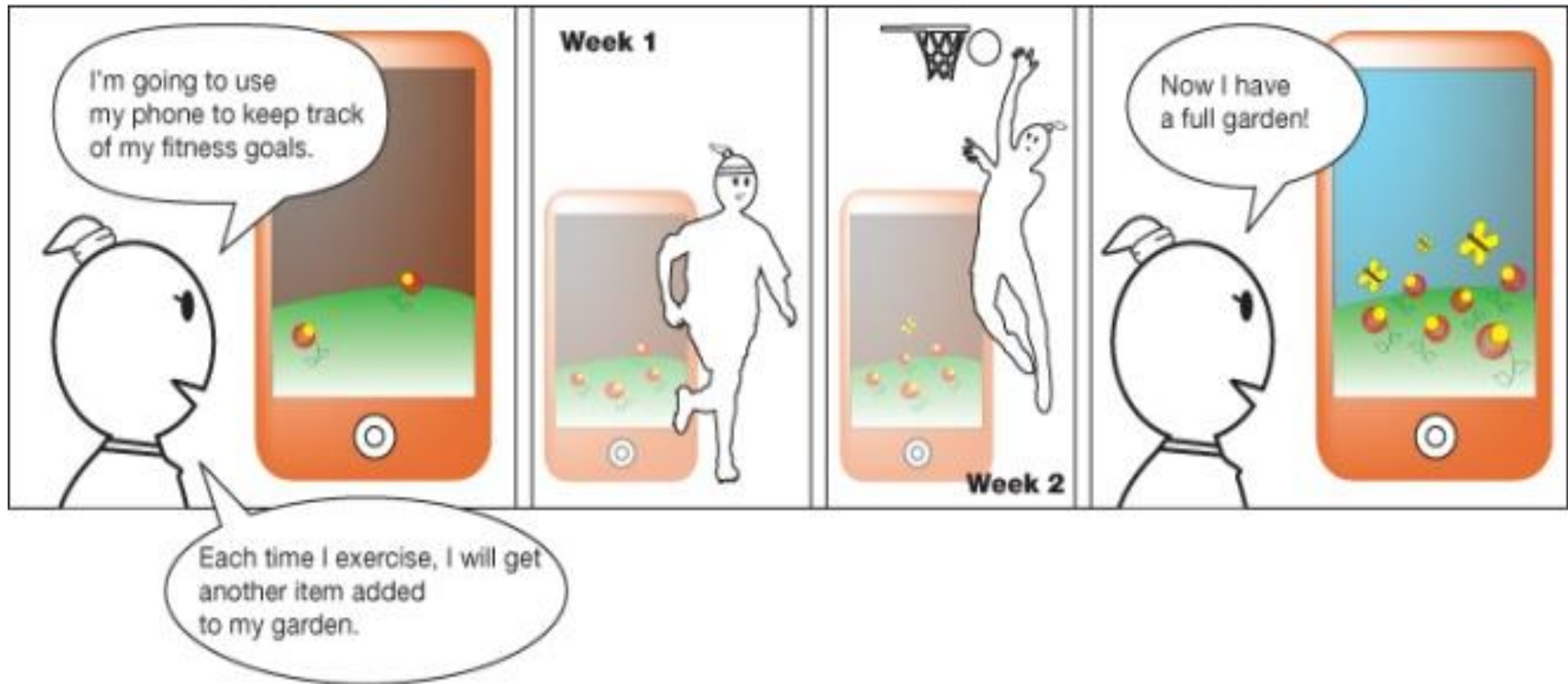
*Add annotations
to emphasize people's
actions or thoughts,
or changes happening
in a device's user
interface*



the final storyboard



Another storyboard example



case study (Kevin Cheng): The Square



*case study (Kevin Cheng):
The Square*



benefits of storyboards

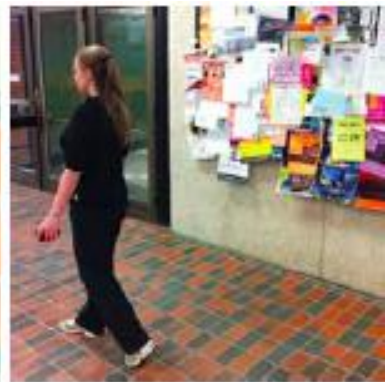
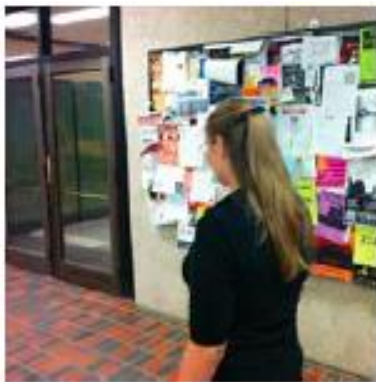
- holistic focus
- avoids commitment to particular UI
- help get all the stakeholders (and your team) on the same page

summary

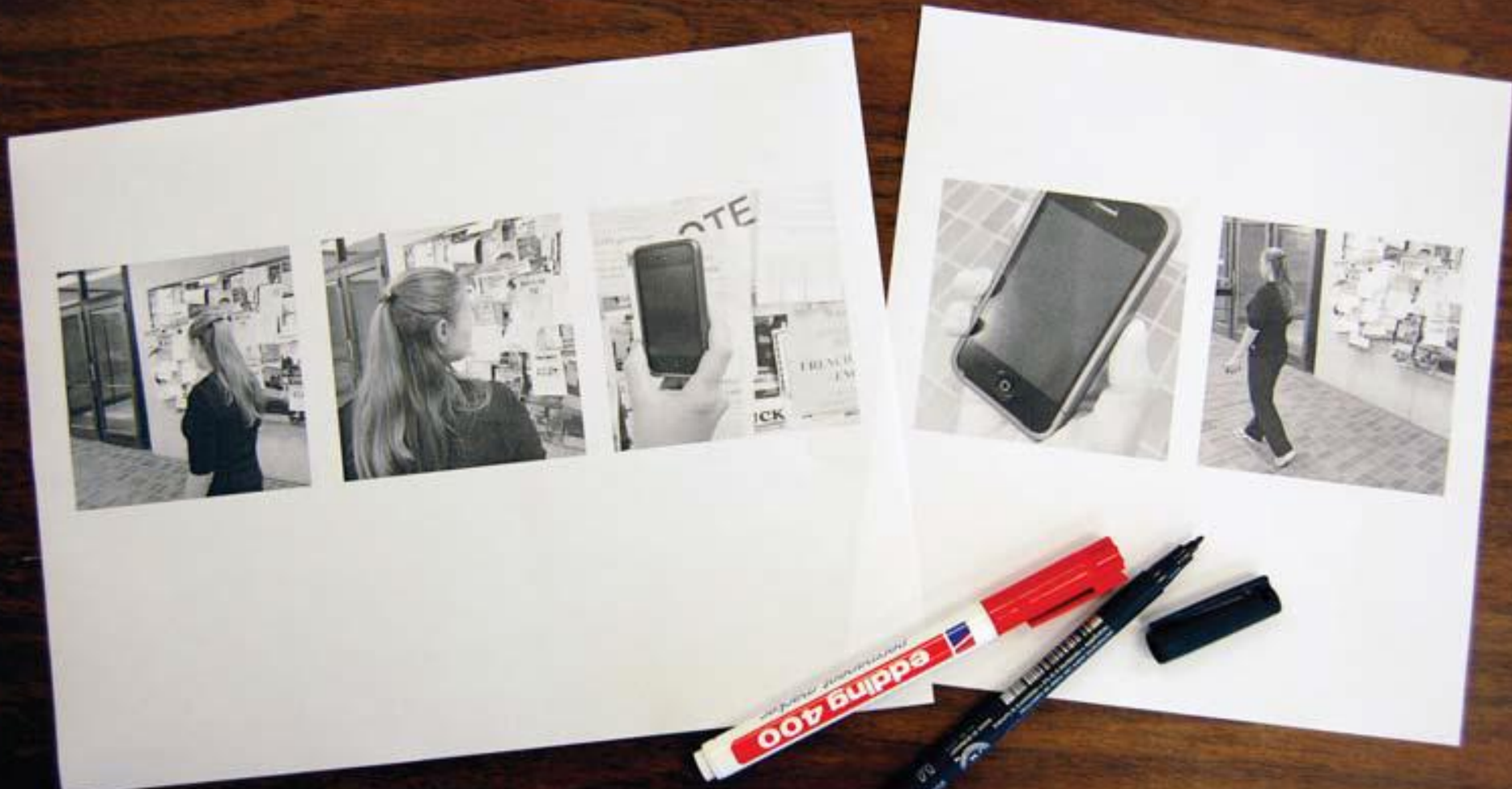
- your storyboard should convey
 - people involved
 - environment
 - task being accomplished
- sequence
 - what steps are involved
 - what leads someone to use the app
 - what task is being illustrated
- satisfaction
 - what motivates people to use the system
 - what does it enable people to accomplish
 - what need does the system fill

Photo-based Storyboards

take 5 photos of key moments



print out (50% transparency)



add annotations



add storyline and comments



① Person is passing by an advertisement board



② Notices one particular announcement and is interested in more inform.



③ Takes a photo of the barcode on the poster.

result



① Person is passing by an advertisement board



② Notices one particular announcement and is interested in more inform.



③ Takes a photo of the barcode on the poster.

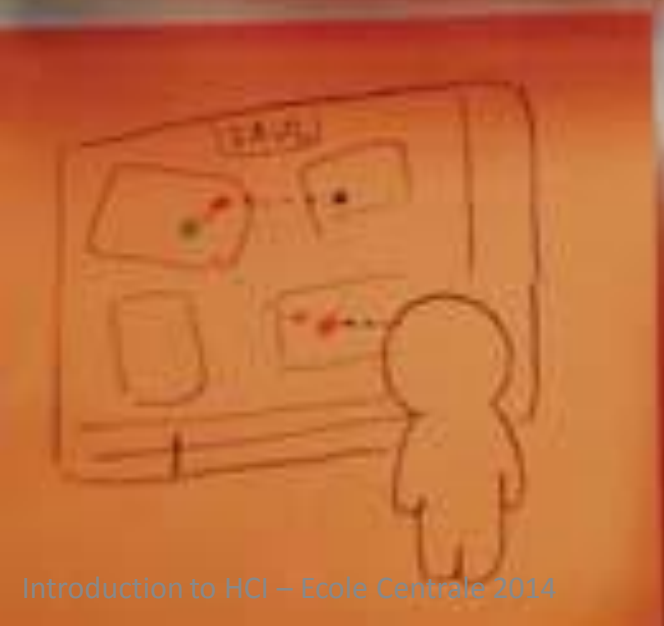


④ Detailed information appears on the phone's screen



⑤ Person turns around and leaves.

other methods for creating storyboards





CA is working on the bus
 The study is very
 It is very
 It is very



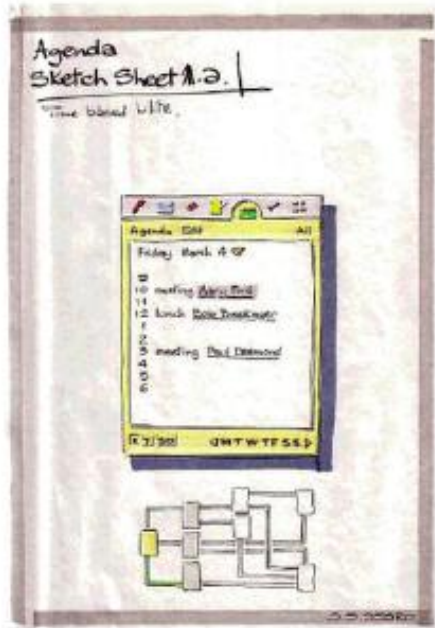


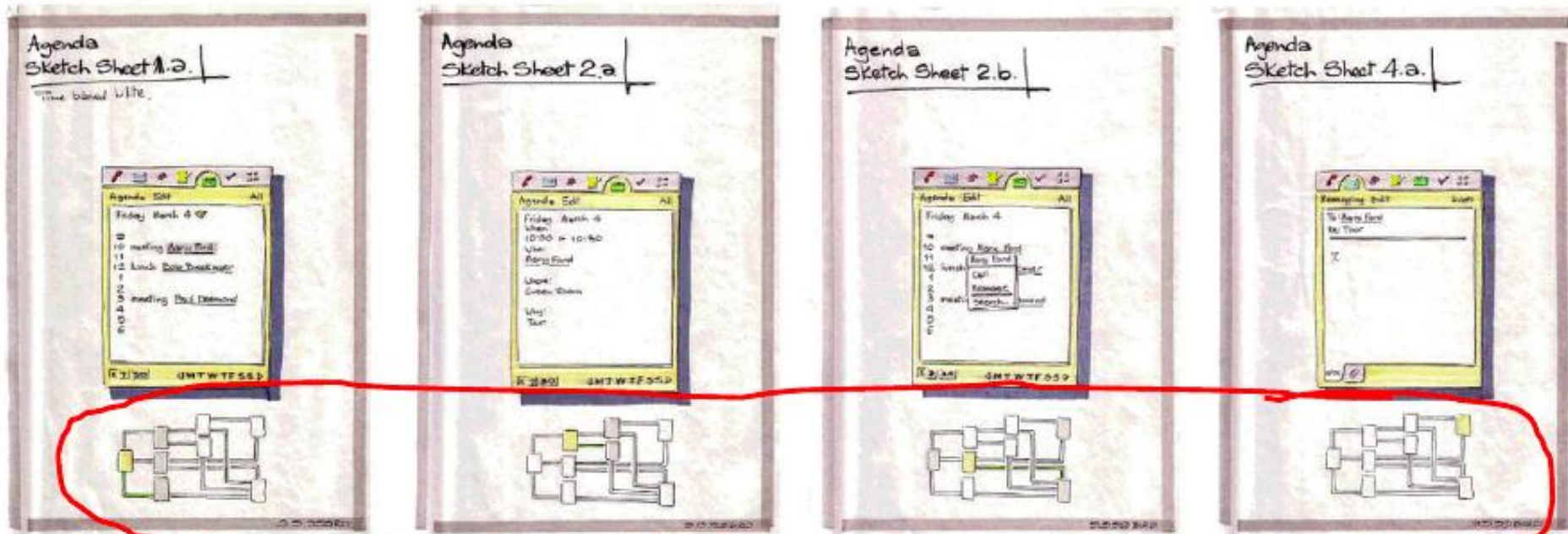
Study you are the
 The study is very
 Study you are the
 Study you are the
 Study you are the

Result



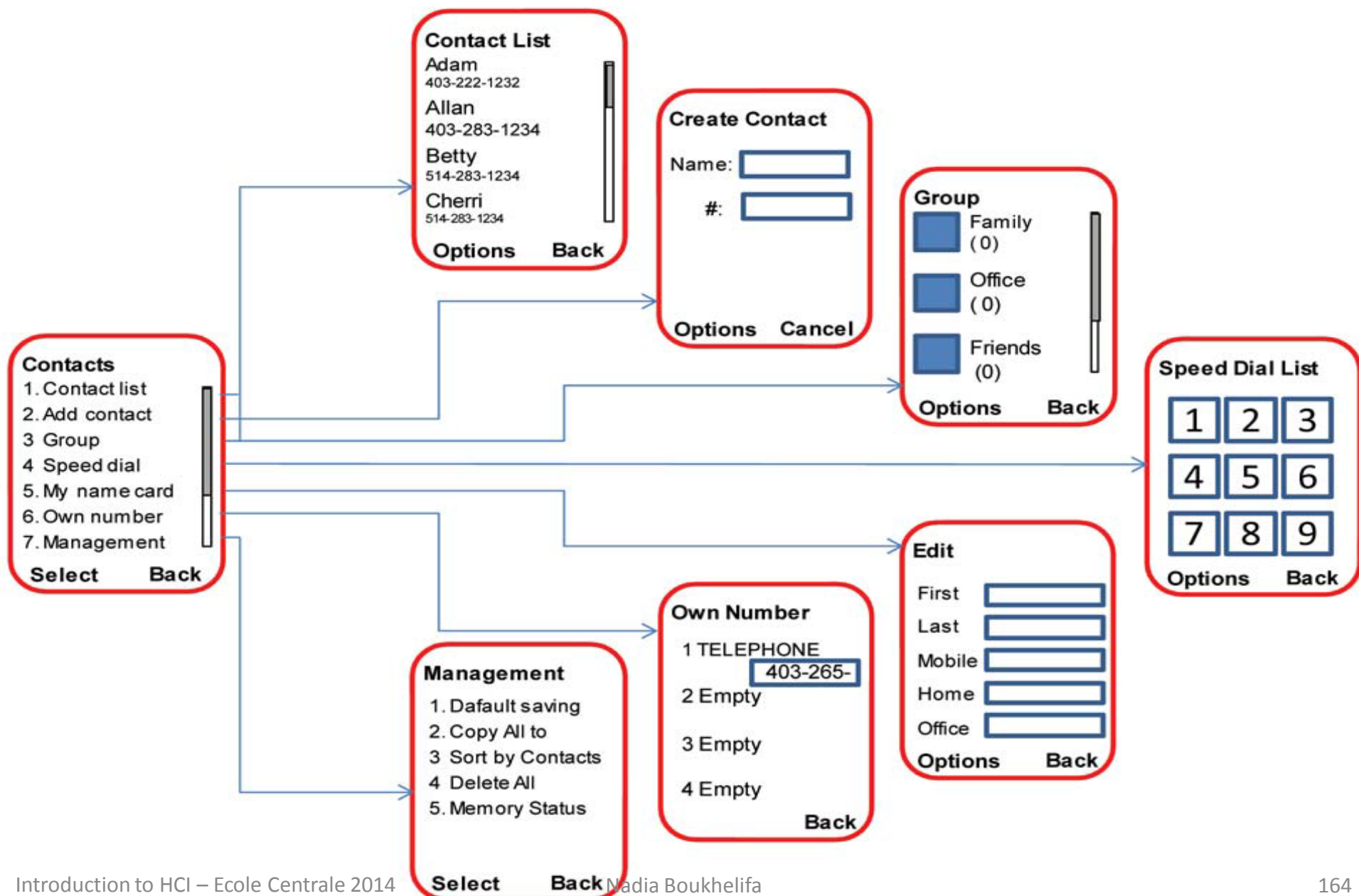
*branching storyboard
(state-transition diagram)*





The sequence of images sketches out a potential design for interacting with a mobile calendar agenda application.

State Transition Diagram



Week 3 Tutorial

LAB - SKETCHING

YOUR ASSIGNMENT

this is what you should have done

- think about a project (done in lab)
- think a bit deeper about the project and users with your team (30 - 60 minutes)
- check my website for instruction on how to write up the report (10 minutes)
- write this up (max. 45 min – work can be split up)
- print out remaining pieces of paper (5 minutes)
- put in a binder and , max 2h later you're done

Result

- Most of you did OK, some well
- Some good ideas
- Project descriptions - issues
 - Some included details of the UI
 - More focus on context and problem to be solved
 - Concrete scenarios are better
- Users and stakeholders
 - Primary users
 - Other

example of a good description

Our product, Chefito, is an electronic cooking center that allows the users quick access to thousands of detailed recipes along with video tutorials and an extensive explanation of cooking terminology. Chefito is portable and can mount underneath a kitchen cabinet or attach to a refrigerator or rest on a countertop. Our main goal is to combine the different items for cooking instruction in a way that makes cooking simpler. To do this, we have to design a good user interface based on human-computer interface principles such as natural mapping, affordability, alignment, visibility and emergent features. In addition to being usable, the functions that Chefito performs need to be sufficient to make the product marketable. The user should feel that the product does everything they need it to do. We also did not want to intimidate users who are unfamiliar with either cooking or technology. In general, Chefito should appeal to people who are not knowledgeable about cooking or technology, but are interested in cooking or learning to cook. These consumers will find this product more beneficial than cookbooks, instructional cooking tapes, or other cooking related software. The value added by Chefito needs to be high enough to offset the costs and out-do the competition.

project idea

Chefito's users can range from professional cooks to people who have enough of an interest in cooking to buy cookbooks or receive them as gifts to those who would like to learn to cook. Because our user population is restricted to those who buy the product as opposed to the general population, Chefito is targeted at an audience one step above a complete novice. Our users will have some idea of what our product is and what they might want to use it for because they purchase the system as opposed to encountering it in public. It is not certain that the users of this product would be comfortable with technology; therefore, this interface does not require any technological skills to navigate. Even though it's tempting to assume that the population who cooks often enough or enjoys cooking enough to purchase this product would have culinary skills, we designed the product so that no culinary knowledge is required. Chefito includes dictionary definitions and video tutorials of many skills, including the most elementary. Also, the users might be buying this product for quicker and easier access to recipes than flipping through pages and pages of hardcopy cookbooks, so we paid careful attention to the usability of the search functions. Given that the product could be mounted in the user's home, we designed the product to have a warm, welcoming feel.

users (no description of other stakeholders – you needed this also)

your next assignment (due Feb 23)

- brainstorming session (spend 1h together)
 - sketch ideas, each on single sheet of paper
 - we will start this in the lab with the 10+10 technique
- create an affinity diagram with the sketches
 - organize them into groups (see last lecture slides)
- Deliverable 1:
 - report on your brainstorming session
 - describe the range of ideas explored
 - briefly describe the major conceptual groupings you came up with (likely 3-5)
 - report how the groupings relate to the user requirements from last assignment

your next assignment (due Feb 23)

- select and polish ideas
 - from the affinity diagram
 - select the three or four most promising sketches
 - three if you are in a group of three, four for groups of four
 - they do not have to be from different students
 - discuss these sketches
 - re-sketch them on a piece of paper neatly, one per student (even if it was not your original sketch)
 - add annotations, provide descriptions where necessary, add date and name of re-sketching student
- Deliverable 2:
 - the 3 or 4 re-sketched ideas.
 - add the whole set of sketches as an appendix.

your next assignment (due Feb 23)

- create storyboards
 - take the three sketches and turn them into a storyboard
 - each student should do one
 - put your name on it
- Deliverable 3: one storyboard per idea / student

evaluation criteria storyboard

	Guiding questions	Bare minimum	Satisfactory effort & performance	Above & Beyond
Task choice	Do your storyboards clearly communicate a user's real problem or need? Convince us that this problem needs to be solved!	Task is vague, or ill-specified. Storyboards do not demonstrate the need for such a task	Storyboards communicate an authentic need and the task effectively	Task is unique and addresses a real need. Storyboards clearly convince reader of the task's authenticity.
Design alternatives	Do your storyboards communicate significantly different alternatives? Do you demonstrate how your idea solves the user's problem or desire? Don't be married to an idea. Generate as many as you can and show us!	Little variation among each storyboard of either interface or scenario. Designs do not convincingly accomplish the task at hand.	Storyboards show significant variation in interface or scenario. Designs solve problem to a degree.	Storyboards demonstrate deep thought about multiple design alternatives, Utility of designs is shown clearly & elegantly.
Clarity	Are your design ideas communicated clearly? Are the important aspects of your interface illustrated? Do your storyboards give a decent understanding of how your interface works? We are not looking for artistry, just good communication!	Storyboards poorly communicate design ideas. Lacks key elements necessary to establish scenario and design solution.	Storyboards communicate design ideas effectively, using a solid mix of illustrations and words to focus on key elements of story.	Illustrates ideas intelligently, focusing on important scenarios and interface elements. Relies less on labels for explanation.
Research	Did you use insights from the user requirements assignment?	Design ideas are based more on author's ungrounded ideas than on research	Design ideas are taken directly from user research	Design ideas are based on user research and go further to addressing <i>root</i> of breakdowns or opportunities

sketching for brainstorming

- To this point, we have mainly talked about the use of sketching for communication
- But, sketching can also be used for brainstorming (and commonly is)

10 Plus 10 Technique

- the 10 plus 10 technique is a great way to generate ideas, PLUS refine those ideas
- we will actually use the 10 plus 10 technique today to explore/study one design problem
- This is a technique that you can use in generating ideas/refining them for the purpose of your project

10 Plus 10 Technique

- Generate 10 sketches individually that relate to the design problem (individually) (10 mins)
 - These sketches must be meaningfully different (i.e. avoid variations on the same idea)
 - Take risks: do not limit yourself to the realities of “today”
 - Avoid judging the quality of these ideas now; the point is to get diversity
- Discuss within your group each of the design ideas represented in the sketches, then select the most promising 3 design ideas (10 mins)
- Using these promising design ideas, generate an additional 10 sketches that are variations of these 3 design ideas (10 mins)
- Discuss within your group each of these variations, and select the 2 best variations for each design idea (5 mins)
- Present these best ideas to the class and discuss (5 mins for each presentation, plus 5 mins of discussion)

First Design Challenges

- Connect two smartphones together (so they know to “talk” to each other)

Phase 1: Make 10 sketches (10 mins)

- Generate 10 sketches **individually** that relate to the design problem (individually)
 - These sketches must be meaningfully different (i.e. avoid variations on the same idea)
 - *Take risks: do not limit yourself to the realities of "today"*
 - Avoid judging the quality of these ideas now; the point is to get diversity

Phase 2: Internal Discussion

- Discuss within your group each of the design ideas represented in the sketches
- Select the most promising 3 design ideas

Phase 3: "Plus 10" (10 mins)

- Using the 3 promising design ideas, generate an additional 10 sketches that are variations of these 3 design ideas
- On a per-person basis, it might be best to stick to one of the design ideas

Phase 4: Internal Discussion 2

- Discuss within your group each of these variations
- Select the 2 best variations for each design idea

Phase 5: Present (5 mins/group)

- Present these best ideas to the class and discuss (5 mins for each presentation, plus 5 mins of discussion)

Lessons from 10 Plus 10

- 10+10 is a great technique for brainstorming
- This is a great way to “unstick” yourself if you feel stuck on a design problem.
- Note: there are phases where you discuss with others—in principle, you can do this on your own.
- But, one thing to remember is that it is always valuable to discuss the sketches with others—forces you to communicate something, and forces you to be concrete.

Remaining time (if there is any)

START ON YOUR PROJECT!