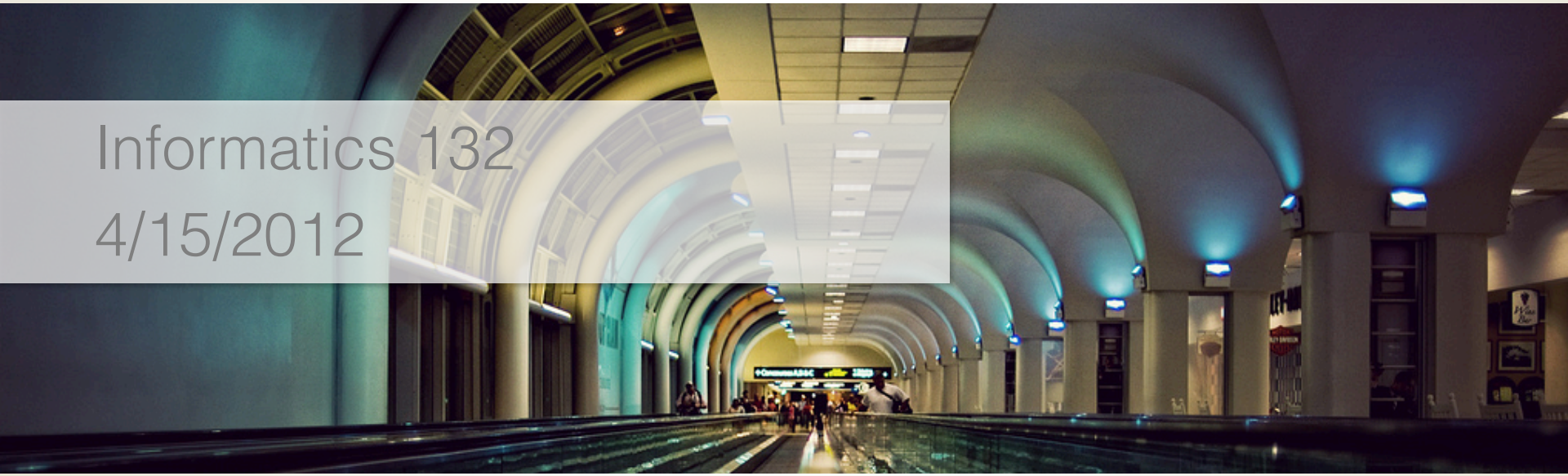
Design Process & Interaction Fundamentals

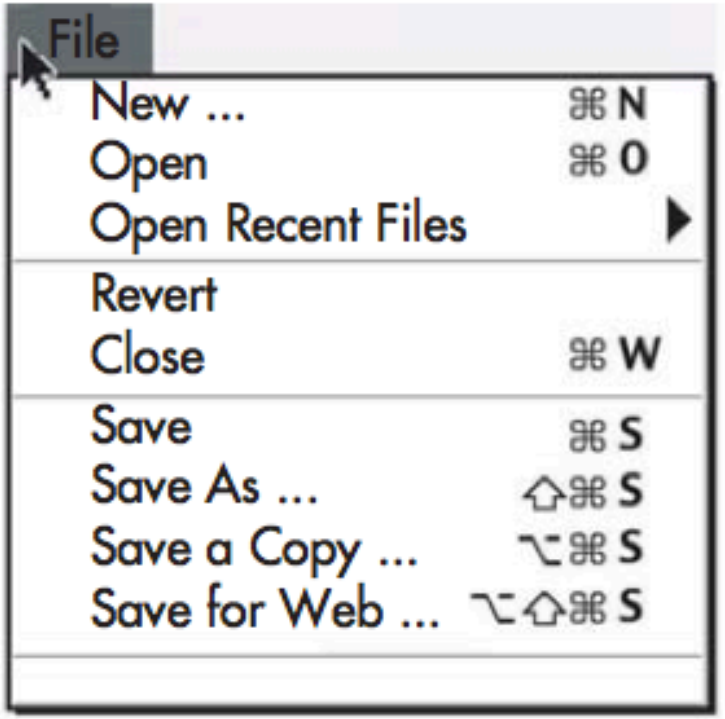


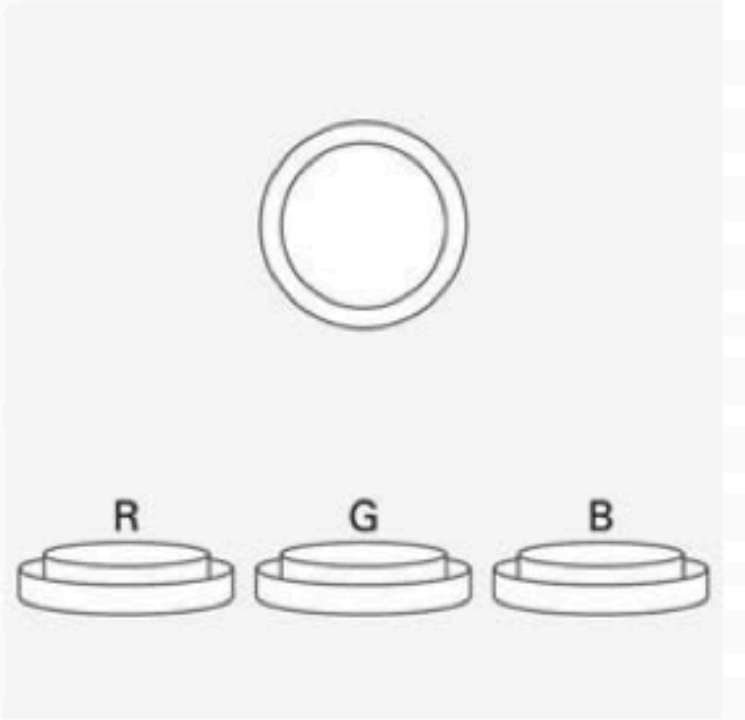
Informatics 132

4/15/2012

Hick's Law

The time it takes to make a decision increases as the number of alternatives increases.[1]





TODAY

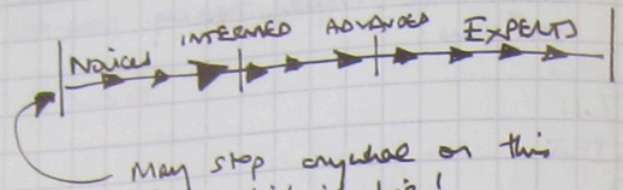
- Some comments on sketching…
- The Design Process & Interaction Fundementals

UPCOMING

- Due Friday:
  S2*: Health & Fitness*
  A1: *Thinking About Design*

Why sketch?

- The sketches for S1 were nice. Let's make them great.
- Use the sketches to think beyond your solution.
- Use the sketches to think beyond your problem.
- Example: USB stick.



Go through your

May stop anywhere on this line, which is true!

object

Physical interactions

Mouse, keyboard, screen

~~Left click~~

LEARNING THE BASICS

Physical Software interactions

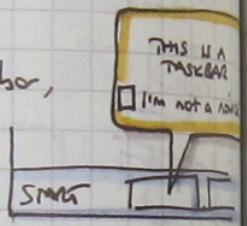
what things are on screen.
where things are.
States.

Navigation

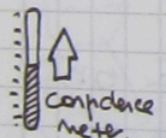
Right/left click
Backwards, forwards,
opening, closing,
saving, undoing.

REGIONS

Titlebar, toolbar,
Taskbar



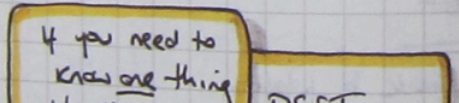
WAYS TO TEACH THEM STUFF.
LEARN AS YOU GO
LEARN BY EXAMPLE
HOW DO USERS GET CONFIDENT



confidence meter.

How do you ask someone "Is this your first time using a pc?" without getting annoying

what about OEMs overriding everything...?



(shades of office assistant)

Is there any way of establishing a users experience?
Ask them → Annoying
Try and guess → Unpredictable

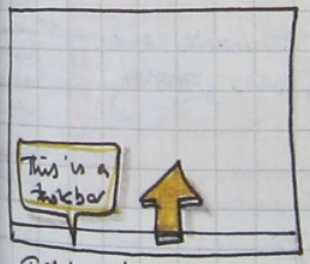
- Do you need help with a concept?
- Do you need help from a friend? → Network of friends.

New user support group

Not knowing the basics
↓
Not knowing how to set something up. → Not online ::: problem.

Ignoring warnings

Problem 1: figuring out the expertise of someone.
Problem 2: knowing what they need help with.
Problem 3: Building a UI that grows as they go.

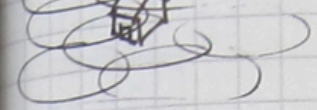


Taskbar bounces on screen as first

Easier showing screen.

Big meeting: me: TRENDLINES: Making best guesses
TRENDS BLOG: | 600 + articles | cons represented
BC themes | alias | watching for
bleeding edge
DESIGN: Primarily focused on rapid prototype
generation. Slow pcus towards sum
presentation
THEMES: Structuring the work.
How these were generated / what the
big groups are
work: rapid sketches to try and draw
conclusions / package of work / d
VISUALIZATIONS
STORAGE
Hand over to Don: emotional UI + f
up.

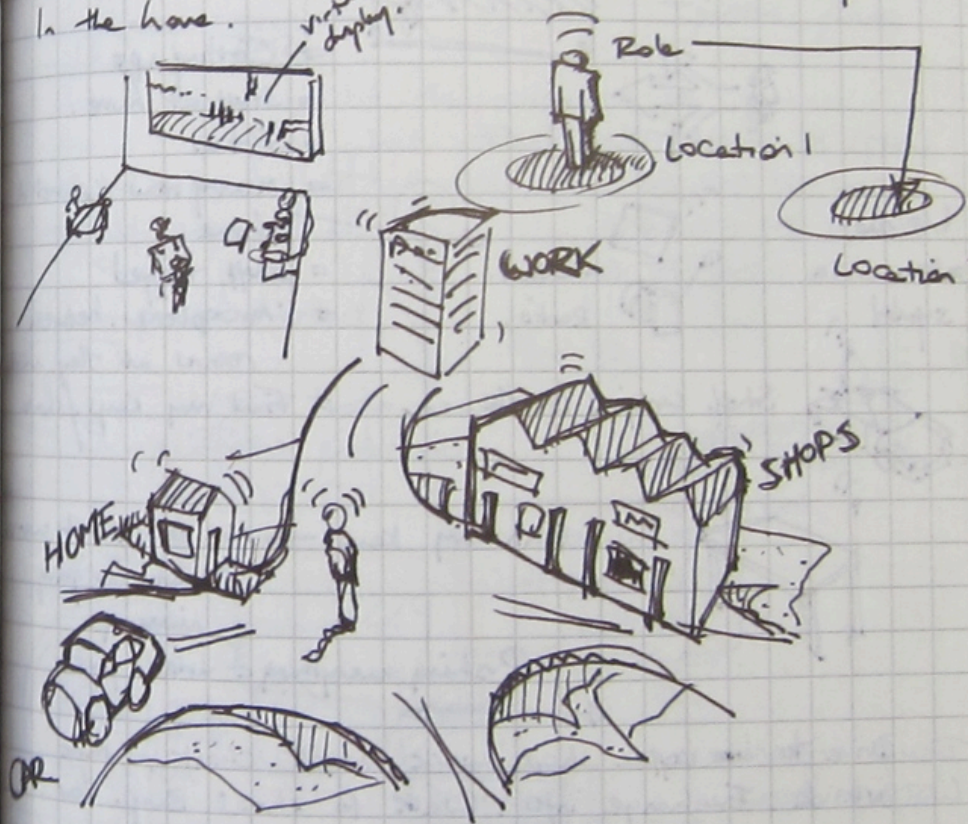
SMART:
RJ04 KDN



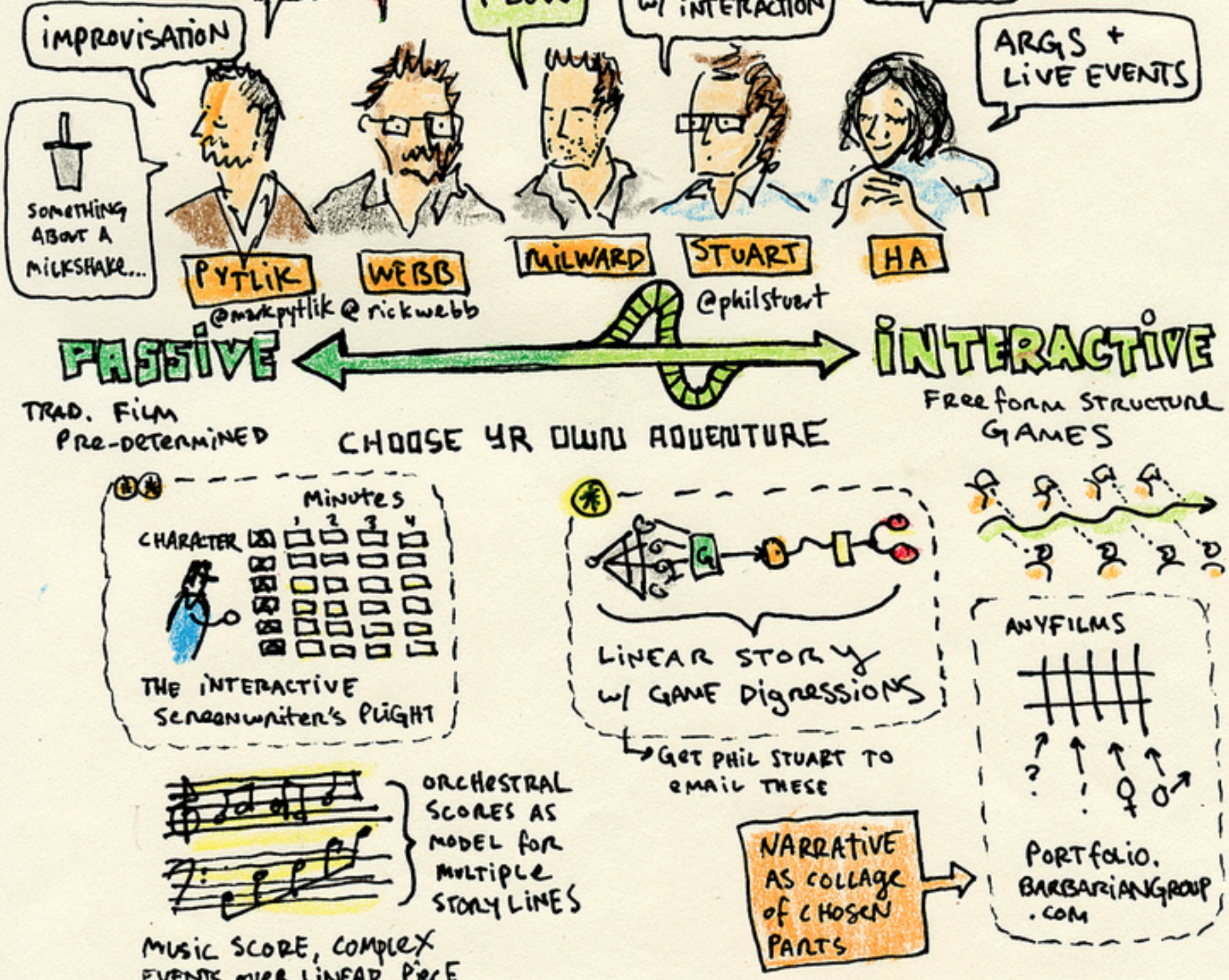
Location - Location. Location.

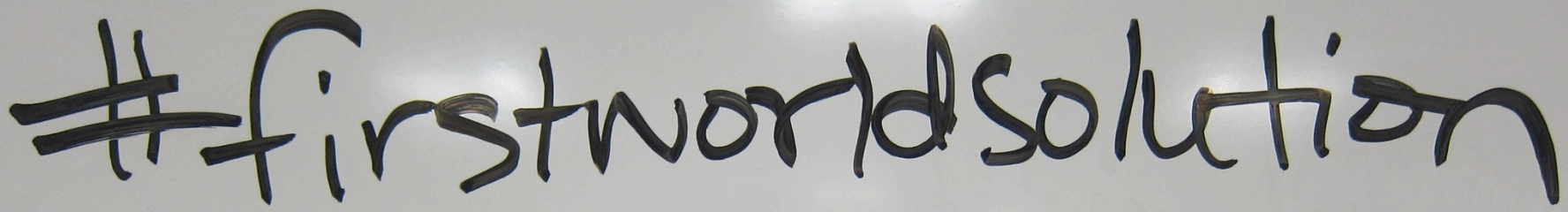
In the park.
In the car.
In the home.

Freedom. Liberation. Control.
Fun. Connection. Play.

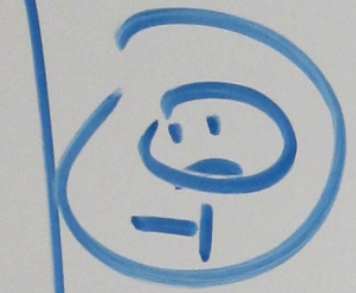


METAPHOR
PINT
WORD PICTURE?
SOUND BITES
LISTEN
BUILDS PICTURE IN YOUR MIND
RADIO
FOCUS!
CAPTURE
DOODLING
NOTES
SKETCHNOTES
MIKE ROHDE
ART DIRECTOR / DESIGNER
flow
BE EARLY
RELAX
FIND LIGHT
WHY?
MEMORY
PALACE
AA
TYPOGRAPHY
GEL PEN
MOLESKINE
TOOLS
LINEAR
TIME
NON-LINEAR
SPACE
WHY ARE YOU DRAWING DINOSAURS?
I'M LEARNING, FOOL.
NOTES BY WWW.AUSTINKLEON.COM

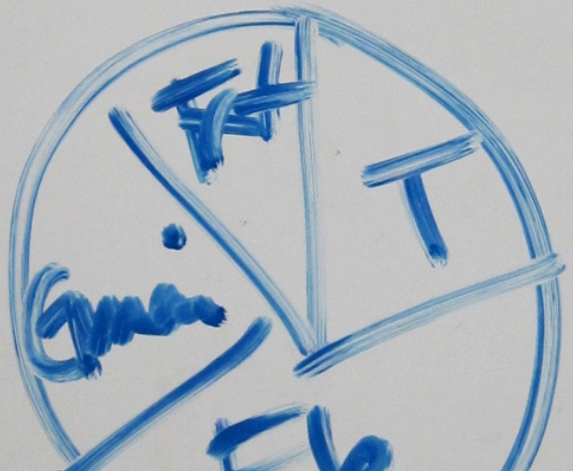

IMPROVISATION
SOMETHING ABOUT A MILKSHAKE...
PYTLIK
@markpytlik
WEBB
@rickwebb
MILWARD
STUART
@philstuart
HA
ARGS + LIVE EVENTS
PASSIVE
INTERACTIVE
TRAD. FILM
PRE-DETERMINED
CHOOSE YR OWN ADVENTURE
FREEFORM STRUCTURE
GAMES
MINUTES
CHARACTER
THE INTERACTIVE SCREENWRITER'S PLIGHT
LINEAR STORY w/ GAME DIGRESSIONS
GET PHIL STUART TO EMAIL THESE
ANYFILMS
ORCHESTRAL SCORES AS MODEL FOR MULTIPLE STORYLINES
MUSIC SCORE, COMPLEX EVENTS OVER LINEAR PIECE
NARRATIVE AS COLLAGE of CHOSEN PARTS
PORTFOLIO.
BARBARIANGROUP
.COM


#firstworldsolution

Home



Name



NEW INFO VIZ

AGG. IN A NEW WAY

ENGAGE W/ IT

→ CHARTS

PUSH NOTIFICATIONS TO EXTREME

PUSH FRIEND TO EXTREME

↓

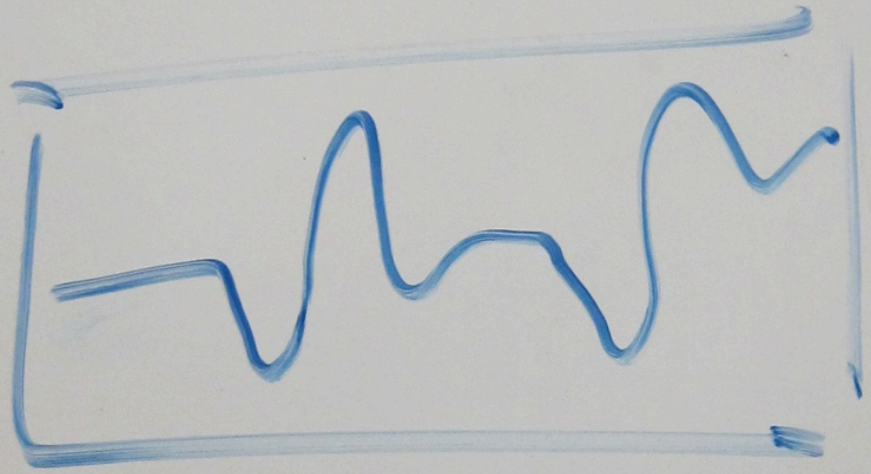
THIS WILL BREAK THE SOCIO-TECHNICAL INFRASTRUCTURE.

NEW

LOG. IN

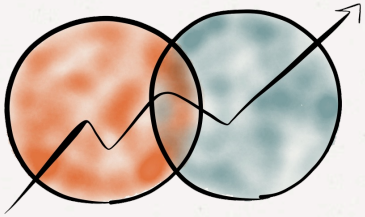
ENGAGE

(9) FRIEND



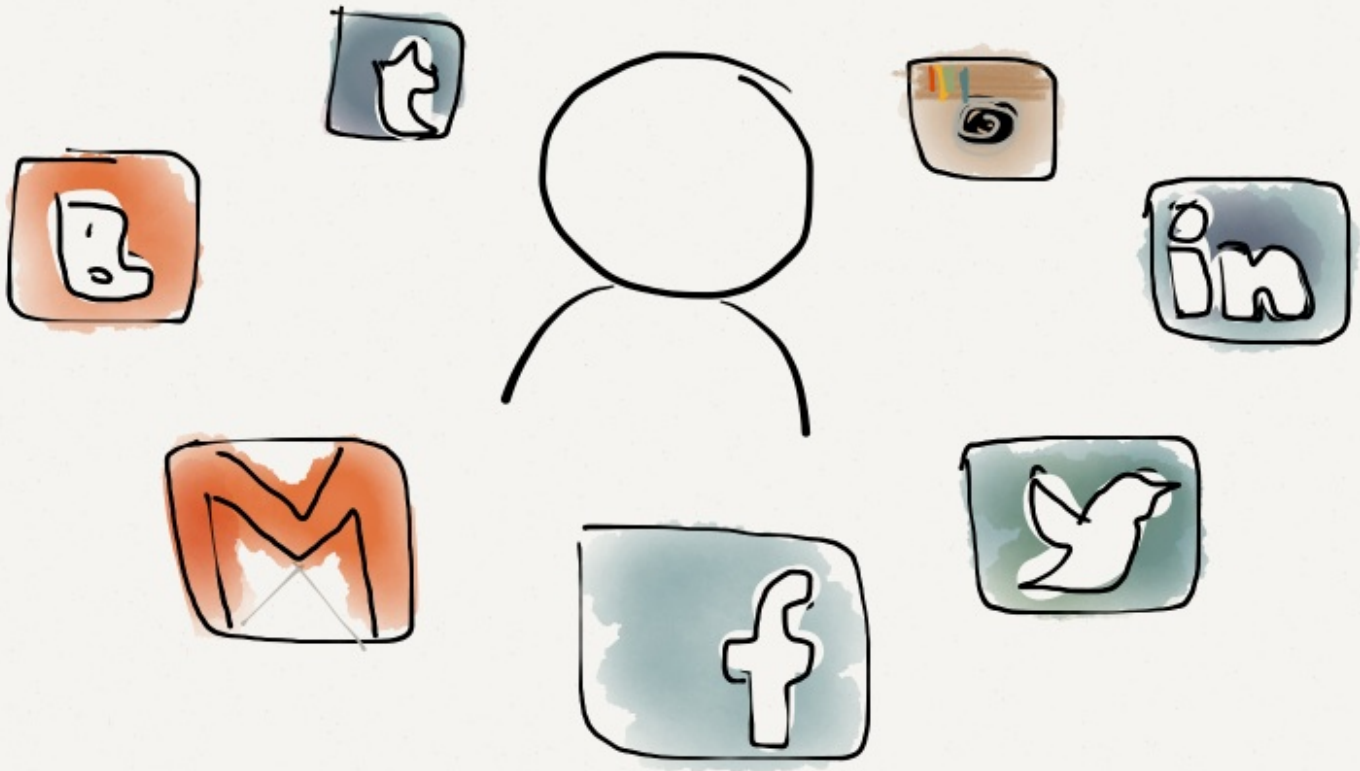
23 OUTSTAND

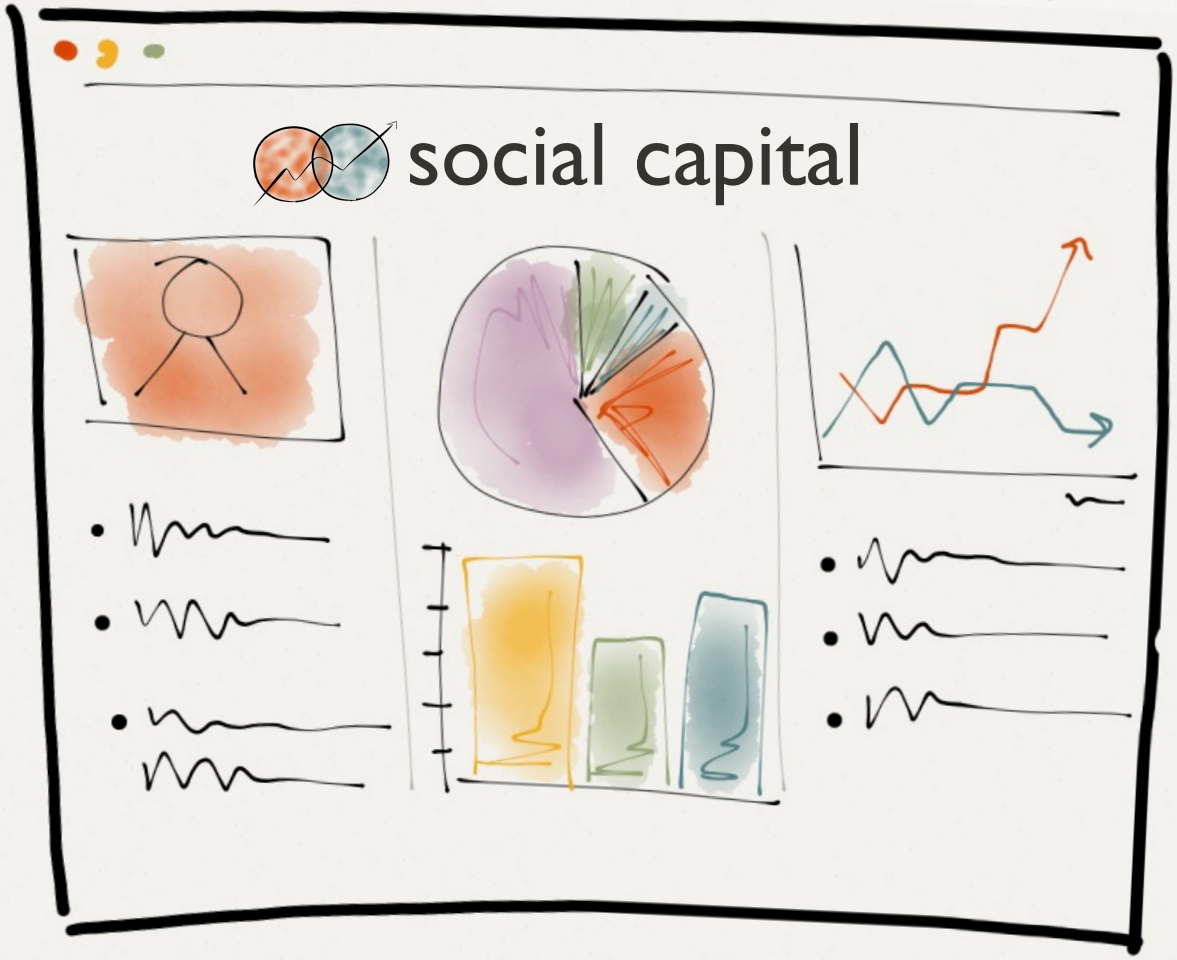
ING...



social capital

With thanks to the “Dark Values” team from the Values in Design Workshop, 2012.

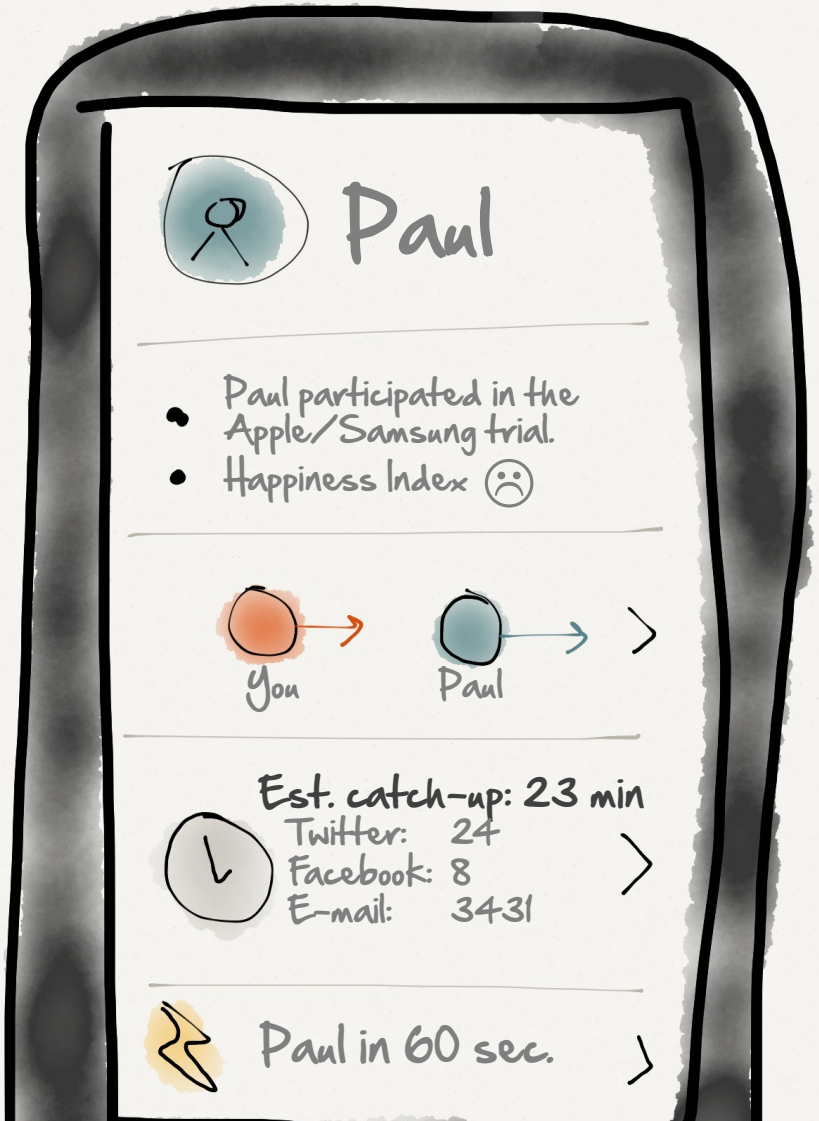



social capital

features

snapshot

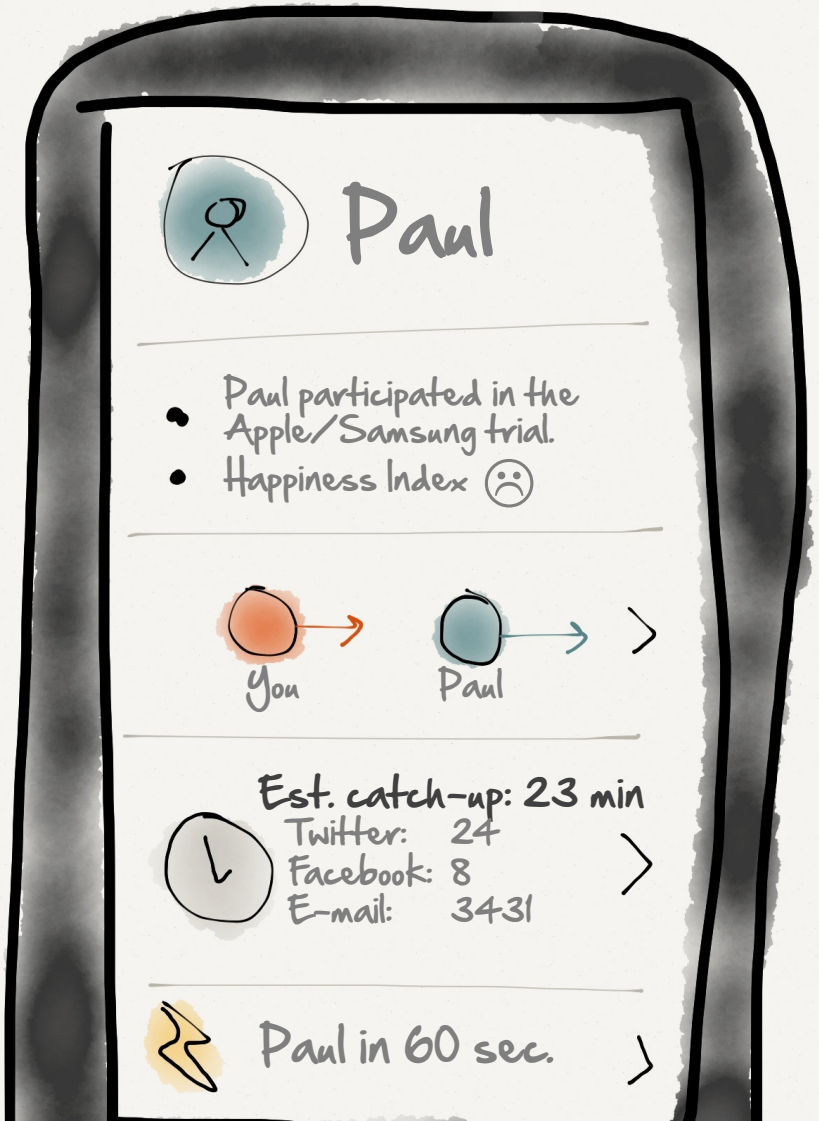
Gives you your colleague's very latest updates up front and out loud.



snapshot

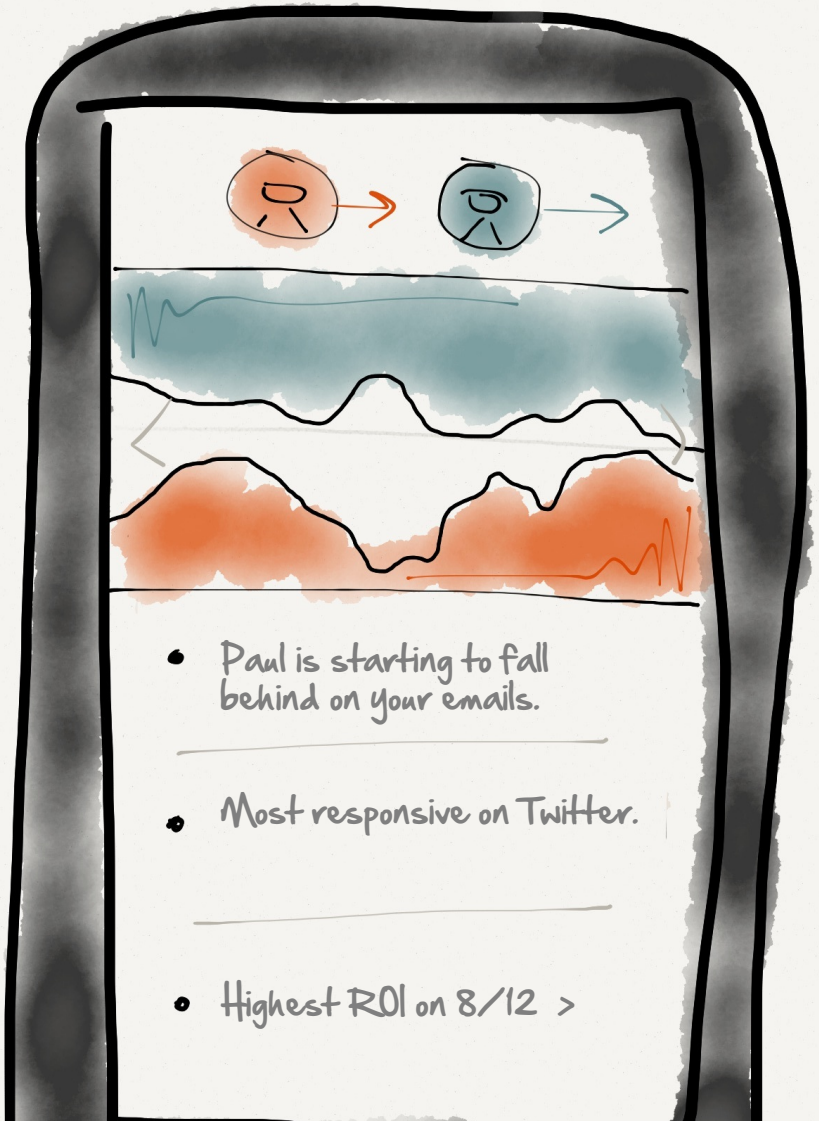
"I can see this being used to keep up with friends from a distance… for someone in-between a person I'd Google, and people I'd invest time to catch up with."

"It's therapeutic and flattering to know someone is using this to read my own updates."



trend

Visualizes the amount, type, & quality of your interactions in order to optimize your interpersonal communication channels.

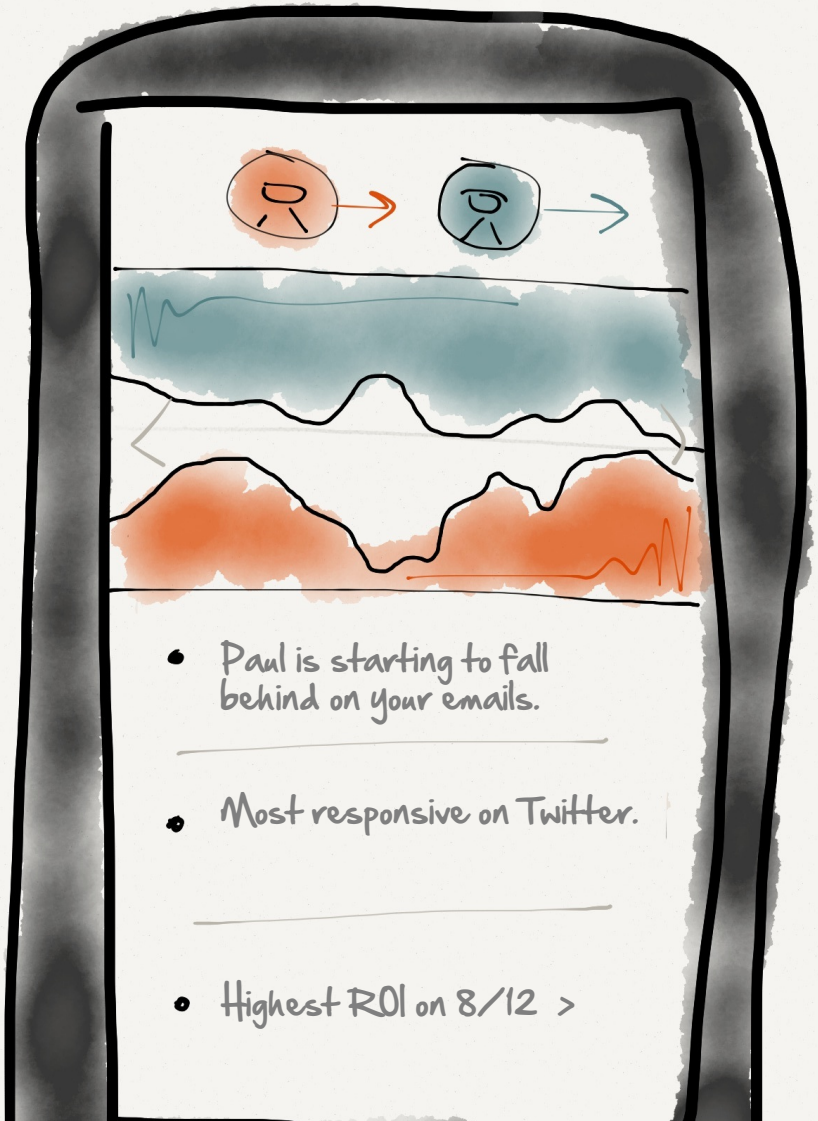


trend

“It's about scoping a holistic picture of our interactions and interest in each other over time."

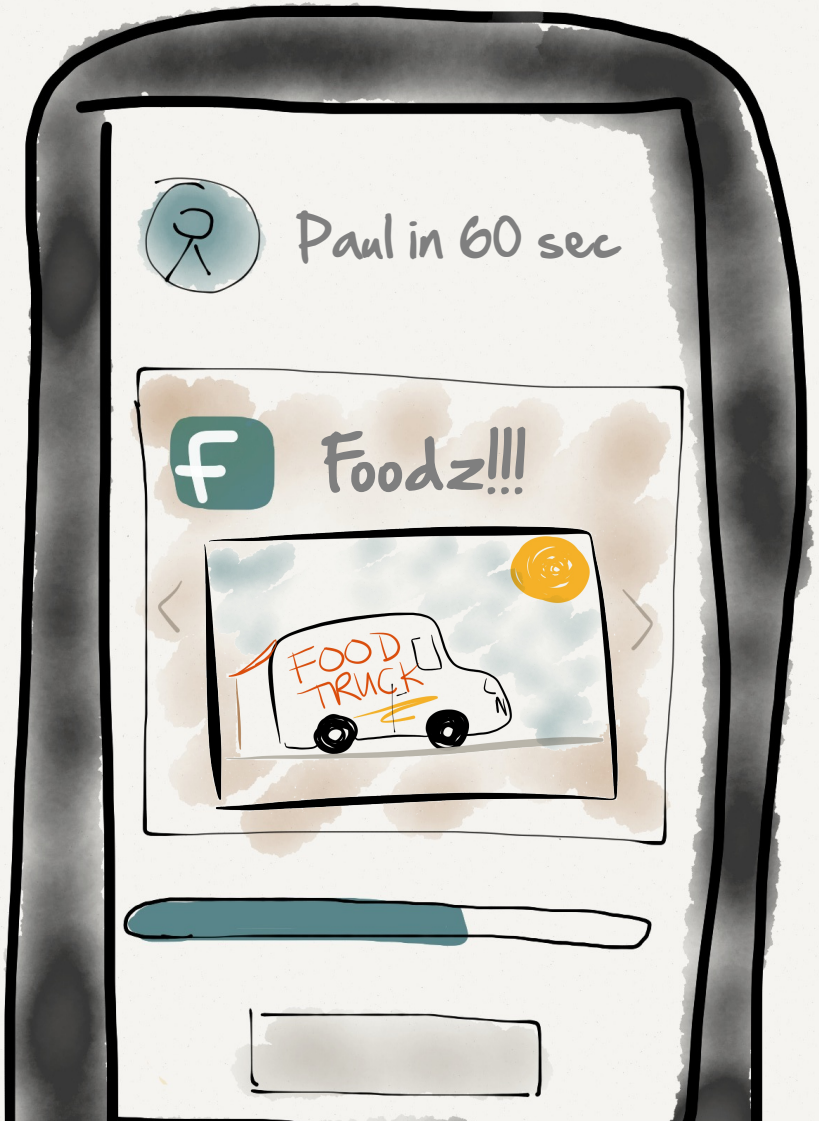
"It helps to represent all interactions I've had, and the forms they take.”

”Its helpful - there's a pleasure in reviewing when we’re far apart, but also when we've been in touch. Then I'm reminded to stay in touch.”



currentcy

Short on time? In 60 seconds, Currentcy gives you a rapid overview of the latest details.



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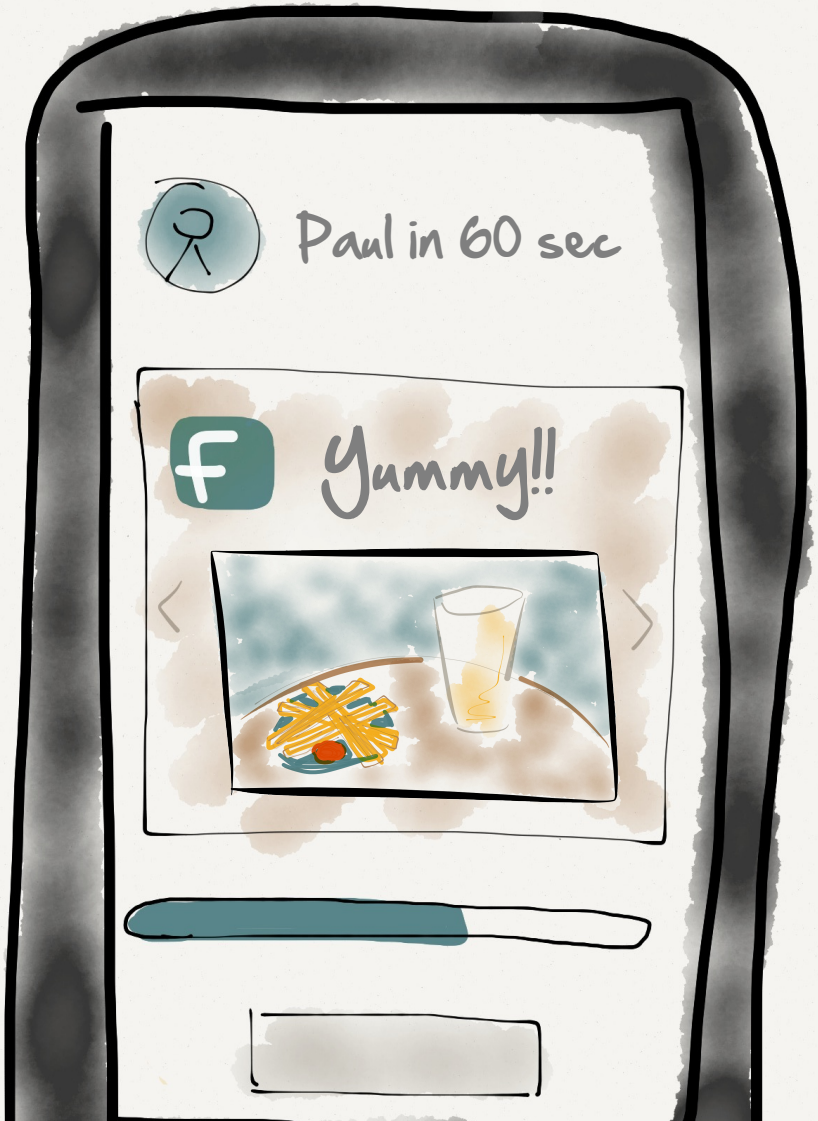

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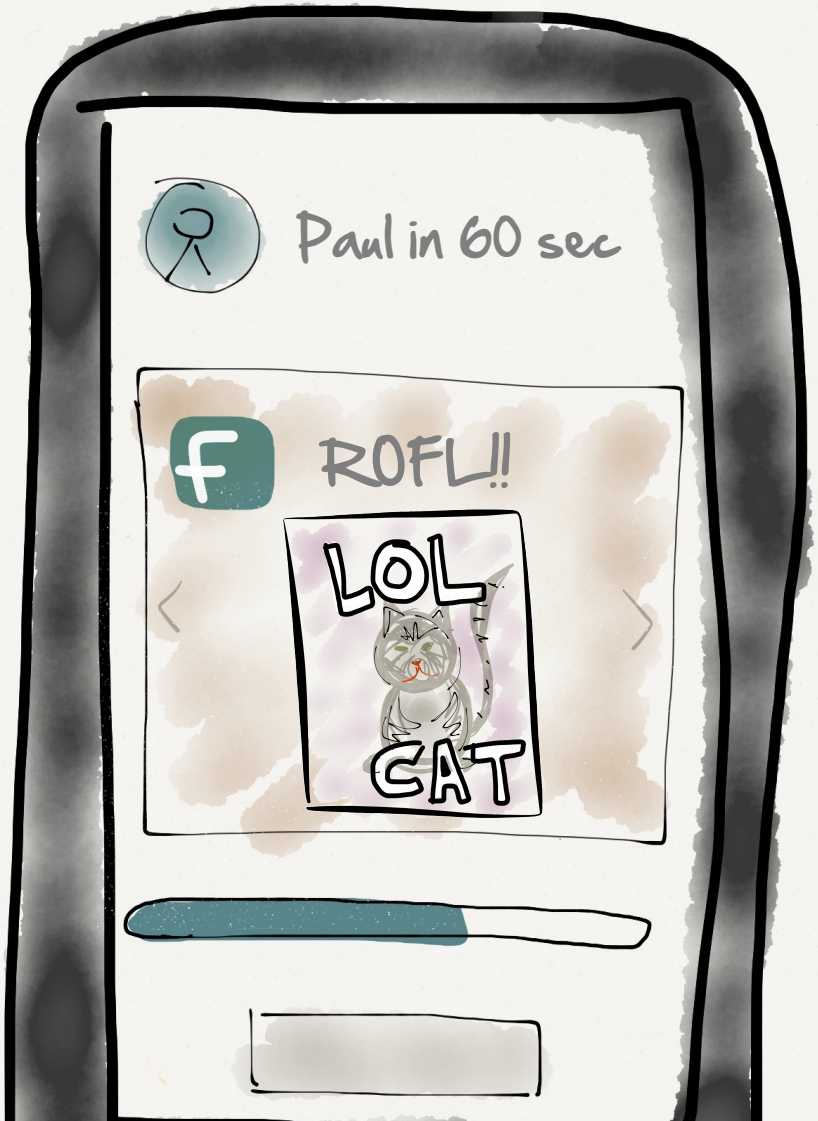
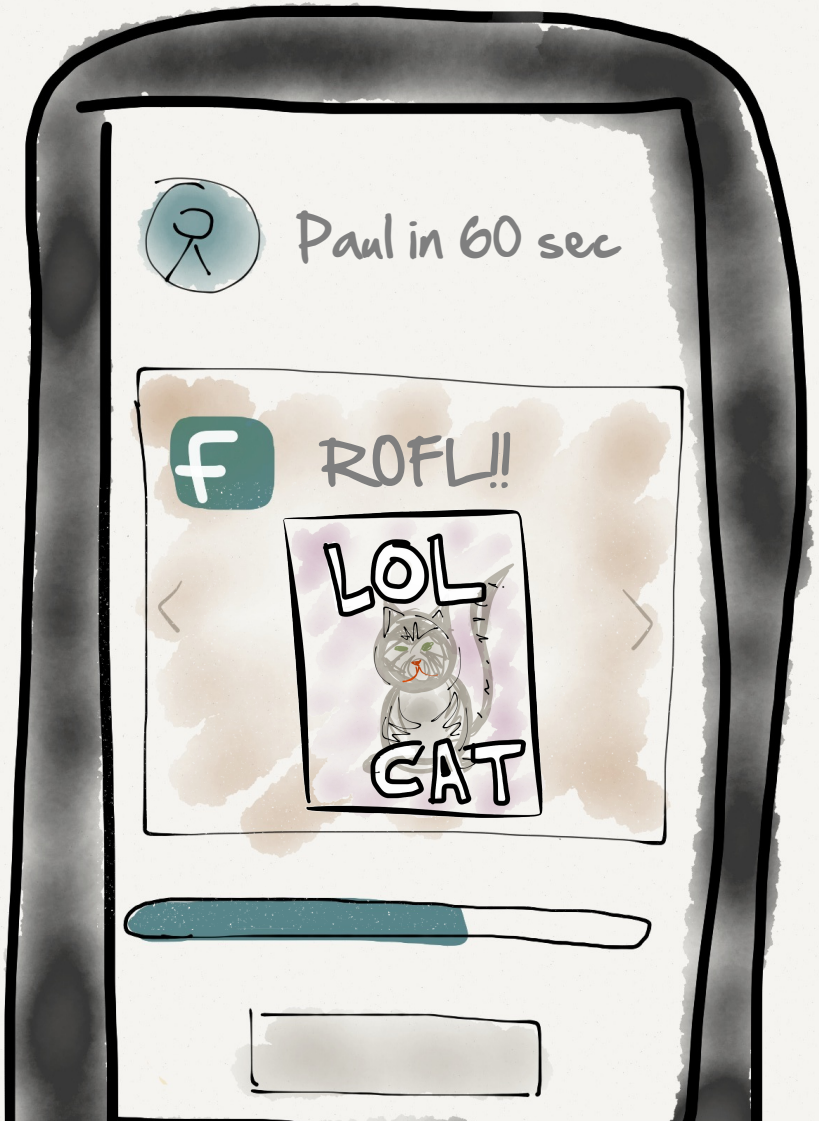


currentcy

"It feels very immediate. To be reminded about events in my friends' lives is very useful."

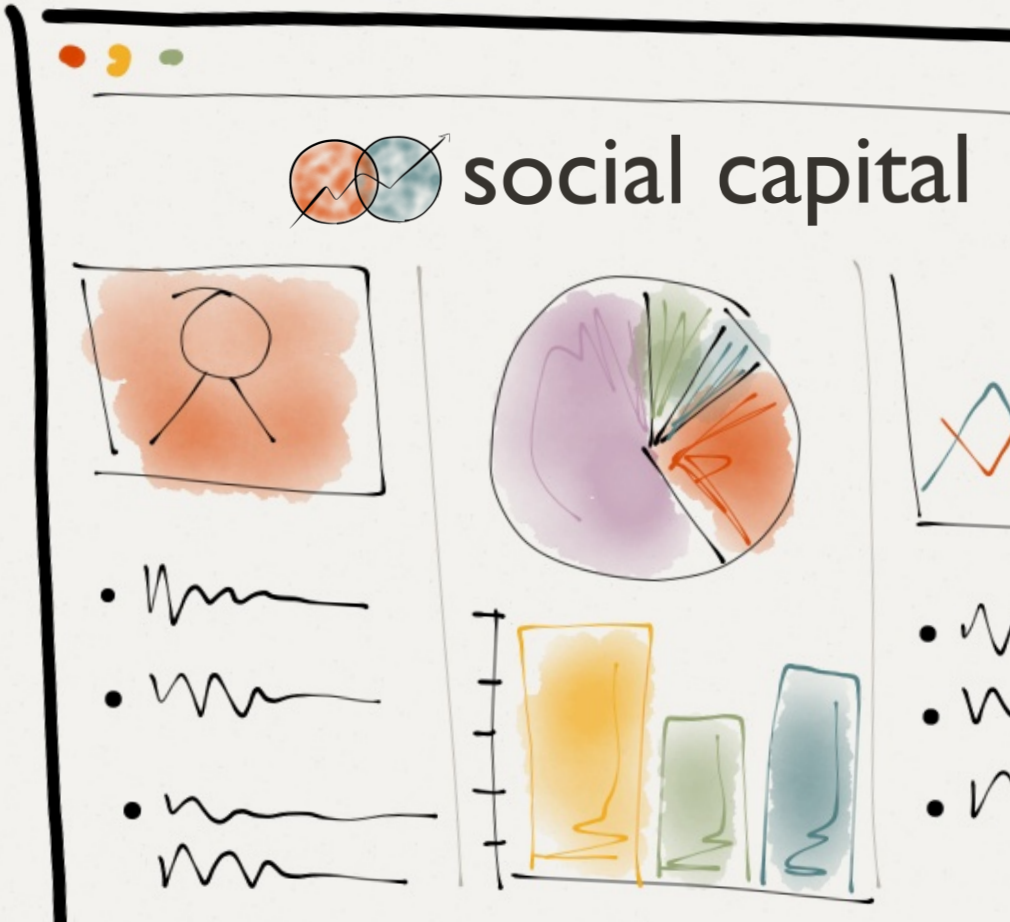
"It's a guilt reliever. It's embarrassing if it comes out that I didn't really look at her posts."



dashboard

"I don't mind if someone else uses it, but I wouldn't touch it."

"I would feel like I was under a surveillance regime."



Why a design process?

- It helps us get started with a proven tack
- It prevents “designer's block”
- It keeps us directed toward a final product
- It helps us stay on schedule and within cost
- It helps us measure design progress
- It helps us communicate where we are to others
- It prevents us from omitting important steps
- It is more reliable than intuition
- It forces us to iterate!
- It helps us keep the user first!

Designers' expertise…

…lies not in the thing he or she is designing.

You do not have to be a ***widget expert*** to be a ***designer of a widget-manufacturing interface***.

Instead, you must be an expert in the process of design.

What is designed?

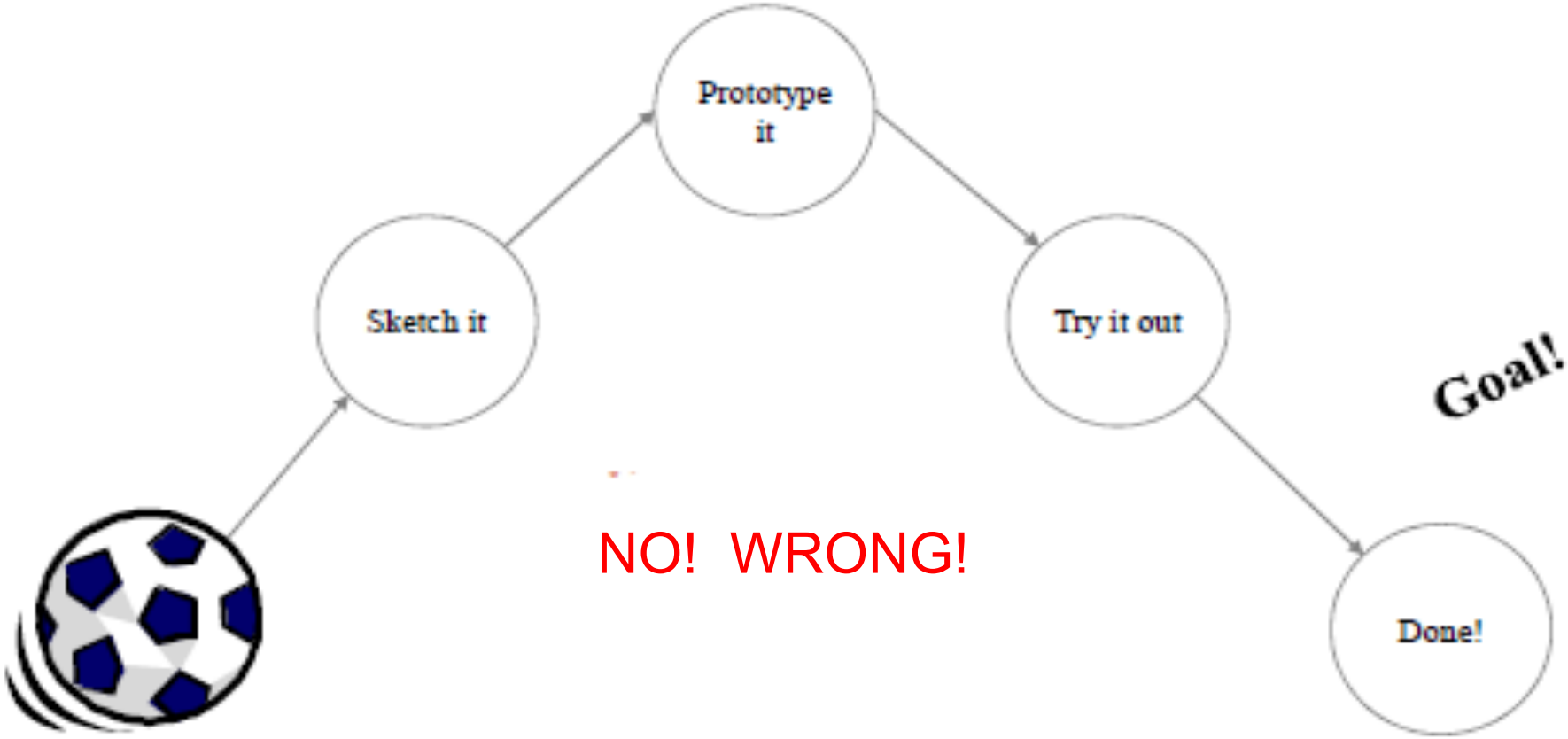
Artifact view: The object, device, or system that is designed

Holistic view: The interaction, the flow, the user's experience is designed

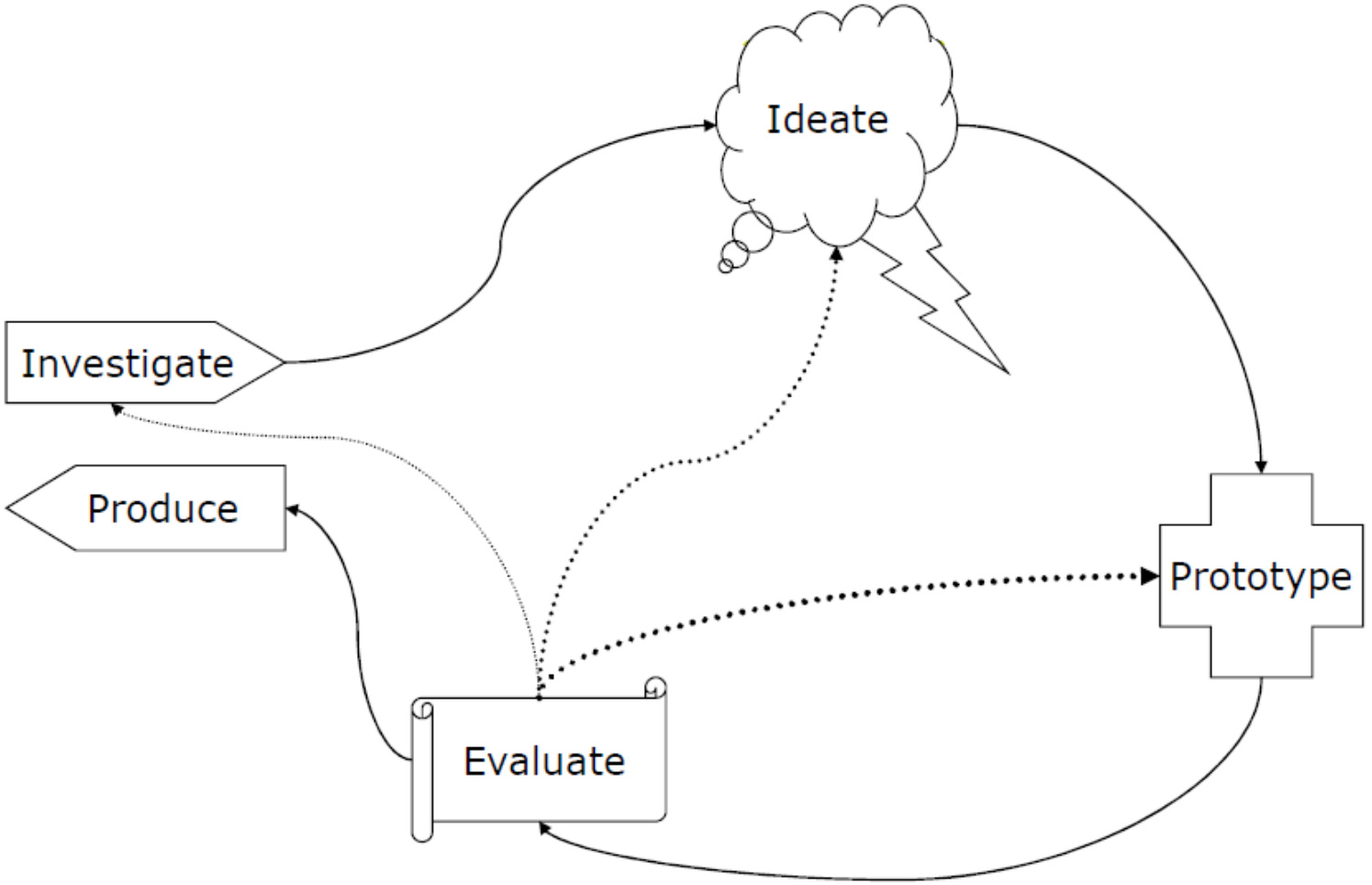
Think in terms of users' goals:

- Artifacts have no goals
- People have goals!
- Keep users in the center in the beginning, middle, and end

Design Process?



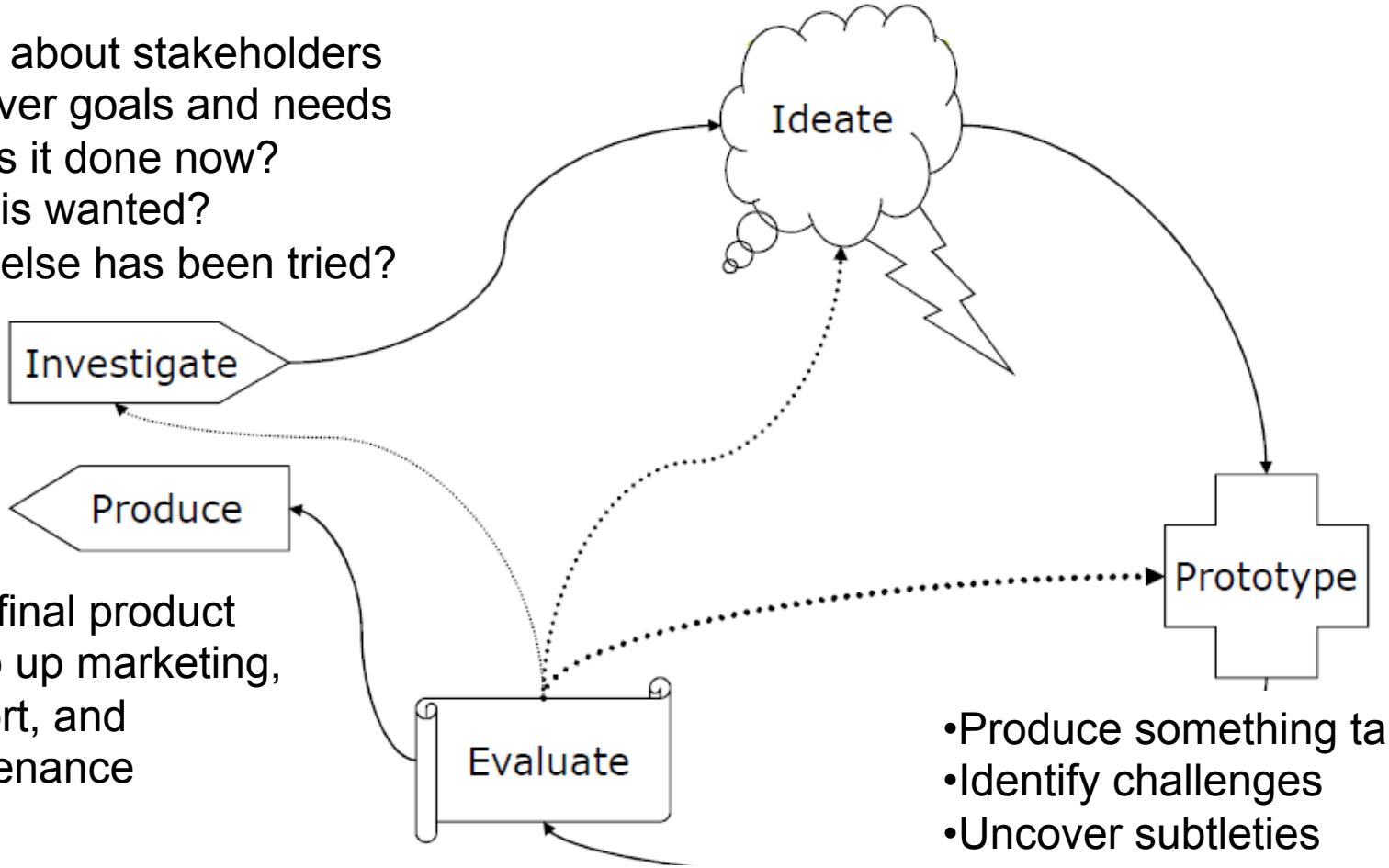
Design Requires Iteration



Stage Goals

- Generate lots of ideas
- Grasp issues and potential solutions

- Learn about stakeholders
- Discover goals and needs
- How is it done now?
- What is wanted?
- What else has been tried?

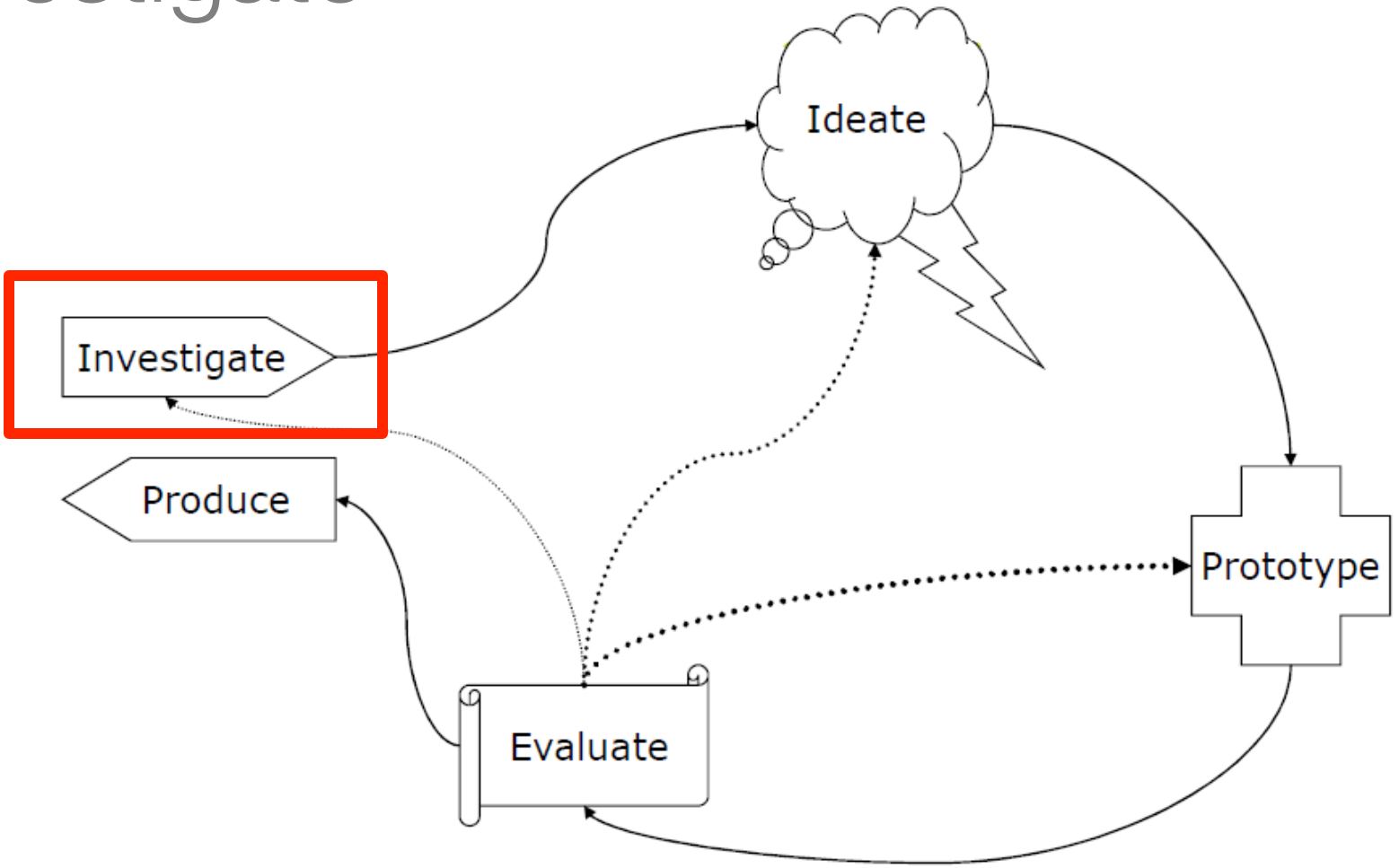


- Build final product
- Ramp up marketing, support, and maintenance

- Produce something tangible
- Identify challenges
- Uncover subtleties

- Discover problems
- Assess progress
- Determine next steps

Investigate



Why investigate?

You cannot design apart from the world in which your users and design will live

Investigation Questions

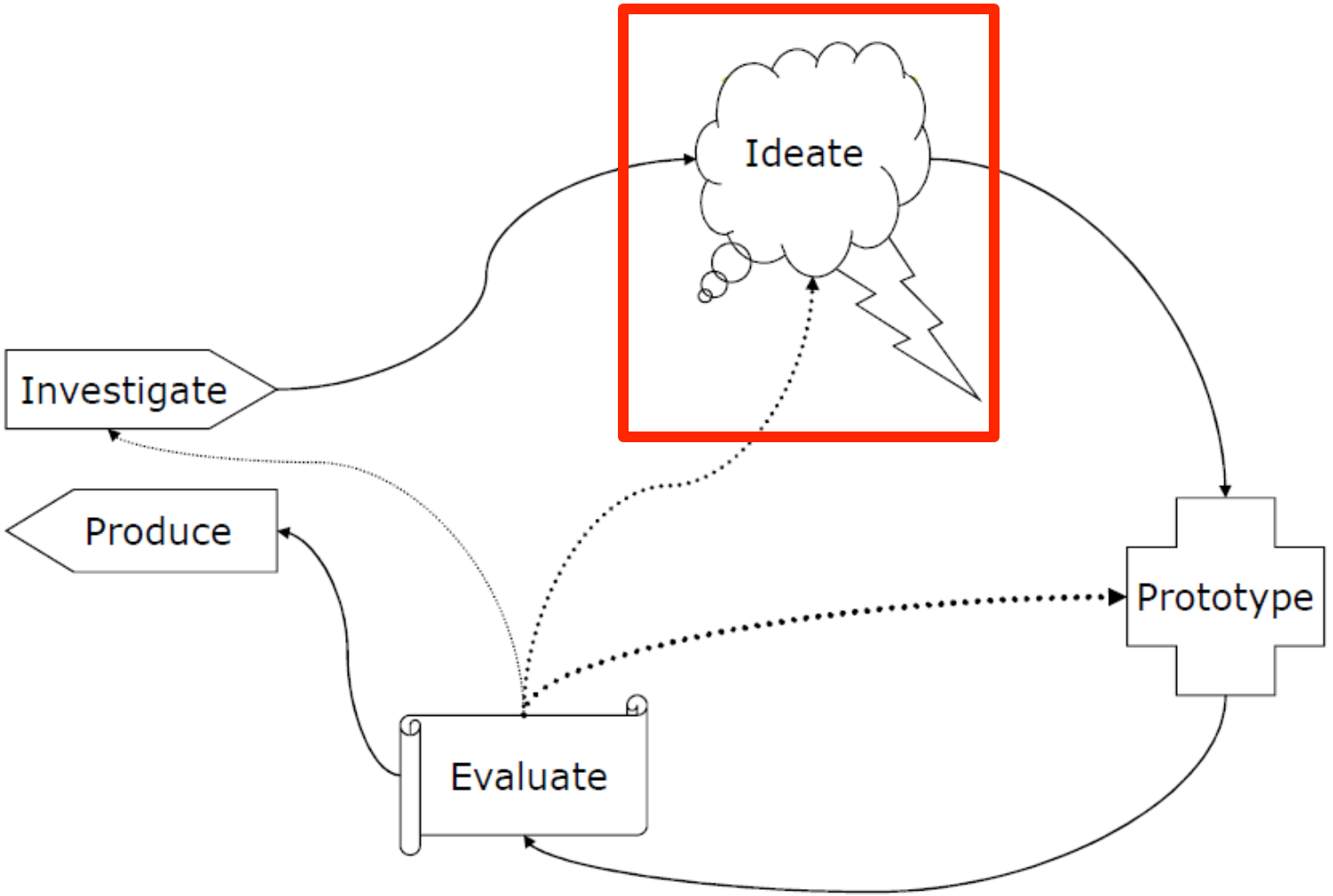
- Identify users
- Identify stakeholders
- What are the requirements?
- How do they do it now?
- How long does it take?
- What do they want?
- What do they need?
- What else have they tried?
- Is there already another solution?

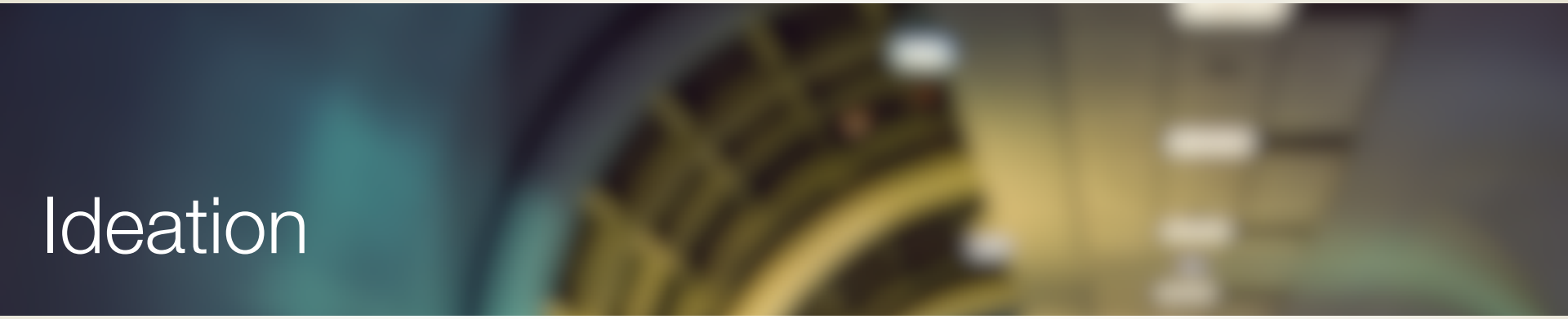
Investigation Methods

- User surveys
- Focus groups
- Interviews
- Analysis of competition
- Contextual inquiry
- Design Ethnography

This is what next week is all about!

Ideate





Ideation

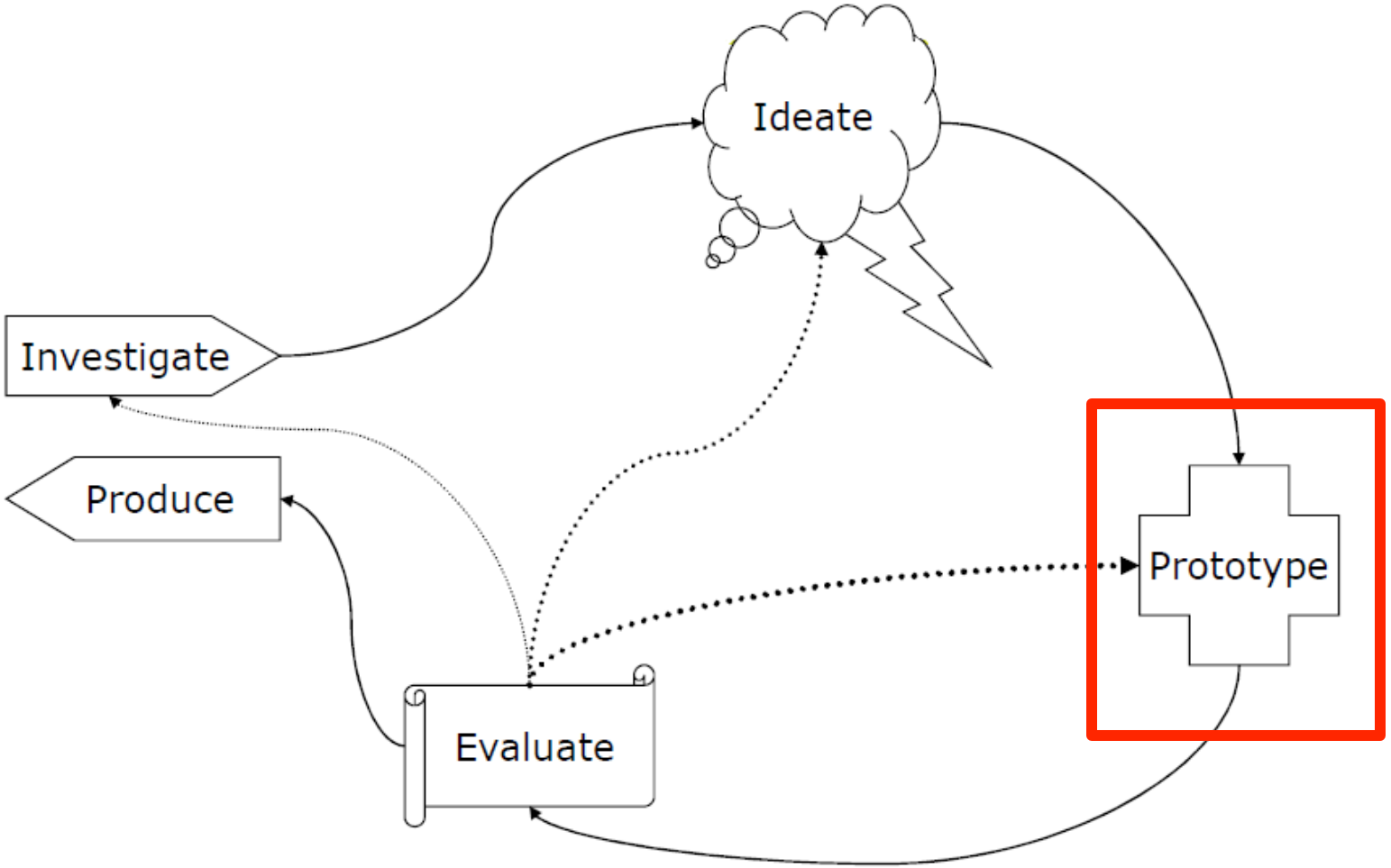
- Ideation = “idea generation”
  - *Volume matters most!*
- To increase the chances for success by considering a huge volume of ideas in a systematic way
- One of the worst things you can do is go with the first idea that you get
  - You can always come back to it later

Ideation Methods

- Affinity diagramming
- Personas
- Scenarios
- Role-playing, play-acting, scripts, props
- Card sorting
- Structured Brainstorming
- Sketching

This will happen in a few weeks!

Prototype



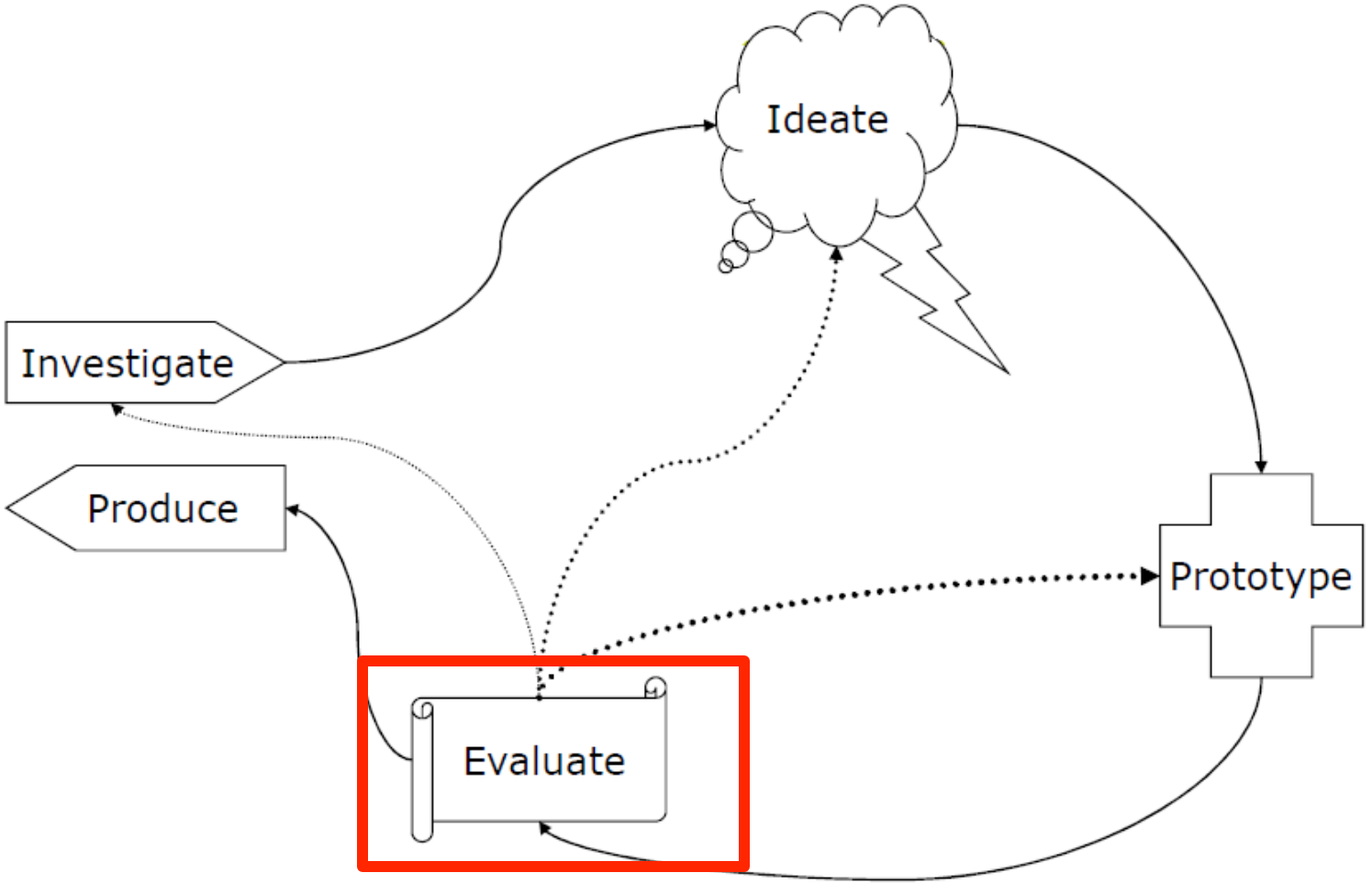
Why prototype?

- It is hard to evaluate something that does not exist.
- It is hard for users to react to abstract concepts.
- Prototyping brings subtleties and nuances into the light.
- Begin to wrestle with the technical constraints

Prototyping Fundamentals

- Build it fast!
- Prototype at the right fidelity
  - Stick with low-fidelity paper prototypes early in the process, and transition to higher-fidelity software prototypes later
- Don't over-engineer!
- Concentrate on the unknowns
- Don't become attached to it
  - Prepare to throw it away
- Build multiple concurrently (even if just two)
  - Users can compare two things much better than consider one in isolation

Evaluate



Evaluation: why do we need it?

- Automated procedures can find bugs, but not usability problems
- You can't iterate without knowing what to fix, leave, or remove
- Answers both questions:
  - Did we build the right thing?
  - Did we build it right?

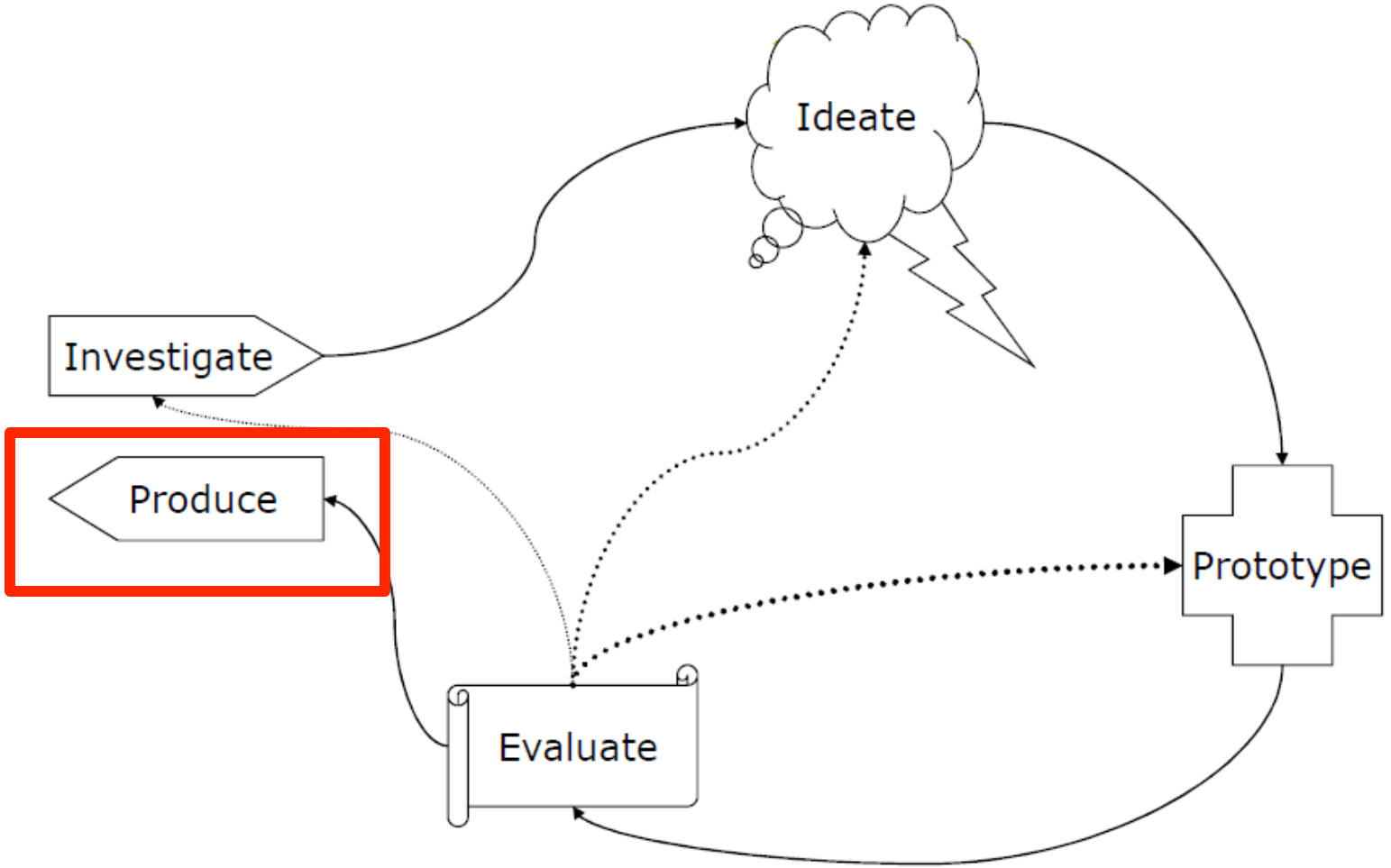
Evaluation Methods

- Heuristic Evaluation
- Guidelines Review
- Cognitive Walkthrough
- Usability Testing
- Laboratory Experiments
- Real World Deployments

Evaluation Drives Iteration

- If problems are in user performance
  - Probably need to return to prototyping phase
- If problems are in conceptual model and how users understand it
  - Probably need to return to ideation phase
- If problems are in usefulness or appropriateness
  - Probably need to return to investigation phase

Produce



Production

"Production" refers to all steps required to go from a functional prototype to a final product

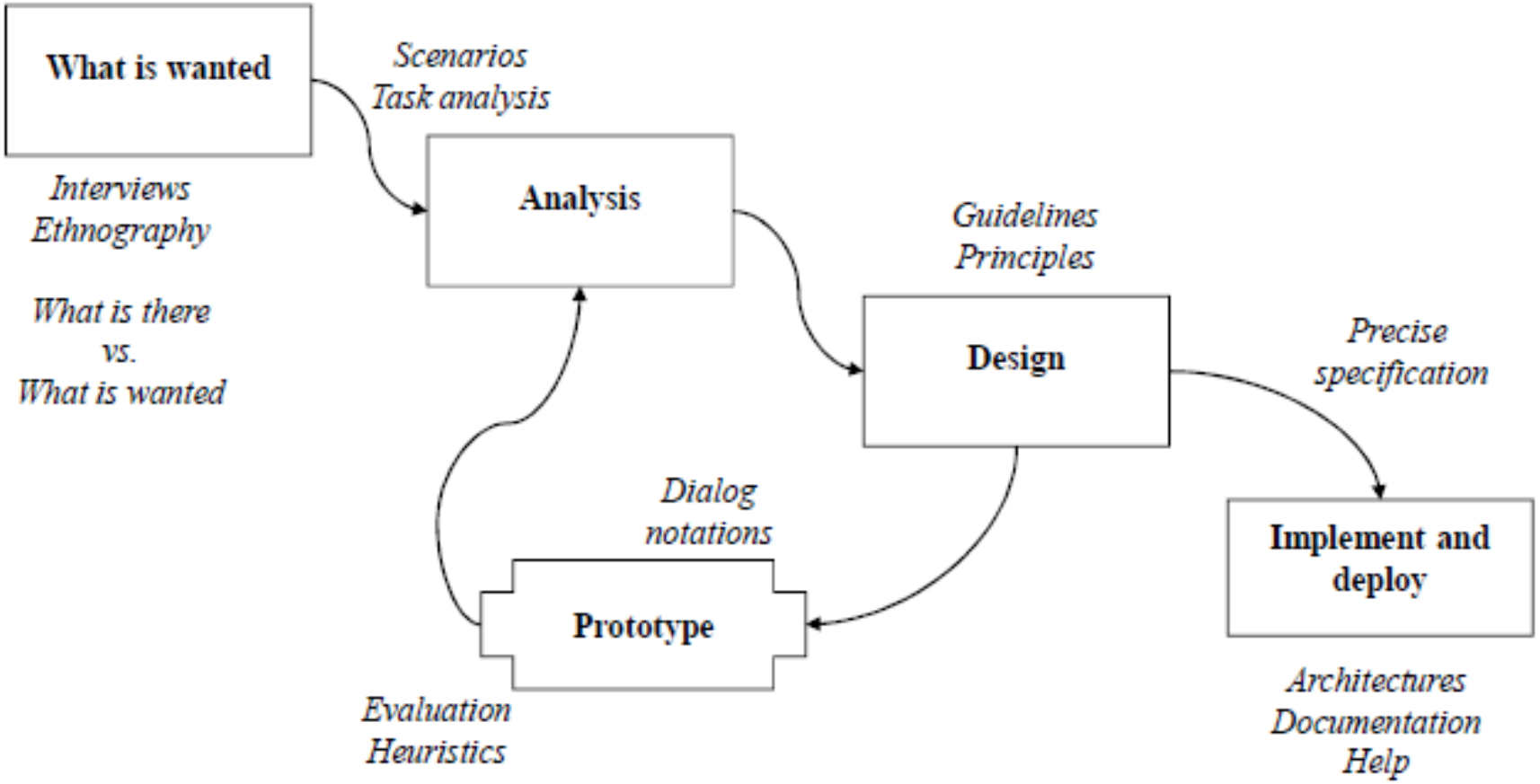
- Software architecture
- Programming, building
- Manufacturing
- Packaging
- Help systems
- Manuals
- Training
- Customer support
- Marketing
- Branding
- Distribution

Design Processes

There is no agreement on an exact design process…

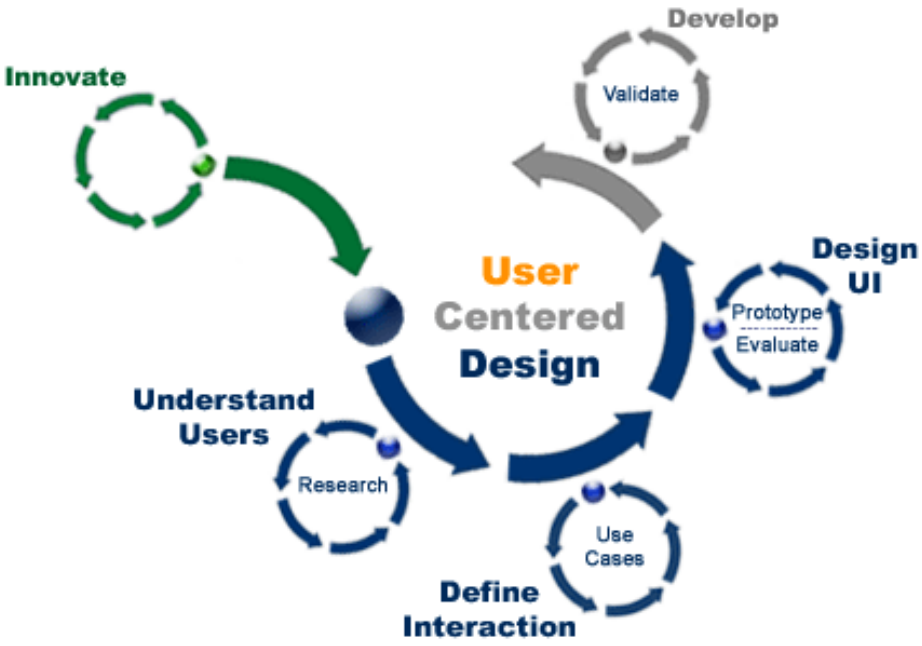
DFAB

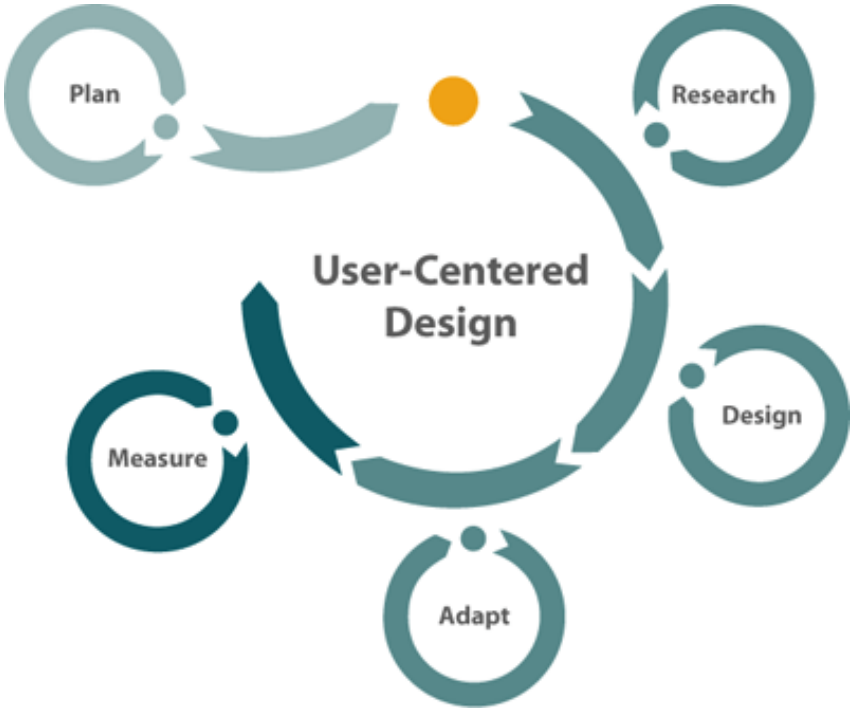
What do you like about it?
What do you not like about it?
What is missing?
What is superfluous?



SAP (2 versions)

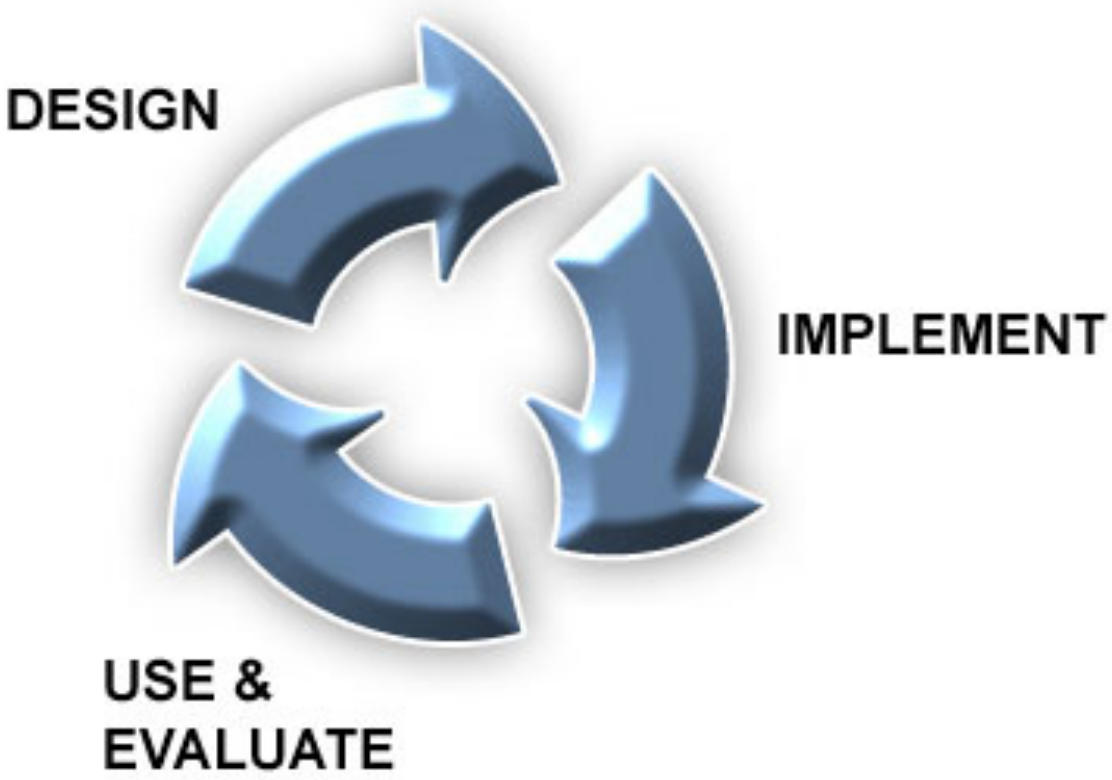
What do you like about it?
What do you not like about it?
What is missing?
What is superfluous?





Simple View

What do you like about it?
What do you not like about it?
What is missing?
What is superfluous?



Comparing the Processes

- What do they all have in common?
- What seem to be the main components?

Interaction Fundamentals

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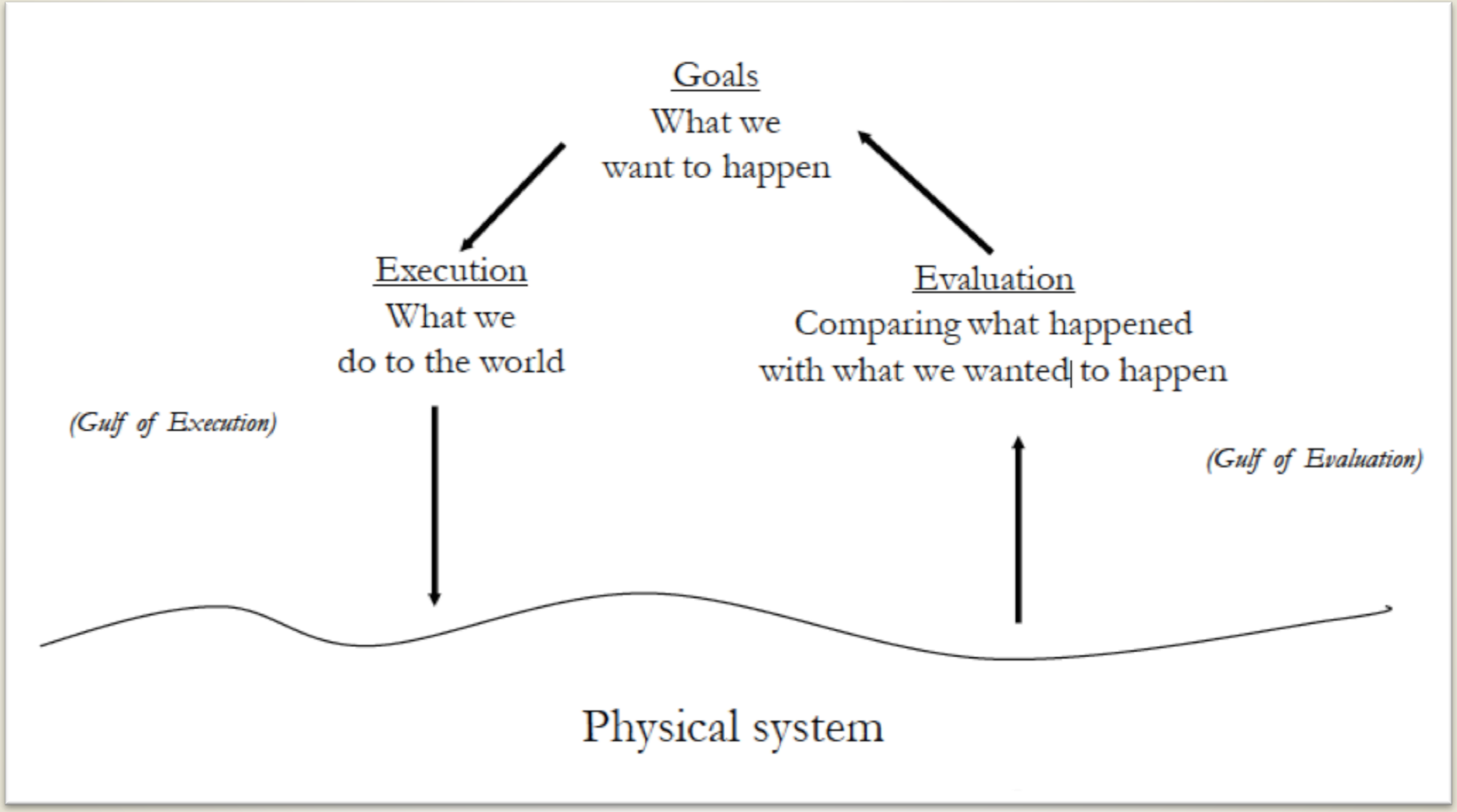
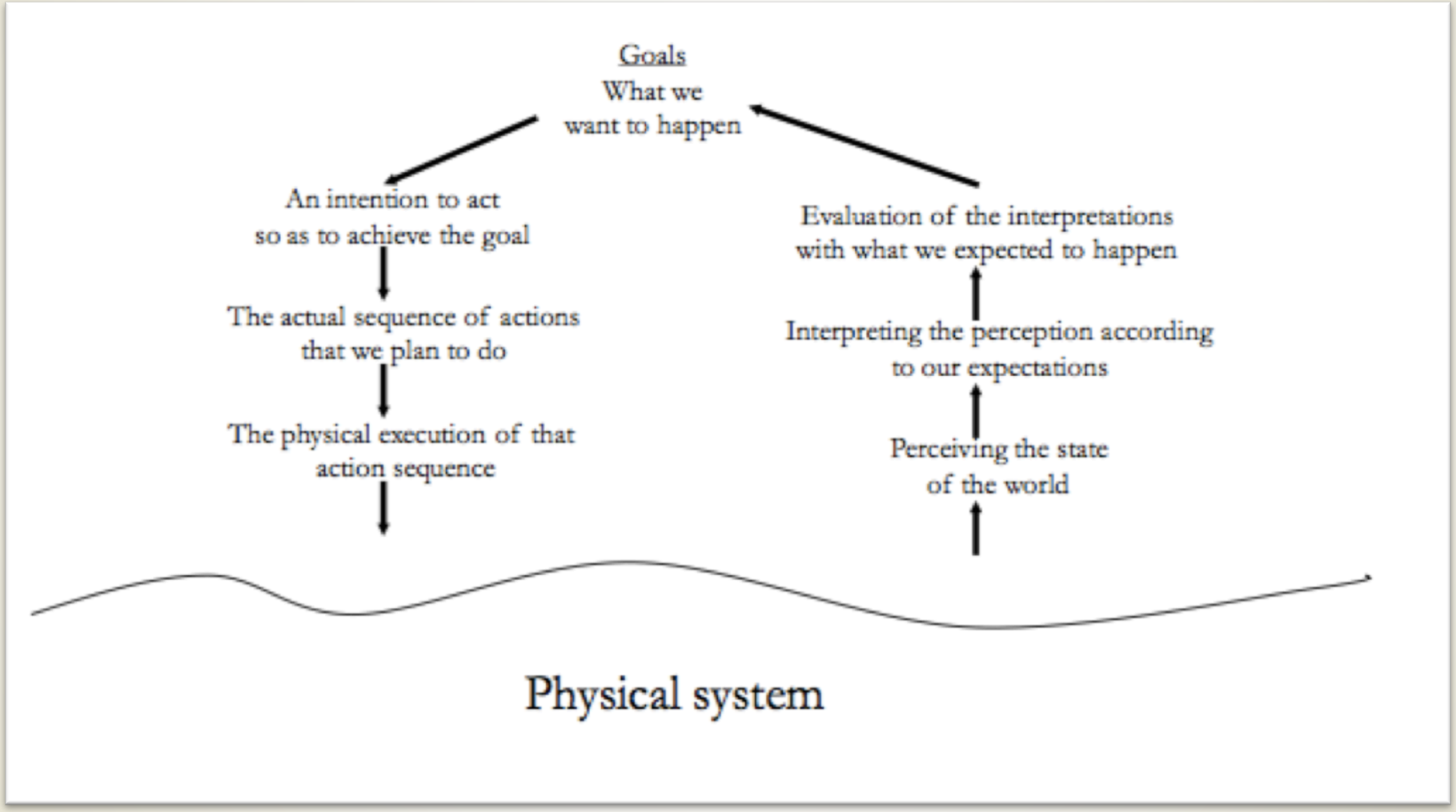
Goals, Execution, & Evaluation



Seven Stages of Action

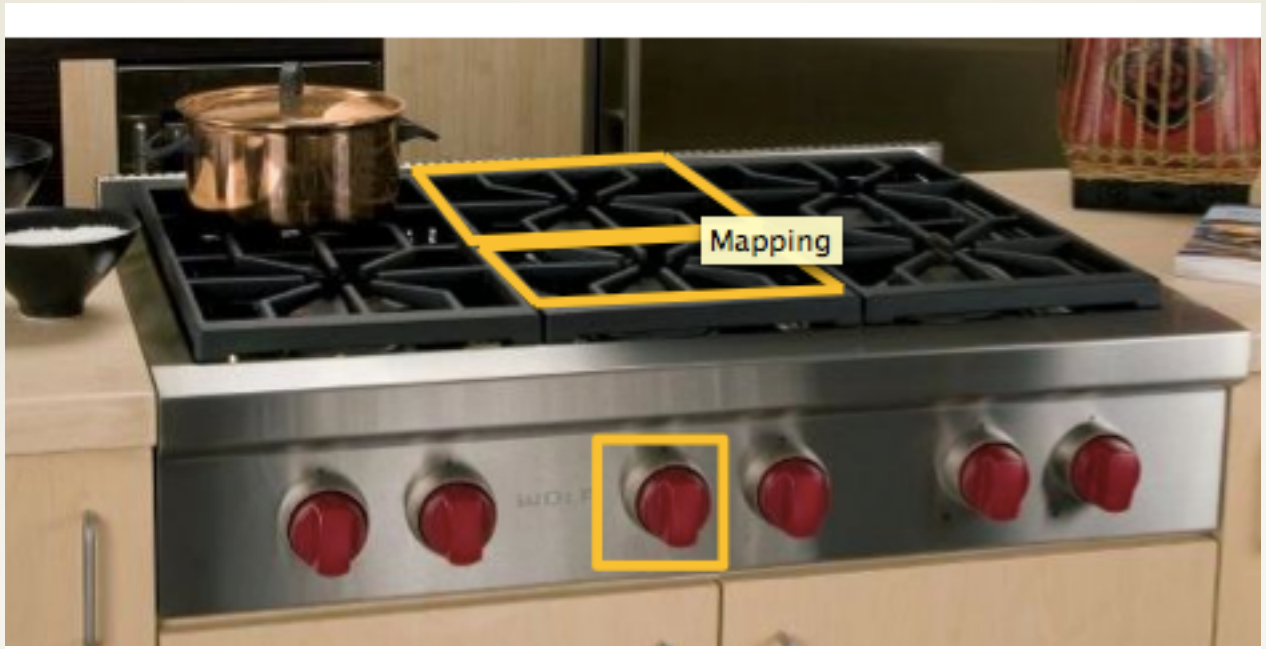


Important Design Principles

- Natural mapping
- Visibility
- Perceived affordance
- Constraints
- Feedback
- Mental models / conceptual models

Mapping

- The relationship between two things
- Relationship between controls & their manipulations and the results in the world



or?

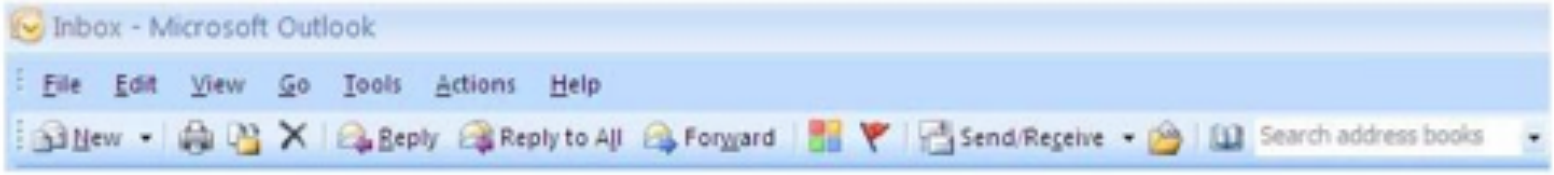
Visibility

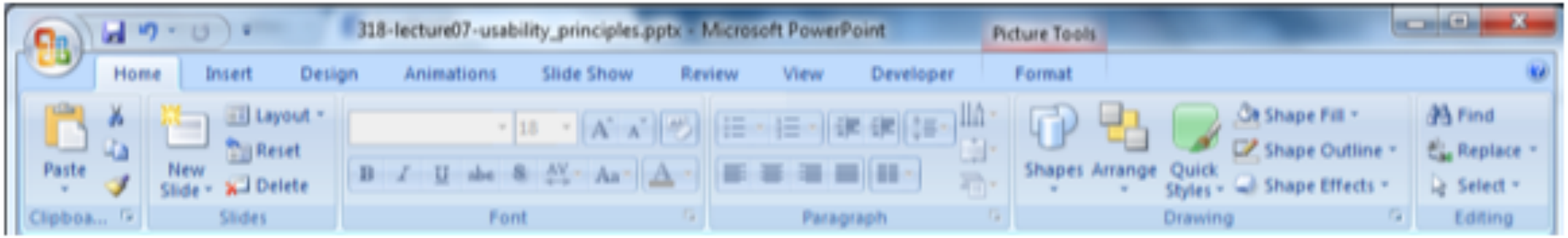
- Make capabilities perceivable and interpretable
- Counteracting factors
  - Features
  - Aesthetics
  - Abstractions

Visibility

- When number of functions is greater than number of controls, functionality is often hidden
- When capabilities are visible, it does not require memory of how to use
- Leverage recognition over recall
  - Knowledge“in the world” vs.“in the head”

Oh Office…


Inbox - Microsoft Outlook
File Edit View Go Tools Actions Help
New Reply Reply to All Forward Send/Receive Search address books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Picture Tools
Home Insert Design Animations Slide Show Review View Developer Format
Paste
New Slide
Layout
Reset
Delete
Shapes
Arrange
Quick Styles
Shape Fill
Shape Outline
Shape Effects
Find
Replace
Select
Clipboa...
Slides
Font
Paragraph
Drawing
Editing

Feedback

- Sending back to the user information about what action has actually been done, what result has been accomplished
- I.e., let someone know what just occurred
  - Can be sound that's made
  - Can be change in physical state

10:49 AM
Sebastiano
Me: Ciao Sebastiano ;)
Sent: 10:05 AM
Ci
Send

SMS

02:30
Chat with techradartest
techradartest: Hey TechRadar!
Me: Bonjour
techradartest: Didn't know you're were French
Me: I'm not. Pretty sure I'm Icelandic.
techradartest: Well, aren't you classy
Me: How's Mrs Radar?
Lost connection to server messages will be sent when online.
Type to compose
Send

Chat

Affordance

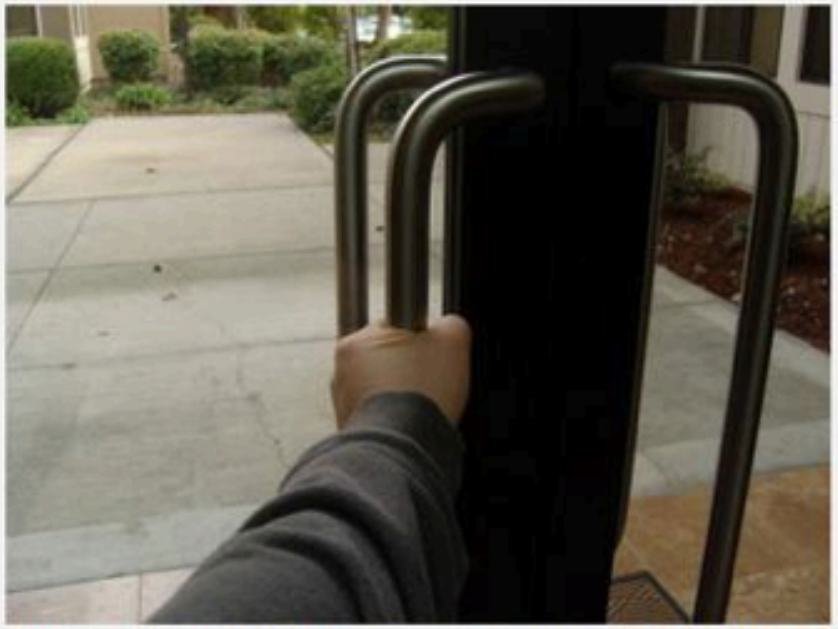
- Perceived and actual cluea about something
  - ...that determine just how a thing could possibly be used
- How does this apply to design?
- Complex things may need explanation, but simple things should not
- If a simple thing requires instructions, it is likely a failed design

Note: not a real example

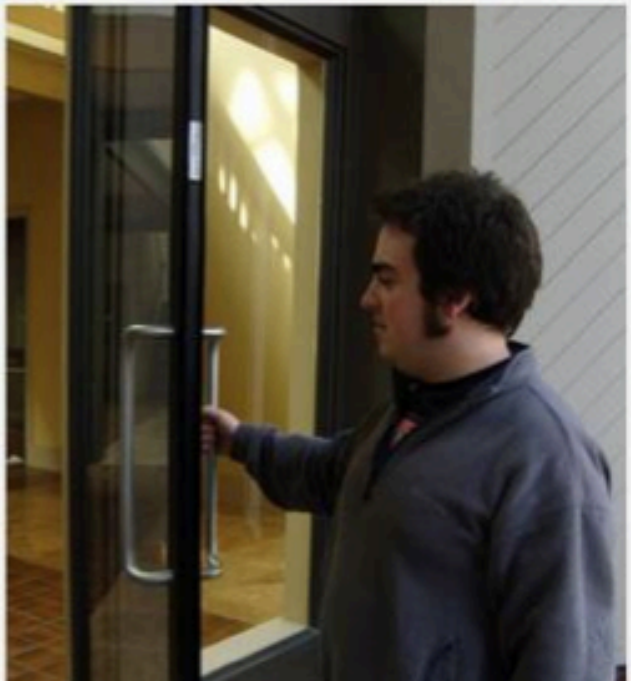
Norman's pet peeve: door handles

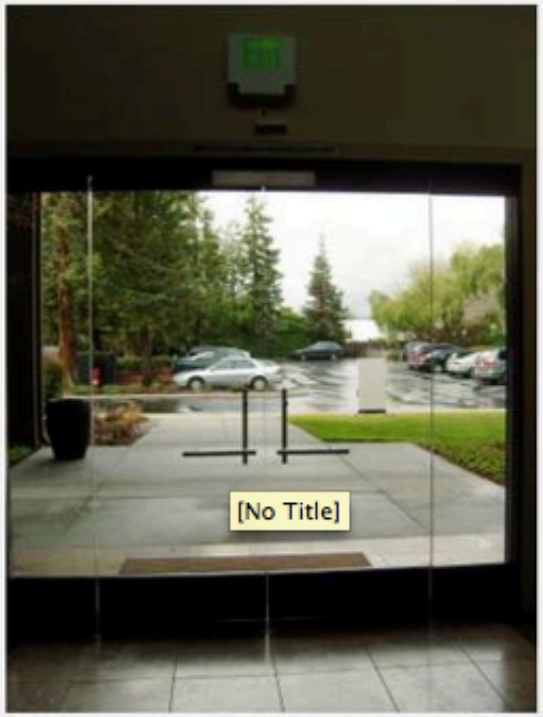
In the Mountain View building complex that houses the main Mozilla offices, there are many doors like this one.

In the Mountain View building complex that houses the main Mozilla offices, there are many doors like this one.



What's your natural reaction to a vertical door handle? You grab it like this...





The other side of the building, a few meters away, has doors like this.

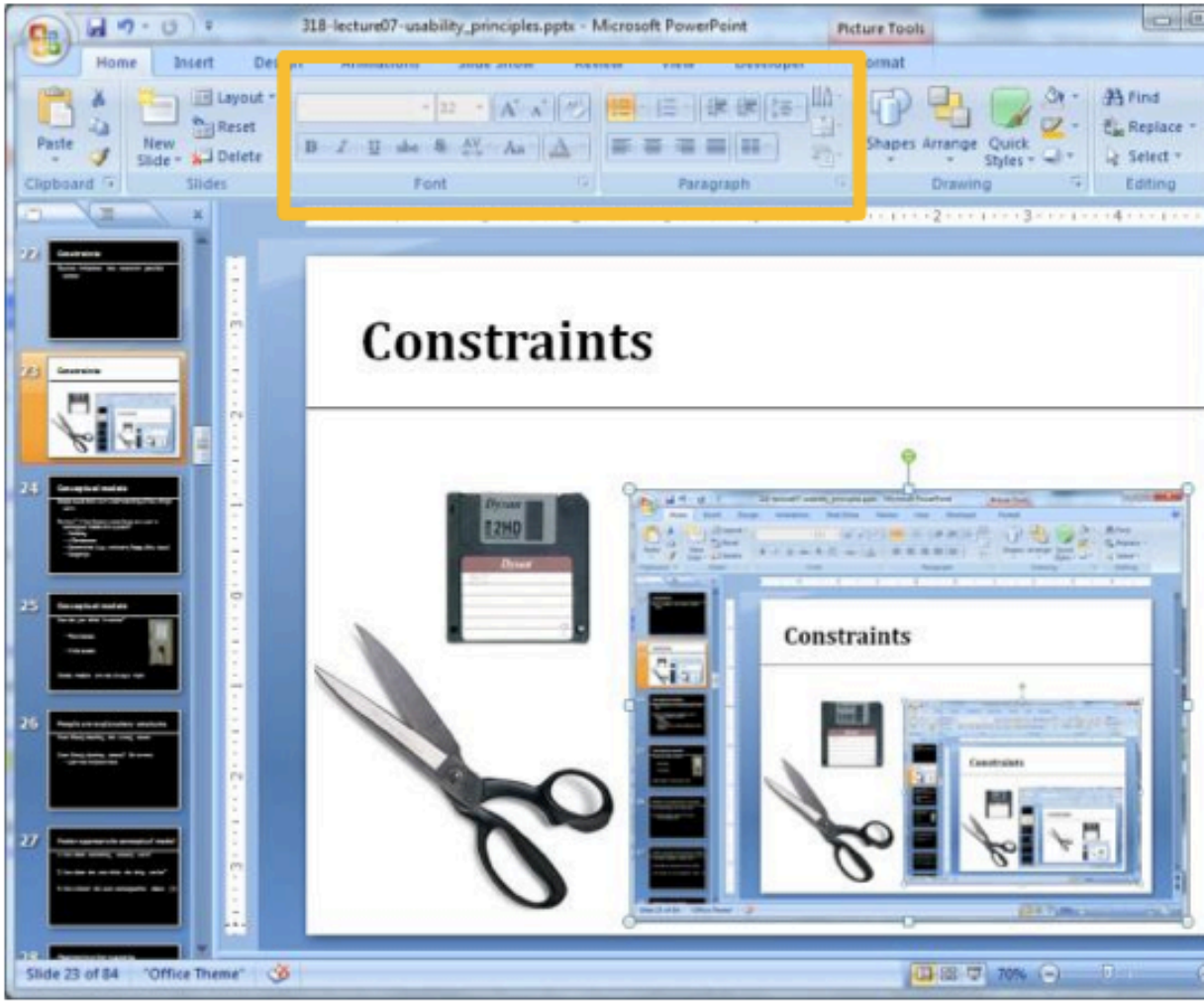
The outside handle is vertical, the inside one horizontal.

The architects of the building had a perfect solution to the handle problem, so why did they use it on only half of the doors?

Constraints

- Physical limitations that constrain possible actions

Dysan
2HD
DOS FORMAT
Dysan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Picture Tools
Home
Insert
Paste
New Slide
Layout
Reset
Delete
Clipboard
Slides
Font
Paragraph
Shapes
Arrange
Quick Styles
Drawing
Find
Replace
Select
Editing
Constraints
Slide 23 of 84
"Office Theme"
70%

Conceptual Models

- People build their own understanding of how things work
- But how? What factors contribute to a user's conceptual model of a system?
  - Visibility
  - Affordances
  - Constraints
  - Mappings

Conceptual Models

- How do you think it works?

- Mental models are not always right.

People have explanations (usually)

- Sometimes they get it right
- Sometimes they blame the wrong cause
- Sometimes they blame themselves
  - Learned helplessness

Fostering conceptual models

Designers should work to foster the appropriate conceptual model

1. How does something actually work?
2. How does the user think the thing works?
3. How should the user conceptualize about #1?

Designing for people

- Designers are not users & vice versa
  - The user is not like me!!!
- Provide clear mappings between controls and behaviors
  - Make states & possible actions/behaviors visible
  - Afford & constrain the intended use
  - Provide feedback of actions/behaviors
  - Foster appropriate mental models

Summary

- Design is a highly iterative process
- Design processes must keep the user's interests central
- Design starts with understanding the user
- Designs are never truly perfect. They can always be improved.
- It is a skill to know when to stop iterating and call a design "finished"
- There are 6 fundamentals to interaction design you should keep in mind during this course.