Interaction Design

School of Computer and Communication Sciences

EPFL

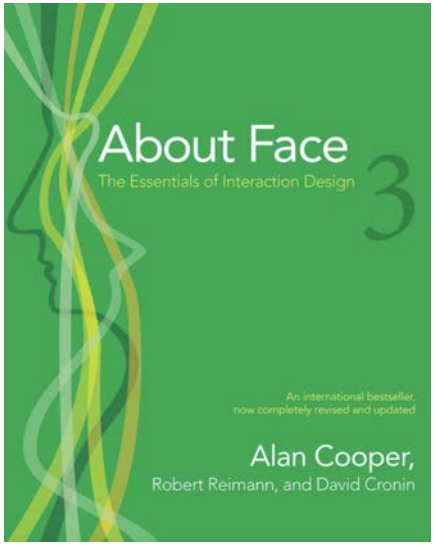
Pearl Pu

Administrative Details

- **Course Title: CS 486**
- **Number of credits: 4**
- **Time allocated: 120 hours**
- **Lecture Time:** Monday 8:15h – 10h (BC 01)
- **Exercise Hour (TP):** Mon 10:15h – 11h (BC 07)
- **Project Hour**: Mon 11:15-12h (BC 07)
- **Format of Control:** continuous
- ***Textbooks:***
  - ***Required*** : About Face 3 by Alan Cooper et al.
  - 100 Things Every Designer Needs to Know About People by Susan Weinschenk (Kindle edition and e-book)

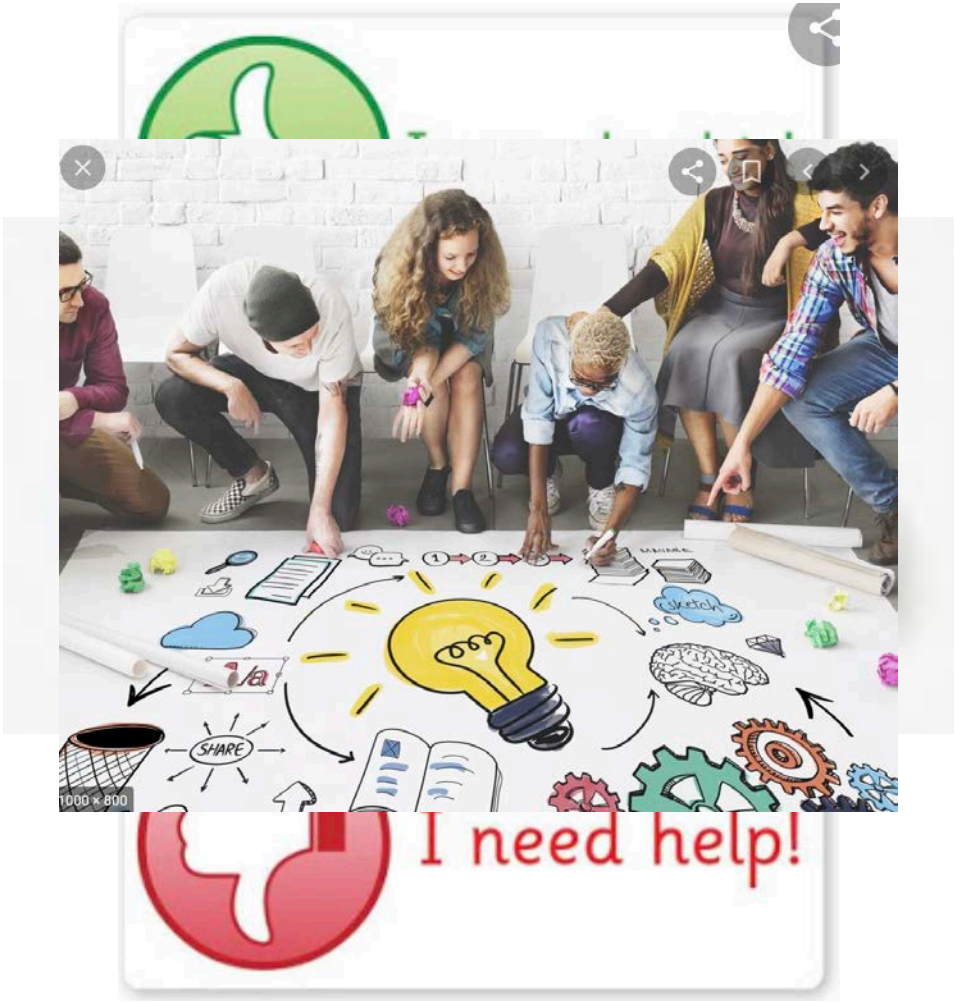
CONCEPTUAL KNOWLEDGE

- Two major sources
  - Cooper book
  - Lecture notes in slides

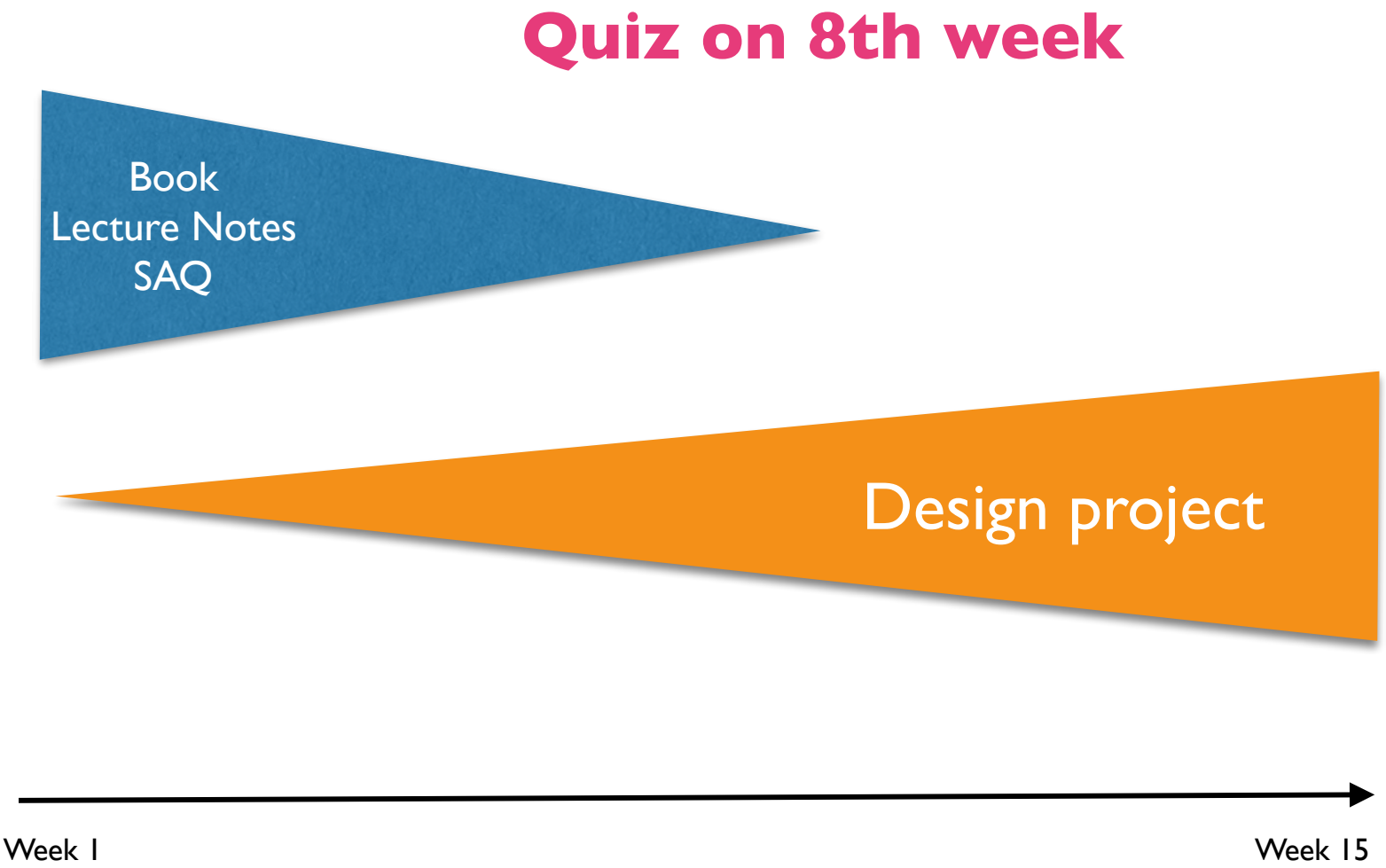


PRACTICES

- Self assessment questions (SAQ)
- Mid-term quiz
- Capstone project in three phases



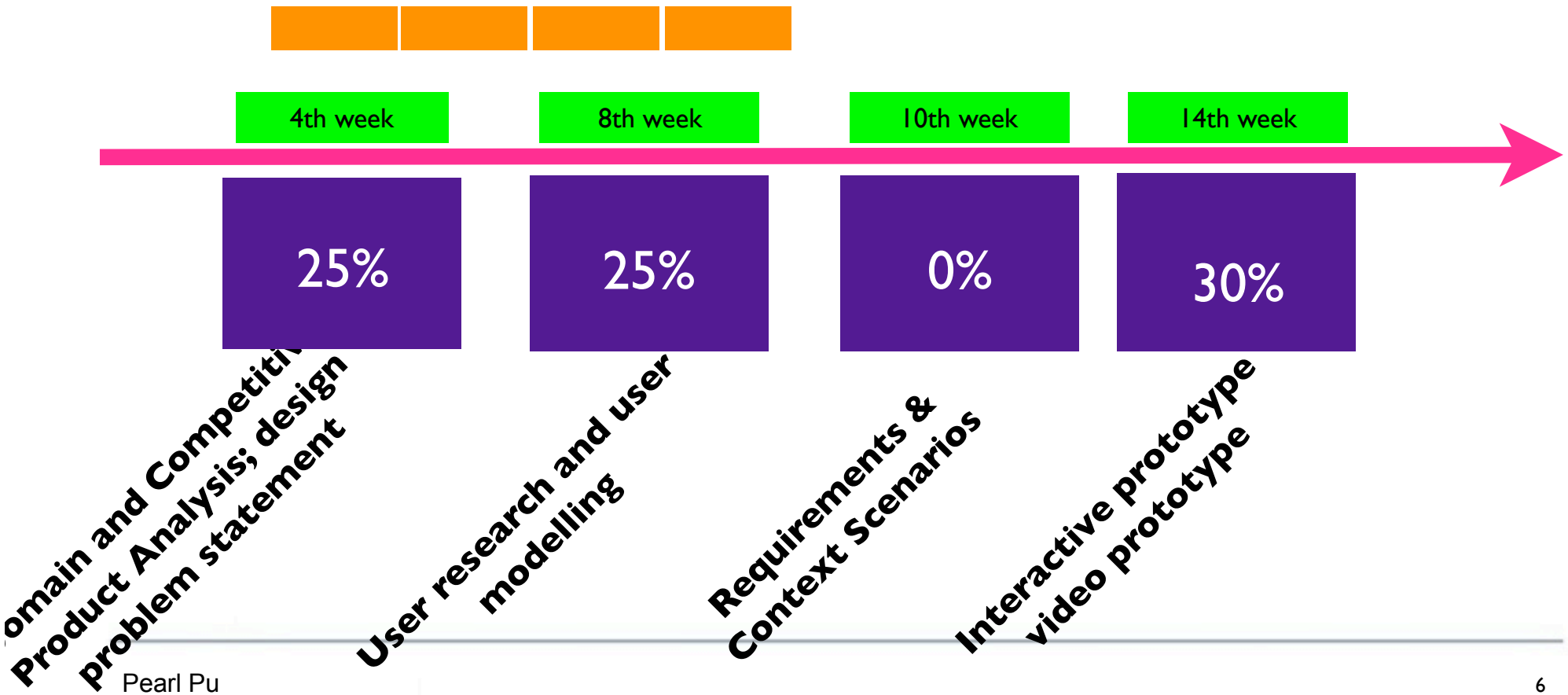
How do they interact?



PLANNING

Quiz 20%

Self-Assessment Assignments



What is Interaction Design?

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HUMAN COMPUTER INTERACTION?

Outline

1. Cookper book: history, what, how
2. Lecture notes: why HCI
3. Design Aims
4. Recapitulation

Cooper Book

Foreword: The Postindustrial World
Introduction
Chapter 1: Goal-Directed Design

HCI IS A RESPONSE TO A BIG CHANGE

- Industrial Age vs. Information Age
  - assembly workers vs. information architects and programmers
  - transport goods vs. transport bits
  - construct software once and use it many times
  - no need to reduce the cost of software construction; optimize it
- Users in industrial age vs. in information age
  - users interact with software much more often and in more ways (how you operate a car, a microwave in the old days vs. nowadays)
  - you buy a car today -> you are really buying a navigation system
- HCI emerged as a topic due to the pervasive impact of information technology on users and our society

Making most desirable software is the main goal, rather than saving manufacturing cost

COMPANIES STRUGGLE WITH SOFTWARE

- Some executives are still thinking using industrial age mind set - optimizing manufacturing
- New Way: adopt **interaction design** as the primary tool for designing and managing software construction

Interaction design determines what behaviour will succeed

Design has been ignored until recently

- Mechanical devices have a dozen of visible states; they are carefully designed for ease of use
- A piece of software can easily have 1 mio lines of code, and be in one of thousands of states, their interaction behavior often has been poorly designed

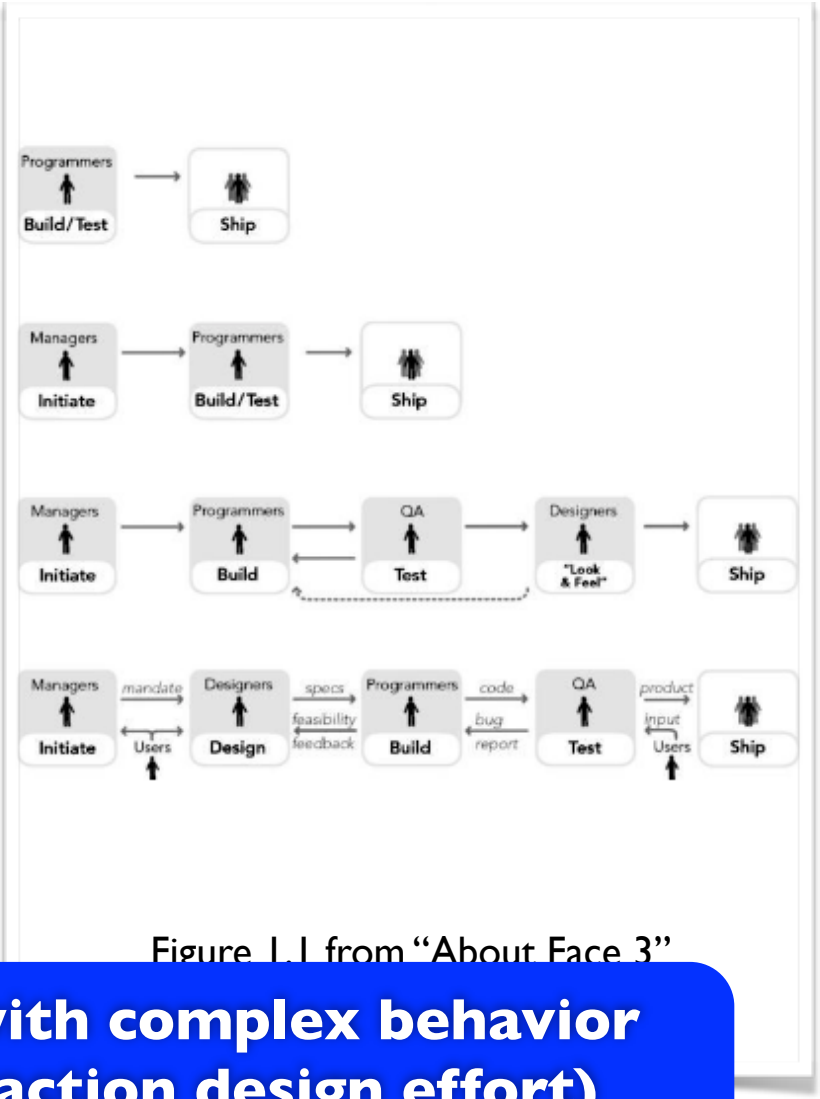


Figure 1.1 from "About Face 3"

The emergence of software with complex behavior requires design effort (interaction design effort)

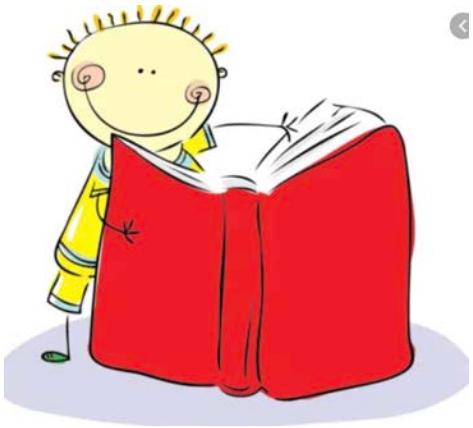
4 GREAT ARGUMENTS

- Digital products
  - are rude
  - require people to think like computers
  - exhibit poor behavior (10 year old)
  - Require humans to do the heavy lifting

Read them in the Cooper book

Why so bad?

- Ignorance about users
- Conflicting interests - ease of coding vs ease of use
- Lack of process



Need a new design method

- Repeatable
- Predictable
- Analytical

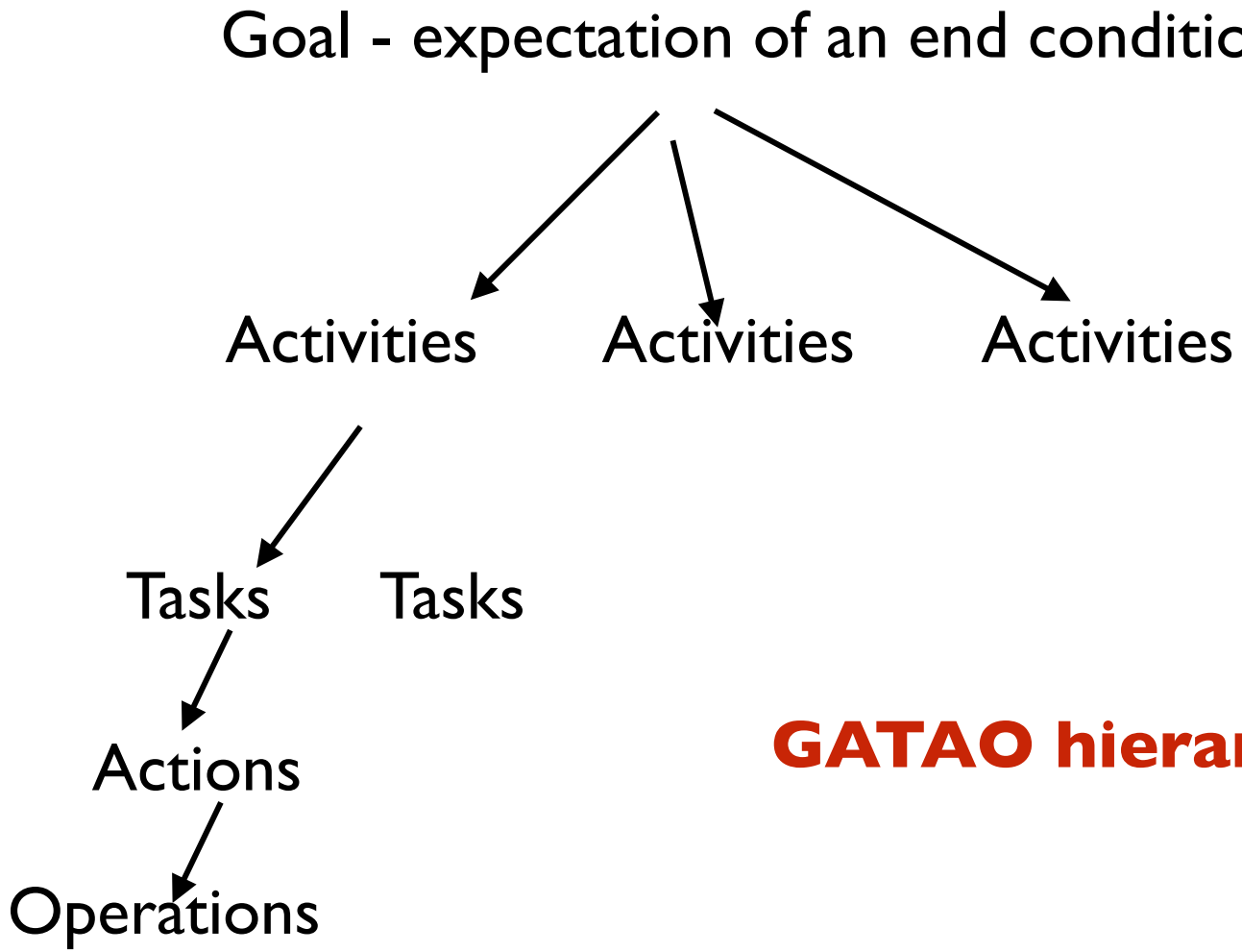
- To transform an understanding of users into products that both meet their needs and excite their imaginations

Design method: goal-directed method

- Goal-directed method comprises of qualitative research, user modeling, requirentment analysis, prototyping, and evaluation
- Design principles to optimize design process
- Cognitive and behavior psychology theories to help understand users' goals, motivations, and limitations

Goal-directed Design Method (GDD)

What is a goal?



GATAO hierarchy

Why focusing on goals?

- Goals motivate people to perform activities
- Understanding goals allow you to understand the expectations and aspirations of your users
- This understanding translates to deciding which activities are truly relevant to your design

- Reminder: SAQ about goals and activities related to interaction with an ATM

Goal-directed design process (GDD)

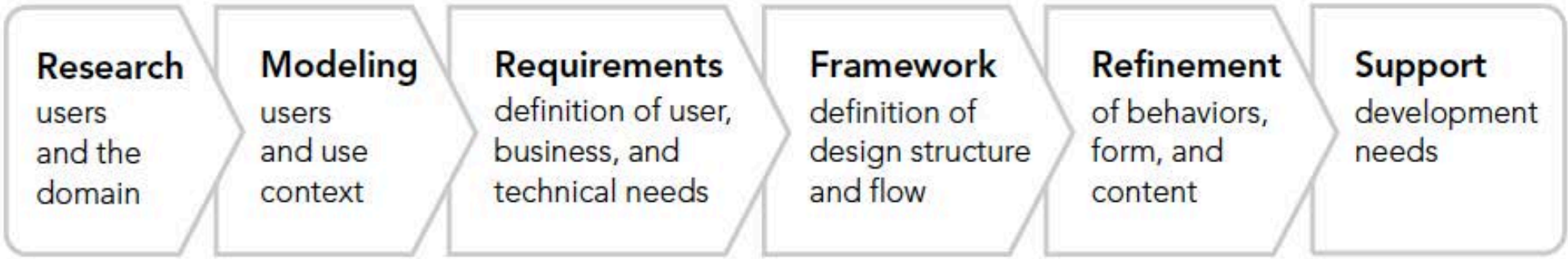


Figure 1-5 The Goal-Directed Design process.

What is human computer interaction?

Lecture notes - Why HCI

DEFINITIONS

Human computer interaction is concerned with the ***Design***, ***Implementation*** and ***Evaluation*** of digital products, environments, systems, and services for the purpose of offering compelling user experience

What are we designing?

- Three main entities
  - Behavior (interaction)
  - Form (interface)
  - Content (information)

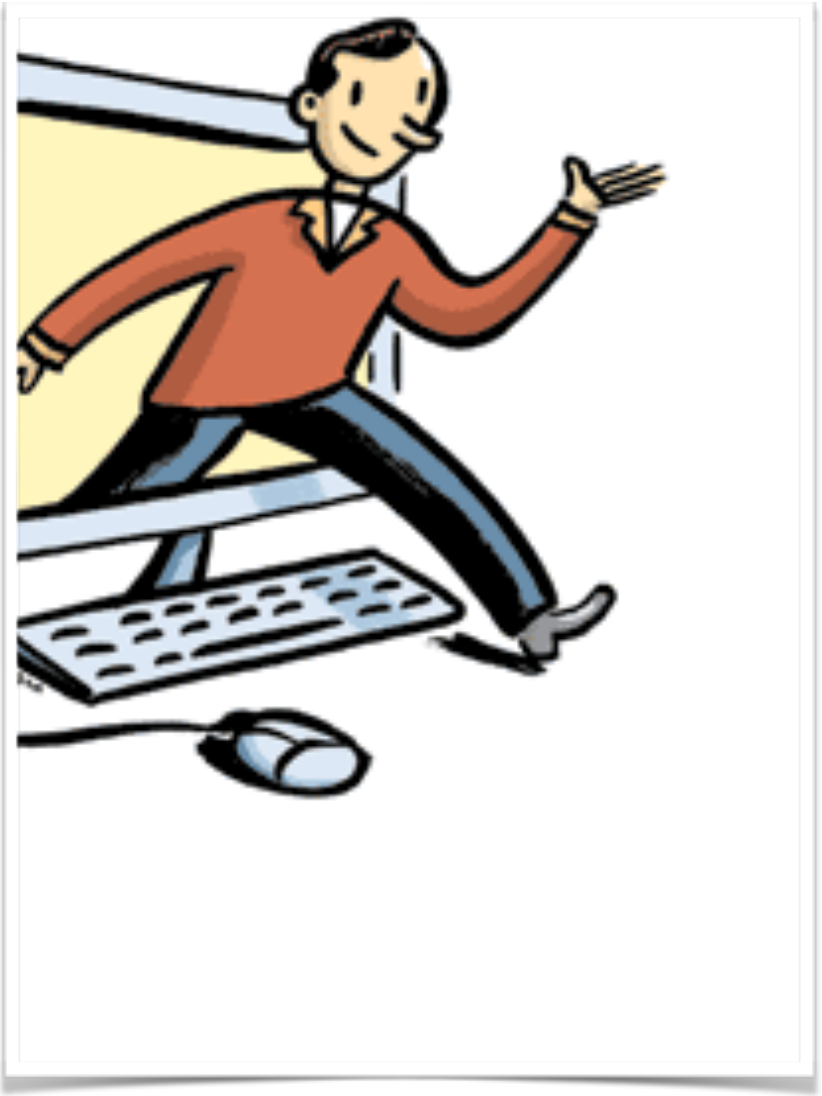
- When a true design succeeds, user experience dominates while behavior, form, and content may even disappear (less is more)

Why study HCI?

Why HCI matters?

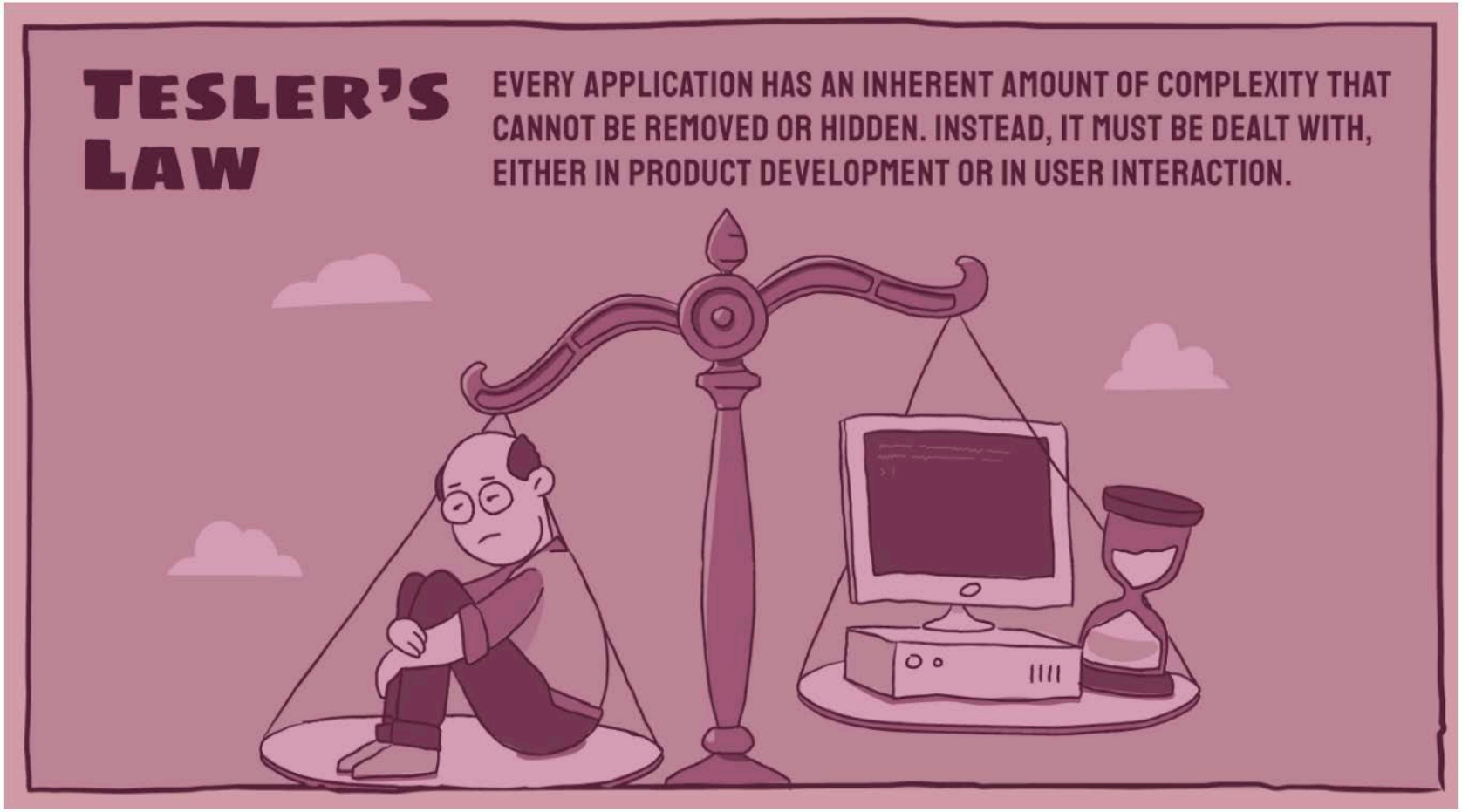
HCI IS HARD

- Design is hard
  - Who are users? what do they want?
  - What are their goals?
  - How do they do things? how to model them? how will they adapt to new software
- Lack of traditional methods (it's a young field)
- Inherit conflict: ease of coding vs. ease of use



Developers step out and examine IT products from users' point of view

Law of conservation of complexity



HCI IS A CAREER OPTION

UX quantitative Researcher Facebook Palo Alto, CA

Every day, Facebook is altering the way people communicate and share information. Over 175 million people spend 3 billion minutes daily on Facebook to share and connect with people they care about. As a Facebook researcher, you can **fundamentally affect** people's lives in a real and meaningful way.

The goal of the User Experience team (UEX) is to improve the user experience by incorporating research, insights and content strategy into the product cycle. Our current research menu is focused on qualitative methods: **discount usability methods, user tests, interviews studies and observation**.

You will not only influence specific product decisions, but will also help guide the focus of the UEX team's efforts. Finally, as part of the User Experience team, the Quantitative Researcher must have enthusiasm for the **design process**, a desire to address the **needs of the user**, and a deep respect for the variety of methods one can use to get at user experience issues, qualitative and quantitative

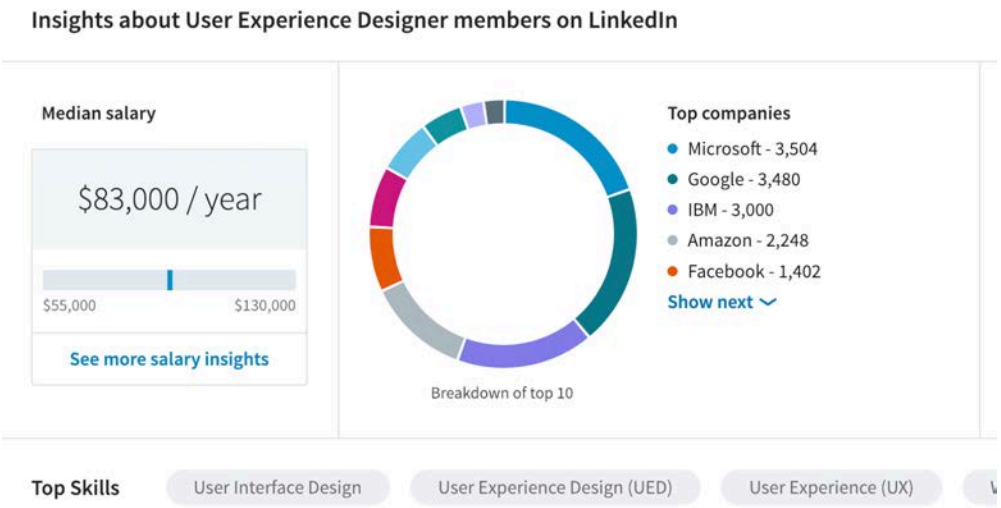
JOB ADS

Swissquote

Project Management · 1 job

UI/UX Product Designer

Gland, Switzerland



HCI SAVES MONEY

- ✓ **IBM**, along with several other companies, states that for every $1 invested in usability testing on software, the payback is between $10 and $100.
- ✓ The single largest predictor of call center volume is your web site's usability. Calls cost an average $22-$30 per call.
- ✓ For every dollar spent acquiring a customer, you will spend $100 dollars reacquiring them after they leave because of poor user experience.
- ✓ For every $10 spent defining and solving critical usability problems early in development using professional usability research, you will save about $100 in development costs.

CONCLUSION

- HCI is not guess work
- HCI requires professional training.

Misconceptions about HCI

- HCI is about GUI
  - but GUI is just one piece of the puzzle.
- HCI is about technology
  - but HCI is not limited to the confines of the computer; it doesn't even need a screen.
- HCI is about usability
  - while ease of use is important, HCI also promotes designing products to offer compelling user experience.
- HCI is just about Users
  - while HCI adopts a user-centric approach to design technology, users are also the bottleneck; users don't decide what's good, but designers do; designers have to integrate as many goals and needs as possible for the business and users.
  - Henry Ford said: "if i asked my consumers, they would have wanted a faster horse."

What is the difference

- User Experience Design (UX), and Interaction Design (IxD) are often used interchangeably
- UX - behavior, content, form
- IxD - behavior
- How are IxD and UX related?
  - IxD addresses a subset of concerns of UX
- Our main focus is on both IxD (behavior) and UX (all three items)

What are the design aims?

What is a successful design?

What makes people want your products?

- Digital products must be useful
  - provide functions and features to help users perform his tasks
    - word processing
    - printing
    - online purchase
    - communication
    - online entertainment

Usefulness of a product is primordial

Useful but unusable object

Is usefulness alone enough?

No! design must consider ease of use

- What do we mean by ease of use?
  - Minimize learning time
  - Minimize interaction time
  - Minimize error rate

USEFUL AND EASY TO USE, BUT....

unattractive, even embarrassing

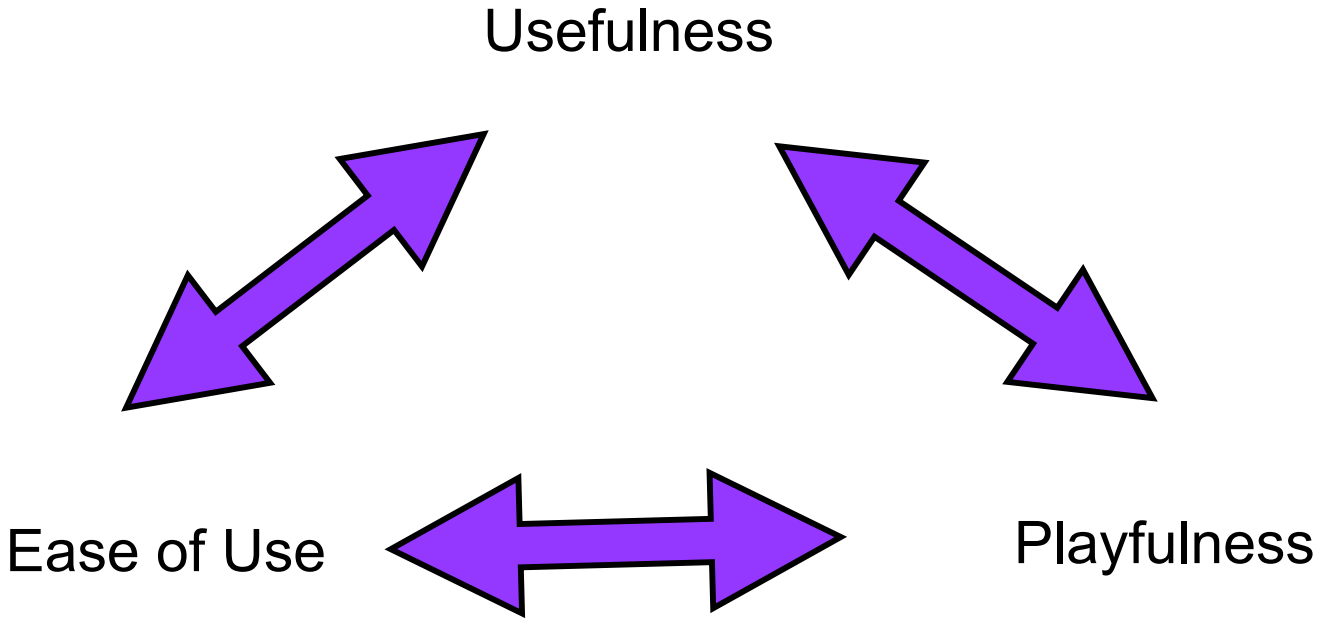
Which one do you prefer?

USEFULNESS AND EASE OF USE ENOUGH?

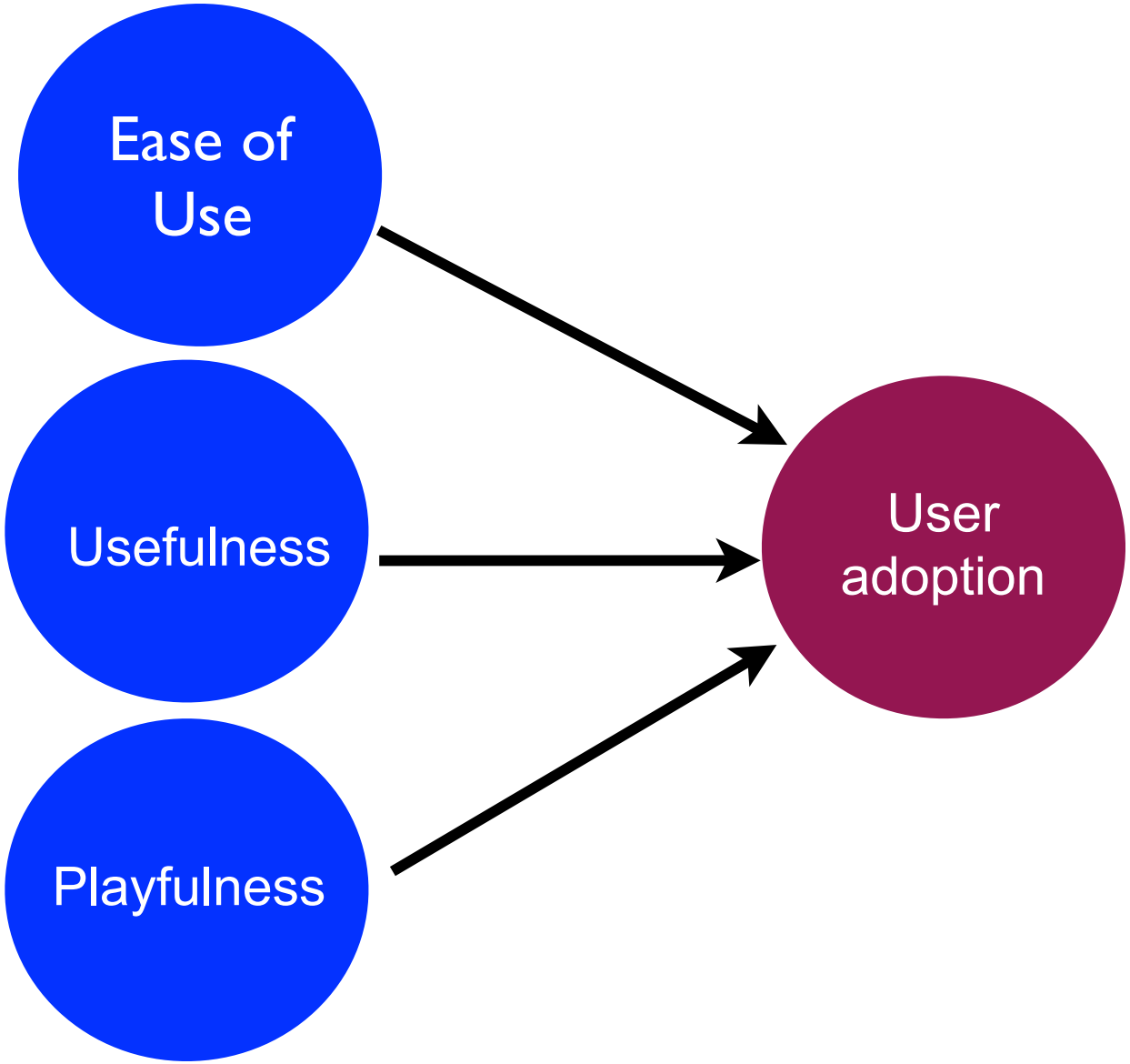
No! design must consider playfulness

- What do we mean by playfulness?
  - Do users forget the lapse of time?

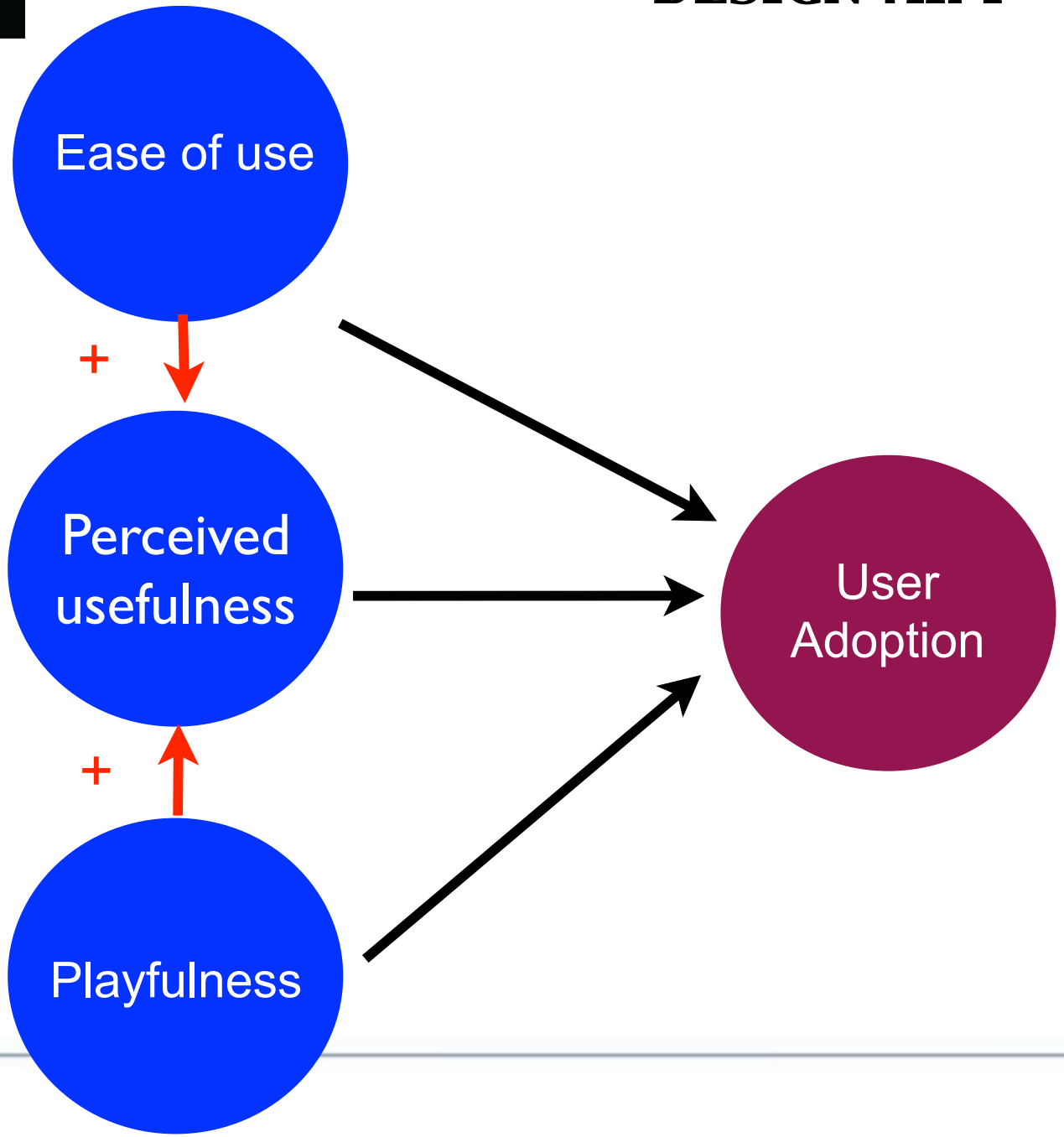
Success criteria for UX design



How these criteria relate?



Design aim – adoption



The relations of these three criteria

- The three criteria do not interact with each other equally
- Users perceive products that are easy to use more useful
- Users perceive products that are more playful more useful
- Users do not perceive more useful products (more features) easier to use
- Users do not perceive more useful products more playful

- ***Conclusion: easy of use and playfulness are amplifiers of adoption - they increase the likelihood of user adoption, giving the same usefulness***

Recapitulation

Foundations of Design

- UX design uses theories and methods from many disciplines: design science, usability, and traditional sciences (cognitive and psychology) and engineering disciplines
- UX is more than the sum of its parts: user experience design is an extension beyond the traditional sciences

COURSE OBJECTIVE

- Design thinking vs. analytical thinking
- Goal-directed design process including users goals/ needs finding, prototyping, evaluation, re-design
- Design principles derived from psychology and cognitive science - mental models, how people learn, memorize, focus, perceive, etc.
- Via a hands-on project, learn to become an user experience designer

How does this course address your needs?

- I'd like to design cool and attractive software/ websites/games/gadgets, but i don't know how.
  - design thinking (training you to think differently)
  - give you a method (GDD in Cooper's book)
  - teach you design principles that work
- I see so many poorly designed software/websites/ games/gadgets. I don't know how to explain why the design didn't work.
  - critique poor design
  - suggest improvement
- I want to do a start-up; I need to develop user-facing software

What this course does not cover?

- How to use flash, proEngineer, or any other particular software package
- How to make an attractive webpage
- How to design an interface hardware
- How to program

THE END