

Lecture 5: The process of interaction design

Overview

- What is Interaction Design?
 - What are the users capabilities?
 - Importance of involving users
 - Degrees of user involvement
 - What is a user-centered approach?
 - Four basic activities
- Some Practical Issues
 - Who are the users?
 - What are 'needs'?
 - Where do alternatives come from?
 - How do you choose among alternatives?

Learning Outcomes

- Explain some advantages of involving users in development
- Explain the main principle of user-centered approach
- Present a simple lifecycle model of interaction design

Based on material from:

Sharp, H., Preece, J. and Rogers, Y. (2019). *Interaction Design Beyond Human-Computer Interaction*. 5th Ed. Sussex: John Wiley & Sons Ltd.

What is Interaction Design?

- It is a process:
 - Focused on discovering requirements, designing to fulfil requirements, producing prototypes and evaluating them
 - Focused on users and their goals
 - Involves trade-offs to balance conflicting requirements
- Generating alternatives and choosing between them is key
- Four approaches: user-centered design, activity-centered design, systems design, and genius design

Understanding the Problem Space

- Explore:
 - What is currently the user experience
 - Why is a change needed
 - How will this change improve the situation
- Articulating the problem space
 - Team effort
 - Explore different perspectives
 - Avoid incorrect assumptions and unsupported claims

Degrees of User Involvement

- Member of the design team
 - Full time: constant input, but lose touch with users
 - Part time: patchy input, and very stressful
 - Short term: inconsistent across project life
 - Long term: consistent, but lose touch with users
- Face-to-face group individual or activities

Degrees of User Involvement

- Online contributions from thousands of users
 - Online Feedback Exchange (OFE) systems
 - Crowdsourcing design ideas
 - Citizen science
- User involvement after product release

What is a User-Centered Approach?

User-centered approach is based on:

- Early focus on users and tasks: directly studying cognitive, behavioral, anthropomorphic & attitudinal characteristics
- Empirical measurement: users' reactions and performance to scenarios, manuals, simulations & prototypes are observed, recorded and analysed
- Iterative design: when problems are found in user testing, fix them and carry out more tests

missed above

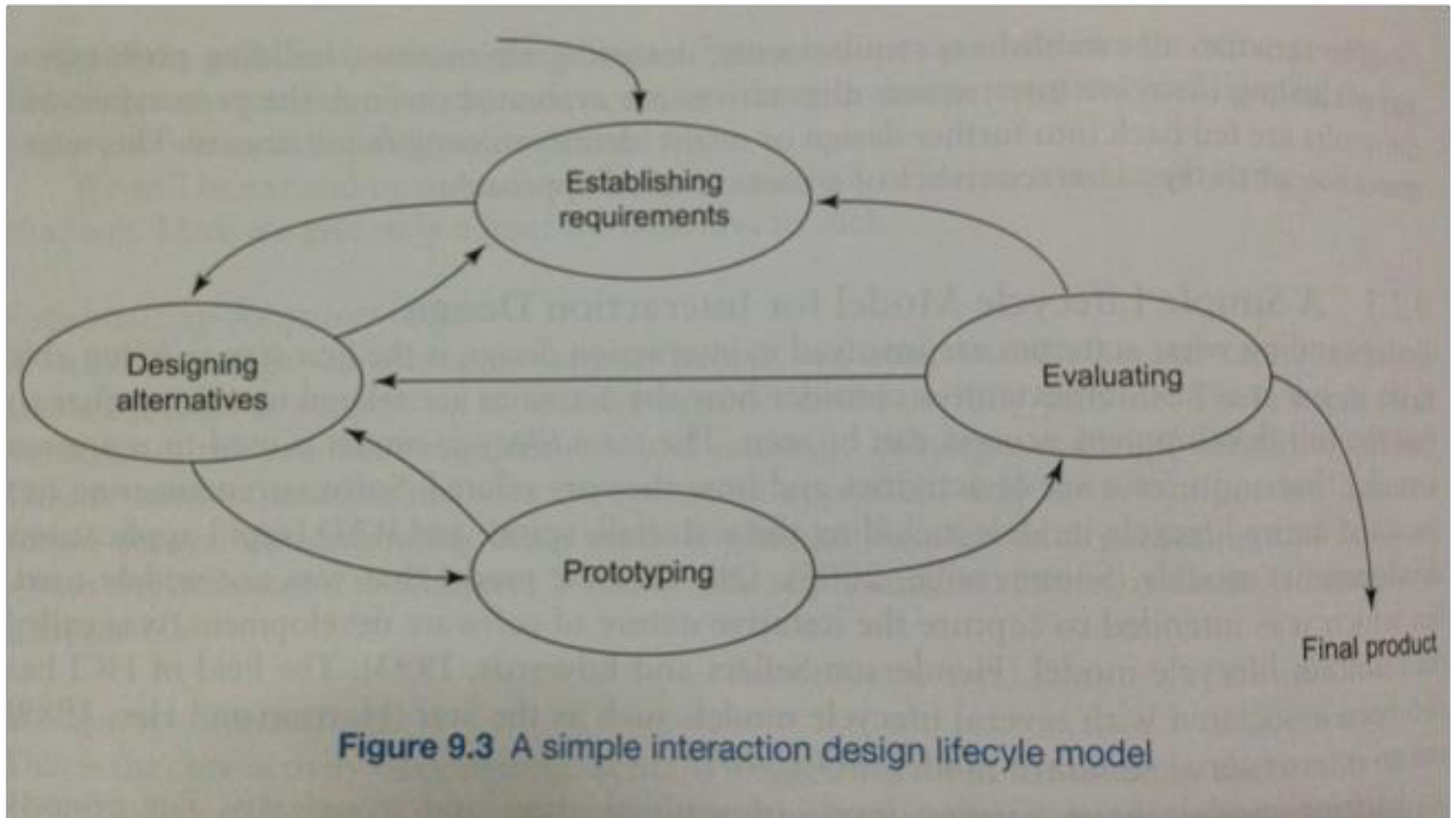
Four basic Activities of Interaction Design

1. Discovering requirements
2. Designing alternatives
3. Prototyping alternative designs *lo fi*
hi fi
4. Evaluating product and its user experience throughout

A simple interaction design lifecycle model

①

lifecycle model



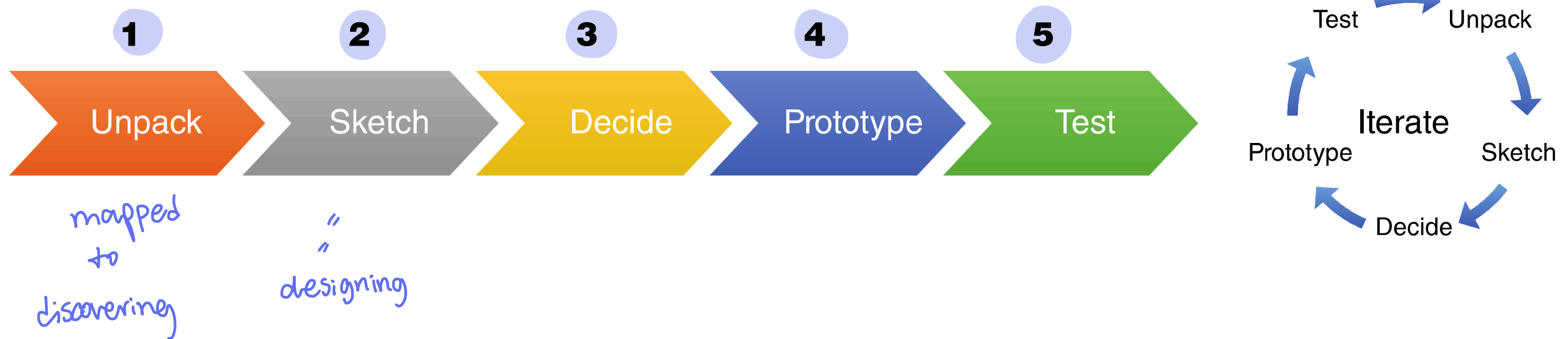
Another Lifecycle Model:

② Google Design Sprints

(Knapp et al, 2016)

comprised of 5 but they map

Google Design Sprint

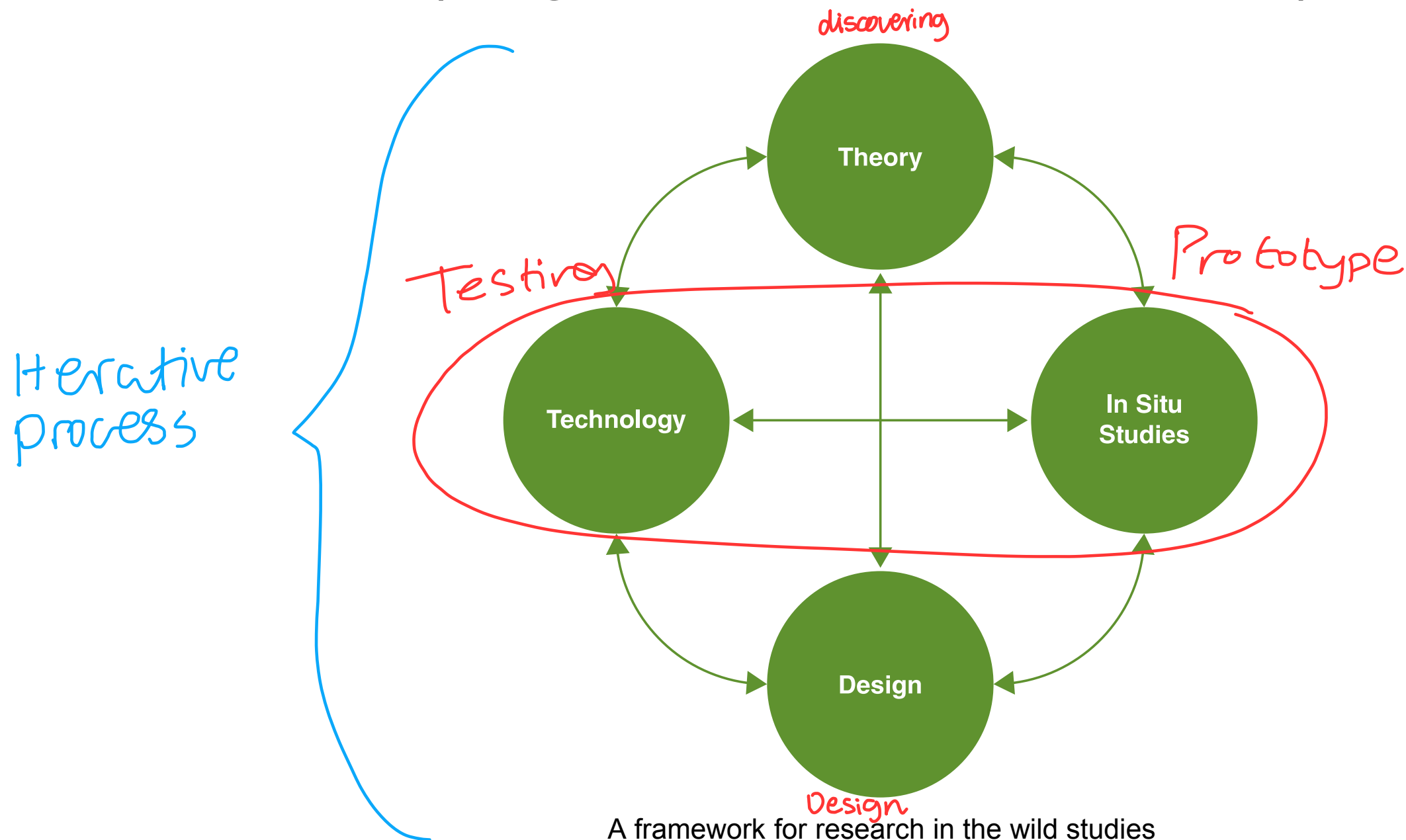


Source: www.agilemarketing.net/google-design-sprints/ Used courtesy of Agile Marketing

Another Lifecycle Model:

③ Research in the Wild

(Rogers and Marshall, 2017)



A framework for research in the wild studies

Source: Rogers and Marshall, 2017, p6. Used courtesy of Morgan & Claypool

PM1

Four basic activities in Interaction Design

requirements: must know target audience by making user profile
• Trying to understand user needs

1. Establishing requirements

- In order to design – must know your target users
- What kind of support an interactive product could usefully provide
- Fundamental to user-centered approach
- Understanding these needs through data gathering and analysis

UP

Four basic activities in Interaction Design (cont)

2. Designing Alternatives

- Core activity in designing – suggesting ideas for meeting the requirements

- Broken up into two-sub activities:

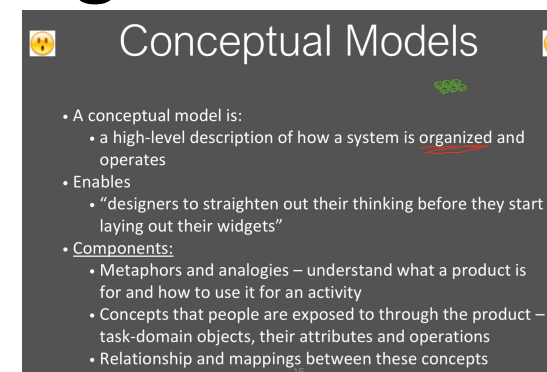
(a) conceptual design

- producing the conceptual model for the product
- describes the outline what people can do with the product and what concepts are needed to understand how to interact with it

(b) physical design

- details of the product including colours, sounds, images, menu design, icon design

envisionment



in our brain
• outline what users can do
• How they can use

Have details: colors, shape
↳ drawing or sketching

Four basic activities in Interaction Design (cont)

3. Prototyping

- Involves designing interactive products
- The most sensible ways for users to evaluate such designs is to interact with them = through prototyping
 - proof of concept
 - low-fidelity
 - (lo-fi)
- Paper-based prototypes are very quick & cheap to build and very effective to identifying problems in the early stages of design
 - Test designs / interactions
 - Shows early stages
- Through role-playing users can get a real sense of what it will be like to interact with the product

approaches:
① horizontally
② vertically

Four basic activities in Interaction Design (cont)

4. Evaluating / *Testing*

- Evaluation is the process of determining the **usability** and **acceptability** of the product or design
- Testing to make sure that the final product is fit-for-purpose

Testing UX
user-experience

Three key characteristics

Three key characteristics permeate these four activities:

1. Focus on ^{user involvement} users early in the design and evaluation of the artefact
2. Identify, document and agree specific usability and user experience goals
3. Iteration is inevitable. Designers never get it right the first time

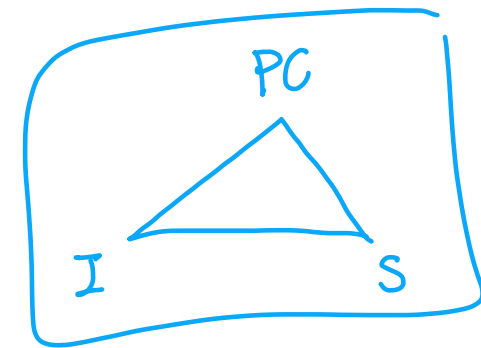
↪ able to go back

permeate the 4

Some practical issues

- Who are the users? *how 2 know the users for my project?*
 - People who match user profile

- What do we mean by 'needs'?
 - Interview



- Where do alternatives come from?
 - Product comparisons

- How to choose among alternatives
 - Triangulation: perform diff techniques to see and collect data
 - ↳ see diff pov's

- How to integrate interaction design activities with other lifecycle models

- UCD model
 - ↳ 4: discover
designing
evaluating
testing

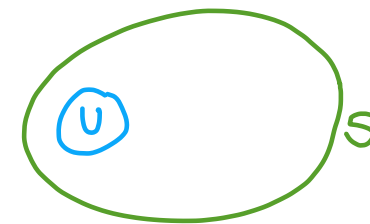
Who are the users / stakeholders?

- Users

direct users (product users)

- 382 distinct types of users for smartphone apps (Sha Zhao et al, 2016)
- Many products are intended for use by large sections of the population, so user is “everybody”
- More targeted products are associated with specific roles

- Stakeholders

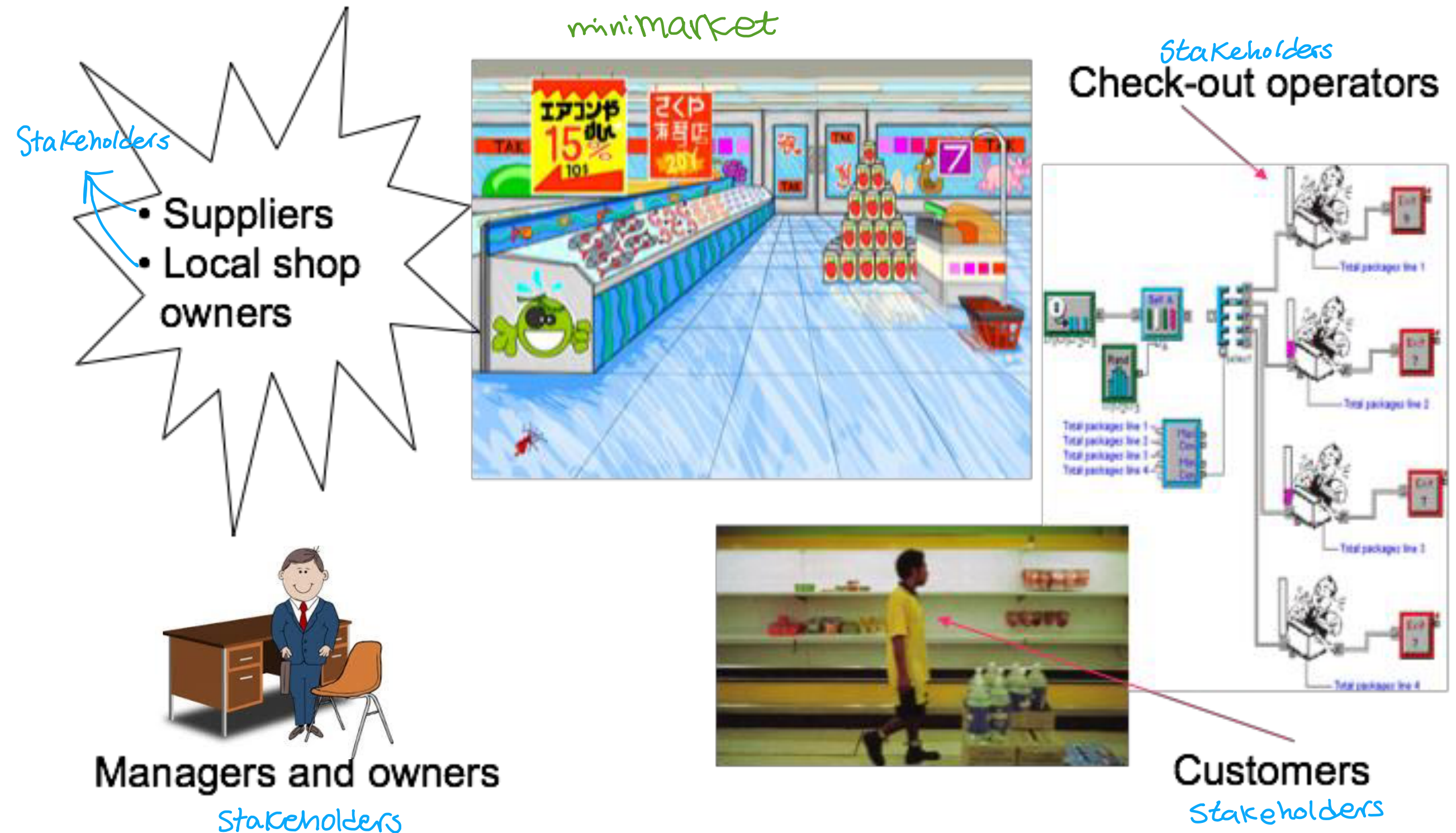


- Larger than the group of direct users
- Identifying stakeholders helps identify groups to include in interaction design activities

Who are the users / stakeholders?

- Not as obvious as you think:
 - those who interact directly with the product *users*
 - those who manage direct users *S*
 - those who receive output from the product *S*
 - those who make the purchasing decision *S*
 - those who use competitor's products *u*
iPhone Huawei
- Three categories of user (Eason, 1987):
 - primary: frequent hands-on
 - secondary: occasional or via someone else
 - tertiary: affected by its introduction, or will influence its purchase *20*

Who are the stakeholders?



What are 'needs'?

- Users rarely know what is possible
- Instead:
 - Explore the problem space
 - Investigate who are the users
 - Investigate user activities to see what can be improved
 - Try out ideas with potential users
- Focus on peoples' goals, usability and user experience goals rather than expect stakeholders to articulate requirements *working directly with users*

Where do alternatives come from?

- Humans tend to stick with something that works
- Considering alternatives helps identify better designs
- Where do alternative designs come from?
 - ‘Flair and creativity’: research and synthesis
 - Cross-fertilisation of ideas from different perspectives
 - Users can generate different designs *we will only do 1 this course*
 - Product evolution based on changing use
 - Seek inspiration: similar products and domain, or different products and domain *PC*
- Balancing constraints and trade-offs



How to choose alternative designs?

- Interaction design focuses on externally visible and measurable behaviour
- Technical feasibility
- Evaluation with users or with peers
 - Prototypes not static documentation because behaviour is key
- A/B Testing
 - Online method to inform choice between alternatives
 - Nontrivial to set appropriate metrics and choose user group sets
- Quality thresholds:
 - Different stakeholder groups have different quality thresholds
 - Usability and user experience goals lead to relevant criteria

Testing prototypes to choose among alternatives



Summary

- Four basic activities in the design process
 - Establishing requirements
 - Designing alternatives
 - Prototyping
 - Evaluating
- User-centered design rests on three principles
 - Early focus on users and tasks
 - Empirical measurement using quantifiable & measurable usability criteria
 - Iterative design