

Week 2: Introduction to HCI

User-Centred Design (UCD) vs Human Computer Interaction (HCI)



Main aspects of UCD

- At its core, user centred design is about **putting the user at the centre of design**
- User centred design focuses not on the software, but the user's relationship **with** the software

Main aspects of HCI

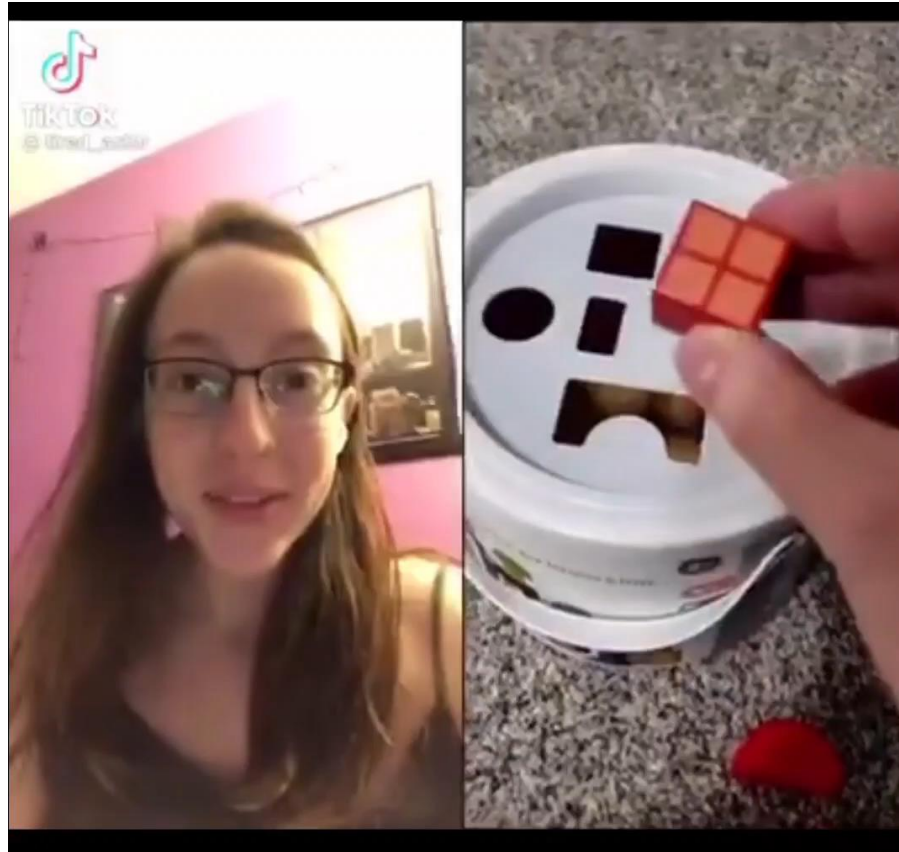
- “It is a multidisciplinary field of study focusing on the design of computer technology, and in particular, the interaction between humans and computers”
- Human-computer interaction focuses not on the software, but the relation between the human **and** the software by means of **usability**.

We will make the difference!

- In UCD (SOME OF) you examined:
 - Understanding the needs of users
 - Keeping users central to requirements gathering
 - Getting feedback from users with prototypes
- In HCI we will examine:
 - Understanding the users
 - Produce designs
 - Evaluating these designs at different stages
- In fact, sometimes both are merged into the concept of **USABILITY**



Whose fault is this, UCD or H“C”I?



Whose fault is this, UCD or H“C”I?



Usability

First attempts

- In the 90's, the European MUSiC project was developed to specify usability measures for **effectiveness, efficiency** and **satisfaction**
- First comprehensive public investigation to collect usability metrics
- Four classes:
 - *Class 1*: Goal achievement indicators (such as success rate and accuracy)
 - *Class 2*: Work rate indicators (such as speed and efficiency)
 - *Class 3*: Operability indicators (such as error rate and function usage)
 - *Class 4*: Knowledge acquisition indicators (such as learnability and learning rate)



Refrigerator add from the 80's attempting to define the usability concept

First attempts

- All goals where **objective**, without considering the subjective element
- Still, this derived into the following usability measures:
 - **Effectiveness**: Measures related to the accuracy and completeness with which task goals are achieved.
 - If the task is to transcribe a document into a specified format, effectiveness measures would include transcription accuracy, number of deviations from the specified format, and completeness of the transcription.
 - **Efficiency**: Measures related to the expenditure of mental or physical resources.
 - Task time is one such measure, as are those that combine task time (or another measure of effort) with effectiveness.
 - **Satisfaction**: Measures of perceived usability and acceptability,
 - Including direct measures from standardised usability questionnaires or indirect measures derived from ratios of positive and negative user comments.

Usability

- In 1998, ISO defined the ISO 9241 standard for ergonomics of human-computer interaction (now called *Ergonomics of Human System Interaction*)
 - Based in MUSiC
 - Previously divided in parts, now in sections
- The most famous one is ISO 9241-110 (also known as part 11) which describes definitions and concepts of usability
- In 2018, ISO 9241-11:2018 brought the most recent changes:
 - More goals (including personal and organisational)
 - Negative consequences of use (e.g. health, safety, security)
 - Clarification of satisfaction by including wider issues



A Business Project Lifecycle

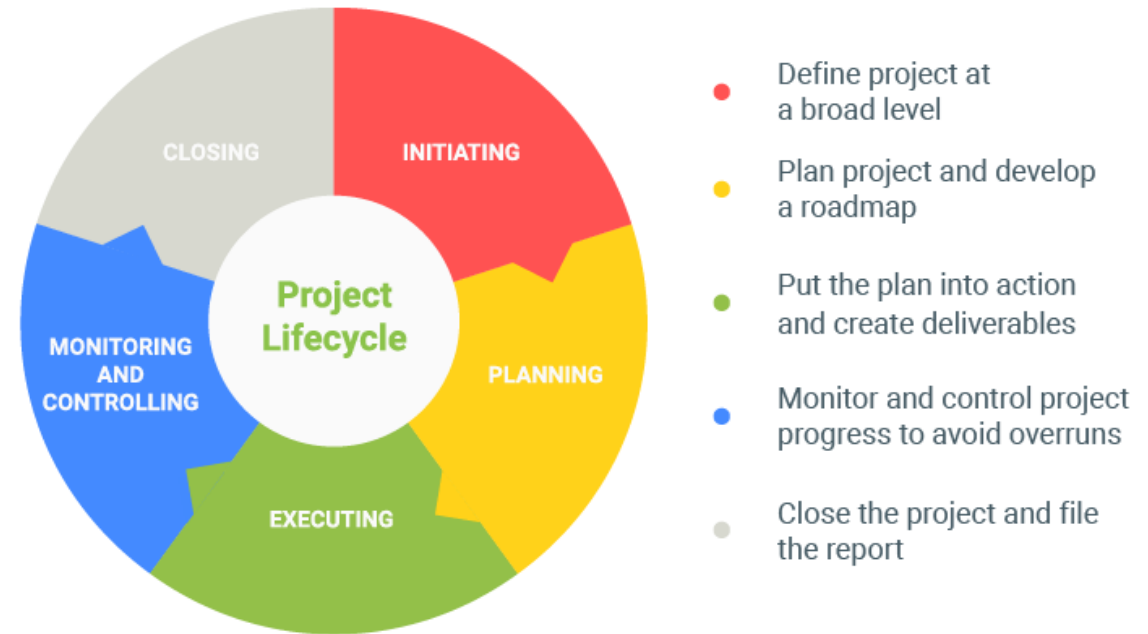
The Individual User vs the Business as a Whole

- From the definitions provided, both UCD and HCI are very tied to enabling and empowering users
 - UCD - well, it's in the name...
 - HCI - generally we think of interaction as the direct link between human and computer, meaning a specific user of a specific service at a given time
- However, that does **not** mean they ignore the needs of the business

The Business Perspective

- These techniques support wider product development and evaluation, not just individuals
- We can best see this by looking at the project life cycle

Step-By-Step Project Lifecycle Methodology



Stage 1: Project Initiating

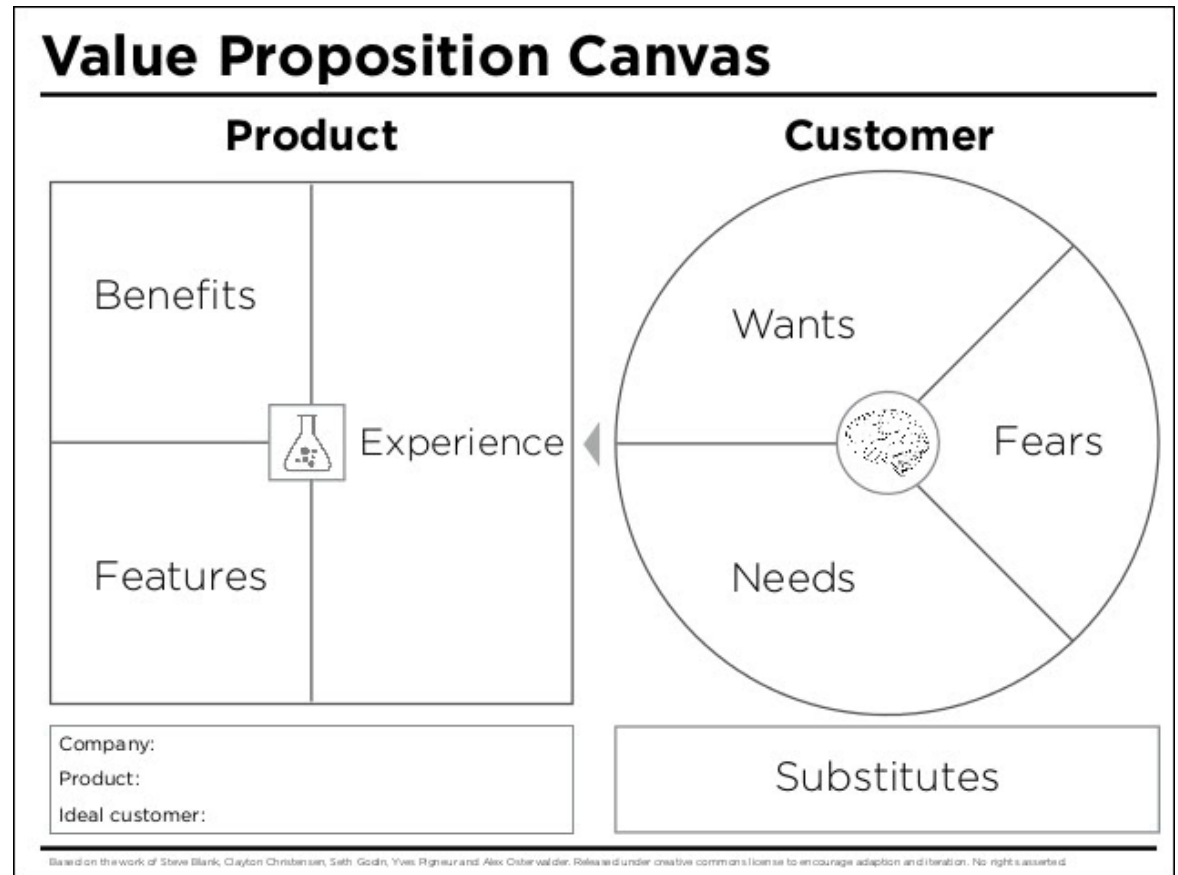
- Project initiation is about identifying a problem or opportunity for your business and establishing a project to solve or take advantage of it
- This involves:
 - Identifying the scope of a problem/opportunity with a business case
 - Determining the effectiveness of the proposed solution with a feasibility study
 - Building a team and workplace to actually complete the project

Business Case

- A business case is basically the justification for the need of your project
- A good business case will explain the value of the project, its drawbacks and clearly state what problem/opportunity the project aims to answer
 - For products, this often takes the form of a product value proposition
 - For procedure or policy changes, a business case may incorporate legislative, ethical, operational and financial justifications
- Both UCD and HCI techniques can contribute to building this justification by bringing in feedback from users

Product Value Proposition

- In other words, a clear statement of what your product is and how it answers the needs of your customers.
- UCD & HCI techniques can help identify the needs of the customer to guide product design (in stage 3) to meet those needs.



Feasibility Studies

- A feasibility study is designed to identify whether project outcomes are achievable, and will answer the problem/opportunity that have led to the project
- These are often performed by examining available resources before fully designing a solution
- Particularly for software projects, this means that understanding best practice frameworks from HCI can play a role in determining feasibility

Stage 2: Project Planning

- The goal of project planning is to establish those impacted by the project (the stakeholders) and use their feedback to identify project goals and deliverables
- In other words:
 - Gather the stakeholder's requirements for the project
 - Build those requirements into an appropriate set of deliverables
 - Establish a timeline for those deliverables
 - And check the deliverables and timeline with the stakeholders

Requirements Gathering with UCD/HCI



Co-creation workshop by Vodafone in India

MARK, 22

DEMOGRAPHICS

- Rents a 2 bedroom apartment in uptown Charlotte, NC with old teammates from lacrosse.
- Currently an intern for a large sports management company and a bar tender at a high end cocktail bar on the weekends.
- Recently single and using dating apps. An only child and rescued a puppy 4 months ago.
- Graduated with a B.S in Health Sciences from UNCW. Owes \$28,000 in private loans.

BEHAVIORAL IDENTIFIERS

- Hobbies include eating out, lifting weights, playing club lacrosse, drinking draft beer, tailgating for UNC, and watching live music.
- Wants fast shipping. Values a low price. Prefers online marketing, light colors, and simple websites.
- Owens an Android and shops on mobile with referrals from social media such as Instagram and Facebook.
- Personal goals to be out of debt by 2024, to be engaged in 4 years, and to work in a university sports medicine department.
- Prefers chat systems for customer service and support. Values quick responses and 24 hour availability.
- Shops online between 7pm-8pm. Buys during pay periods at the end of the month and often uses promo codes.
- Studied abroad in Chile. Can speak Spanish and some Italian. Travels on a budget and prefers hostels to hotels.
- Very fit and active but has a bad diet due to eating on a budget and drinking often. Seeks out health information daily.

JUSTIN, 31

DEMOGRAPHICS

- Rents a 1 bedroom apartment in uptown Atlanta with his partner. Saving to buy a house next year.
- Works 40 hours a week in a 5 star hotel as a superintendent with a net income of \$120,000.
- Recently engaged to his boyfriend of 3 years with plans to marry in NYC in the winter.
- Graduated from a community college with honors and held office in 3 on campus clubs.

BEHAVIORAL IDENTIFIERS

- Hobbies include vegan cooking, yoga, monthly massages, playing the drums, volunteering, drinking cocktails and watching local plays.
- Wants free shipping on large orders. Values quality and privacy. Extremely brand loyal. Prefers email marketing.
- Owens an iPhone and tablet. Shops on this tablet with referrals from email marketing and promotions.
- Personal goals to become a general manager within 4 years and to purchase a suburban home after his wedding and honeymoon.
- Prefers to call for customer service and support. Values follow up summary emails and easy to read directions.
- Shops online between 8pm-10pm and makes multiple returns. Uses PayPal at checkout.
- Travels in the USA twice a year to visit family in Maine and California. Prefers long road trips and holiday travel.
- Cooks very healthy and with local products. Has great self care and is very active.

MAGGIE, 52

DEMOGRAPHICS

- Owens a 4 bedroom home in coastal NC and 2 high end cars. Lives in a suburban gated neighborhood.
- Human Resource Director of a small media company for 5 years with a \$68,000 salary.
- Happily married for 12 years with 2 sons and a house hold income of above \$230,000.
- Well educated with an MBA degree from a state university. Graduated without debt.

BEHAVIORAL IDENTIFIERS

- Hobbies include reading, playing tennis, networking at the country club, being involved in youth groups and visiting the beach.
- Wants a simple product. Values quantity and brand image. Prefers print marketing and bold graphics.
- Owens an iPhone but makes purchases online with a desktop Mac computer. Needs a simple check out system.
- Personal goals to retire by age 65, to own a vacation home on the Spanish Riviera and for her sons to attend an Ivy league university.
- Strong need for customer service and support. Values face to face communication and rewards systems.
- Shops in department stores after 8pm. Buys in bulk on sale items. Referred by a previous client.
- Went traveled in Europe. Prefers traveling in off peak times in chain hotels and loves pre-planned travel like cruises.
- In very good health but very busy and often stressed. Visits group exercise programs.

Stage 3: Project Execution

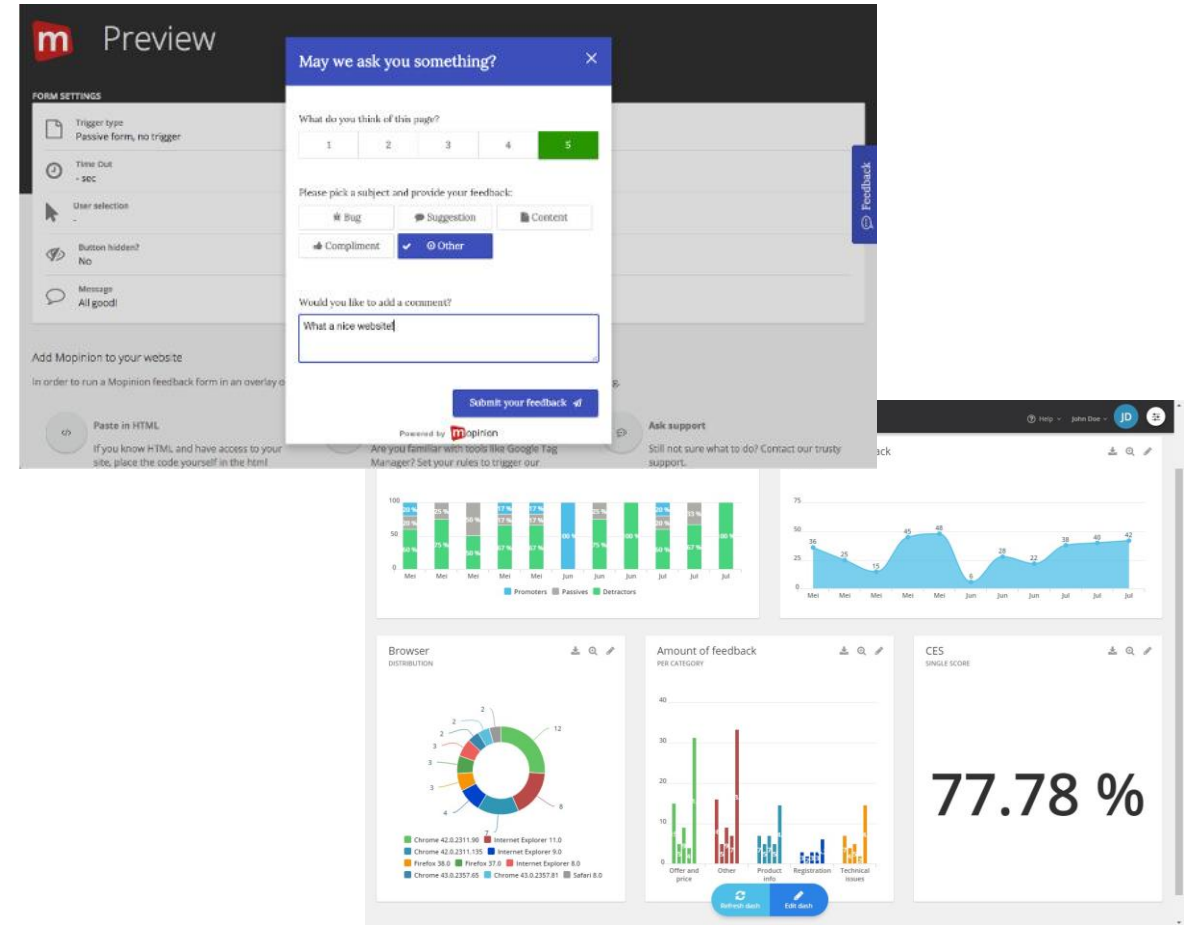
- Executing the project involves producing the deliverables and achieving the milestones that were identified in the project plan.
- Similarly, while the goal of the project will be refined by communications with users, they will not do the work for the project team
- However, they are very helpful for making sure the work continues to be relevant over the course of the project...

Stage 4: Project Monitoring and Controlling

- Project monitoring occurs throughout the project execution stage
- It is important to monitor a project to ensure that what is being produced actually meets the project goals
- If the project is not achieving the goals, then it is important to make changes to bring it back in line with the objective

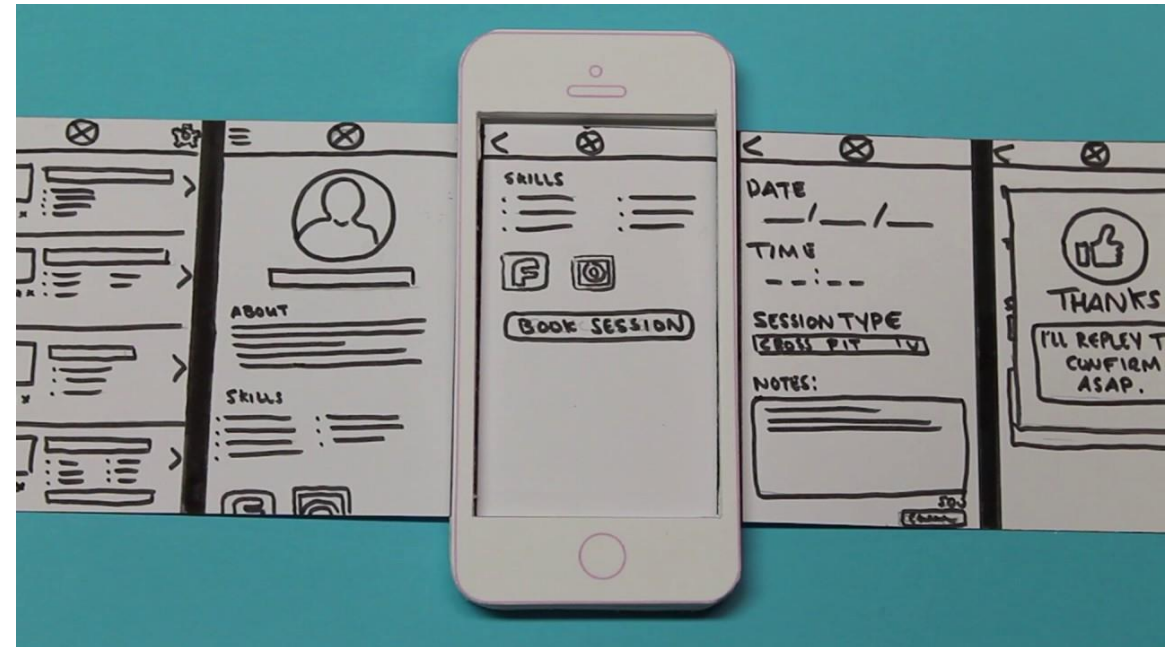
Stakeholder Involvement in Project Monitoring

- In software development, it is important to remember that you are building the product to be used by different user groups
- Therefore you must produce something that is useful to them
- Low fidelity prototyping can be useful to get feedback quickly and without expending too much resources



Low Fidelity Prototyping

- Low fidelity prototyping aims to test the fundamentals of the design extremely quickly and cheaply.
- The 'Friendly ATM':
<https://youtu.be/JvxRn57ezjA>
- See here for more details on the project:
<https://challenges.openideo.com/challenge/financial-longevity/top-ideas/all-generation-friendly-atm>



Stage 5: Project Closing

- Project closing is the end of the project
- In completed projects, it is where the project management team agree that all deliverables have been met
- In uncompleted projects, it is where the project management team identify that the project cannot or should not continue

Lab Activity: Card Sorting

Card Sorting

- Technique used to become familiar with information architecture
- How users perceive that resources shall be ordered
- May be open (no pre-existing categories) or close (the opposite)



Technologies Used

- Specific
 - OptimalSort
 - OptimalWorkshop
- General
 - Trello
 - Miro
 - MS Planner



Today's lab

1. A company called BananaCom wants to design their website. They have created a card sorting exercise using [Trello](#).
2. To help them with the design, sign up/sign in to [Trello](#)
3. Join the CM4110 Trello Team by using the following link:
 1. <https://trello.com/invite/cm4110/3a2f158f0dc0a3066748578888e0b8e1>
4. Copy the following board into your account:
 1. <https://trello.com/b/tb1YTWIV/card-sort>
 1. You can copy a board by going to the Menu on the right hand side, selecting ... **More** and then **Copy Board**
5. Instructions are on the first column, but to keep it simple, you just have to drag and drop the cards in the **Unsorted** column into the numbered ones.
 1. You can add more columns by selecting + **Add another list** and rename all of them by clicking on their title.
6. Name your board "CM4110 – Card Sorting – *yourname*".

References

- <https://measuringu.com/iso-9241/>
- <https://www.g2.com/products/mopinion-user-feedback-analytics-software/reviews>
- <https://youtu.be/JvxRn57ezjA>
- <https://challenges.openideo.com/challenge/financial-longevity/top-ideas/all-generation-friendly-atm>
- <https://media-openideo-rwd.oengine.com/attachments/6224da8f-9ed2-424e-b029-f0d30e6be2a9.pdf>
- <https://www.pmi.org/learning/library/importance-of-closing-process-group-9949>
- <https://www.smashingmagazine.com/2014/10/improving-information-architecture-card-sorting-beginners-guide/>