

Topic 1: 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 on the relation between the human **and** the software through **usability**

We will make the difference!

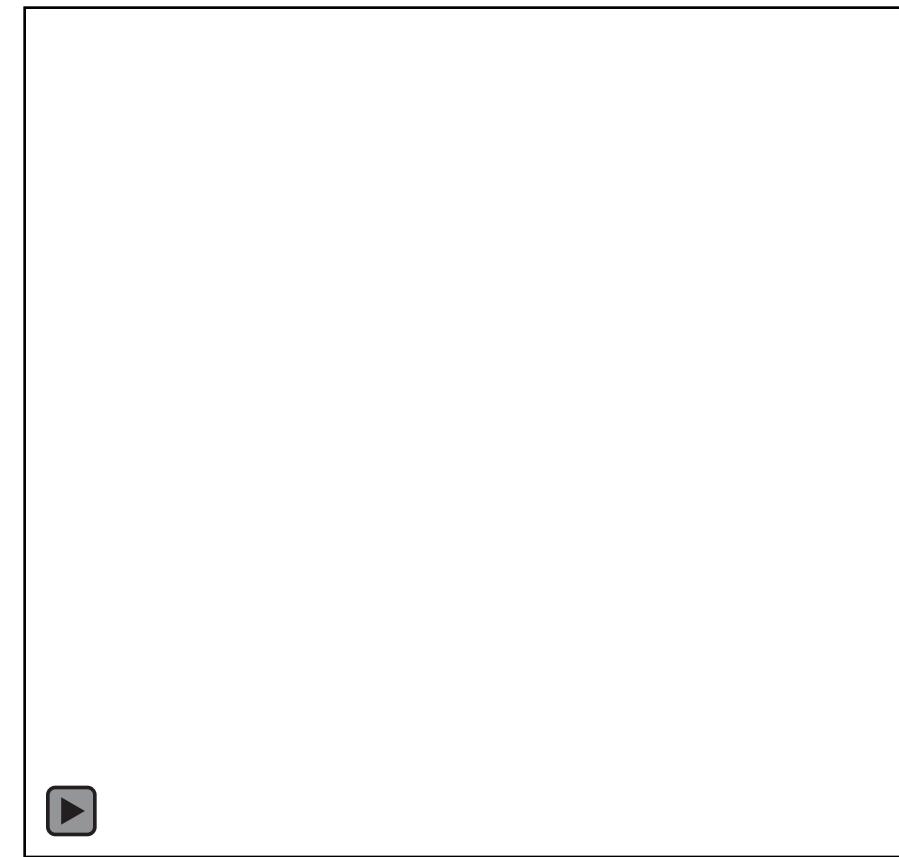
- In UCD (SOME OF) you examined:
 - Understanding the needs of users
 - Keeping users central to requirements gathering
 - Getting feedback from users with prototypes
- In HCI we will examine:
 - Understanding the users
 - Produce designs
 - Evaluating these designs at different stages
- In fact, sometimes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



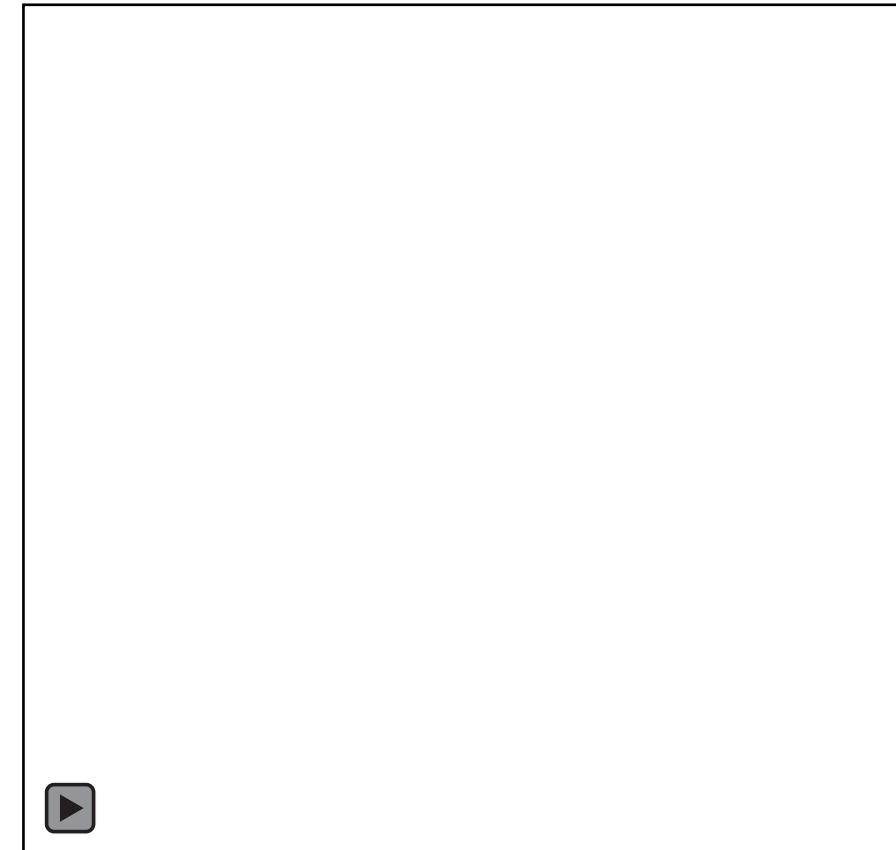
UCD or HCI?

Go to www.menti.com and use code **2877 1223**

Whose fault is this, UCD or H“C”I?



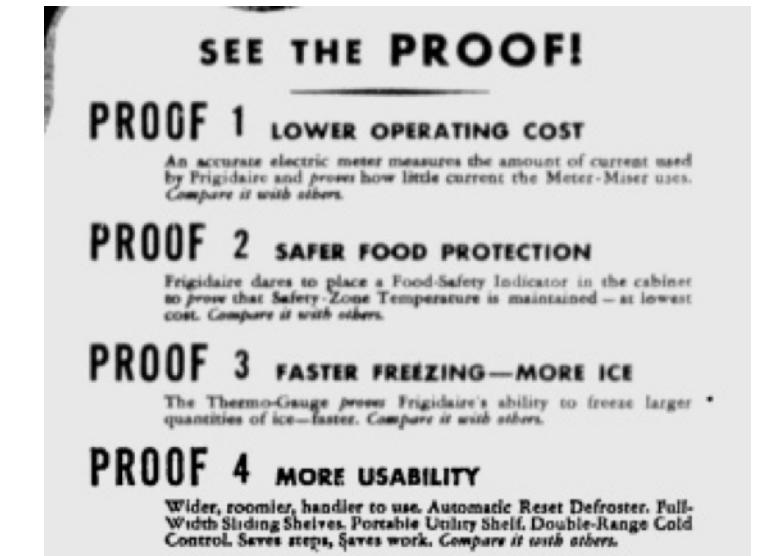
Whose fault is this, UCD or H“C”I?



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

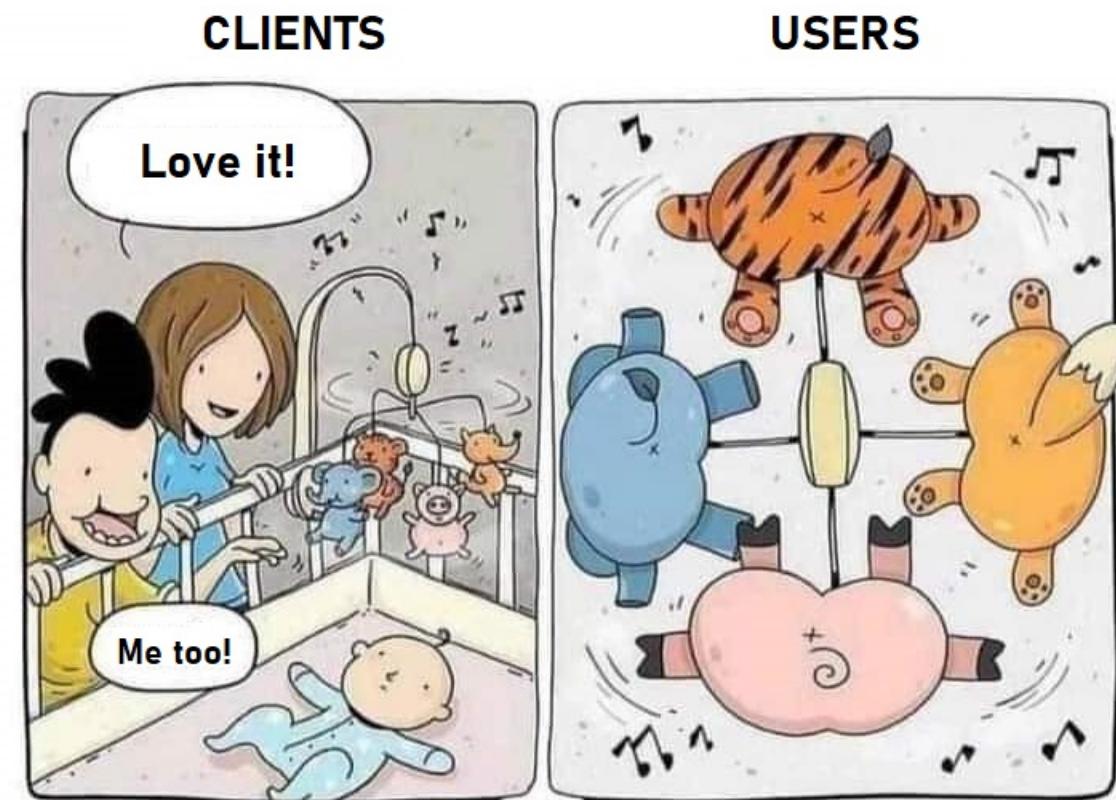
- In 1998, ISO defined the ISO 9241 standard for ergonomics of human-computer interaction (now called *Ergonomics of Human System Interaction*)
 - Based in MUSiC
 - Previously divided in parts, now in sections
- The most famous one is ISO 9241-110 (also known as part 11) which describes definitions and 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



- Define project at a broad level
- Plan project and develop a roadmap
- Put the plan into action and create deliverables
- Monitor and control project progress to avoid overruns
- Close the project and file the report

Stage 1: Project Initiating

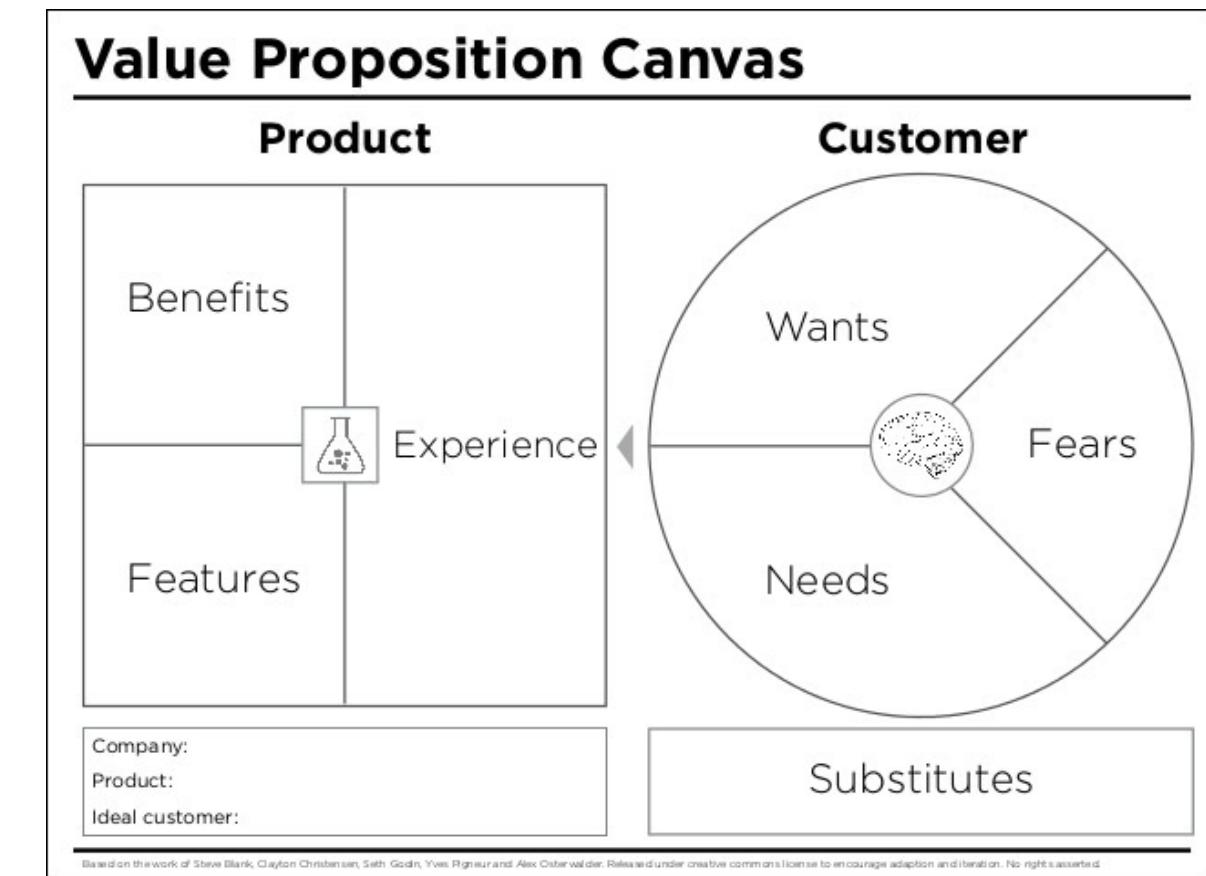
- Project initiation is about identifying a problem or opportunity for your business and establishing a project to solve or take advantage of it
- This involves:
 - Identifying the scope of a problem/opportunity with a business case
 - Determining the effectiveness of the proposed solution with a feasibility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

- Bents a 2 bedroom apartment in upstate Charlotte, NC with old teammates from lacrosse.
- Currently an intern for a large investment 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.

BEHAVIORAL IDENTIFIERS

- Hobbies include eating out, lifting weights, playing chess, going to bars, 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.
- Owns 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.

JUSTIN, 31

DEMOGRAPHICS

- Bents a 1 bedroom apartment in Uptown Atlanta with his partner. Saving to buy a home next year.
- Recently engaged to his boyfriend of 5 years with plans to marry in NYC in the winter.

BEHAVIORAL IDENTIFIERS

- Hobbies include vegan cooking, yoga, monthly massages, playing the drums, volunteering, drinking coffee, and watching local plays.
- Wants his products on large orders. Values safety and privacy. Extremely brand loyal. Prefers email marketing.
- Owns an iPhone and tablet. Shops on this tablet with referrals from email marketing and promotions.
- Personal goals to become a general manager within 5 years and to purchase a suburban home after his wedding and honeymoon.

MAGGIE, 52

DEMOGRAPHICS

- Owns a 4 bedroom home in coastal NC and 2 high end cars. Lives in a suburban gated neighborhood.
- Happily married for 12 years with 2 sons and a house hold income of above \$200,000.

BEHAVIORAL IDENTIFIERS

- Hobbies include reading, playing tennis, networking at the country clubs, being involved in youth groups and visiting the beach.
- Wants a simple product. Values quantity and brand image. Prefers print marketing and bold graphics.
- Owns an iPhone but makes do with a feature phone. 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.

Stage 3: Project Execution

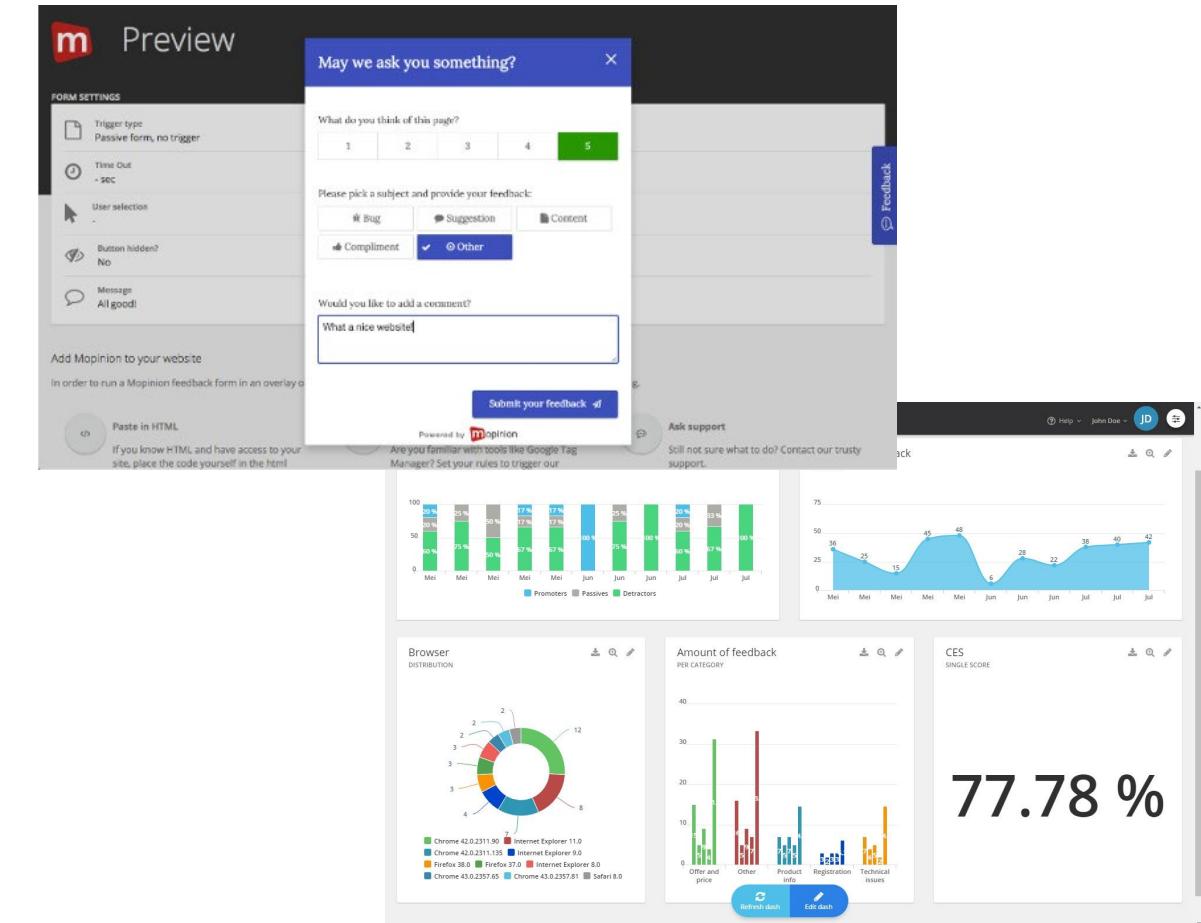
- Executing the project involves producing the deliverables and achieving the milestones that were identified in the project plan.
- Similarly, while the goal of the project will be refined by communications with users, they will not do the work for the project team
- However, they are very helpful for 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 spending too many 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

References

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