

Case Studies in Design Informatics 1

Week 2 – 22nd September 2025

Definitions of Design (Research)

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University Teacher

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What we will do today

- Questions for this week
- Definitions of design (research)
 - Products, Services, Systems
 - User, Human, More-than-Human
 - Usability, Experience, Values
 - Co, Critical, Speculative
- Overview of Coursework 1.1
- Prep work for next week



Questions for this week

Questions for this week

About 98 submissions

Approx. 22,000 words total

Now I know the different types of design research, but I'm still not sure how people apply them.

Can you provide some examples of projects that use or show these design research processes?





SIGCHI

JOURNAL



Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies

The Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT) is a premier journal series for...

MAGAZINE



Interactions

Interactions is a magazine intended for professionals interested in the connections between experiences, people an...

JOURNAL



Proceedings of the ACM on Human-Computer Interaction

The Proceedings of the ACM on Human Computer Interaction (HCI) is a journal series for research relevant to multiple aspects of...

<https://dl.acm.org/sig/sigchi/publications>



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- **Human Factors in Computer Systems (CHI)**
- ACM Conference on Supporting Groupwork (GROUP)
- International Conference on **Tangible, Embedded and Embodied Interaction (TEI)**
- International Conference on **Intelligent User Interfaces (IUI)**
- ACM/IEEE International Conference on **Human Robot Interaction (HRI)**
- Symposium on Eye Tracking Research and Applications (ETRA)
- ACM International Conference on **Interactive Media Experiences (IMX)**
- Collective Intelligence (CI)
- Interaction, Design and Children (IDC)
- ACM SIGCHI Symposium on **Engineering Interactive Computing Systems (EICS)**
- **Designing Interactive Systems Conference (DIS)**
- International Conference on User Modeling, Adaptation, and Personalization (UMAP)
- ACM International Joint Conference on **Pervasive and Ubiquitous Computing (Ubicomp)**
- International Conference on Automotive User Interfaces and Interactive Vehicular Applications (AutomotiveUI)
- ACM Conference on Recommender Systems (RecSys)
- International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI)
- Computer-Supported Cooperative Work (CSCW)
- ACM Symposium on **User Interface Software and Technology (UIST)**
- International Conference on **Multimodal Interaction (ICMI)**
- Symposium on Spatial User Interaction (SUI)
- ACM Symposium and Virtual Reality Software and Technology
- Symposium on Computer-Human Interaction in Play (CHIPLAY)
- Interactive Surfaces and Spaces (ISS)
- **Creativity and Cognition (C&C)**



Lectures

Week	Day	Who	Topic
1 (w/c 18 th Sept)	Mon	JV/SL	Course Introduction + Introduction to Design Thinking
2 (w/c 25 th Sept)	Mon	JV	Research into, for and through Design
3 (w/c 2 nd Oct)	Mon	JV	Ethical Design Practice
4 (w/c 9 th Oct)	Mon	SL	Case Studies in IoT and Sustainability
5 (w/c 16 th Oct)	Mon	SL	Case Studies in XR and Cultural Heritage
6 (w/c 23 rd Oct)	Mon	SL	Case Studies in LLMs and Creative Industries
7 (w/c 30 th Oct)	Mon	JV	Case Studies in Blockchain and Civic Participation
8 (w/c 6 th Nov)	Mon	JV	Case Studies in Autonomous Systems and Ageing
9 (w/c 13 th Nov)	Mon	SL	Probes in Design Research
10 (w/c 20 th Nov)	Mon	JV	Co-Design in Design Research
11 (w/c 27 th Nov)	Mon	SL	Q&A refresher session

JV: John Vines - **SL:** Susan Lechelt

Tutorials

Week	Tutorial
3 (w/c 2 nd Oct)	How to use the ACM Digital Library
4 (w/c 9th Oct)	How to analyse a case study
6 (w/c 23 rd Oct)	Analysis of a case study #1
7 (w/c 30 th Oct)	Analysis of a case study #2
9 (w/c 13 th Nov)	Cultural Probes #1 - Design
10 (w/c 20 th Nov)	Cultural Probes #2 - Feedback



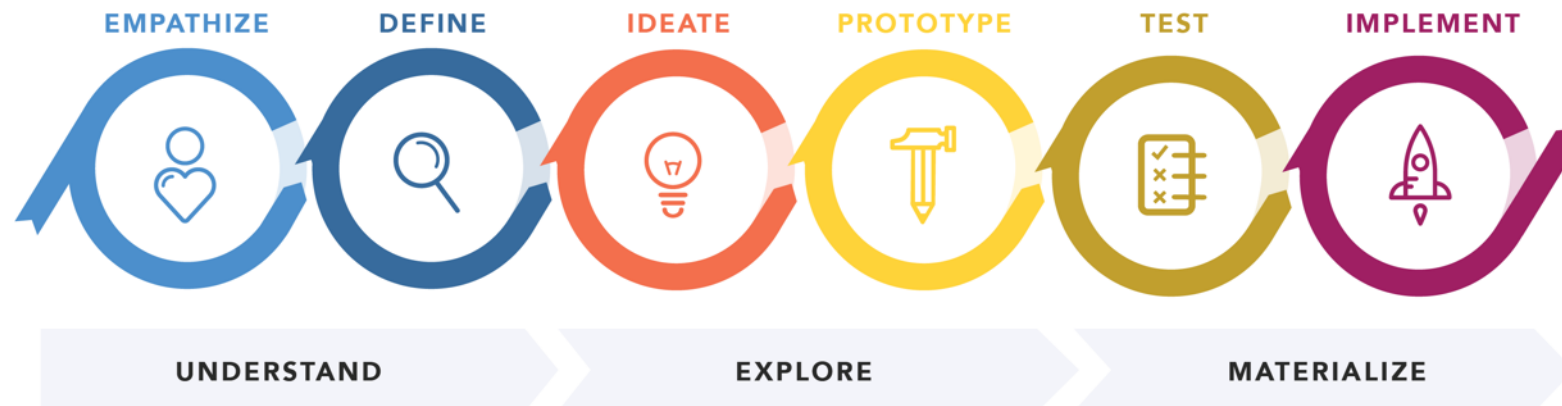
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Research for, into, through Design

Research for Design (RfD) = Design is the *purpose/ end goal*.

You conduct research without designing something. You have the intention of designing something later on, or to pass what you find out to someone else to design something.



Research for Design (RfD) Examples

ACADEMIA

Embrace 'Sleeping Bag'

Stanford d.School - Entrepreneurial Design for Extreme Affordability class

>Come up with a low-cost incubator design that could help save premature babies born into poverty



Extensive field research in low-resource hospitals (needs, constraints, materials) directly informed the product's requirements and iteration—research primarily *to inform the design of the end product*.

INDUSTRY

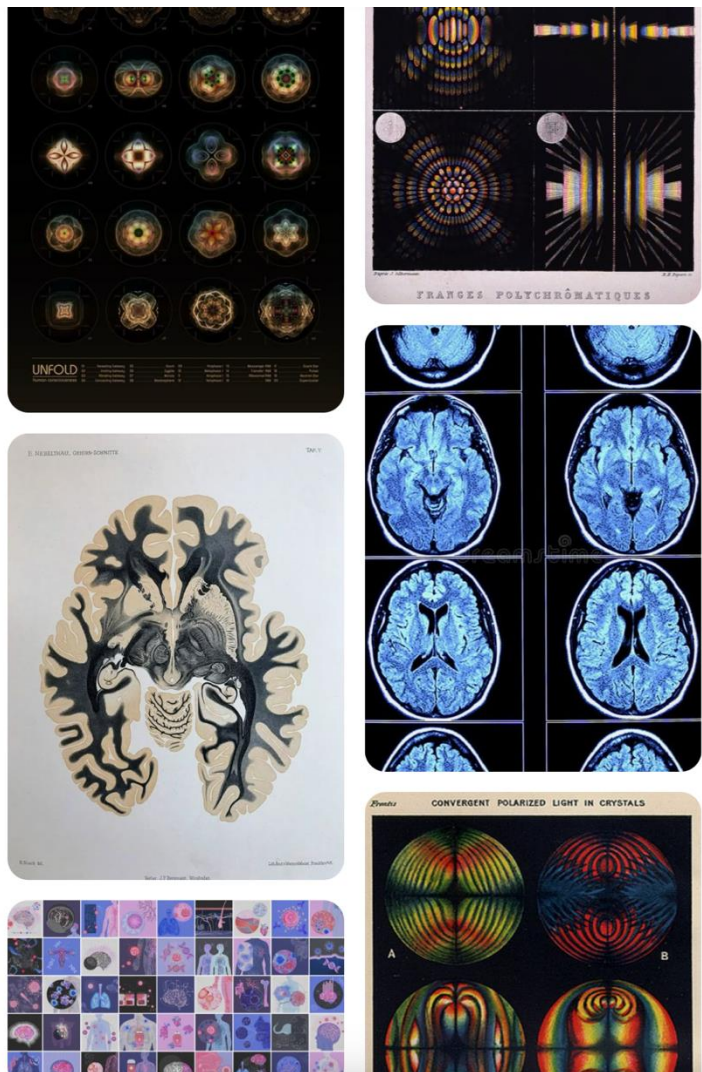
"Keep the Change" Program

Bank of America and IDEO

>Incentivize new customers to open bank accounts



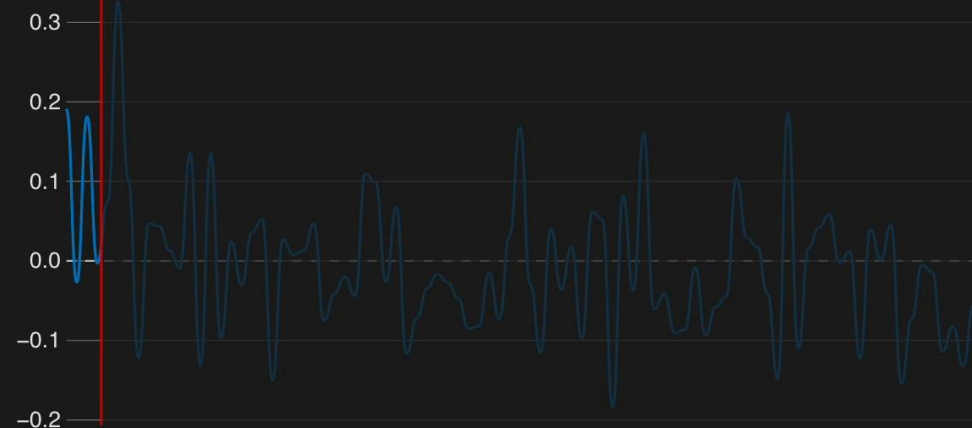
Ethnographic research on saving habits identified a behavioral insight ("rounding up" small amounts) that shaped the final program.



F1 2025 | It's All To Drive For



00:00:03



Adjust timeframe

00:00:00

00:01:30

GROUP ↔ METRIC

Adults 18+

ATTENTION



-0.02

MIN -0.22 MAX 0.36

CONNECTION



-0.06

MIN -0.22 MAX 0.28

ENCODING



-0.00

MIN -0.21 MAX 0.33

IMMERSION



-0.10

MIN -0.35 MAX 0.42

COGNITIVE LOAD



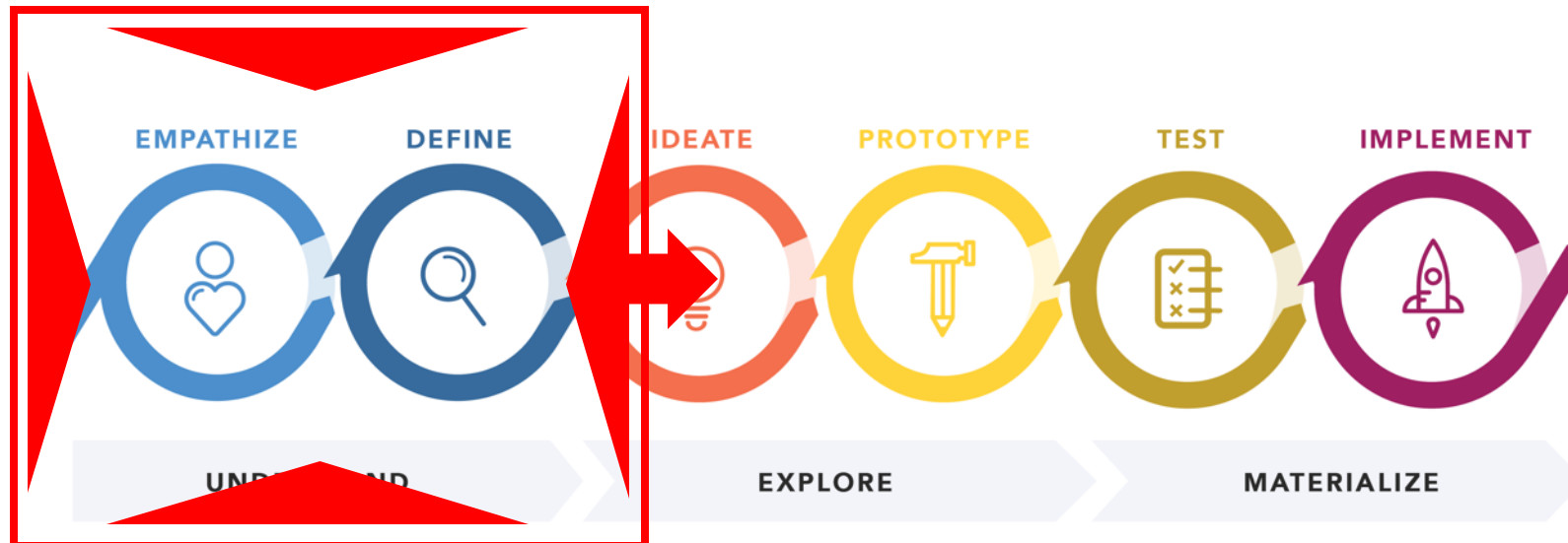
-0.09

MIN -0.28 MAX 0.21

Research for, into, through Design

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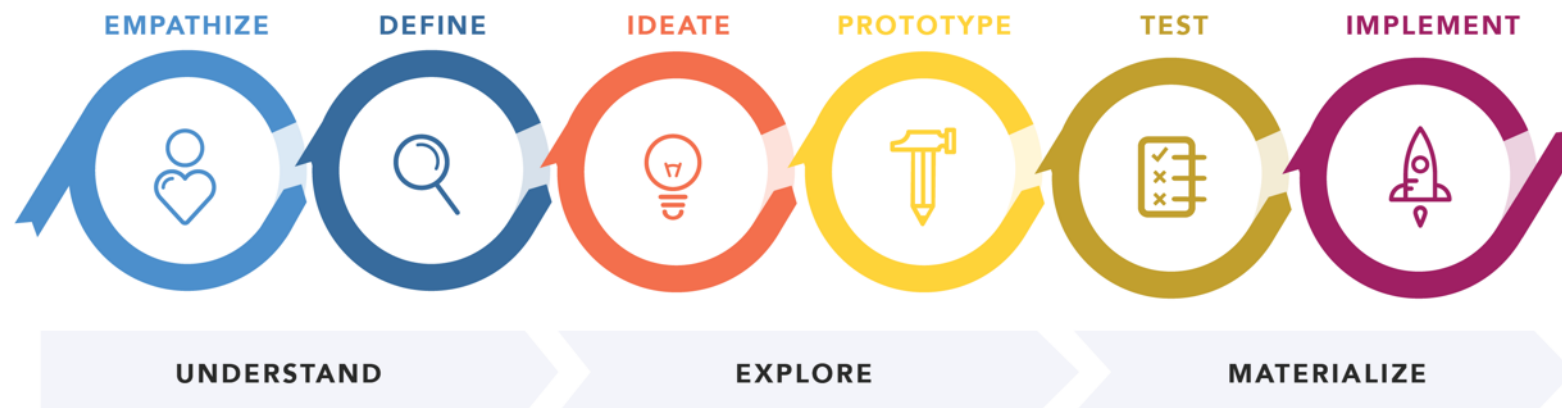
Research for, into, through Design

Research for Design (RfD) = Design is the *purpose/ end goal*.

You conduct research without designing something. You have the intention of designing something later on, or to pass what you find out to someone else to design something.

Research into Design (RiD) = Design is the *subject*.

You conduct research into someone else doing some designing. You have the intention to learn from someone else's design process for your own practice, or you are more interested in understanding how people do design than designing yourself.

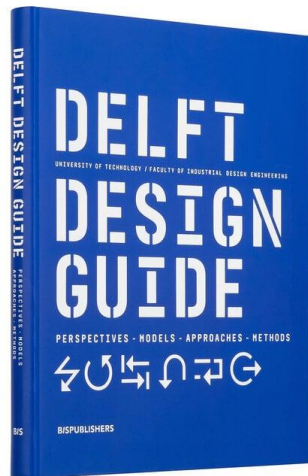


Research into Design (RiD) Examples

ACADEMIA

Delft Design Guide

Bachelor's & Master's in Industrial Design Engineering at Delft University of Technology, Netherlands.



Systematically studies, synthesizes, and teaches design models/methods—knowledge *about the nature and practice of design* rather than for a particular product.

INDUSTRY

People + AI Guidebook

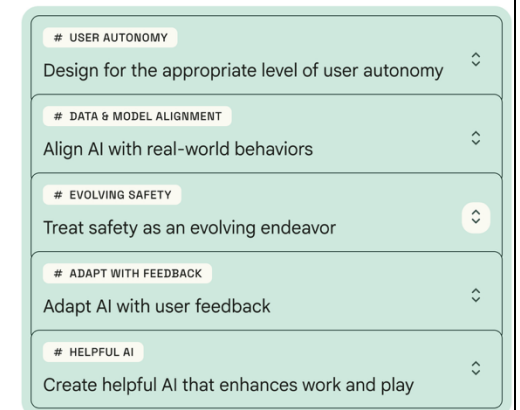
Google PAIR



People + AI Guidebook

A friendly, practical guide that lays out some best practices for creating useful, responsible AI applications.

Consolidates research insights and best practices on designing with AI—an inquiry *into* how design should approach AI systems, not a single product brief.





and sketch the macro structure of our storytelling piece.

0:58

Creative Data Visualization for Narrative Designs - Course by Federica Fragapane | Domestika English

2.4K views • 2 years ago



Domestika English

Embrace the expressiveness of shapes to turn important information into meaningful graphics that tell stories and resonate with an ...



and breath and work with all these

3:52

SKILLSHARE

Graphic Designer Aaron Draplin (DDC) on Logo Design: How to Create Wordmarks -- Class Excerpt

49K views • 6 years ago



Skillshare

Graphic design icon Aaron Draplin shares tried and true techniques for customizing type for better logo designs – an essential ...





Design Discipline

What does "design research" mean?

Design Research

1x



0:00



-24:20



5



What does "design research" mean?

Design research has 3 faces: research for, into, and through design

M.A. BAYTAŞ

APR 15, 2021



5



Share



Design Discipline

independent design research

Type your email...

Subscribe

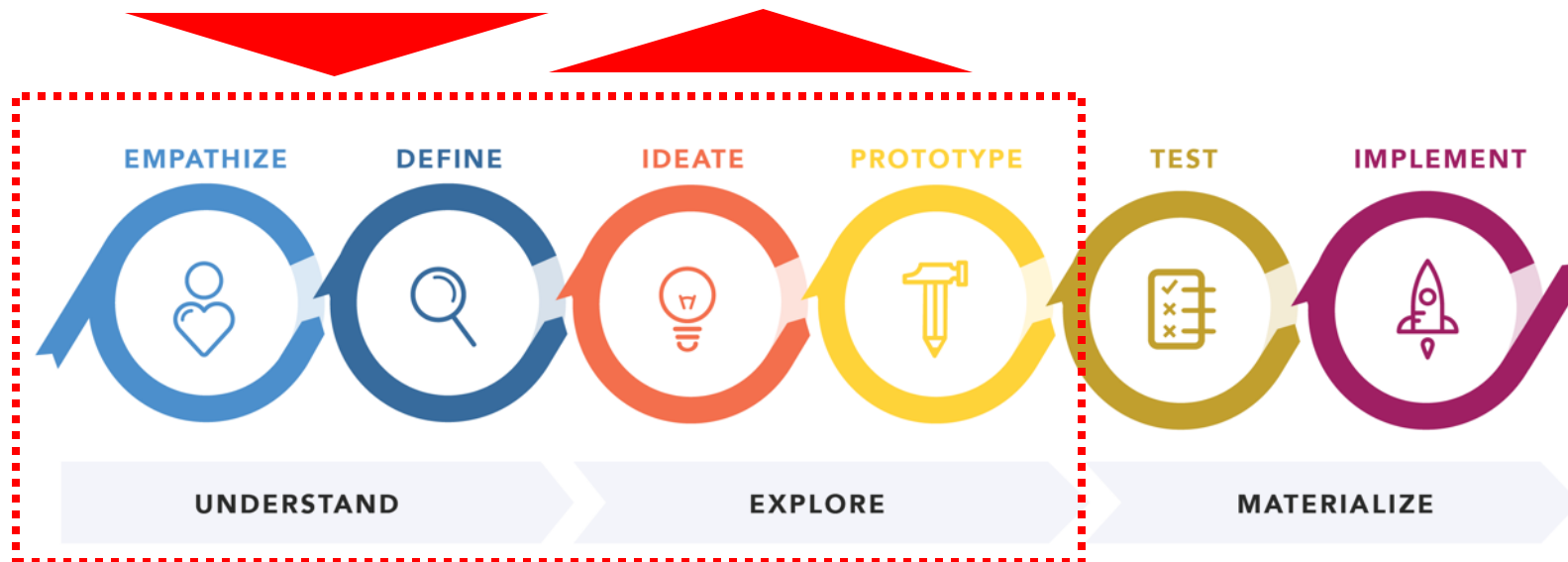
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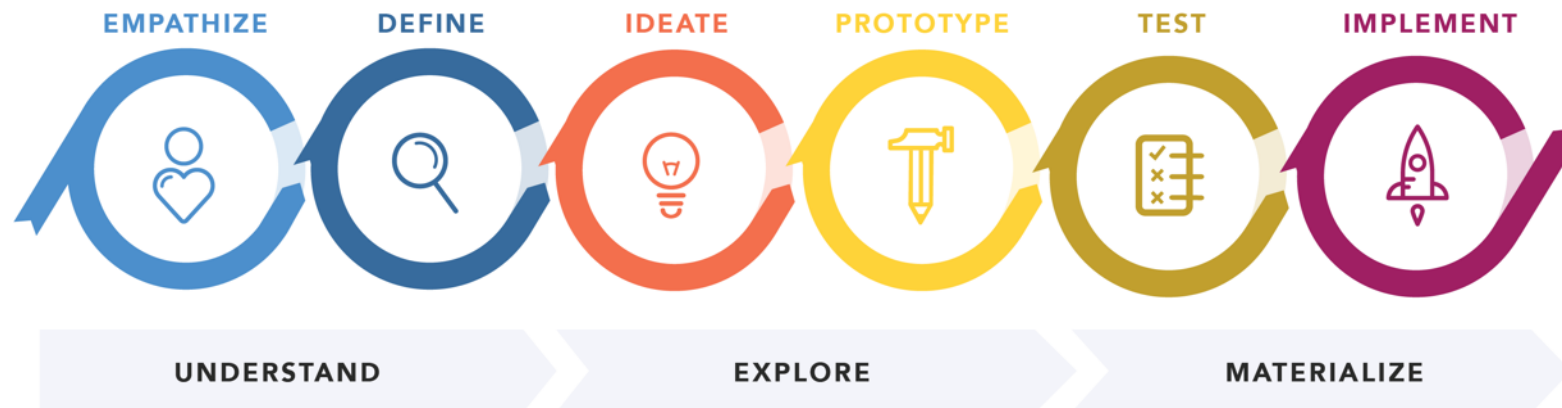
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Research through Design (RiD) = Design is the *method*.

You conduct research as part of an iterative design process. You realise / materialise / represent aspects of a design and use research (e.g., engagements with users) to develop your ideas and design as you go along, eventually leading to a refined design.



Research through Design (RtD) Examples

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DFAB House

ETH Zurich researchers in collaboration with industry partners



First inhabited 'house' that was not only digitally planned, but also – with the help of robots and 3D printers, built largely digitally.

ACADEMIA/ INDUSTRY

Reef Design Lab

ETH Zurich researchers in collaboration with industry partners



Built and deployed modular, diver-assembled reef lattices as experimental substrates to compare materials and attachment methods; to learn what forms/materials support colonization.



Research for, into, through Design

Research for Design (RfD) = Design is the *purpose/ end goal*.

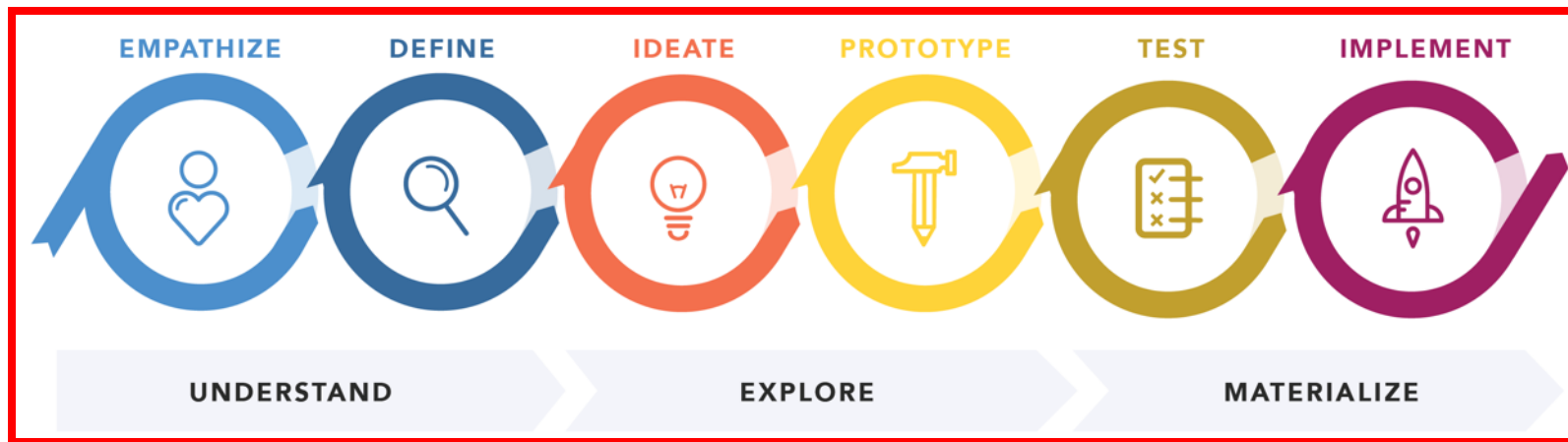
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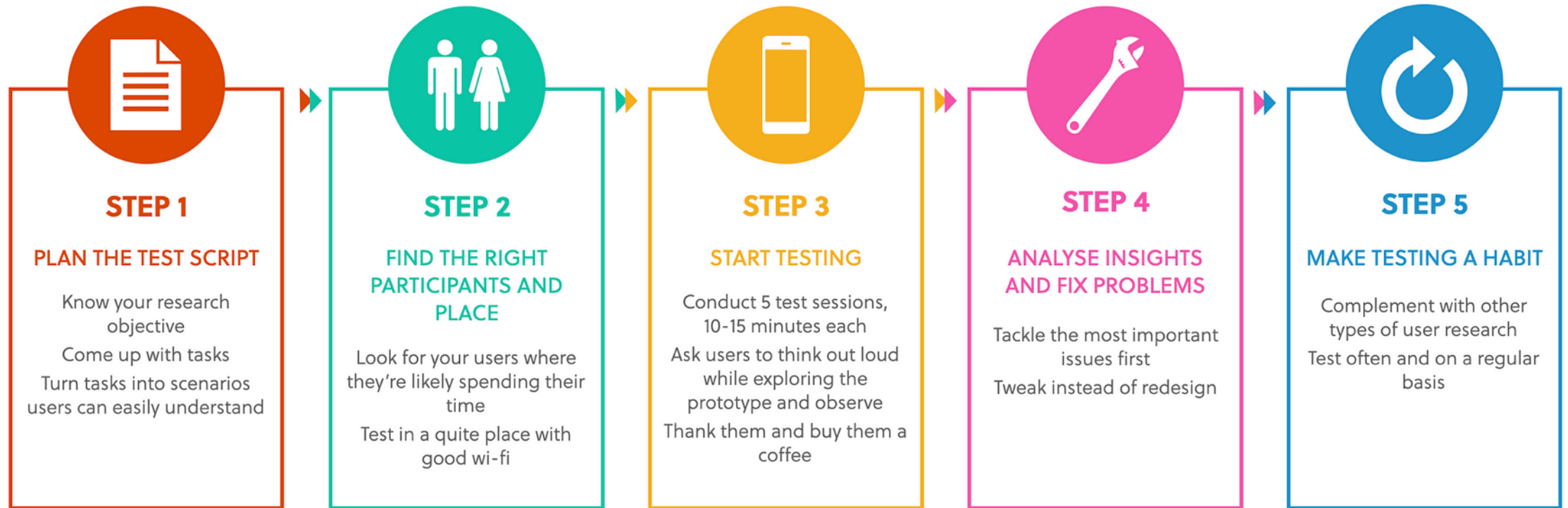
You conduct research as part of an iterative design process. You realise / materialise / represent aspects of a design and use research (e.g., engagements with users) to develop your ideas and design as you go along, eventually leading to a refined design.



*What can help determine when to
prioritize "quick and dirty" research
methods over more formal approaches
in high-stakes design projects?*



GUERRILLA USABILITY TESTING



Why You Only Need to Test with 5 Users

Summary: Elaborate usability tests are a waste of resources. The best results come from testing no more than 5 users and running as many small tests as you can afford.

By [Jakob Nielsen](#) on March 18, 2000

Topics: [User Testing](#)

Share this article:



Nielsen. 2000. <https://www.nngroup.com/articles/why-you-only-need-to-test-with-5-users/>

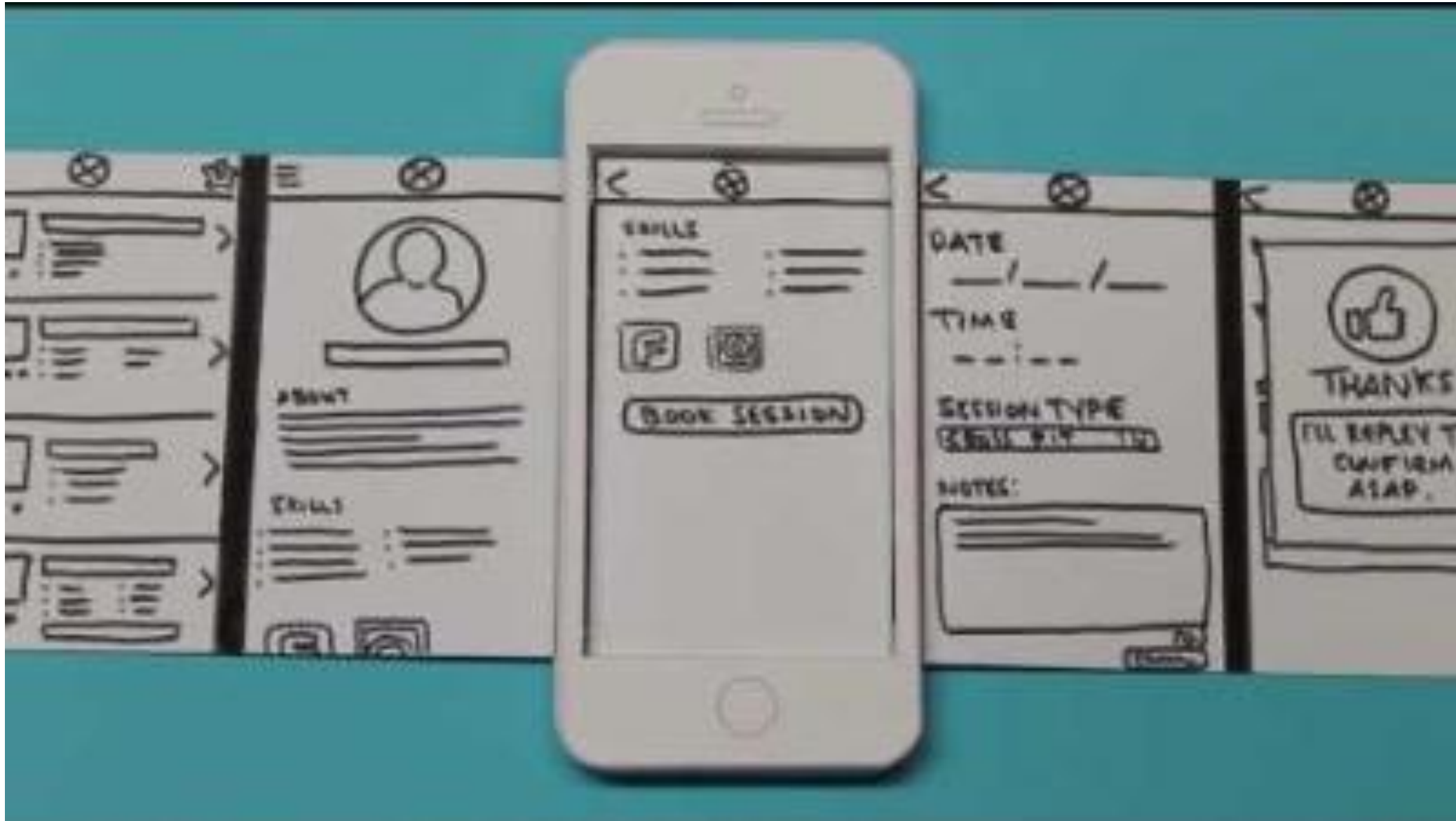
Xperienz. 2021.

<https://medium.com/@xperienzRD/quick-dirty-user-research-50cf641b47c4>



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<https://www.youtube.com/watch?v=y20E3qBmHpg>



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Cormac Reidy, 2017

design
informatics

What does the article mean when it talks about the need to avoid being too methodical (RfD) or not methodical enough (RtD)?



*What does the article mean when it talks about the need to **avoid being too methodical** (RfD) or not methodical enough (RtD)?*



What does the article mean when it talks about the need to avoid being too methodical (RfD) or not methodical enough (RtD)?



How do we know what the best method is for a particular project?

**Most
asked
question!**



Let's jump into Miro!

https://miro.com/app/board/uXjVLdYIsAw=/?share_link_id=939980948872



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Activity 1!: 10 minutes

In the Miro ...

... write down examples of research and design methods you know of.



Activity 1!: 10 minutes

In the Miro ...

... write down examples of research and design methods you know of.

... add these to where in the process illustrated here you think they fit.



Take a break!
Back at 16:05



Definitions of design

Defining design in relation to what type of thing is being made

Product Design / Interaction Design

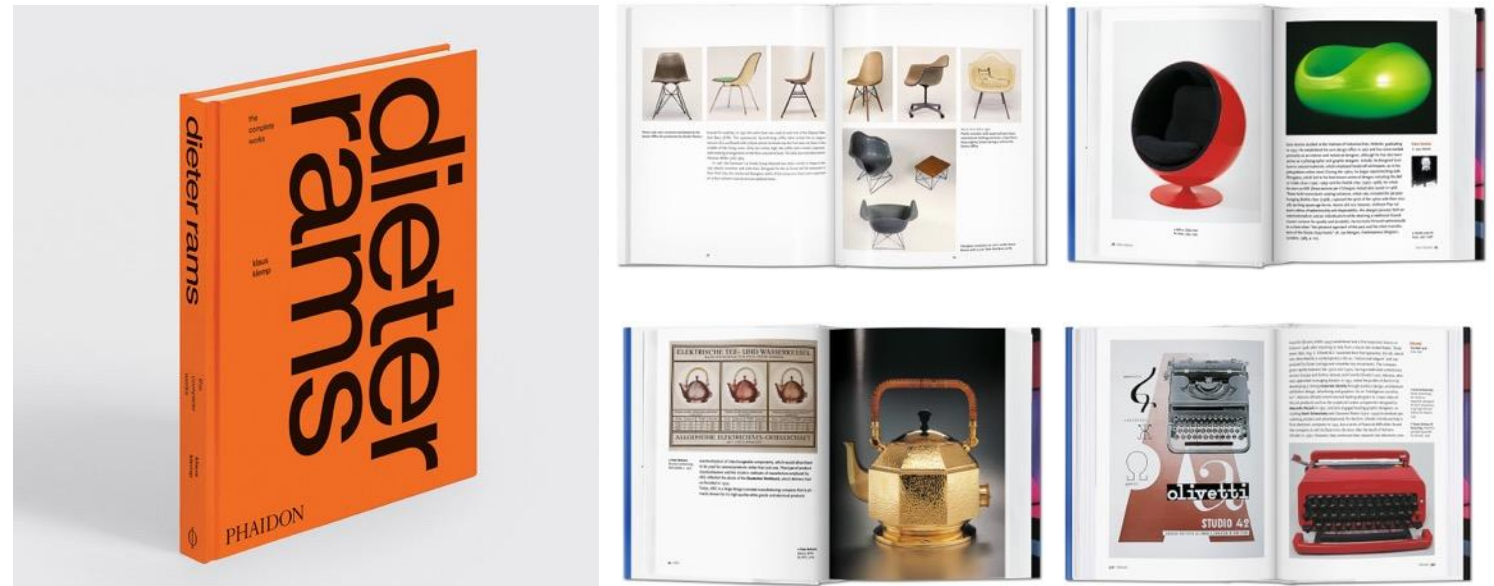
Service Design

Systemic Design

Key references:

- Norman. 2013. The Design of Everyday Things. Revised and Expanded Edition. MIT Press.

Example: Products designed by Dieter Rams. From: Klemp. 2020. Dieter Rams: The Complete Works. Phaidon.



Defining design in relation to what type of thing is being made

Product Design / Interaction Design

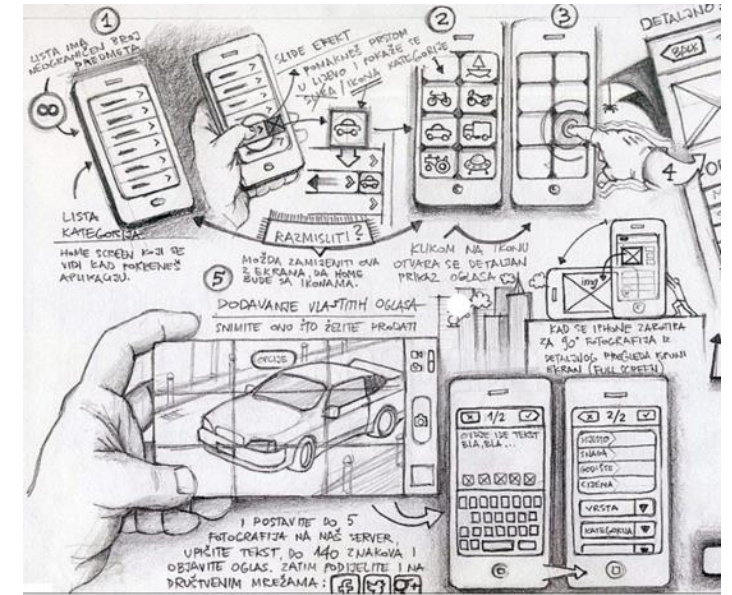
Service Design

Systemic Design

Key references:

- Moggridge. 2006. Designing Interactions. MIT Press.

Example: Any projects focused on designing mobile apps



When engaging in product or interaction design, you are primarily interested in how people interact with, use and experience the “artefact” you have designed

Defining design in relation to what type of thing is being made

Product Design /
Interaction Design

Service Design

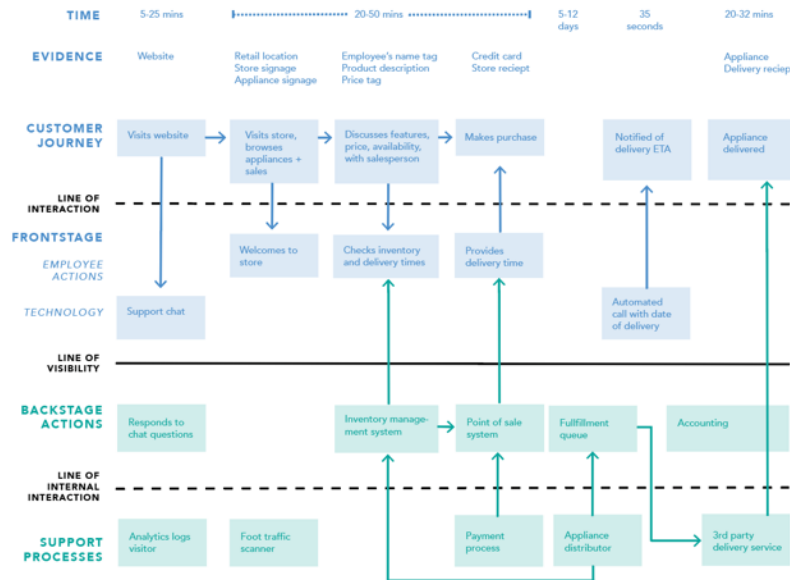
Systemic Design

Key references:

- Stickdorn. 2014. This is Service Design Thinking. BIS Publishers.

Example: Gibbons. 2017. Service Blueprints.

<https://www.nngroup.com/articles/service-blueprints-definition/>



When engaging in services design, you are interested in the multiple ways people may use a service (multiple “artefacts”) and how these are embedded in an organisations service

Defining design in relation to what type of thing is being made

Product Design /
Interaction Design

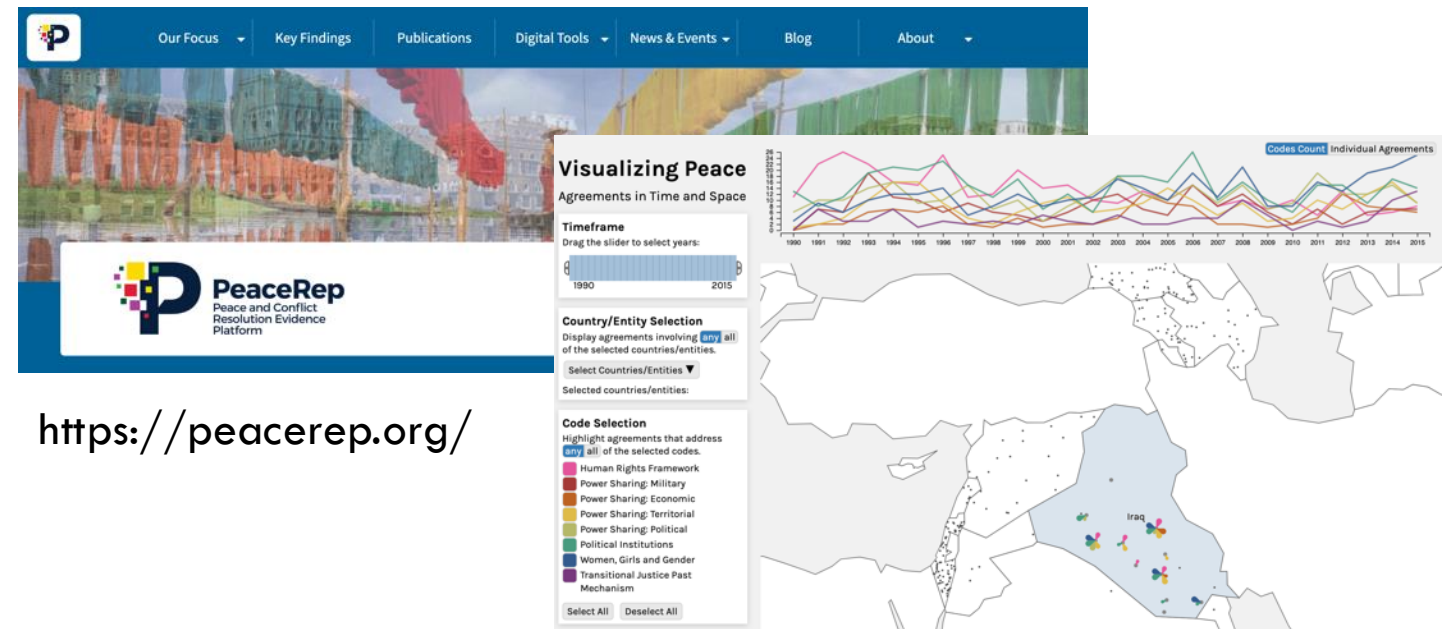
Service Design

Systemic Design

Key references:

- Drew, Robinson and Winhall. 2021. System-shifting design: An emerging practice explored.
<https://www.designcouncil.org.uk/fileadmin/uploads/dc/Documents/Systemic%2520Design%2520Report.pdf>

Example: Peace and Conflict Resolution Platform



<https://peacerep.org/>

When engaging in systemic design, you are interested in how different “artefacts” might be designed to change the attitudes, beliefs or practices of a collective or group of people

Defining design in relation to what is at the centre of the process

User-centered design

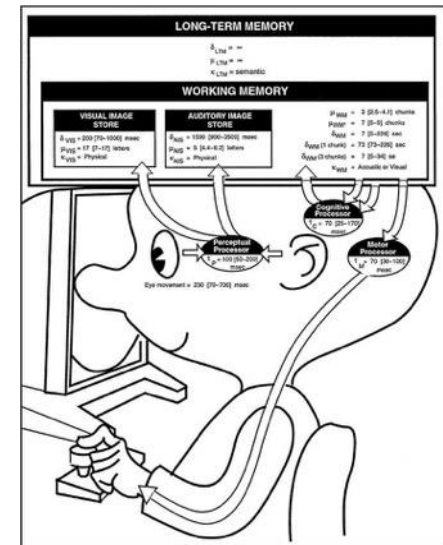
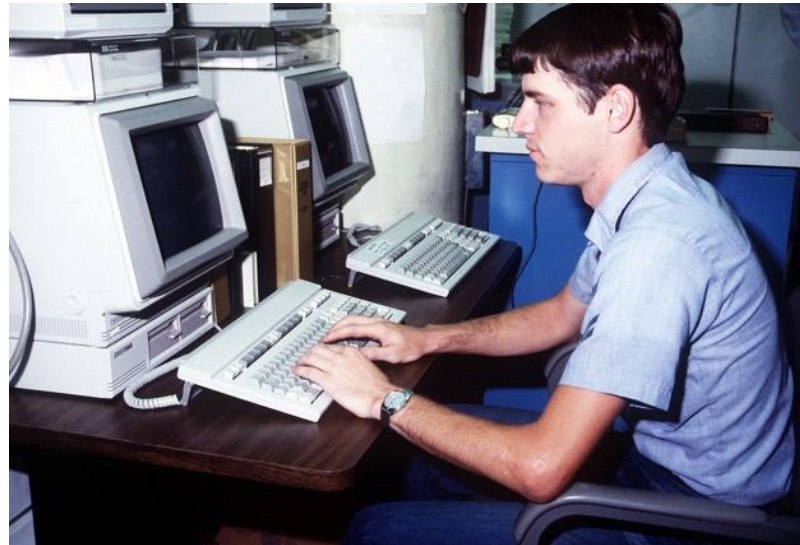
Human-centered design

More than human centered design

Key references:

- Sharp, Rogers and Preece. 2019. Interaction design: Beyond the interface. Wiley-Blackwell.

Example: Card, Thomas, Newell. 1983. The Psychology of Human Computer Interaction. Lawrence Erlbaum



When engaging in user centered design, you try to focus on understanding the goals, tasks and aims of the intended user. Historically this has focused on workplaces and individual users.

Defining design in relation to what is at the centre of the process

User-centered design

Human-centered design

More than human
centered design

Key references:

- IDEO. 2015. The Field Guide to Human-Centered Design.
<https://www.designkit.org/resources/1.html>

Example: IDEO. 2015. DESIGN KIT.

<https://www.designkit.org/methods.html>



*When engaging in human centered design (HCD), you are interested in not just a person's tasks, but their emotions, aspirations, and unmet needs.
HCD was adopted as technology moves from workplaces to all manner of everyday situations.*

Defining design in relation to what is at the centre of the process

User-centered design

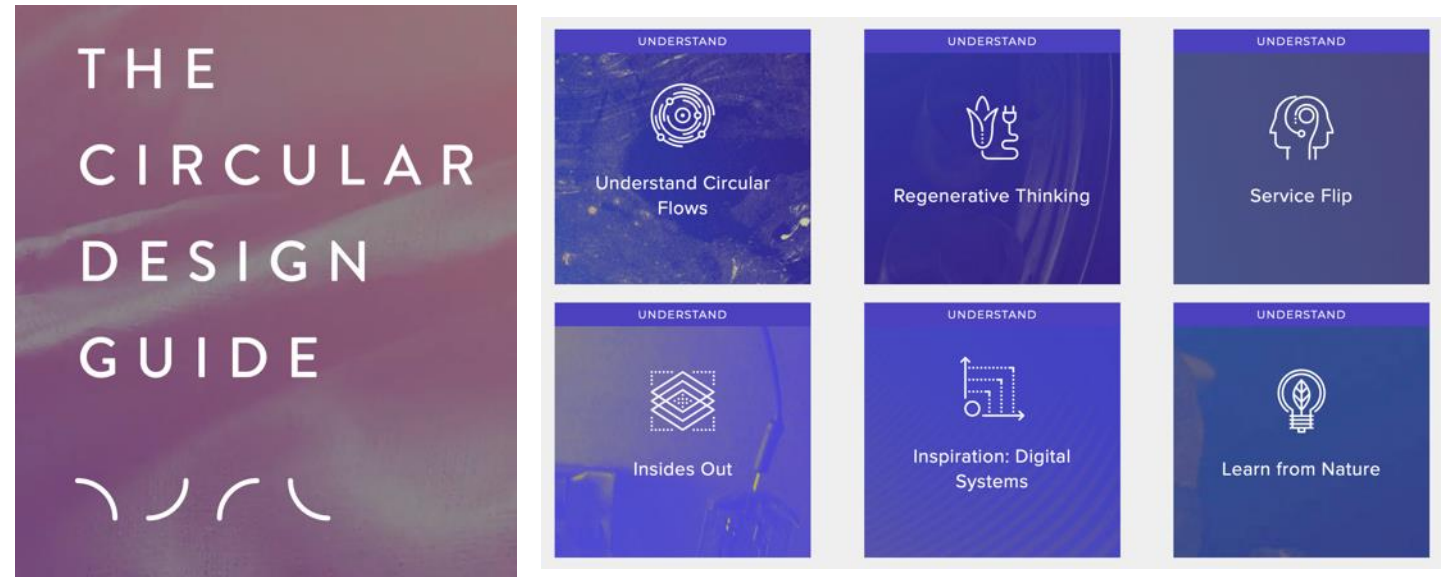
Human-centered design

**More than human
centered design**

Key references:

- Wakkary. 2021. Things we could design: For more than human centered worlds. MIT Press.

Example: Ellen MacArthur Foundation. 2018. Circular Design Guide. <https://www.circulardesignguide.com/>



When engaging in more than human centered design, you look at the wider implications for any new design on the environment, on other lifeforms, and long-term effects.

Defining design in relation to what is being enhanced

Usability

User experience /
Experience design /
Experience-centered design

Value sensitive design

Key references:

- Nielsen Norman Group.
<https://www.nngroup.com/topic/web-usability/>

Example: Nielsen. 2012. Usability 101.

<https://www.nngroup.com/articles/usability-101-introduction-to-usability/>

Usability is defined by **5 quality components**:

- **Learnability:** How easy is it for users to accomplish basic tasks the first time they encounter the design?
- **Efficiency:** Once users have learned the design, how quickly can they perform tasks?
- **Memorability:** When users return to the design after a period of not using it, how easily can they reestablish proficiency?
- **Errors:** How many [errors](#) do users make, how severe are these errors, and how easily can they recover from the errors?
- **Satisfaction:** How pleasant is it to use the design?

When focused on usability, you are interested in designing interfaces that are efficient to use, and work in a way a user would expect them to.

Defining design in relation to what is being enhanced

Usability

User experience /
Experience design /
Experience-centered design

Value sensitive design

Key references:

- Sharp, Rogers and Preece. 2019. Interaction design: Beyond the interface. Wiley-Blackwell.

Example: Sharp, Rogers and Preece. 2019. Interaction design: Beyond the interface. Wiley-Blackwell.

Desirable aspects		
Satisfying	Helpful	Fun
Enjoyable	Motivating	Provocative
Engaging	Challenging	Surprising
Pleasurable	Enhancing sociability	Rewarding
Exciting	Supporting creativity	Emotionally fulfilling
Entertaining	Cognitively stimulating	Experiencing flow
Undesirable aspects		
Boring	Unpleasant	
Frustrating	Patronizing	
Making one feel guilty	Making one feel stupid	
Annoying	Cutesy	
Childish	Gimmicky	

When focused on user experience, you are trying to go beyond just making something usable, and considering how a design might delight someone, provoke them to engage.

Defining design in relation to what is being enhanced

Usability

User experience /
Experience design /
Experience-centered design

Value sensitive design

Key references:

- Friedman. 2019. Value Sensitive Design: Shaping Technology and Moral Imagination. MIT Press

<https://vsdesign.org/>

Example: Friedman, Hendry. 2012. The envisioning cards: a toolkit for catalyzing humanistic and technical imaginations. Proc. CHI 2012.

<https://doi.org/10.1145/2207676.2208562>



When focused on values, you are dealing with the complexity of the values and ethics (i.e., priorities, assumptions) of many different stakeholders, and long-term adoption.

Defining design in relation to *an ethical stance*

Co-design /
Participatory design /
Co-creation

Critical design

Speculative design /
Design fiction

Key references:

- Sanders, Stappers. 2008. Co-creation and the new landscapes of design. Co-design.
<https://www.tandfonline.com/doi/full/10.1080/15710880701875068>

Example: McNaney et al. 2017. DemYouth: Co-Designing and Enacting Tools to Support Young People's Engagement with People with Dementia

<https://dl.acm.org/doi/10.1145/3025453.3025558>



When taking a co-design stance, you prioritise the involvement of people affected by introduction of a new product, service, system in the design decision making process.

Defining design in relation to an ethical stance

Co-design /
Participatory design /
Co-creation

Critical design

Speculative design /
Design fiction

Key references:

- Dunne, Raby. 2013. Speculative Everything. Design Fiction and Social Dreaming. MIT Press.

Example: Dunne, Raby. 2009. Designs for an overpopulated planet: Foragers.



When taking a critical design stance, you prioritise design's role to question "taken for granted" technological, political and social developments, and focus on provoking audiences' imaginations.

Defining design in relation to an ethical stance

Co-design /
Participatory design /
Co-creation

Critical design

Speculative design /
Design fiction

Key references:

- Coulton, Lindley, Cooper. 2018. The little book of design fiction for the internet of things.
https://www.research.lancs.ac.uk/portal/files/259562831/Little_Book_of_Design_Fiction.pdf

Example: Bleeker. 2015. An IKEA catalogue from the near future.
<https://medium.com/design-fictions/an-ikea-catalog-from-the-near-future-e293938148bc>



When taking a speculative design stance, you place emphasis on representing exploring future scenarios where emerging technologies are adopted to stimulate engagement with stakeholders now

Let's go back into Miro!

https://miro.com/app/board/uXjVLdYIsAw=/?share_link_id=939980948872



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Activity 2!: 10 minutes

In the Miro ...

Which of the examples of different design approaches are you most familiar with?

Which of the examples of different design approaches would you like to find out more about?

Go out on the Internet... find an example of this approach....



Some final reflections

- You can see a general trend over time from “*designing for one person and one thing*” to “*designing for many people connected to many things within a complex social and environmental context*”.
- These different definitions and approaches are not mutually exclusive or “either / or”.
 - For e.g., You can use co-design as part of human centered approaches, or as part of value sensitive design processes.
 - For e.g., You can design for both usability and user experience
 - For e.g., You may want to support systemic change through systemic design, but the designs you use as part of that need to be efficient to use
- Authors of papers and practitioners that share their work online might not actually “define” what type of design approach they take – you often need to analyse and interpret this
- There is a lot of mis-use of some of these terms – especially user centered / human centered, and usability / user experience

Critical reading (and writing)

Don't ever simply accept what a paper says.

No matter who wrote the paper, or where it is published, or who recommended it: ***always question.***

Critique is the foundation of all academic study:

- Ask yourself: do I understand this?
- If not, it might be just because it isn't clear! See if you can rephrase it more clearly. Ask a friend, or ChatGPT, etc., to rephrase it. Does it make more sense?
- Ask yourself: do I agree with this?
- If so, why?
- If not, why not?
- Is there other research that agrees/disagrees with it, or with your opinion?
 - Use Google Scholar (<https://scholar.google.com>), the ACM Library, etc.
- Get into the habit of following things up ...
 - ... and keep notes, so that you can refer to what you have found, and what you have thought, in your writing later
- In your writing, construct an ***argument*** for your own conclusions, informed by your reading
- Critique your own argument using the same process

What we've covered so far.... the basics

In Week 1:

- 3 different ways to view the role of data in design
- High-level overviews of design processes / key qualities

In Week 2:

- 3 different ways to see the role of research in design processes
- Examples of research and design methods and mapped these onto design processes
- 12 different definitions of design