

Case Studies in Design Informatics 1 - INFR11094

Week 2 – 23rd September 2024

Definitions of Design (Research)

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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

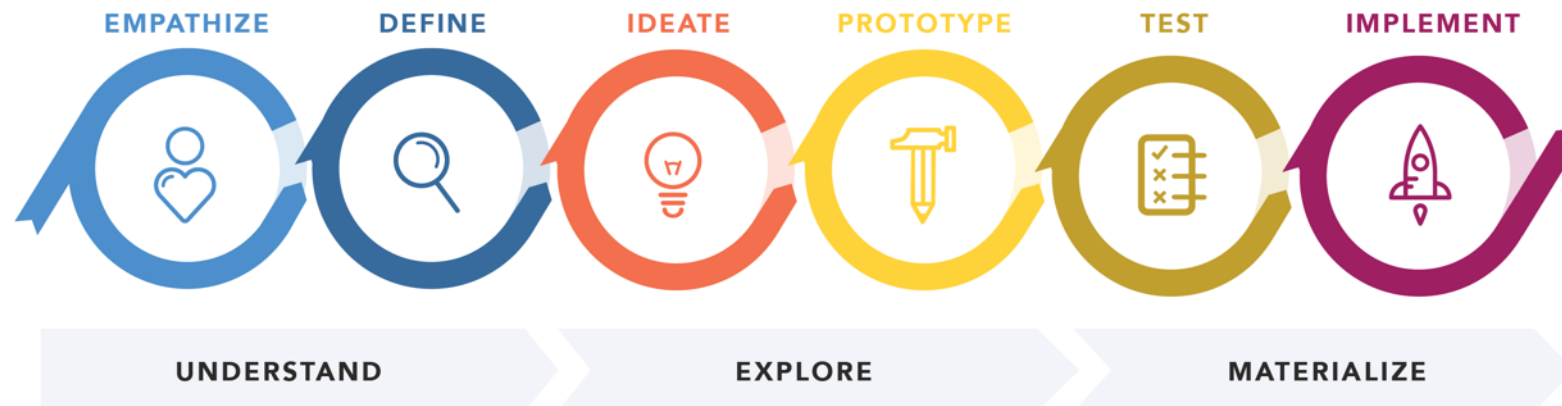
Questions for this week

About 70 submissions

Approx. 5000 words (just for questions...)

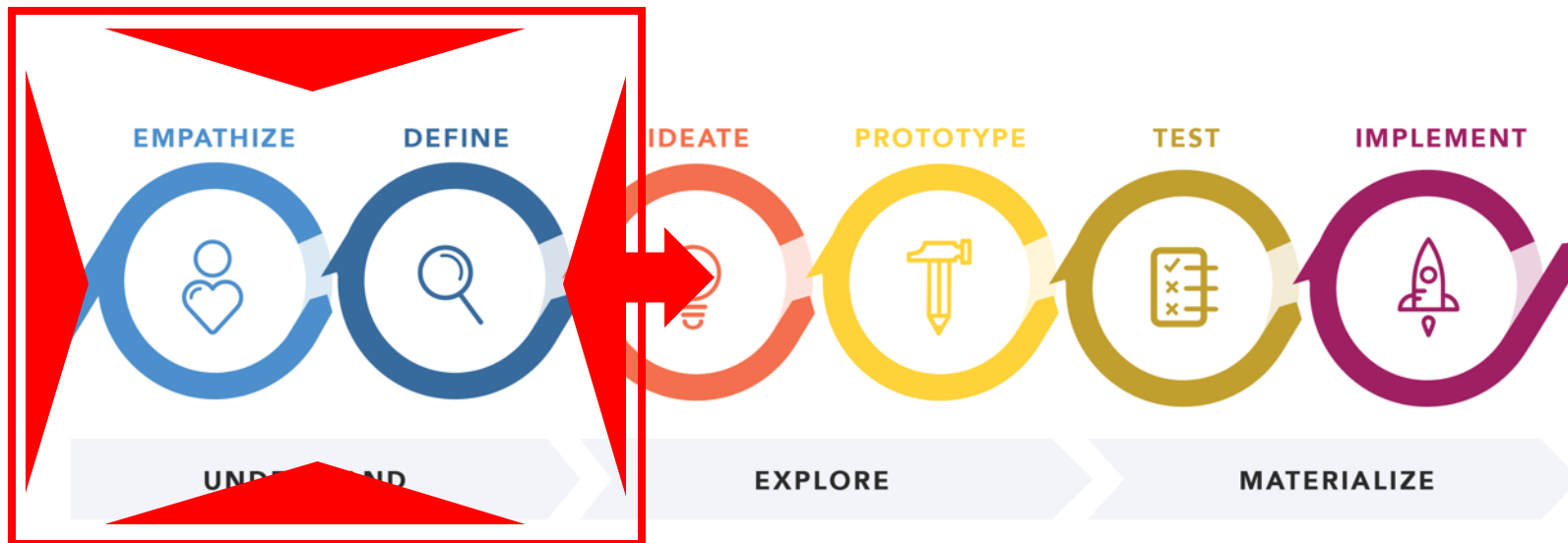
Research for, into, through Design

RfD = 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, into, through Design

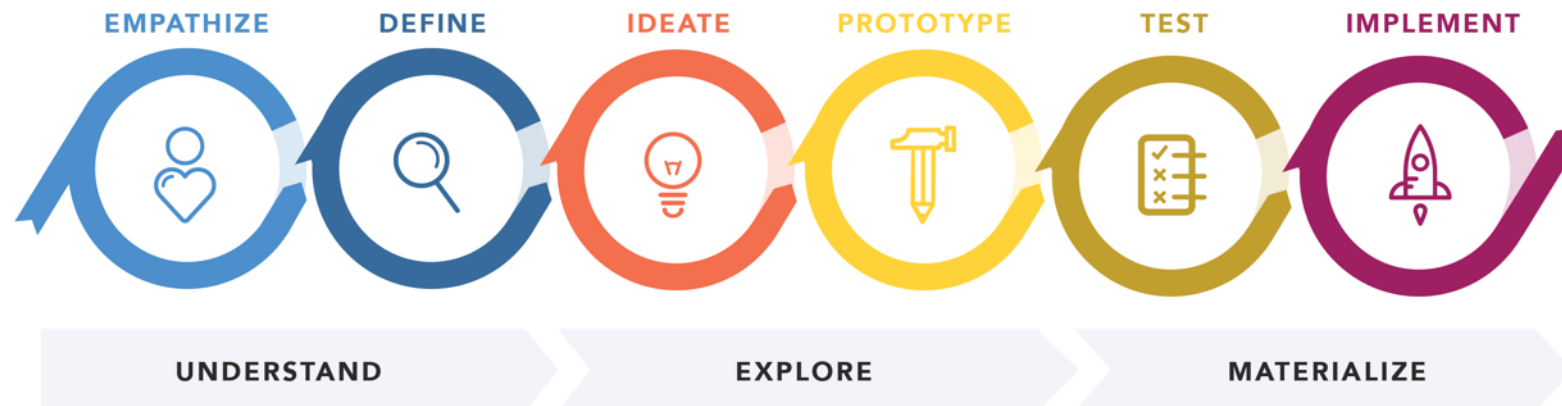
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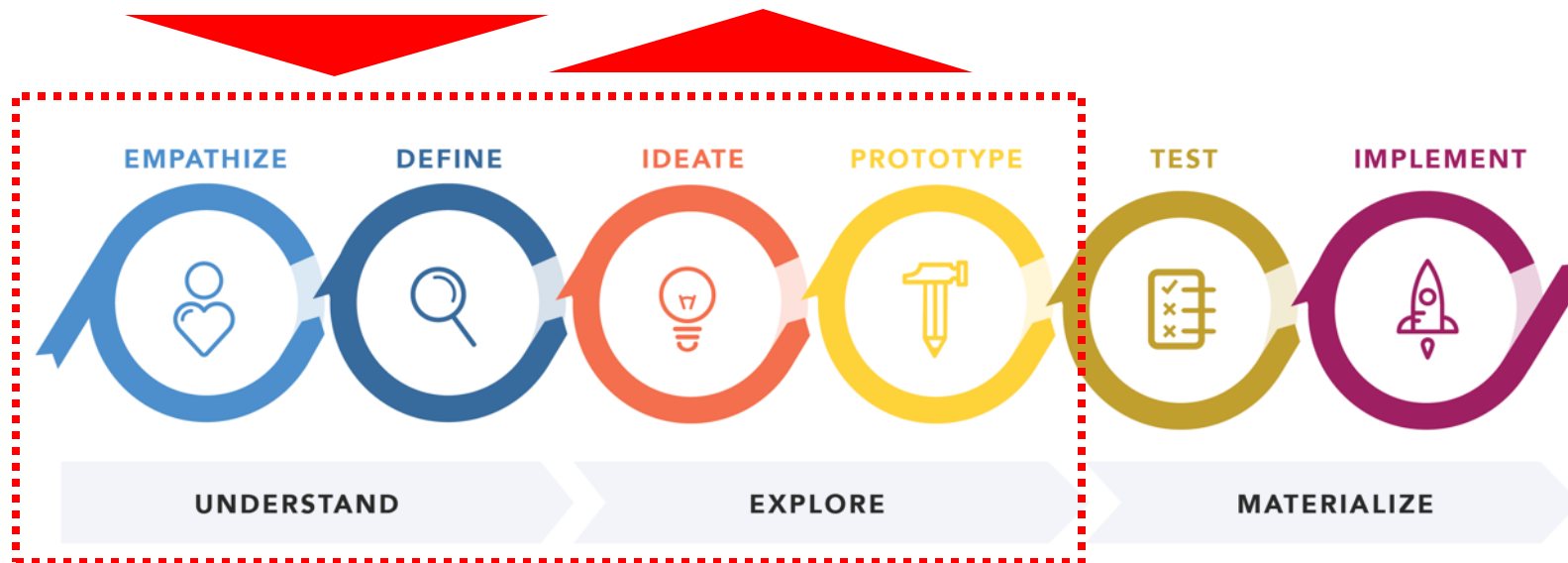
RiD = You conduct research into someone else doing some designing. You have the intention to learn from someone else's design process for your own practice, or you are more interested in understanding how people do design than designing yourself.



Research for, into, through Design

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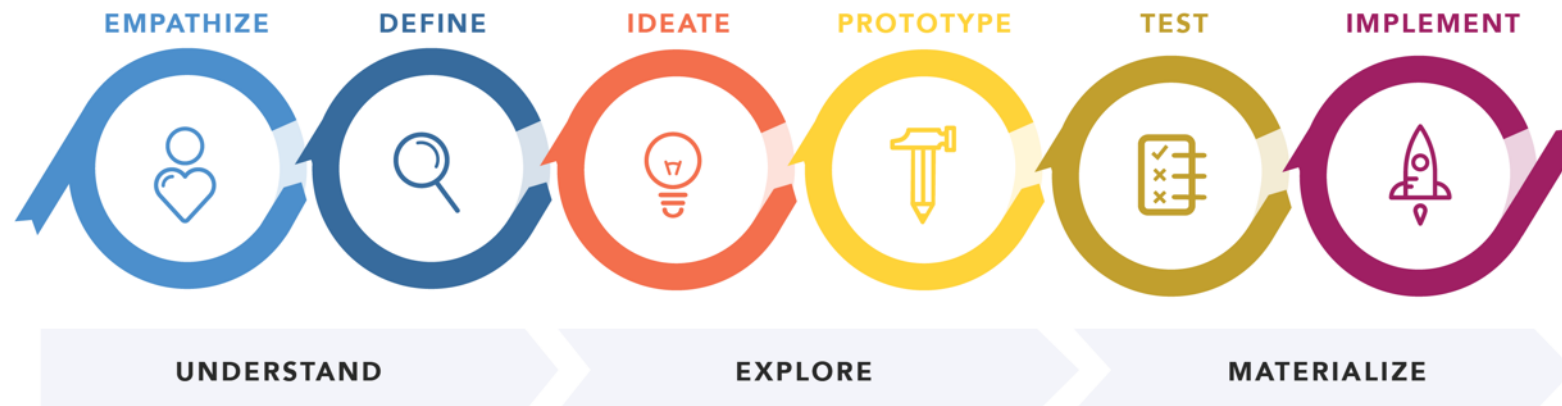


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RiD = You conduct research into someone else doing some designing. You have the intention learn from someone else's design process for your own practice, or you are more interested in understanding how people do design than designing yourself.

RtD = 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.

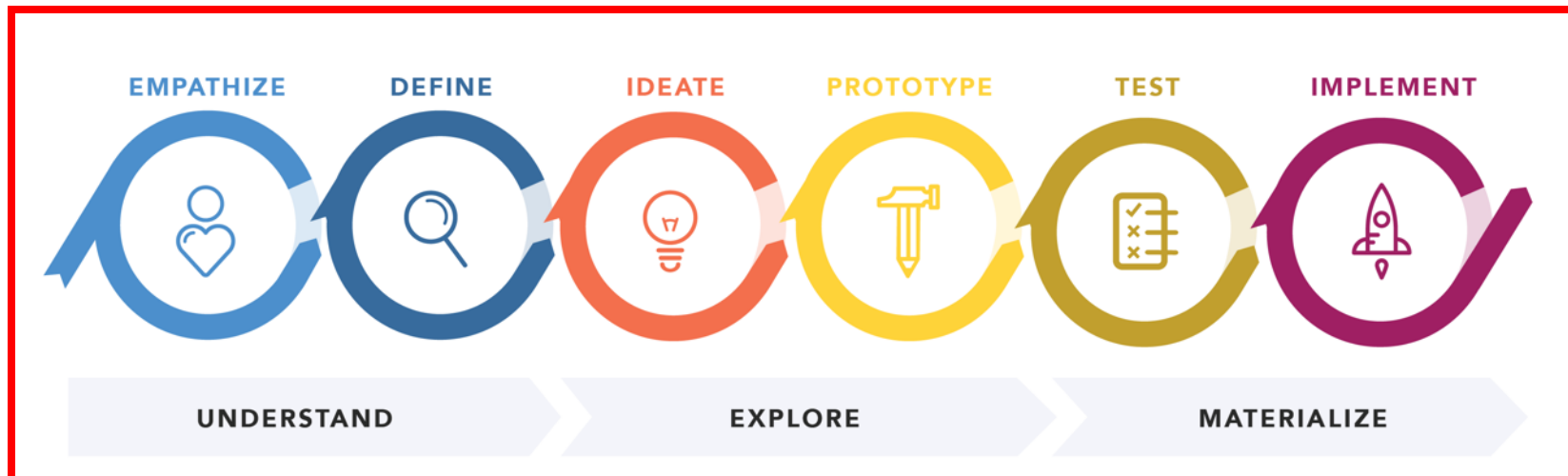


Research for, into, through Design

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RtD = You conduct research as part of an iterative design process. You realise / materialize / 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.



*These concepts (RfD, RiD and RtD)
seem similar to Design from, with, by
Data. Are they related?*



Design Informatics: is about design + data

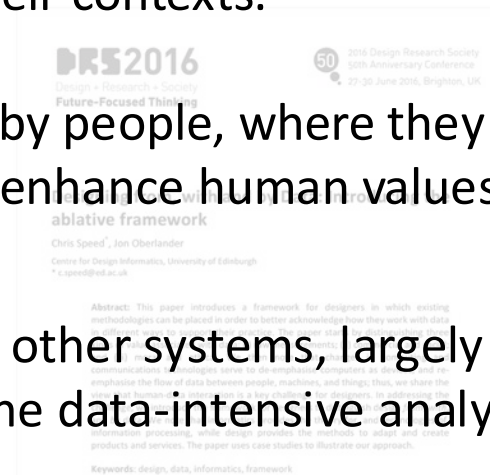
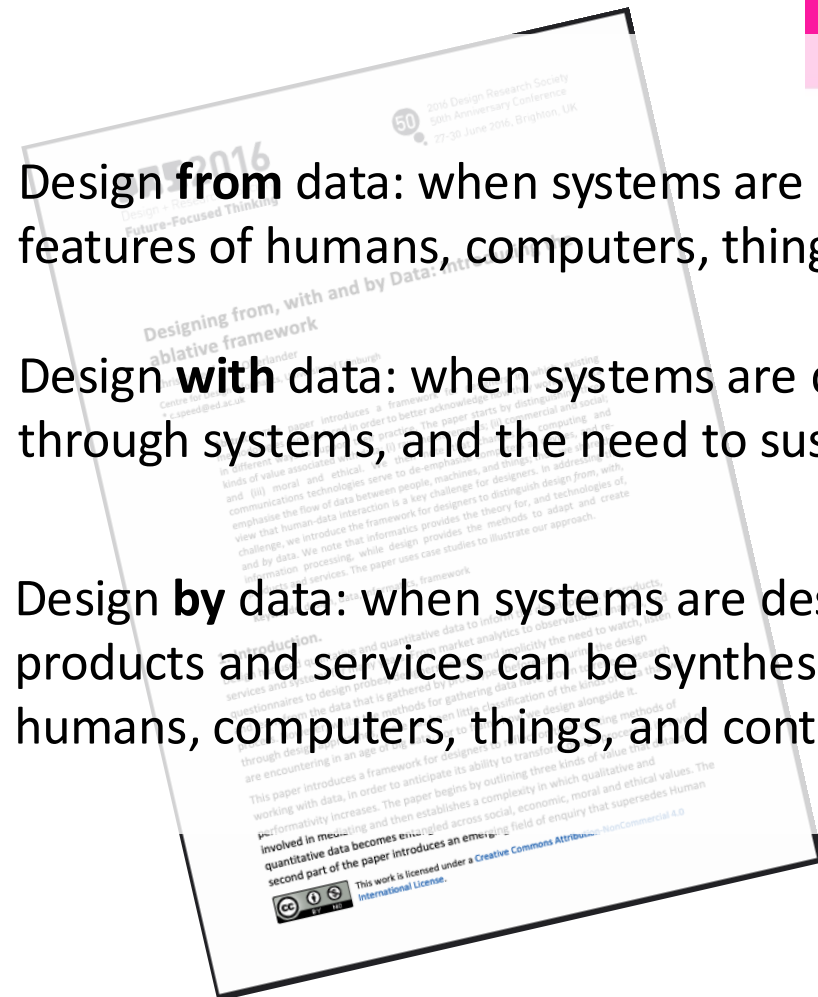
It's about design + data

DESIGNING FROM, WITH AND BY DATA: INTRODUCING THE ABLATIVE FRAMEWORK

Design **from** data: when systems are designed by people, where they are inspired by measurable features of humans, computers, things, and their contexts.

Design **with** data: when systems are designed by people, where they take into account the flows of data through systems, and the need to sustain and enhance human values.

Design **by** data: when systems are designed by other systems, largely autonomously, where new products and services can be synthesised via the data-intensive analysis of existing combinations of humans, computers, things, and contexts.



DESIGNING FROM, WITH AND BY DATA: INTRODUCING THE ABLATIVE FRAMEWORK

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Keywords: design, data, informatics, framework

Abstract

This paper introduces a framework for designers in which existing methodologies can be placed in order to better acknowledge how they work with data in different ways in their practice. The paper starts by distinguishing three kinds of value associated with data: (i) raw measurements; (ii) commercial and social; and (iii) human. It then introduces the ablative framework, which provides the methods to adapt and create products and services. The paper uses case studies to illustrate our approach.



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



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



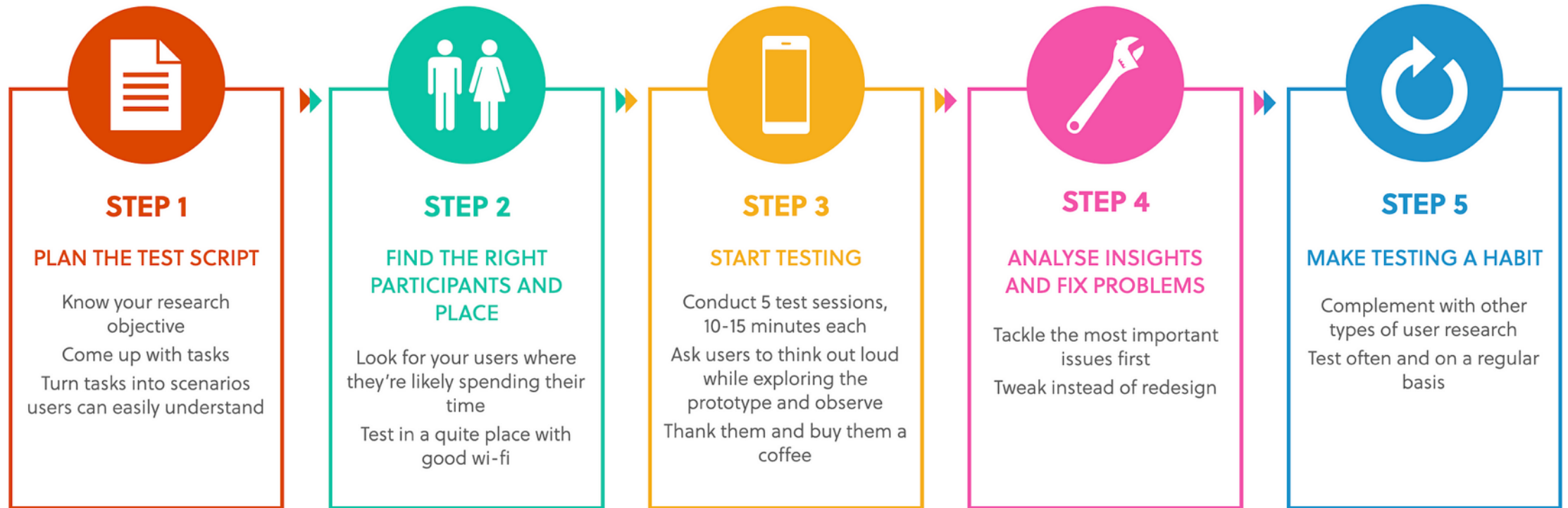
What does the article mean when it talks about the need to avoid being too methodical (RiD) or not methodical enough (RtD)?



*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](#)

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

Xperienz. 2021.

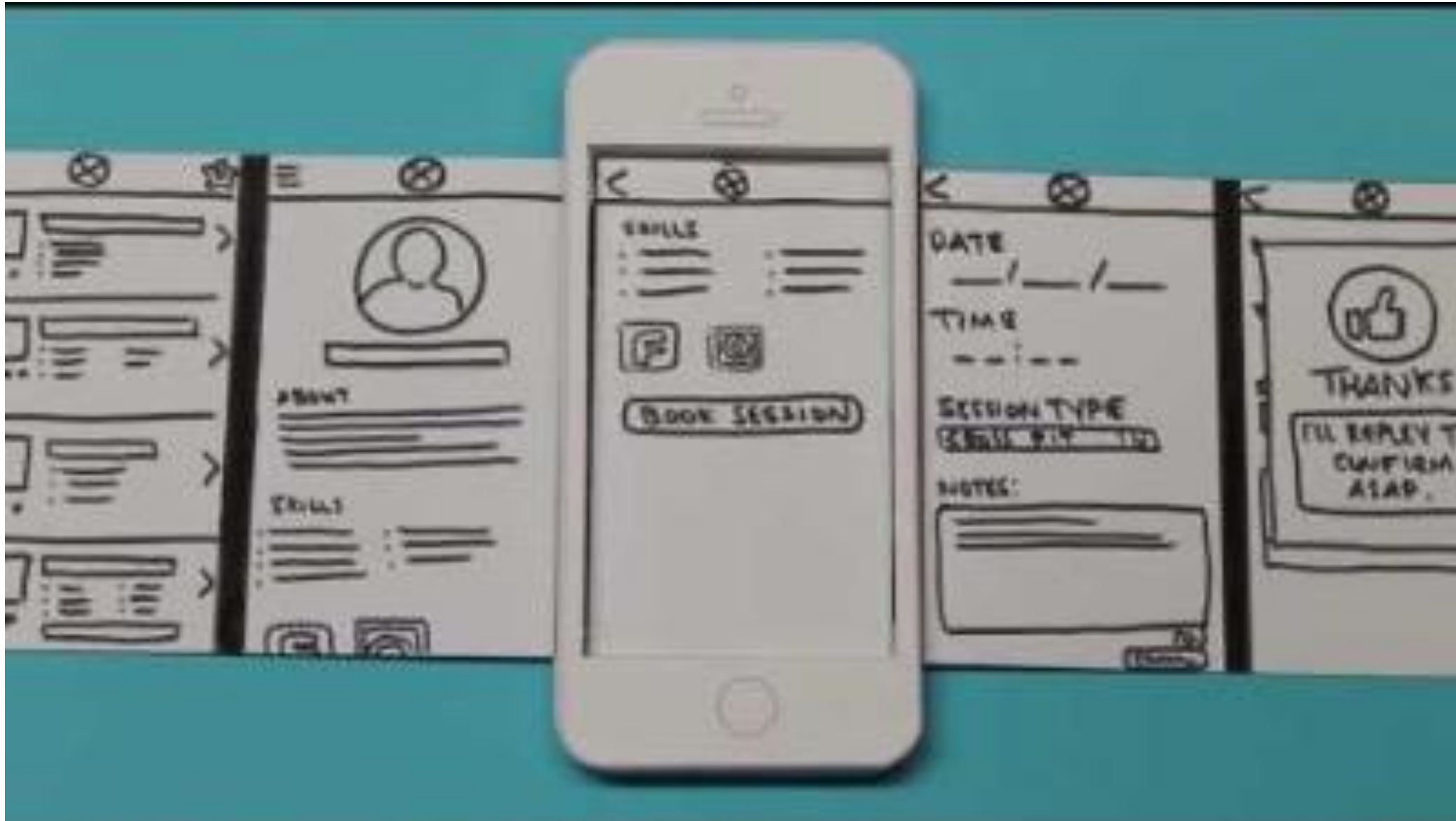
<https://medium.com/@xperienzRD/quick-dirty-user-research-50cf641b47c4>

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



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Cormac Reidy, 2017

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*I wonder if there are more vivid
examples of Research into Design and
Research through Design since I am
curious about how designers and
researchers exactly proceed the work.*





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



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

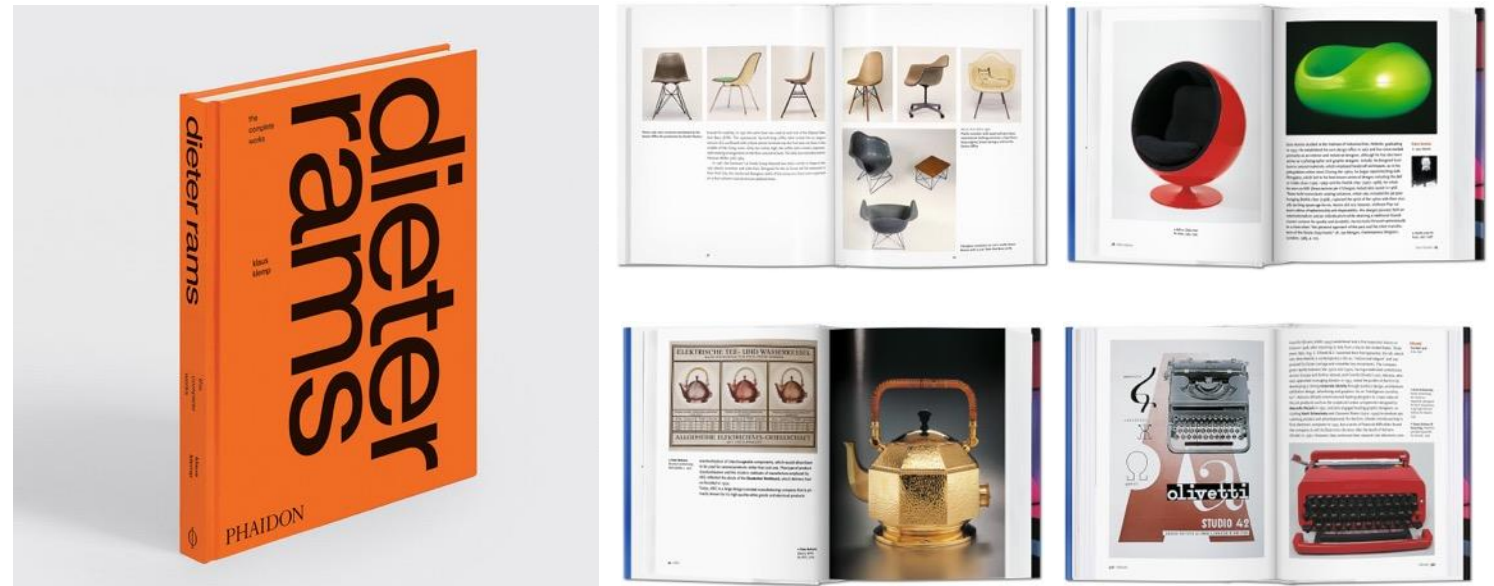
Service Design

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

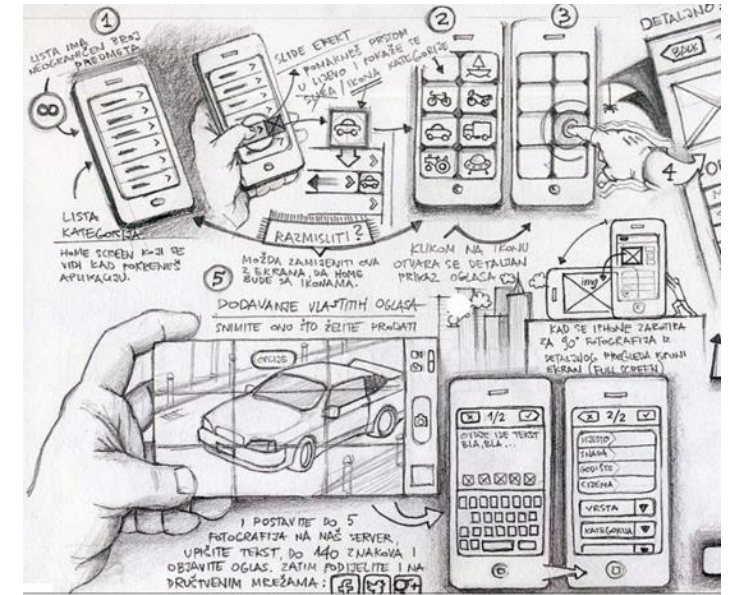
Service Design

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

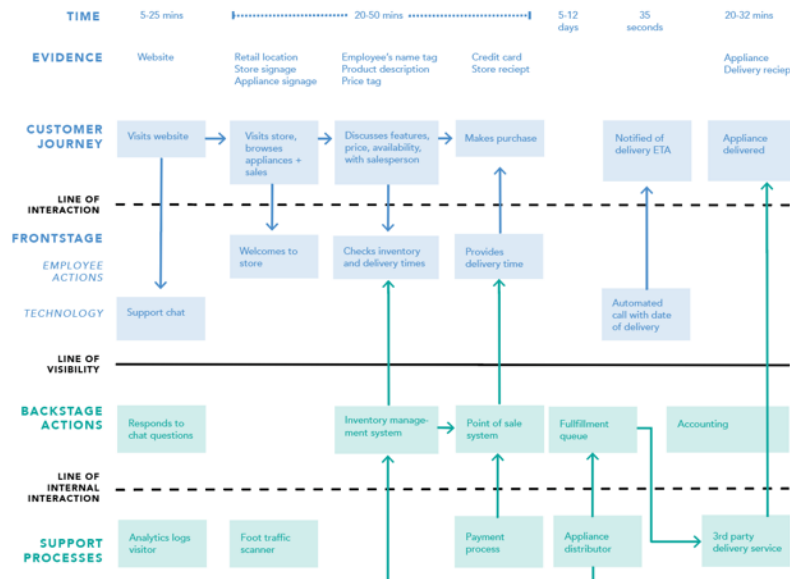
Systemic Design

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

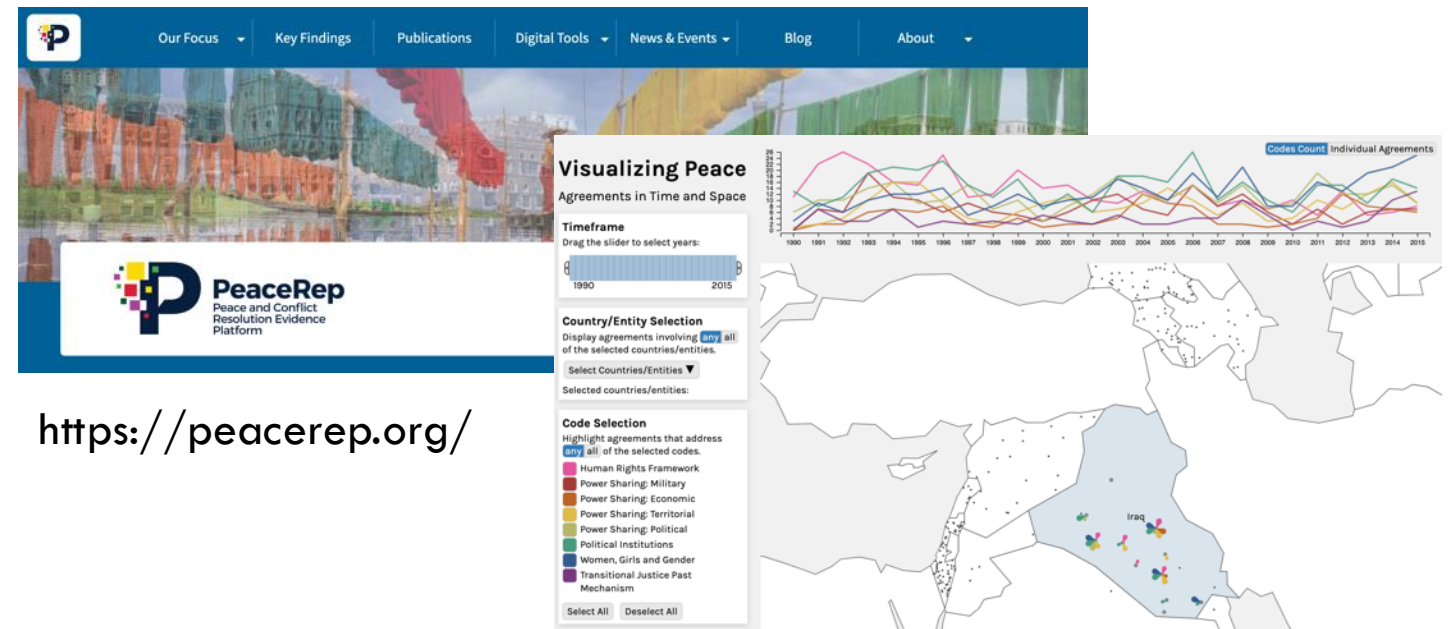
Service Design

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

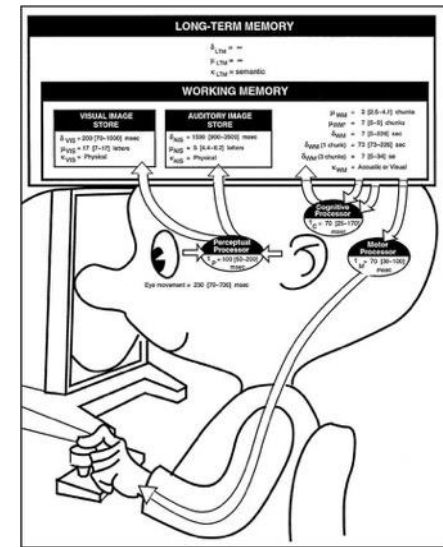
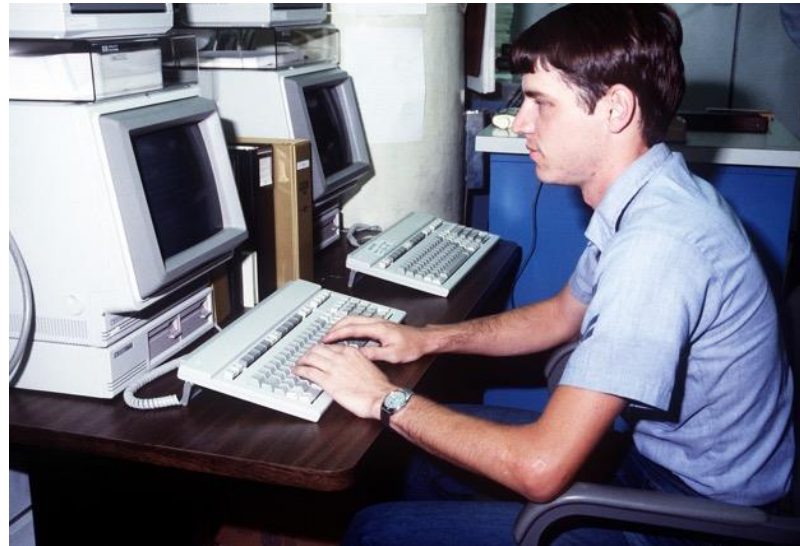
Human-centered design

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

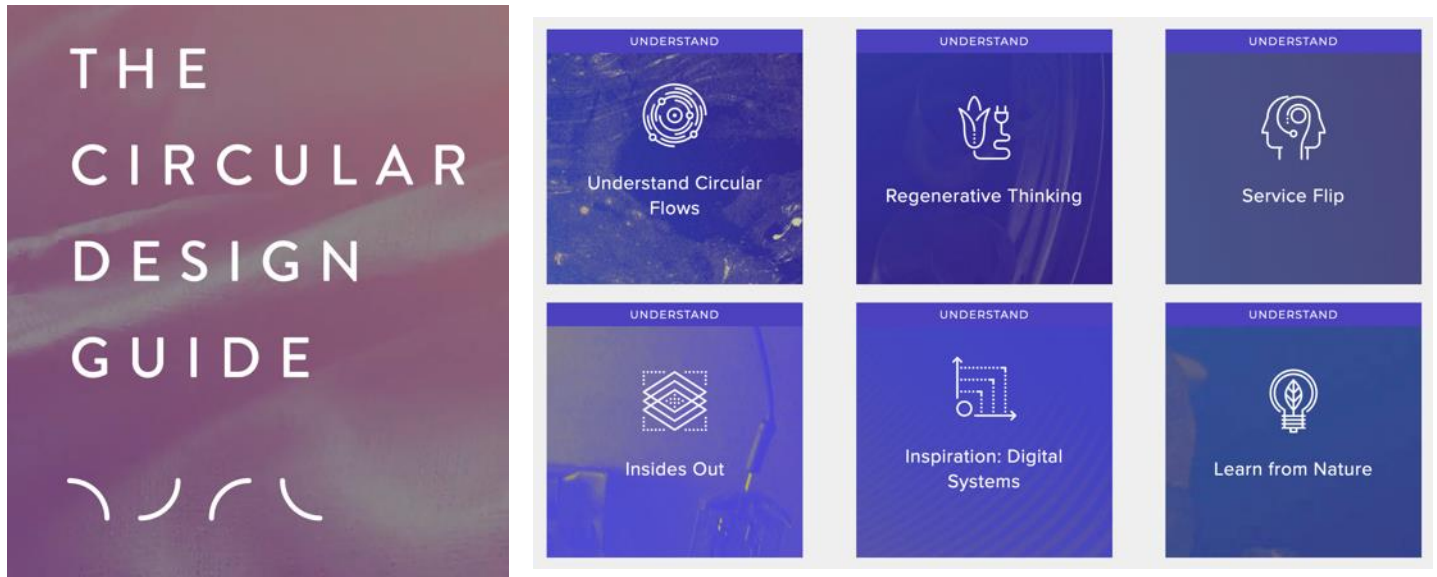
Human-centered design

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

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

In CW1.1, we're looking for you to show you can identify examples of two of these and explain how they differ ...

Overview of Coursework 1.1

Coursework 1.1

Lectures

Week	Day	Who	Topic
1 (w/c 16 th Sep)	Mon	SL/JL	Course Introduction + Introduction to Design Thinking
2 (w/c 23 rd Sep)	Mon	JL	Research into, for and through Design
3 (w/c 30 th Sep)	Mon	SL	Ethical Design Practice
4 (w/c 7 th Oct)	Mon	SL	Case Studies in XR and Cultural Heritage
5 (w/c 14 th Oct)	Mon	SL	Case Studies in LLMs and Creative Industries
6 (w/c 21 st Oct)	Mon	SL	Case Studies in IoT and Sustainability
7 (w/c 28 th Oct)	Mon	JL	Case Studies in Blockchain and Civic Participation
8 (w/c 4 th Nov)	Mon	JL	Case Studies in Autonomous Systems and Ageing
9 (w/c 11 th Nov)	Mon	SL	Probes in Design Research
10 (w/c 18 th Nov)	Mon	JL	Co-Design in Design Research
11 (w/c 25 th Nov)	Mon	SL	Q&A refresher session

SL: Susan Lechelt - JL: John Lee

Tutorials

Week	Tutorial
3 (w/c 30 th Sep)	How to use the ACM Digital Library
4 (w/c 7 th Oct)	How to analyse a case study
6 (w/c 21 st Oct)	Analysis of a case study #1
7 (w/c 28 th Oct)	Analysis of a case study #2
9 (w/c 11 th Nov)	Cultural Probes
10 (w/c 18 th Nov)	Co-Design

Block 1 – What is design (research)



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Coursework 1.1

CW1 – Studying Case Studies (Individual) – 50%

1.1. - Comparing two different approaches to design research – 5% - 11th October 2024 (PASS/FAIL)

1.2. - Case study reflection and analysis – 45% - 9th December 2024

CW2 – Applying a Design Method and Weekly Engagement (Individual) – 50%

2.1 - Portfolio of materials for Probe or Co-Design study – 45% - 10th January 2025

2.2 - Evidence of weekly engagement in Course Notebook – 5% - each week throughout the course!



Coursework 1.1

CW1.1: Comparing two different approaches to design research (5%).

This is an initial simple PASS/FAIL coursework to see how well you can search for and cite literature on the ACM Digital Library, and to give you an opportunity to review and compare two examples of published literature that you have identified as using different approaches to design research.

You are asked to:

- Search for and identify two published research articles that:
 - (1) you identify as relevant to design informatics, and;
 - (2) use different approaches to design research (which can include different conceptualisations or methods).
- Write a 300 word (+/- 10%) review of how the approaches used in the two papers compare and differ from one another, with citation to key references.
- Include a short list of References, in [ACM format](#), which should include the two papers you have selected.
- *An opportunity to explore a topic that is of interest to you!*

Template to be found on: Blackboard LEARN, Assessment -> CW1.1.

Deadline: 11th October 2024, 12:00.



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Coursework 1.1

Lectures

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8 (w/c 4 th Nov)	Mon	JL	Case Studies in Autonomous Systems and Ageing
9 (w/c 11 th Nov)	Mon	SL	Probes in Design Research
10 (w/c 18 th Nov)	Mon	JL	Co-Design in Design Research
11 (w/c 25 th Nov)	Mon	SL	Q&A refresher session

SL: Susan Lechelt - JL: John Lee

Tutorials

Week	Tutorial
3 (w/c 30 th Sep)	How to use the ACM Digital Library
4 (w/c 7 th Oct)	How to analyse a case study
6 (w/c 21 st Oct)	Analysis of a case study #1
7 (w/c 28 th Oct)	Analysis of a case study #2
9 (w/c 11 th Nov)	Cultural Probes
10 (w/c 18 th Nov)	Co-Design

Block 1 – What is design (research)



THE UNIVERSITY of EDINBURGH

design
informatics

Prep work for next week

Tasks for the next 5 days:

1. Your prep work for next week's lecture

- i. Read the ACM Code of Ethics and Professional Conduct: <https://www.acm.org/code-of-ethics>
- ii. Read this related article by Aaditeshwar Seth: <https://interactions.acm.org/archive/view/may-june-2023/whats-missing-in-the-acm-code-of-ethics-and-professional-conduct>
- iii. Read “Box 10.4: Data Ethics Principles (FATE)” (pages 380-382) in “Interaction Design: Beyond Human-Computer Interaction” – Access this via the link at <https://opencourse.inf.ed.ac.uk/cdi1/resource-list>.

2. Complete your Class Notebook submission in MS Teams:

- i. Write 3 reflections from last week's prep work and today's lecture – what did you learn? Go beyond what you wrote last week.
- ii. Write 2 questions you have based on the prep work for us to consider for our lecture next week.
- iii. Write 1 comment – something you have learned, are intrigued by, something related to your background and interests – prompted by the prep work.



Any questions?

If you have any questions about this week, contact John at : john.lee@ed.ac.uk;
or otherwise contact Susan at :
susan.lechelt@ed.ac.uk

