User Research: Data Gathering and Bringing Requirement to Life

IF3151 Human Computer Interaction

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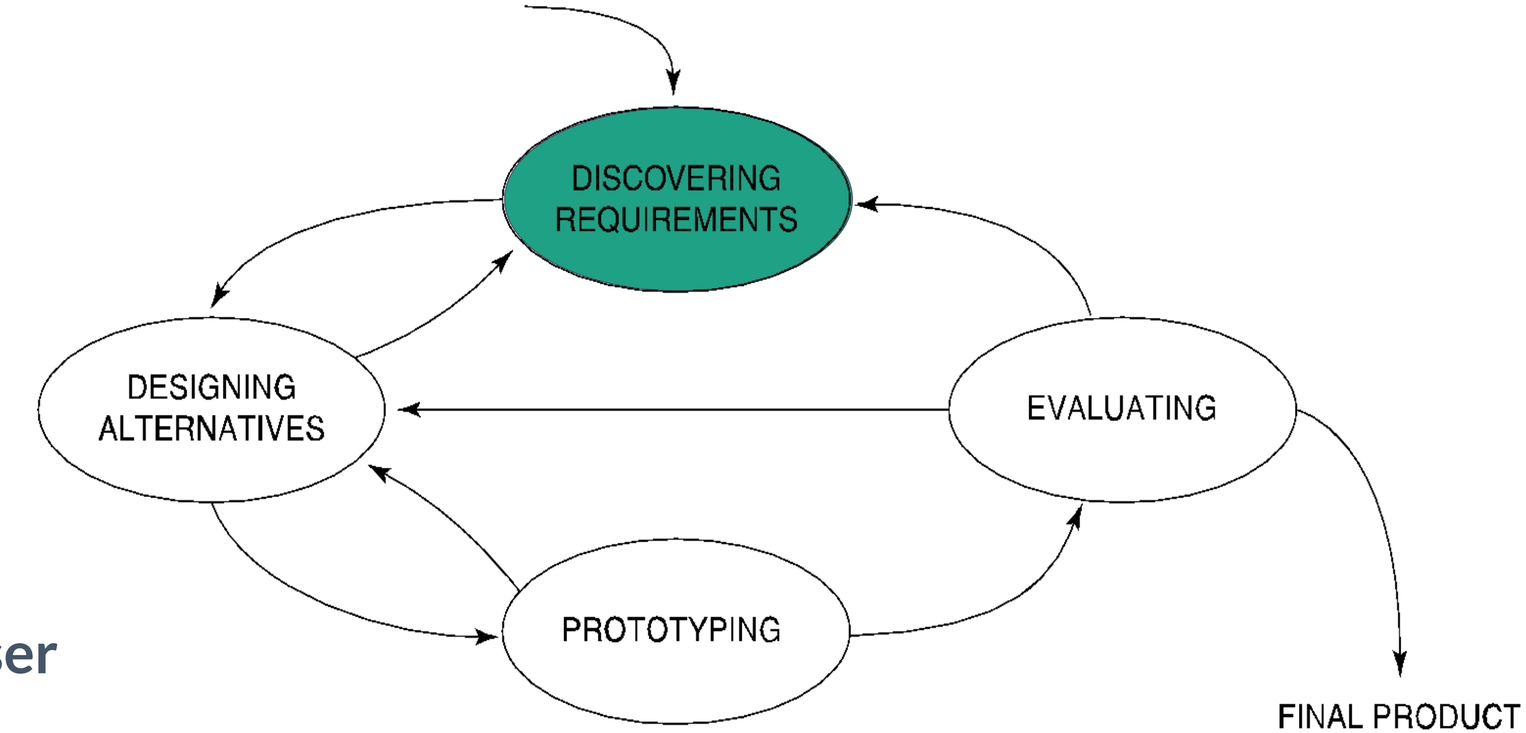
Basic Activities of Interaction Design

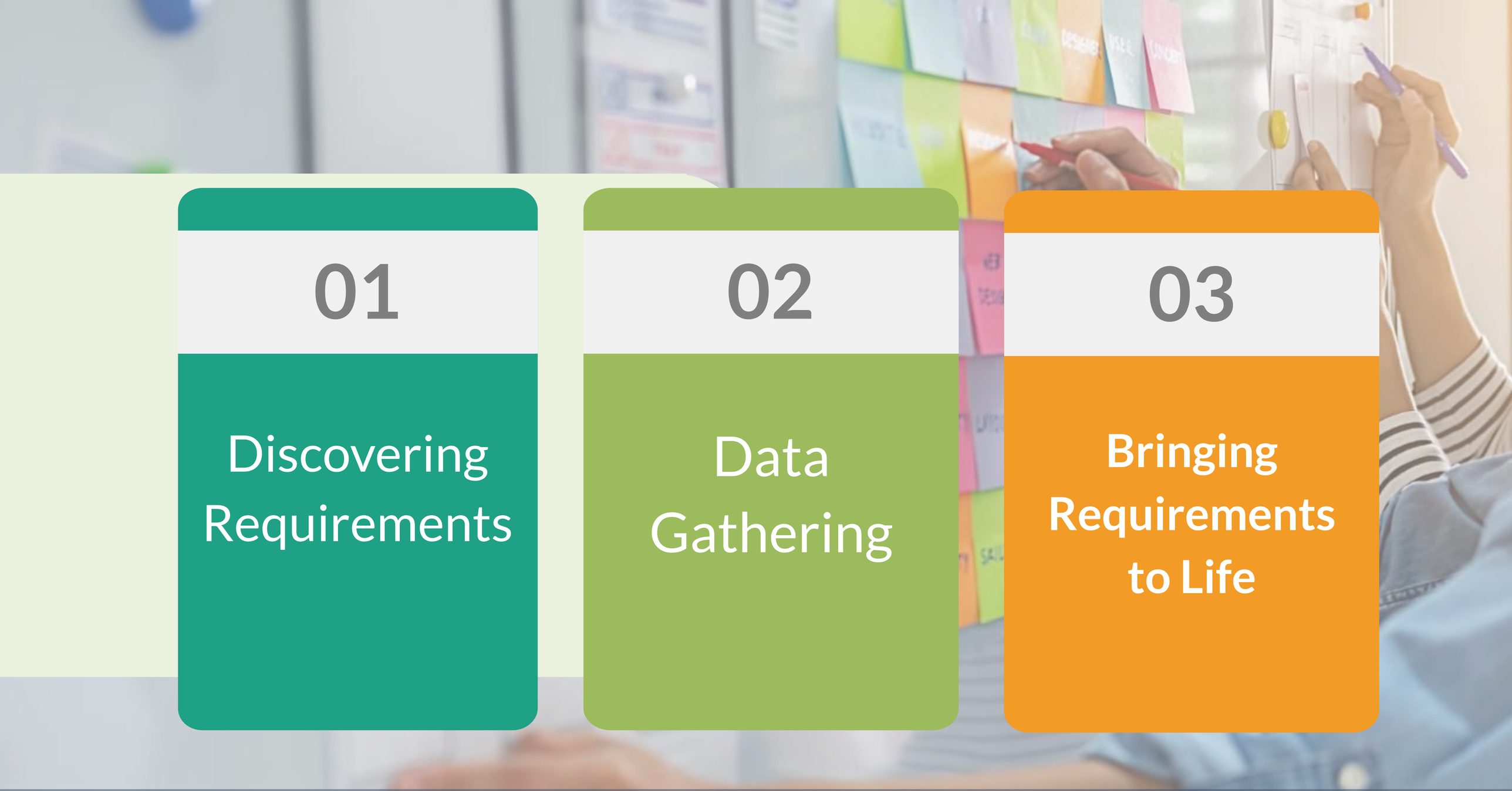
01 Discovering requirements

02 Designing alternatives

03 Prototyping alternative designs

04 Evaluating product and its user experience throughout





01

Discovering Requirements

02

Data Gathering

03

Bringing Requirements to Life

02

Data Gathering

Five Key Issues

1 Setting Goals
Decide how to analyze data once collected

→ target analisis datanya apa

2 Identifying Participants
Decide from whom to gather data;
How many participants are needed

→ target partisipannya siapa

3 Relationship with participants
Clear and professional;
Informed consent when appropriate

→ harus cari responden profesional (selain teman & keluarga)

4 Triangulation
Look at data from more than one perspective;
Collect more than one type of data, e.g: quantitative data from experiments and qualitative data from interviews

→ pake metode buat kumpulin datanya jgn cuma satu

5 Pilot Studies
Small trial of main study

→ jgn gunakan responden yg di awal utk respon di akhir

→ intinya responden awal ≠ responden akhir

안녕 하세요 데니스

Data Recording

Notes, audio, video, and photographs can be used individually or in combination:

- Notes plus photographs
- Audio plus photographs
- Video

Different challenges and advantages with each type of data recording

Methods

01 **Interviews**

02 **Questionnaires**

03 **Observation**

01 Interviews

Type of Interviews

- **Unstructured**:
  - Not directed by a script.
  - Rich but not replicable.
- **Structured**:
  - Tightly scripted, often like a questionnaire.
  - Replicable but may lack richness.
- **Semi-structured**:
  - Guided by a script, but interesting issues can be explored in more depth.
  - Can provide a good balance between richness and replicability.
- **Focus groups**: A group interview

01 Interview

Interviews Questions

Two types:

jawabannya kaya choice gitu jd emg gabakal dpt info banyak

- ‘Closed questions’ have a predetermined answer format, for example, ‘yes’ or ‘no’
  - Closed questions are easier to analyze

- ‘Open questions’ do not have a predetermined format

bisa dapat banyak informasi

01 Interview

Interviews Questions

Avoid:

- Long questions → pecah2 aja pertanyaannya
- Compound sentences — split them into two
- Jargon and language that the interviewee may not understand → pake bahasa yg mudah dimengerti
- Leading questions that make assumptions, for example, why do you like ...? → objektif, jgn lgsg arrange ke topik yg kita mau
- Unconscious biases, for instance, gender stereotypes

intinya tidak boleh menyinggung

01 Interview

Running the Interview

1. **Introduction**

   Introduce yourself, explain the goals of the interview, reassure about the ethical issues, ask to record, and present the informed consent form.

2. **Warm-up**

   Make first questions easy and non-threatening.

3. **Main body**

   Present questions in a logical order

4. **A cool-off period**

   Include a few easy questions to defuse tension at the end

5. **Closure**

   Thank interviewee, signal the end, for example, switch recorder off.

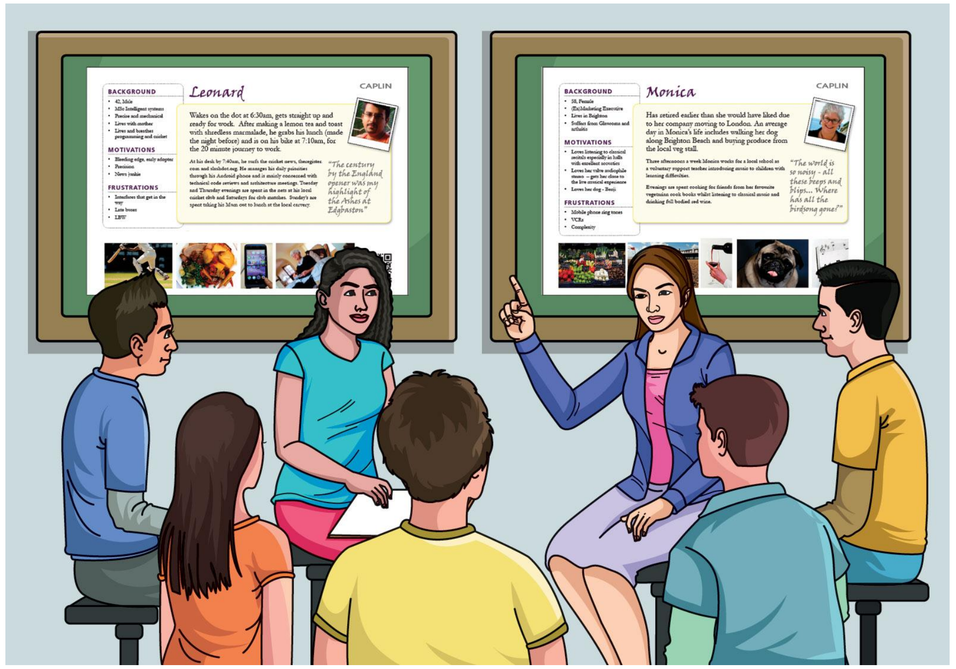
kalo misal uda kelar, hrr ditutup sm pertanyaan" mudah biar narrum ga pusing

HARUS TULUS!

Enriching the Interview Process

Using Props: Devices for prompting interviewee

For example: use a prototype, scenario



Pros and Cons

0 Interviews

buat dapet insight lebih banyak & mendalam
buat user yg sibuk mending pake interview

1 Pros 

- Great way to start collecting data
- Explains why
- Can be done in many ways
- Easily combined with other techniques
- Usually inexpensive

Cons 

- Data harder to quantify
- Result might not generalize (because of small samples)
- Hard to draw conclusion about population

Characteristics

0 Questionnaires

kalau targetnya punya waktu lebih banyak
kalau mau JUMLAH jawaban banyak
biasanya kombinasi closed and open question

2

- Questions can be closed or open
  - Closed questions are easier to analyze, and may be distributed and analyzed by computer
- Can be administered to large populations
- Disseminated by paper, email and the web
- Sampling can be a problem when the size of a population is unknown as is common online evaluation

Sample Size

02 Questionnaires

ada target responden ;
pakai metode sampling yg tepat
biar valid utk mewakili populasi

Sample Size?

How many survey participants do I need if there are ~500,000 riders in Jakarta?

Confidence Level	Confidence Interval (in %)	Population	Sample Needed
95%	5	>223.000	384
95%	3	>480.000	600
95%	1	>800.000	1,065
99%	5	>400.000	665
99%	3	>900.000	1,846
99%	1	>1.000.000	16,369

Population Size	Confidence = 95% Margin of Error			
	5.0%	3.5%	2.5%	1.0%
10	10	10	10	10
20	19	20	20	20
30	28	29	29	30
50	44	47	48	50
75	63	69	72	74
100	80	89	94	99
150	108	126	137	148
200	132	160	177	196
250	152	190	215	244
300	169	217	251	291
400	196	265	318	384
500	217	306	377	475
600	234	340	432	565
700	248	370	481	653
800	260	396	526	739
1,000	278	440	606	906
1,200	291	474	674	1067
1,500	306	515	759	1297
2,000	322	563	869	1655
2,500	333	597	952	1984
3,500	346	641	1068	2565
5,000	357	678		3288
7,500	365	710	1275	4211
10,000	370	727	1332	4899
25,000	378	760	1448	6939
50,000	381	772	1491	8056
75,000	382	776	1506	8514
100,000	383	778	1513	8762
250,000	384	782	1527	9248
500,000	384	783	1532	9423
1,000,000	384	783	1534	9512
2,500,000	384	784	1536	9567
10,000,000	384	784	1536	9594
100,000,000	384	784	1537	9603
300,000,000	384	784	1537	9603

Questionnaire Design

02 Questionnaires

urutan & cara pertanyaan berpengaruh

- Provide clear instructions on how to complete the questionnaire.
- Avoid very long questions and questionnaires
- The impact of a question can be influenced by question order.
- Decide on whether phrases will all be positive, all negative, or mixed.
- Strike a balance between using white space and keeping the questionnaire compact.
- You may need different versions of the questionnaire for different populations.

Question and Response Format

02 Questionnaires

- ‘Yes’ and ‘No’ checkboxes
- Checkboxes that offer many options
- Rating scales
  - Likert scales
  - Semantic scales
  - 3, 5, 7 or more points
- Open-ended responses

Encouraging a Good Response

02 Questionnaires

- Make sure that the purpose of study is clear
- Promise anonymity
- Ensure that questionnaire is well designed
- Offer a short version for those who do not have time to complete a long questionnaire
- If mailed, include a stamped, addressed envelope
- Follow-up with emails, phone calls, or letters
- Provide an incentive

Deploying Online Questionnaires

02 **Questionnaires**

1. Plan the timeline
2. Design the questionnaire
3. Test the survey to make sure that it behaves as you would expect
4. Test it with a group that will not be part of the survey to check that the questions are clear
5. Recruit participants

Pros and Cons Online Questionnaires

0 Questionnaires

Pros

- Easy and quick to distribute
- Responses are usually received quickly
- Can be collected in database for analysis
- Time required for data analysis is reduced
- Errors can be corrected easily

Cons

- Sampling is problematic if population size is unknown
- Preventing individuals from responding more than once can be a problem

Type of Observation

0 Observation

3

1. Direct observation in the field
   - Structuring frameworks
   - Degree of participation (insider or outsider)
   - Ethnography

2.Direct observation in controlled environments[3].

3. Indirect observation: tracking users' activities
   - Diaries
   - Interaction logging
   - Video and photographs collected remotely by drones or other equipment

Example of Direct Observation

03 **Observation**

Mars Exploration Rover

Source: Reproduced by permission of NASA Jet Propulsion Laboratory (NASA-JPL)

Structuring Frameworks to Guide Observation

0 Observation

3 Three easy-to-remember parts:

- **The person**: Who?
- **The place**: Where?
- **The thing**: What?

Structuring Frameworks to Guide Observation

0 Observation

3 A more detailed framework (Robson, 2014):

- **Space** : What is the physical space like and how is it laid out?
- **Actors** : What are the names and relevant details of the people involved?
- **Activities** : What are the actors doing and why?
- **Objects** : What physical objects are present, such as furniture
- **Acts** : What are specific individual actions?
- **Events** : Is what you observe part of a special event?
- **Time** : What is the sequence of events?
- **Goals** : What are the actors trying to accomplish?
- **Feelings** : What is the mood of the group and of individuals?

Planning and Conducting Observation in the Field

03 Observation

- Decide on how involved you will be: passive observer or active participant
- How to gain acceptance
- How to handle sensitive topics, e.g: culture, private spaces
- How to collect the data:
  - What data to collect
  - What equipment to use
  - When to stop observing

Type of Observation

0 **Observation**

3

1. Direct observation
   Think aloud techniques
1. Indirect observation – tracking users' activities
   - Diaries
   - Interaction logs
   - Web analytics

Video, audio, photos, and notes are used to capture data in both types of observations

Ethnography

- Analyzing video and data logs can be time-consuming
- Ethnography is a philosophy with a set of techniques that include participant observation and interviews
  - Ethnographers immerse themselves in the culture that they study
  - A researcher’s degree of participation can vary
  - Collections of comments, incidents, and artifacts are made

More on Ethnography (continued)

(a)

(b)

(a) The situation before MERboard;
(b) a scientist using MERboard to present information

Source: J. Trimble, R. Wales and R. Gossweiler (2002): "NASA position paper for the CSCW 2002 workshop on Public, Community and Situated Displays MERBoard.

Choosing and Combining Techniques

Depends on the:

- Focus of the study
- Participants involved
- Nature of the technique(s)
- Resources available
- Time available

03

Bringing Requirements to Life

Bringin Requirement to Life

harus tau siapa target user

Create Personas

bangun persona dari user

Create Task Description

- Scenario
- Use Case

Personas

A way to model, summarize, and communicate research about people who been observed or researched in some way

Rich descriptions of typical users, not specific people

Represents a significant portion of people in the real world

Characteristics of Persona

- Capture a set of user characteristics (user profile)
- Synthesized from real people based on user research
  - Develop a small set of personas with one primary
  - Bring to life with name, characteristics, goals, and personal background relevant to product under development
- Good persona helps designer with design decisions and reminds team about who will use the product

Example of Persona #1

Family traveler

"I want a travel organiser that will offer me a range of potential vacations that suit our needs"

Age: 35
Work: Plumber
Family: Married, two children

Personality

Introvert — Extrovert
Thinking — Feeling
Sensing — Intuition

Organised | Practical | Expects high standard

Goals

- To book comprehensive travel quickly
- To find a trip that meets the needs of the whole family
- To feel supported and guided from the beginning of the booking experience right to the end.

Frustrations

- Wasting time filling in forms
- Too much irrelevant information
- Existing systems tend to be too diverse and complicated

Bio

Will loves to take his family on adventure holidays to explore new challenges. His children, Sky (8) and Eamonn (15) are old enough to take part in several sporting activities and he wants to make the most of this before they no longer want to go on trips with him and his wife, Claire. He likes the fact that choosing travel options is so much easier than it used to be, but is frustrated by the many different sources and disjointed options that this can result in. He wants a travel organiser that can provide clear support for family holidays while offering as wide a choice as possible.

Motivation

Price
Comfort
Choice

Favourite destinations

Example of Persona #2

Where does The Concept of Personas Come from

- Informally develop by Alan Cooper in the early ‘80s
  - a way to empathize with and internalize the mindset of people who would eventually use the software he was designing

- He interviewed several people among the intended audience of the project and got to know them so well that he pretended to be them as a way of brainstorming and evaluating ideas from their perspective

- This method allow Cooper to put users front and center in the design process as he created software

How Are Personas Created?

Designers are recommended to follow this general formula:

1. Interview and/or observe an adequate number of people.
2. Find patterns in the interviewees' responses.
3. Create archetypical models.
4. Drawing from that understanding of users.
5. Share with others team members.

What are Personas used for?

1 **Build Empathy**
Crafting the lens through which they will see the world

2 **Develop Focus**
Help to define who the product is being created for and who not to focus on

3 **Communicate and Form Consensus**
Help to communicate research findings; Establishing a medium for shared knowledge brings all members of a team on the same page

Scenarios

- User scenarios are detailed descriptions of a user – typically a persona – that describe realistic situations relevant to the design of a solution.
- By painting a “rich picture” of a set of events, teams can appreciate user interactions in context, helping them to understand the practical needs and behaviors of users.

Scenarios Form

- May be textual descriptions, animations, audio or video
- Example animation scenarios

Source: Keirnan et al. (2015), Figure 1. Reproduced with permission of ACM Publications.

Scenario for Group Travel Organizer

“The Thomson family enjoy outdoor activities and want to try their hand at sailing this year.

There are four family members: Sky (8 years old), Eamonn (12 years old), Claire (32), and Will (35).

One evening after dinner they decide to start exploring the possibilities.

They want to discuss the options together but Claire has to visit her elderly mother so will be joining the conversation from her mother’s house down the road.

As a starting point, Will enters an idea they had been discussing over dinner – a sailing trip for four novices in the Mediterranean.

The system supports users to log on from different locations and use different devices so that all members of the family can interact easily and comfortably with it wherever they are.

The system's initial suggestion is a flotilla, where several crews (with various levels of experience) sail together on separate boats.

Sky and Eamonn aren't very happy at the idea of going on vacation with a group of other people, even though the Thomson’s would have their own boat.

The travel organizer shows them descriptions of flotillas from other children their ages and they are all very positive, so eventually, everyone agrees to explore flotilla opportunities.

Will confirms this recommendation and asks for detailed options.

As it's getting late, he asks for the details to be saved so everyone can consider them tomorrow.

The travel organizer emails them a summary of the different options available.”

Scenarios and Personas

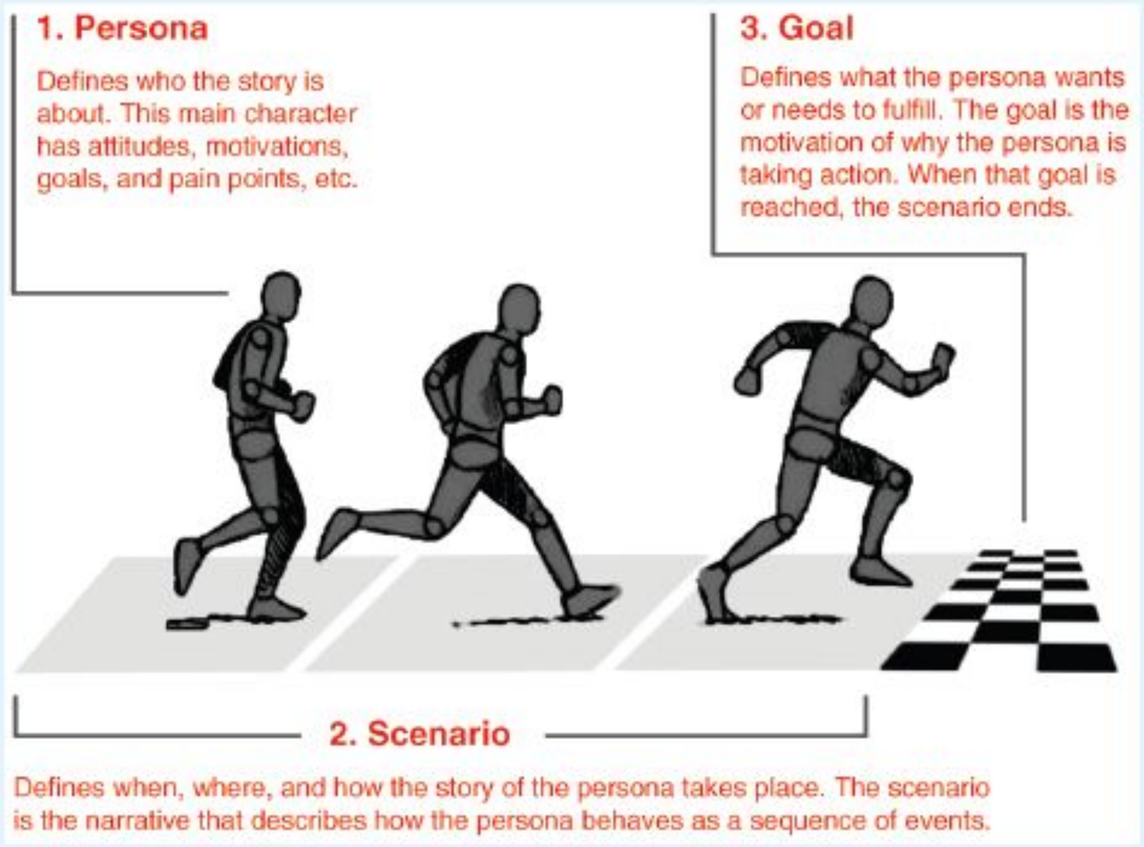


Figure 10.10 The relationship between a scenario and its associated persona

Source: http://www.smashingmagazine.com/2014/08/06/a-closer-look-at-personas-part-1/

- This three part are most effective when used together.
- For instance, in order for a sprinter to reach their potential, they need a place to run and a finish line to cross.
- Without a scenario or end goal, the sprinter would have nothing to do or strive for.

Use Case

Focus on functional requirements and capture interaction

Can be used in design or to capture requirements

Use cases are step-by-step descriptions of interactions

Two styles:

- Essential use cases: division of tasks, no implementation detail
- Use case with normal and alternative courses: more detail

Essential Use Case for Travel Organizer

RetrieveVisa

USER INTENTION	SYSTEM RESPONSIBILITY
Find visa requirements	Request destination and nationality
Supply required information	Obtain appropriate visa info
Obtain copy of visa info	Offer info in different formats
Choose suitable format	Provide info in chosen format

Use Case for Travel Organizer

1. The product asks for the name of the destination country
2. The user provides the country's name
3. The product checks that the country is valid
4. The product asks the user for their nationality
5. The user provides their nationality
6. The product checks the visa requirements of that country for a passport holder of the user's nationality
7. The product provides the visa requirements
8. The product asks whether the user wants to share the visa requirements on social media
9. The user provides appropriate social media information

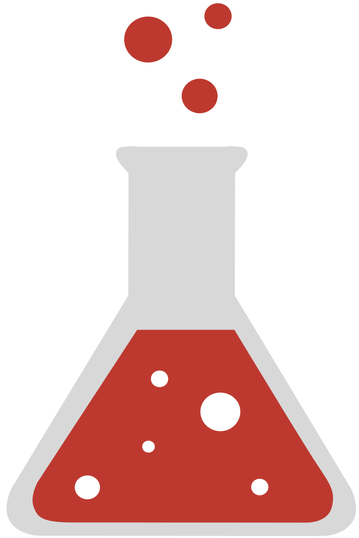
Use Case for Travel Organizer

Some alternative courses:

4. If the country name is invalid:
   4.1: The product provides an error message
   4.2: The product returns to step 1

6. If the nationality is invalid:
   6.1: The product provides an error message
   6.2: The product returns to step 4

7. If no information about visa requirements is found:
   7.1: The product provides a suitable message
   7.2: The product returns to step 1



Creativity is the key to success
in the great education

Terima Kasih

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