MONASH University

FIT3175 - Usability

Understanding Users

Week 1 Lecture P2

Copyright Warning

Commonwealth of Australia Copyright Act 1968

Warning

This material has been reproduced and communicated to you by or on behalf of Monash University in accordance with section 113P of the Copyright Act 1968 (the Act).

The material in this communication may be subject to copyright under the Act. Any further reproduction or communication of this material by you may be the subject of copyright protection under the Act.

Learning objectives

Designing for the not-so-average user

- User classification
- User diversity and bias

Data gathering and user research methods

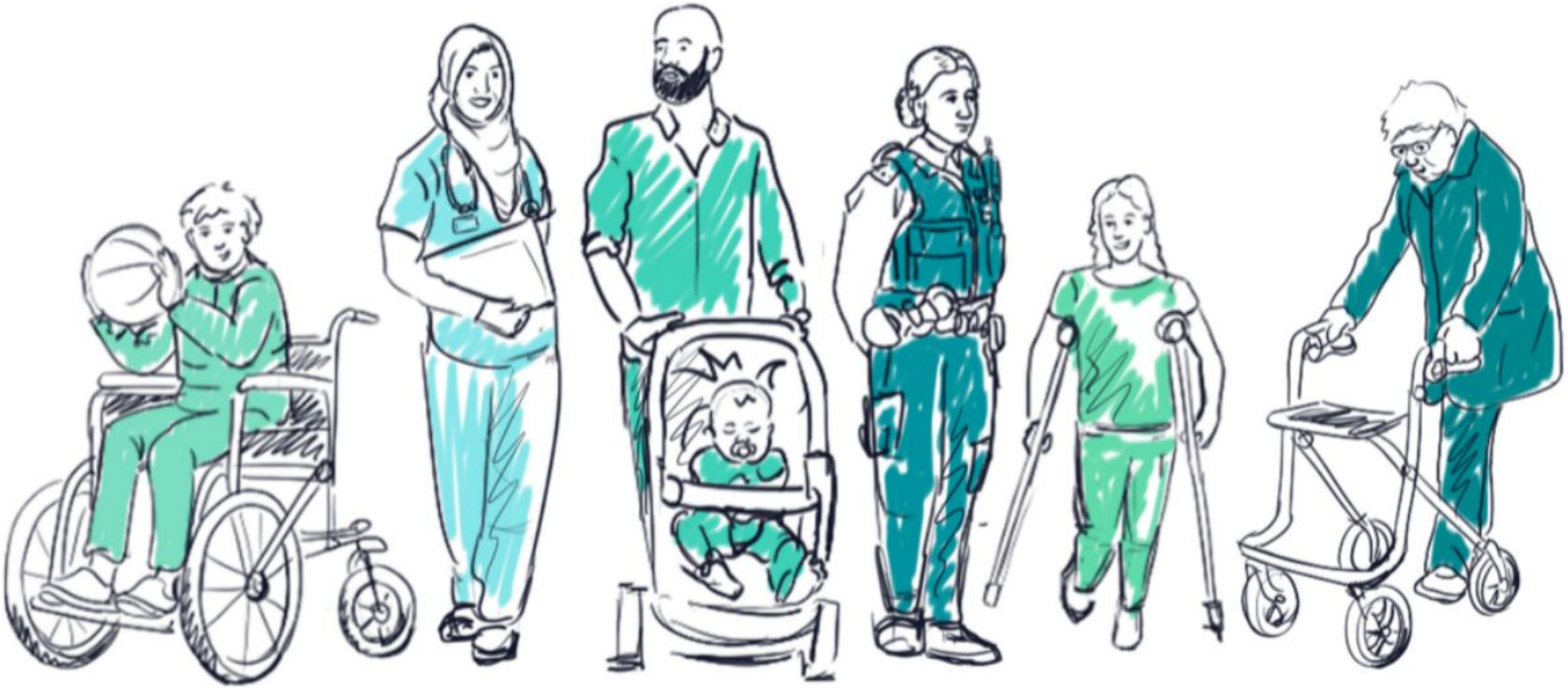
- User research methods
- Quantitative and qualitative

User empathy methods

- User personas
- User stories and scenarios
- Journey and empathy maps

Designing For The Not-So-Average User

Review: Diversity of users



https://uxdesign.cc/designing-for-diversity-cfdf8c8ad54d

Who are your users?

Users are the people who will use the products and services that you design.

> ***"The target audience for my product is the average user".***

Discuss: What is the problem with the statement above?

Also be aware that while users are often "customers" this is different form of thinking:

- **Customer:** We aim to convince the person that our product is right for them.
- **User:** We understand the person so that we can design a solution that is aligned with their needs, abilities, preferences and expectations.

Strategies for identifying and classifying users

User Roles

Defines user groups in the context of typical tasks they perform.

For example:

- Student
- Tutor
- Lecturer

Each has task-based goals and experience.

User Demographics

Statistical characteristics of populations. This can include external factors.

For example:

- Age
- Ethnicity
- Gender
- Income
- Disability
- Technology

User Need States

Different motivations drive different behaviour, even for the same user.

For example:

- Options explorer
- Troubleshooter
- Knowledge builder
- Professional

https://uxdesign.cc/different-ways-to-identify-user-segments-roles-demographics-need-states-and-personas-405e60d6c161

Personality traits and unconscious bias

People from similar backgrounds share experiences and develop similar traits.

However, individual experiences are unique and varied, resulting in different expectations and preferences/biases.

Understanding where these traits and biases exist helps us:

- Create good experiences
- Create preferred experiences

https://joseaguirre.myshopify.com/blogs/videos/unconscious-bias-102

User skill levels

A simple way to classify users is by their knowledge and experience.

Novice users

- Also known as **"beginner"** users, they lack experience with a system.
- May require simpler interfaces or additional guidance and instructions.

Intermediate users

- Could be **"intermittent"** users, have broad knowledge of tasks and interfaces.
- Also "knowledgeable", but might not be familiar with very specific details.

Expert users

- Also known as **"frequent"** users, a very familiar with task and interface concepts.
- Desire task efficiency - may require (or may try to find) task shortcuts.

Interface skill vs. domain skill

User skill classification should consider the context of tasks.

- **Interface skills**
  Familiarity navigating and operating different types of user interfaces.

- **Domain skills**
  Task specific knowledge, including specialised real-world knowledge.

https://global.chinadaily.com.cn/a/202102/13/WS60272ed1a31024ad0baa8da0.html

Describe users with objective traits

When describing users:

- Don't use vague or subjective descriptions that may be misinterpreted.
- Do makes use of specific demographics, traits and motivations.
- Classify users correctly - consider task and context

What is the problem with the following description?

"The target audience is young Asian people who are good with technology".

Identify 3 parts of the description that could be refined.

Benefits of understanding your users

Services designed around user needs:

- Are more likely to allow the user to complete the task they are trying to do, without support
- Help more people get the right outcome, achieving government's policy intent
- Cost less to operate by reducing time and money spent on resolving problems

The service you are designing and building needs to meet the whole user experience with those products.

This makes the whole experience clearer and simpler for the user.

https://www.dta.gov.au/help-and-advice/build-and-improve-services/user-research/understanding-users-and-their-needs

Data Gathering and User Research Methods

Data gathering

Successful ideas are supported by data gathered from real users in real contexts.

The first step of user interface design is to collect information about the user, tasks, the context of use, the environment/domain and potential limitations.

Data can be collected for

- User analysis
- Task analysis
- Domain analysis

Different techniques can be used to collect data depending on requirements and constraints.

User sampling approaches

Gathering data from all potential users is impractical - you will choose a sample.

- **Probability Sampling**
  A random selection based on probability distribution in a specified population.
- **Purposive Sampling**
  Select participants based on predefined user or group selection criteria.
- **Haphazard Convenience Sampling**
  Participants are selected randomly or near-randomly based on availability.

What are some advantages and disadvantages to each approach?

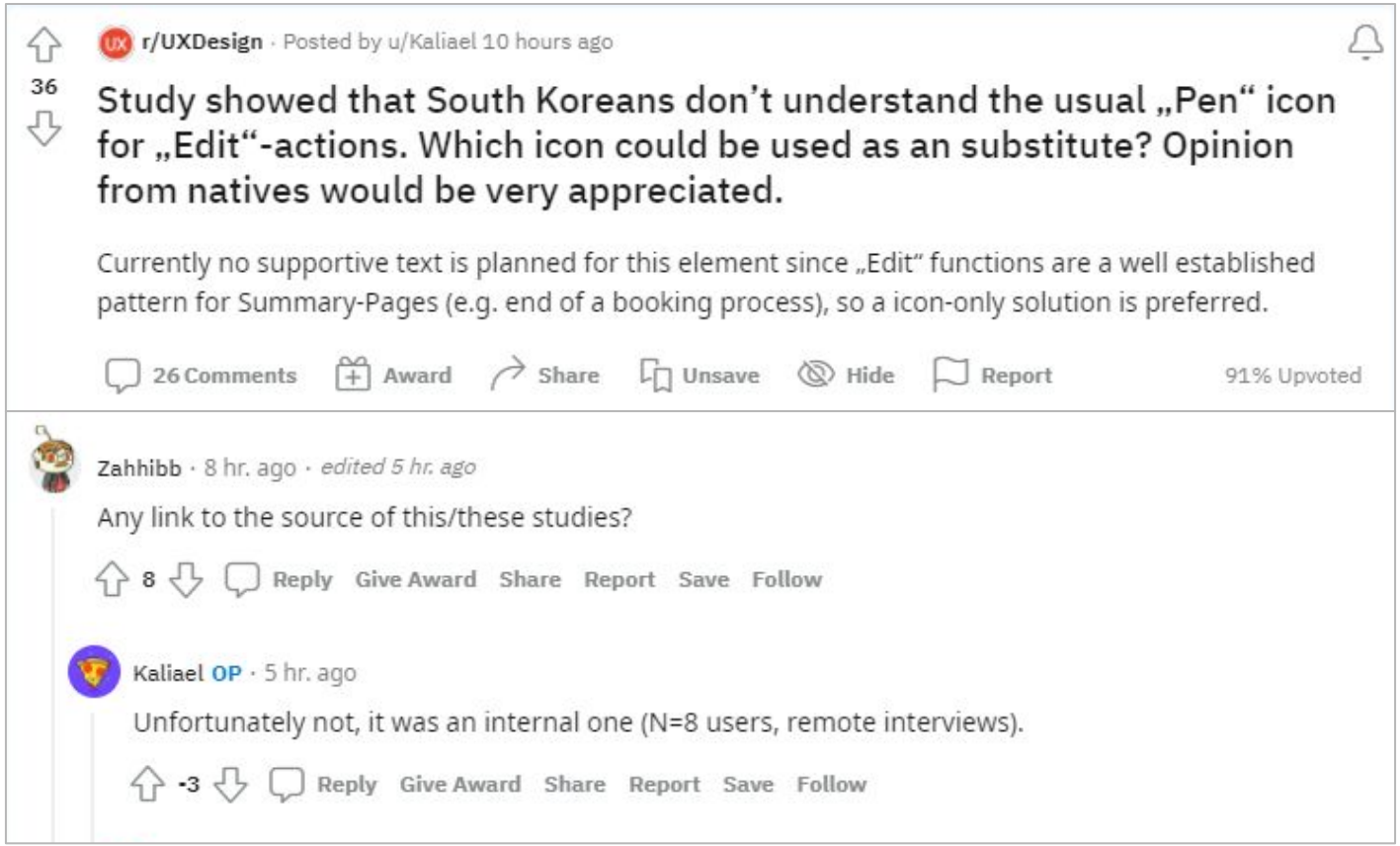
https://www.abs.gov.au/websitedbs/d3310114.nsf/home/Basic+Survey+Design+-+Sample+Design

Sample selection and size

There is no "one size fits all" approach to choosing the number of participants for a sample. Your goals, context and methods will be major influences.

- **Cost and constraints** in terms of **time** and **effort**. Consider the requirements of a testing method for producing, facilitating and analysing.
- Good **qualitative** insights can be gained from **as little as 5 participants**.
- If your sample is **well-defined** and **representative** of a specific demographic, the data collection will tend to be more accurate and relevant.
- For a broader demographic, your collected data produces an estimate of that demographic. Increasing the sample size here lowers your **margin or error**.

What are the problems in this scenario?

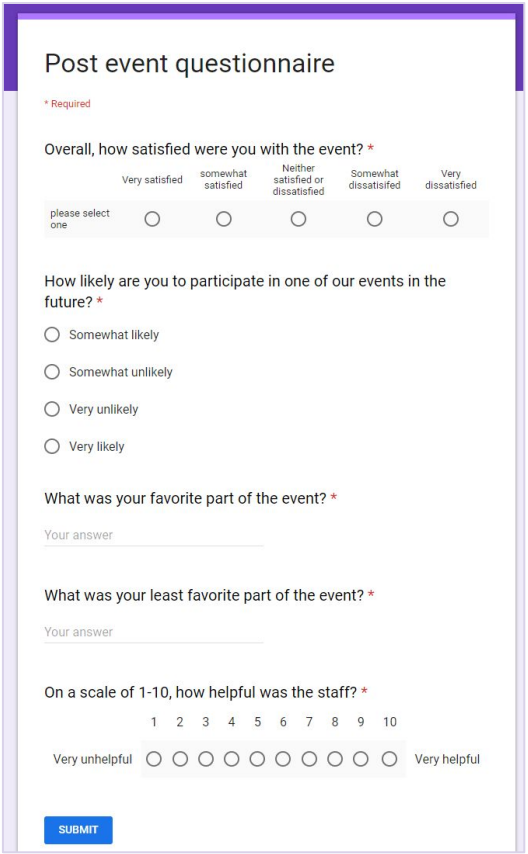


Questionnaires and surveys

The terms **"survey"** and **"questionnaire"** are often be used interchangeably. However there are differences.

Questionnaire (noun)	**Survey (noun, verb)**
A set of prepared written questions devised for the purposes of statistical study.	A broader term that describes content, method, and analysis, usually of a questionnaire.
	

We create **questionnaires** so that we can conduct **surveys**.



Post event questionnaire

* Required

Overall, how satisfied were you with the event? *

	Very satisfied	somewhat satisfied	Neither satisfied or dissatisfied	Somewhat dissatisifed	Very dissatisfied
please select one	○	○	○	○	○

How likely are you to participate in one of our events in the future? *

- ○ Somewhat likely
- ○ Somewhat unlikely
- ○ Very unlikely
- ○ Very likely

What was your favorite part of the event? *

Your answer

What was your least favorite part of the event? *

Your answer

On a scale of 1-10, how helpful was the staff? *

	1	2	3	4	5	6	7	8	9	10	
Very unhelpful	○	○	○	○	○	○	○	○	○	○	Very helpful

SUBMIT

Questionnaires

Questionnaires make it easy to capture data, scaling to large numbers of participants. Low cost and produce, distribute and analyse for quantitative data.

Paper

Mail

In-Person

Online

Phone

For its convenience, questionnaires do have limitations:

- Individual question are predetermined, may be misdirected or misunderstood.
- Responses may be dishonest, optional responses may be missing entirely.
- Difficult to capture and analyse qualitative data, such as perceived emotions.

Interviews

Structured

- Tightly scripted. Almost a spoken questionnaire. Simple to replicate and analyse.
- No opportunity for you to respond to interesting and unexpected ideas.

Semi-structured

With planned topics/themes you want to cover, but open to deviation.

Pseudo-replicable, somewhat comparable across interviewees

Unstructured

- Little advance planning. Start with an initial question, and go with the flow.
- Results in really rich, deep data. But makes replication and analysis difficult.

Semi-structured interviews

A planned interview with room to explore seems a perfect solution. Qualitative data can be captured and analysed - potentially making use of audio/video recording.

However:

- Expertise required to execute is significantly higher than a structured interview.
- Time constraints may make it impossible to perfectly balance...
  - **Depth:** Covering topics of interest in great detail.
  - **Breadth:** Covering all of many important topics.
- Requires the interviewer to know the topics well enough to make some assumptions to guide the direction of the interview.
- Interview must be careful not to introduce on bias when guiding participants.

Experience sampling

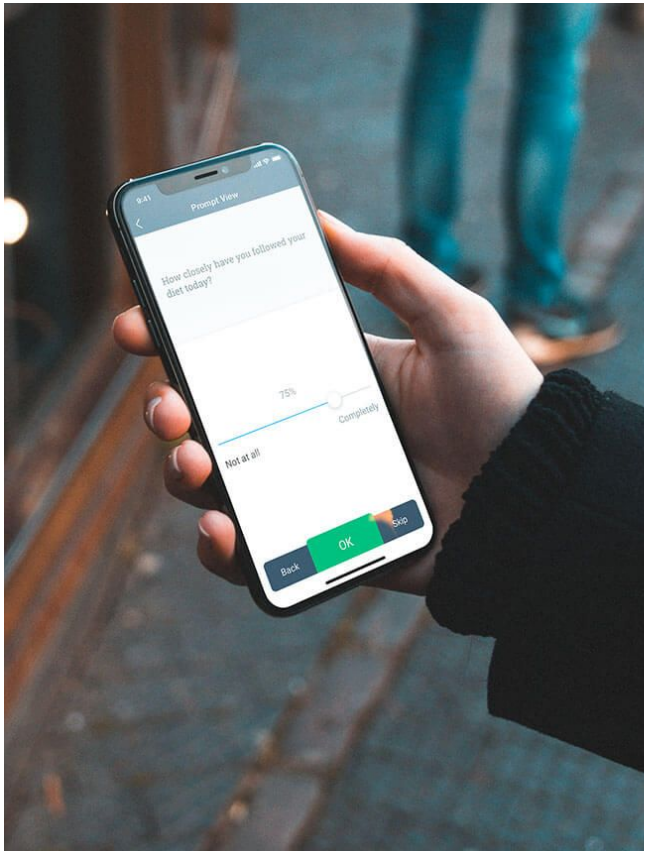
Users' thoughts and perception may change of the course of an experience.

Experience sampling presents users with the same question(s) at repeated intervals.

- Perhaps, a single question every few hours.
- Perhaps, asking the user to perform a task.

Be mindful of users' time commitment.

- Ask a minimal number or questions.
- Design questions that are easy to respond to.



https://www.lifedatacorp.com/

Diary studies

This is a method of long-term experience sampling. Perhaps once a day, or once a week, participants to respond in an open-ended way, to a prompt about their behaviour, opinions, frustrations, etc.

Well suited to collecting data about users' behavioural changes.

- **Usage habits:** What time of day do users engage with a product?
- **Usage scenarios:** What are the user's primary tasks and does this change?
- **Motivations:** Why is the user performing certain tasks?
- **Perceptions:** Does the user value the product?

The scope can be targeted (a specific app) or broad (general daily workflows).

https://www.nngroup.com/articles/diary-studies/

Observation-based approaches

Field research methods provide opportunities to observe participants performing their tasks in a natural setting. This may produce insights that are not possible via surveys.

Passive observation: A researcher observes users performing tasks in their natural environments. Errors may be made in interpreting observed behaviours.

Participant observation: A researcher participates as a user and observes their own first-hand experience. May be inauthentic if researcher lacks domain knowledge.

Active observation: A researcher observes users in their environment but also has ability to interview users during or after tasks.

What to observe

An observation not only examines users, but also the context n which they function.

To help remember the various aspects of observation, use the **AEIOU framework**:

- **Activities** are the users' goals, but also specific actions used to achieve goals.
- **Environments** are the context for activities, and also users' roles in a space.
- **Interactions** are regular and spontaneous events between people and objects.
- **Objects** are elements of the environment put into use intentionally or otherwise.
- **Users** are the people being observed, including their interpersonal and organisational relationships.

Ethnography

Ethnographic observation emerged from anthropology, as a way of exploring the everyday realities of non-western societies.

Key principles:

- Capture the tiny details of the broader picture.
- Observe natural settings.
- Record behaviour, analyse later.

https://commons.wikimedia.org/wiki/File:Wmalinowski_trobriand_isles_1918.jpg

Contextual inquiry

This implements a shorter observation period (e.g. hours instead of months), supplemented with an interview to collect further information.

- More time-consuming than an interview alone
- Provides contextual insights.

However, hard to do for a larger sample. Works if participants are homogenous, or the project fits a very specific niche.

Focus groups

Should have at least 6 participants:

- Participant selection typically includes key stakeholders
- Participants discuss experiences and express their opinions and beliefs

A moderator is required to to oversee participants:

- To lead and manage the discussions
- To ensure all topics are covered
- To ensure all participants contribute to the discussions

Typically, multiple focus group sessions are run as a single discussion may not be representative of all views.

Observation problems: Hawthorne effect

Also known as **"observer effect"**. If users are aware of being observed, their behavior may be affected.

"Hawthorne effect" was coined in 1958 by Henry A. Landsberger. The Hawthorne Works factory was studying the effect of lighting on worker productivity.

- Productivity seemed to improve when minute lighting changes were made.
- Productivity decreased when the study ended.

Conclusion: Workers are most productive when being observed!

Quantitative vs. qualitative data

Quantitative data provides real numerical results to be analysed (quantities)

- Countable numbers and percentages
- Objective measurements
- Measurements from sensors

Qualitative data provides subjective observations (what, why, how?)

- Description of type, quality and characteristics.
- Comments about behaviour and experience.
- Emotions and perceptions.

Quantitative and qualitative capture different aspects of users and their experiences - they can be used together to get a better overview of a population.

Comparing quantitative and qualitative data

Quantitative	Qualitative
How old are you?	Do you identify as a millennial?
Number of people aged 20-25 years.	What is the colour of your hair?
Number of respondents with red hair.	Describe how you feel about cats.
How many times a day do you check your notifications?	Which of the following words describes your experience with technology?
How far do you commute to work?	How do you commute to work each day?

Note that some qualitative data can be analysed to produce countable values.

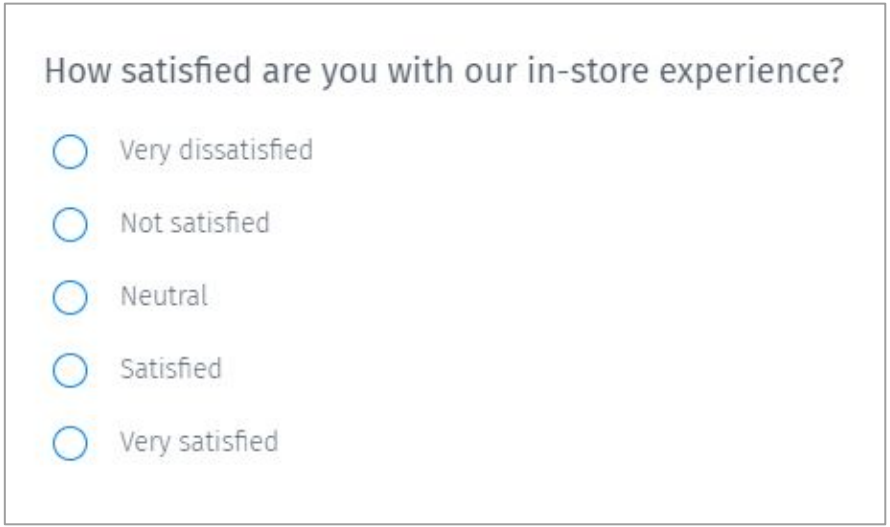
Quantification of qualitative entities

To ease processing of vast amounts of qualitative data, we can try construct questions that identify variables to mapped to a numerical scale.

For example: "On a scale of 1 to 5, how how well do you understand this lecture?".

A **Likert Scale** is commonly used in questionnaires to allow qualitative experiences to be numerically ranked.

- An odd number of response options.
- Centred neutral option for symmetry.
- Balanced wording or representation of positive and negative options.



https://www.questionpro.com/article/likert-scale-survey-questions.htm

Supporting research

Where gaps exist in your data, you will need to make assumptions about your user.

Informed assumptions based on research are better than biased assumptions!

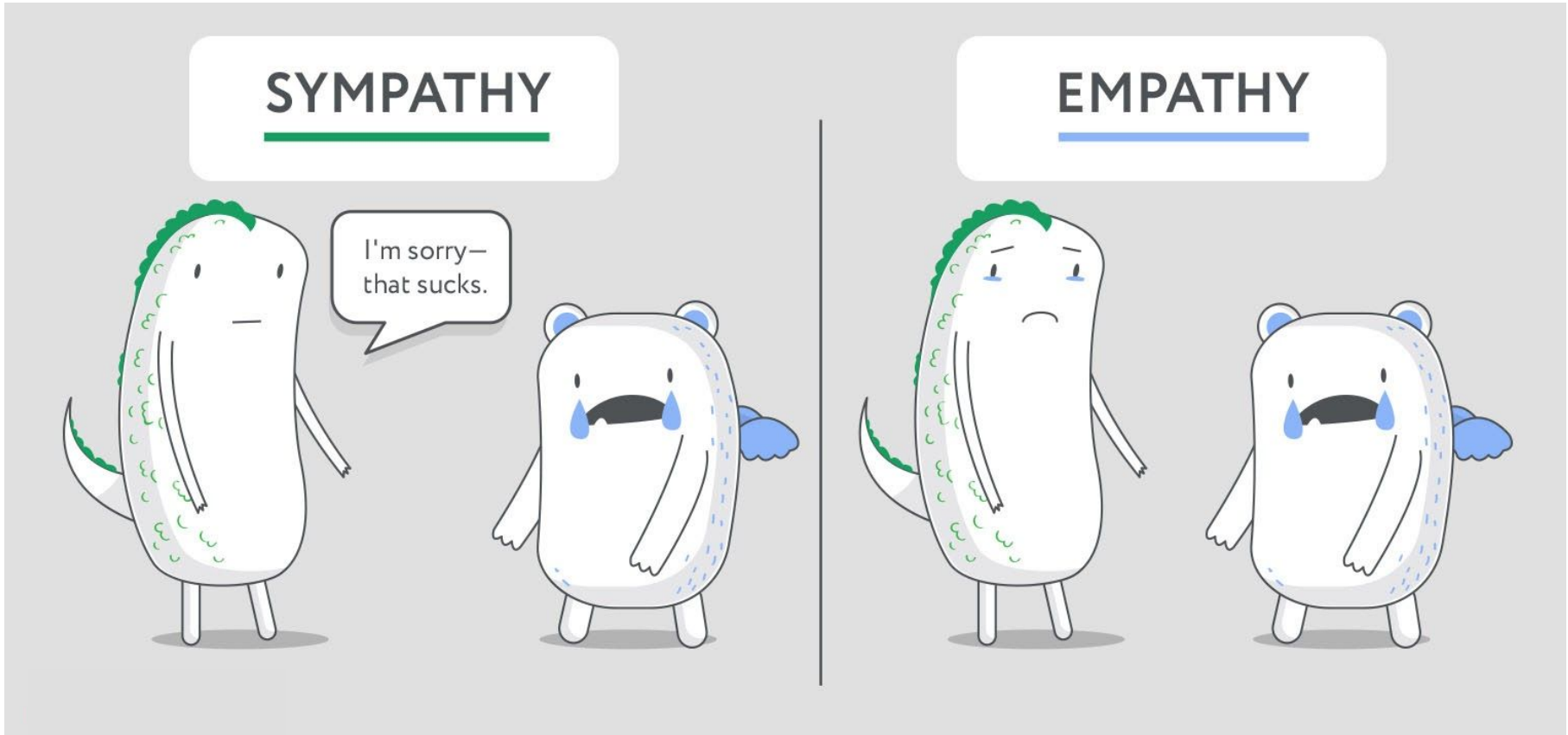
- **Studying existing documentation**
  - Relevant prior research and data
  - Domain related documents
  - Popular and professional research
- **Researching similar systems/products**
  - Product research
  - Direct competitors
  - Indirect competitors

User Empathy Methods

Think about this...

What is the best way to choose a gift for a friend or family member?

What is the difference between these images?



https://www.grammarly.com/blog/empathetic/

What is empathy?

"In an effort to practice empathy, many teams mistakenly practice sympathy"

Sympathy vs. Empathy in UX - NNGroup

- **Sympathy** is the acknowledgement of the suffering of others.

- **Empathy** is the ability to fully understand, mirror, then share another person's expressions, needs, and motivations.

Why document empathy?

Through the creation of UX deliverables we can not only find empathy, but document it for future use my ourselves or others. This is especially important in team projects.

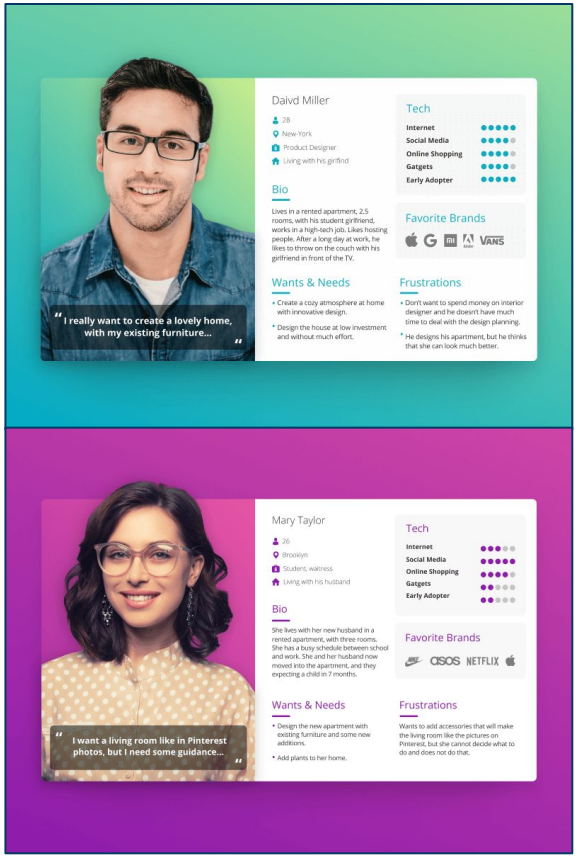
Personas

A profile of a **fictional user archetype** (example user).

Personas allow us to use insights from data and empathy to create a coherent representation of a user.

- User biography and demographics
- User goals needs and pain points
- User behaviours and attitudes
- User context.

This forms a documented narrative that can be referred to throughout the design process consider problems from the perspective of a user.



Personas by Ofer Ariel - https://dribbble.com/ofergpr

Persona scope

The scope or specificity of a persona depends on the problems it is intended to solve.

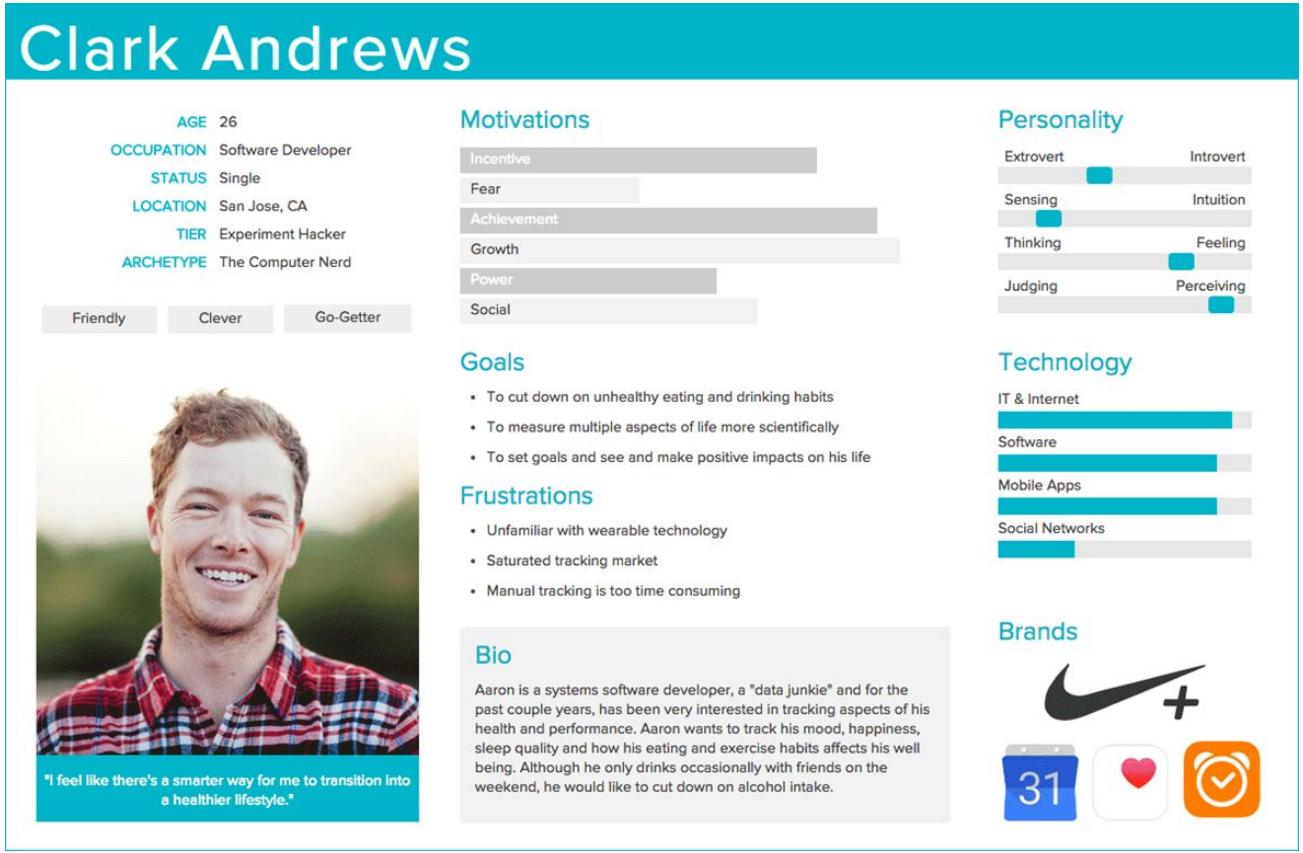
Narrow scope: Describes a single specific user, usually to solve specific goals.

Broad scope: Describes a general user group or role. More rarely used, but may be created if the persona is to be used across multiple products/problems/contexts.

Personas with a smaller scope will have richer narratives for more specific user detail.

- Less ambiguity in what it represents.
- Greater empathy with specific scenarios.
- Better consistency when used by a team.

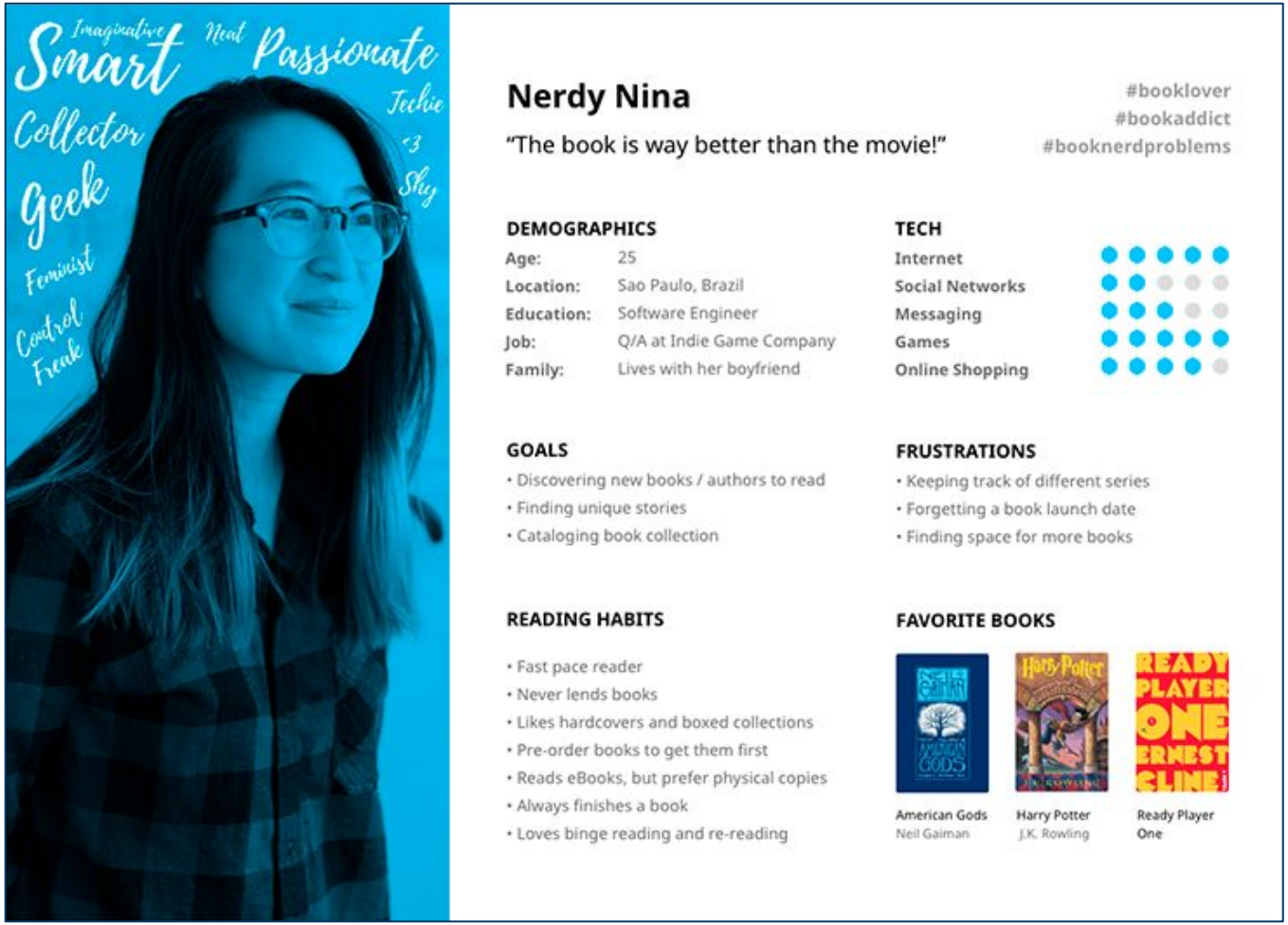
High-fidelity narrow-scope personas



https://en.99designs.de/blog/business/how-to-create-user-personas/

Observe how previously discussed details are presents in this persona.

Which elements of this persona help you understand and empathise with this fictional user?



https://dribbble.com/shots/3052941-UX-Persona-for-Book-App

This persona uses multiple types of information to convey personality relating to context.

Note that the context provided does not give any specific suggestion of the type of product being developed.

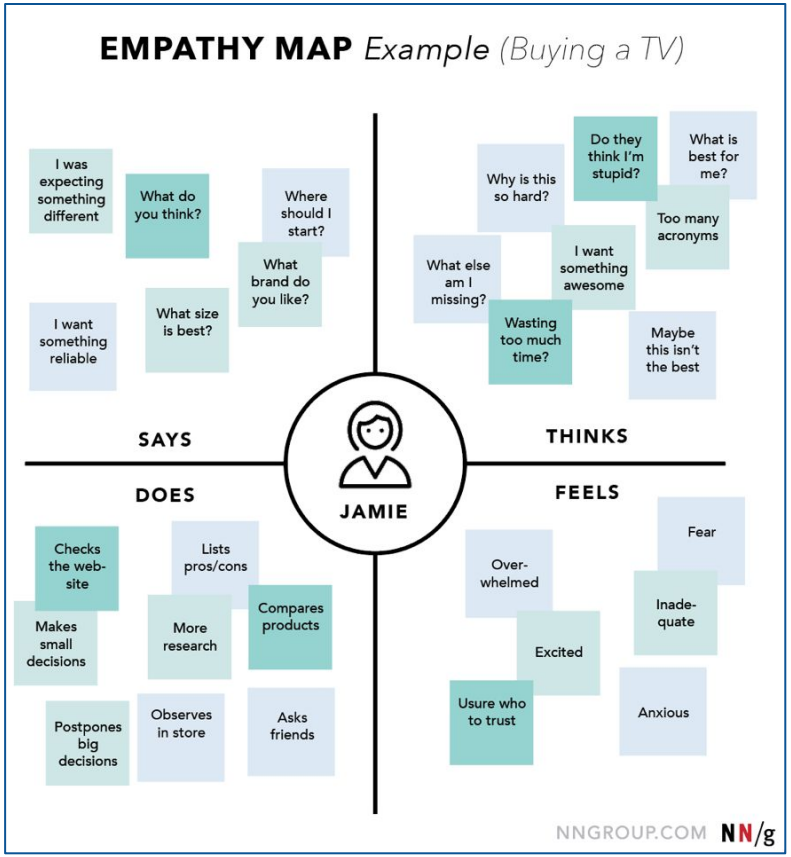
Empathy maps

A visualisation of how we empathise with a user or persona.

An empathy map splits ideas into 4 types:

- What the user **says**
- What the user **thinks**
- What the user **does**
- What the user **feels**

Empathy maps help align a team with a single interpretation of a user/persona, and helps us understand user **motivations** (i.e. what influences a user's decision-making process)



https://www.nngroup.com/articles/empathy-mapping/

User stories

A **user story** is a 1-sentence statement that clearly presents a user-specific problem that can be solved.

User stories are

- Short
- Specific
- Goal-oriented

Focus on the perspective of the user not the developer. User stories should not express specific solutions or UI features.

What is the difference between these stories?

User-centric

> *As Clark, I want easy access to notifications so that I don't miss out on important news from my friends.*

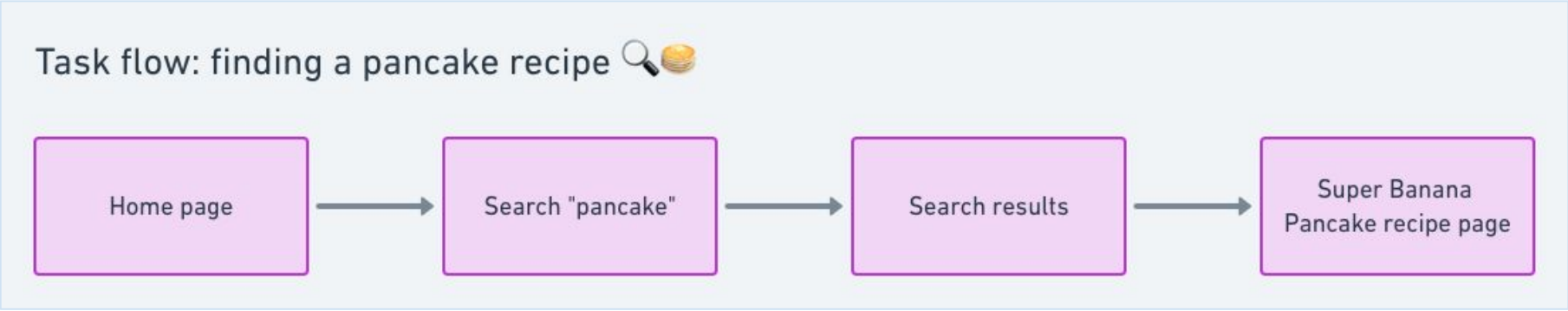
Developer-centric

> *As a user, I want a notifications button so that I can open my notifications.*

Task flows

After knowing the users and goals, tasks should be identified. Different users with different contexts/motivations may have varying approaches to achieving a goal

At their most basic level, task flows can depict a specific single sequence of actions.

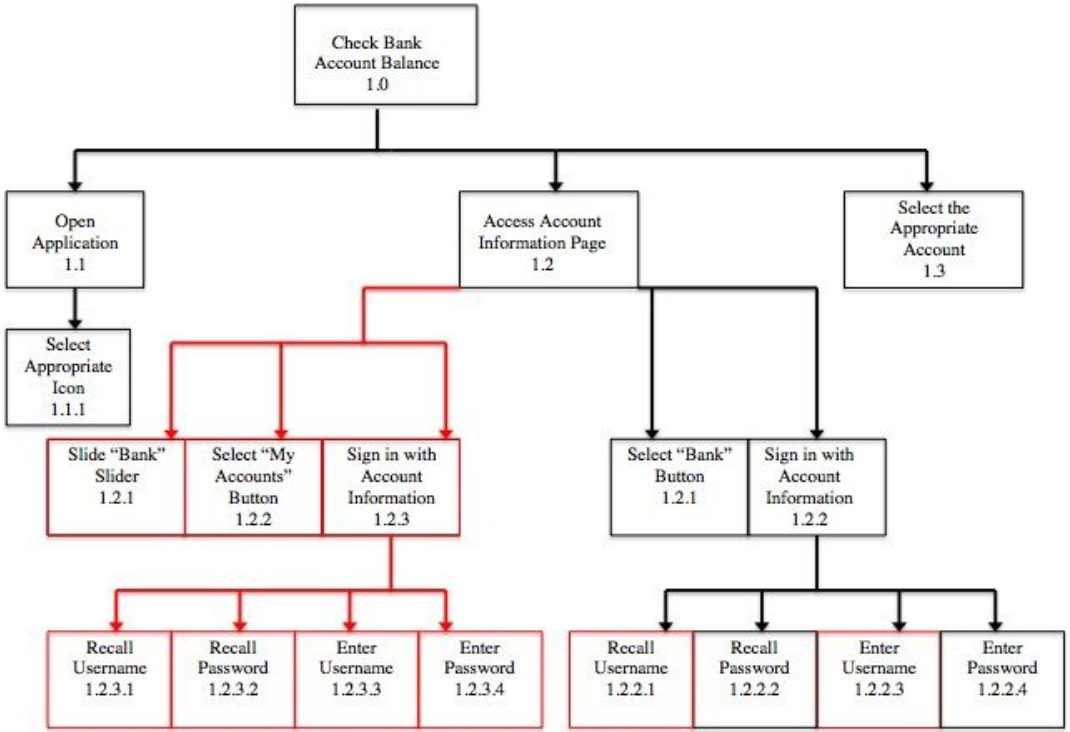


https://medium.com/erika-harano/ux-task-flows-versus-user-flows-as-demonstrated-by-pancakes-896e78a98026

Tasks are depicted from the perspective of a persona.

Hierarchical Task Analysis

Tasks can be decomposed into a hierarchy of subtasks that are grouped as plans.



Follow the numbering:

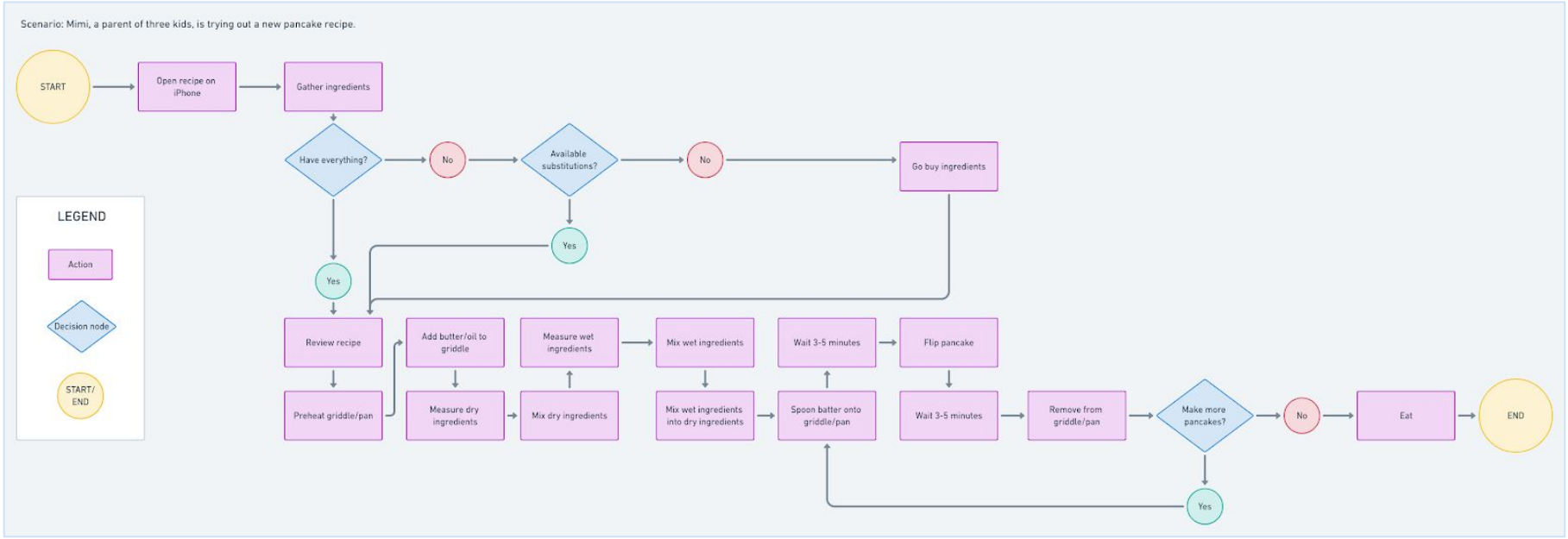
- Nested levels represent subdivision of a task.
- Sub-tasks at the same level sequential plans.
- Identically numbered sub-tasks are alternatives.

In this examples, red tasks are highlighted as redundant.

https://hfacmethods.wordpress.com/hierarchical-task-analysis/

User flows

User flows can depict complex outcomes where decisions need to be made.



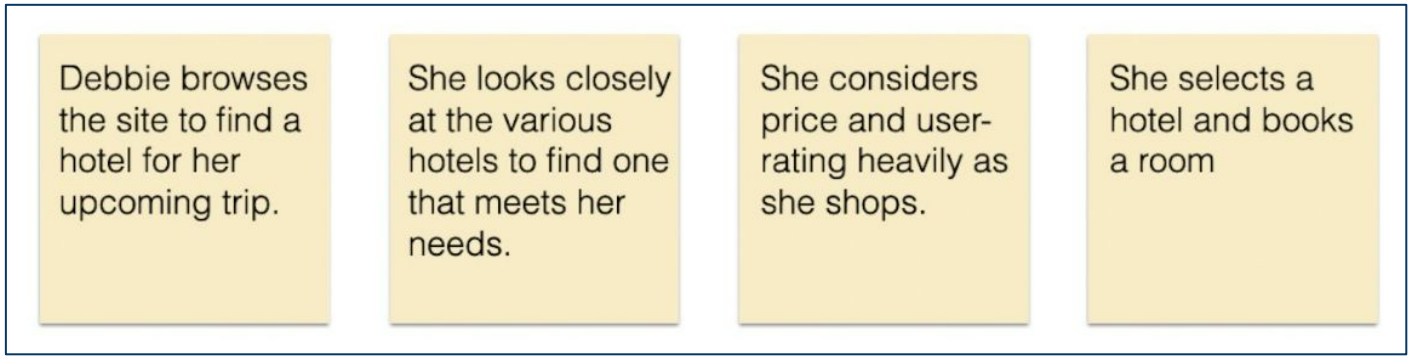
The design of a flow will be specific to a particular persona.

Setting up a scenario for a scenario map

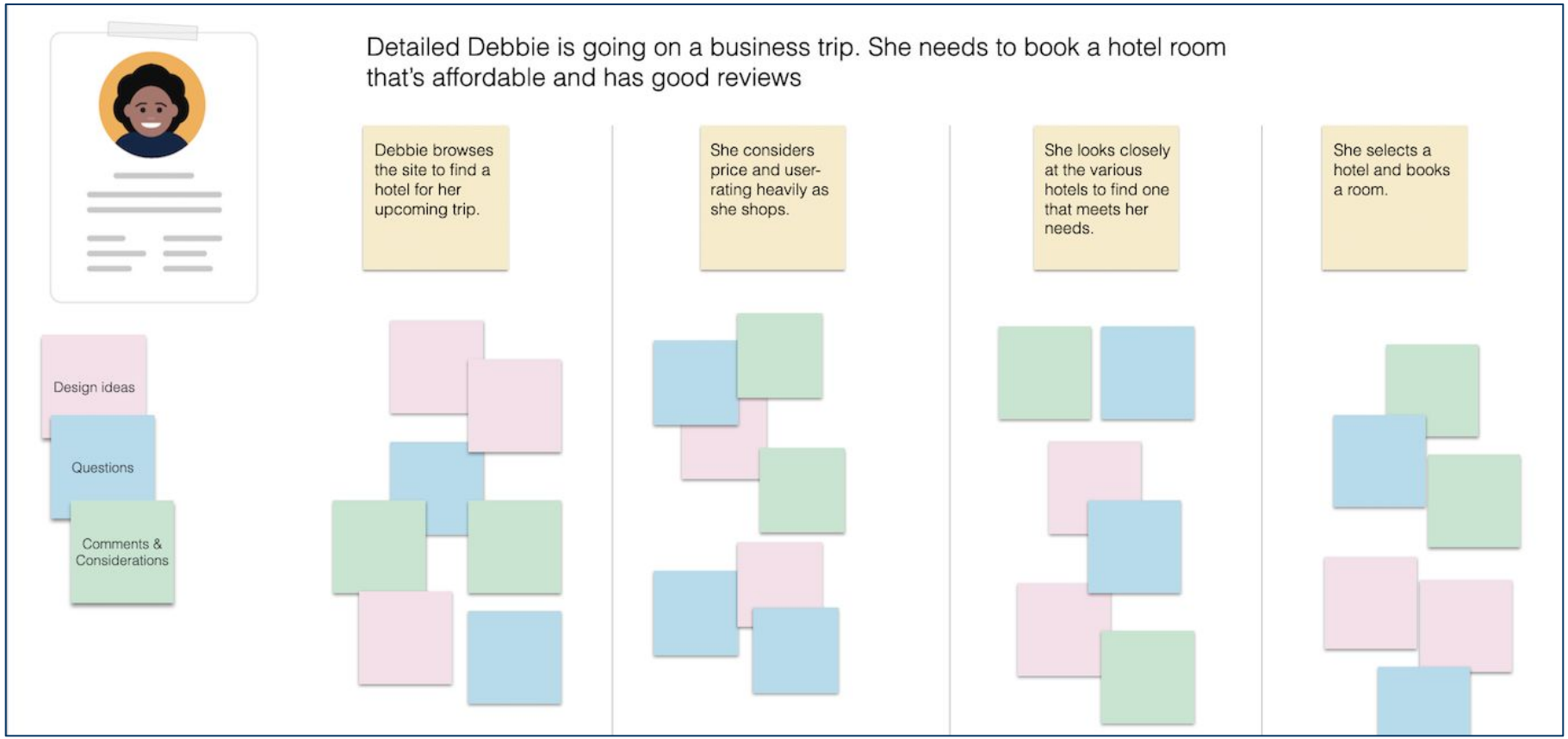
Actor	*Detailed Debbie*
Motivator	*is going on a business trip.*
Intention	*She needs to book a hotel room that's affordable and has good reviews.*
Action	*Debbie browses the site to find a hotel for her upcoming trip. She looks closely at the various hotels to find one that meets her needs.*
Resolution	*Debbie selects a hotel and books a room.*

Above: Defining a scenario using a persona.

Right: Dividing the scenario into pieces.



Adding ideas to the scenario map



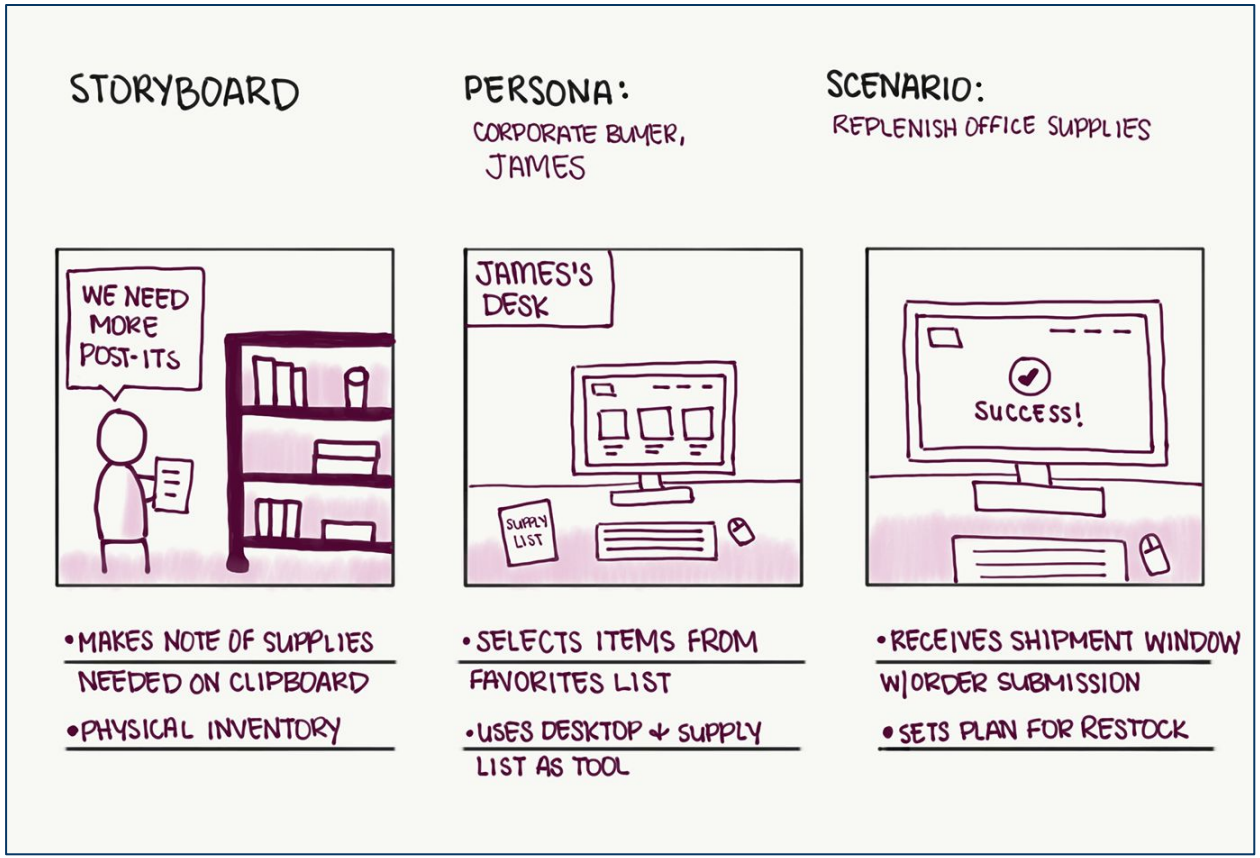
https://www.nngroup.com/articles/scenario-mapping-personas/

Storyboards

Sometimes an ideas is clearer when it is communicated visually.

A storyboard depicts a goal-oriented scenario using a small number (typically 3-6) of simple sketches.

Captions provide the story's context.



https://www.nngroup.com/articles/storyboards-visualize-ideas/

Acceptance criteria

Consider the previous user story:

> ***As Clark, I want easy access to notifications so that I don't miss out on important news from my friends.***

As thinking as a designer, what requirements would be needed to satisfy Clark's goal? Acceptance criteria should **satisfy goals**, **provide benefits** and **fit the persona**.

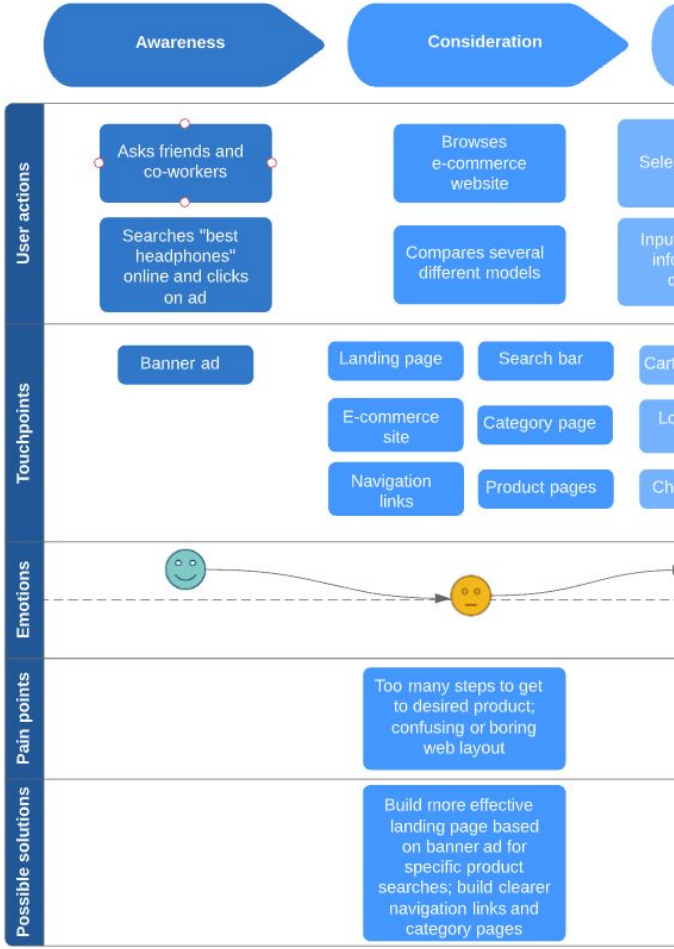
1. ***Button with clear bell icon always present at top of screen.***
2. ***Button has indicator dot shown when there are unread messages.***
3. ***Option to toggle notifications from specific friends - perhaps in friends list.***
4. ***Indicator on each notification to indicate level of importance.***

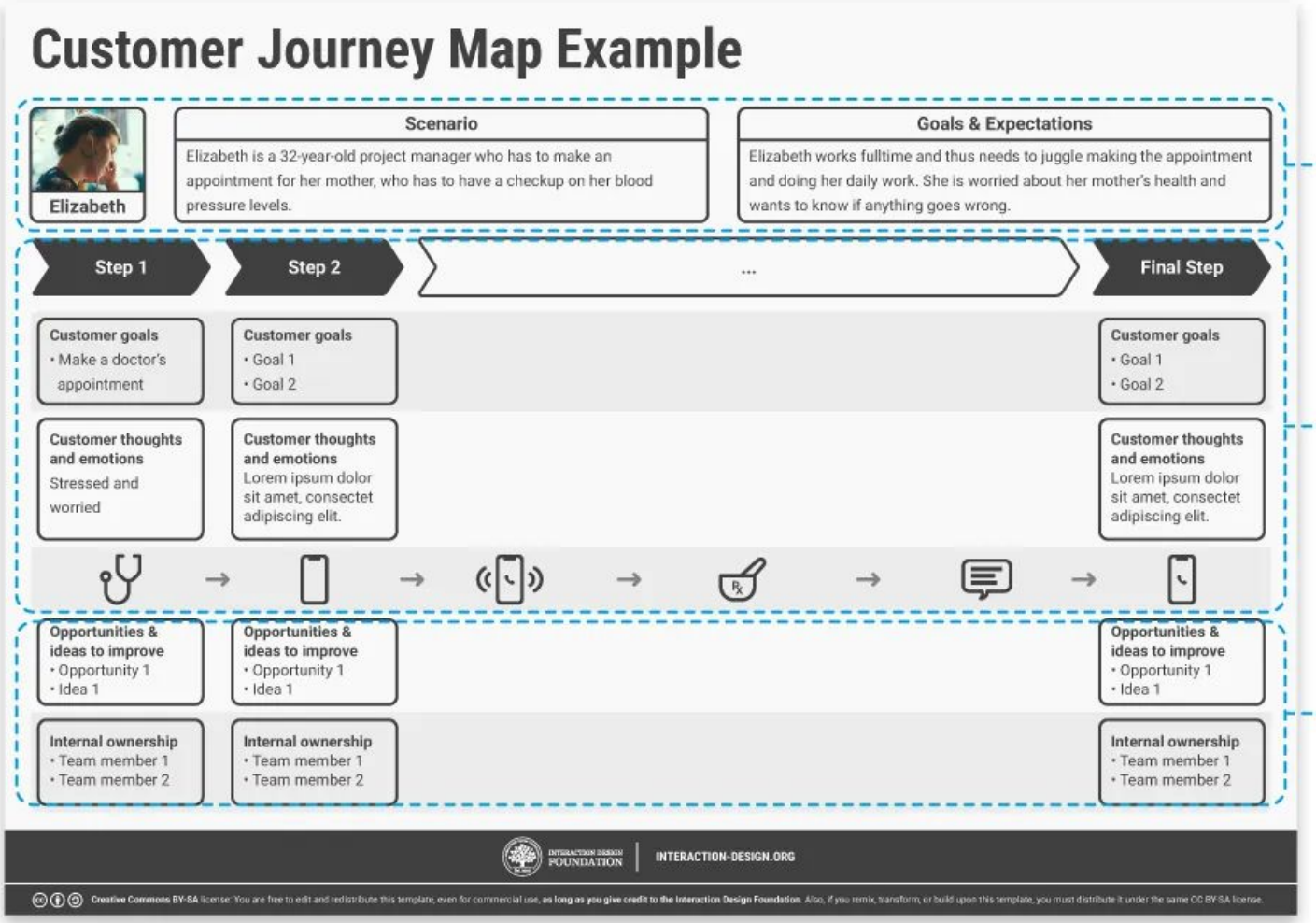
Journey maps

A visualisation of a user's experience as they interact with a product or service.

- Divide the journey of the experience into stages.
- Considering different dimensions of each stage.
  - Thoughts
  - Feelings
  - Actions
- Providing insight into problems and solutions.

Specific dimensions and how they are depicted is Flexible, provided that ideas are clearly expressed.





User Context
Persona and scenario.

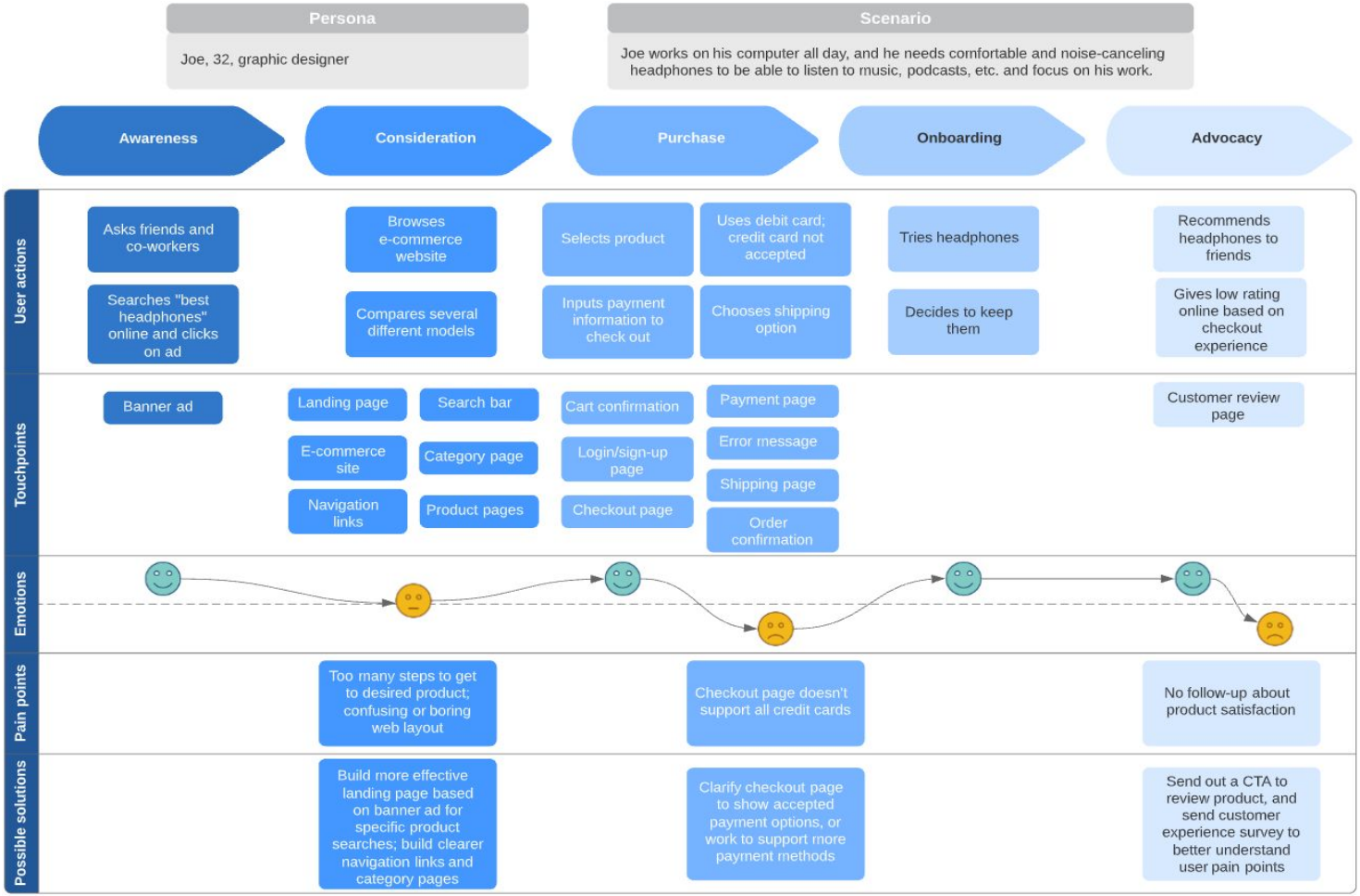
Phases (columns)
Stages of the experience.

Lanes (rows)
Each row depicts a single aspect of the experience.

- *Thoughts*
- *Feelings*
- *Actions*

Takeaways
Insights that may lead to opportunities for problem solving, team member responsibilities for resolution.

https://www.interaction-design.org/literature/topics/customer-journey-map



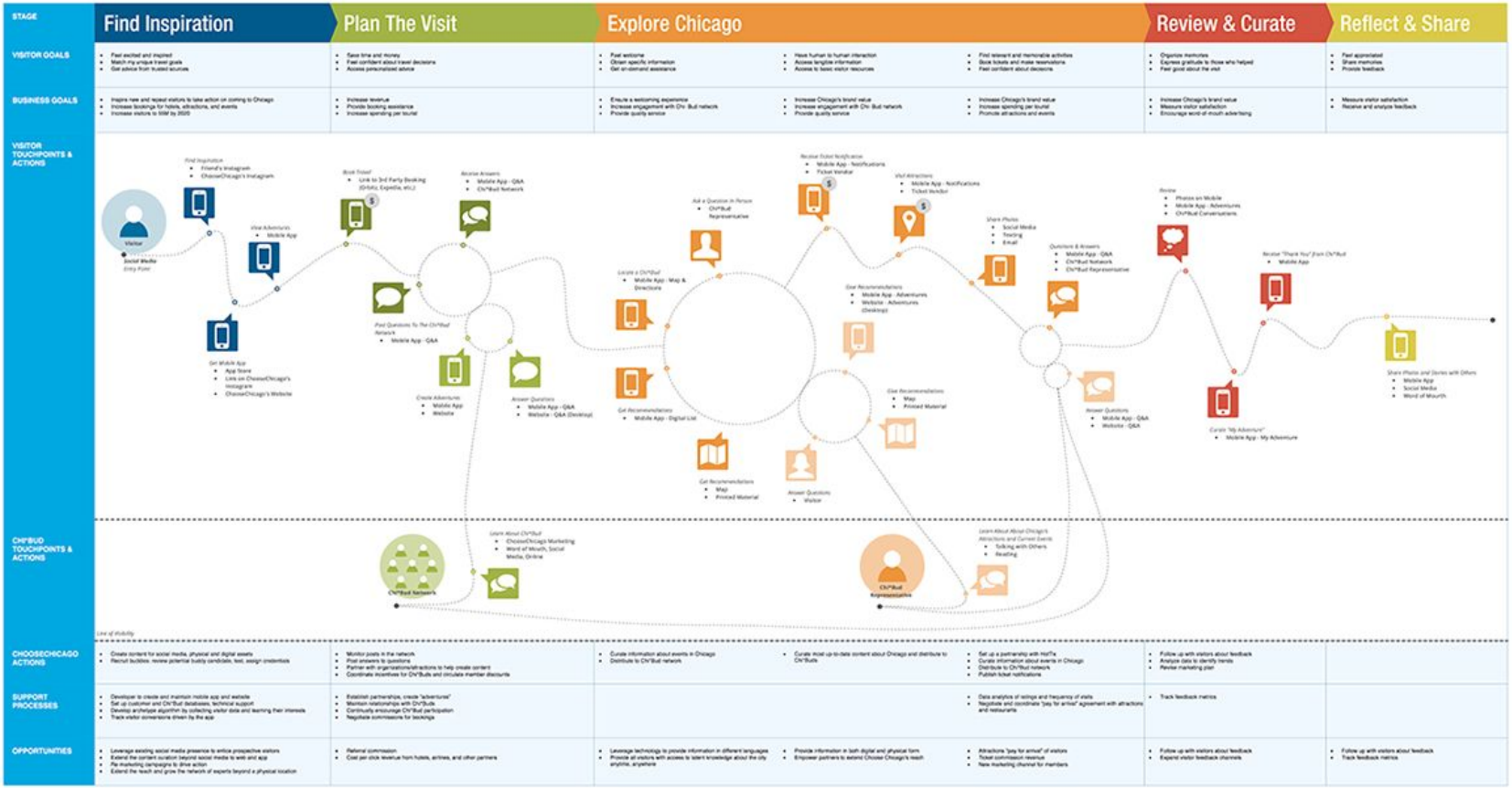
https://www.lucidchart.com/blog/aligning-product-strategy-with-company-strategy

The Chi*Bud Network Visitor Experience & Service Model

What is the future Chicago visitor experience?

CHOOSE CHICAGO

Dec 2015



https://www.behance.net/gallery/22758977/Customer-Journey-Map-Template-Stencils

Next session

- Psychology of user interaction
- Theories, principles and models

Self-study

Review recommended resources for personas and user stories.

Reminders

- **Assignment Stage A is due on Friday of Week 2.**
  - Work with your group to create a survey.
  - Distribute the survey as soon as possible.
  - Collect results and analyse them to learn about your users.