Pragmatic Software Design

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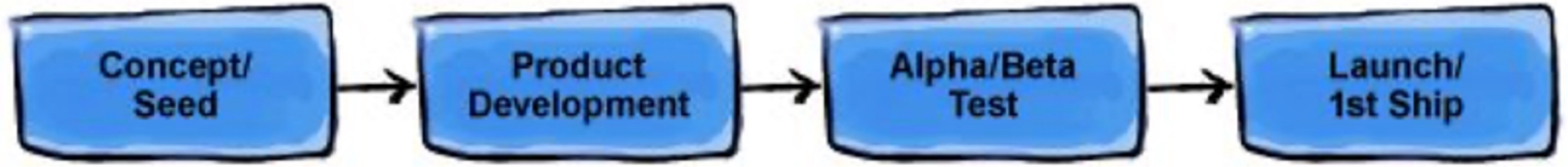
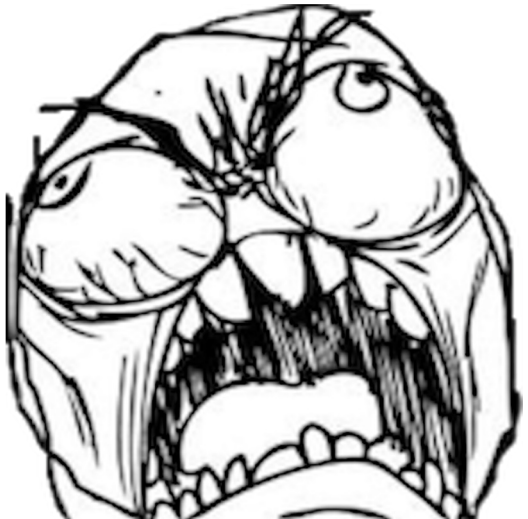
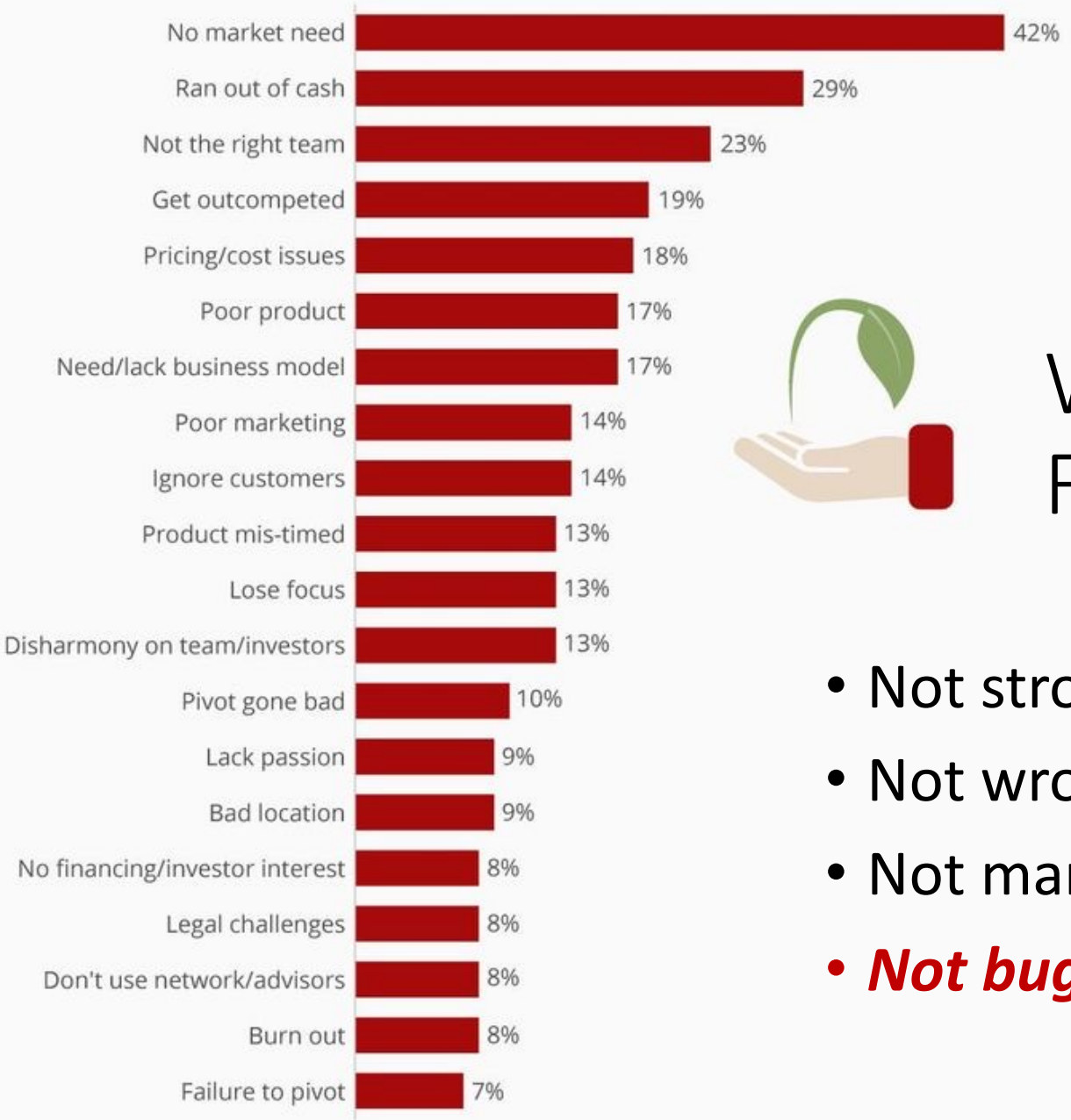
The “Project Development Flow”



- Is actually a disaster!





Why Startups Fail?

- Not strong competitors
- Not wrong pricing
- Not marketing
- ***Not bugs in product***

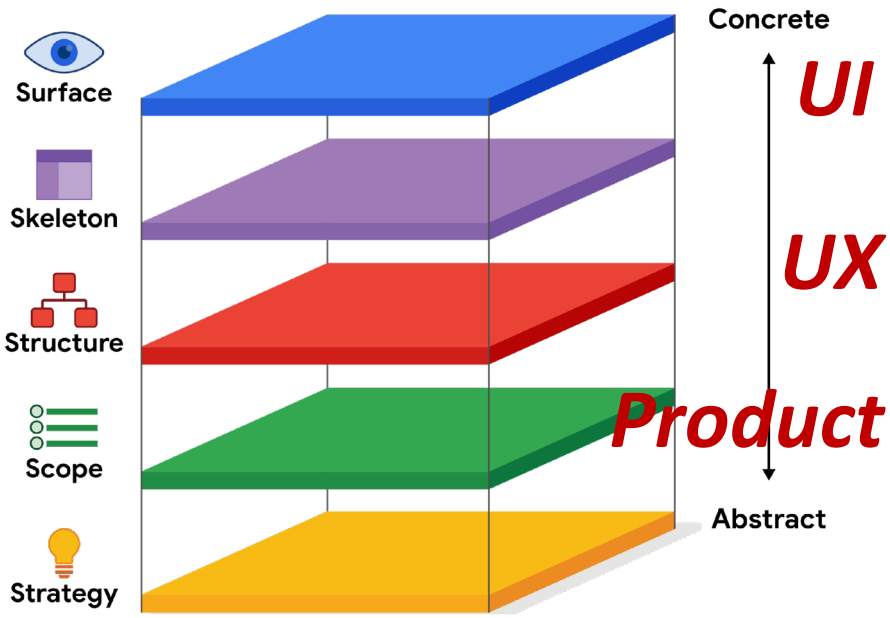
* Based on an analysis of 101 startup post-mortems
Source: CB Insights

@StatistaCharts

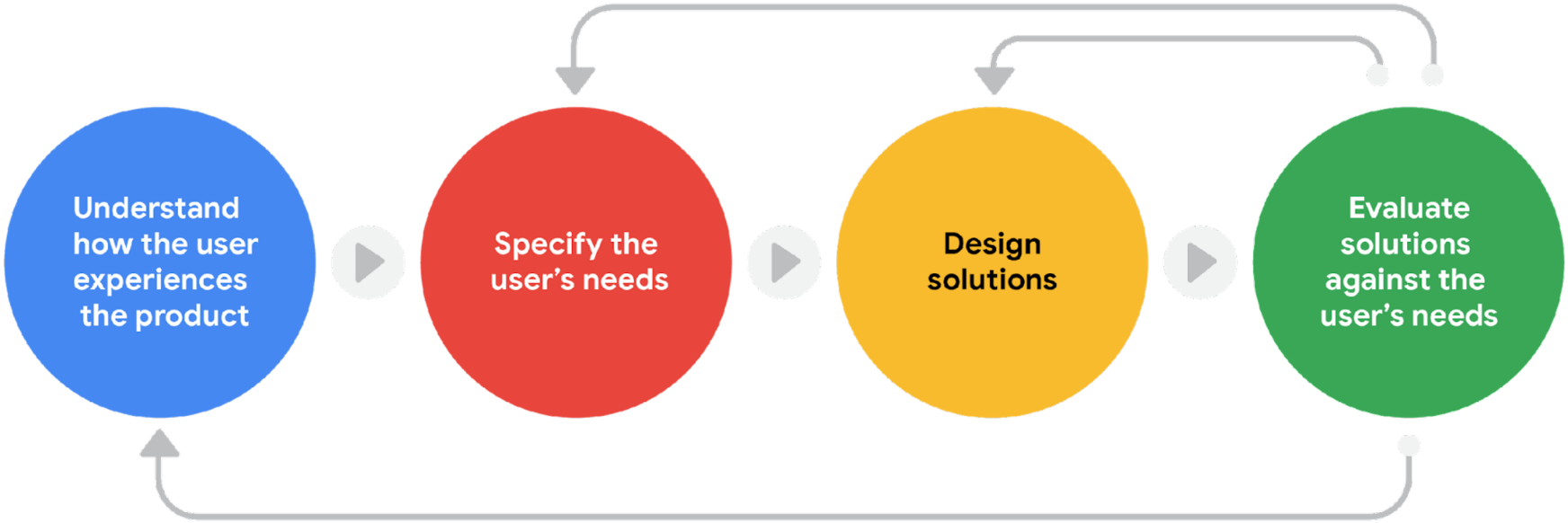
Forbes statista

Product vs. UX vs. UI Design

- Strategy
  - How to help users reach goals?
  - How to reach our marketing or business goals?
- Scope
  - What features to include?
  - What not to?
- Structure
  - Navigation system?
  - Transitions?
  - Notifications?
- Skeleton
  - Layout of each page/screen?



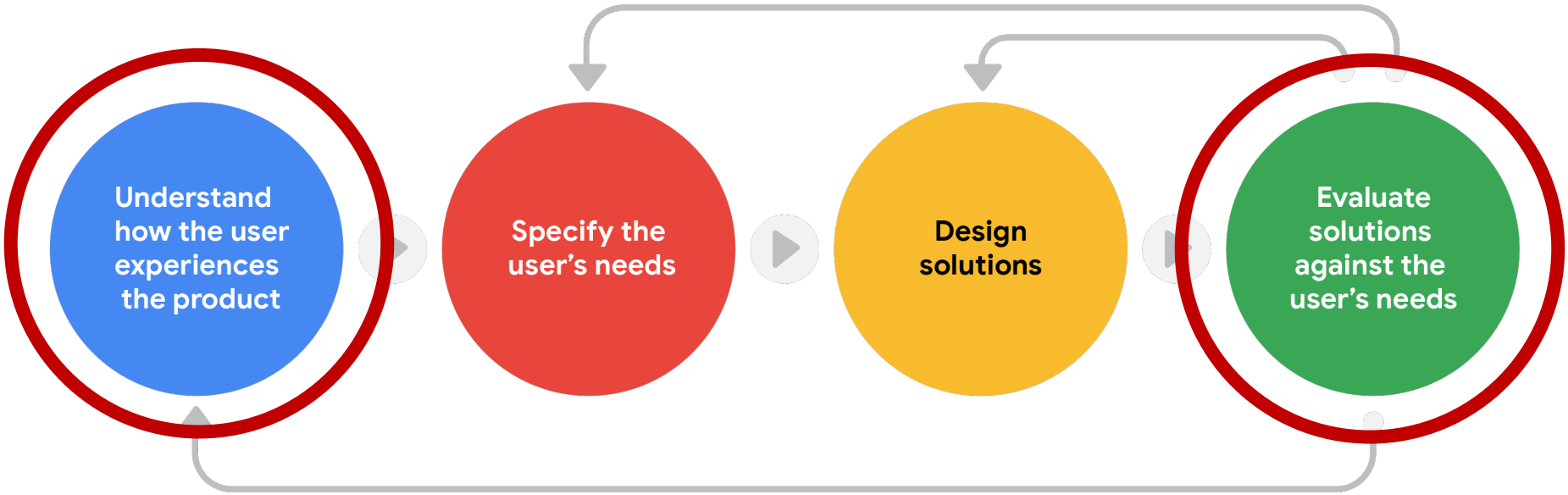
Design before Development



- Design processes are ***iterative*** in nature
  - Be ready to change when you get new information/feedback
  - Modular codebase matters

Outline

- Empathize with users
- Overcoming your biases

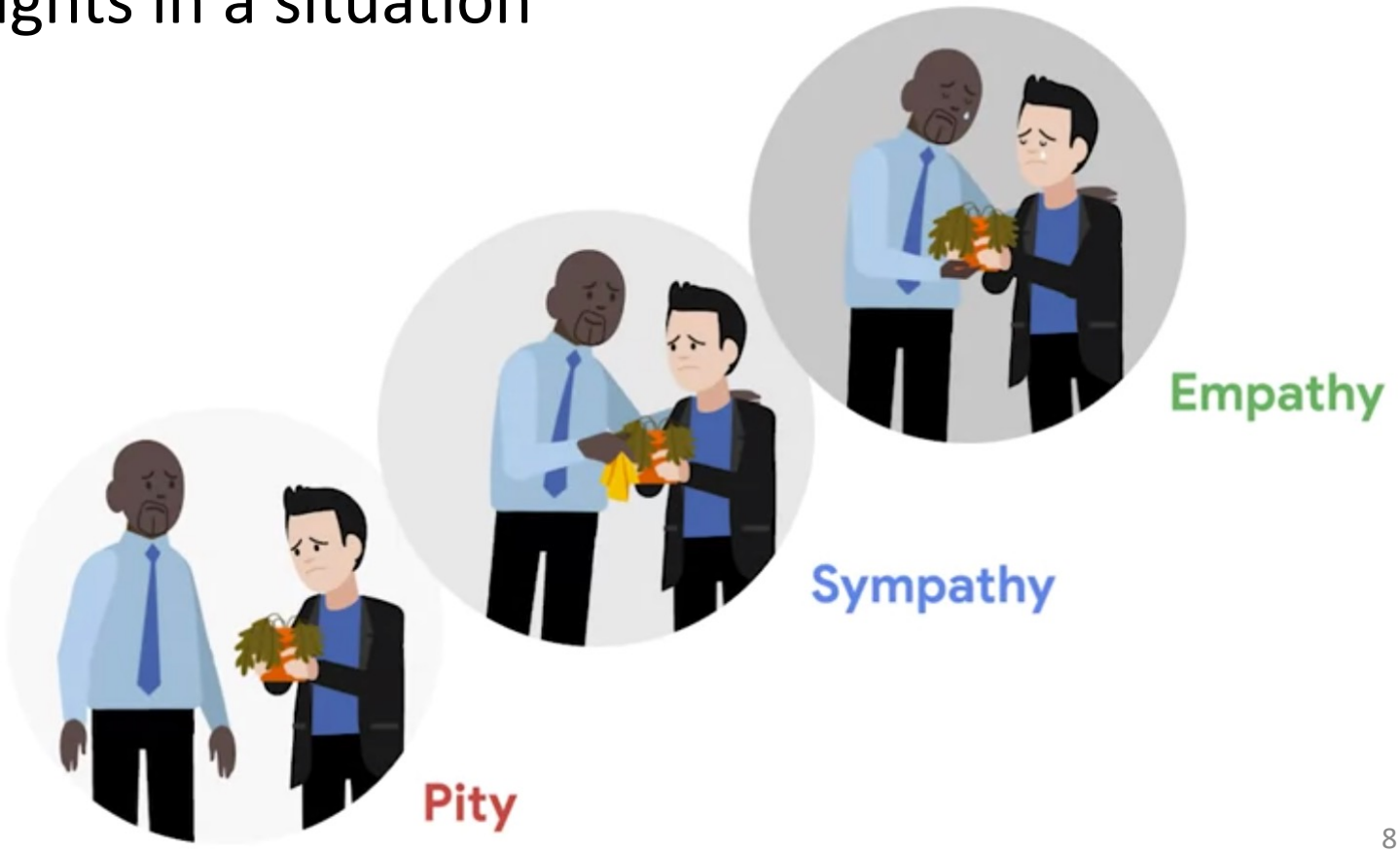


Two Major Goals

1. To empathize users
2. To understand market and competitors

Empathy

- Able to understand someone else's feelings or thoughts in a situation



Assignment: User Interview

1. Recruiting subjects
2. Preparing for the interviews
3. Conducting interviews
4. Visualizing and learning

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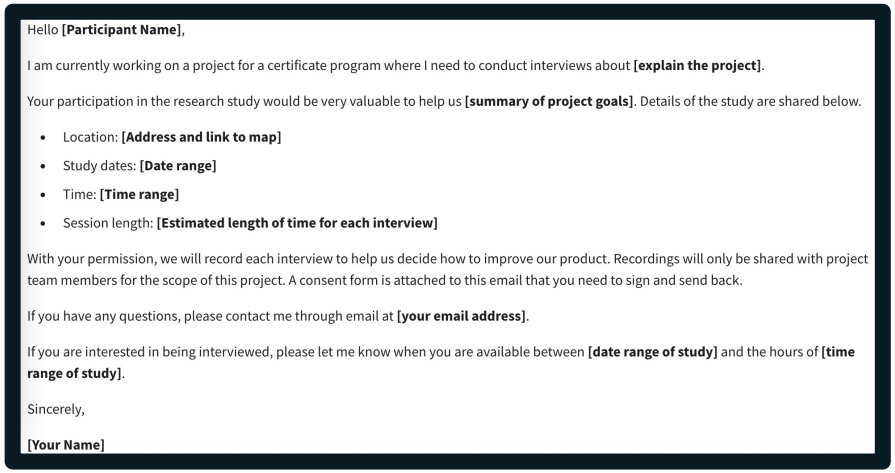
Recruiting Interview Subjects

1. Determine interview goals
2. Screener survey (age, gender, location, job…)
3. Invite subjects and schedule time

- Channels
  - ***Classmates***
  - Friends & family
  - Online
  - Hallway
  - Recruiting agencies
  - Existing user base



Hello **[Participant Name]**,

I am currently working on a project for a certificate program where I need to conduct interviews about **[explain the project]**.

Your participation in the research study would be very valuable to help us **[summary of project goals]**. Details of the study are shared below.

- Location: **[Address and link to map]**
- Study dates: **[Date range]**
- Time: **[Time range]**
- Session length: **[Estimated length of time for each interview]**

With your permission, we will record each interview to help us decide how to improve our product. Recordings will only be shared with project team members for the scope of this project. A consent form is attached to this email that you need to sign and send back.

If you have any questions, please contact me through email at **[your email address]**.

If you are interested in being interviewed, please let me know when you are available between **[date range of study]** and the hours of **[time range of study]**.

Sincerely,

[Your Name]

Assignment: User Interview

1. Recruiting subjects
2. Preparing for the interviews
3. Conducting interviews
4. Visualizing and learning

Preparing for User Interviews

1. Script interview questions
   - Example for food delivery app (by Google)
   - Example for apps scheduling dog walkers (by Google)
2. Collect supplies (e.g., phone and apps)
3. Research subjects
4. Practice

Assignment: User Interview

1. Recruiting subjects
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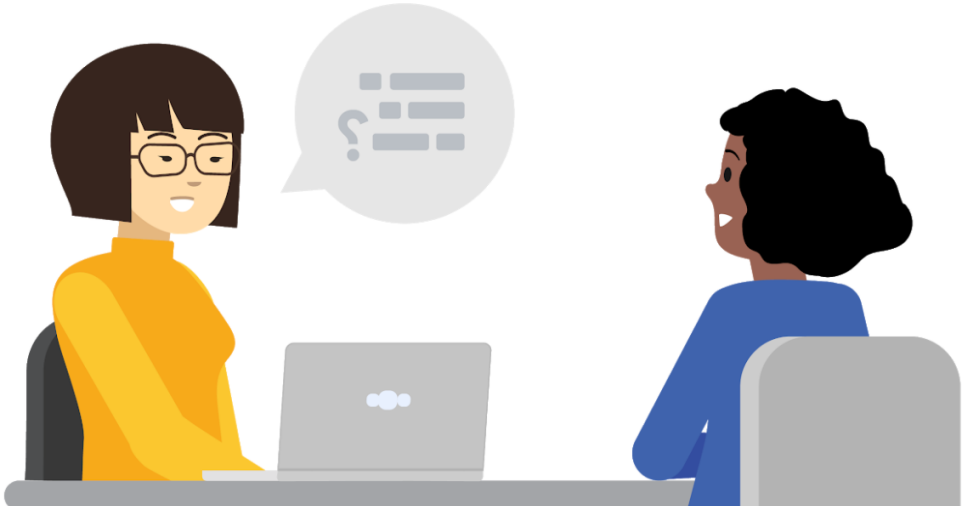
Conducting User Interviews

1. Make subjects relaxed and at ease
   - Build a good rapport
   - Thank the subject for coming
   - Get legal consent (e.g., of your recording)
   - Gather basic details
   - Let subject know there's no "right" or "wrong" answers

Conducting User Interviews

2. Conduct the interview
   - Speak clearly and concisely
   - Keep calm no matter how the subject answers the question
   - Ask ***open-end*** questions
     ❌ "Yes" or "No" ✅ "Why" or "What"
   - Ask ***follow-up*** questions



Conducting User Interviews

3. Take notes
    - Highlight compelling quotes
        - To be used in empathy maps and user testimonies
    - Document observations about the subject
        - What's done? (mood, expressions, body language, behavior, etc.)
        - What's said? (audio recording suggested)

Conducting User Interviews

4. Wrap up the interview
    - Give the subject a chance to share any final thoughts
    - Thanks the subjects again for their time
    - Optional: offer the prepared incentives

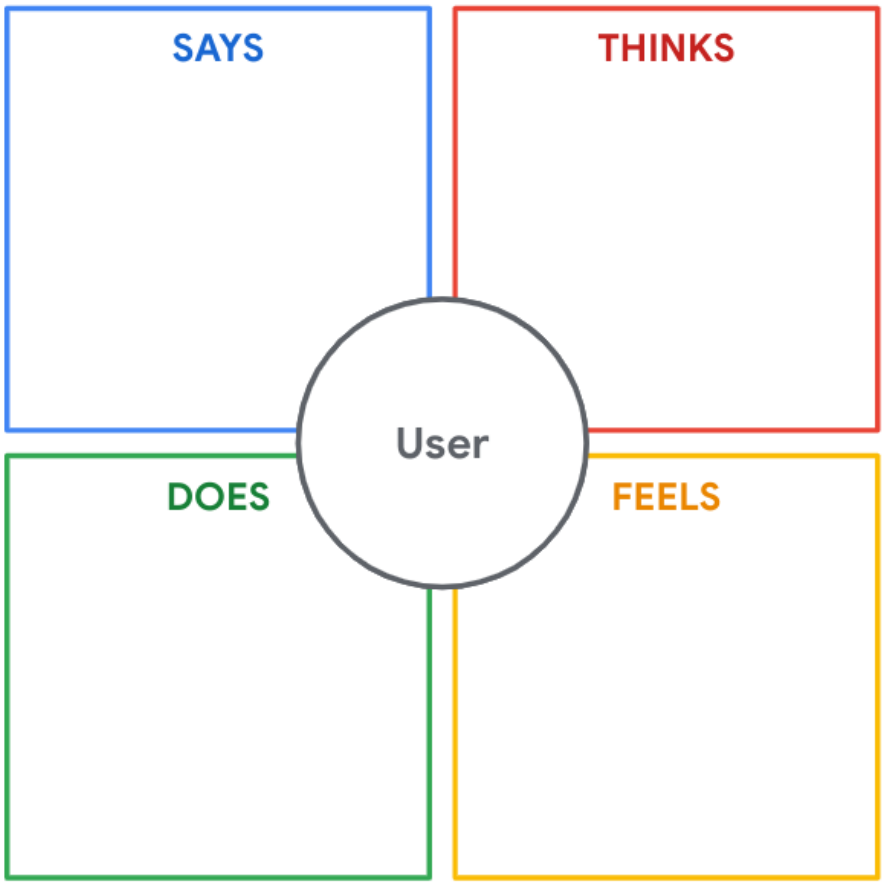
Assignment: User Interview

1. Recruiting subjects
2. Preparing for the interviews
3. Conducting interviews
4. Visualizing and learning

Visualizing and Learning

1. Draw the empathy maps
2. Identify user pain points
3. Refine or create new personas

Empathy Maps



- A chart that explains everything designers have learned about a type of user

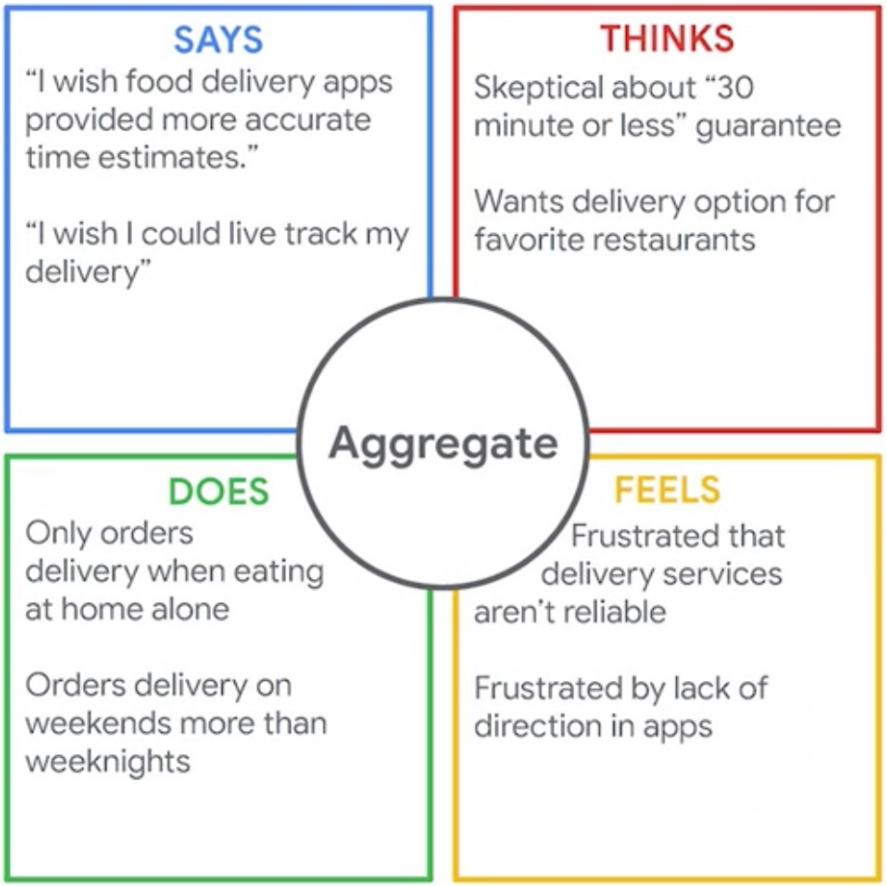
- How to draw?
  1. Maps for individual users
  2. Maps for different user segments

One-User Empathy Maps

- Imagine you're reviewing an app that promises food delivery in 30 minutes

- Use quotes whenever possible

Aggregated Empathy Maps



- Merge the maps of similar users to form ***user segments***

- One aggregated map for each user segment
  - "Positive" vs. "Negative" vs. "Confused" subjects

Two Major Goals

1. To empathize users
2. To understand market and competitors

Direct vs. Indirect Competitors

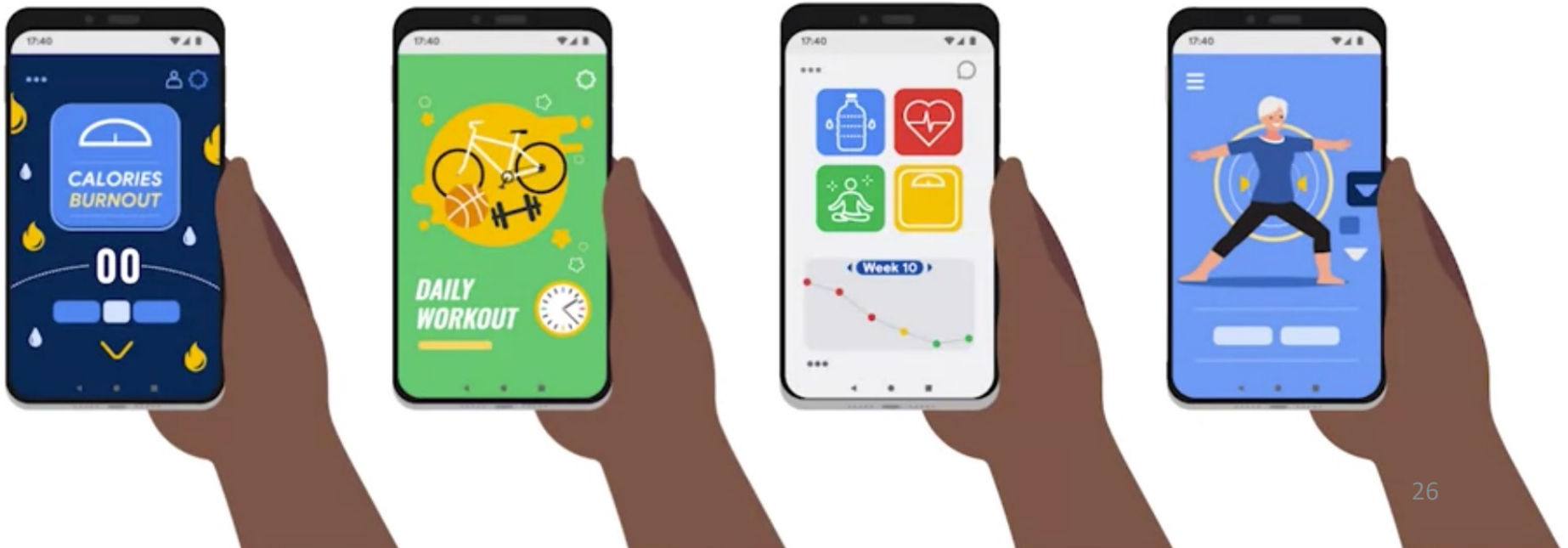
- Direct competitors
  - Have offerings (products, services, or features) similar to your product and focus on the same audience
- Indirect competitors
  - Have a similar set of offerings, but focus on a different audience
  - Or, have a different set of offerings and focus on the same audience

Example (Weight-loss App for 20’s)

Indirect

- Health/wellness apps targeting 20’s
- Weight-loss apps for 60’s

Direct



User Journey Map

- An illustration of what a target user experiences to achieve a specific goal ***with existing solutions***

Example (CoffeeHouse App)

Persona: Anika

Goal: A fast and easy way to place and pick up group orders

ACTION **2.a**	Collect orders	Go to Coffeehouse	Submit group order	Wait for order completion	Pick up order
2.b TASK LIST	Tasks A. Collect orders from coworkers B. Collect payment from coworkers	Tasks A. Go to Coffeehouse B. Wait in line	Tasks A. Relay order to barista B. Double-check order for accuracy C. Initiate checkout	Tasks A. Gather any extra items (napkins, coffee sleeves, etc.)	Tasks A. Pick up order B. Check that order is correct
2.c FEELING ADJECTIVE	Excited to connect to coworkers Worried about making order errors	Anxious about getting back to work in time	Stressed about entering each order one by one	Anxious about time	Relieved that order is ready Hopeful that everyone's orders are correct
2.d IMPROVEMENT OPPORTUNITIES	Offer a way to easily collect multiple orders	Create an app for advance ordering	Offer a way to easily collect multiple orders	Create an app that offers order status updates	

Benefits of User Journey Mapping

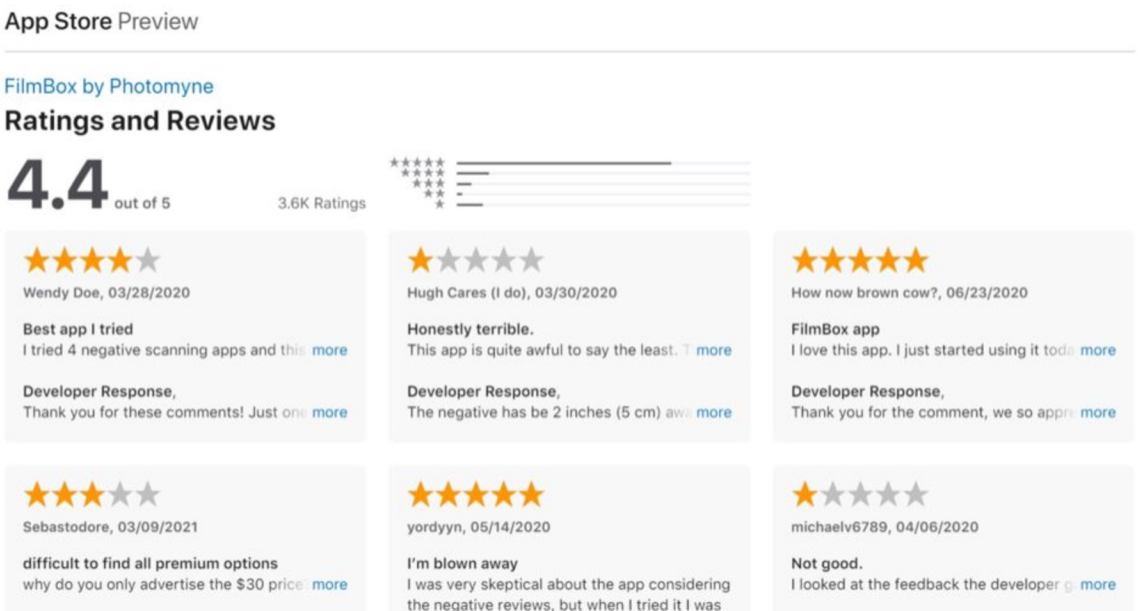
- Helps get a ***bigger picture*** of the user stories
  - Avoids partial solutions
  - Reduces impact of user & designer biases
- Highlights existing ***pain points***
- Identifies improvement ***opportunities***

- How to know real users' feelings?

Ratings & Reviews

- A good source of opinions from real users
  - Positive reviewers vs. negative reviewers

- Together with empathy maps, you'll have clearer picture of your potential users



Assignment & Grading

- Conduct interviews to validate your 1~3 rough ideas
- Per-user & aggregate empathy maps of target audience: ***40%***
- Direct & indirect competitors: ***25%***
- User journey maps: ***25%***

- By 3/27 noon
  - TAs will provide a sheet where your team can announce your interview topic
  - Each of you should participate in at least 3 interviews
  - Each group should have at most 20 interviewers

Peer Review (10%)

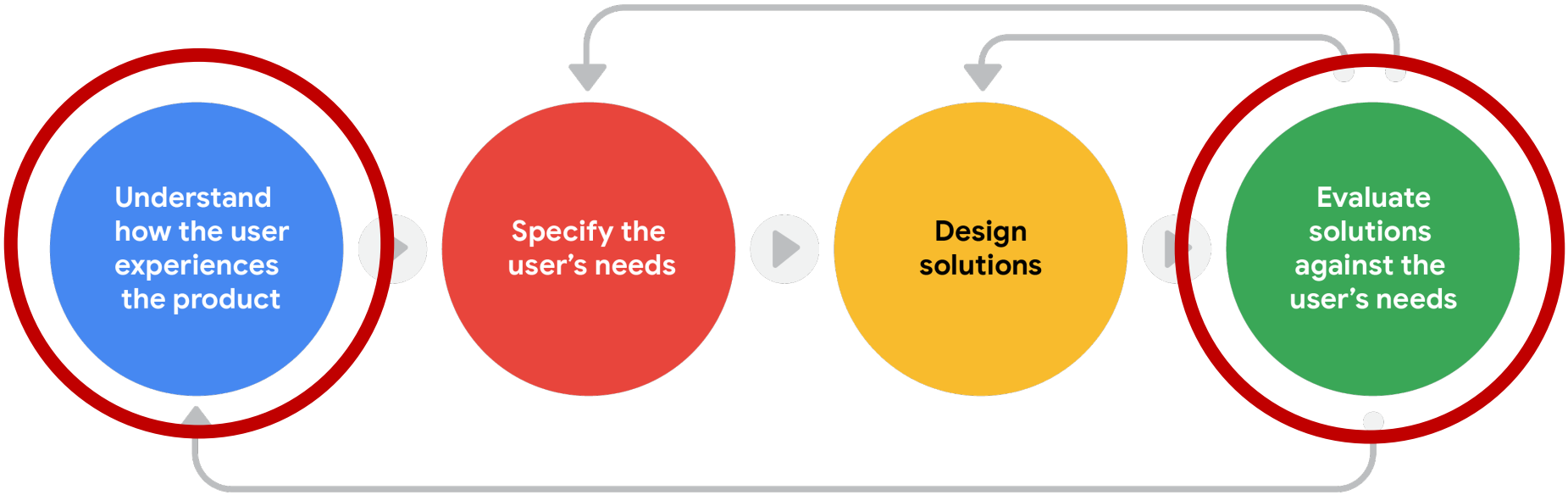
- Each team is rated by a tester **5%**
  - Did the team give enough background or context?
  - Were the questions clear and without bias?
  - ***Not*** based on the idea
- Each tester is rated by a team **5%**
  - Was the feedback specific enough?
  - ***Not*** based on the number of insights

Tips for Getting Rough Ideas

- What bothers ***you*** or people around you?
- Make ***few*** people ***very*** happy
- Avoid “platforms” with chicken-and-egg problem
- To have a good idea, you need ***many*** bad ones

Outline

- Empathize with users
- Overcoming your biases



Bias

- Favoring or having prejudice against something based on limited information

Kinds of Biases

- Confirmation bias
- False consensus bias
- Primacy bias
- Recency bias
- Implicit bias
- The sunk cost fallacy

Confirmation Bias

- Occurs when you start looking for evidence to prove a hypothesis you have
  - E.g., “Left-handed people are more creative than right-handed people”
- How to overcome it?
  - Ask open-ended questions
  - Actively listen (without your own opinions)
  - Include a large sample of users

False Consensus Bias

- The assumption that others will think the same way as you do
  - E.g., “Anyone who doesn’t … must be crazy”
- How to avoid it?
  - Identify and articulate your assumptions
  - Survey large groups of people
- Ask open-ended questions

Recency Bias

- It’s easiest to remember the last thing you heard in an interview or conversation because it’s the most recent

- How to overcome it?
  - Take notes or recordings

Primacy Bias

- You remember the first participant most strongly
- How to overcome it?
  - Take notes or recordings
  - Interview each participant in the same way
    - Also helps you remember the unusual moments

Implicit/Unconscious Bias

- A collection of attitudes and stereotypes we associate to people without our conscious knowledge
  - E.g., when we only interview a limited set of people
  - E.g., Not interviewing people whose life experiences are different from your own
- How to overcome it?
  - Team up with people with diverse background

The Sunk Cost Fallacy

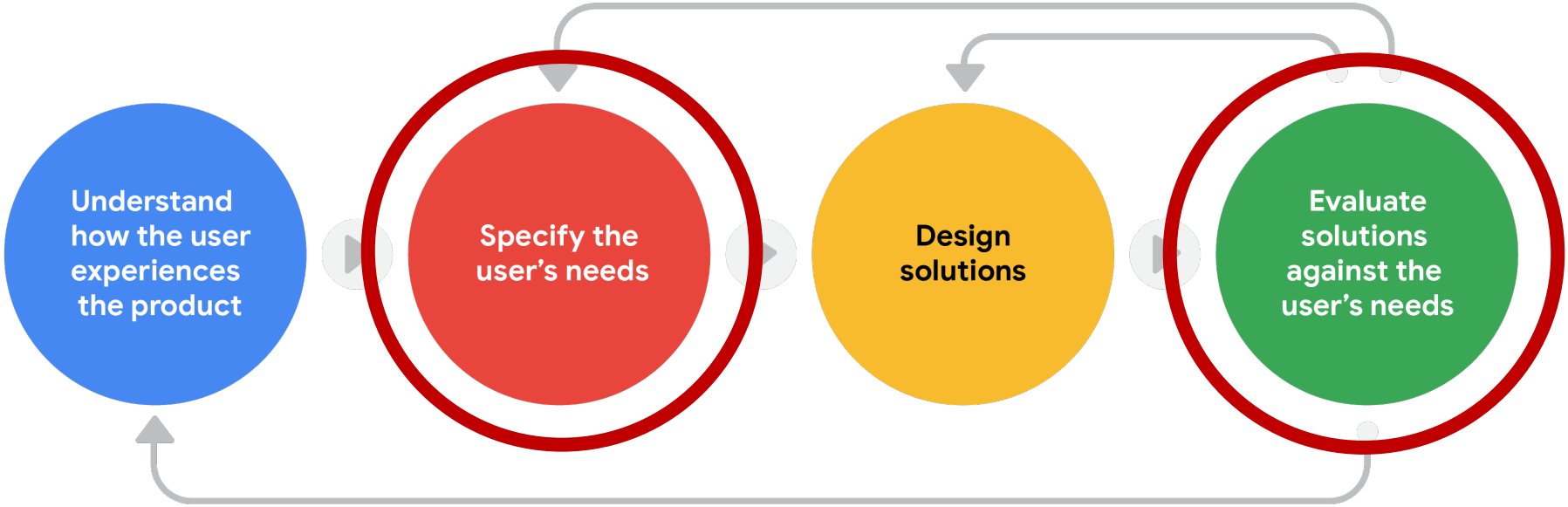
- The deeper we get into a project we've invested in, the harder it is to change course without feeling like we've failed or wasted time
  - E.g., "I need to finish this because I've been working on it for 2 months"
- How to avoid it?
  - Break down your project into smaller phases
  - Outline designated points where you can decide whether to continue or stop

Preventing Bias in Data Collection

- Choose your words carefully
  - "Do you like or dislike the ***improved*** layout of these buttons?"
- Avoid the bandwagon effect
  - "Let's ***take turns*** to share your opinions…"
- Avoid specific language
  - "Which of ***the following ways*** did you use our product? (1) … (2) …"
- Limit the guidance you give users
  - "Oh! You should ***click here first***…"
- Consider users' tone and body language
  - Subject: "***Uh***, ***well***, … it's … good… ***I think***…"
- Be careful of your own body language and reactions
  - "It's smart! ***Isn't it***?"
- Plan your research effectively
  - "Let's invite your Mom ***because we are out of testers***"
- Space out the scheduling of interviews and take notes

Outline

- Understanding user goals
- Unique value proposition for your target audience
- Ideation & storyboards



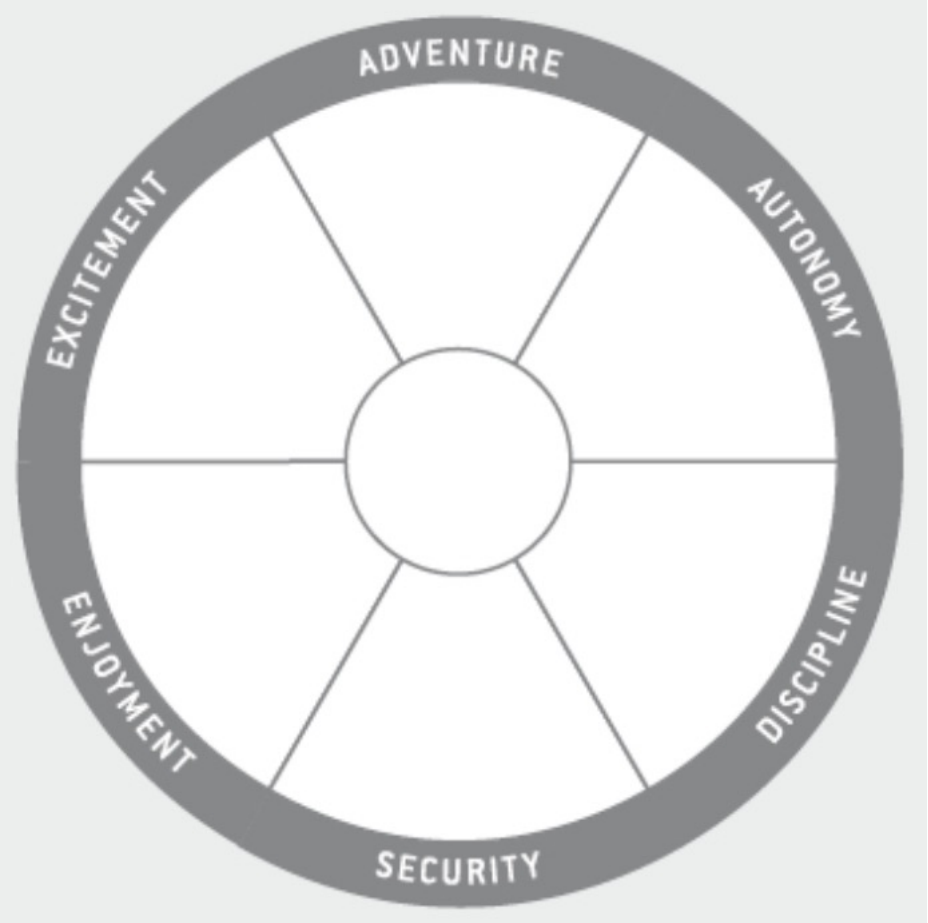
People use a product because of its *expected value* to achieve a *goal*

Users' Goals

- Explicit goals
  - Category specific
  - E.g., moisturizing our skin, reliability of a car, removing stains…
- Implicit goals
  - More general
  - Operate on a psychological level
  - E.g. energizing, being sensible, fun, status…

Anatomy of Implicit Goals

- Security
  - Care, trust, closeness, security, warmth…
- Enjoyment
  - Relaxation, light heartedness, openness, pleasure…
- Excitement
  - Vitality, fun, curiosity, creativity, change…
- Adventure
  - Freedom, courage, rebellion, discovery, risk…
- Autonomy
  - Pride, success, power, superiority, recognition…
- Discipline
  - Precision, order, logic, reason…



What Did You See?

Anatomy of Implicit Goals

- Security
  - Care, trust, closeness, security, warmth…
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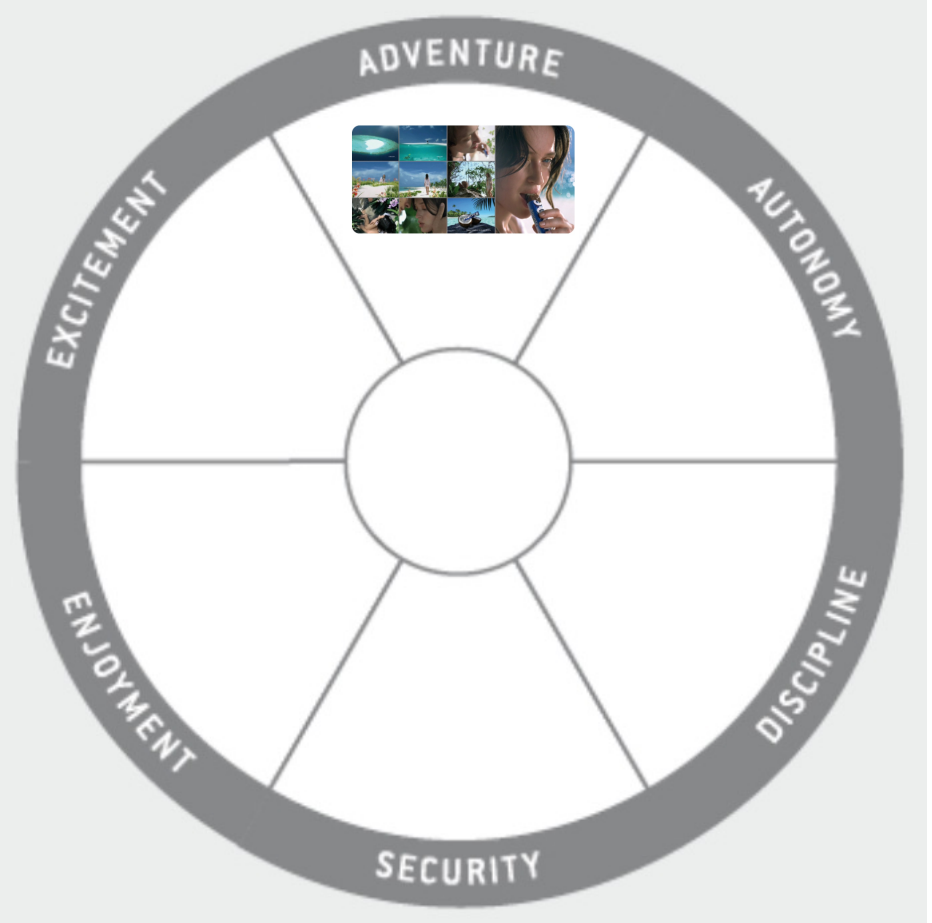

What Did You See, Again?

Anatomy of Implicit Goals

- Security
  - Care, trust, closeness, security, warmth…
- Enjoyment
  - Relaxation, light heartedness, openness, pleasure…
- Excitement
  - Vitality, fun, curiosity, creativity, change…
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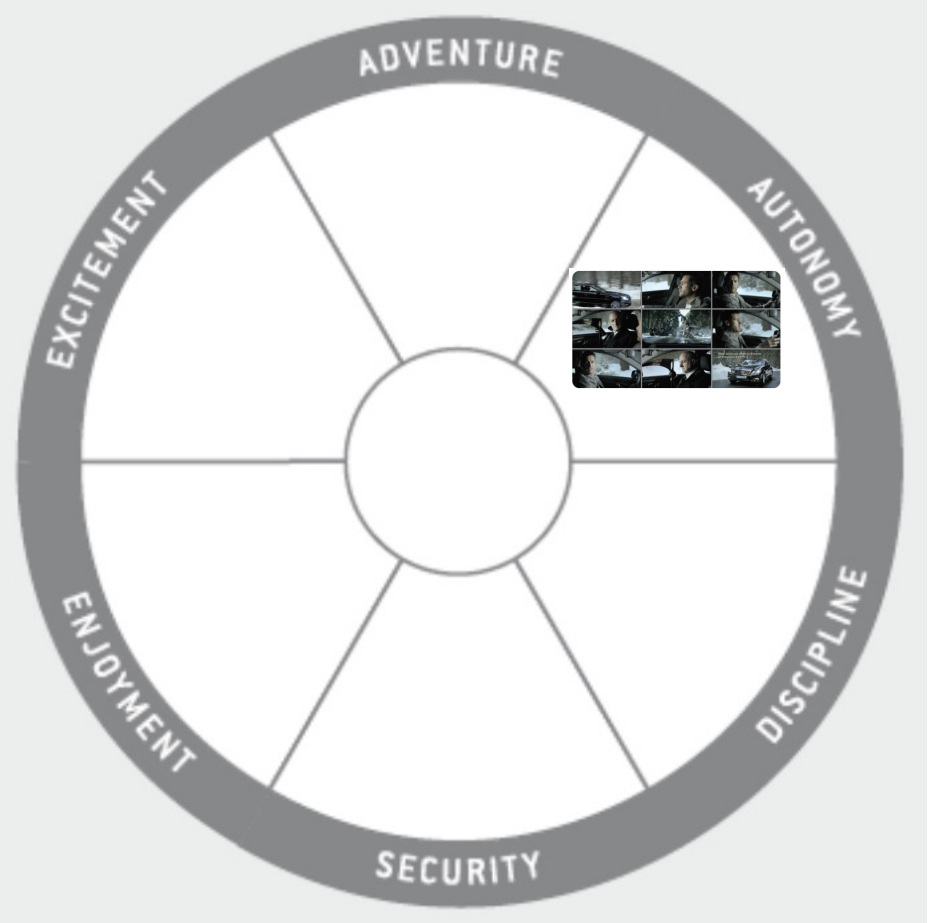

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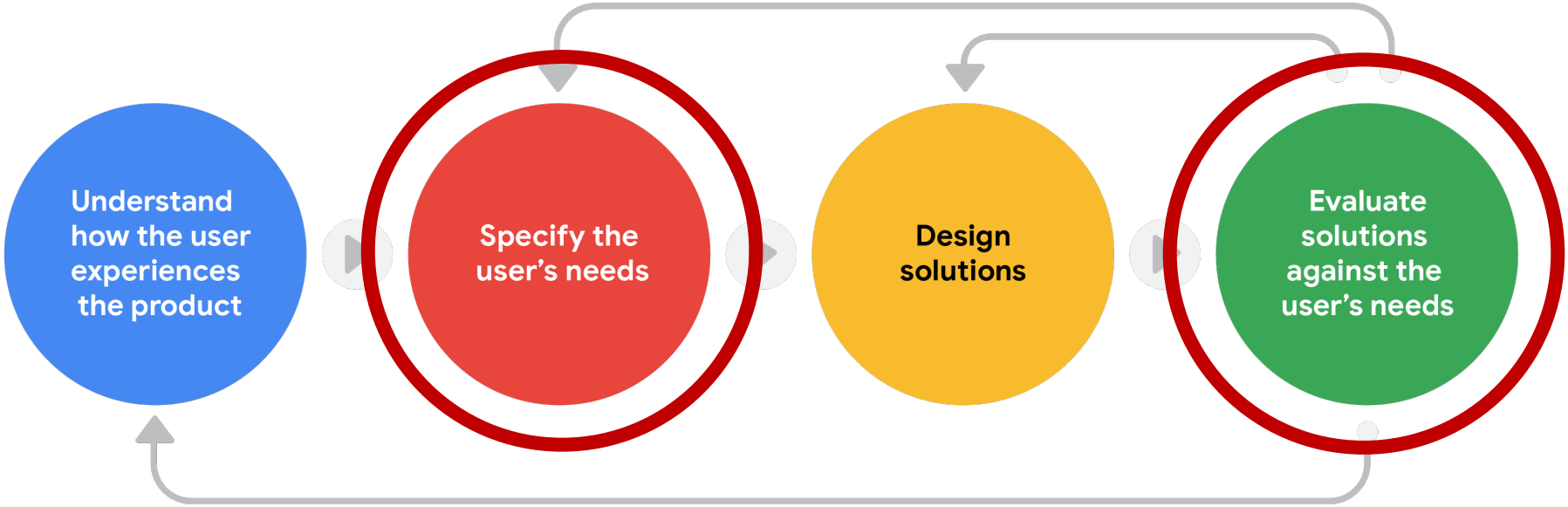


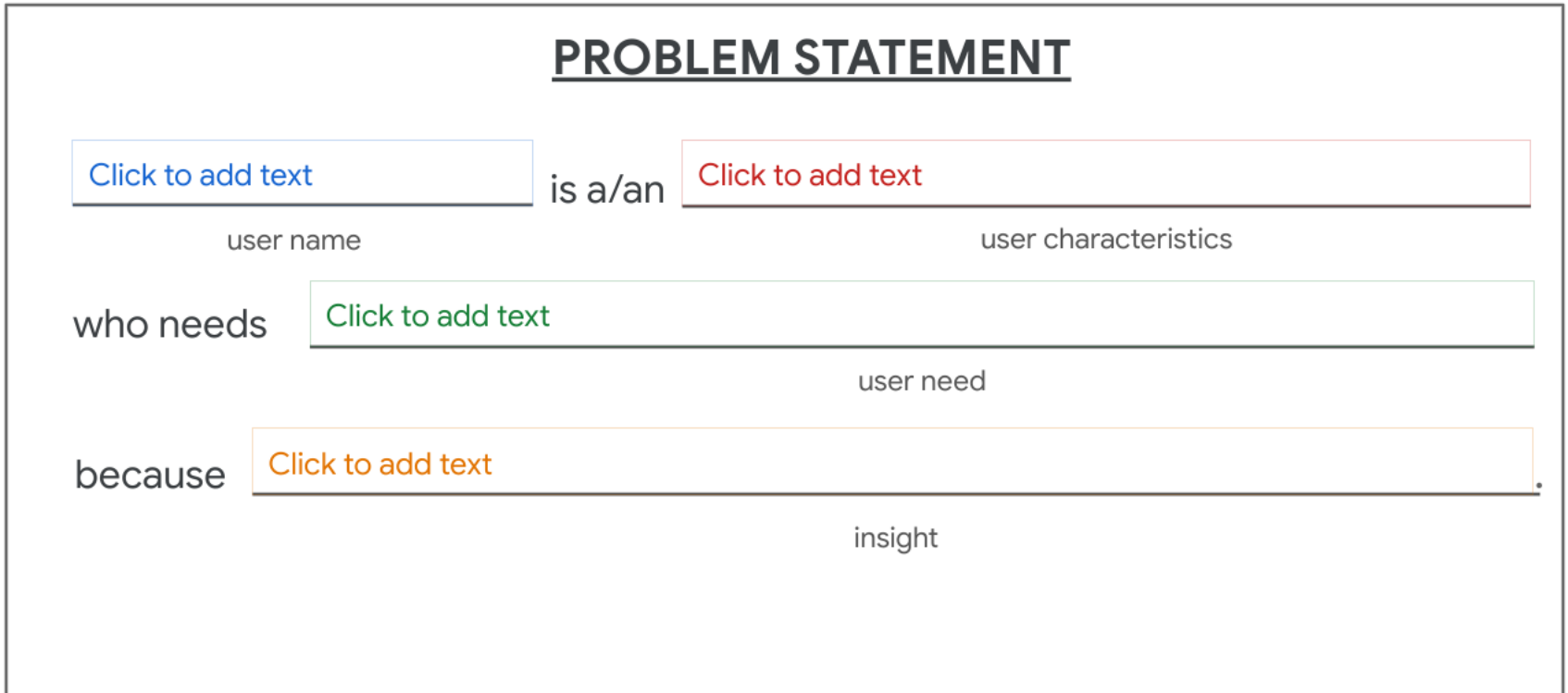
Who're Your *Target Audience*

- Be specific (persona):
  - John, ***college student*** addicted to ***video games*** who ***cannot wake up on time*** to attend classes in the morning

- Explicit & implicit goals of John?
- What unique features does John need?
  - What works for John might not work for Alice

Problem Statements

- A clear description of the user's needs that should be addressed



Problem Statements vs. Empathy

- User maps/journeys: What ***users*** think they need
- Problem statements: What ***you*** (the designers) think the users need

Example (Alarm Project)

As a college student, I want to set a loud alarm so that I can wake up early to have breakfast with my gf

Andy is a night owl who needs a sleep motivator because he cannot turn off his computer to sleep on time

Unique Value Proposition

- A good problem statement usually encode a unique perspective to user problems
  - Untold needs?
  - Implicit constraints?
  - New resources available?
- Solutions along this perspective give ***unique value propositions***
  - Defines the goals and benchmarks for success for your team
  - Coming next

Review Hypotheses

- ***Hypothesis statement***: written hypothesis that you think solving the problem can make the product more desirable/viable/feasible

If ____ then ____

We believe that ____

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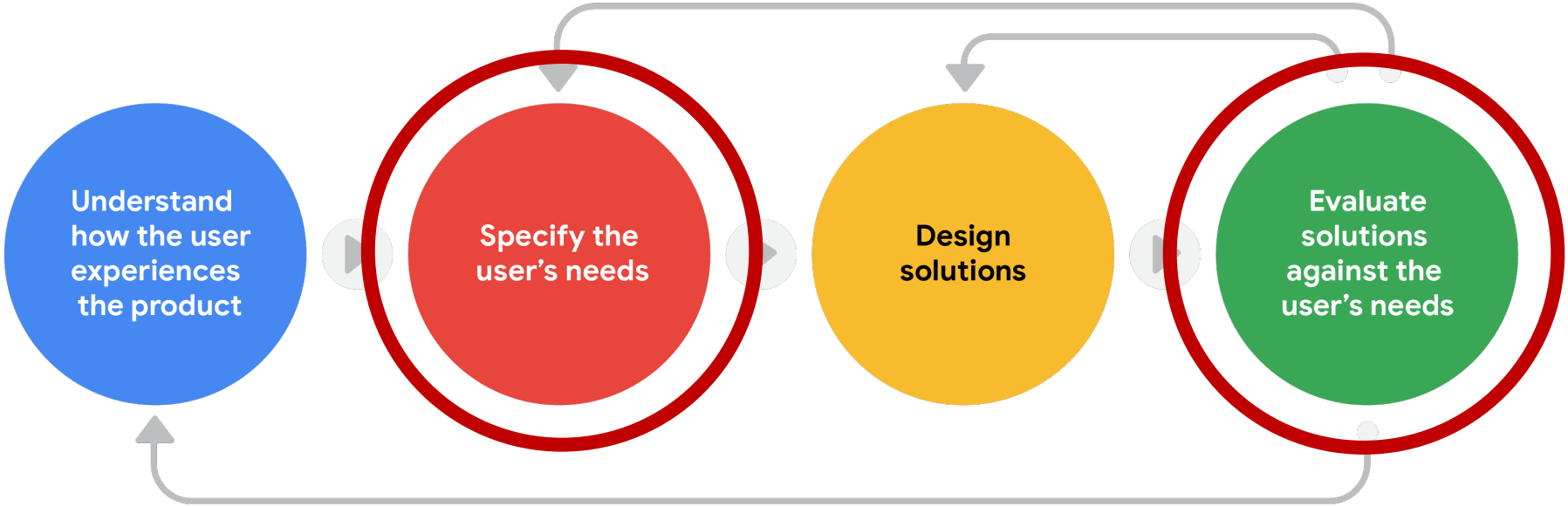
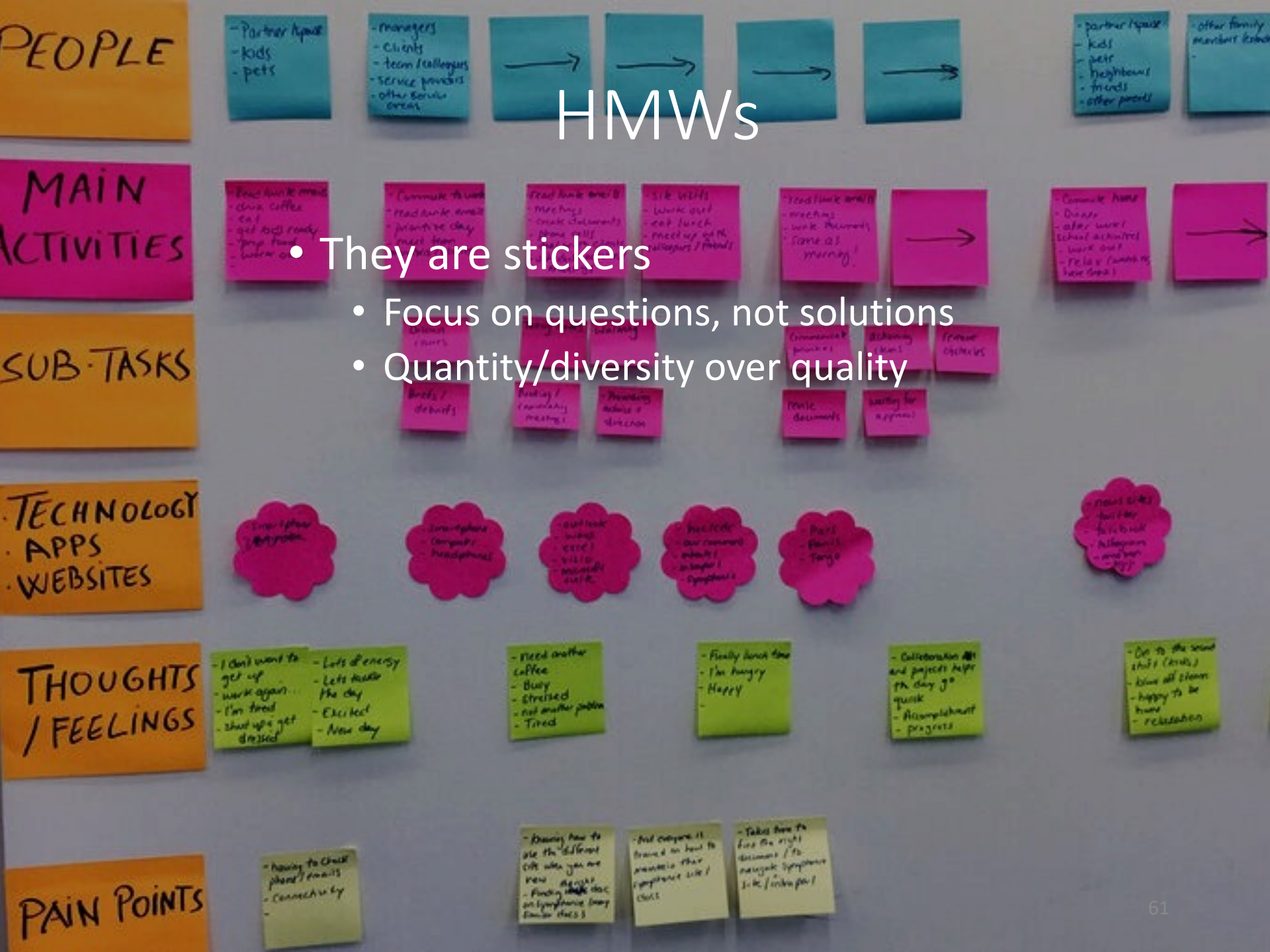


From Problems to Solutions

- Through ***ideation***, a process of generating a ***broad set*** of solutions to a given problem ***with no attempt to judge or evaluate*** the solutions

- Common tools:
  - “How might we/AI…”
  - 5 Whys and H
  - Crazy 8



HMWs

- They are stickers
  - Focus on questions, not solutions
  - Quantity/diversity over quality

Best Practices for HMW (1/2)

- Amp up the good
  - How you might use any positives in the problem as a solution?
- Explore the opposite
  - How you'd solve the opposite of the problem you've outlined
- Change a status quo
  - Think of ways to completely change the process
- Break the point-of-view into pieces
  - This is especially helpful for long, complex problems

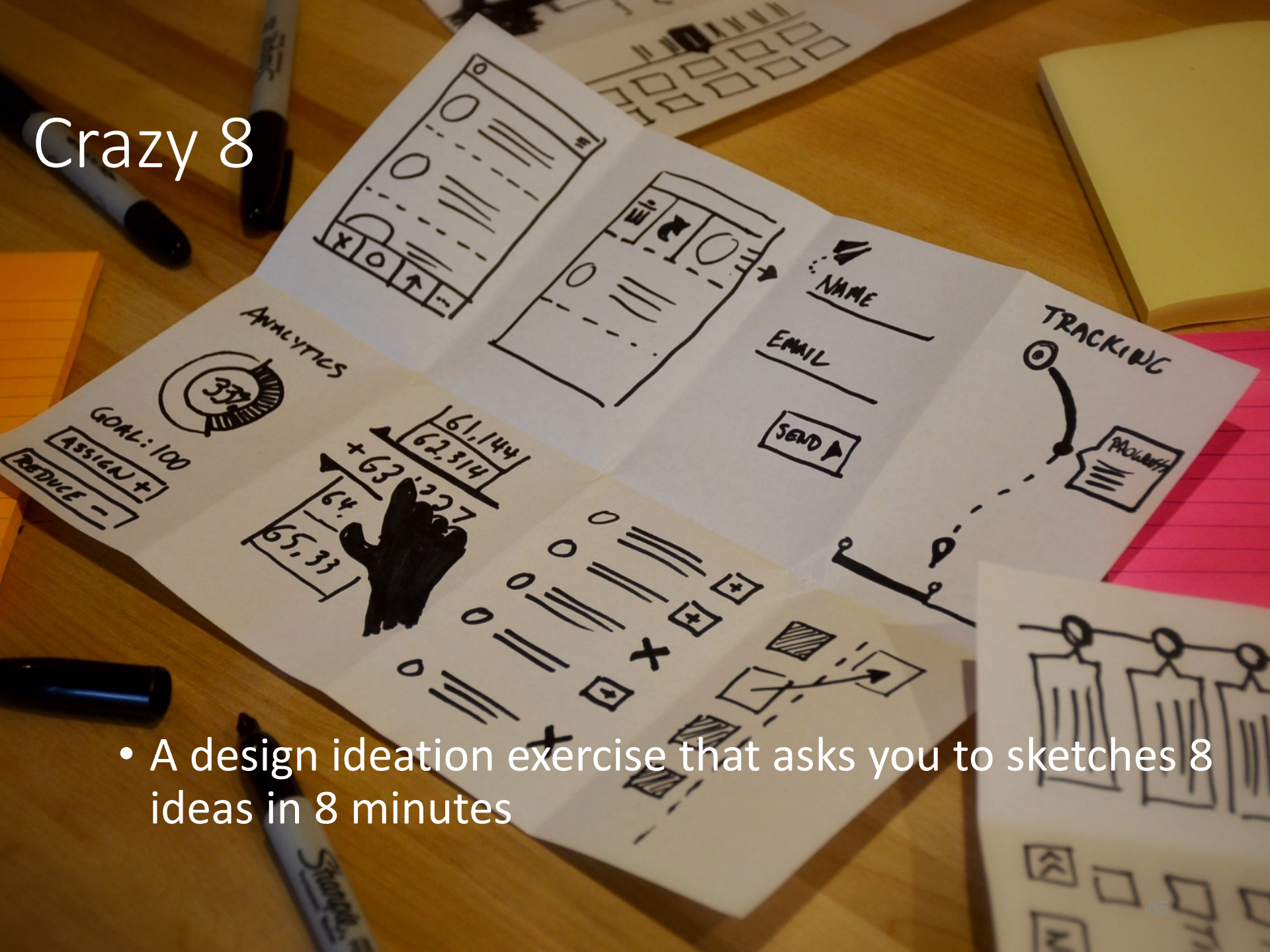
Best Practices for HMW (2/2)

- Remove the bad
  - How to remove the negative part of the problem entirely?
- Go after the adjective
  - Take any negative adjectives and try to turn them into positives
- Question and assumption
  - Remove or change any processes that you assume have to be in place
- Create an analogy
  - Think of ways to compare this user experience to another experience
- Identify unexpected resources
  - How the problem might be solved by a resource that isn't mentioned?

5 Whys Approach (By Sakichi Toyoda)

1. Why are many CS guys the “King of Periods”
   - Because they might not grasp the context or emotional subtleties
2. Why didn’t they grasp the context or emotional subtleties?
   - Because they’re more logic-oriented or straightforward thinkers
3. Why do they become so?
   - Because our education emphasize logic more than emotional expressions
4. Why aren’t there educational tools for emotional subtleties?

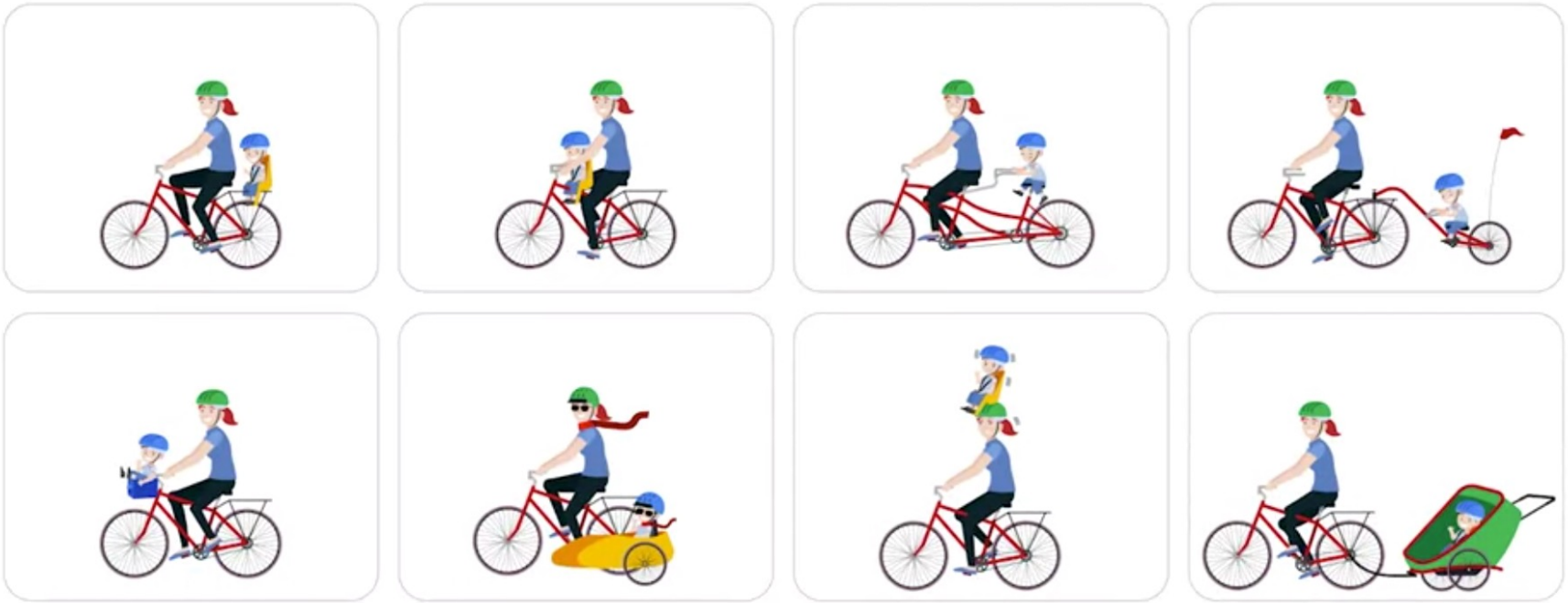
Crazy 8



- A design ideation exercise that asks you to sketches 8 ideas in 8 minutes

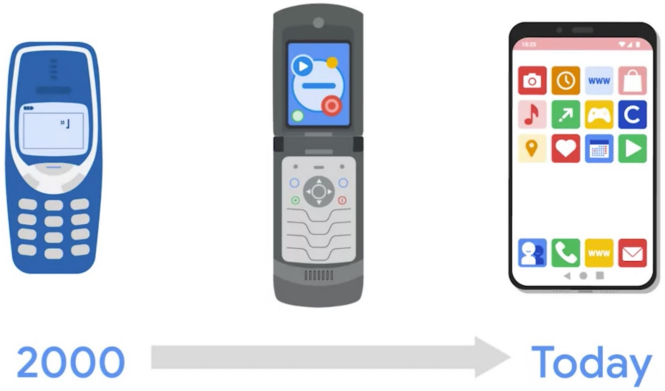
Example (Parent-Kid Cycling)

Jane is a parent in New York, who needs a safe way to ride her bike with her two-year-old kid, Luca, because Luca is still learning how to ride his own bike

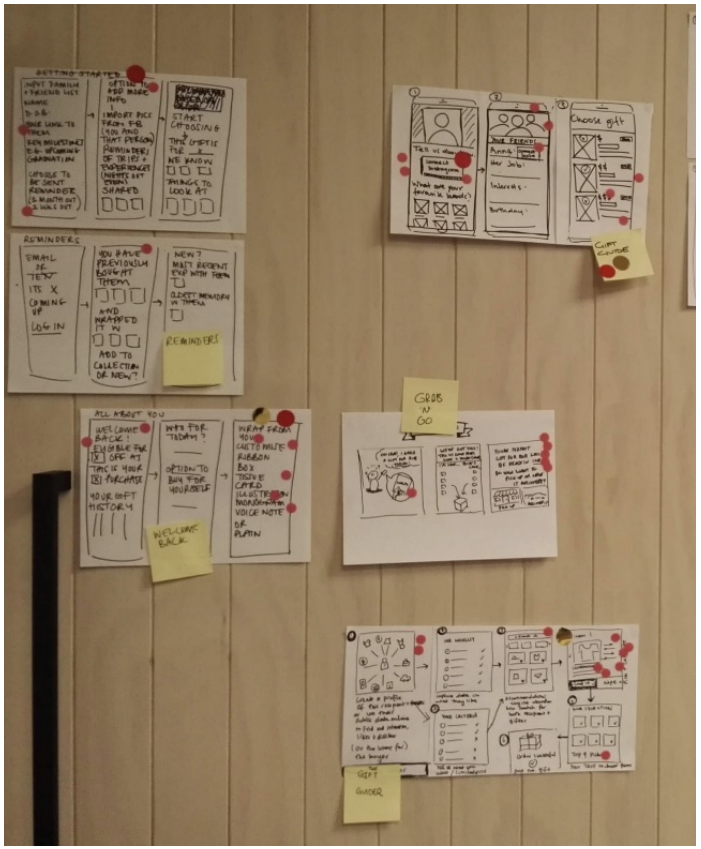


Best Practices for Crazy 8

- Make sure your problem is well defined
- Sketch on real paper to ***move fast***
- ***Quantity*** over quality
- "Crazy" ideas are welcome
- Respect the timer
- Warm-up exercise helps
  - E.g., "draw your interpretations of love"
- ***Don't judge*** (your and others' sketches)
- Include a diverse group
- Ideate in a comfortable environment



Process



1. Hang & present ***anonymous*** sketches
   - By the facilitator, who learn from everyone first
2. Vote the best ***parts***
   - ***No discussion allowed***
3. Speed critique
   - By the facilitator and voters
   - Time limited
   - Sticky notes
4. Merge the best parts by re-sketching, and go to step 1 if necessary
5. Review hypotheses and make storyboards

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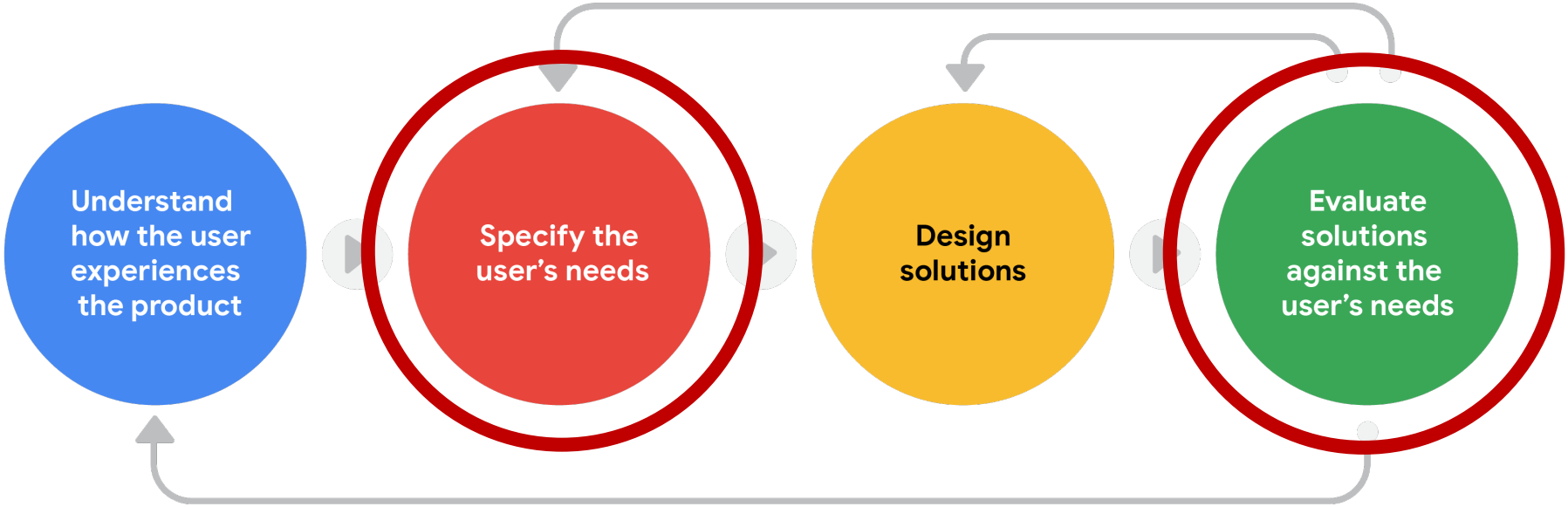
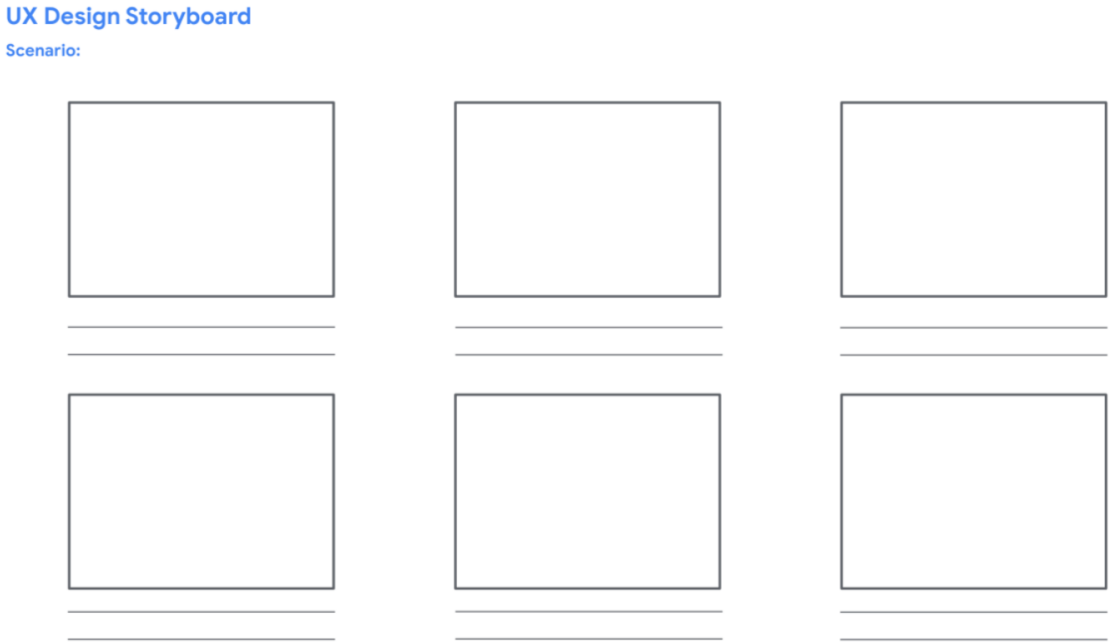


Storyboards

- A series of panels or frames that visually describes and explores a user's experience with ***your best solutions***



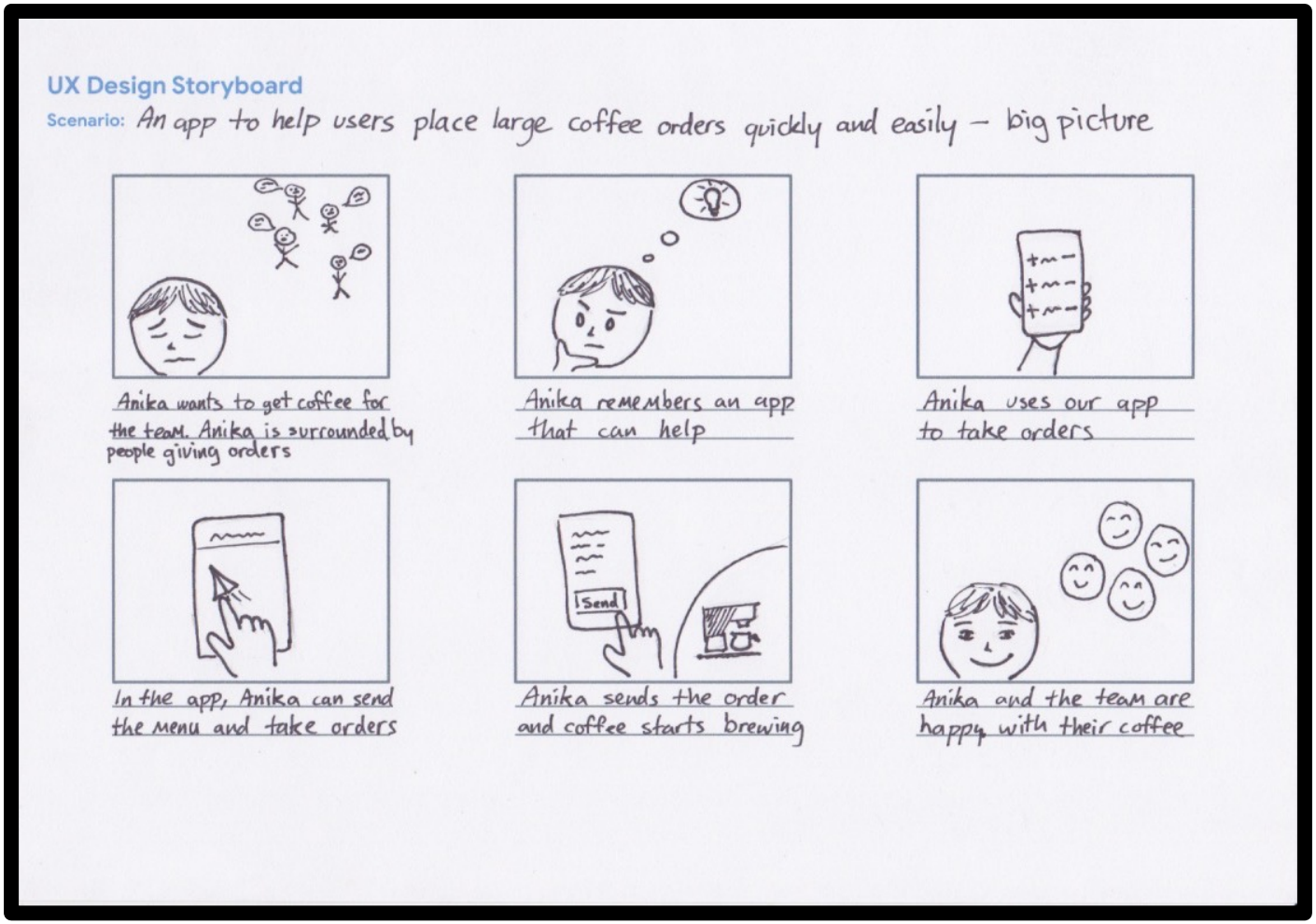
Types

- ***Big-picture*** storyboards
  - Focus on what the user needs, their context, and why the product will be useful to the user
- ***Close-up*** storyboards
  - Concentrate on the product and how it works

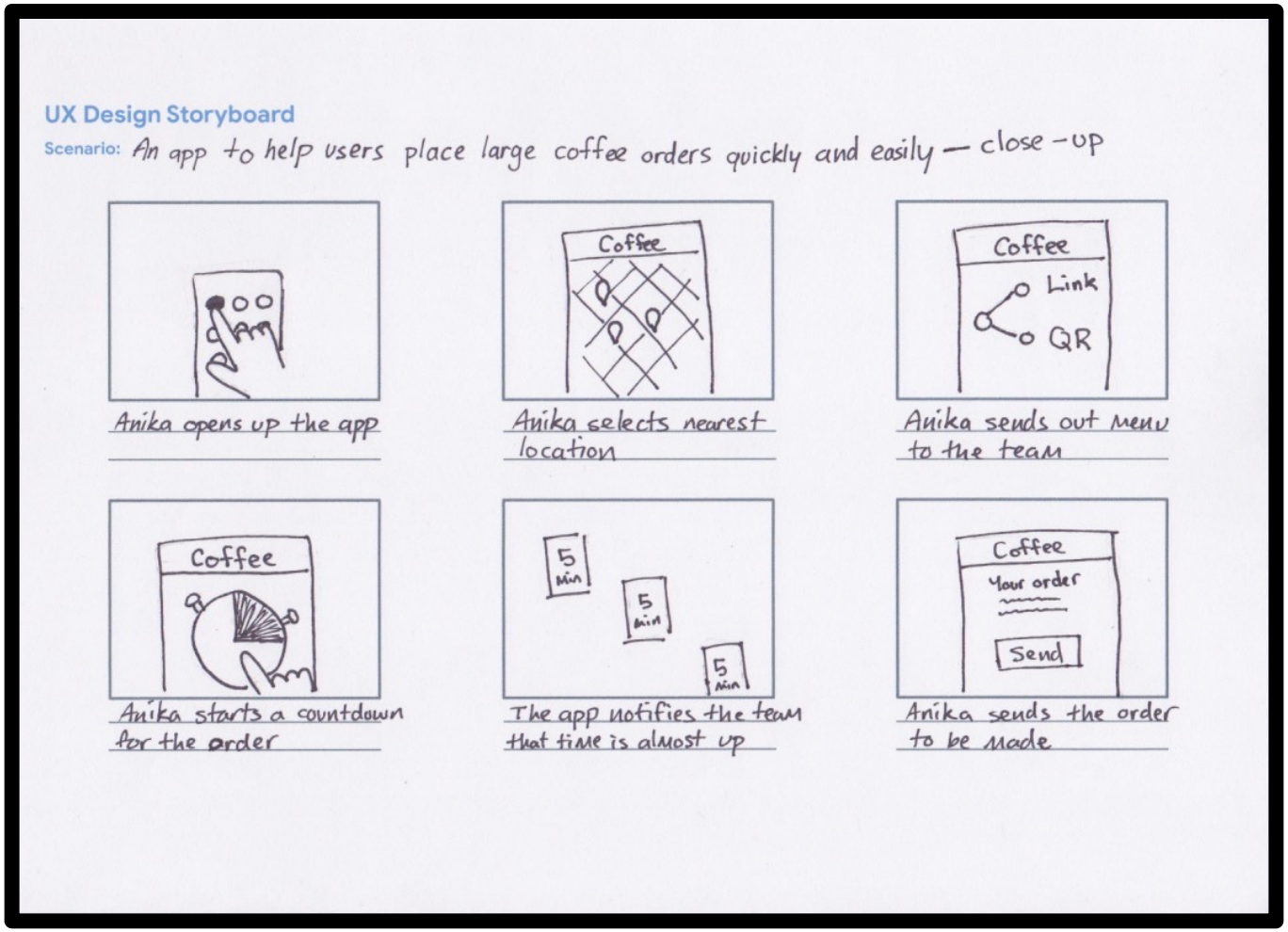
- Consider the example:

Our **CoffeeShop** app will let users place group orders in advance which will affect users who have to make and pick up large orders by letting users skip the line and save time. We will measure effectiveness by tracking orders of 5+ items through the app.

Big-picture Storyboards

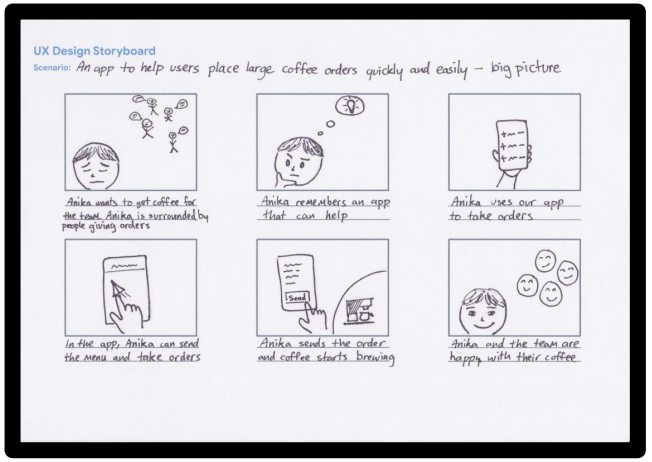


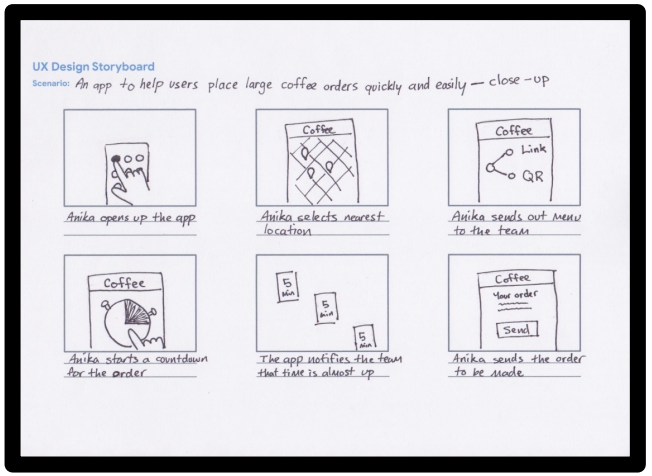
Close-up Storyboards



Key Elements

- Character
  - The target user (from your major persona)
- Scene
  - The user's environment
- Narrative
  - The problem the user is facing and how the design will solve this problem
- Plot
  - Solution offered by the design





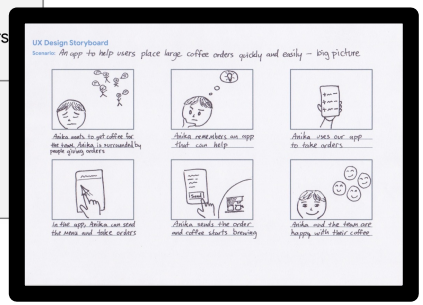
How to Create Big-picture Storyboards?

- The ***user journey map*** for your solution

Persona: Anika

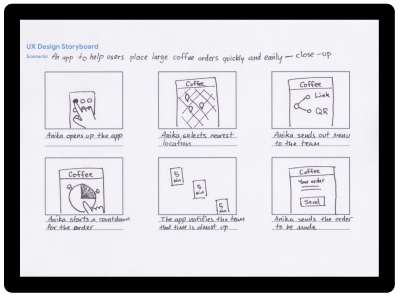
Goal: A fast and easy way to place and pick up group orders

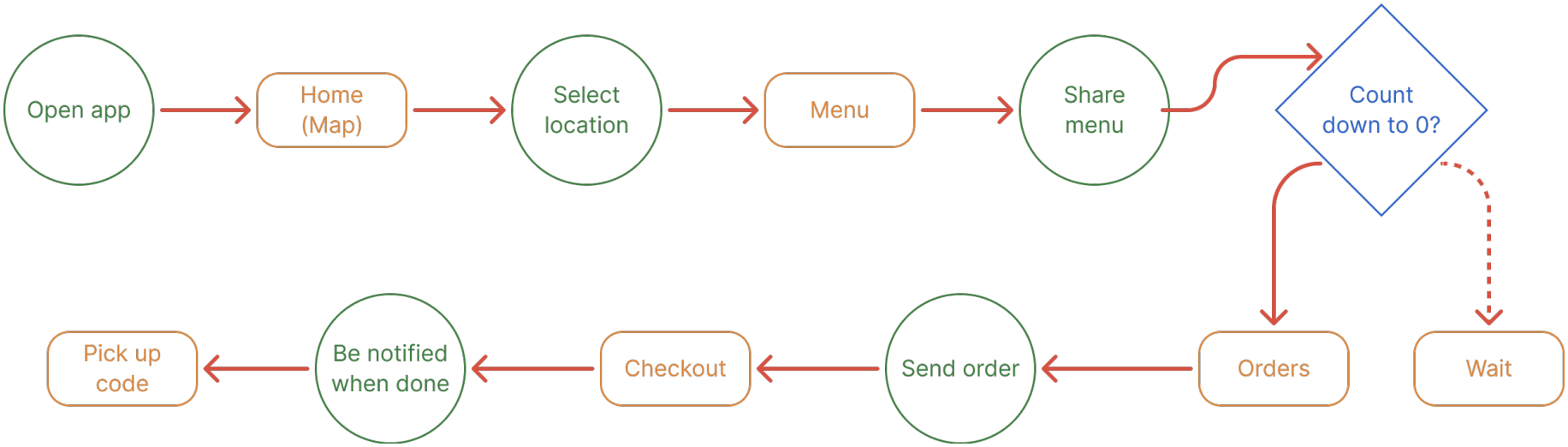
ACTION	Collect orders	Go to Coffeehouse	Submit group order	Wait for order completion	Pick up order
TASK LIST	Tasks A. Collect orders from coworkers B. Collect payment from coworkers	Tasks A. Go to Coffeehouse B. Wait in line	Tasks A. Relay order to barista B. Double-check order for accuracy C. Initiate checkout	Tasks A. Gather any extra items (napkins, coffee sleeves, etc.)	Tasks A. Pick up order B. Check that order is correct
FEELING ADJECTIVE	Excited to connect to coworkers Worried about making order errors	Anxious about getting back to work in time	Stressed about entering each order one by one	Anxious about time	Relieved that order is ready Hopeful that everyone's orders are correct
IMPROVEMENT OPPORTUNITIES	Offer a way to easily collect multiple orders	Create an app for advance ordering	Offer a way to easily collect multiple orders	Create an app that offers order status updates	



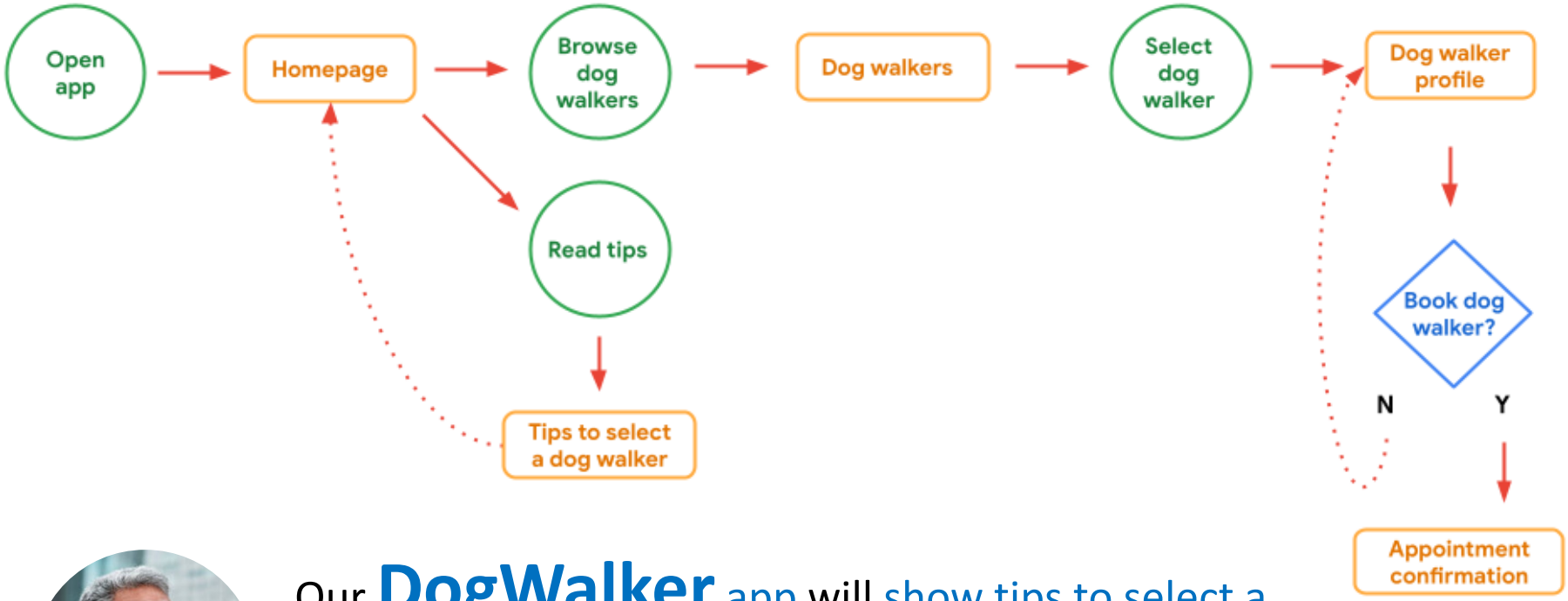
How to Create Close-up Storyboards?

- Identify key ***user flows*** in your app
  - Actions, screens, decisions
  - Happy path (solid) vs. edge cases (dotted)





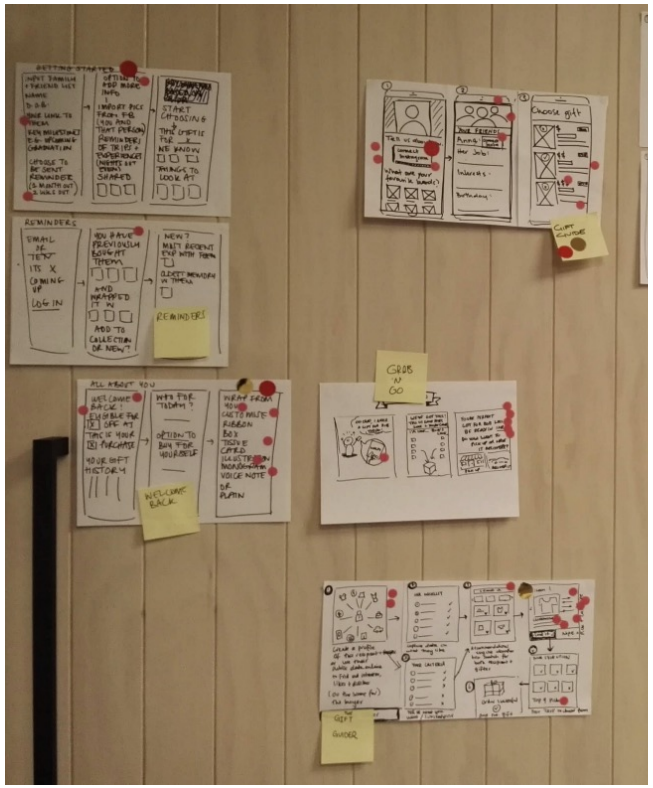
Exercise: DogWalker Storyboards



Our **DogWalker** app will show tips to select a dog walker which will affect non-tech-savvy users by helping users hire the right dog walkers. We will measure effectiveness by tracking the booking rate in the app.

Assignment & Grading

- Conduct brainstorm meetings to define your problems and ideate solutions
- Problem & hypothesis statements: ***25%***
- Photos of your ideation process: ***30%***
- Big-picture & closed up storyboards: ***25%***



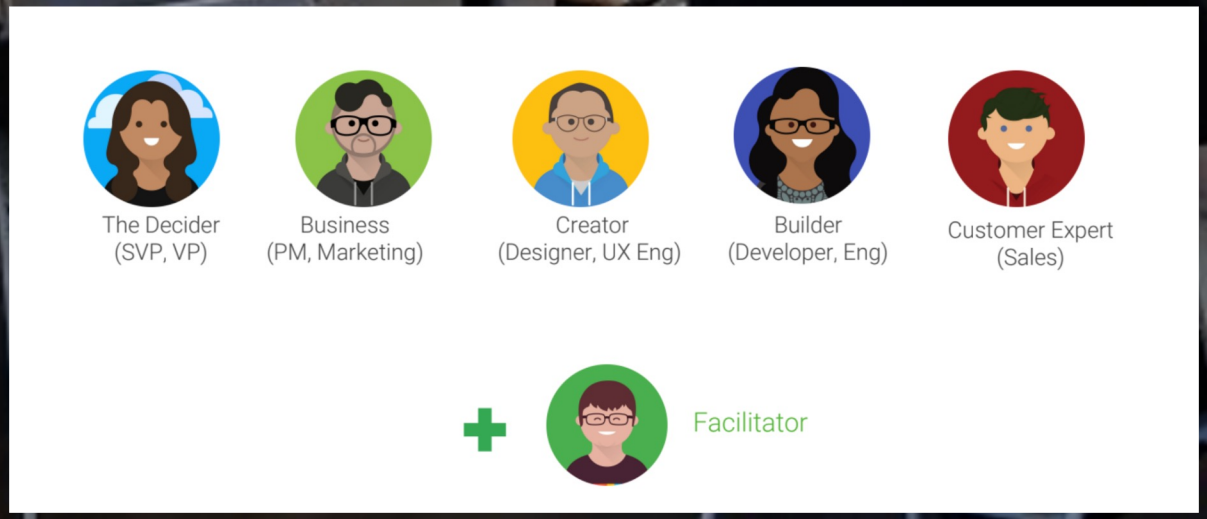
Peer Review (20%)

- Team members rate each other
  - Perspectives? ***10%***
  - Participation in ideation? ***10%***
  - ***Not*** based on relevance with final outcome

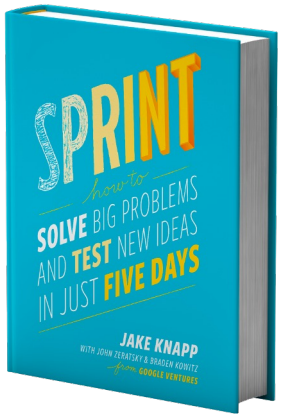
- By 4/3 noon
  - TAs will provide a Google Form for you to rate each other

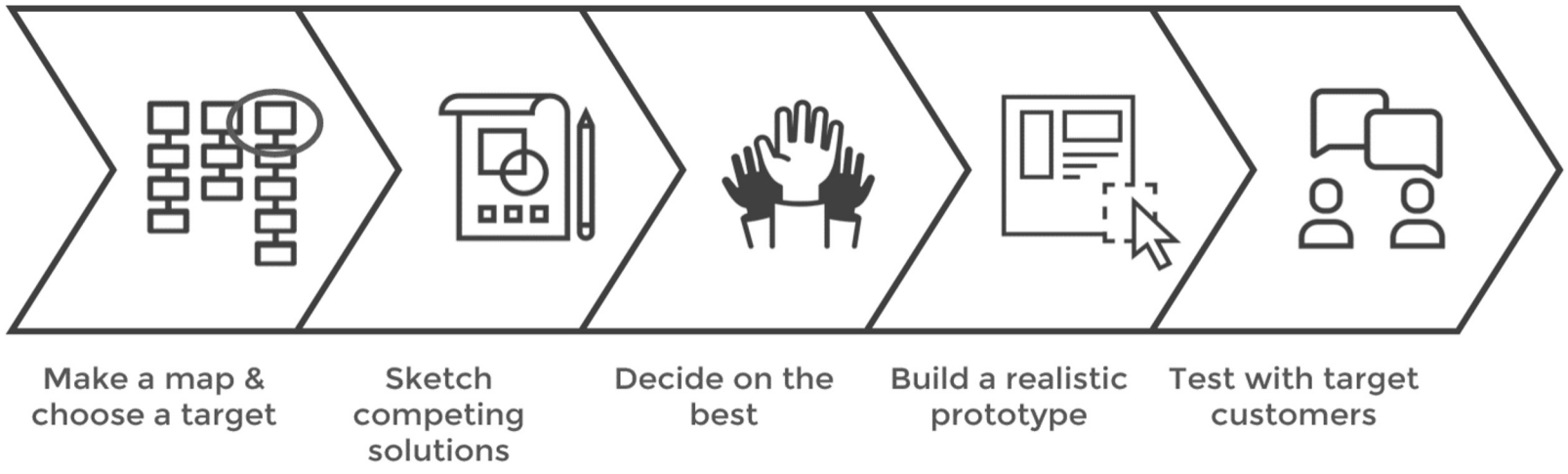
Prerequisits

- A rough target problem (or a few)
- A team + at least one user/domain expert
- A mediator/facilitator (***+10%***)
- A nice space with whiteboard for discussion



Reading for Mediator

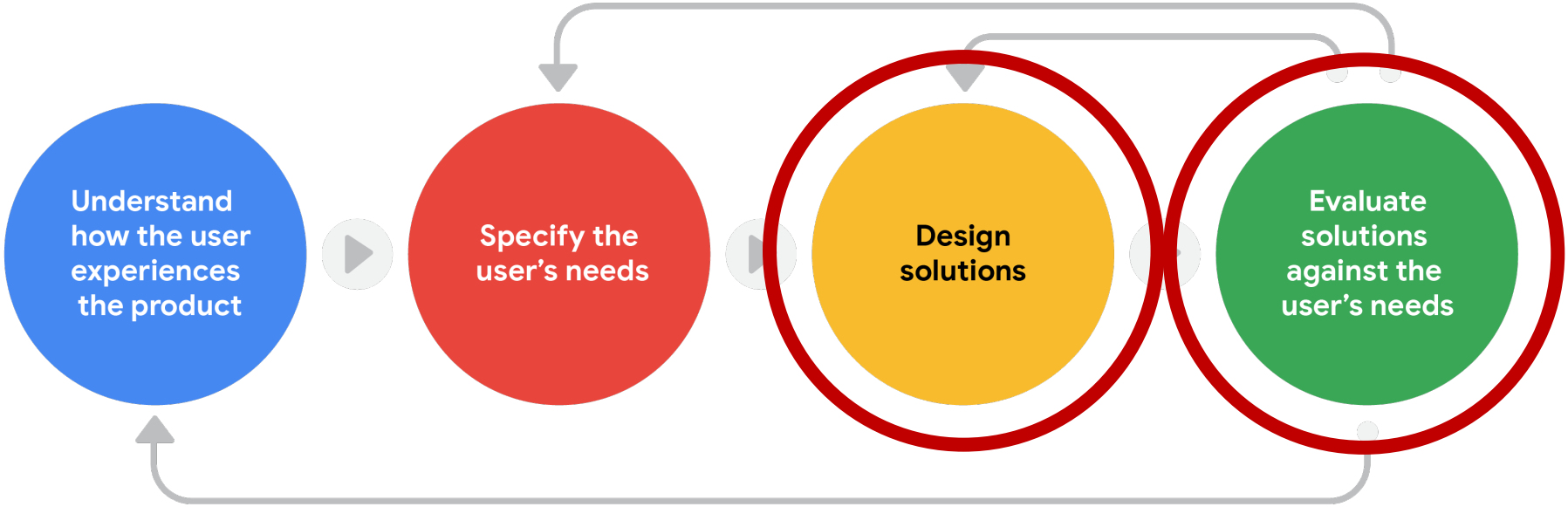




- Focus on chapters for “sketching solutions” and “deciding the best”

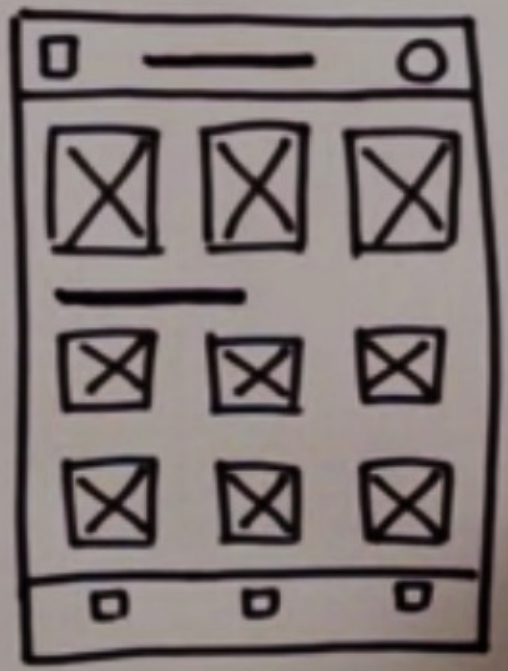
Prototyping & Usability Test

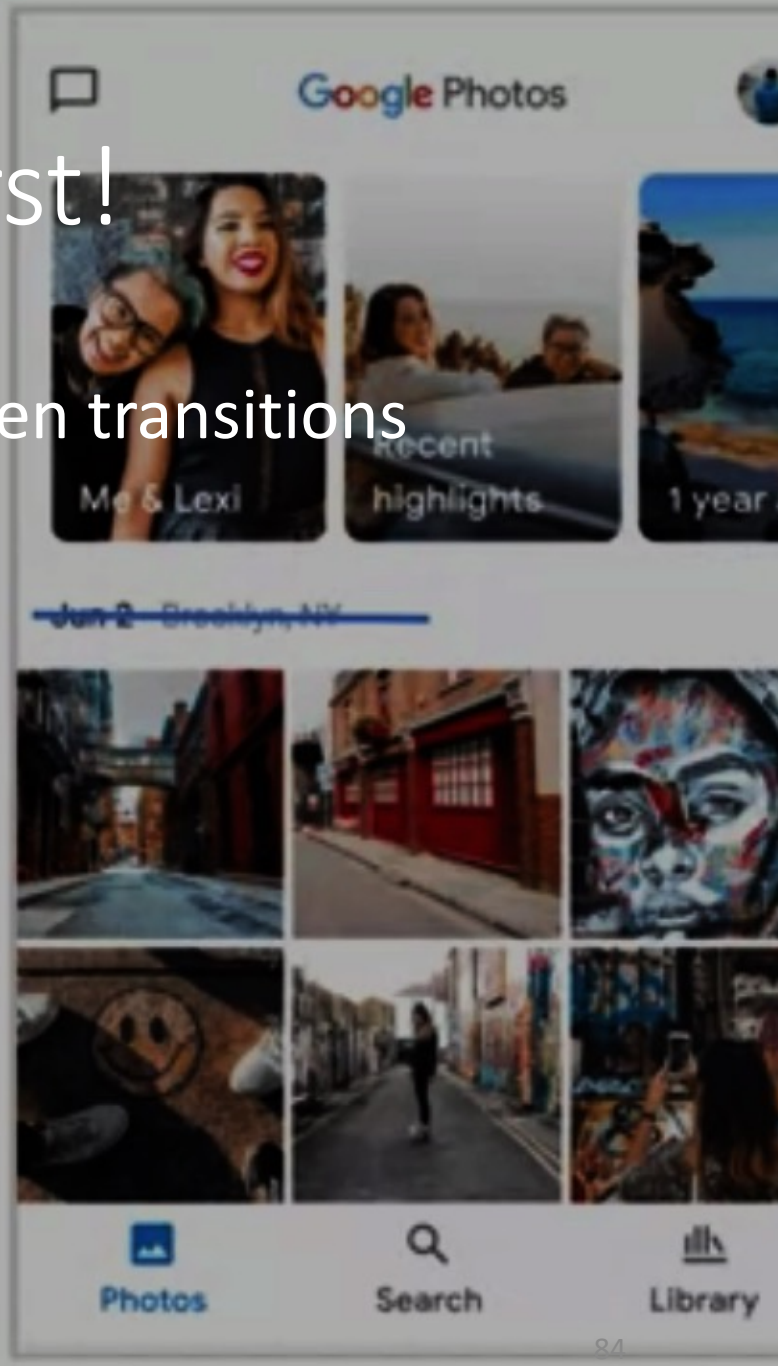
- Prototyping
- UI design
- Usability test



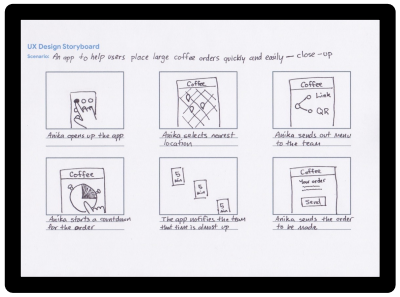
Paper Wireframes First!

- Quickly turn user flows into screen transitions

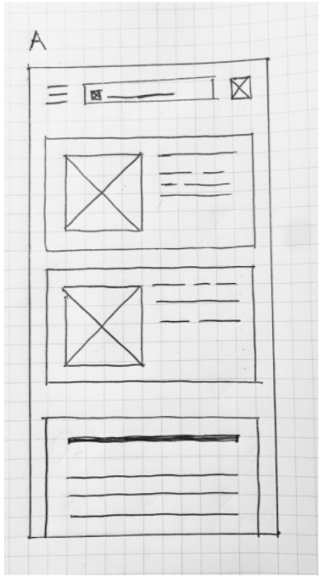


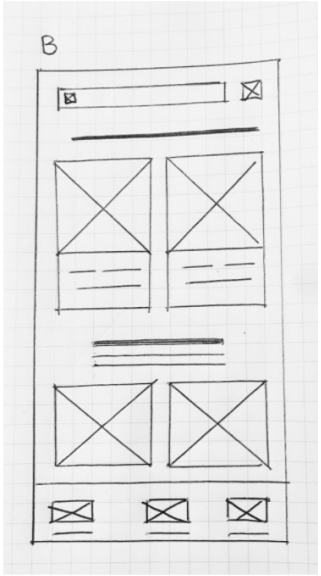


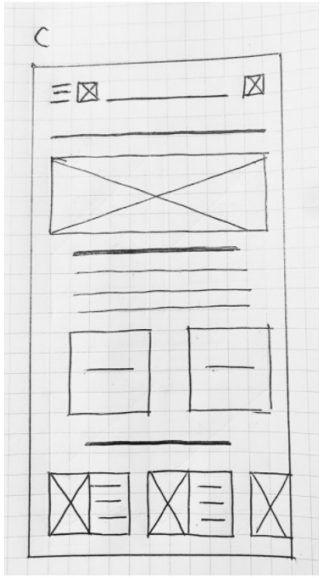
Same Idea, Different UIs

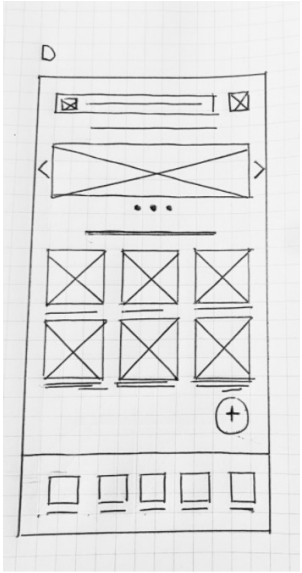


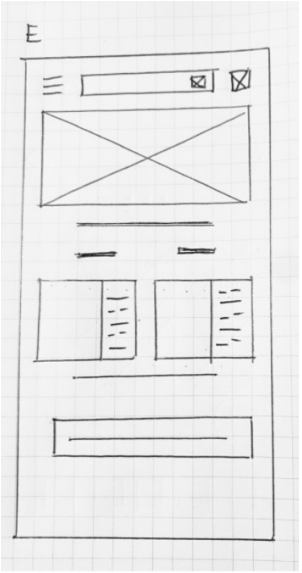
“Show menu…”





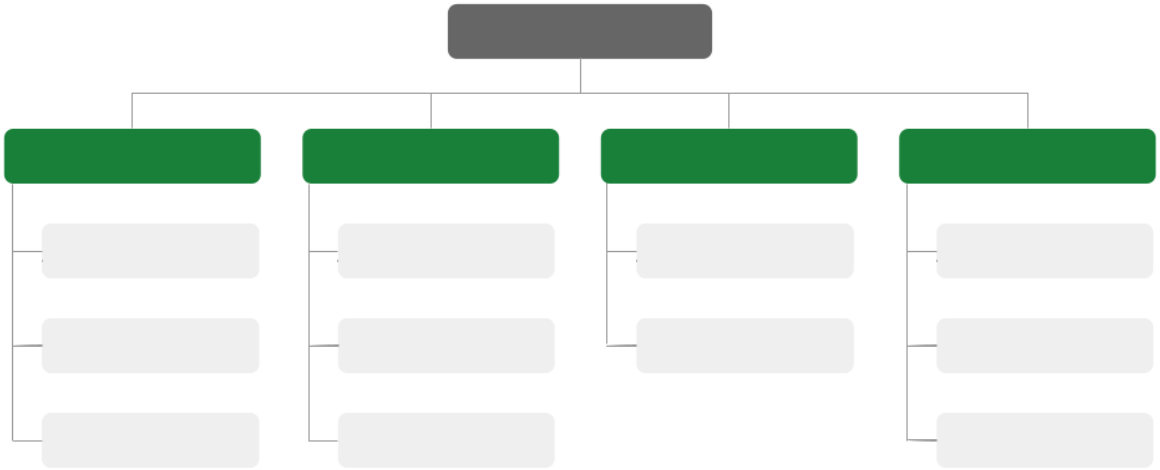






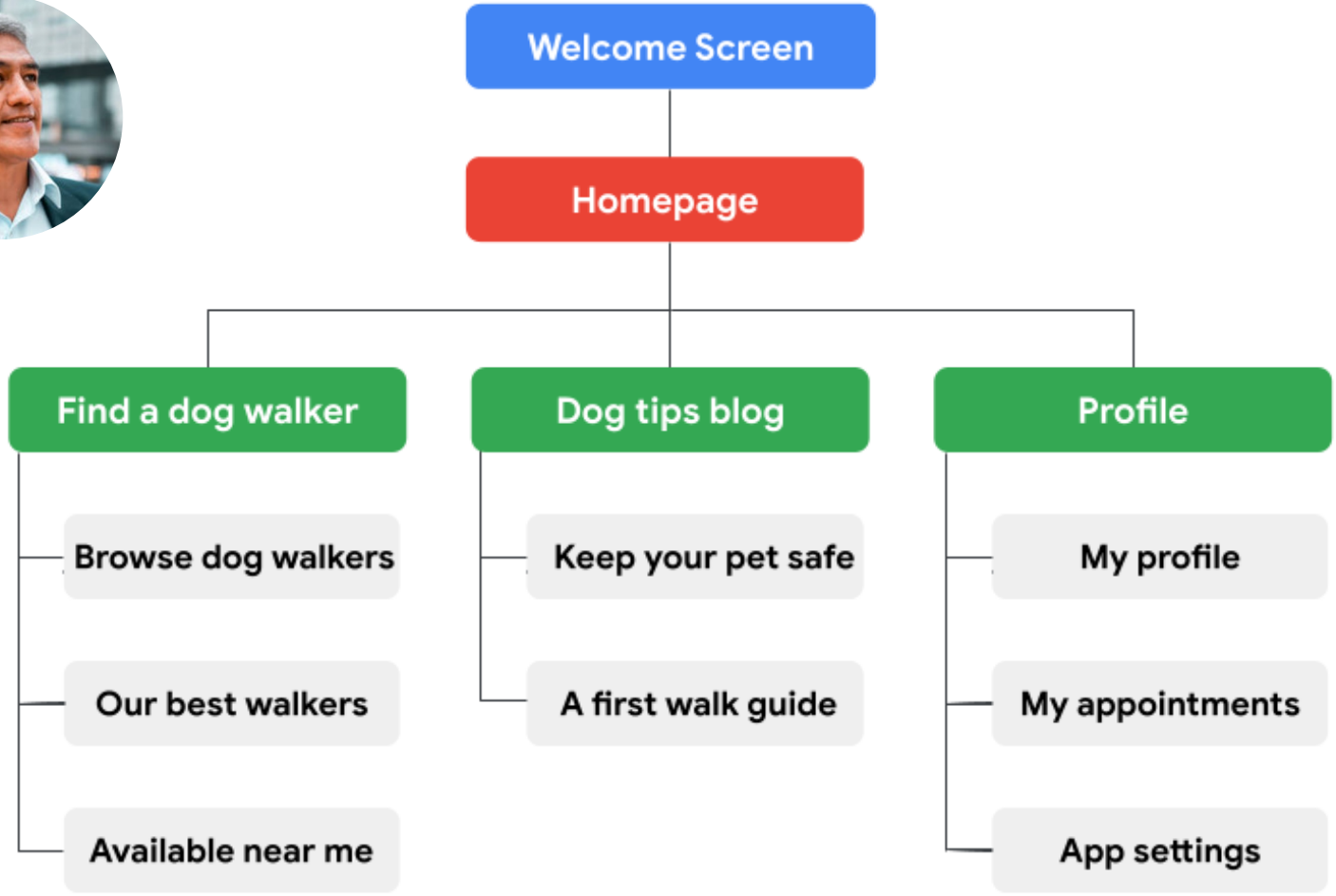
Information Architecture (IA)

- Organization of content that help users understand where they are in a product and where the information they want is



- When users can find what they're looking for, quickly and intuitively, you have a good IA

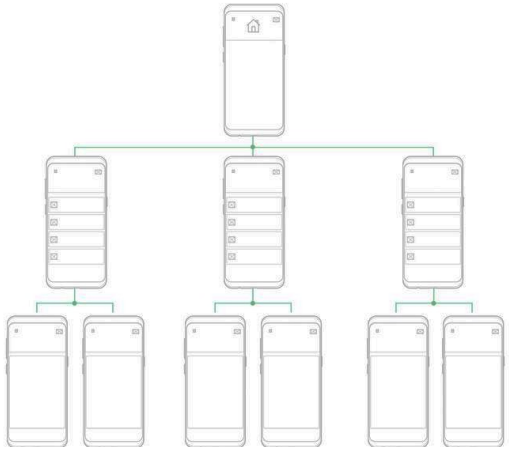
Example: DogWalker

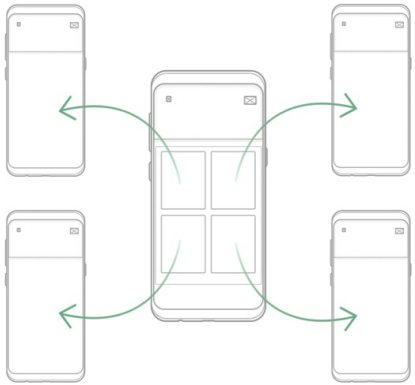


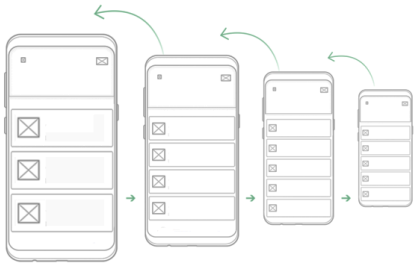
8 Principles of IA

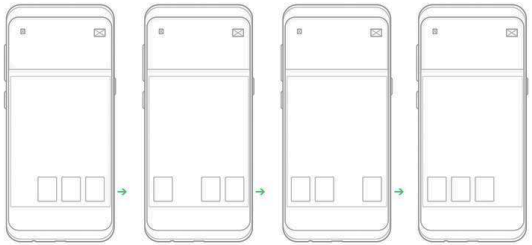
1. **Object principle**: You should view your content as “living” and as something that changes and grows over time
2. **Choice principle**: People think they want to have many choices, but they actually need fewer choices that are well-organized
3. **Disclosure principl**e: Information should not be unexpected or unnecessary
4. **Exemplar principle**: Humans put things into categories and group different concepts together
5. **Front door principle**: People will usually arrive at a homepage from another website
6. **Multiple classification principle**: People have different ways of searching for information
7. **Focused navigation principle**: There must be a strategy and logic behind the way navigation menus are designed
8. **Growth principle**: The amount of content in a design will grow over time

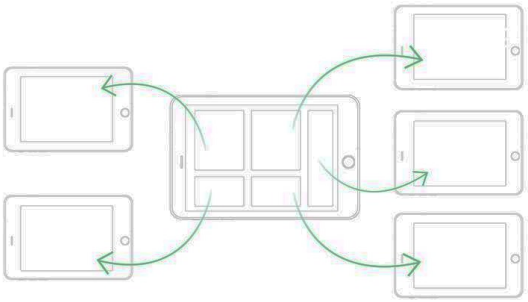
6 Common Patterns of IA

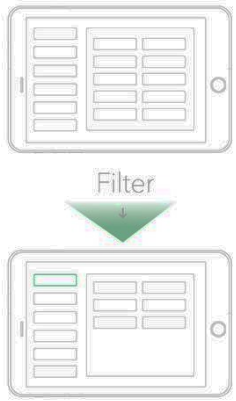




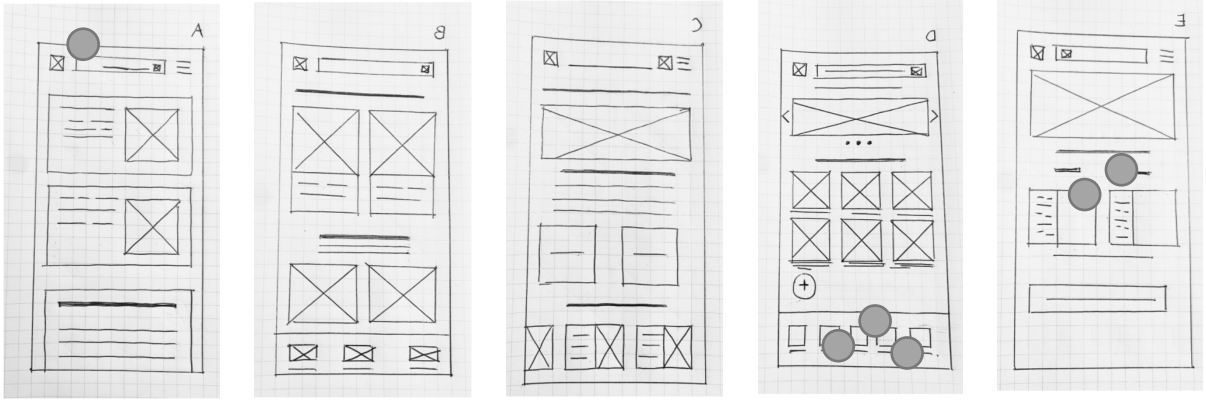


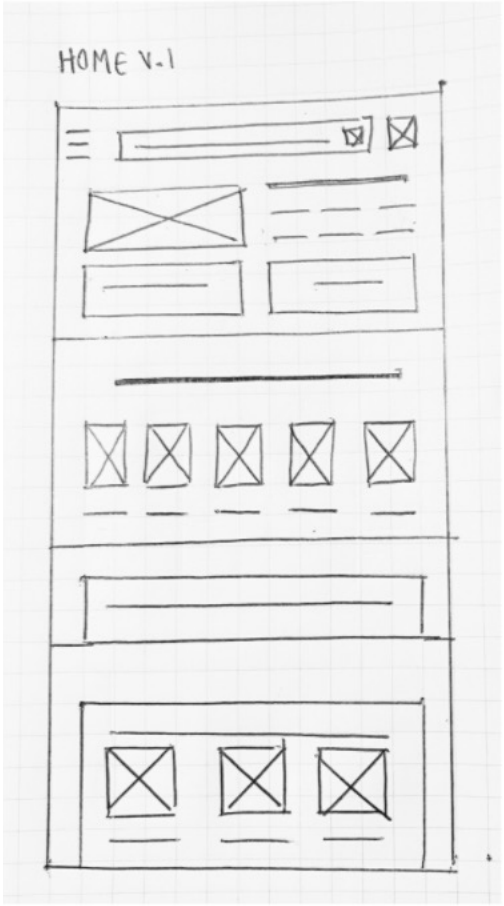






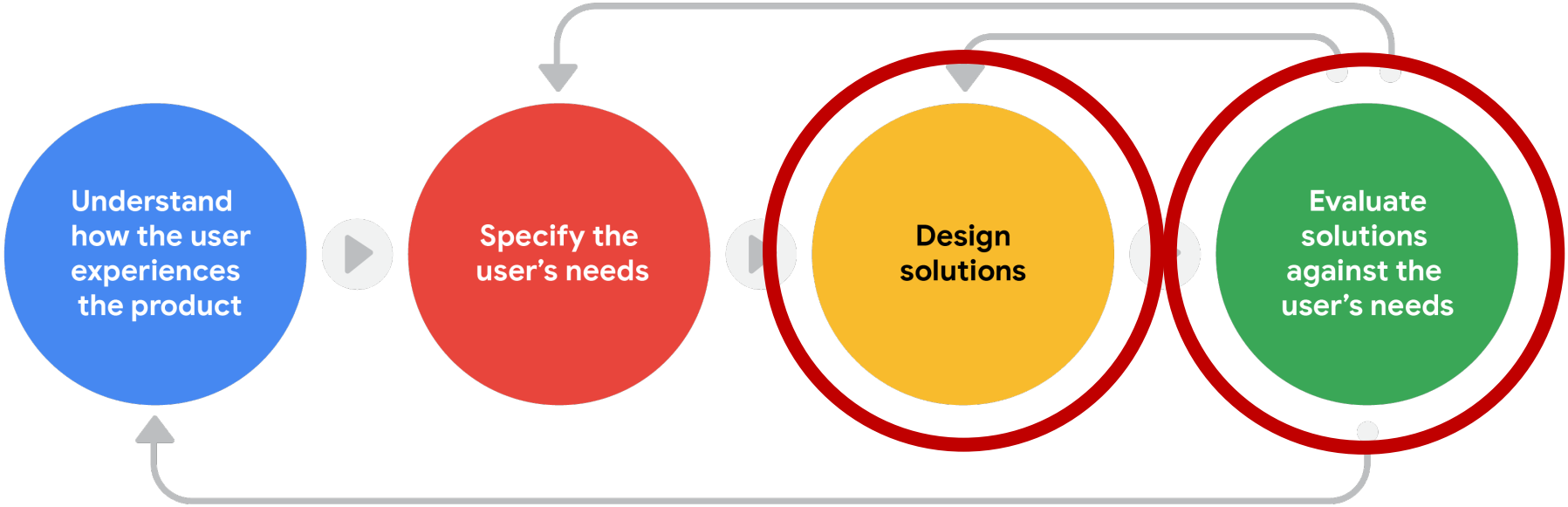
Voting & Refinement



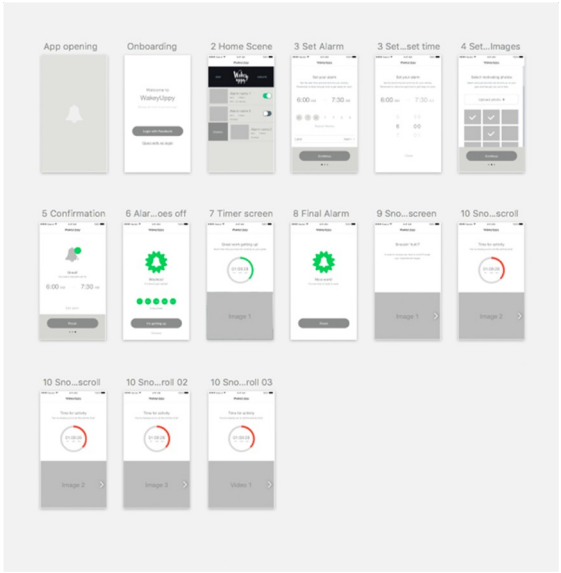


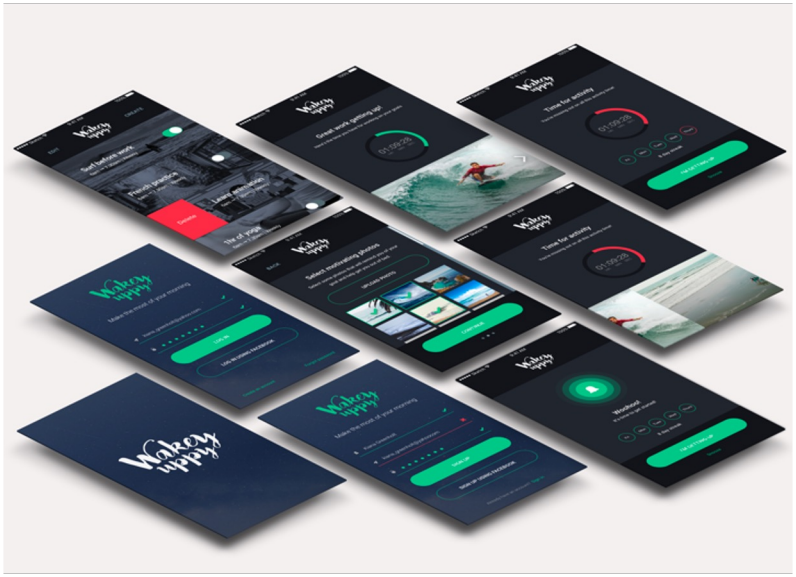
Prototyping & Usability Test

- Prototyping
- UI design
- Usability test



From Wireframes to Prototype





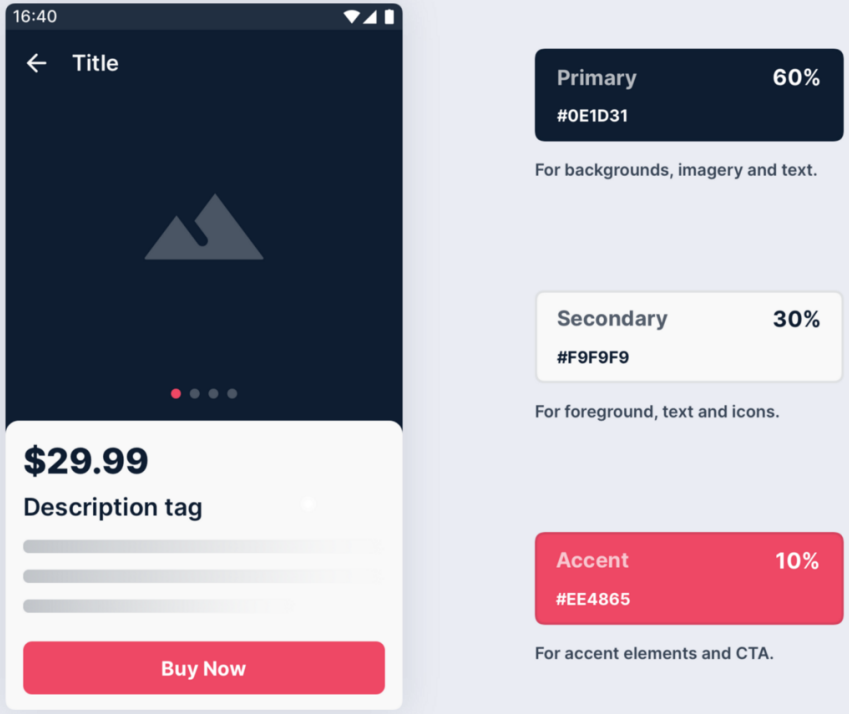
- Code + dummy data (recommended)
- Or, use mockup tools like Figma

Principles of UI Design

- Leverage predefined themes
- ***60-30-10 rule*** for colors
- ***Gestalt principles***: how humans group similar elements, recognize patterns, and simplify complex images when we perceive objects
- Von Restorff effect
- Serial position Effect

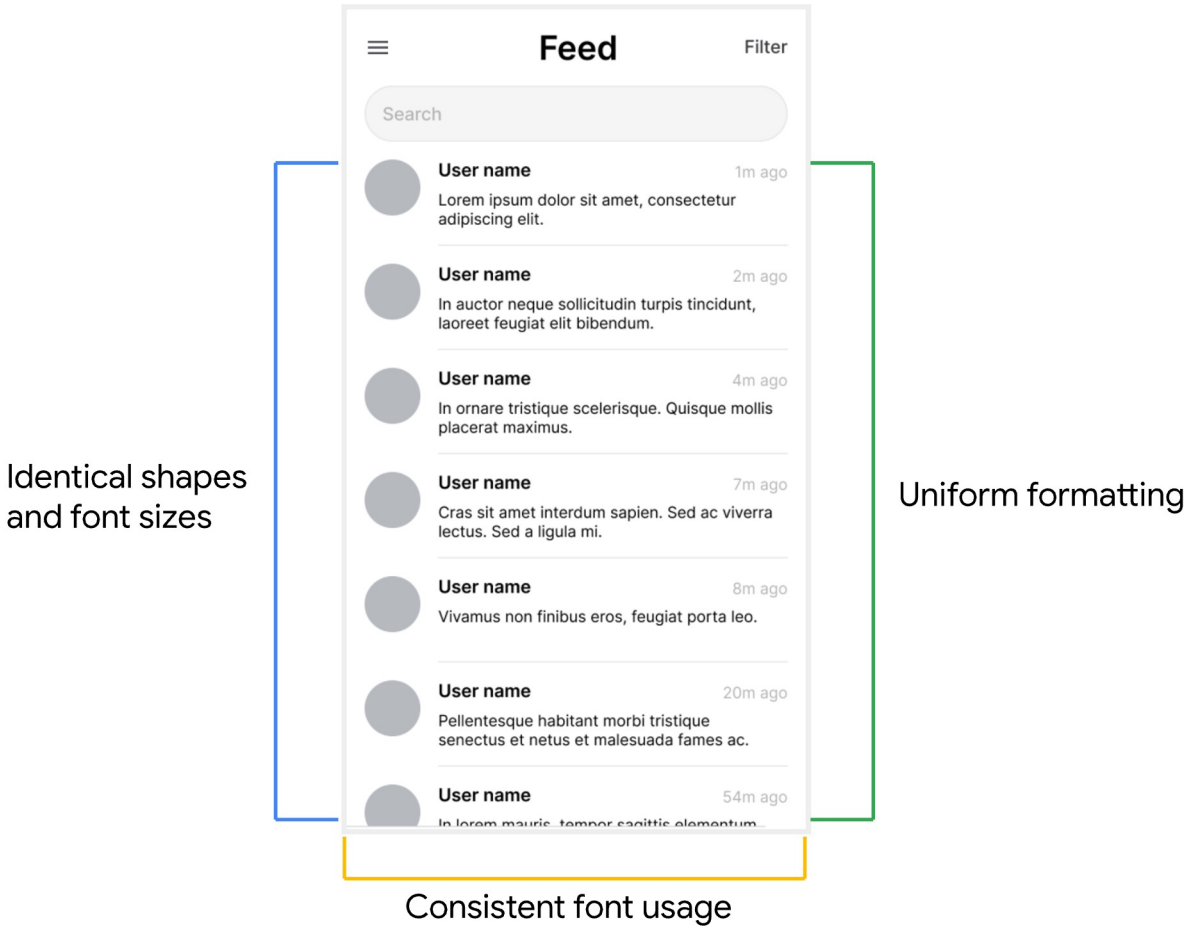
60-30-10 Rule

- Neutral color 60%
- Secondary color 30%
- ***Accent color*** 10%



Gestalt Principle 1: Similarity

- Elements that look alike (in shape, size, or color, for instance) are perceived to have the same function

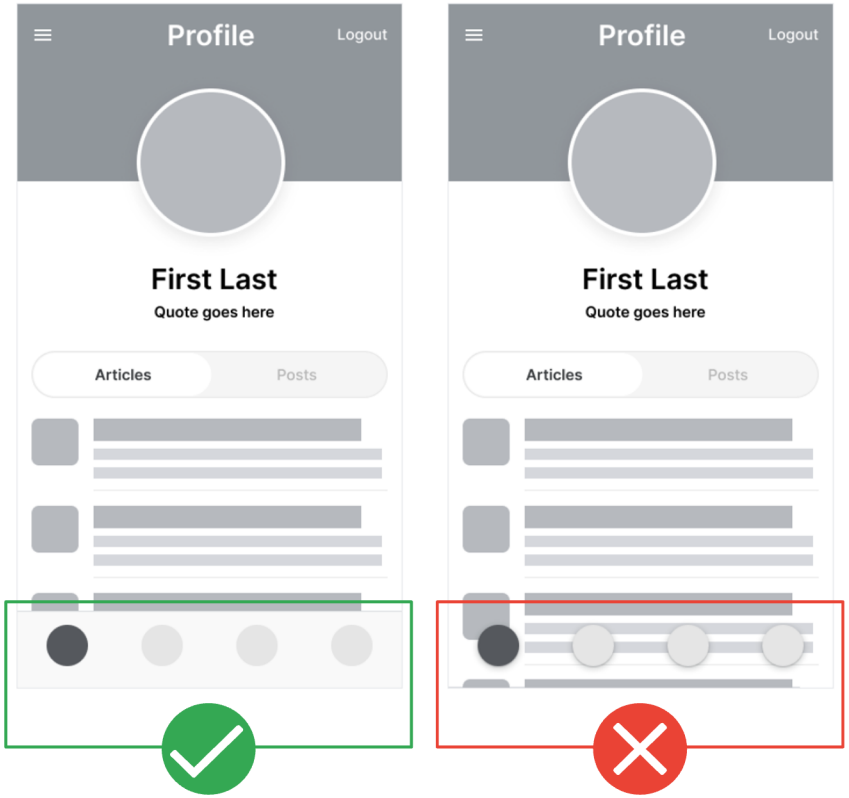


Gestalt Principle 2: Proximity

- Elements that are close together appear to be more related than things that are spaced farther apart

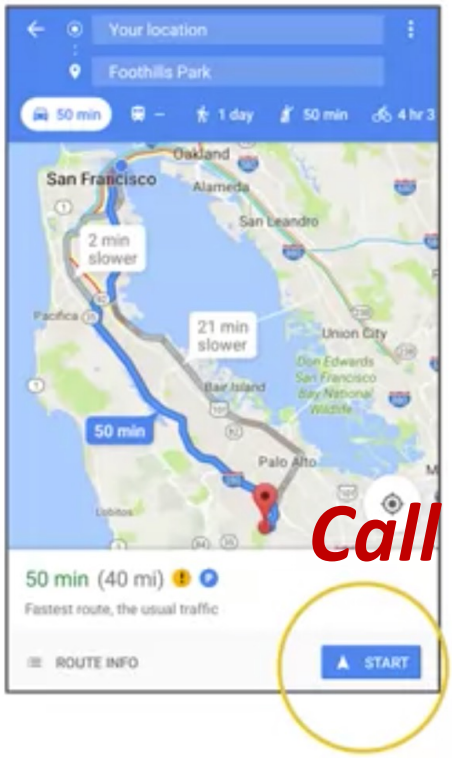
Gestalt Principle 3: Common Region

- Elements located within the same closed area are perceived to be grouped together



Von Restorff Effect

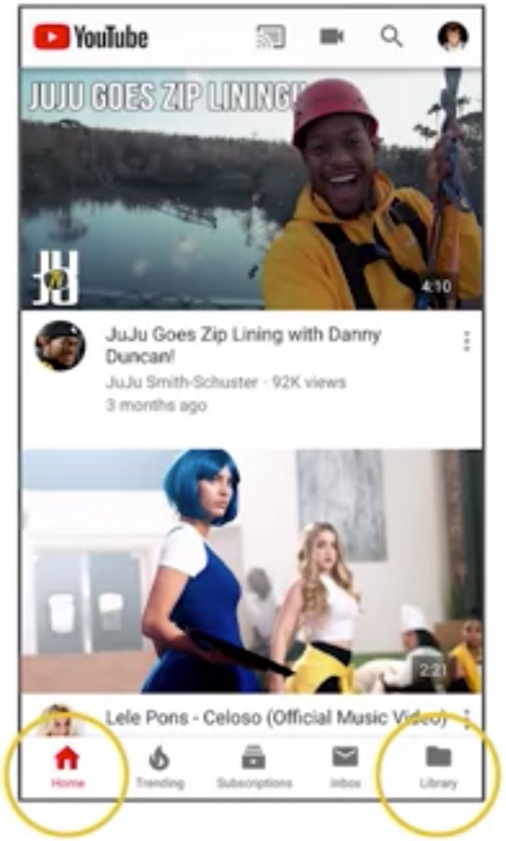
- When multiple similar objects are present, the one that differs from the rest is most likely to be remembered



Call to action (CTA)

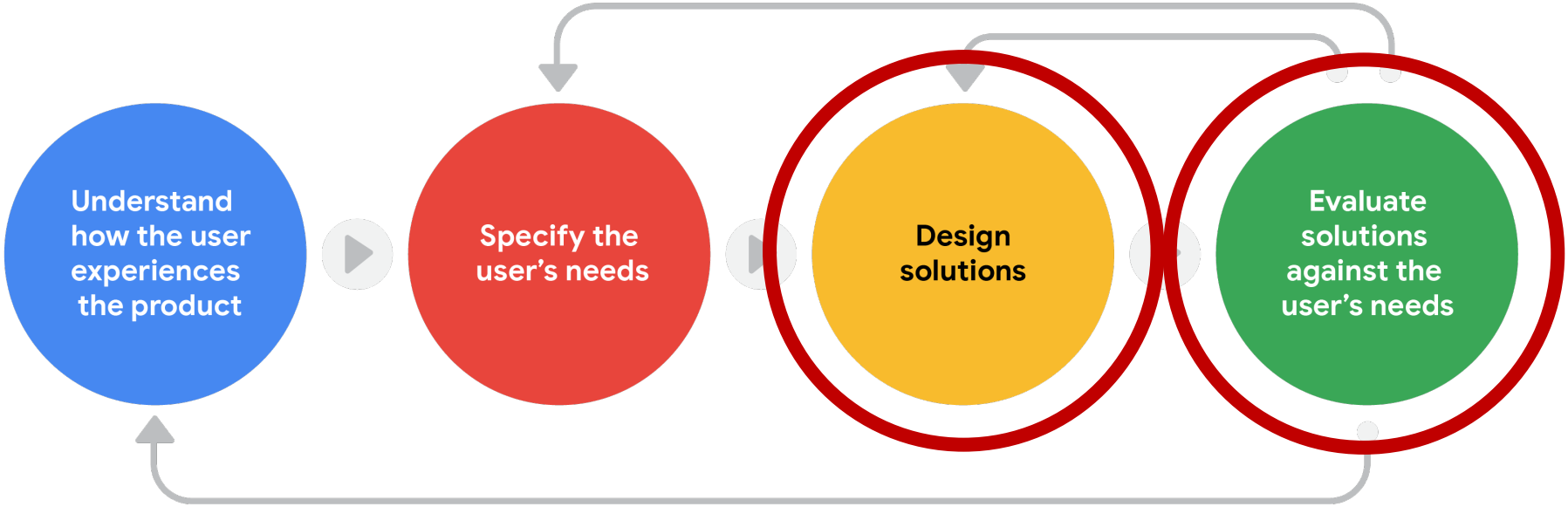
Serial Position Effect

- When given a list of items, users are more likely to remember the first and the last few, while the items in the middle tend to blur



Prototyping & Usability Test

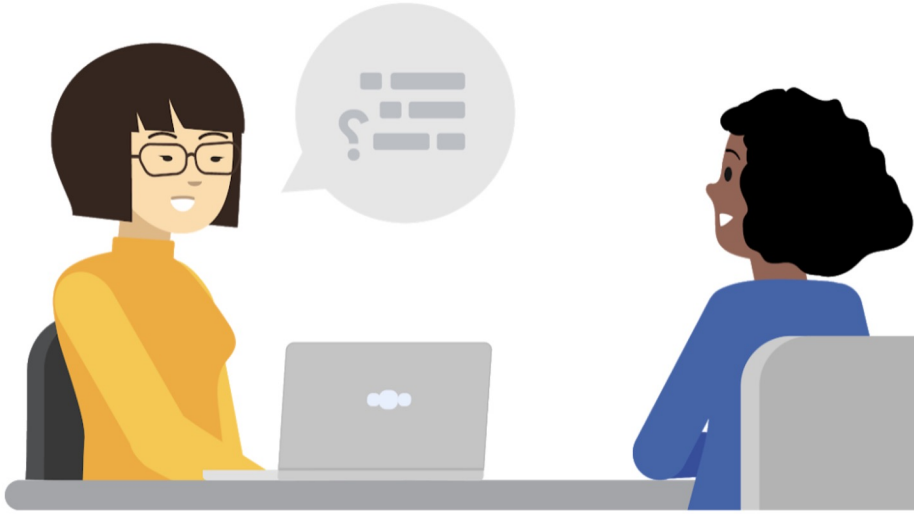
- Prototyping
- UI design
- Usability test



Usability Test

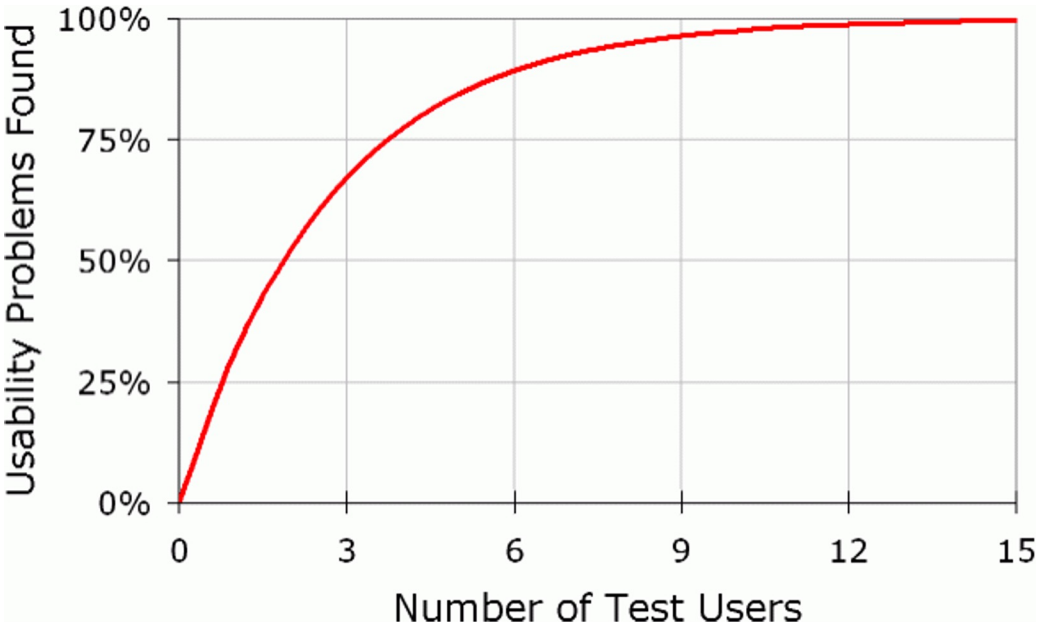
- A research method that assesses how easy it is for users to complete ***core tasks*** in a design

1. Present storyboards & task prompts
2. Record usage
   - Tester 1 (speak out loud)
   - Tester 2
   - Tester 3
   - Tester 4
   - Tester 5
3. Conduct interviews



How Many Testers?

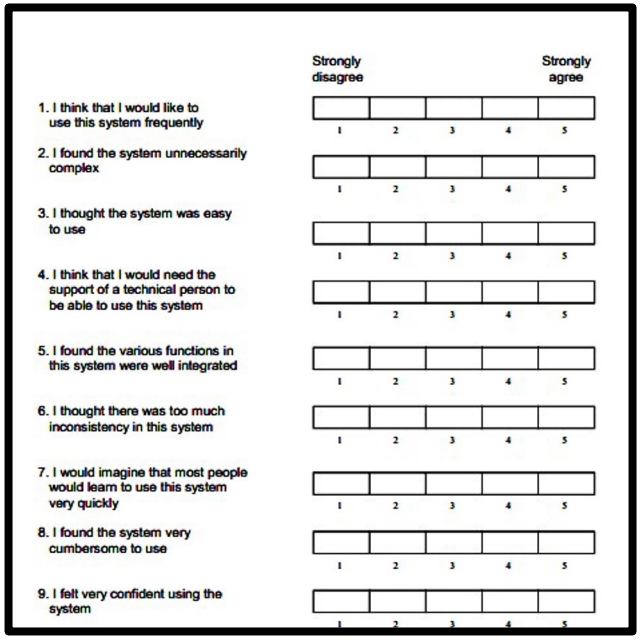
- ***Five*** is the magic number



- Should represent your target audience

Key Performance Indicators (KPIs)

- Time on task
- Use of navigation vs. search
- User error rates
  - “Wrong icon clicked!”
- Drop-off rates
  - “How many users quit before
  - finishing a purchase?”
- Conversion rates
  - “How many users complete the task?”
- System Usability Scale (SUS)
  - “Would you use the app in your daily life?”
- Net Promoter Score (NPS)
  - “Would you recommend this product to a friend or colleague?”



Preparing Your Script

Getting started

- Welcome participants
- Thank participants for their time
- Get consent to record
- Learn the participant's basic information
- Remind participants they are not being tested
- Let participants ask questions

Usability tasks

- Based on research goals
- Specific
- Make participants take action
- Avoid providing clues on how to complete the task

Conclusions

- Ask clarifying questions
- End the recording
- Thank the participant

Introduction	• **Project background**: We're creating a new app to help people find and schedule dog walkers. We need to find out if the main user experience, finding and scheduling a dog walker, is easy for users to complete. We'd also like to understand the specific challenges that users might face in the searching, scheduling, and reservation processes. • **Research goals**: Determine if users can complete core tasks within the prototype of the dog walker app. Determine if the dog walker app is difficult to use.
Research questions	• How long does it take a user to find and book a dog walker in the app? • What can we learn from the user flow, or the steps that users take, to book a dog walker? • Are there parts of the user flow where users get stuck? • Are there more features that users would like to see included in the app? • Do users think the app is easy or difficult to use?
Key Performance Indicators (KPIs)	• Time on task. • Conversion rate. • System Usability Scale.
Methodology	• Unmoderated usability study • **Location**: United States, remote (each participant will complete the study in their own home) • **Date**: Sessions will take place on March 12 (normal business hours) and March 13 (after hours) • **Length**: Each session will last 5 to 10 minutes, based on a list of prompts • **Compensation**: $25 Target gift card for participating in the study
Participants	• Participants are all dog owners with full-time jobs and who go out for activities more than once a week. • Two males, two females, and one nonbinary individual, between the ages

Example (DogWalker)

- Hypotheses

	of 20 and 75. One participant is a person with a visual impairment. • The study is accessible for use with a screen reader and a switch device.

Script	**During the unmoderated usability study**
	A list of prompts appears on the device screen
	• **Prompt 1:** Pick a date and time to schedule a dog walker.
	  ○ **Prompt 1 follow-up:** How easy or difficult was this task to complete? Is there anything you would change about the process of scheduling a dog walker?
	• **Prompt 2:** Select a dog walker.
	• **Prompt 3:** Confirm booking of a dog walker and complete the checkout process.
	  ○ **Prompt 3 follow-up:** How easy or difficult was this task to complete? Is there anything you would change?
	• **Prompt 4:** From the home page, figure out where you would go to edit your address.
	• **Prompt 5:** How did you feel about this dog walking app overall? What did you like and dislike about it?
	
	After the unmoderated usability study
	Participants will complete the System Usability Scale
	• Participants will score the following ten statements by selecting one of five responses that range from “Strongly Disagree” to “Strongly Agree.”
	  ○ I think that I would use this app frequently.
	  ○ I find the app unnecessarily complex.
	  ○ I think the app is easy to use.
	  ○ I need the support of a technical person to be able to use this app.
	  ○ I find the app easy to navigate.
	  ○ There is inconsistency within the app.
	  ○ I imagine that most people would learn to use this app quickly.
	  ○ I feel confident using the app.
	  ○ I need to learn a lot of things before I can start using this app.
	  ○ The main user flow is clear.

Schedule	• Recruitment starts: March 1 • Study dates: March 12-13 • Results available: April 1

Example (CoffeeHouse)

Introduction	• **Date**: 12/14/2020 • **Project background**: We're creating a CoffeeHouse app to help people place and pick up multiple CoffeeHouse orders together at once, so they can skip in-store lines and the payment process is streamlined. Some patrons place orders for groups and ordering individually takes too long. • **Research goals**: Figure out if collaborative ordering in the app actually saves people time when placing group orders.
Research questions	• How long does it take for 4-5 people to make a collaborative group order? • What can we learn from the steps users take to order as a group, and on their own?
Key Performance Indicators (KPIs)	• Time on task • User error rates • Conversion rates
Methodology	• Unmoderated usability study • Location: United States, remote (participants will go through the usability study in their own homes). • Date: Sessions will take place on February 8 & 9 • Five participants complete the collaborative ordering tasks on their own. One of the participants is randomly chosen to submit the group order. Each participant completes a questionnaire on their experience privately. • Each session will last 45 minutes, and will include an introduction, a list of tasks, and a short questionnaire.

- Moderated

Example (CoffeeHouse)

Participants	• Participants are people who place group coffee orders at least twice a month, whether it's a business task or a social task. This could be for office meetings, friend groups, or family.
	• They don't have to be coffee drinkers themselves • 2 Male, 2 Female, 1 Nonbinary, all aged 20-75 years old ○ 1 user of assistive technologies (keyboard, screen reader) • Incentive: $10 CoffeeHouse gift card redeemable at any location or online

	• **Intro:**
	  ○ Before we begin, do I have your consent to take both audio and video recordings of this interview?
	  ○ I want you to know that this isn't a test. There is no "right" answer, and none of your responses will be considered wrong.
	  ○ If you have any questions, please don't hesitate to ask.
	  ○ This data is being collected to help create an app that makes ordering coffee easier. Your answers will help us make the app easier for people to use.
	  ○ Basic questions:
	  ■ Do you live in an area with lots of coffee shops?
	  ■ Do you have a favorite coffee shop?
	  ■ How many times a week do you order coffee from a store?
	  ■ Do you usually order for yourself, or for a group?
	  ■ Can you talk me through a normal day in your life?
	  ○ Great! If you're ready, let's move onto the tasks you'll be working on.

Example (CoffeeHouse)

Script	• **Prompt 1:** Open up the CoffeeHouse app on your phone and customize a drink order for yourself. Do your best to talk me through your thought process.
	  ○ **Prompt 1 Follow-Up:** How easy do you feel it is to customize a drink the way you like it? What was easy and what was challenging?
	• **Prompt 2:** If I said, "start a new group order," would you know what to do?
	  ○ **Prompt 2 Follow-Up:** Try it out now, please.
	  ○ **Prompt 2 Follow-Up:** Did you find anything confusing?
	• **Prompt 3:** From the existing group order screen, add your custom drink from a moment ago, then add multiple other custom drinks to the same order and proceed to the checkout screen.
	  ○ **Prompt 3 Follow-Up:** How do you feel about the process of purchasing multiple drinks in the same order? What was easy and what was challenging?
	• **Prompt 4:** Finally, checkout and complete the group order.
	  ○ **Prompt 4 Follow-Up:** How do you feel about paying for different orders in the same transaction? What are your feelings about the

	amount of time it took to complete? • **Prompt 5:** How did you feel about the CoffeeHouse app overall? What did you like and dislike about it?

Taking Notes

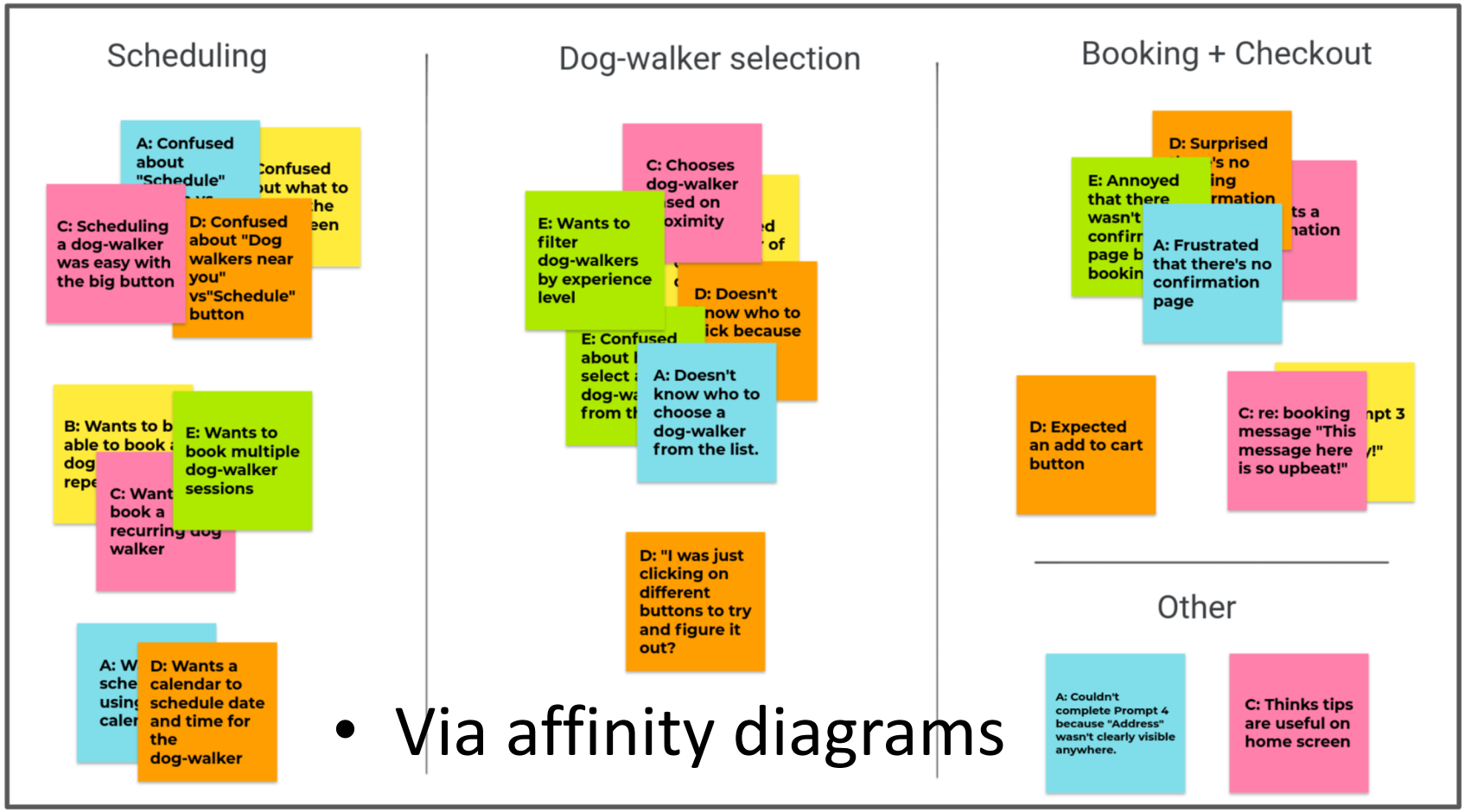
	A	B	C	D	E
1	Tash				
2	**Task**	**Click Path**	**Observations**	**Quotes**	**Task Completion**
3	Write the task number and directions here.	Record what path the participant took to complete the task.	Note down behaviors, opinions, and attitudes along with any errors, issues, or areas of confusion.	Note any significant quotes (positive and negative).	Choose if the task was: **1** - easy to complete **2** - completed but with difficulty **3** - not completed
4	Prompt 1: Pick a date and time to schedule a dog walker	Home > "Schedule" > "Submit"	- confused about what to press on home screen - wonders if there's a way to schedule a recurring dog walker	"there needs to be a way to do a recurring booking"	**2**
5	Prompt 2: Select a dog walker	Dog walkers > "Learn more"	- commented on number of options for dog walkers		**1**
6	Prompt 3: Confirm booking of dog walker and complete the checkout process	Jane Doe > "Book"		"that was super easy!"	**1**
7	Prompt 4: From the homepage, figure out where you would go to edit your address	Home > Profile icon			**1**
8	Prompt 5: Would you use the dog walking app?			"I don't know if it's that useful, especially since you can't book a recurring time."	
9	**Additional Notes:**				

- For each tester, done by each member

Goal: Insights

- Observations about people that help you understand the ***user*** or ***their needs*** from new perspectives

From Notes to Insights



- Via affinity diagrams

Example (DogWalker)

- 4/ 5 participants wanted to be able to make a reoccurring appointment with a dog walker
- 3/ 5 users would like to pick a date when scheduling a dog walker
- 3/5 testers were surprised that there wasn't a confirmation page before they were charged

Qualities of Strong Insights

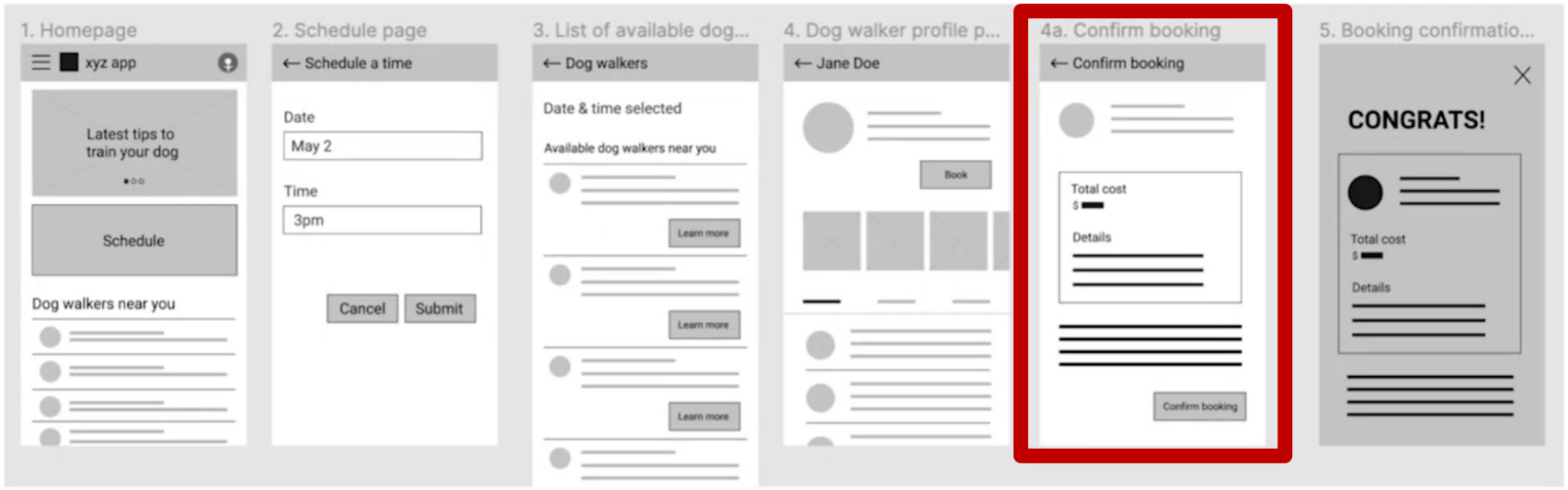
- Grounded in real data
- Answer your research questions
- Easy to understand
- Increase empathy for the user experience
- Inspire direct action

Prioritizing Insights

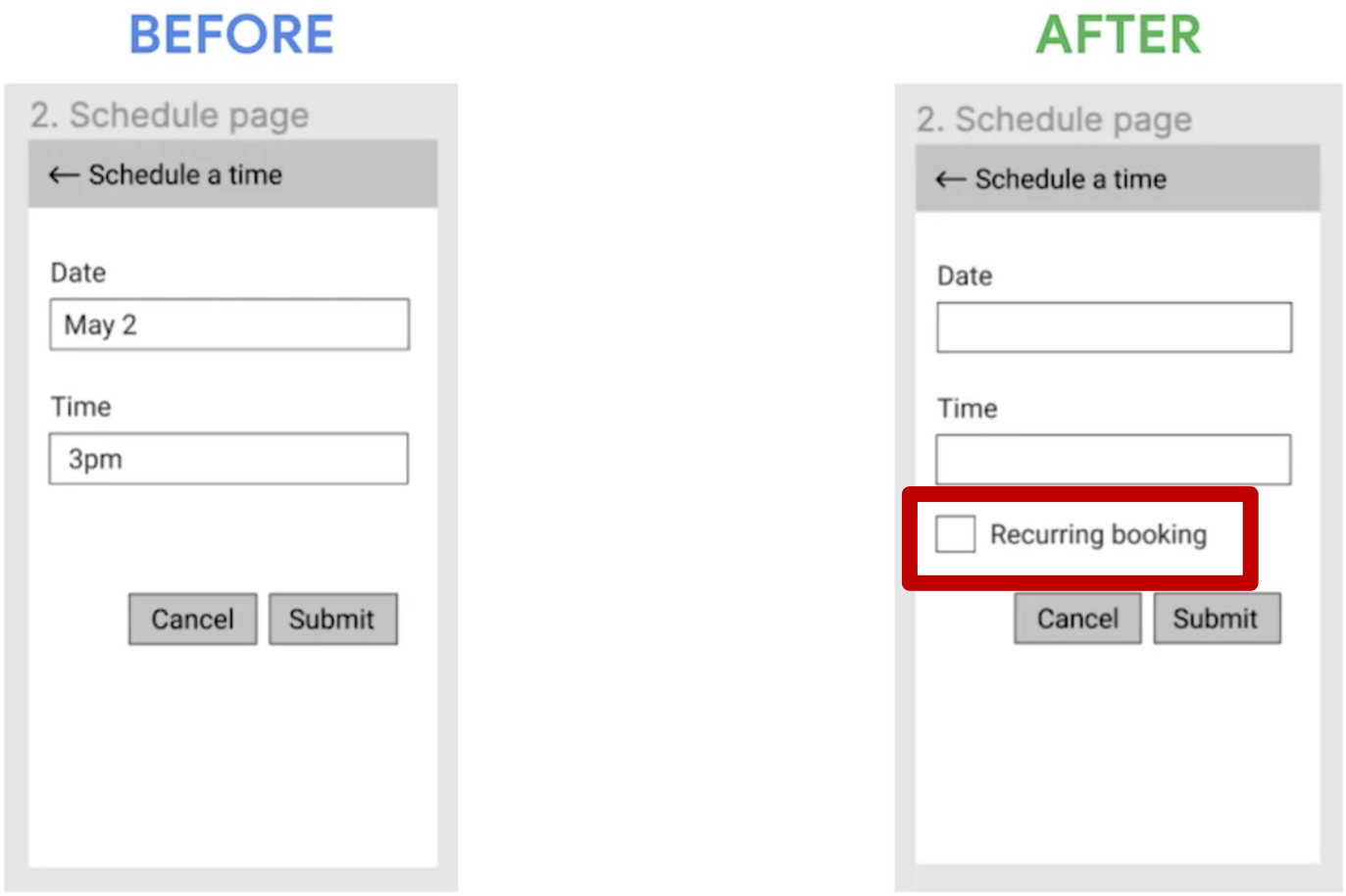
- P0: must be fixed so users can complete the main flow
  - Confirmation page before charge
- P1: should be included in future version
  - Reoccurring appointments
- P2 …
  - Date picker for scheduling a dog walker

Confirmation Page before Charge

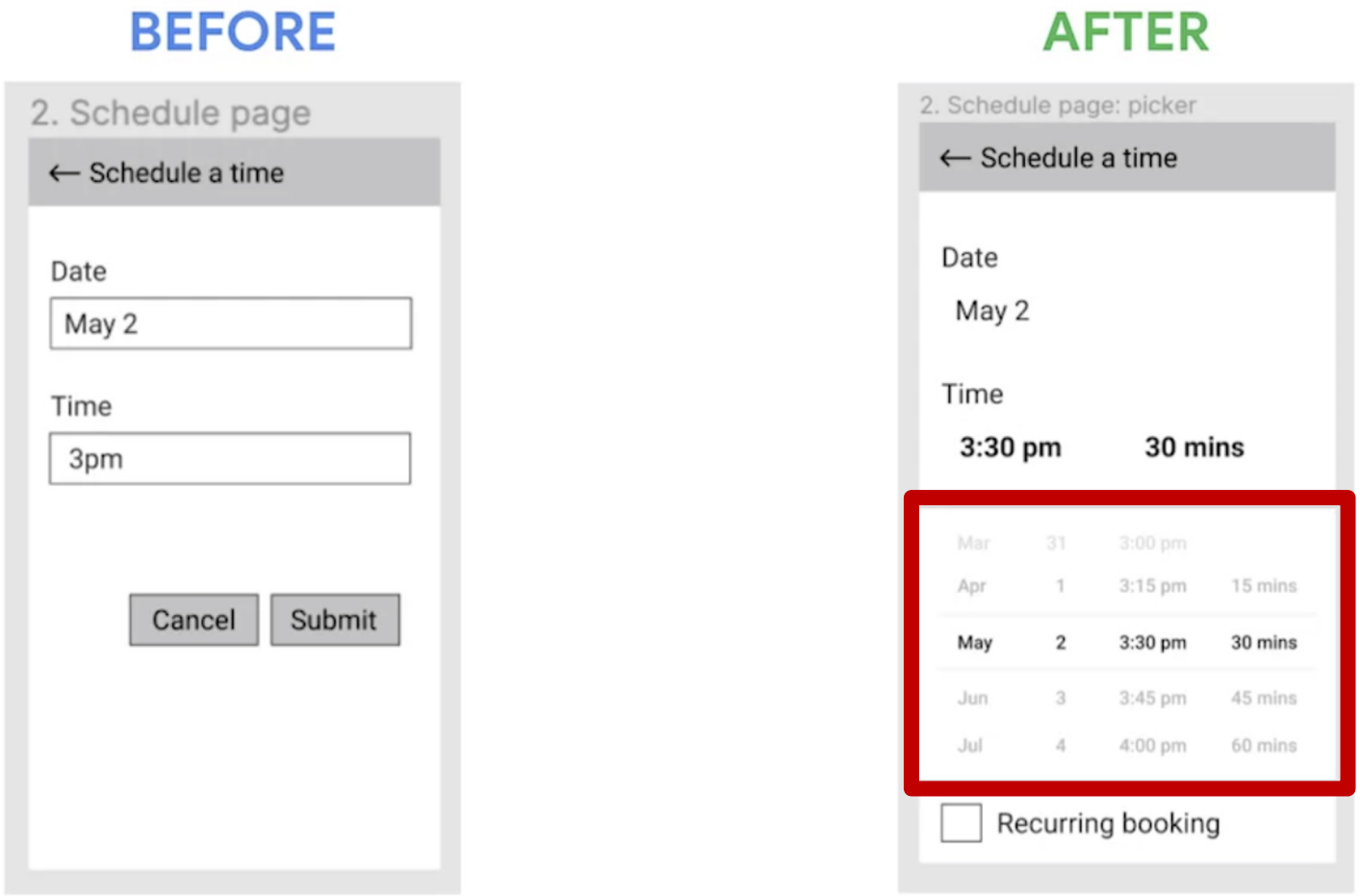
AFTER



Reoccurring Appointments



Date Picker


BEFORE
2. Schedule page
← Schedule a time
Date
May 2
Time
3pm
Cancel
Submit
AFTER
2. Schedule page: picker
← Schedule a time
Date
May 2
Time
3:30 pm
30 mins
Mar 31 3:00 pm
Apr 1 3:15 pm 15 mins
May 2 3:30 pm 30 mins
Jun 3 3:45 pm 45 mins
Jul 4 4:00 pm 60 mins
Recurring booking

Assignment & Grading

- Make a prototype and conduct usability tests
- Script ***30%***
- Insights (with priorities) ***25%***
- Changes (before vs after) ***25%***

- By 4/17 noon
  - TAs will provide a sheet where your team can announce your test script & prototype
  - Each of you should participate in at least 3 tests
  - Each group should have at most 20 testers

Peer Review (10%)

- Each team is rated by a tester **5%**
  - Did the team give enough background or context?
  - Were the task prompts clear enough?
  - ***Not*** based on the design of the prototype
- Each tester is rated by a team **5%**
  - Did the mind spoken out loudly?
  - Was the feedback specific enough?
  - ***Not*** based on the number of insights

Midterm Demo

1. Target audience & problems to solve
2. Unique value proposition
3. Solution demo
4. FAQs (at most 3)

- Make it like ***product announcement*** than summarization of design process
- ***5 min*** each team
- On ***4/15***

Eavluation

- Problem criticalness (to your audience) ***20%***
- Uniqueness (against your competitors) ***30%***
- Prototype UX ***30%***
- Readiness for FAQs ***20%***

- Use your time wisely to justify your scores!

Peer Review

- Contribution check ***x0.6***
  - Initial prototyping
  - Script preparation
  - Result interpretation
  - Prototype refinement
  - Demo
  - …