

# Human-Computer Interaction

CS 449 | 649 – F26

Week 5: Oct 5 – Oct 9

**Translating needs to functionality**

**POV and HMW**

**JTBD + task analysis**

**Feature ideation + assessment**

\* Updated Oct 2 2026

# Week 4 Recap

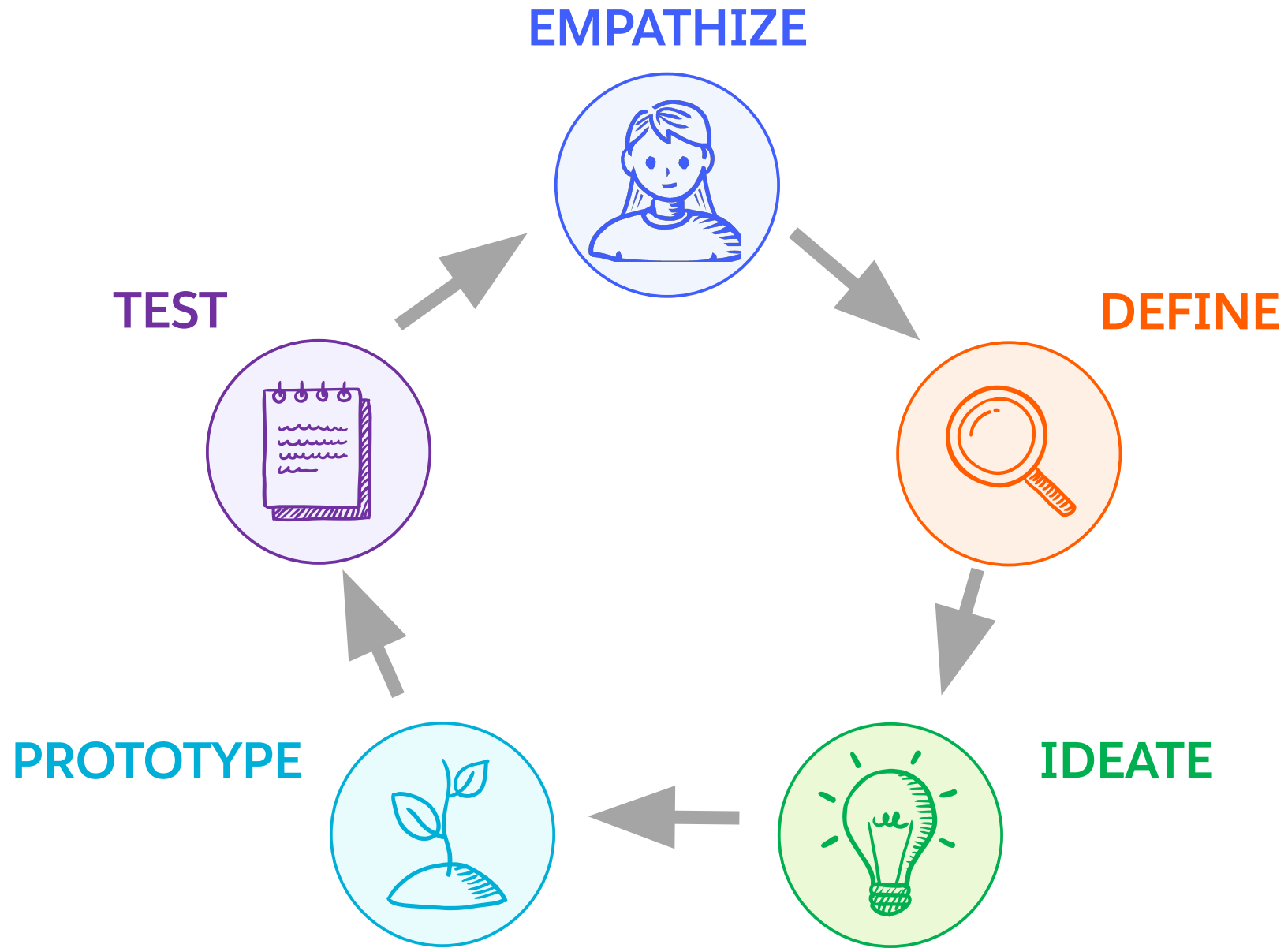
Interviews, Drawing insights from data, Affinity diagramming

## Reminder - Week 4's To-Do List

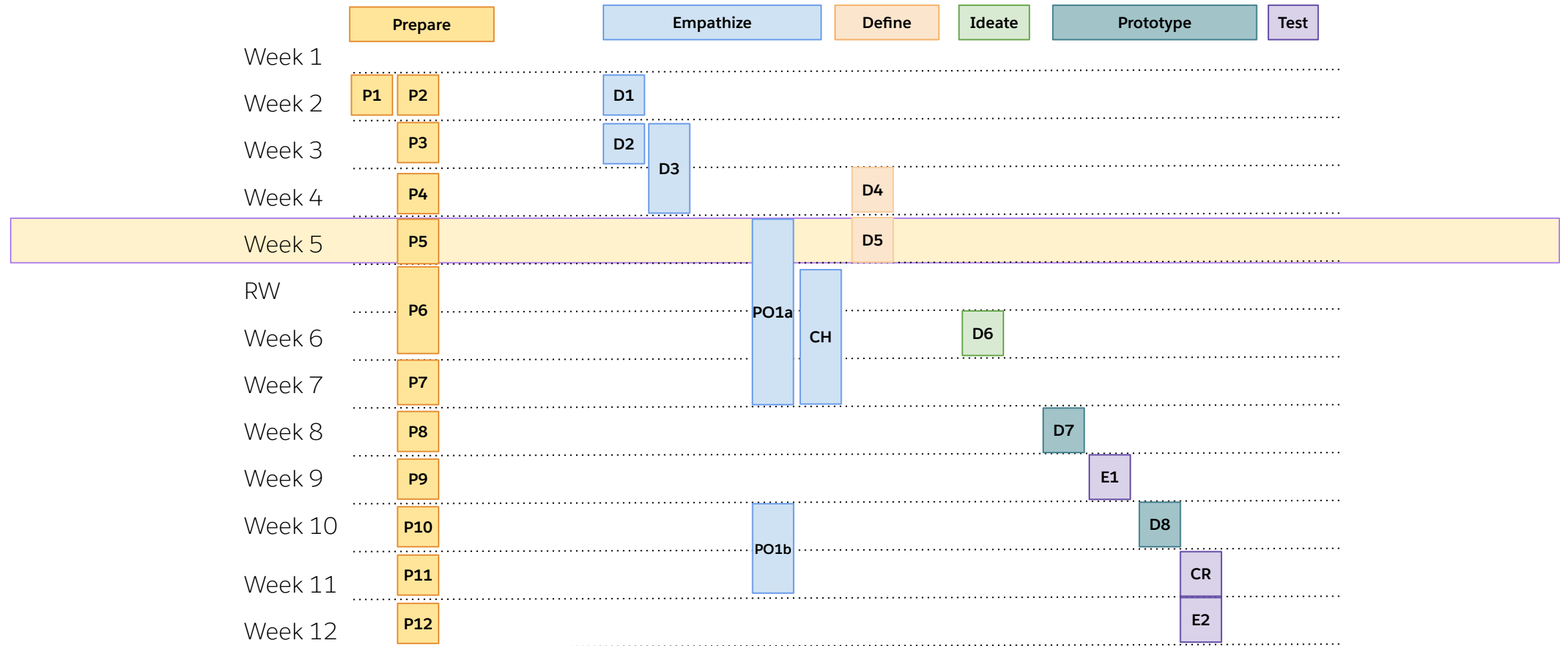
- ✓ Complete a **T2** Team reflection entry (1 paragraph)
- ✓ Complete design notebook entry for **D3**: Interview Questions
- ✓ Conduct your first 1-2x **PO1a** Interviews
- ✓ Complete design notebook entry for **D4**: Affinity Diagramming
- ✓ **P5**: Prepare for Week 5 studio

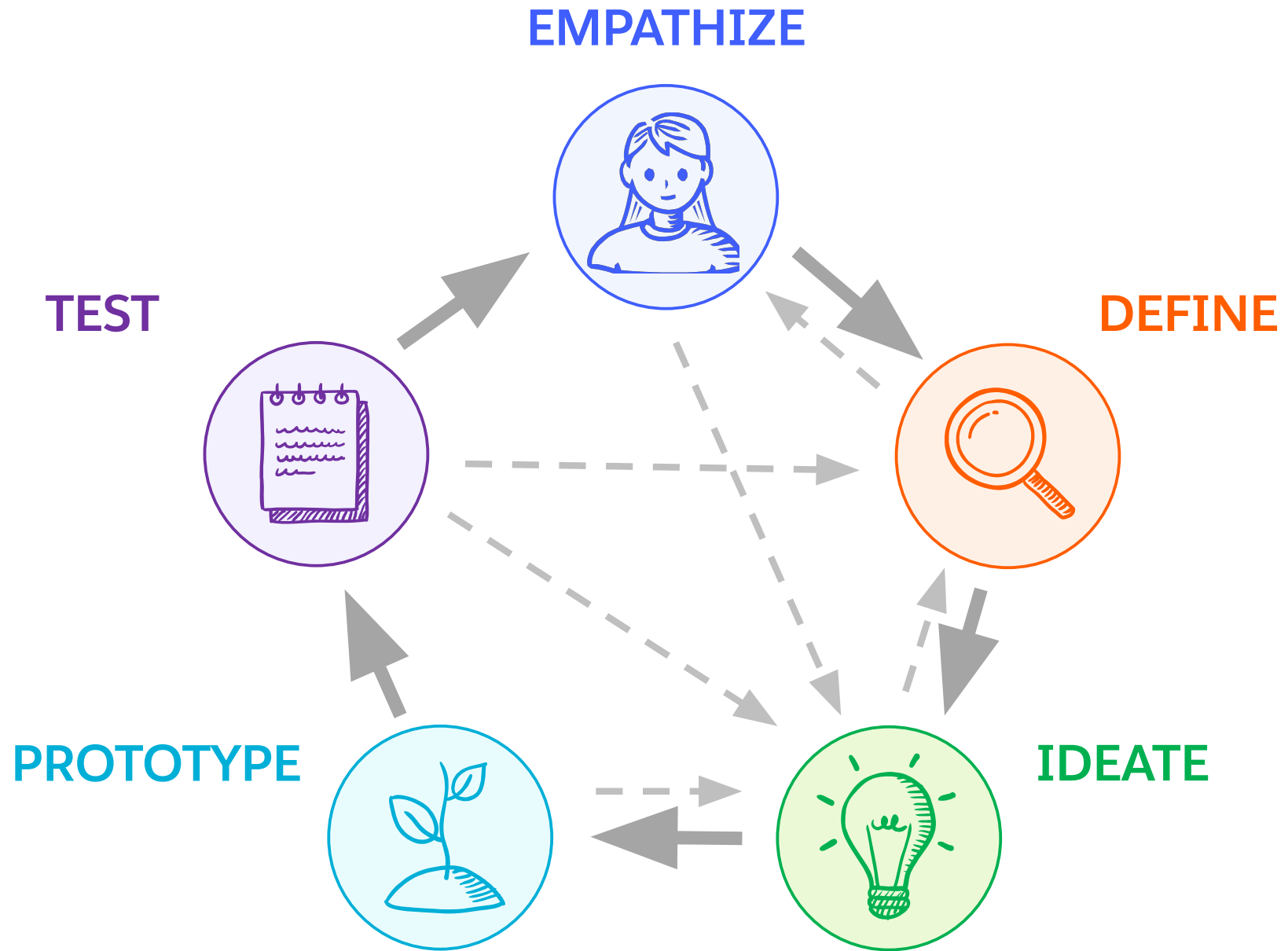
# Translating needs to functionality ...

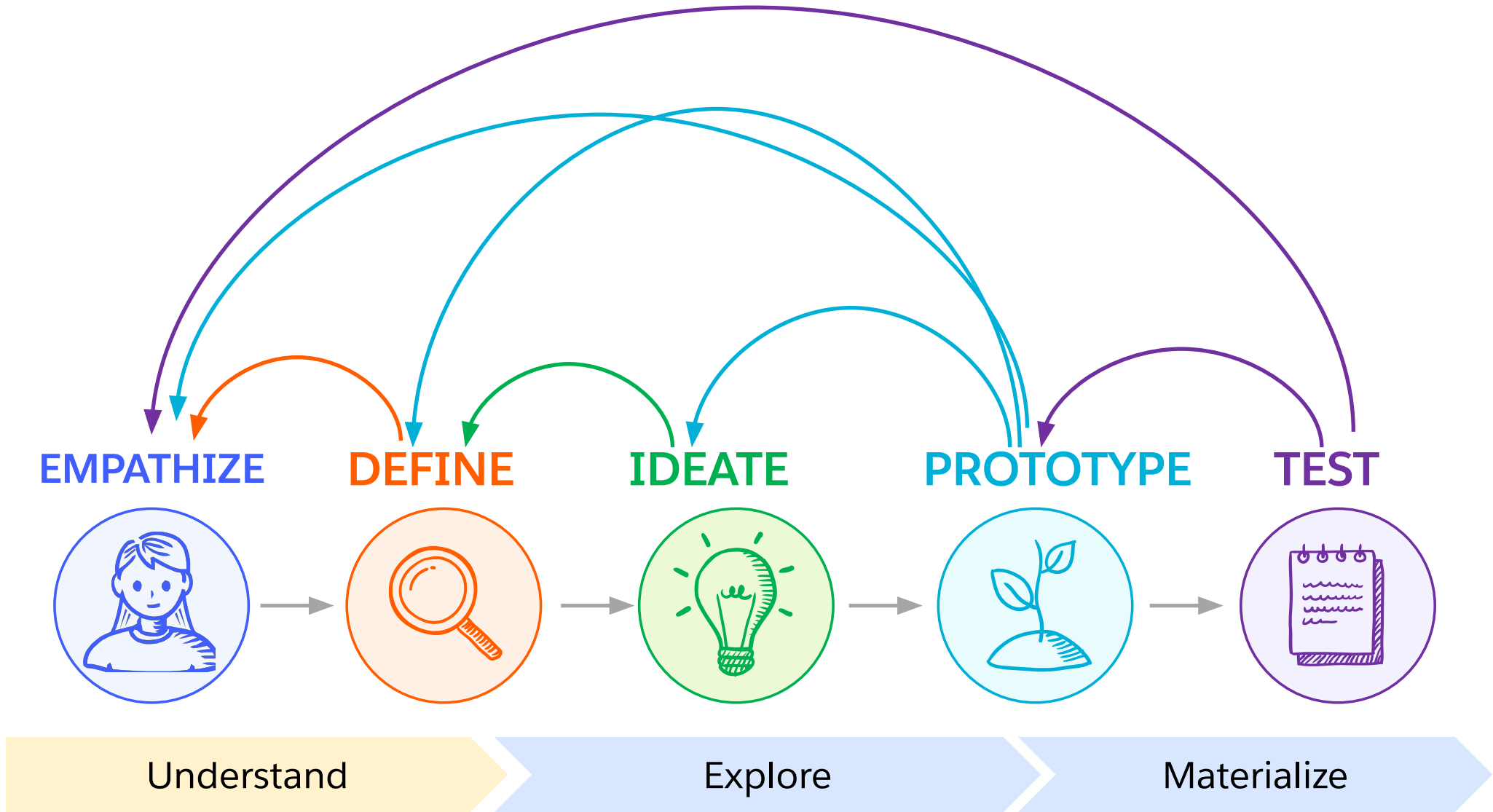
Or, UX Design Process, Revisited ...



# Project Deliverables Build on Each Other







**“If you don’t understand your users, the ideas you generate will be worthless:**

**... they may not be on target, and, even worse, you won’t have the correct evaluation criteria for determining which idea is the best and should be implemented.”**

– Aurora Harley (2017)



# Design Spaces

...

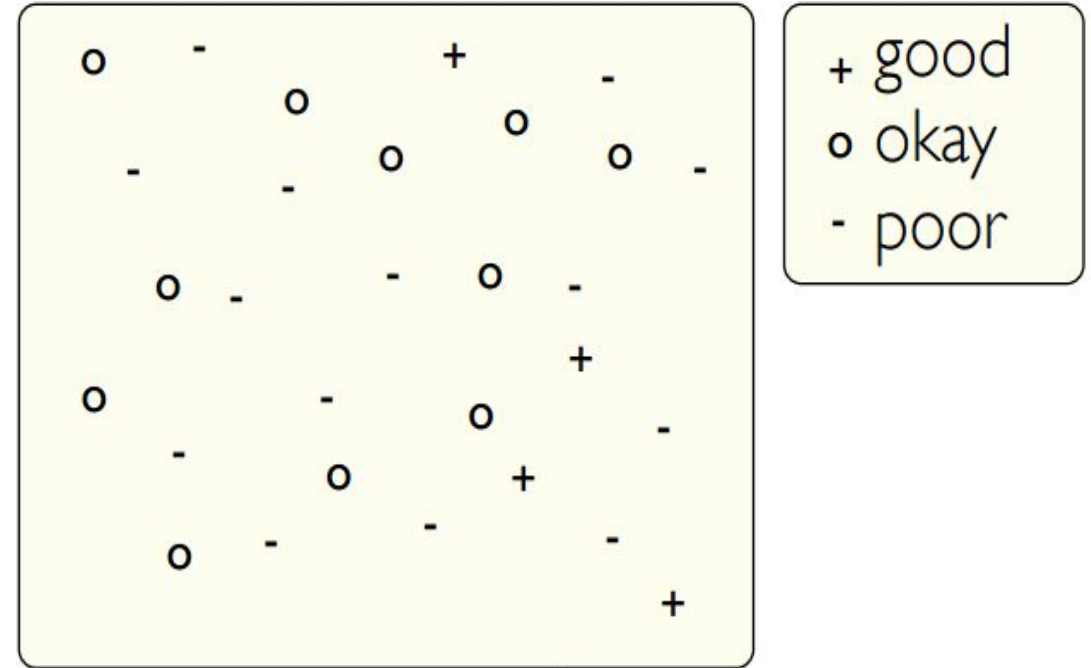
# Exploring a Design Space

A **design space** is a conceptual representation of all possible solutions to a problem ...

... Some good, some bad, and some just okay

... It provides a framework for understanding the design process

... It helps identify and organize alternatives and considerations, guiding comparisons of different ideas



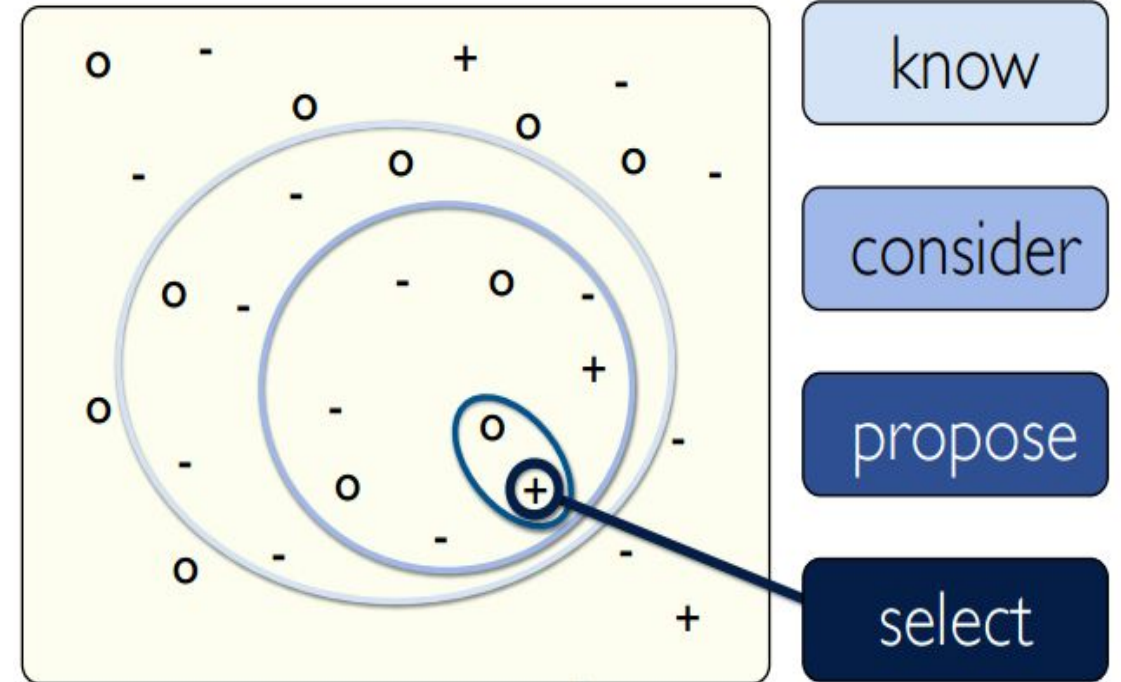
*Conceptual space of all possible solutions for your project design*

# Exploring a Design Space

We **search a design space** for the best possible solution

... In AI/ML we might think of this as gradient descent, but we're dealing with people ...

... **Define to Ideate** flow attempts to make this process more refined than a random walk



*Conceptual space of all possible solutions for your project design*

# Problem Statements

Point of View (POV), How Might We (HMW), Jobs to be Done ...

# Connections between POV, Behavioral, and HMW

**POV** statements: define the problem space

**Behavioral** statements: factual basis for interactions and experiences

**HMW** statements: Build on POV and behavior statements to drive exploration in ideation, problem framing, and design solutions.



# From (Qualitative) Raw Data to Insights

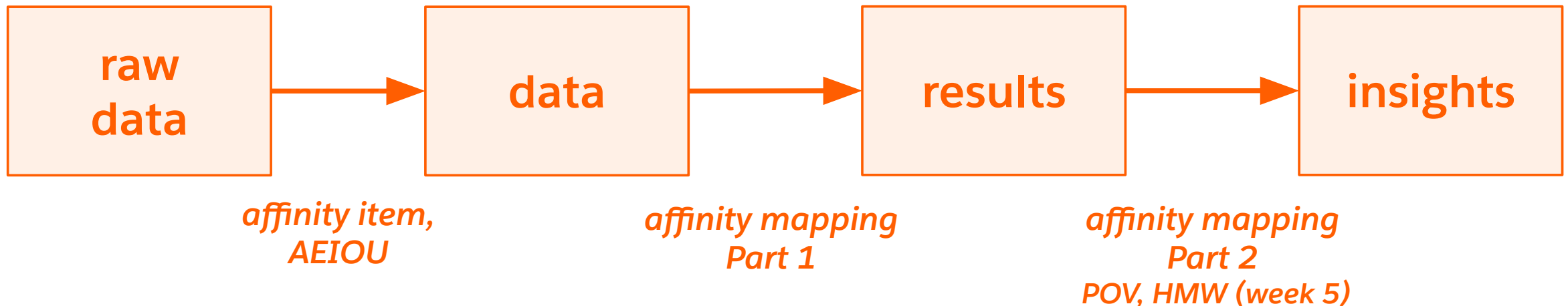
Raw data is unstructured text, audio, photos, video ...

... questionnaire/interview responses, observations, brainstorming, etc.

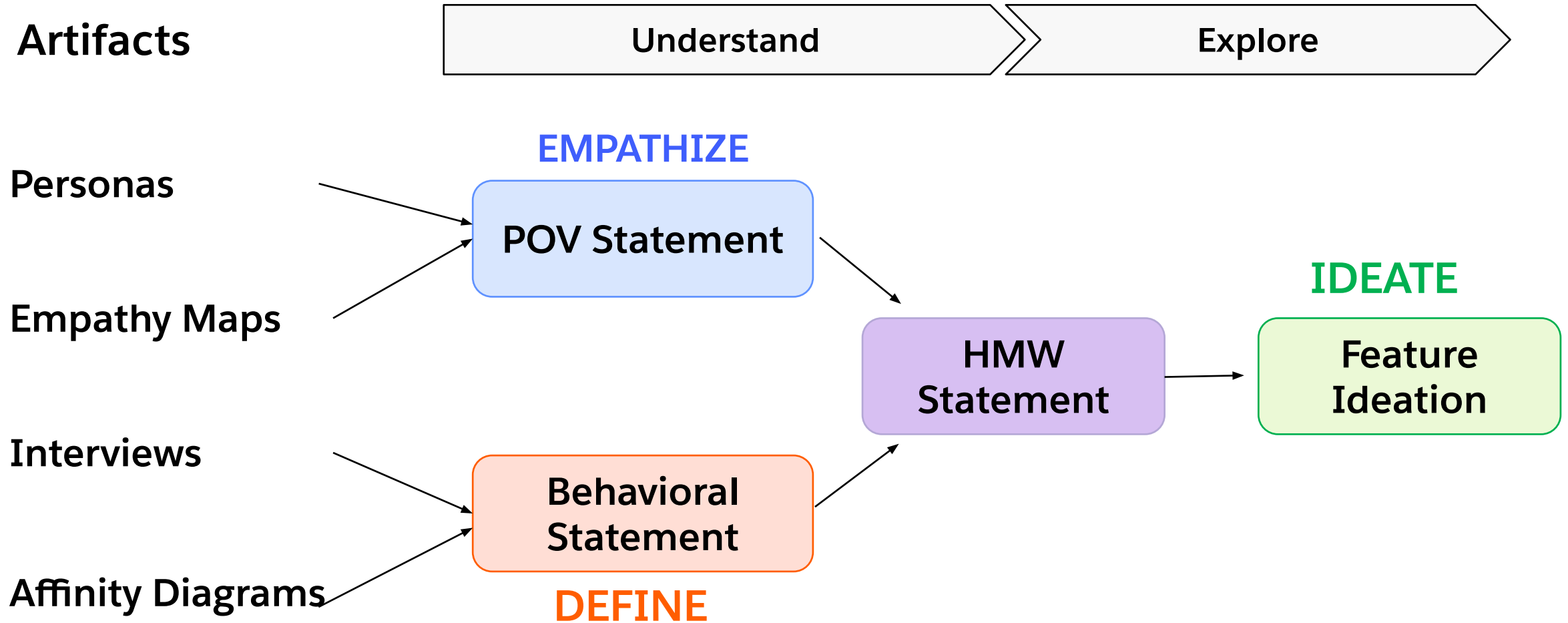
Data is extracted manually using guidelines and more subjective methods, analyzed using affinity mapping

Creating insights out of results requires synthesis ...

... looking for patterns, combining quantitative and qualitative results



# Connections between POV, Behavioral, and HMW



# POV

Point of View (POV) statements define the problem space

# Point of View (POV)

A narrative tool used in design thinking to synthesize observations about a person...

A guiding statement that focuses on specific people, and insights and needs that you uncovered ...

... "**Needs**" are human emotional or physical necessities, which help define your design challenge

... An "**Insight**" is a remarkable realization that you could leverage to better respond to a design challenge

# Structure of a POV statement

**Person:** Who are you designing for

... From personas, empathy maps, and affinity diagrams

**Need:** What is their essential need or goal?

... Try to use descriptive verbs

... Interviews, affinity diagrams

**Insight:** What surprising or unexpected discovery did you find?

... Not the reason for the need, but a statement you can leverage in a design

... Quotes from interviews, results from affinity diagrams

# Structure of a POV statement

Articulate a POV as an actionable problem statement using this template:

{{**person** description}}  
... **need(s)** {{need description}}  
... **because** {{insight description}}

*“Busy urban professionals, like Sarah, need a way to access a variety of healthy meal options efficiently because they struggle to find the time to prepare nutritious meals due to their hectic schedules.”*

# Example POV statement

{{person description}}  
... need(s) {{need description}}  
... because {{insight description}}

*“An adult person who lives in the city needs access to a car for 10-60 minutes 1-4 times per week because he would rather share a car with more people as this is cheaper, more environmentally friendly, however, it should still be easy for more people to share..”*

# A Good POV Statement ...

- ... Provides a narrow focus
- ... Frames the problem as a problem statement
- ... Inspires your team
- ... Guides your innovation efforts
- ... Informs criteria for evaluating competing ideas
- ... Is evocative and captures people's attention
- ... Is valid, insightful, actionable, unique, narrow, meaningful, and exciting

# Behavioural Statements

Provide a factual basis for interactions and experiences

# Behavioral Statement

Focuses on a person's actions in a specific context

Intended to capture what people do rather than what they **feel**

Grounded in empirical observations

... For example, from your interviews!

Intended to understand interactions with products + services

... Friction, confusion, delight, etc.

# Structure of a Behavioral Statement

**People:** Who are you designing for ...  
... From personas and empathy maps

**Action:** What specific thing are they trying to do?  
... Try to use descriptive verbs

**Context:** When and where does this behavior occur?  
Quotes from interviews, results from affinity diagrams

# Structure of a Behavioral Statement

A statement that focuses on specific actions (that come from data)

{{**person** description}}  
... {{action description}}  
... **because** {{**context** description}}

*“When given the option, Sarah, as busy professional, often defaults to ordering fast food through delivery apps because it’s quicker than cooking at home, even though she prefers eating healthier options.”*

# HMW

How Might We (HMW) Statements drive exploration in ideation, problem framing, and design solutions.

# How Might We (HMW) for Data Synthesis

Short questions to launch brainstorming... seeds for your ideation that fall out of your POV + Behavioral statement or insights:

"**How**" suggests that we do not yet have the answer

"**Might**" emphasizes that our responses are only **possible** solutions

"**We**" brings in the element of a collaborative effort

# Structure of a HMW Statement

Can use a specific structure to write HMW questions, for example:

How might we {{intended action}} for {{a person}} so that {{desired outcome}}?

*“How might we make healthy meal options more accessible and convenient for busy urban professionals like Sarah, so that we encourage them to choose healthy options over fast food?”*

# HMW Tip #1: Start from specific problems/insights

Start with you personas, empathy maps, and affinity diagrams ...  
... Conduct team brainstorming sessions based on data analysis

**Insight:** *customers aren't aware of the full product offerings.*

✗ *“How might we make the customer experience of the website?”*

✓ *“How might we support enhanced browsing on our website for busy professionals so that we increase awareness of the full product offerings?”*

## HMW Tip #2: Avoid suggesting a solution

Embedding solutions in the HMW question restricts possible solutions and subsequent HMW questions

**Insight:** *Taxpayers are often unsure about which form to complete when they file their taxes.*

✗ *“How might we tell taxpayers which form to complete to file their taxes?”*

✓ *“How might we simplify tax filings for the general population so that we can make them feel confident they are filing their taxes correctly?”*

## HMW Tip #3: Keep questions broad

Try to rewrite a HMW questions in a broader way ...The broader the HMW, the more ideas can be generated but not so broad that you lose sight of the problem you're trying to solve.

**Insight:** *People often spend a long time checking their submission for mistakes.*

✗ *“How might we make it quick and easy for people to check their work for mistakes?”*

✓ *“How might we improve document checking and review for undergraduate students so that we can help them to efficiently draft submissions that they're happy with?”*

## HMW Tip #4: Focus on desired outcome

HMW questions should focus on root problems not symptoms of problems

**Insight:** *People often call us because they're unsure about the application process.*

✗ *“How might we stop people from calling us?”*

✓ *“How might we summarize our data for our customers so that we can make them feel confident they have all the information they need?”*

# HMW Tip #5: Phrase questions positively

Positive questions can generate more ideas and encourage creativity

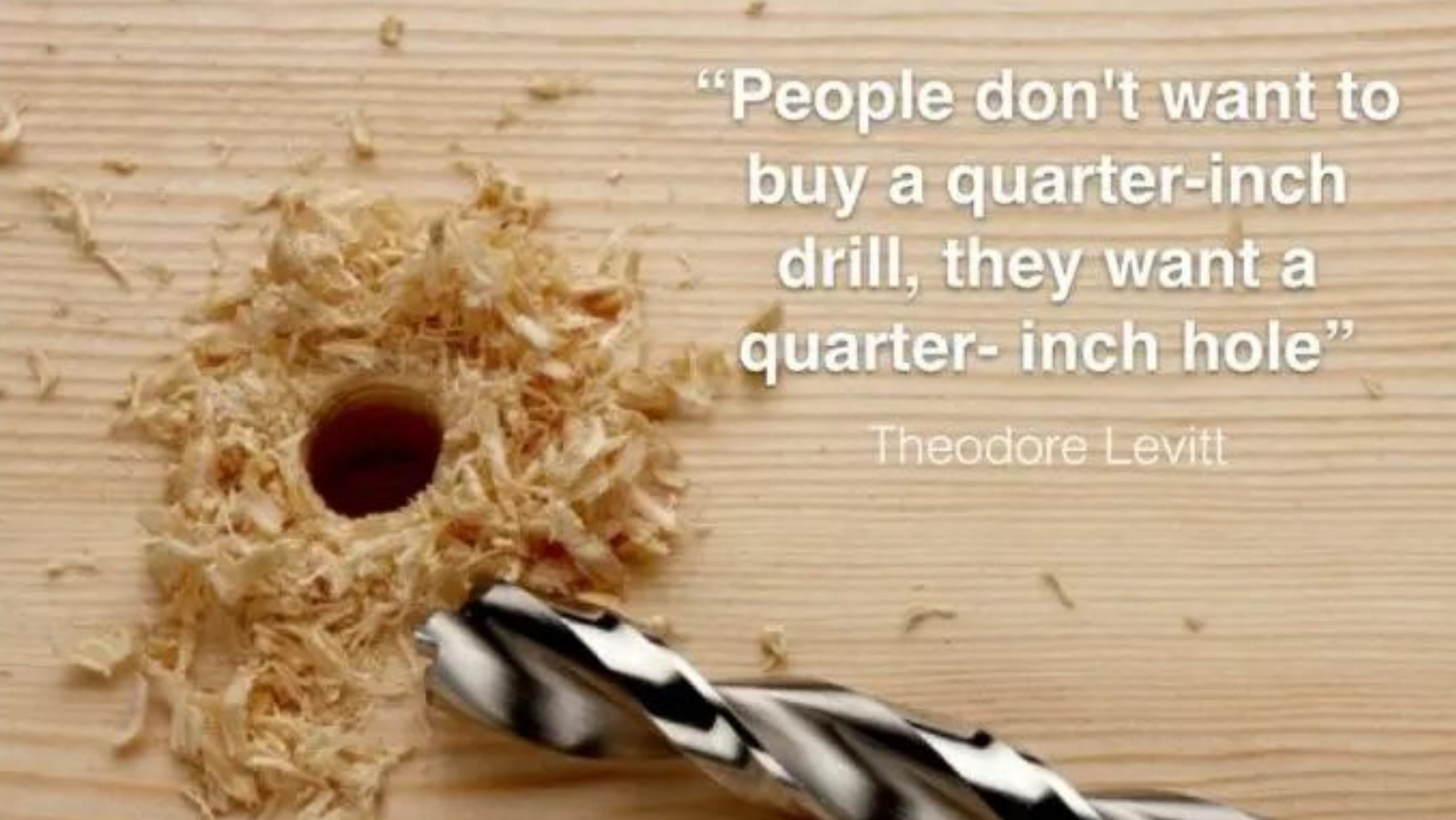
**Insight:** *Customers find the return process difficult.*

✗ *“How might we prevent the return process from being difficult?”*

✓ *“How might we enhance our return process for our elderly customers so that we can make the return process quick and intuitive?”*

# JTBD

Jobs to be Done ... An alternative (or complementary) approach



**“People don't want to  
buy a quarter-inch  
drill, they want a  
quarter- inch hole”**

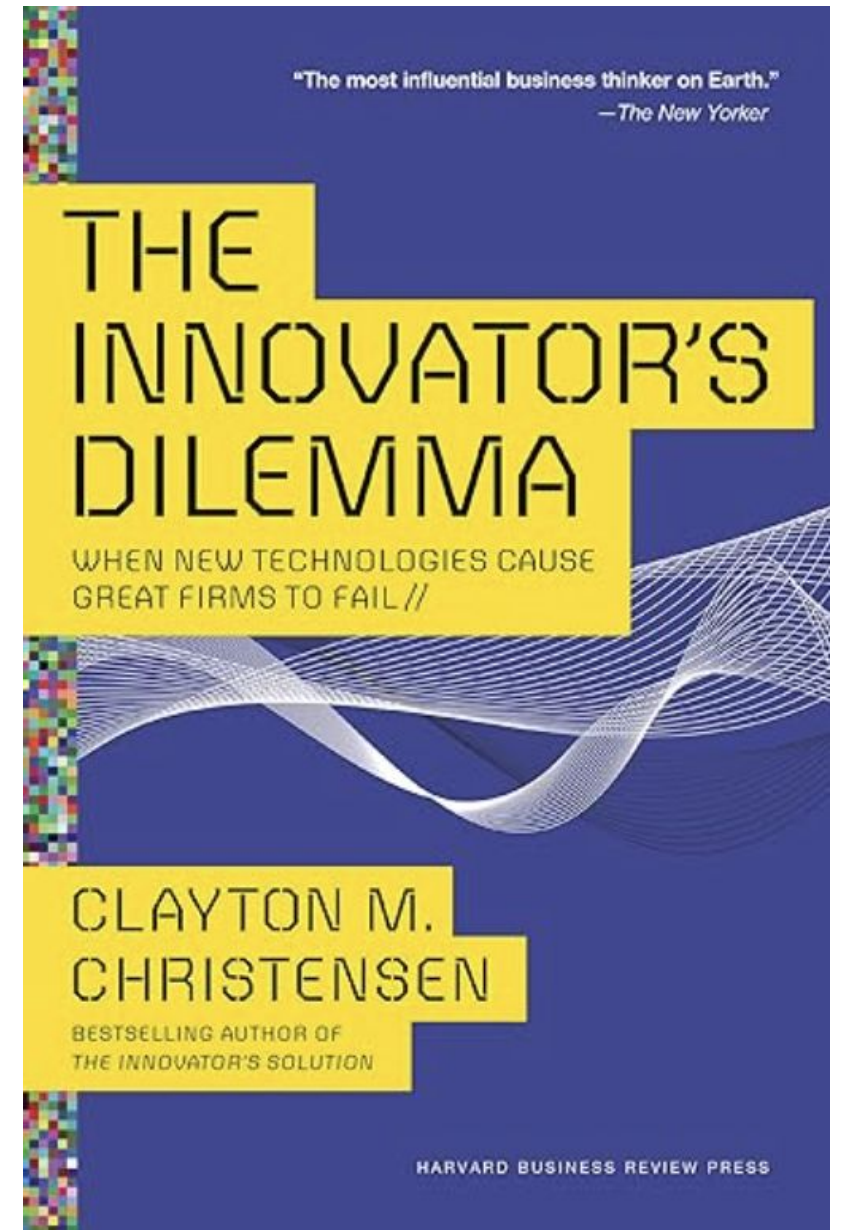
Theodore Levitt

# Jobs to be Done (JTBD)

A framework for helping to understand a person's goals, widely used in industry.

... Complementary to POV, HMW and bigger ideas of personas and empathy maps...

The key idea is that people “hire” software for a job, and they will continue to “hire” the software if it does the job well



# JTBD: Key Ideas

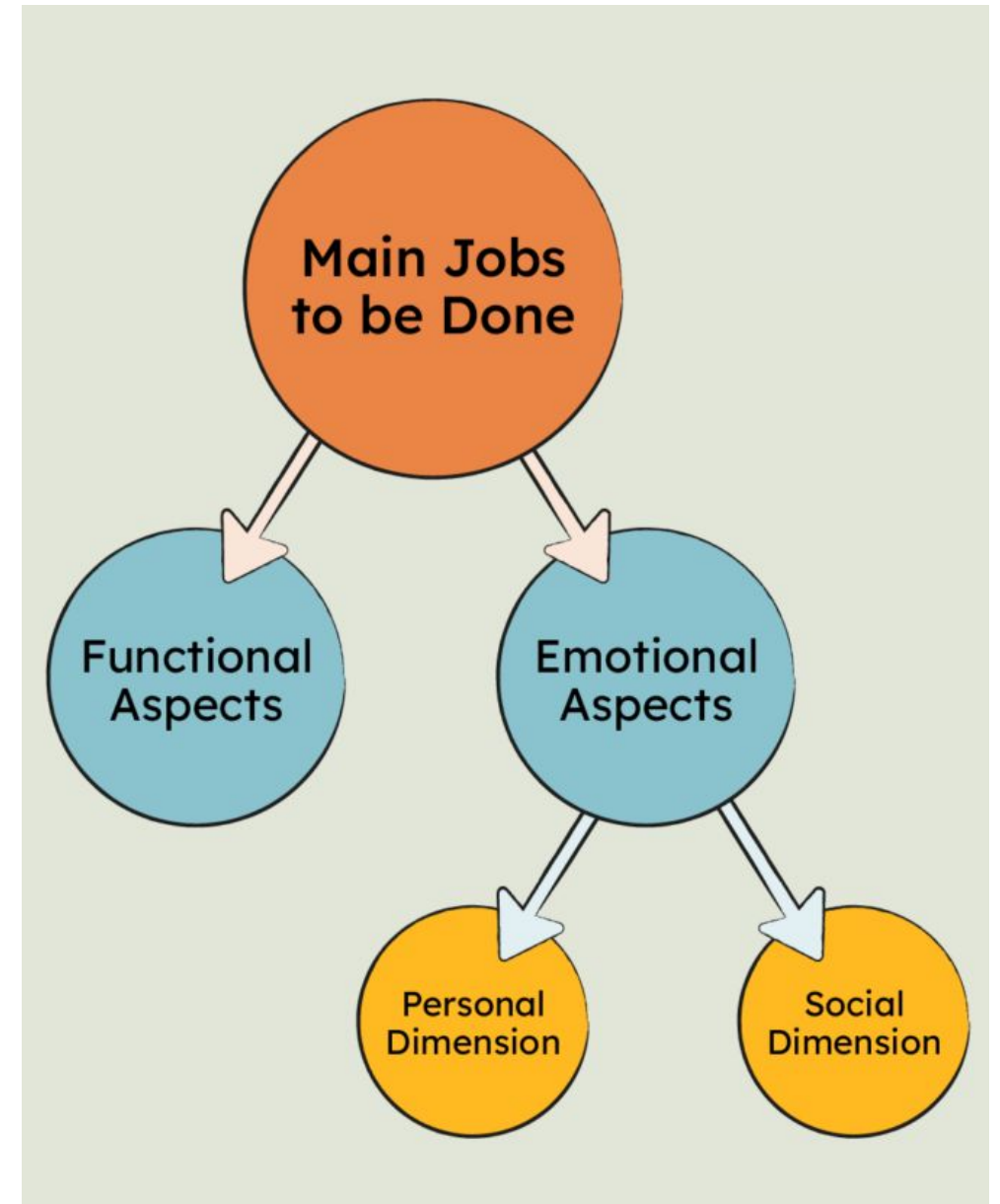
... People hire products/solutions to get the job done

... Jobs are functional with emotional and social components

... the way they want to feel and be perceived constitutes their emotional and social jobs-to-be-done

... A JTBD is stable over time

... Is solution-agnostic, independent of any solution or technology



# Structure of a JTBD Statement

Can use a specific structure to write JTBD statements, for example:

When I {{**situation/context**}}, I want to {{**motivation / goal**}} so I can {{**desired outcome / progress**}}.

*“When I am busy at work, I want to quickly get healthy meals delivered, so I can avoid the stress of cooking and eating poorly.”*



## The Handbook

### GitLab Values

- ▶ About GitLab
- ▶ About the Handbook
- ▶ Acquisitions Handbook
  - Board of Directors and Corporate Governance
- ▶ CEO
- ▶ Customer Experience (CX)
- ▶ Customer Success
- ▶ Engineering
- ▶ Enterprise Data Team
- ▶ Entity-Specific Information
- ▶ Executive Business Administrators (EBAs)

[The Handbook](#) / [Product Handbook](#) / [UX Department](#) / Jobs to be Done at GitLab

# Jobs to be Done at GitLab

Jobs to be Done (JTBD) is a framework for viewing products and solutions from the user's perspective, focusing on the problems they want to solve rather than specific solutions. It helps GitLab team members uncover user needs, identify strategic opportunities, validate plans, and drive innovation.

The material in this page and related pages ([Playbook](#), [Beyond the Playbook](#)) draws from [Jim Kalbach](#) and his book, "[The Jobs to be Done Playbook](#)".

For practical JTBD research guidance, see the [playbook](#). For a deep dive into each aspect of a job canvas, review the [Anatomy of a JTBD canvas](#).

**Note:** The previous JTBD source ([yaml file](#), internal only) is being replaced. Teams should track JTBD work in FigJam until a new handbook page is created.

# Task Analysis

While JTBD focuses on **what** people are trying to accomplish, task analysis breaks down the **how**

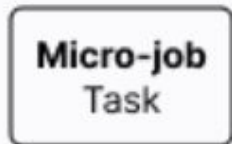
# JTBD and Tasks



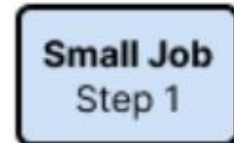
^  
Why  
How  
v



^  
Why  
How  
v



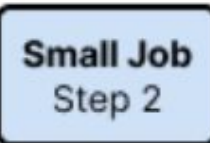
Beginning



Micro-job

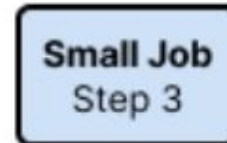
Micro-job

Micro-job



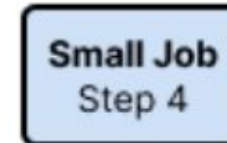
Micro-job

Middle



Micro-job

Micro-job



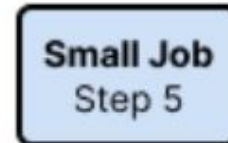
Micro-job

Micro-job

Micro-job

Micro-job

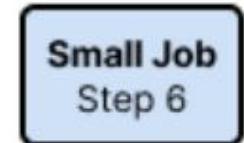
End



Micro-job

Micro-job

Micro-job



Micro-job

# Task Analysis

Tasks are a unit of work - what the worker must do

Low-level components of work that needs to be done

- ... This is better for implementation than ideation but it's still useful

- ... For large apps, also good for project management

Can be used early stages of design to ideate specific ideas

Task analysis with AI: decide human and AI tasks

# Types of Task Analysis

**Hierarchical Task Analysis (HTA):** Breaking down tasks into smaller and related components

- ... simplest and most common approach
- ... identify tasks and keep breaking them down to some ideal level

**Cognitive Task Analysis (CTA):** Like HTA, but considers how someone:

- ... makes a decisions at each step
- ... how cognitively demanding each step is
- ... how the process relies on a person's knowledge and experience

**Parallel Task Analysis:** Task is analyzed multiple times to reflect the perspectives of different personas

# Example of an HTA

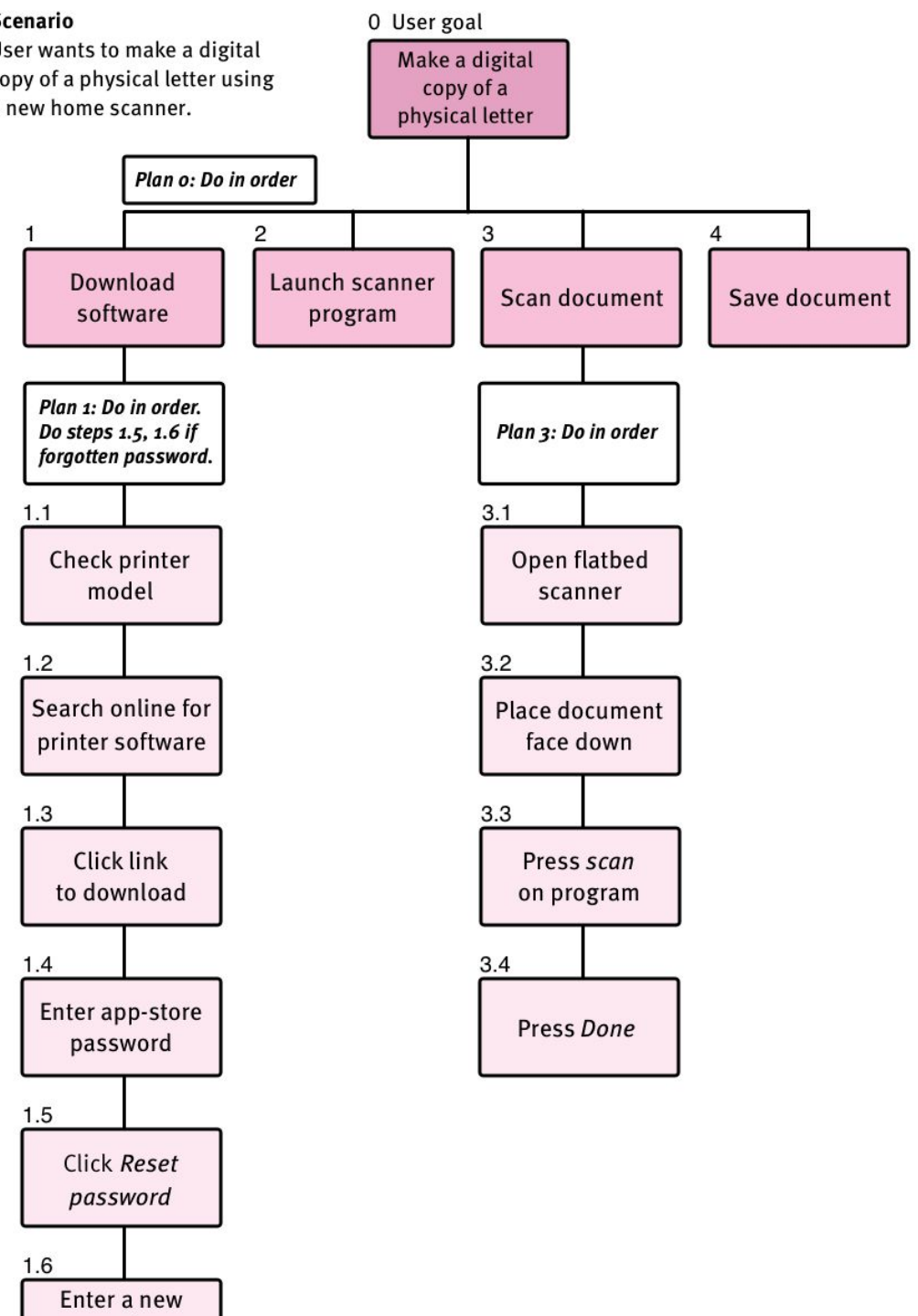
This is largely a subjective and iterative process

You decide what the lowest level of task is ...

... e.g., one developer week of time

Informed by interviews, journey maps, observations etc.

**Scenario**  
User wants to make a digital copy of a physical letter using a new home scanner.



# Feature Ideation

Generation & Selection

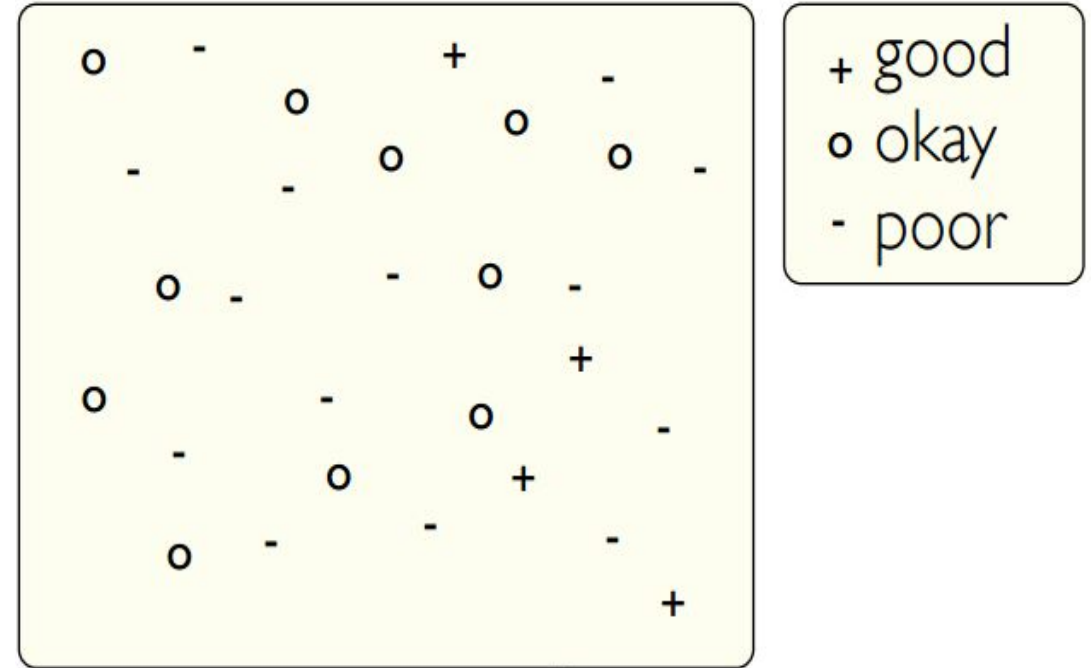
# Exploring a Design Space

A **design space** is a conceptual representation of all possible solutions to a problem ...

... Some good, some bad, and some just okay

... It provides a framework for understanding the design process

... It helps identify and organize alternatives and considerations, guiding comparisons of different ideas

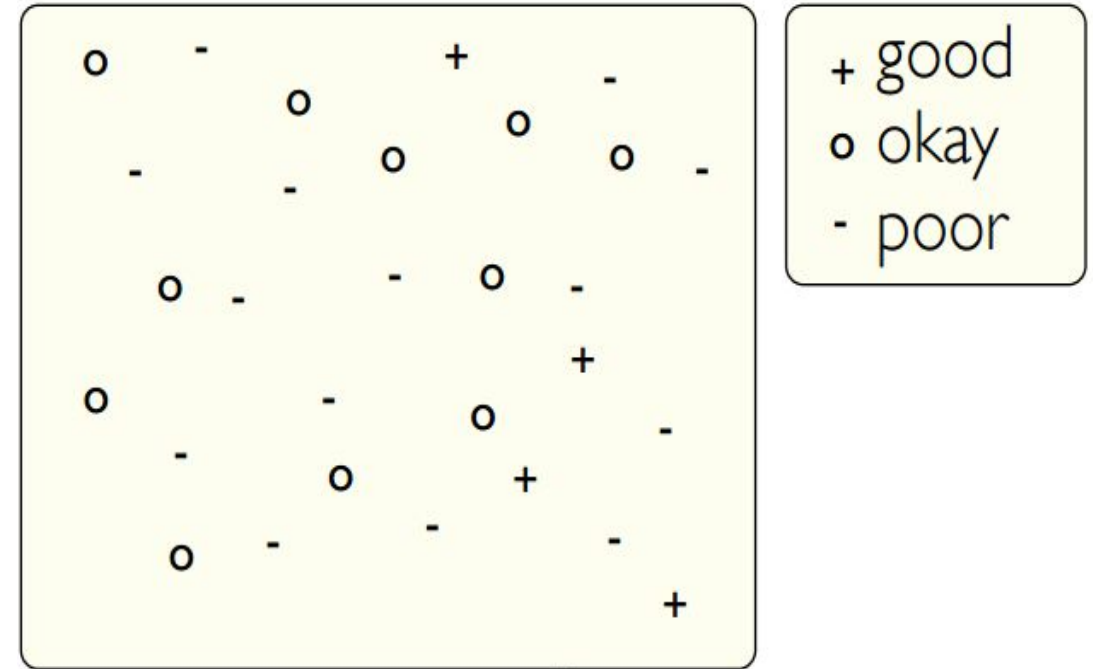


*Conceptual space of all possible solutions for your project design*

# Feature Ideation and the Design Space

**Feature** - a distinct functionality or capability that helps people achieve a specific goal, solve a problem, or fulfill a need

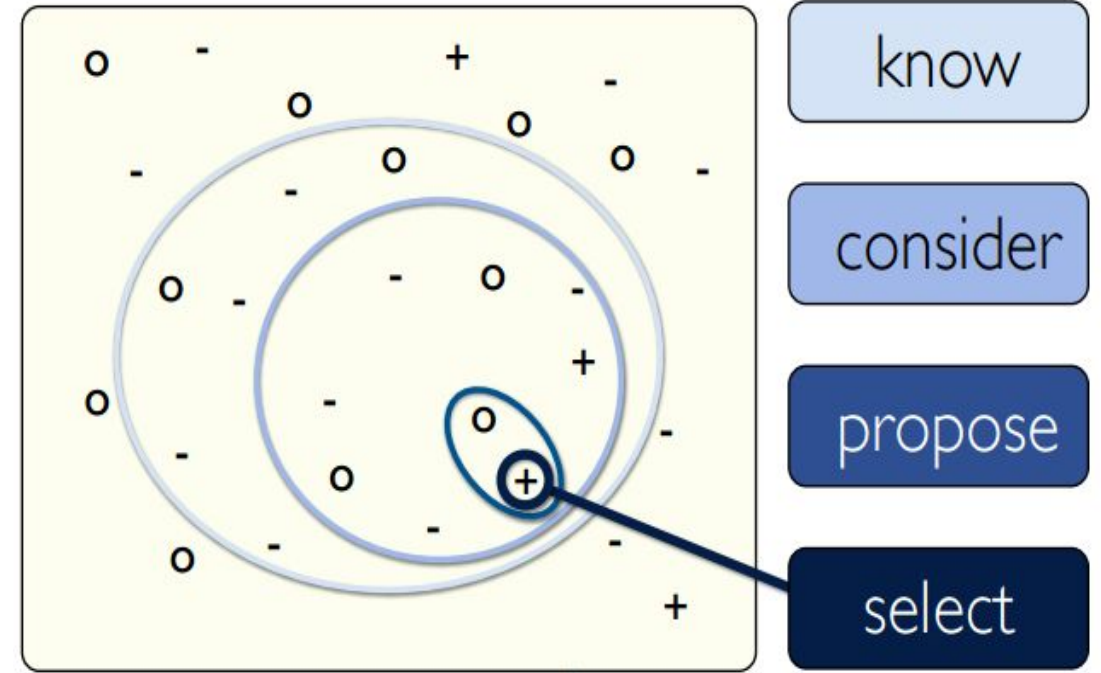
**“Feature creep”** - building functionality that people do not actually use/need



*Conceptual space of all possible solutions for your project design*

# Feature Ideation and the Design Space

**Feature ideation** is a way to map out the design space, while { problem statements and tasks are ways to explore and assess features.



*Conceptual space of all possible solutions for your project design*

# Brainstorming!

**Feature ideation** is about generating, exploring, and choosing among possible design alternatives

POV, HMW, JTBD, Task Analysis, etc. are all tools to inform and focus brainstorming & ideation

Be bold! Be creative! Be Wild!



**“It is much easier to scale back a crazy idea that addresses a true user need, than to try to make a mundane idea desirable.”**

– Aurora Harley (2017)



# Designing and Rating Features

## Feature ideation

CRAZY-8s

Design Charrettes

SCAMPER

## Feature ranking and selection

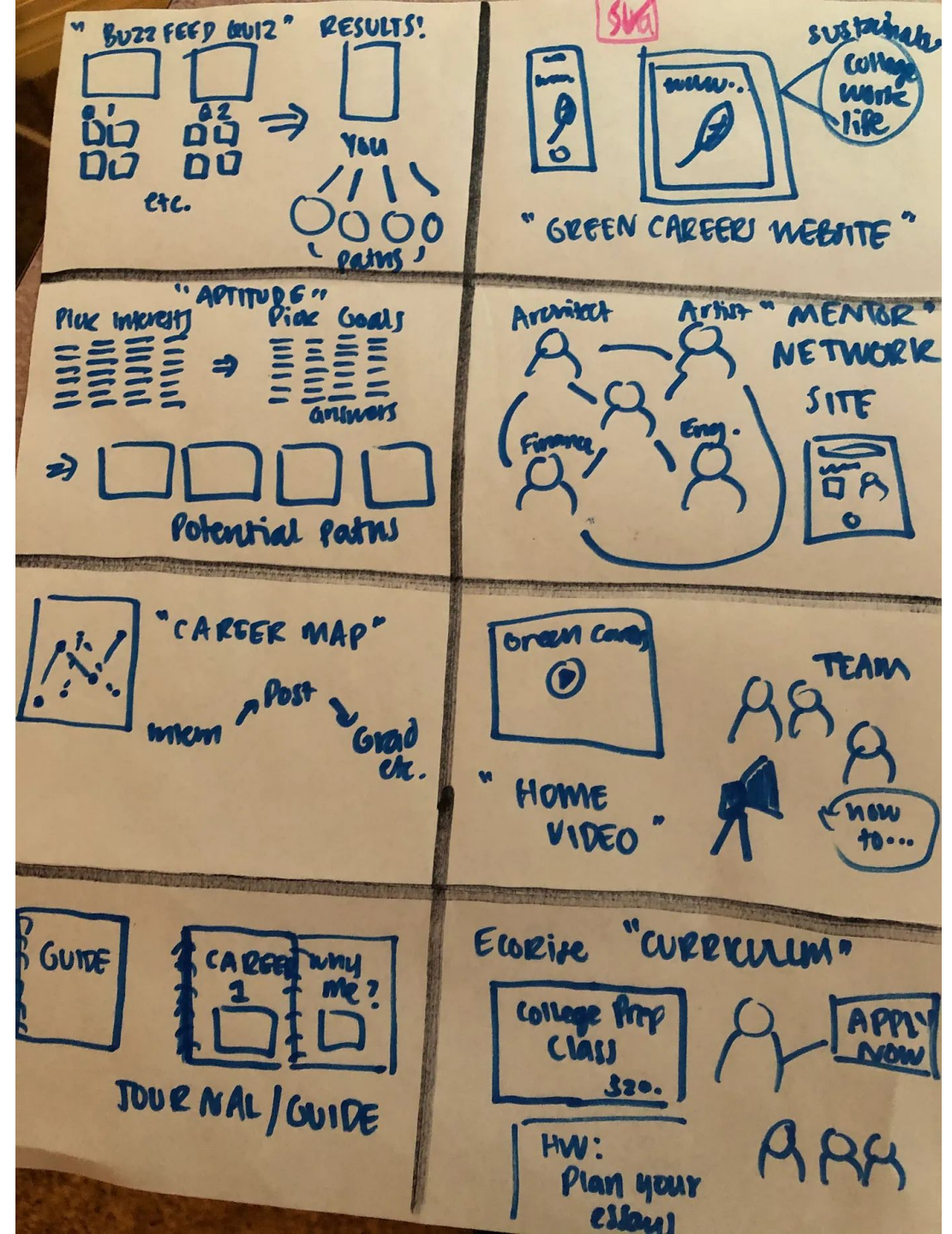
Dot / Heatmap voting

Decision Matrix

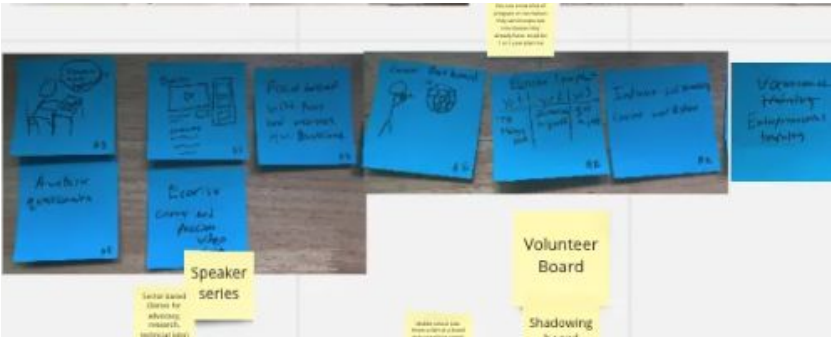
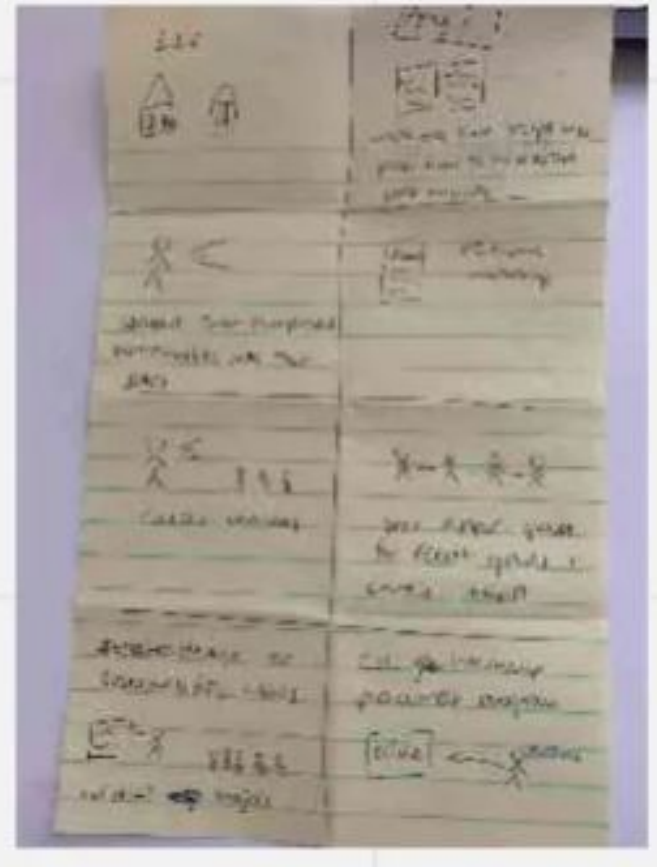
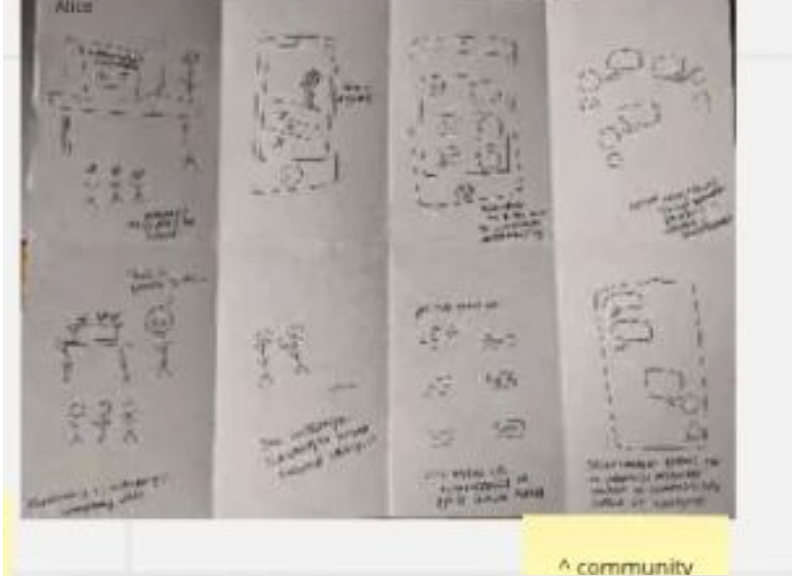
# Crazy 8s

## Rapid Collaborative Ideation:

1. Each team member takes a piece of paper and folds it into 8 sections
2. Set a timer for 8 minutes
3. Individually each team member sketches one idea in each section for a total of 8 (roughly 1 idea per minute)
4. When timer goes off, its pencils down



# Crazy 8s



# Design Charrettes

An intensive, hands-on, collaborative workshop to co-design:

1. Distribute paper + pens
2. Establish a common design challenge (e.g., HMW, JTBD, etc.)
3. Each person draws one or more sketches/ideas (could use crazy 8s)
4. Each person presents ideas for two minutes + 1 minute of questions

## Key Ideas:

Hearing priorities for multiple people and getting consensus

Making people feel included and listened to in the design process

# Feature Ideation with SCAMPER

A brainstorming method to see your product through different provocation lenses. With an initial set of features you should consider :

**Substitute:** What can be replaced?

**Combine:** What features, uses, or components can be combined?

**Adapt:** What can be slightly tweaked to improve the product/process?

**Modify:** How can the process be changed in a way that changes the outcomes

**Put to another use:** What benefits can be gained by using the process/product in another field?

**Eliminate:** What unnecessary components can you get rid of?

**Rearrange:** Would changing the sequence of interactions produced a different outcome?

# Feature Assessment

Dot voting, Heatmap voting, Decision matrix

# Dot Voting

Dots can be real (stickers) or digital colored shapes ... Assign each team member a 2 - 3 dots (2 - 3) ... Vote by placing dots on features



## Offer limited products



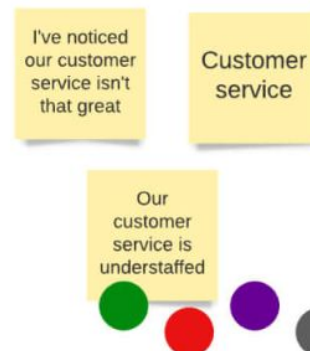
## Poor product quality



## Our prices are too high



## Mediocre customer service



## Website issues



## Store location



# Heatmap Voting

An extension of dot voting to specific parts of the interface

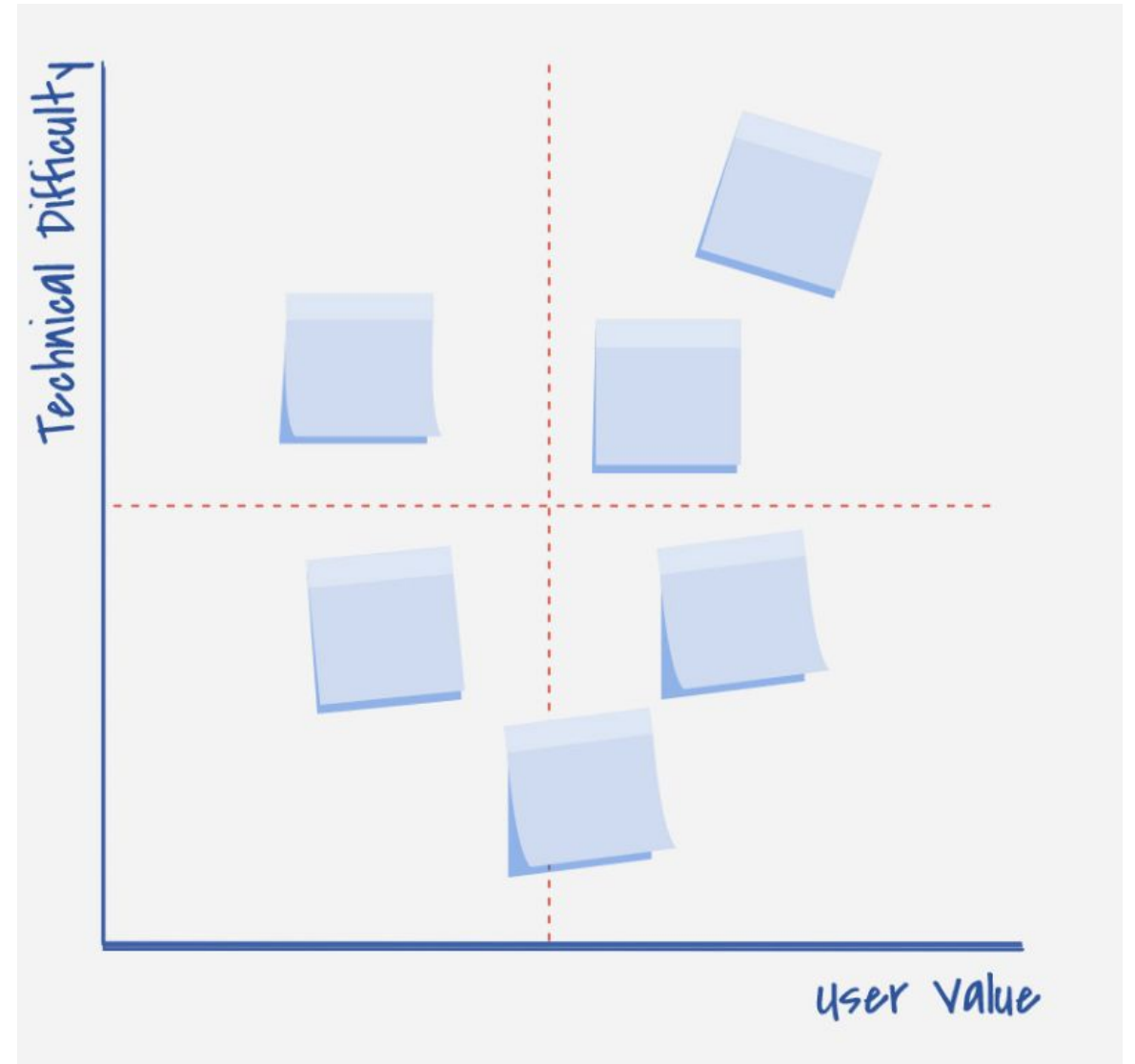


# Decision Matrix

Evaluate ideas based upon specific criteria

Useful when team can't reach consensus by dot voting

Your team gets to decide on the matrix criteria



# Week 5 Studio Prep P5

Preparing to Brainstorm, Challenge, and Concretize Features

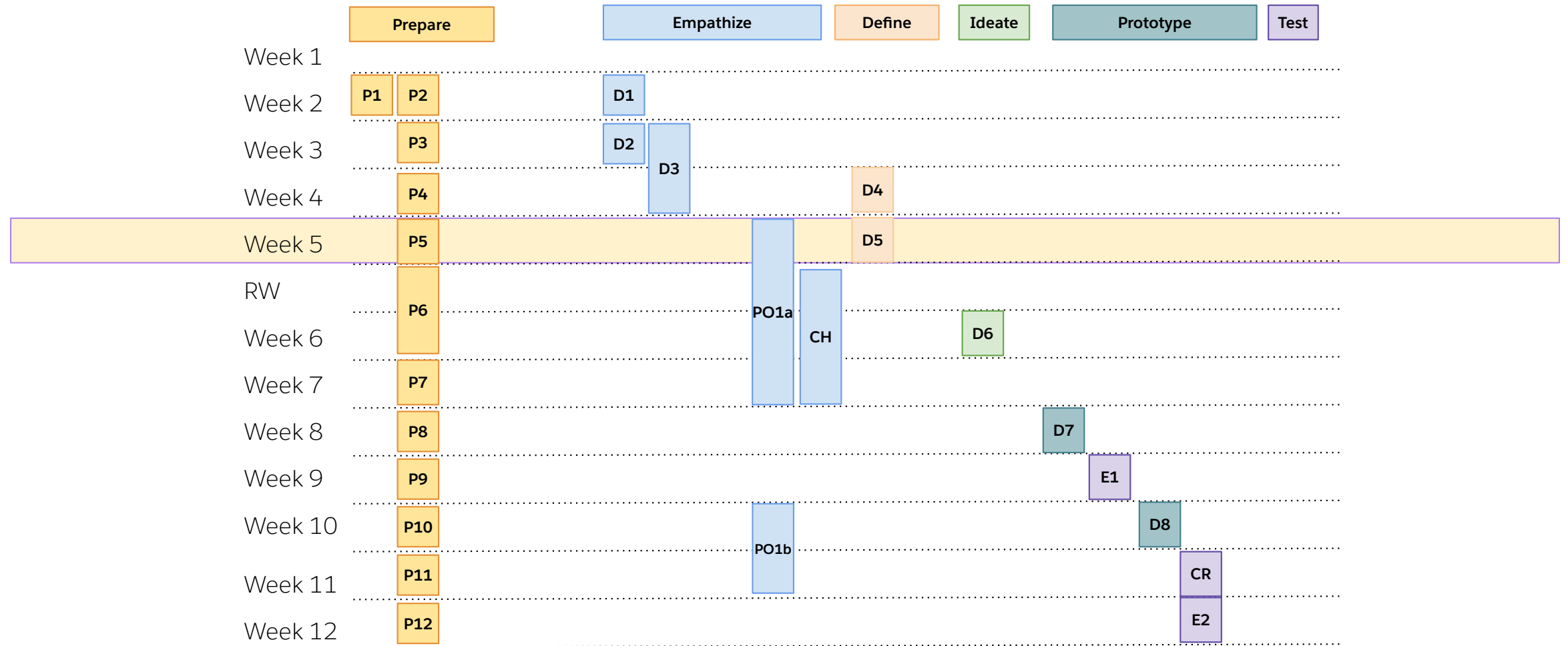
## Reminder - P5 Week 5 Studio Prep

As a team, complete the following three steps to brainstorm a set of features for your app. You can do this in-person using real sticky notes, or online using Miro:

**Preparation** (Individual), **Provocation** (Individual), **Vote** (Team) ...

In the design notebook, include (1) a screenshot of the Miro board from different team members, and star symbols indicating which features are most liked, (2) a write-up describing the list of four to five chosen features, why your team likes them the best, and the design argument for each feature.

# Project Deliverables Build on Each Other



## Week 5 Studio Activities – Bring Writing Materials!

### D5: Brainstorm, Challenge, and Concretize Features

As preparation (**P5**), you and your team should have brainstormed a feature list.

During the studio activity, you will perform different exercises to further challenge and concretize your features. You should narrow down your final feature list to about four or five (roughly one per team member). Each feature should have some motivating POV, Behavioral, and HMW statement.

## Week 5 Studio Activities (... cont.)

In your **D5** writeup you should include:

- ... How you and your team voted on the smaller feature list.
- ... A POV, Behavioral, and HMW statement for each feature (ideally one per team member).
- ... A short write-up (~250 words) of how each statement was informed by the interviews.
- ... For each feature, a **Crazy 8 sketch** (screenshot, labelled with team member contribution).

Hang on to these images, in the studio, you'll discuss how you picked one of them to incorporate into flows.

# Looking Ahead to Week 6

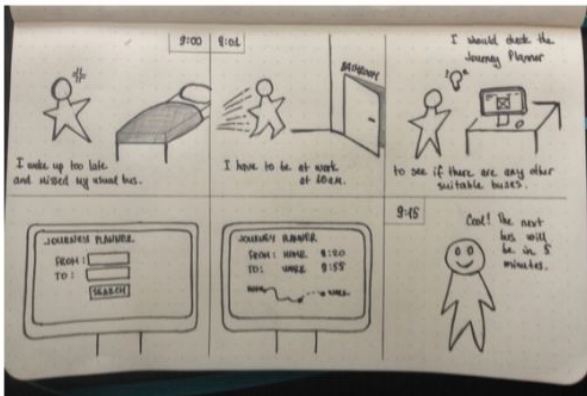
Creating design ideas, Creative process, Stories, scenarios, + use cases, Storyboards, Design argument and statements

# Feature Ideation: Where are we heading?

## User stories / Storyboard

- description of a feature from an end-user perspective

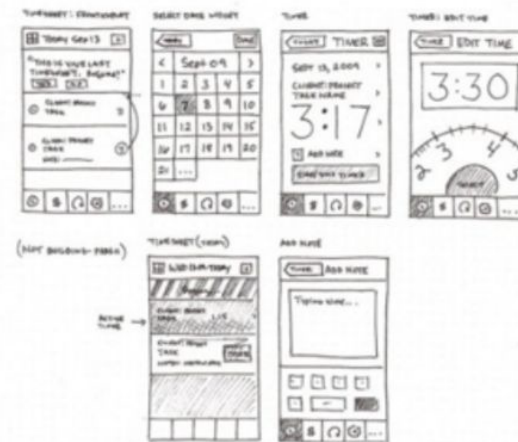
As a user / <persona> ,  
I want / need <action>  
so that I can <user goal>.



<https://digitalflask.com/blog/ux-storyboarding-introduction/>

## Sketches

- illustration of how the basic concept works

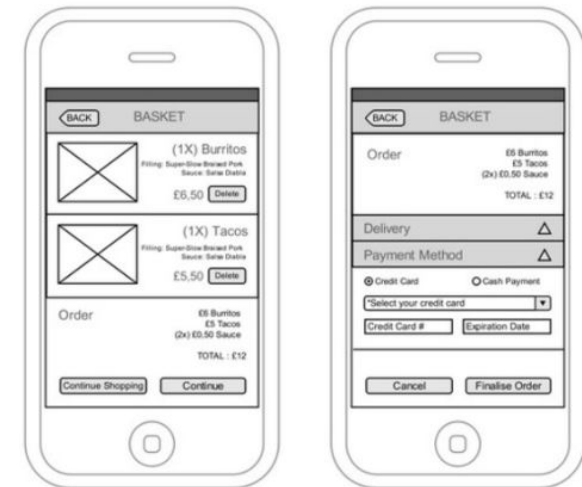


The idea translated into user interface form.

<http://uxmovement.com/wireframes/why-its-important-to-sketch-before-you-wireframe/>

## Wireframes

- static representation of the UI layout and user flow



<https://www.behance.net/gallery/13421913/Wireframes-Restaurant-App>