bootcamp bootleg

d.

Check this out —
It's the d.school bootcamp bootleg.

This compilation is intended as an active toolkit to support your design thinking practice. The guide is not just to read – go out in the world and try these tools yourself. In the following pages, we outline each mode of a human-centered design process, and then describe dozens of specific methods to do design work. These process modes and methods provide a tangible toolkit which support the seven mindsets — shown on the following page – that are vital attitudes for a design thinker to hold.

The bootleg is a working document, which captures some of the teaching we impart in "design thinking bootcamp," our foundation course. An update from the 2009 edition, we reworked many of the methods based on what we learned from teaching and added a number of new methods to the mix. The methods presented in this guide are culled from a wide range of people and organizations who have helped us build the content we use to impart design thinking. Think of this guide as a curation of the work of many individuals, who hail both from the d.school and also from other far-reaching areas of the design world. We thank all the people who have contributed to the methods collected in this guide.

This resource is free for you to use and share – and we hope you do.
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We welcome your reactions to this guide. Please share the stories of how you use it in the field. Let us know what you find useful, and what methods you have created yourself – write to: bootleg@dschool.stanford.edu

Cheers,
The d.school

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HASSO PLATTNER
Institute of Design at Stanford

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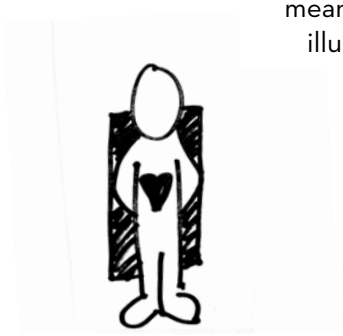
Show Don't Tell

Communicate your vision in an impactful and meaningful way by creating experiences, using illustrative visuals, and telling good stories.



Focus on Human Values

Empathy for the people you are designing for and feedback from these users is fundamental to good design.

Craft Clarity

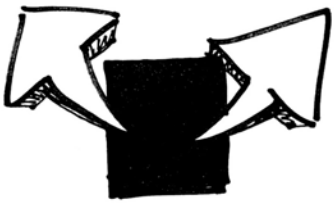
Produce a coherent vision out of messy problems. Frame it in a way to inspire others and to fuel ideation.

Embrace Experimentation

Prototyping is not simply a way to validate your idea; it is an integral part of your innovation process. We build to think and learn.

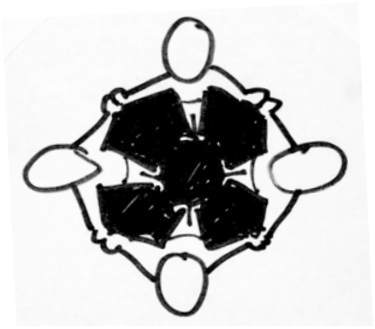
Be Mindful Of Process

Know where you are in the design process, what methods to use in that stage, and what your goals are.



Bias Toward Action

Design thinking is a misnomer; it is more about doing than thinking. Bias toward doing and making over thinking and meeting.



Radical Collaboration

Bring together innovators with varied backgrounds and viewpoints. Enable breakthrough insights and solutions to emerge from the diversity.

D.MINDSETS

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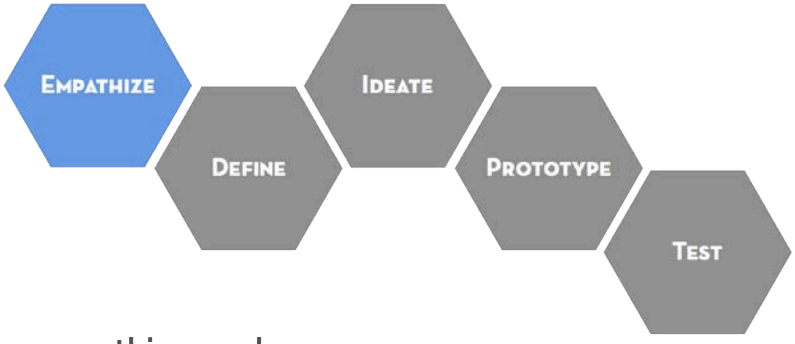
MODE
EMPATHIZE



WHAT is the empathize mode

Empathy is the foundation of a human-centered design process. To empathize, you:
- Observe. View users and their behavior in the context of their lives.
- Engage. Interact with and interview users through both scheduled and short 'intercept' encounters.
- Immerse. Experience what your user experiences.

WHY empathize

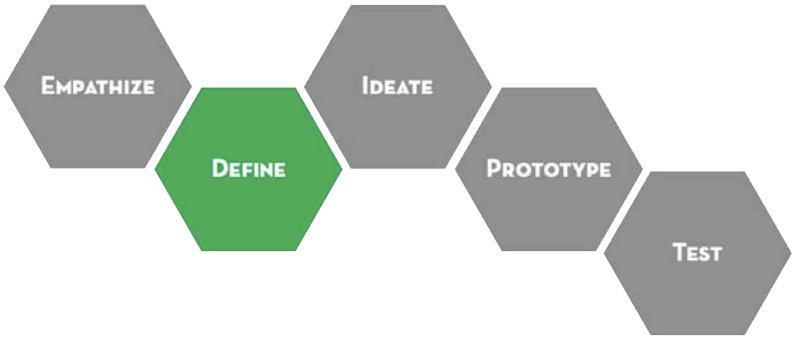
As a human-centered designer you need to understand the people for whom you are designing. The problems you are trying to solve are rarely your own—they are those of particular users; in order to design for your users, you must build empathy for who they are and what is important to them.

Watching what people do and how they interact with their environment gives you clues about what they think and feel. It helps you to learn about what they need. By watching people you can capture physical manifestations of their experiences, what they do and say. This will allow you to interpret intangible meaning of those experiences in order to uncover insights. These insights will lead you to the innovative solutions. The best solutions come out of the best insights into human behavior. But learning to recognize those insights is harder than you might think. Why? Because our minds automatically filter out a lot of information in ways we aren't even aware of. We need to learn to see things "with a fresh set of eyes" – tools for empathy, along with a human-centered mindset, is what gives us those new eyes.

Engaging with people directly reveals a tremendous amount about the way they think and the values they hold. Sometimes these thoughts and values are not obvious to the people who hold them. A deep engagement can surprise both the designer and the designee by the unanticipated insights that are revealed. The stories that people tell and the things that people say they do—even if they are different from what they actually do—are strong indicators of their deeply held beliefs about the way the world is. Good designs are built on a solid understanding of these kinds of beliefs and values. Engage to:
- Uncover needs that people have which they may or may not be aware of
- Guide innovation efforts
- Identify the right users to design for
- Discover the emotions that guide behaviors

In addition to speaking with and observing your users, you need to have personal experience in the design space yourself. Find (or create if necessary) experiences to immerse yourself to better understand the situation that your users are in, and for which you are designing.

MODE
DEFINE



WHAT is the define mode

The define mode is when you unpack and synthesize your empathy findings into compelling needs and insights, and scope a specific and meaningful challenge. It is a mode of "focus" rather than "flaring." Two goals of the define mode are to develop a deep understanding of your users and the design space and, based on that understanding, to come up with an actionable problem statement: **your point of view**. Your point of view should be a guiding statement that focuses on specific users, and insights and needs that you uncovered during the empathize mode.

More than simply defining the problem to work on, your point of view is your unique design vision that you crafted based on your discoveries during your empathy work. Understanding the meaningful challenge to address and the insights that you can leverage in your design work is fundamental to creating a successful solution.

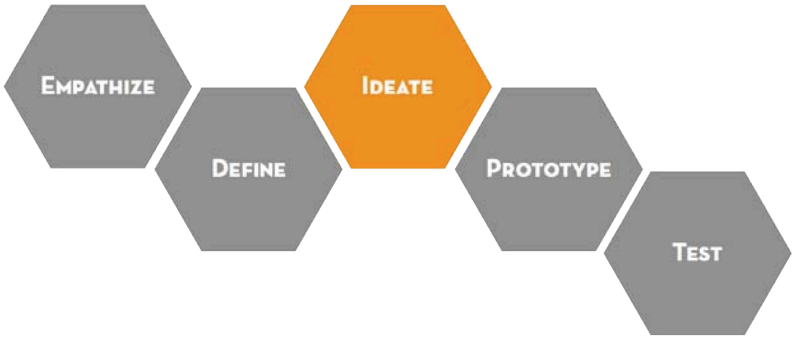
WHY define

The define mode is critical to the design process because it explicitly expresses the problem you are striving to address through your efforts. Often, in order to be truly generative, you must first reframe the challenge based on new insights you have gained through your design work. This reframed problem statement can then be used as a solution-generating springboard.

As a test, a good point of view (POV) is one that:

- Provides focus and frames the problem
- Inspires your team
- Provides a reference for evaluating competing ideas
- Empowers team members to make decisions in response to the high-level goals of the team
- Fuels brainstorms by suggesting "how might we" statements
- Captures the hearts and minds of people you meet
- Saves you from the impossible task of developing solution concepts that are all things to all people
- You revisit and reformulate as you learn by doing
- Guides your innovation efforts

IDEATE



WHAT is the ideate mode

Ideate is the mode of your design process in which you aim to generate radical design alternatives. Mentally it represents a process of "going wide" in terms of concepts and outcomes—it is a mode of "flaring" rather than "focus." The goal of ideation is to explore a wide solution space – both a large quantity of ideas and a diversity among those ideas. From this vast depository of ideas you can build prototypes to test with users.

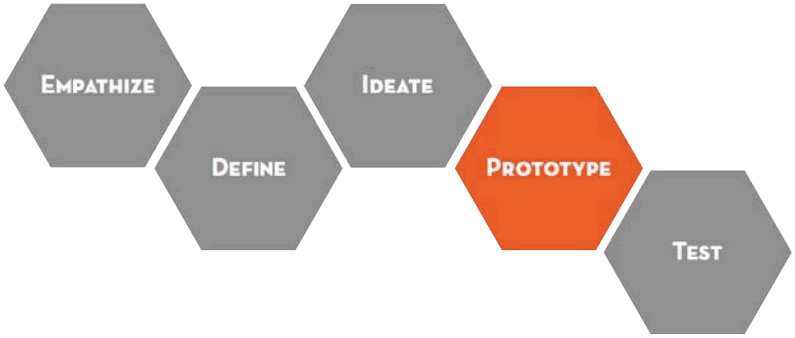
WHY ideate

You ideate in order to transition from identifying problems into exploring solutions for your users. Various forms of ideation are leveraged to:

- Step beyond obvious solutions and thus increase the innovation potential of your solution set
- Harness the collective perspectives and strengths of your teams
- Uncover unexpected areas of exploration
- Create fluency (volume) and flexibility (variety) in your innovation options
- Get obvious solutions out of your heads, and drive your team beyond them

Regardless of what ideation method you use, the fundamental principle of ideation is to be cognizant of when you and your team are generating ideas and when you are evaluating ideas – typically keeping these two tasks separate, and only mixing the two intentionally.

Prototype



WHAT is the prototype mode

Prototyping is getting ideas and explorations out of your head and into the physical world. A prototype can be *anything* that takes a physical form – be it a wall of post-it notes, a role-playing activity, a space, an object, an interface, or even a storyboard. The resolution of your prototype should be commensurate with your progress in your project. In early explorations keep your prototypes rough and rapid to allow yourself to learn quickly and investigate a lot of different possibilities.

Prototypes are most successful when people (the design team, the user, and others) can experience and interact with them. What you learn from those interactions can help drive deeper empathy, as well as shape successful solutions.

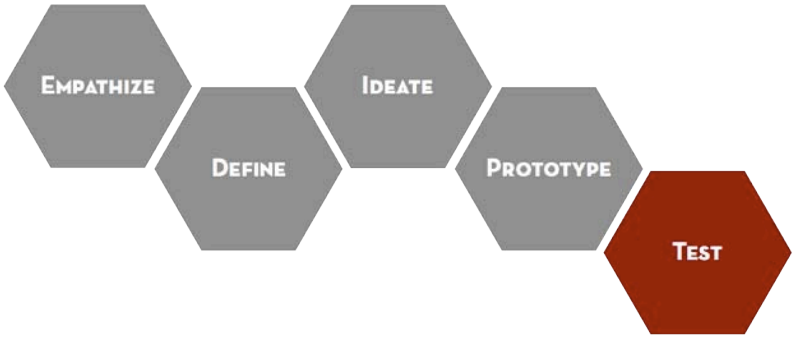
WHY do we prototype

Traditionally prototyping is thought of as a way to test functionality. But prototyping is used for many reasons, including these (non-mutually-exclusive) categories:

- **Empathy gaining:** Prototyping is a tool to deepen your understanding of the design space and your user, even at a pre-solution phase of your project.
- **Exploration:** Build to think. Develop multiple solution options.
- **Testing:** Create prototypes (and develop the context) to test and refine solutions with users.
- **Inspiration:** Inspire others (teammates, clients, customers, investors) by showing your vision.

Many of the goals of prototyping are shared across all four of the above categories.
We prototype to:

Learn. If a picture is worth a thousand words, a prototype is worth a thousand pictures.
Solve disagreements. Prototyping is a powerful tool that can eliminate ambiguity, assist in ideation, and reduce miscommunication.
Start a conversation. A prototype can be a great way to have a different kind of conversation with users.
Fail quickly and cheaply. Creating quick and dirty prototypes allows you to test a number of ideas without investing a lot of time and money up front.
Manage the solution-building process. Identifying a variable to explore encourages you to break a large problem down into smaller, testable chunks.



WHAT is the test mode

Testing is the chance to get feedback on your solutions, refine solutions to make them better, and continue to learn about your users. The test mode is an iterative mode in which you place your low-resolution artifacts in the appropriate context of the user's life. Prototype as if you know you're right, but test as if you know you're wrong.

WHY test

To refine your prototypes and solutions. Testing informs the next iterations of prototypes. Sometimes this means going back to the drawing board.
To learn more about your user. Testing is another opportunity to build empathy through observation and engagement—it often yields unexpected insights.
To test and refine your POV. Sometimes testing reveals that not only did you not get the solution right, but also that you have failed to frame the problem correctly.

Assume a Beginner's Mindset

WHY assume a beginner's mindset

We all carry our experiences, understanding, and expertise with us. These aspects of yourself are incredibly valuable assets to bring to the design challenge – but at the right time, and with intentionality. Your assumptions may be misconceptions and stereotypes, and can restrict the amount of real empathy you can build. Assume a beginner's mindset in order to put aside these biases, so that you can approach a design challenge with fresh eyes.

HOW to assume a beginner's mindset

Don't judge. Just observe and engage users without the influence of value judgments upon their actions, circumstances, decisions, or "issues."
Question everything. Question even (and especially) the things you think you already understand. Ask questions to learn about how the user perceives the world. Think about how a 4-year-old asks "Why?" about everything. Follow up an answer to one "why" with a second "why."
Be truly curious. Strive to assume a posture of wonder and curiosity, especially in circumstances that seem either familiar or uncomfortable.
Find patterns. Look for interesting threads and themes that emerge across interactions with users.
Listen. Really. Lose your agenda and let the scene soak into your psyche. Absorb what users say to you, and how they say it, without thinking about the next thing you're going to say.

What? | How? | Why?

concrete ⟷ emotional

WHAT (what are they doing in the photo?)	HOW (how are they doing it?)	WHY (why are they doing it this way? Take a guess!)
-little girl picking root vegetables	-she's smiling, even though it looks bigger than her, it looks fun	-somehow it's been made into a game...gardening is fun...getting messy is fun to her?

WHY use What? | How? | Why?

What? | How? | Why? is a tool that can help you drive to deeper levels of observation. This simple scaffolding allows you to move from concrete observations of a particular situation to the more abstract emotions and motives that are at play in that situation. This is a particularly powerful technique to leverage when analyzing photos that your team has taken into the field, both for synthesis purposes, and to direct your team to future areas of needfinding.

HOW to use What? | How? | Why?

Set-up: Divide a sheet into three sections: What?, How?, and Why?

Start with concrete observations (What):
What is the person you're observing doing in a particular situation or photograph? Notice and write down the details. Try to be objective and don't make assumptions in this first part.

Move to understanding (How):
How is the person you're observing doing what they are doing? Does it require effort? Do they appear rushed? Pained? Does the activity or situation appear to be impacting the user's state of being either positively or negatively? Use descriptive phrases packed with adjectives.

Step out on a limb of interpretation (Why):
Why is the person you're observing doing what they're doing, and in the particular way that they are doing it? This step usually requires that you make informed guesses regarding motivation and emotions. Step out on a limb in order to project meaning into the situation that you have been observing. This step will reveal assumptions that you should test with users, and often uncovers unexpected realizations about a particular situation.

User Camera Study

WHY do a user camera study

In empathy work, you want to understand your users' lives, and specific tasks within the context of their lives. A User Camera Study allows us to understand a user's experience by seeing it through their eyes. It will also allow you to understand environments to which you might not normally have access.

HOW to do a user camera study

1. Identify subjects whose perspective you are interested in learning more about.

2. Briefly explain the purpose of the study, and ask if they would be willing to take photographs of their experiences. Get permission to use images they take.

3. Provide a camera to your subject and instructions such as: "We would like to understand what a day in your life feels like. On a day of your choosing, take this camera with you everywhere you go, and take photos of experiences that are important to you." Or you could try: "Please document your [morning routine] experience with this camera." Or, "Take pictures of things that are meaningful to you in your kitchen." Frame your request a little broader than what you believe your problem space might be, in order to capture the surrounding context. Many insights can emerge from that surrounding space.

4. Afterwards, have your subject walk you through the pictures and explain the significance of what they captured. Return to a good empathetic interviewing technique to understand the deeper meaning of the visuals and the experience they represent.

Interview Preparation

WHY prepare for an interview

Time with users is precious; you need to make the most of it! While you must always allow room for the spontaneous, blissful serendipity of a user-guided conversation, you should never abdicate your responsibility to prepare for interviews. Especially in following up with users (after testing, etc.), it is imperative to plan your interviews. You may not get to every question you prepare, but you should come in with a plan for engagement.

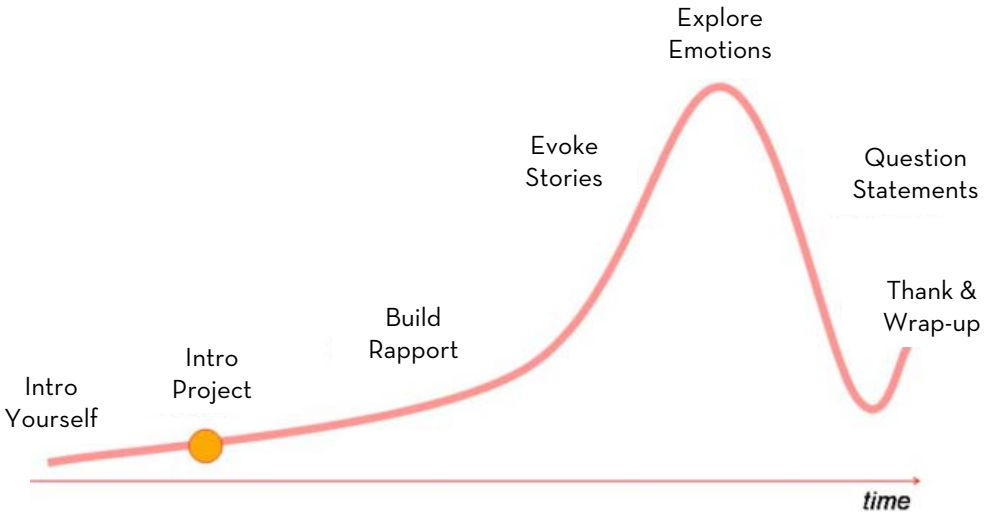
HOW to prepare for an interview

Brainstorm questions
Write down all of the potential questions your team can generate. Try to build on one another's ideas in order to flesh out meaningful subject areas.

Identify and order themes
Similar to "grouping" in synthesis, have your team identify themes or subject areas into which most questions fall; once you've identified the themes of your question-pool, determine the order that would allow the conversation to flow most naturally. This will enable you to structure the flow of your interview, decreasing the potential for hosting a seemingly-scattershot interaction with your user.

Refine questions
Once you have all the questions grouped by theme and order, you may find that there are some redundant areas of conversation, or questions that seem strangely out of place. Take a few moments to make sure that you leave room in your planning to ask plenty of "why?" questions, plenty of "tell me about the last time you ___?" questions, and plenty of questions that are directed at how the user FEELS.

Interview for Empathy



WHY interview

You want to understand a person's thoughts, emotions, and motivations, so that you can determine how to innovate for him or her. By understanding the choices that person makes and the behaviors that person engages in, you can identify their needs, and design to meet those needs.

HOW to interview

Ask why. Even when you think you know the answer, ask people why they do or say things. The answers will sometimes surprise you. A conversation started from one question should go on as long as it needs to.
Never say "usually" when asking a question. Instead, ask about a specific instance or occurrence, such as "tell me about the last time you ___"
Encourage stories. Whether or not the stories people tell are true, they reveal how they think about the world. Ask questions that get people telling stories.
Look for inconsistencies. Sometimes what people say and what they do are different. These inconsistencies often hide interesting insights.
Pay attention to nonverbal cues. Be aware of body language and emotions.
Don't be afraid of silence. Interviewers often feel the need to ask another question when there is a pause. If you allow for silence, a person can reflect on what they've just said and may reveal something deeper.
Don't suggest answers to your questions. Even if they pause before answering, don't help them by suggesting an answer. This can unintentionally get people to say things that agree with your expectations.
Ask questions neutrally. "What do you think about buying gifts for your spouse?" is a better question than "Don't you think shopping is great?" because the first question doesn't imply that there is a right answer.
Don't ask binary questions. Binary questions can be answered in a word; you want to host a conversation built upon stories.
Make sure you're prepared to capture. Always interview in pairs. If this is not possible, you should use a voice recorder—it is impossible to properly engage a user and take detailed notes at the same time.

METHOD

Extreme Users

WHY engage with extreme users

Designers engage with users (people!) to understand their needs and gain insights about their lives. They also draw inspiration from their work-arounds and frameworks. When you speak with and observe extreme users, their needs are amplified and their work-arounds are often more notable. This helps you pull out meaningful needs that may not pop when engaging with the middle of the bell curve. However, the needs that are uncovered through extreme users are often also needs of a wider population.

HOW to engage extreme users

Determine who's extreme
Determining who is an extreme user starts with considering what aspect of your design challenge you want to explore to an extreme. List a number of facets to explore within your design space. Then think of people who may be extreme in those facets. For example, if you are redesigning the grocery store shopping experience you might consider the following aspects: how groceries are gathered, how payment is made, how purchase choices are made, how people get their groceries home, etc. Then to consider the aspect of gathering groceries, for example, you might talk to professional shoppers, someone who uses a shopping cart to gather recyclables (and thus overloads the cart), product pullers for online buyers, people who bring their kids shopping with them, or someone who doesn't go to grocery stores.

Engage
Observe and interview your extreme user as you would other folks. Look for work-arounds (or other extreme behaviors) that can serve as inspiration and uncover insights.

Look at the extreme in all of us
Look to extreme users for inspiration and to spur wild ideas. Then work to understand what resonates with the primary users you are designing for.

Analogous Empathy

WHY use analogous empathy

During empathy work, analogies can be a powerful tool for developing insights that aren't obvious in a direct approach. Analogous needfinding spaces can offer up inspiration, a way to get unstuck, a fresh perspective on a space, or a useful work-around when direct observation is difficult.

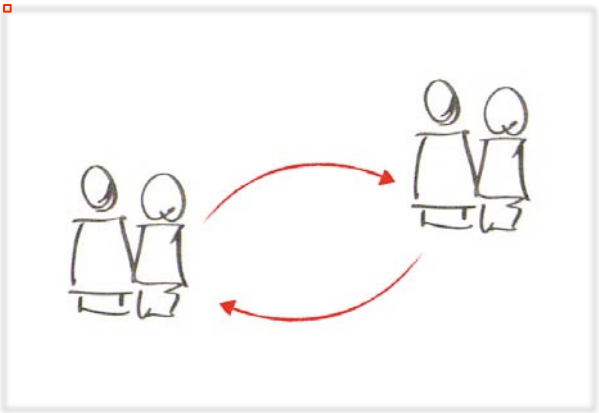
HOW to use analogous empathy

Identify specific aspects of the space that you're interested in
Get your team together to talk about what aspects of the empathy space you're exploring are particularly interesting. If you're looking at hospitals, for example, you may be focusing on extreme time pressures, very high stakes decisions or perhaps long wait times. Look for spaces that are tangential to your design challenge, but share enough attributes that there may be insight cross-over.

Brainstorm opportunities for analogous spaces
If, for example, you think customer service is an important aspect of the space you're looking at, brainstorm places you might go to find particularly strong (or weak) customer service. You may also want to brainstorm
specific people you could interview about these analogous spaces, or how you might do a quick observation.

Make an analogous inspiration board
Saturate a space with photos and quotes from your analogous space; this can help the team share inspiration, or bring in the analogous insight later in the process.

Story Share-and-Capture



WHY story share-and-capture

A team share serves at least three purposes. First, it allows team members to come up to speed about what different people saw and heard in the field. Even if all the team members were present for the same fieldwork, comparing how each experienced it is valuable. Second, in listening and probing for more information, team members can draw out more nuance and meaning from the experience than you may have initially realized. This starts the synthesis process. Third, in capturing each interesting detail of the fieldwork, you begin the space saturation process.

HOW to story share-and-capture

Unpack observations and air all the stories that stick out to you about what you saw and heard during your empathy fieldwork. Each member in the group should tell user stories and share notes while other members headline quotes, surprises, and other interesting bits – one headline per post-it. These post-its become part of the team's space saturation, and can also be physically grouped to illuminate theme and patterns that emerge (See "Saturate and Group" method card). The end goal is to understand what is really going on with each user. Discover who that person is and what that person needs in regard to your problem space.

Saturate and Group

WHY saturate and group

You space saturate to help you unpack thoughts and experiences into tangible and visual pieces of information that you surround yourself with to inform and inspire the design team. You group these findings to explore what themes and patterns emerge, and strive to move toward identifying meaningful needs of people and insights that will inform your design solutions.

HOW to saturate and group

Saturate your wall space (or work boards) with post-its headlining interesting findings (see "Story Share-and-Capture") plus pictures from the field of users you met and relevant products and situations.

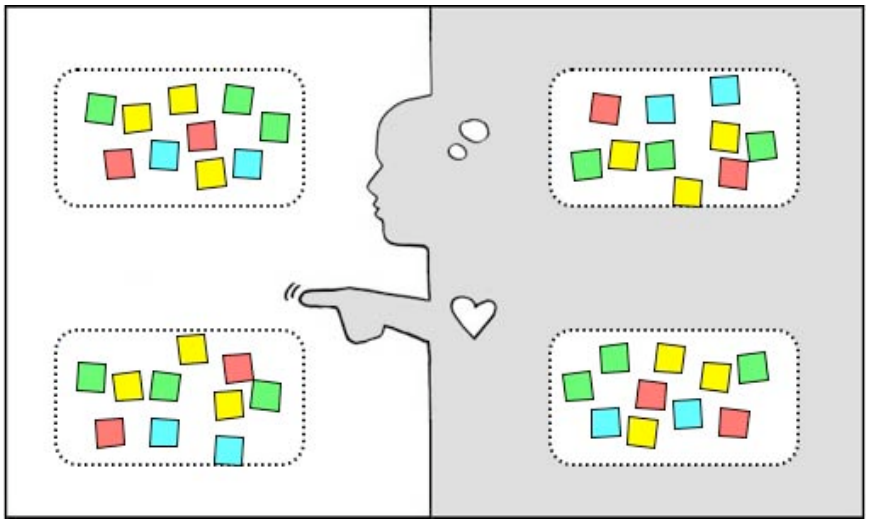
In order to begin to synthesize the information, organize the post-its and pictures into groups of related parts. You likely have some ideas of the patterns within the data from the unpacking you did when producing the notes. For example, you may have seen and heard many things related to feeling safe, and many things regarding desire for efficiency. Within the group of 'safety', go beyond the theme and try to see if there is a deeper connection that may lead to an insight such as "Feeling safe is more about who I am with than where I am". Maybe there is a relation between groups that you realize as you place items in groups – that safety is often at odds with users' desire for efficiency. Try one set of grouping, discuss (and write down) the findings, and then create a new set of groups.

The end goal is to synthesize data into interesting findings and create insights which will be useful to you in creating design solutions.

It is common to do the grouping with post-its headlining interesting stories from fieldwork. But grouping is also useful to think about similarities among a group of products, objects, or users.

METHOD

Empathy Map



WHY use an empathy map

Good design is grounded in a deep understanding of the person for whom you are designing. Designers have many techniques for developing this sort of empathy. An Empathy Map is one tool to help you synthesize your observations and draw out unexpected insights.

HOW to use an empathy map

UNPACK: Create a four quadrant layout on paper or a whiteboard. Populate the map by taking note of the following four traits of your user as you review your notes, audio, and video from your fieldwork:

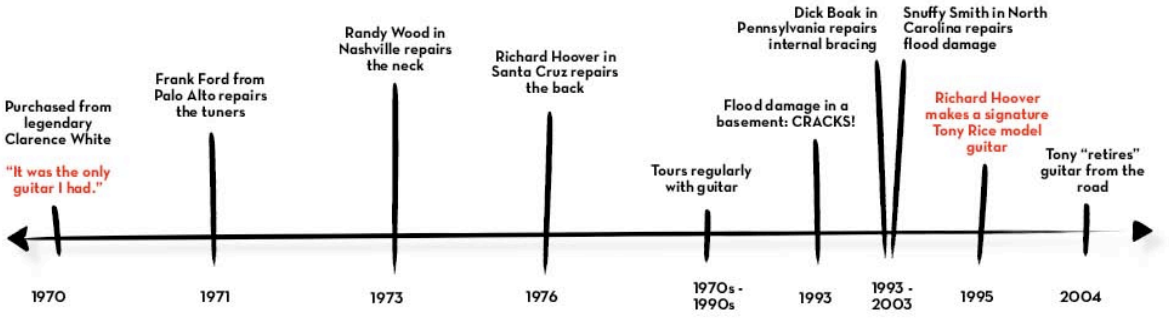
SAY**:** What are some quotes and defining words your user said?
DO**:** What actions and behaviors did you notice?
THINK**:** What might your user be thinking? What does this tell you about his or her beliefs?
FEEL**:** What emotions might your subject be feeling?

Note that thoughts/beliefs and feelings/emotions cannot be observed directly. They must be inferred by paying careful attention to various clues. Pay attention to body language, tone, and choice of words.

IDENTIFY NEEDS: "Needs" are human emotional or physical necessities. Needs help define your design challenge. Remember: Needs are *verbs* (activities and desires with which your user could use help), not *nouns* (solutions). Identify needs directly out of the user traits you noted, or from contradictions between two traits – such as a disconnect between what she says and what she does. Write down needs on the side of your Empathy Map.

IDENTIFY INSIGHTS: An "Insight" is a remarkable realization that you could leverage to better respond to a design challenge. Insights often grow from contradictions between two user attributes (either within a quadrant or from two different quadrants) or from asking yourself "Why?" when you notice strange behavior. Write down potential insights on the side of your Empathy Map. One way to identify the seeds of insights is to capture "tensions" and "contradictions" as you work.

Journey Map



WHY use a journey map

To gain empathy for a person or understanding of one's process through an experience, consider the details of that process to illuminate areas of potential insights. Creating a journey map is an excellent way to systematically think about the steps or milestones of a process. A journey map can be used for your own empathy work, or to communicate your findings to others.

HOW to use a journey map

Create diagrams that capture multiple observations, e.g. a map of a user's day, a map of a user's experience, or a map of how a product moves through space and time (from manufacturing to store shelf to user's hands). Consider a process or journey that is relevant, or even tangential to, your problem space. For example, you could consider your user's morning breakfast routine. You could capture every event of one person's exercise in a month – and consider who she was with, where she came from, where she exercised, and where she went afterwards. Or perhaps you are developing a dating service website; you could document every communication between two people before the first date. One important concern is to be comprehensive within the variables you choose to capture. (Don't overlook the opening of the window shades in the morning breakfast routine.) What seems meaningless, could actually be the nugget that develops into a stunning insight. You can create a journey map based on observation and interview – or you might ask a user to draw a journey map and then explain it to you.

Organize the data in a way that makes sense: a timeline of events, a number of parallel timelines that allows for easy comparison, a series of pictures, or a stack of cards. Then look for patterns and anomalies and question why those themes or events occurred. Push yourself to connect individual events to a larger context or framework. It is often the pairing of an observation with the designer's knowledge and perspective that yields a meaningful insight.

Composite Character Profile

Franklin

- 38 years old
- Divorced
- 2 kids
- Diabetic
- Free-clinic care-giver
- Has extreme tendencies in consumption and preparation of food.
- Balances his health and that of others, favoring the health of others.

WHY use a composite character profile

You can use the composite character profile to bucket interesting observations into one specific, recognizable character. Teams sometimes get hung up on outlying (or non-essential) characteristics of any of a number of particular potential users, and the composite character profile is a way for them to focus the team's attention on the salient and relevant characteristics of the user whom they wish to address. Forming a composite character can be a great way to create a "guinea pig" to keep the team moving forward.

HOW to use a composite character profile

The composite character profile is a synthesis method whereby the team creates a (semi)-fictional character who embodies the human observations the team has made in the field. These might include "typical" characteristics, trends, and other patterns that the team has identified in your user group over the course of your field work.

In order to create a composite character profile, a team needs to have unpacked its field observations and saturated its team space. After this is done, a team should survey across the individual users it encountered in the field to identify relevant dimensions of commonality and/or complementarity – these dimensions could be demographic information, strange proclivities and habits, or sources of motivation, to name only a few. After several dimensions of commonality have been identified, list these features of the user; if there are any dimensions of complementarity (those which may not be shared by all users, but are interesting to the team and not necessarily mutually exclusive), the team should add these as well. Last, give your character a name, and make sure every member of the team buys into the identity and corresponding characteristics that the team has created.

METHOD

Powers of Ten

WHY use powers of ten

Powers of Ten is a reframing technique that can be used as a synthesis or ideation method. It allows the design team to use an intentional approach to considering the problem at varied magnitudes of framing.

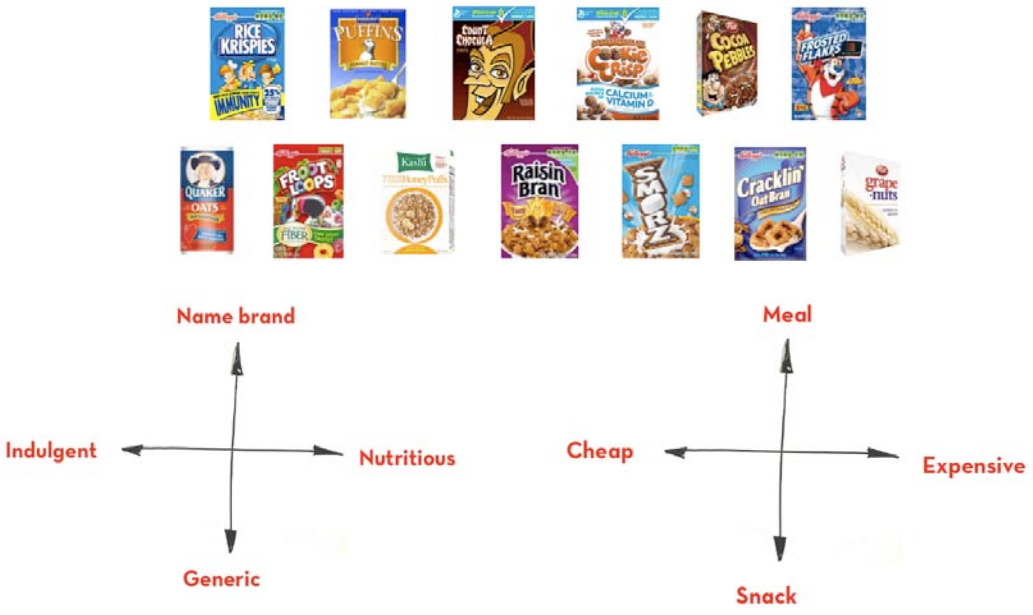
HOW to use powers of ten

The concept of Powers of Ten is to consider one aspect over increasing and decreasing magnitudes of context. Let's take two examples to illustrate how Powers of Ten could be used during a design process:

POWERS OF TEN FOR INSIGHT DEVELOPMENT: In this example, imagine you are designing a checkout experience. You are trying to understand a user's thinking and behavior in a related aspect of her life: how she makes buying decisions. You made the observation that she read a number of customer reviews before making a purchase and are developing an insight that she values her peers' opinions when making purchases. Consider what her behavior might be for buying various items over a wide range of costs, from a pack of gum, to a pair of shoes, to a couch, to a car, to a house. Capture this in writing. Probe for nuances in your insight and see where it breaks down. Perhaps this could develop into a framework, such as a 2x2 (see the 2x2 Matrix method card).

POWERS OF TEN FOR IDEATION: During brainstorming groups idea generation lulls from time to time. One way to facilitate new energy is to use Powers of Ten. Continue with your brainstorming topic, but add a constraint that changes the magnitude of the solution space. "What if it had to cost more than a million dollars to implement?," "What about under 25 cents?," "What if it was physically larger than this room?," "Smaller than a deck of cards?," "Had no physical presence?", "Took more than four hours to complete the experience?", "Less than 30 seconds?". More power to you.

2x2 Matrix



WHY use a 2x2 matrix

A 2x2 matrix is tool to scaffold thinking and conversation about your users and problem space. Use it during your synthesis process to help you think about relationships between things or people. The aim is that insights or areas to explore more deeply will come out from using a 2x2. 2x2 matrices are also a great way to visually communicate a relationship you want to convey.

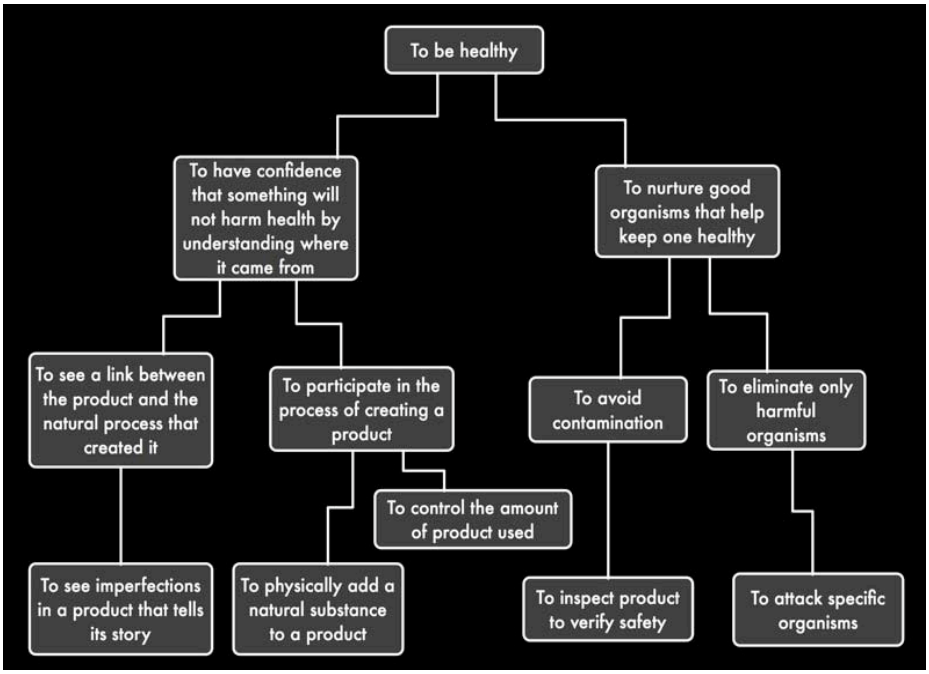
HOW to use a 2x2 matrix

Pick two spectra (one on each axis), draw a 2x2 matrix, and plot items in the map . The items could be product, objects, motivations, people, quotes, materials – any group of things that would be useful to explore. Put opposites on either end of each axis. For example, you might place different people on a matrix of passion for their career (low-to-high) vs. technology adoption (early-adopter-to-late-adopter). Look for relationships by seeing where groups start to form. See what quadrants are very full or empty; where does the assumed correlation break down?

The discussion that is spurred by trying to place items on the matrix is often more valuable than producing the map itself. You may need to try a number of combinations of spectra to get one that is meaningful and informative. Try some combinations, even if you are not sure which is right – the first attempts will inform the ones to follow. Because you are trying to understand how people think, usually at least one of the axes should be subjective – this can very useful to get to new insights.

One common use for a 2x2 matrix is a competitive landscape. In this case, an empty quadrant could signal a market opportunity (or a very bad idea).

Why-How Laddering



WHY why-how ladder

As a general rule, asking 'why' yields more abstract statements and asking 'how' yields specific statements. Often times abstract statements are more meaningful but not as directly actionable, and the opposite is true of more specific statements. That is why you ask 'why?' often during interviews – in order to get toward more meaningful feelings from users rather than specific likes and dislikes, and surface layer answers. Outside an interview, when you think about the needs of someone, you can use why-how laddering to flesh out a number of needs, and find a middle stratum of needs that are both meaningful and actionable.

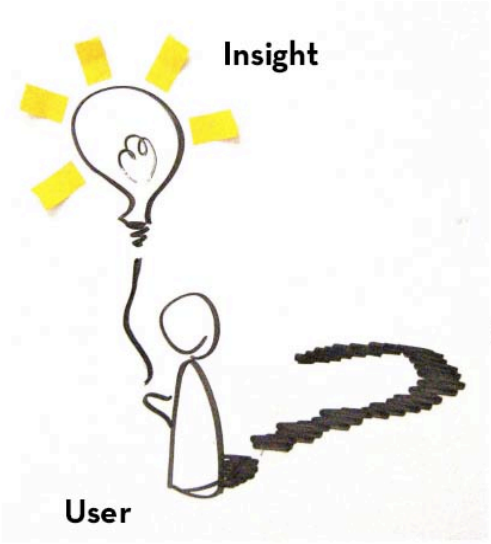
HOW to why-how ladder

When considering the needs of your user, start with a meaningful one. Write that need on the board and then ladder up from there by asking 'why'. Ask why your user would have that need, and phrase the answer as a need. For example, "Why would she 'need to see a link between a product and the natural process that created it'? Because she 'needs to have confidence that something will not harm her health by understanding where it came from'." Combine your observations and interviews with your intuition to identify that need. Then take that more abstract need and ask why again, to create another need. Write each on the board above the former. At a certain point you will reach a very abstract need, common to just about everyone, such as the 'need to be healthy'. This is the top of that need hierarchy branch.

You can also ask 'how' to develop more specific needs. Climb up ('why?') and down (how?) in branches to flesh out a set of needs for your user. You might come up to one need and then come back down. In the previous example, you climbed up to the 'need to understand where a product came from'. Then ask 'how' to identify the 'need to participate in the process of creating a product'. There will also be multiple answers to your 'whys' and 'hows' – branch out and write those down.

The result (after some editing and refining) is a needs hierarchy that paints a full picture of your user or composite user. Alternatively, you can use this tool to hone in on one or two particularly salient needs.

Point-of-View Madlib



WHY use a POV madlib

A point-of-view (POV) is your reframing of a design challenge into an actionable problem statement that will launch you into generative ideation. A POV Madlib provides a scaffolding to develop your POV. A good POV will allow you to ideate in a directed manner, by creating How-Might-We (HMW) questions based on your POV (see "Facilitating Brainstorms"). Most of all, your POV captures your design vision – your responsibility and opportunity as a designer is to discover and articulate the meaningful challenge.

HOW to use a POV madlib

Use the following madlib to capture and harmonize three elements of a POV: user, need, and insight.

[USER] needs to [USER'S NEED] because [SURPRISING INSIGHT]

Use a whiteboard or scratch paper to try out a number of options, playing with each variable and the combinations of them. The need and insight should flow from your unpacking and synthesis work. Remember, 'needs' should be verbs, and the insight typically should not simply be a reason for the need, but rather a synthesized statement that you can leverage in designing a solution. Keep it sexy (it should intrigue people) and hold the tension in your POV.

For example, instead of "A teenage girl needs more nutritious food because vitamins are vital to good health" try "A teenage girl with a bleak outlook needs to feel more socially accepted when eating healthy food, because in her hood a social risk is more dangerous than a health risk." Note how the latter is an actionable, and potentially generative, problem statement, while the former is little more than a statement of fact, which spurs little excitement or direction to develop solutions.

Point-of-View Analogy

WHY use a POV analogy

A point-of-view (POV) is your reframing of a design challenge into an actionable problem statement that will launch you into generative ideation. A POV Analogy can be a concise and compelling way to capture how you define the design challenge (your POV!). A good analogy will yield a strong directive of how you go about designing the final solution.

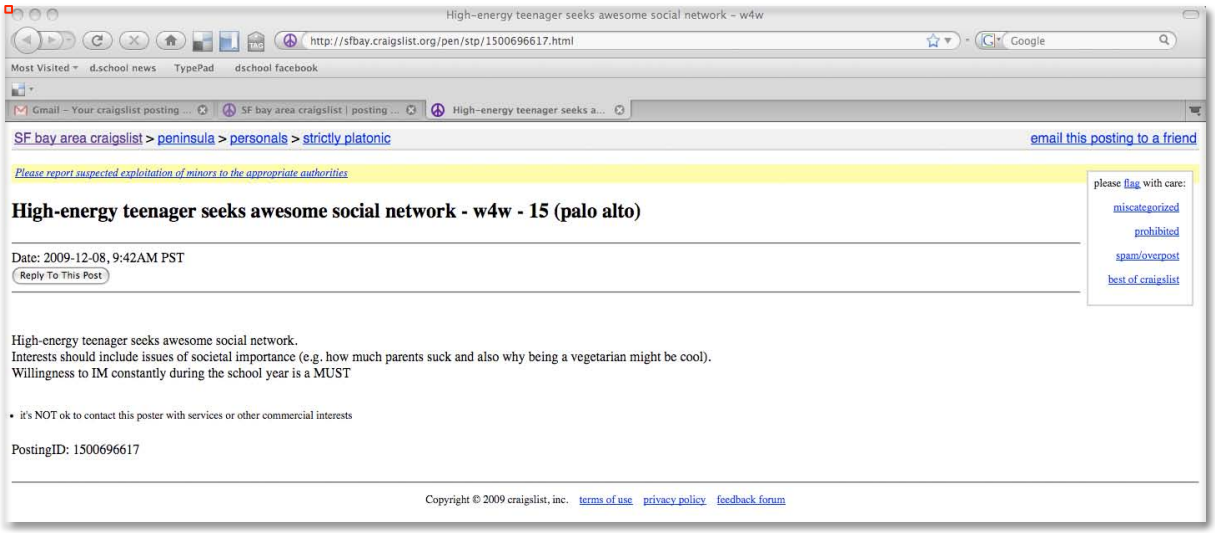
HOW to use a POV analogy

Use concise analogies to distill ideas. Metaphors and similes can encapsulate your insights in a rich picture. Discover metaphors from the work you do in synthesizing information, and looking at analogies between your user's situation and other areas.

For example, one metaphor from industry is:
"Personal music player as jewelry,"
which provides the directive for creating the iPod. Looking at the headset as jewelry, rather than simply speakers, allows the designer to create a product that users will enjoy as a projection of themselves, rather than merely a utilitarian device. You can imagine this could have been seeded by an insight about how a user views her music collection – that "her identity is linked to the bands she listens to, and her relationships are bolstered by shared music taste."

A metaphor can also be embedded into a more comprehensive POV.
For example you may create the following POV:
"A works-hard-plays-hard young professional needs to be motivated at work with a job that is more like a first-person-shooter than Tetris."

POINT-OF-VIEW WANT AD



WHY use a POV want ad

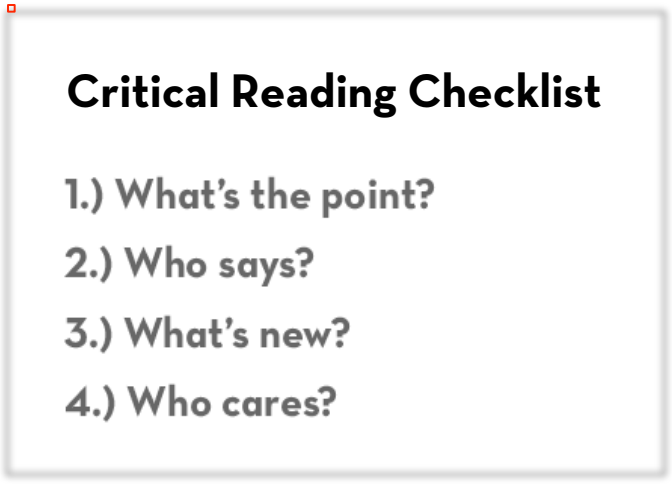
A point-of-view (POV) is your reframing of a design challenge into an actionable problem statement that will launch you into generative ideation. A POV Want Ad can be a good way to express your distilled findings in an intriguing format. The want ad format tends to accentuate a specific user, and her important character traits.

HOW to use a POV want ad

Embed your user, his or her need, and your insights within the format of a want ad. This way of expressing a POV is often more playful and nuanced than the simple USER+NEED+INSIGHT madlib, but should still have a clarity about how you have reframed the problem.

Try this format:
Descriptive characterization of a user,
followed by "seeks" an ambiguous method to meet an implied need,
plus additional flavor to capture your findings.
For example: "High-energy teenager seeks awesome social network. Interests should include issues of societal importance (e.g. how much parents suck and also why being a vegetarian might be cool). Willingness to IM constantly during the school year is a MUST!"

Critical Reading Checklist



WHY use a critical reading checklist

The Checklist is a tool used to determine whether a team has arrived at a meaningful, unique Point of View (POV). The original "Critical Reading Checklist" tool was developed by David Larabee, of the Stanford School of Education, and repurposed in the context of a design process to evaluate POVs.

Use this Checklist to ensure that your team's POV is valid, insightful, actionable, unique, narrow, meaningful, and exciting. While this method is not in itself sufficient to address the deficiencies of a POV, it is a great tool to think through and evaluate the usefulness of the POV.

HOW to use a critical reading checklist

We ask ourselves four basic questions about our Point of View:
1. **What's the point?** – What is your team's angle?
• What is your team's framework in stating a POV?
• Is it User-centered, Need-based, and Insight-driven?
2. **Who says?** – How valid is your team's POV?
• Is your position supported by findings from users?
• Is it a distillation of findings? Is this applicable outside of one colorful interview?
3. **What's new?** – What is the value-add of your POV?
• Have you articulated your findings in a new way?
• Are they placed in the context of a user?
• If your POV doesn't feel new, try being more specific.
4. **Who cares?** – How is your POV significant?
• Your team should be excited at this point!
• Is this work *worth doing? If not, ask yourself why?*
• Reframe/rephrase until you get it right.

Design Principles

WHY use design principles

Design principles are strategies to solve a design challenge independent of a specific solution. You, as the designer, articulate these principles, translating your findings – such as needs and insights – into design directives. These principles give you a format to capture abstracted, but actionable, guidelines for solutions, and communicate your design intentions to others.

HOW to use design principles

Develop a list of statements – using imperative phrasing – that outlines essential guidelines to create successful design solutions. The guidelines should distill your understanding of the design space and user. That is, you define what would be the meaningful challenge to solve, based on your empathy work, and then create the design principles to outline what's necessary to achieve that success.

You develop design principles in a number of ways. You can translate your point of view, needs, and insights into design principles by stating your findings in terms of solutions rather than the user, while maintaining the focus on the user-centered needs and insights you discovered. For example, a user's "need to feel instrumental in creating a gift" could become a design directive that the solution should "involve the user in creating the final gift outcome." You can also back out design principles from potential solutions that you and users find compelling. Ask yourself what aspects of the solution resonated with users, and those aspects may be abstracted and formed into design principles.

Design principles should be statements independent from the specific implementation – i.e. useful guidelines regardless of the particular solution. However, it is helpful to identify the broad solution context to help you develop design principles. For example, you may know that you are designing a physical space – that would help you understand how to phrase your principles. In another case, you might know you are creating a gift – but not know whether it will be physical, digital, or experiential. Still, that context would allow you articulate the principle mentioned above to "involve the gift-giver in creating the final outcome."

"How Might We" Questions

WHY create how might we questions

"How might we" (HMW) questions are short questions that launch brainstorms. HMWs are seeds for your ideation that fall out of your point-of-view statement, design principles, or insights. Create a seed that is broad enough that there are a wide range of solutions but narrow enough that the team is provoked to think of specific, unique ideas. For example, between the (possibly) too narrow "HMW create a cone to eat ice cream without dripping" and the too broad "HMW redesign dessert" might be the properly scoped "HMW redesign ice cream to be more portable." It should be noted, the the proper scope of the seed will vary with the project and how much progress you have made in your project work.

HOW to generate how might we questions

Begin with your Point of View (POV), insights, or problem statement. Create small actionable questions that retain your unique and specific perspective. Write these questions beginning with the phrase, "How might we..." It is often helpful to brainstorm the HMW questions before the solutions brainstorm. For example, consider the following POV and resulting HMW statements.

Challenge: Redesign the ground experience at the local international airport
POV: Harried mother of three, rushing through the airport only to wait hours at the gate, needs to entertain her playful children because "annoying little brats" only irritate already frustrated fellow passengers.

Amp up the good: HMW use the kids' energy to entertain fellow passenger?
Remove the bad: HMW separate the kids from fellow passengers?
Explore the opposite: HMW make the wait the most exciting part of the trip?
Question an assumption: HMW entirely remove the wait time at the airport?
Go after adjectives: HMW we make the rush refreshing instead of harrying?
ID unexpected resources: HMW leverage free time of fellow passengers to share the load?
Create an analogy from need or context: HMW make the airport like a spa? Like a playground?
Play against the challenge: HMW make the airport a place that kids want to go?
Change a status quo: HMW make playful, loud kids less annoying?
Break POV into pieces: HMW entertain kids? HMW slow a mom down? HMW mollify delayed passengers?

STOKE

WHY stoke

Stoke activities help teams loosen up and become mentally and physically active. Use stoke activities when energy is wavering, to wake up in the morning, to launch a meeting, or before a brainstorm.

HOW to stoke

Do an activity that gets your creativity going and increases your team members' engagement with each other. A good stoke activity not only increases energy but also requires each person to actively engage, listen, think, and do. For example, when playing Pictionary you must watch a teammate drawing, listen to other teammates guessing the answer (allowing you to build on those ideas), think of what the answer might be, and call out guesses yourself. Keep the activity brief (5-10 minutes) and active so you can jump into your design work after. Many improv games are good stoke activities. Try one of these:

Category, category, die! Line folks up. Name a category (breakfast cereals, vegetables, animals, car manufacturers). Point at each person in rapid succession, skipping around the group. The player has to name something in the category. If she does not, everyone yells "die!!" and that player is out for the round.

Sound ball Stand in a circle and throw an imaginary ball to each other. Make eye contact with the person you are throwing to, and make a noise as you throw it. The catcher should repeat the noise while catching, and then make a new noise as he throws to next person. Try to increase the speed the ball travels around the circle. Add a second ball to the circle to increase each person's awareness.

"Yes, Let's" Everyone walk around the room randomly, and then one person can make an offer: "Let's act like we're all at a cocktail party," "Let's be baby birds," or "Let's act like we don't understand gravity." Then everyone should shout in unison the response, "Yes, let's" and proceed to take the directive by acting it out. At anytime someone else can yell out the next offer. The answer is always, "Yes, let's!"

Brainstorming

One Conversation at a Time

Encourage wild ideas

Go for Quantity

Be Visual

Headline!

Stay on Topic

Build on the Ideas of Others

Defer Judgement - NO Blocking

WHY brainstorm

Brainstorming is a great way to come up with a lot of ideas that you would not be able to generate by just sitting down with a pen and paper. The intention of brainstorming is to leverage the collective thinking of the group, by engaging with each other, listening, and building on other ideas. Conducting a brainstorm also creates a distinct segment of time when you intentionally turn up the generative part of your brain and turn down the evaluative part. Brainstorming can be used throughout a design process; of course to come up with design solutions, but also any time you are trying to come up with ideas, such as planning where to do empathy work, or thinking about product and services related to your project – as two examples.

HOW to brainstorm

Be intentional about setting aside a period of time when your team will be in "brainstorm mode" – when the sole goal is to come up with as many ideas as possible, and when judgment of those ideas will not come into the discussion. Invest energy into a short period of time, such as 15 or 30 minutes of high engagement. Get in front of a whiteboard or around a table, but take an active posture of standing or sitting upright. Get close together.

Write down clearly what you are brainstorming. Using a How-Might-We (HMW) question is a great way to frame a brainstorm (e.g. HMW give each shopper a personal checkout experience?). (See more on the "'How Might We'" Questions" method card.)

There are at least two ways to capture the ideas of a brainstorming:

1. Scribe: the scribe legibly and visually captures on the board ideas that team members call out. It is very important to capture every idea, regardless of your own feelings about each idea.
2. All-in: Each person will write down each of his or her ideas as they come, and **verbally share it** with the group. It is great to do this with post-it notes, so you can write your idea and then stick it on the board.

Follow and (nicely) enforce the brainstorming rules – they are intended to increase your creative output.

Facilitate a Brainstorm

WHY facilitate a brainstorm

Good facilitation is key to a generative brainstorm. You brainstorm to come up with many, wide-ranging ideas; a good facilitator sets the stage for the team to be successful doing this.

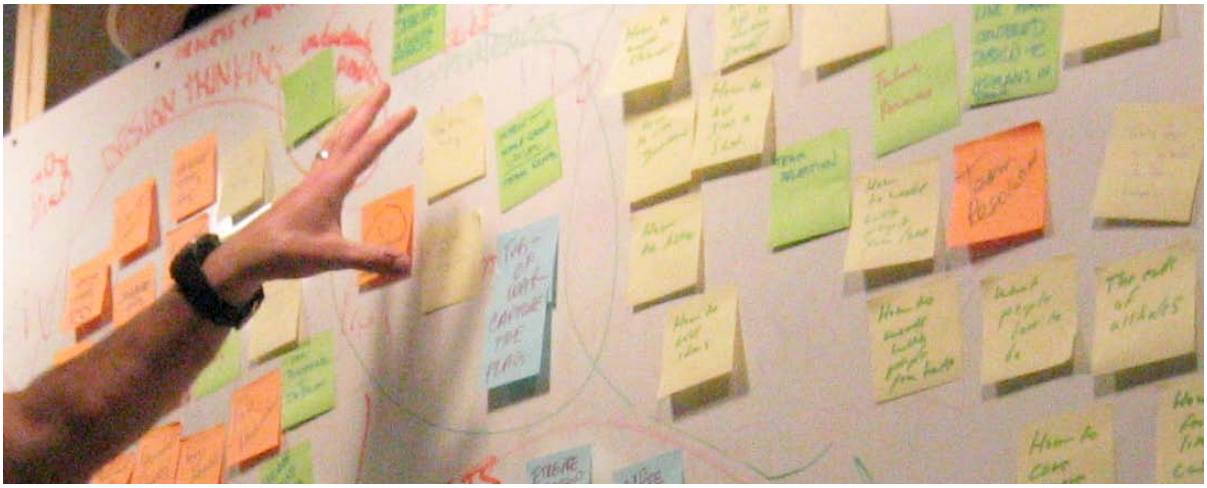
HOW to facilitate brainstorm

ENERGY – As the facilitator it is your task to keep the ideas flowing. Perhaps the most important aspect of a successful brainstorm is the seed question that you are brainstorming about (see the "How Might We" method card for more information). During the brainstorm keep a pulse on the energy of the group. If the group is slowing down or getting stuck, make an adjustment. Create a variation to the "How-might-we?" (HMW) statement to get the group thinking in another direction (prepare some HMW options ahead of time). Or have a few provocative ideas in your back pocket that you can lob in to re-energize the team.

CONSTRAINTS – Add constraints that may spark new ideas. "What if it had to be round?," "How would superman do it?," "How would your spouse design it?," "How would you design it with the technology of 100 years ago?" Additionally you can create process constraints. Try putting a time limit on each how-might-we statement; shoot for 50 ideas in 20 minutes.

SPACE – Be mindful about the space in which you conduct a brainstorm. Make sure that there is plenty of vertical writing area. This allows the group to generate a large number of potential solutions. Strike a balance between having a footprint that is big enough for everyone, but also is not so large that some people start to feel removed. A good rule of thumb is that all members of the group should be able to reach the board in two steps. Also, make sure each person has access to sticky notes and a marker so they can capture their own thoughts and add them to the board if the scribe cannot keep up with the pace. (See more about scribing on the "Brainstorming" method card.)

SELECTION



WHY brainstorm selection is important

Your brainstorm should generate many, wide-ranging ideas. Now harvest that brainstorm, so those ideas don't just sit there on the board. Harvesting is straight forward for some brainstorms (pick a couple of ideas), but when ideating design solutions give some thought to how you select ideas. Carry forward a range of those ideas, so you preserve the breadth of solutions and don't settle only for the safe choice.

HOW to select

In the selection process, don't narrow too fast. Don't immediately worry about feasibility. Hang on to the ideas about which the group is excited, amused, or intrigued. An idea that is not plausible may still have an aspect within it that is very useful and meaningful.

Different selection techniques can be used, including these three:

1. Post-it voting – each team member gets three votes and marks three ideas that he or she is attracted to. Independent voting allows all team members to have a voice.
2. The four categories method – the method encourages you to hang onto those crazy but meaningful ideas. Elect one or two ideas for each of these four categories: the rational choice, the most likely to delight, the darling, and the long shot.
3. Bingo selection method – like the four categories method, this is designed to help preserve innovation potential. Choose ideas that inspire you to build in different form factors: a physical prototype, a digital prototype, and an experience prototype.

Carry forward multiple ideas into prototyping. If an idea is so far out there that it seems pointless to test, ask yourselves what about that solution was attractive, and then test that aspect or integrate it into a new solution.

Bodystorming

WHY bodystorm

Bodystorming is a unique method that spans empathy work, ideation, and prototyping. Bodystorming is a technique of physically experiencing a situation to derive new ideas. It requires setting up an experience - complete with necessary artifacts and people - and physically “testing” it. Bodystorming can also include physically changing your space during ideation. What you're focused on here is the way you interact with your environment and the choices you make while in it.

We bodystorm to generate unexpected ideas that might not be realized by talking or sketching. We bodystorm to help create empathy in the context of possible solutions for prototyping. If you're stuck in your ideation phase, you can bodystorm in the context of a half-baked concept to get you thinking about alternative ideas. Designing a coffee bar? Set up a few foam cubes and "order" a coffee! Bodystorming is also extremely useful in the context of prototyping concepts. Have a couple concepts you're testing? Bodystorm with both of them to help you evaluate them. Developing any sort of physical environment demands at least a few bodystorms.

HOW to bodystorm

This a straight-forward method, but one that is only useful if you fully engage with it. Get physical! If you are trying to ideate in the context of hospital patients, try walking through the experience to come up with new ideas. If you are designing products for the elderly, rub some Vaseline on your glasses to view the world through older eyes. Bodystorm by moving around and becoming aware of the physical spaces and experiences related to your solutions. Pay close attention to decision-making directly related to your environment and related emotional reactions. Dig into the "WHY"!

METHOD

Impose Constraints

WHY impose constraints

It is a bit counterintuitive, but imposing constraints with intention can actually increase your creative potential. Try it: Think of as many white things as you can in ten seconds. Now think of white things in your kitchen. Did the more constrained prompt spark more ideas?

HOW to impose constraints

There are many times throughout the design process when imposing constraints can help you be a more successful designer. However, being conscious of what filters you place on your design process, and when, is very important. Imposing a specific constraint on your idea generation is different than rejecting ideas because of pre-conceived notions of what you are trying to make.

Three areas where imposing constraints can be useful are in ideation, in prototyping, and with time:
IDEATION: During a brainstorm, or when you are ideating with a mindmap, temporarily add a constraint. This constraint might be "What if it were made for the morning?" or "How would McDonald's do it?". Keep this filter on the ideation for as long as it is useful. (For more, see the "Facilitate a Brainstorm" card.)
PROTOTYPING: In prototyping, particularly in early stages, you build to think. That is, you reverse the typical direction – of thinking of an idea and then building it – to using building as a tool to ideate. You can increase the output of this process by imposing constraints. Constrain your materials to push toward faster, lower resolution prototypes and increase the role of your imagination. Developing a checkout service? Prototype it with cardboard, Post-its and a Sharpie. Making a mobility device? Do it with cardboard, Post-its and a Sharpie. Designing an arcade game? Cardboard, Post-its, Sharpie.
Additionally, as with brainstorming, put constraints on the solution itself.
How might you design it . . . for the the blind? Without using plastic? Within the space of an elevator?
TIME: Create artificial deadlines to force a bias toward action. Make two prototypes in an hour. Brainstorm intensely for 20 minutes. Spend three hours with users by the end of the weekend. Develop a draft of your point-of-view by the end of the hour.

Prototype for Empathy

WHY prototype for empathy

It is common practice to test prototypes with users to evaluate solutions, but you can also gain empathy through prototyping, exposing different information than simply interviewing and observation might. Of course, *whenever* you test with a user you should consider both what you can learn about your solution and what you can learn about the person – you can always use more empathetic understanding.

But you can also develop prototypes or create situations specifically designed to gain empathy, without testing a solution at all (or even having a solution in mind). This is sometimes called "active empathy" because you are not an outside observer, you are creating conditions to bring out new information. In the same way a solution prototype helps you gain understanding about your concept, an empathy prototype helps you gain understanding about the design space and people's mindsets about certain issues.

HOW to prototype for empathy

These empathy prototypes are often best used when you have done some work to understand the design space, and want to dig deeper into a certain area or probe an insight you are developing. Think about what aspect of the challenge you want to learn more about. Then discuss or brainstorm ways you might investigate that subject. You can create prototypes for empathy to test with users or with your design team.

Some ideas:
- Have your user draw something (for example, draw how you think about spending money, or draw how you get to work) and then talk about it afterward.
- Create a game that probes issues you want to explore (for example, you could make a simple card game which forces users to make choices related to your design challenge).
- Simulate an aspect of what users are going through to better understand it yourself (for example, if your users plant seeds while carrying a baby, get a sling and carry ten pounds while planting seeds).

Prototype to Test

WHY prototype to test

Prototyping to test is the iterative generation of low-resolution artifacts that probe different aspects of your design solution or design space. The fundamental way you test your prototypes is by letting users experience them and react to them. In creating prototypes to test with users you have the opportunity to examine your solution decisions as well as test your perception of your users and their needs.

HOW to prototype to test

Think about what you are trying to learn with your prototypes, and create low-resolution objects and scenarios which probe those questions. Staying low-res allows you to pursue many different ideas you generated without committing to a direction too early on. The objective is not simply to create a mock-up or scale model of your solution concept; it is to create experiences to which users can react. Bring resolution to the aspects that are important for what you are trying to test, and spend less effort on other aspects. You also need to think about the context and testing scenario you will create to get meaningful feedback. It is not always the case that you can just hand an object to someone on the street and get real feedback. Test in the context that your solution would actually be used (or approximate the important parts of that context). For example, if you are creating a consumer food storage system, let users test it in their kitchens at home – some of the nuanced but important issues will only emerge there.

Some tips for prototyping to test:
Start building. Even if you aren't sure what you're doing, the act of picking up some materials (paper, tape, and found objects are a good way to start!) will be enough to get you going.
Don't spend too long on one prototype. Move on before you find yourself getting too emotionally attached to any one prototype.
Build with the user in mind. What do you hope to test with the user? What sorts of behavior do you expect? Answering these questions will help focus your prototyping and help you receive meaningful feedback in the testing phase.
ID a variable. Identify what's being tested with each prototype. A prototype should answer a particular question when tested.

Testing with Users

WHY test with users

Testing with users is a fundamental part of a human-centered design approach. You test with users to refine your solution and also to refine your understanding of the people for whom you are designing. When you test prototypes you should consider both their feedback on your solution and use the opportunity to gain more empathy. You are back in a learning and empathy mode when you engage users with a prototype.

HOW to test with users

There are multiple aspects to be aware of when you test with users. One is your **prototype**, two is the **context and scenario** in which you are testing, three is **how you interact** with the user during testing and four is how you **observe and capture** the feedback.

In regard to the first two aspects, you need to test a prototype in a context that give you the best chance for meaningful feedback; think about how the prototype and the testing scenario interact. If the prototype is a scenario, think about how to find the proper people (i.e. users relevant to your point-of-view) and get them in the right mindset so that you get genuine feedback.

Roles

During the testing itself, use intentional team roles, as you would with empathy work:
Host: You help transition the user from reality to your prototype situation and give them the basic context they need to understand the scenario (don't over-explain it, let the user discover through the experience). As the host, you will also likely be the lead questioner when the time comes.
Players: You often need to play certain roles in the scenario to create the prototype experience.
Observers: It is very important to have team members who are solely observers, watching the user experience the prototype. If you don't have enough people to run the prototype and observe, videotape the testing.

Procedure

Use a deliberate procedure when you test.
1. Let your user experience the prototype. Show don't tell. Put your prototype in the user's hands (or your user in the prototype) and give just the minimum context so they understand what to do. Don't explain your thinking or reasoning for your prototype.
2. Have them talk through their experience. For example, when appropriate, as the host, ask "Tell me what you are thinking as you are doing this."
3. Actively observe. Watch how they use (and misuse!) what you have given them. Don't immediately "correct" what your user tester is doing.
4. Follow up with questions. This is important; often this is the most valuable part of testing. "Show me why this would [not] work for you." "Can you tell me more about how this made you feel?" "Why?" Answer questions with questions (i.e "well, what do *you* think that button does").

METHOD

Prototype to Decide

WHY prototype to decide

Often during the design process, it's unclear how to proceed forward, particularly when team members have mixed opinions. A prototype can frequently resolve team disagreements and help a team decide which design direction to pursue without having to compromise. The best way to resolve team conflicts about design elements is to prototype and evaluate them with users. Making and evaluating a prototype informs design decisions. If an idea has been prototyped and passes muster with the group, it's a good sign that the idea is worth pursuing further.

HOW to prototype to decide

Staying as low-resolution as possible, develop models of potential design candidates. Be sure to distill the design problem down to discrete elements so you can isolate and be mindful of the variable you are testing. Then try out the prototypes within your team, outsider peers, or, even better, take your prototypes to users and get their feedback.

METHOD

Identify a Variable

WHY identify a variable

Identifying a variable you want to test helps you understand what kind of prototype you are going to create. Most prototypes should not simply be mock-ups of a solution you have in mind. Instead, create prototypes – which may not look like or wholly represent your solutions at all – that help you learn about specific aspects of your solution or mindsets of your users. When you identify a variable, you can save energy in not creating all the facets of a complicated solution, and, more importantly, the results of testing with users will often be more conclusive and nuanced.

Incorporating too many variables into one prototype can water down the feedback you'll get from your users – what was it were they responding to? You might never find out. Identifying a variable also gives you the opportunity to create multiple prototypes, each varying in the one property. Giving a user tester a choice and the ability to make comparisons often results in more useful feedback because that person is encouraged to promote one option over another (rather than a less useful "I like it" response you might get with one prototype).

HOW to identify a variable

Prototype with a purpose; think about what you are trying to learn by making a prototype. Identify one variable to flesh out and test with each prototype you build. Bring resolution to that aspect of the prototype. Remember a prototype doesn't have be, or even look like the solution idea. You might want to know how heavy a device should be. You can create prototypes of varied weight, without making each one operable. In another example, you may want to find out if users prefer getting delivery or picking up themselves – you may not even need to put anything in the box to test this.

METHOD

User-Driven Prototyping

WHY create a user-driven prototype

Whenever you engage a user with a prototype, you are trying to better understand him and perhaps his reaction to your solution-in-progress. Often with prototypes, you ask the user to experience something you created, and you gain insight by observing their reaction and by talking to them about the experience. The intention with a user-driven prototype is to gain understanding by watching the *user* create something, rather than try something that you developed.

The value of a user-driven prototype is that different assumptions and desires are revealed when the user is asked to create aspects of the design, rather than just evaluate or experience the prototype. The goal is not to take what they made and integrate it into your design, but rather to understand their thinking and perhaps reveal needs and features that you may not have thought of.

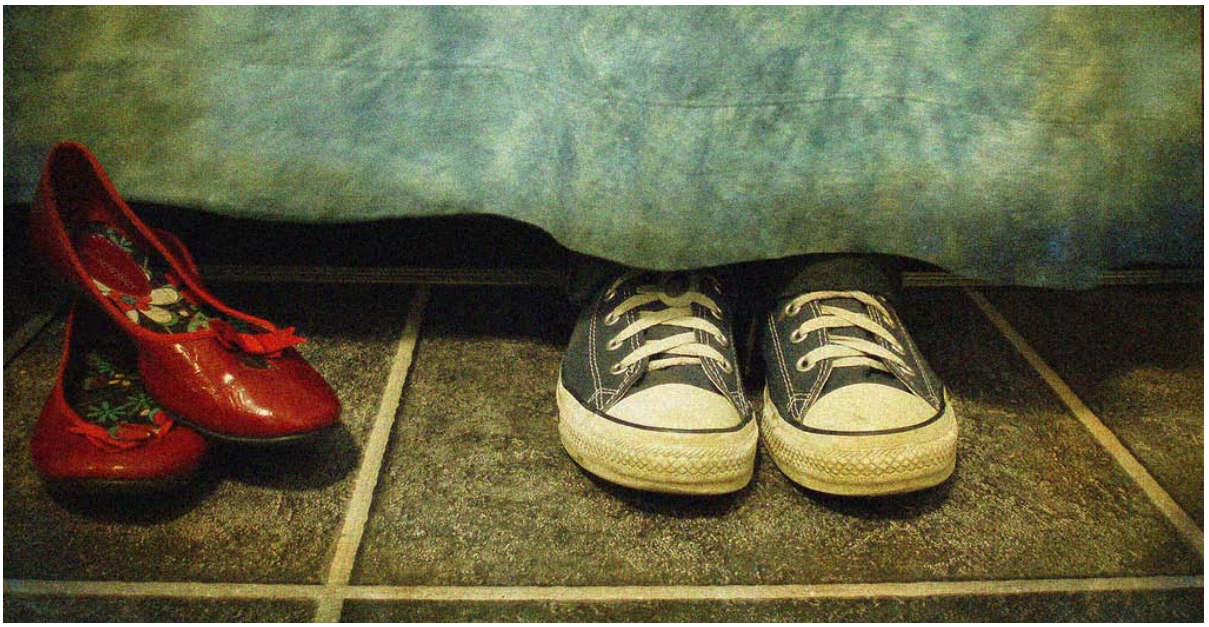
User-driven prototypes are often useful in early empathy work, as a way to facilitate a different kind of conversation. User-driven prototypes are also useful after you have determined the context and form-factor of your solution, to help think about some of the features and details of that solution.

HOW to create a user-driven prototype

The approach to creating a user-driven prototype is to set up a format for your users to create something which leads to your understanding of how they are thinking. As an example, if you were creating a website to allow users to create custom t-shirts, a traditional early-stage prototype might be a mock-up of the webpage with the features and buttons that you think might be appropriate. A *user-driven* prototype could be to give your user a blank piece of paper and ask her to draw what she thinks the features should be. You might provide a light scaffolding to get her going, such as a piece of paper with boxes in the layout of a possible website, and then ask her to create the content for those boxes. Of course, there is an entire spectrum of how much you provide and how much you ask your user to create. You need to find the balance of a prototype that is scaffolded enough that the user feels that she can be generative, but open enough that you learn outside of your own biases and assumptions.

Other examples of user-driven prototypes include: asking a user to draw something ("draw how you think about going to the doctor"), to make an object with simple materials ("make a bag for diapers and baby supplies, using this paper and tape"), or to compile things ("tear out pictures from these magazines that represent your ideal mall shopping experience").

Wizard of Oz Prototyping



WHY create a Wizard-of-Oz prototype

You use a Wizard-of-Oz prototype to fake the functionality that you want to test with users, thus saving you the time and resources of actually creating the functionality before you refine it through testing. Just like the small man behind the curtain faked the power of the wizard of oz, your design team can fake features that you want to test. Wizard-of-Oz prototypes often refer to prototypes of digital systems, in which the user thinks the response is computer-driven, when in fact it is human controlled.

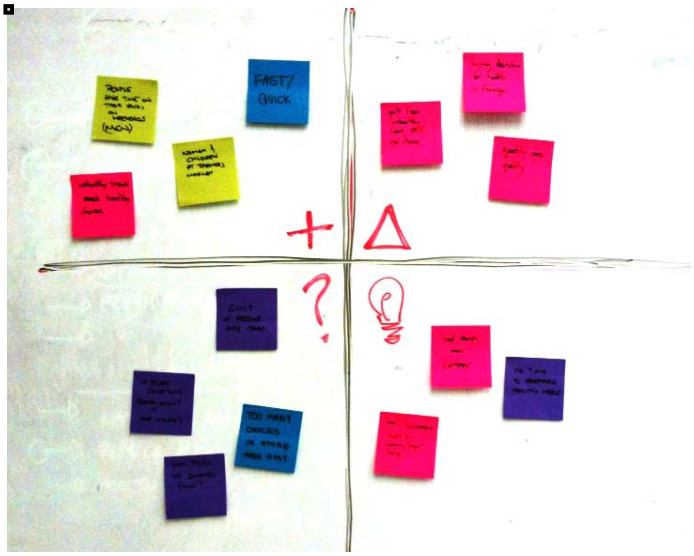
HOW create a Wizard-of-Oz prototype

Creating a Wizard-of-Oz prototype starts with determining what you want to test or explore. It is often the case that you want to test something that requires great effort to create, like coding a digital interface, but you need to learn more before it makes sense to invest that effort. Figure out how to fake the functionality you need to give the user an authentic experience from their viewpoint. Often leveraging existing tools can be very powerful: Twitter, email systems, Skype, instant messengers, Powerpoint to fake a website, projectors, computer screens repurposed in a new skin, etc. Combine tools such as these with your human intervention behind the scenes, and you can create a realistic prototype. The concept can certainly be extended beyond the digital realm, to create physical prototypes. For example, you could prototype a vending machine without creating the mechanics and use a hidden person to deliver the selected purchases.

A good example of a wizard-of-oz prototype is from the company Aardvark. Aardvark connects people with questions with people best-qualified to answer via a digital interface over the internet. To create the network and algorithm to do this would require significant coding, but the team wanted to test user's reaction to the interface well before the coding was completed. They used an instant messaging system and a team of people behind the scenes to physically reroute questions and answers to the right people. The result is they learned quickly and developed their concept without investing coding resources.

METHOD

Feedback Capture Grid



WHY use a feedback capture grid

Use a feedback capture grid to facilitate real-time capture, or post-mortem unpacking, of feedback – times when presenter-critiquer interaction is anticipated. This can be used either to give feedback on progress within the design team or to capture a user's feedback about a prototype. You use the grid because it helps you be systematic about feedback, and more intentional about capturing thoughts in the four different areas.

HOW to use a feedback capture grid

1. Section off a blank page or whiteboard into quadrants.
2. Draw a plus in the upper left quadrant, a delta in the upper right quadrant, a question mark in the lower left quadrant, and a light bulb in the lower right quadrant.

It's pretty simple, really. Fill the four quadrants with your or a user's feedback. Things one likes or finds notable, place in the upper left; constructive criticism goes in the upper right; questions that the experience raised go in the lower left; ideas that the experience or presentation spurred go in the lower right. If you are giving feedback yourself, strive to give input in each quadrant (especially the upper two: both "likes" and "wishes").

Storytelling

WHY storytelling over other forms of communication

It seems stories are hard-wired into our psyche. People have been passing information along via storytelling for as long as humans have had a rich language to draw from. Stories are a great way to connect people with ideas, at a human level. A well-told story – focused on pertinent details that express surprising meaning and underlying emotions – affects the listeners feelings and intellect simultaneously.

HOW to design a story

What's the point? Know what you intend to convey both narratively and emotionally. You should be able to describe the essence of the transformation of your character in one sentence and the emotional tone in a couple of words.

Be Authentic: Stories are more powerful when they include a little bit of you. Honest expression is stronger and more resonant than cliché .

Character-Driven: Characters are a great vehicle to express deep human needs and generate empathy and interest from your audience. Focus on character.

Dramatic Action: Your story should have 3 components: Action, Conflict, and Transformation.
Action: What is the character trying to do? What are the actions she is taking to achieve it?
Conflict: What is in her way? What questions linger beneath the surface?
Transformation: What is the big insight? How do the action and conflict resolve?

Details: "Behind all behavior lies emotion." What details can you share about your character and their situation that will suggest the emotions that lie beneath?

Design Process is a Built-in Story: Use what you've learned during the design process.
Empathy maps well to Character. Needs map to Conflict, Insights + Solutions map to Transformation.

Shooting Video

WHY video

Video is a powerful medium for communicating ideas, insights & stories. Planning ahead, but staying open to possibility will give you the best chance of stumbling on a magical moment. Know what you are trying to do and be aggressive about communicating it in the frame. If it's not in the frame, it doesn't exist.

HOW to shoot video

Some tips for shooting video:

Direct Attention:
1. Know your intention. What are you trying to highlight? How do you want it to feel?
2. Bias toward tight framing.
3. Figure Ground: Get a good contrast between the subject & the background.
4. Be conscious of light sources & shadows on your subject.
5. Follow the rule of thirds, frame off-center.

Plan to Improvise: Know what you want, but be flexible about how you get it.
1. Plan Ahead: Storyboard out your idea. Iterate!
2. Get Lucky: Follow your curiosity on the day of your shoot.
3. Overshoot! Get more than you think you need! More stuff gives you more options when editing. Longer takes allow you some wiggle room for transitions.

Audio is Important!!! Remember the 2 rules:
1. Mic close to the subject.
2. Point away from (undesired) noise.

Video Editing

WHY video, why quick editing

Video is a powerful medium for communicating ideas, insights and stories; editing can make or break a video: the story is supported or undermined by the way a video is sequenced, paced, & scored. Editing can also be very time consuming so how you work is important in maintaining progress.

HOW to edit quickly & create compelling videos

Tips:

Make a rough cut of the whole film then go into details. Iterate.

Keep it simple; avoid superfluous animated transitions.

Shorter is almost always better.

Sound is more important than picture.

Cut early: when in doubt, edit shorter cuts.

Critical eye: don't fall in love with it.

Choose a style that works with quick cuts – don't get swallowed up by the mechanics.

Music is very powerful: use it wisely.

METHOD

I Like, I Wish, What If

WHY use I Like, I Wish, What if

Designers rely on personal communication and, particularly, feedback, during design work. You request feedback from users about your solution concepts, and you seek feedback from colleagues about design frameworks you are developing. Outside the project itself, fellow designers need to communicate how they are working together as a team. Feedback is best given with I-statements. For example, "I sometimes feel you don't listen to me" instead of "You don't listen to a word I say."
Specifically, "*I like, I wish, What if*" (IL/IW/WI) is a simple tool to encourage open feedback.

HOW to use I Like, I Wish, What if

The IL/IW/WI method is almost too simple to write down, but too useful not to mention. The format can be used for groups as small as a pair and as large as 100. The simple structure helps encourage constructive feedback. Meet as a group and any person can express a "Like," a "Wish," or a "What if" succinctly as a headline. For example you might say one of the following:
"I like how we broke our team into pairs to work."
"I wish we would have met to discuss our plan before the user testing."
"What if we got new team members up to speed with a hack-a-thon?"

The third option "What if. . ." has variants of "I wonder . . ." and "How to . . ."
Use what works for your team.

As a group, share dozens of thoughts in a session. It is useful to have one person capture the feedback (type or write each headline). Listen to the feedback; you don't need to respond at that moment. Use your judgment as a team to decide if you want to discuss certain topics that arise.