The Carbon Five

Guide to User Research

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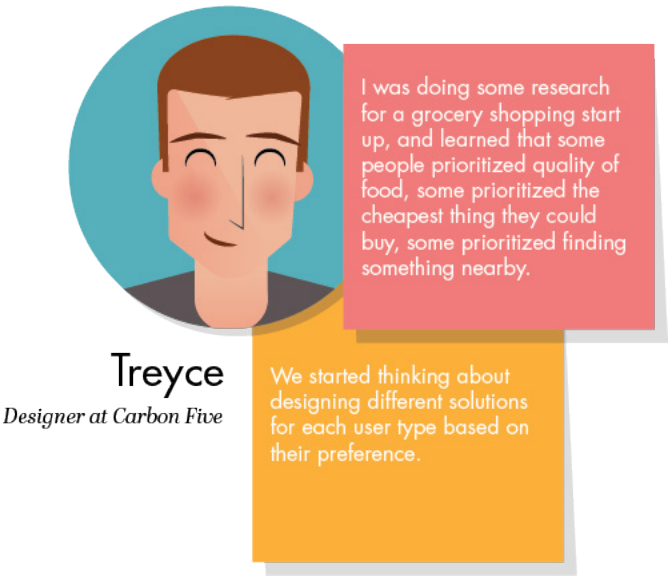
Introduction: What is User Research?

User Research is the practice of understanding user behaviors, needs, and motivations through observation techniques, task analysis, and other feedback methodologies.



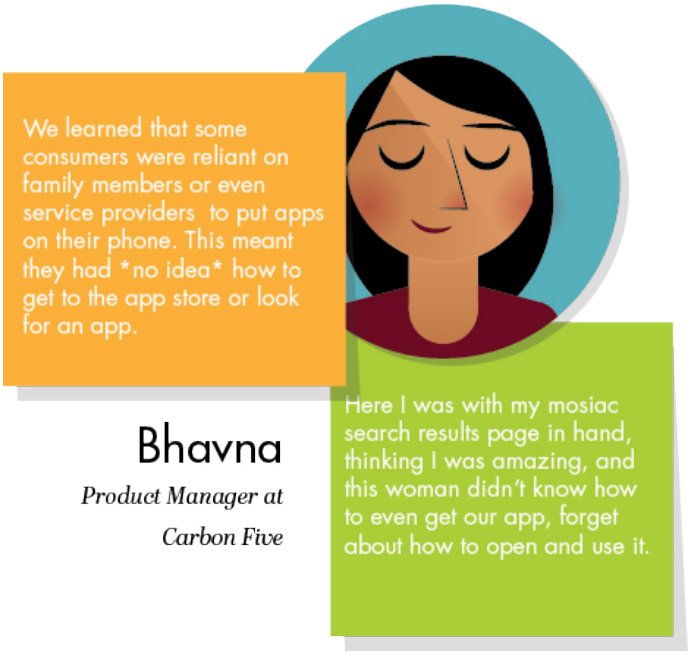
This guide covers *qualitative research* – research focused on interviewing a limited number of people in longer, more open-ended conversations in order to discover unknowns. This makes it well suited to open ended problems with a wide range of possible answers.

As great as it would be if you and your team conducted regular weekly user interviews, user research is a bit like pizza: any amount is good. But if you only can do it once, the best time to do it is at the beginning of a new feature set, a new product, or when you're trying to adapt an existing product to a new market.

Why Research?

User research helps us understand the constraints and opportunities of the audience we're building for, and is a core part of building a successful product. Let's say you've got a great idea for a product. Will your users agree? How do you reach them? In order for your product to succeed, it needs product/market fit.

Defining the users you want to reach and talking to them before you build your product will give you empathy and a clearer sense what your users hope to achieve using your product. It's much easier and more effective to design with specific people in mind than a set of demographics without a distinct voice.



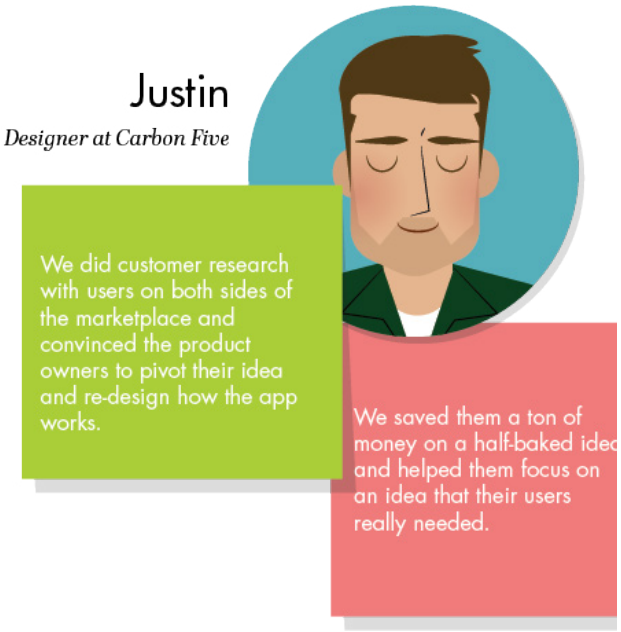
What You'll Need

A quick note here: We're discussing research the Carbon Five way (thus the title), but that shouldn't dissuade you from doing research on your own terms with as much time and precision you can muster. You can talk to users and get excellent insights without following the full process, and we recommend that you do whatever you have time for.

That said, if you want more in-depth help and training, come work with us! We offer a hands-on User Research Sprint.

To do it yourself, here's what you'll need:

- Two or more people (it works best if the entire team is present, including developers)
- Two weeks (1-2 days to set up the research statement and script, 1-2 weeks part-time to recruit and schedule, and 2-3 days for interviewing)
- A laptop that can record audio or video
- Notebooks for anyone sitting in on interviews
- Lots of Post-it notes (or use an online tool like Stickies)
- A small budget for recruiting interviewees



What You'll Do

Write a research guide – Figure out what open questions you're going to focus on and make a hypothesis about who your target user will be. Once you've written a research statement that defines what a successful outcome looks like, write the interview questions that will unlock how your product might fit into your user's lives.

Recruit and schedule– Get scrappy and meet prospective users where they are, whether it's on your existing website, through your personal social network, or through soliciting users off the street! You'll also write a screener to make sure your respondents match your target users.

Interview – The big day is here! Brush up on your interviewing and listening skills, bring a pair into each interview to supplement your notes and observations, and don't forget to record the session.

Analyze – You and your team will sit down with all the information you've gathered and sort through the data looking for shared insights, shared trends, and user motivations and tasks to accomplish.

Define – Once you've untangled what your users want and need, you'll start to generate solutions to their problems and turn them into a feature set for your product.

Prototype – It's time to make the first version of your product! You'll translate feature ideas into the flows that make up the core of your product's user experience. After that…?

Build your product. Test your product. Learn from your tests. Repeat. Happy researching!

Chapter 1

Starting Your Research Project

During this step we'll be working through what we're hoping to find, who we're hoping to talk to, and what we're hoping to ask. If you're trying to convince your company to invest in a research project identifying the basic assumptions and outcomes like this is a great place to start.

When you kick off a new research project, it's a good idea to gather all the stakeholders who may be affected by this project, from executives to developers. Having a clear idea of what everyone expects from the project can go a long way towards helping it succeed. We find this works best when everyone meets in person over the course of a day.

We'll be using the hypothetical company Delivery Healthy. Delivery Healthy is a startup that serves people who are trying to eat healthy while still ordering a lot of take-out, because they say you should write what you know. **Ready? Let's get started.**

Step 1: Define your unknowns

If you have a defined goal for your product, talk through everything that feels undefined that needs to happen in order for your product to be successful. As you're grappling with things that could go wrong, have someone on hand to translate fears into questions that can be answered objectively. *"What if no one uses it?"* becomes *"What will make this compelling to the users we're trying to target?"* This will help your team understand the range of problems you're trying to solve.

If your product is still fuzzy, try writing up a Lean Canvas or similar activity to help you get specific about your business plan.

Step 2: Proto Personas

The goal of building proto personas is to take an educated guess about who your end users are, what they'll need, and how you'll might reach them.

If you don't have a clear picture of who you're going after, that's okay. In fact, not thinking in strict demographics will help you recruit a wider range of potential users who are are excited about your product and want to see it grow. Brainstorm activities your product supports and problems your product might be able to solve. Once you've got those, brainstorm people who might enjoy those activities or share those problems.

Here are a few sample questions to get started:

- What are the key aspects of this user's life situation that are relevant to our design inquiry?
- What is his/her technical ability, familiarity with technology and frequency of use?
- What does this user want to achieve using your product?
- Why is achieving these goals difficult today? How do they accomplish them anyway?

As you think through proto personas, capture them on a whiteboard. Once you've got a list of potential users down, discuss which of these audiences seem easiest to recruit, which constitute a large target audience, and finally, which are most likely to pay for and use your service. Have the team dot vote personas which seem promising.

For this product, we're going to focus on people who are active at the gym: they're a large target market, easy to recruit, and have already invested a lot in their health.

Step 3: Research Statement

Now that you know what questions you'd like to ask and who you'd like to ask them to, it's time to gather up those threads into a statement that defines the scope of your inquiry. **A good research statement defines a strict scope of work.** It should be the big question that answers the smaller questions you've generated.

Here's an example of a research statement that doesn't work:

> We will interview millenials to determine whether or not they would use a delivery service offering them healthy food.

What's wrong with this statement? The respondents ("millenials") are defined by demographic, not specific attributes, and the inquiry ("whether or not they would use a delivery service offering them healthy food") can be answered with a simple yes or no, rather than illuminating the life circumstances that would make the service compelling.

We could rewrite the above statement as:

> We will interview young professionals with 50+ hour work weeks to determine how they define and meet nutritional goals.

Here, the respondents (*young professionals with 50+ hour work weeks*) share a need: to incorporate eating into an already full schedule with little time for food prep, and the inquiry (*determine how they feed themselves on tight schedules*) opens the door for more questions about their lifestyle.

Step 4: Plan

How many people are you going to talk to?
Between 5 and 10 is a good number to target. If you've identified multiple personas you want to learn more about, set a goal of recruiting 5-7 of each.

How long will the interviews be?
Interviews usually run between 15-45 minutes. The time you allocate depends on the length of your script. Give yourself a little more time than you think you'll need in case other questions come up. You can always change it later!

What incentives will you provide?
A good rule of thumb is to pay roughly the hourly wage of your respondents—a doctor and a teenager with a summer job will need different amounts for an interview to be worth their time. We generally give out gift cards or cash, depending on the length of the interview and the interests of the respondent. We make sure to have them on hand and ready to give out, even (especially) if the interview goes poorly and we want to end early.

What kind of recording equipment will you use?
Recording interviews (in addition to written notes from participants) is important in later steps of the process and useful if you need to convince stakeholders that yes, your users really did say that. A recording can be as simple as an audio file from your phone or can include video of the participant and screen recording. Talk to your team about how much data you need to capture.

(Note: If you're going to be recording audio or video, your participant will need to sign a waiver indicating they know they're being recorded. Here's a sample form from usability.gov)

Who from your team will participate?

Identify who on your team will lead the interviews (it's best to have one person lead all the interviews so they stay consistent) and who will participate. Ideally, your entire team will show up to take notes for one or more interview—it's a great way of getting the developers who have to build the product to better understand the audience they're building for. We try and rotate a new team member into each interview session until the whole team has seen at least one.

We find that once someone participates in one session, they are more likely to trust the insights from the others that they don't necessarily attend in person.

delivery **healthy**

Research Plan

10 respondents from around the United States.

30 minute interviews over Skype, video recorded using in-computer tools.

Participants receive a $25 gift card to Whole Foods.

Internal participants include: Nicole, Justin, Treyce, and Bhavna.

Nicole will lead the interviews and Justin, Treyce, and Bhavna will alternate recording.

Step 5 – Write the Interview Script

Once you've defined the goal of your research, determined which users to start talking to, and discussed how you'll capture the knowledge in a research plan, it's time to figure out what you want to say! When you're writing an interview script, here are a few things to keep in mind:

- **Be concrete** – Ask them about specific moments, rather than generalities. You'll learn more accurate and specific information by asking "When was the last time you had this problem and how did you solve it?" than you will from "How do your normally solve this problem?"
- **Ask them about them, not about your product** – You already know about your product. You're trying to find out where it fits in their lives. (Have your read the milkshake story?)
- **Cover things that don't work about existing approaches**
- **Avoid questions that can be answered with yes or no** – A good interview question leaves room for elaboration
- **Check for leading questions** – If you lead a user to an answer, they'll likely tell you what you were hoping to hear. Remember, user research isn't about confirming that your idea is the right one, it's about hearing individual experiences that might make it even better
- **Make sure to leave room for open questions at the end**, and make sure there's time at the beginning to set up and get comfortable

These questions will give us a sense of what our user is trying to achieve, what obstacles they face, and what they think of existing competitors. They also should flow together so the interview feels like a conversation, but you'll hear more about that later.

If this all feels a little overwhelming, don't despair! It gets easier with practice.

Chapter 2

Recruiting Participants

If you have ever tried to recruit folks for a focus group or usability test, you know it can be really hard, super frustrating, and downright discouraging. But have no fear, this chapter is here to help!

Before you start reaching out, you've got to get into the right headspace. You will probably be interacting with people that come from diverse backgrounds, and there are some unusual places you can find ready willing and able participants for your research study. A few rules of thumb will help you successfully recruit:

Be upbeat – Being energetic and positive is a great way to encourage people to spend their valuable time with you. You're excited about your product so be excited that will encourage your recruits to be as just as excited as you.

Be persistent – As a rule, if you don't get a reply, always follow-up without becoming intrusive. Remember this is a high priority for you but a lower priority for them.

Have resources (i.e. time and money) – Remember how the offer of free pizza always made you show up to meetings in college? Compensation isn't always in your control, but 50 bucks usually gets people to show up.

Additionally, having a flexible schedule increases turnout: consider meeting people in the evenings or at unexpected locations convenient to them. Think of yourself as a journalist that has to get that story!

But, how do you find the right audience? That's the eternal question after preparing to do research. *"Wait, how do I find 10 men between 40-70yrs who all suffer from chronic back pain and live in the Midwest?"* So where should you start to search? Here are some of the most accessible options:

Reddit

Cost: Free
Time + Effort: Medium
Best for: Niche communities

If you are open to doing some remote interviews, this is totally your place, particularly if you are researching something atypical. Reddit has communities for almost anything, and while it is known for trolls, there are actually lots and lots of passionate users in their communities.

I have a friend who was creating a diabetes tracking app, and was conducting all of the user research and had never met anyone with diabetes. So he quickly joined a Reddit group and learned more than he could have ever expected. There was a large community excited to share with him. Without this type of input, he would have had a hard time understanding the problem at such a detailed level.

The trick here is to find active Reddit communities since many Reddit communities are left for dead and do not have lots of active users.

Craigslist

Cost: Free
Time + Effort: Medium
Best for: "Average" customers

While it has a somewhat sketchy reputation, Craigslist can be super useful. Quick posts can usually turn up one or two people. The trick I've learned here is to have a really good screener, as I have been in places where the person I was speaking was a fake and didn't fit the criteria (check out these resources about making screeners from Google Ventures). Try keeping a list of these fakers and ignore them the next time around. Make sure to share how much compensation participants receive or you will not get many replies. Generally, people looking through Craigslist are looking to make a quick buck, so be sure you are trying to appeal to that market.

Yelp

Cost: Free
Time + Effort: High
Best for: Passionate brick & mortar customers

Unconventional I know, but think about it: people who are passionate enough to write a review will most likely want to vent more about an experience. I was recently conducting user research for a grocery store startup. All the interviews were from people who had reviewed them on Yelp. I actually then asked them to meet me in a competitor's brick and mortar location. So they were able to give me contextual examples. Yelp's users are passionate, so take advantage of it.

UserTesting.com

Cost: High
Time + Effort: Low
Best for: Ironing out big usability kinks

If you haven't checked them out already, it's worth a shot. While they are expensive, you can often get good results, but bear in mind this is only for user testing, not research. You can't really do interviews, immersion studies, or any other type of user research on UserTesting.com.

I've often found the videos are brief and unsatisfying. I suggest ordering one test to try out and see your results before ordering multiple, that way you can add more specifically if needed.

Social Media

Cost: Low
Time + Effort: High
Best for: Friendly users for beta testing

While social media may seem like the best places to start but they can often turn up little to no results, and those that reply might be biased if they are in your community. While Social Media is great to recruit beta testers, it's not as good at sourcing candidates for user research. If you are going to use Social Media, tho take everything I said about the sites above and apply it here. Also, here are some tips for each channel.

Facebook: Try searching through groups, there are groups for everything just like on Reddit. If you have a less specific user group try to join any Facebook groups with large numbers. One thing to note: you might get banned for posting nonrelated content in the group, so be sure to watch out there.

Twitter + Instagram: Hashtags are your best friend here, so make sure you use them. If you need to research people with triplets go on twitter and search #triplets you will get lots of results. Try to reach out to users that are hashtagging what you are looking for.

Your Own Site

Cost: Medium
Time + Effort: Medium
Best for: Collecting contact information

If you already have a product, fantastic!: you are way ahead of the pack. It's worth putting a little design and development time into putting a form on your site to collect data and contact information of users. It's the same process once you get their emails; be persistents, be persistent and offer incentives. A popular way of doing this is using MailChimp.

Friends & Family

Cost: Low
Time + Effort: Low
Best for: A fine place to start

You will hear some people discourage you from accessing your personal network, but if it's between talking to your friends and family or no one at all then talking to lots of friends, it's a good idea.

Also asking these people to reach out to their networks is great, don't stick to one degree of separation. Widening your network through your friends and family means you can develop a remote relationship with them quickly because of your mutual contact.

I often tell these participants what I am researching, and that I am not involved other than doing the research. Friends and family often sugar coat things, which is not what you want, and verbally separating yourself from work can help get more honest answers.

Street Testing

Cost: High
Time + Effort: High
Best for: Quick and dirty (and cheap!)

If you have the confidence, street testing is super fun! Intercepting people on the street is quick and easy. Often you need a good and concise sales pitch such as "try my dating app for five minutes for $10: doesn't matter if you're single, taken or something else."

I was doing some research for a smartwatch startup, and they didn't know how long to make the strap for an "average" male wrist size. After many meetings and Google searches, there was no clear answer. So we took 200 bucks and headed outside to ask if we could take the measurements ourselves. A few hours later we were out 200 dollars but equipped with all the data we needed. The trick here is to be outgoing, confident, and have cash also make your interaction snappy. The quicker, the better.

And now, go forth and have fun finding some customers! Even though you may have a few people saying no, some people cancel, and you might have to start over a few times: you can do this. It's hard, but it's important.

Chapter 3

Interviewing Users

You've written your script. You've screened your respondents and you've scheduled time with them. Now it's time to get ready—you've got a big day of learning about your users ahead of you!

We're going to cover what to do during the interview and what to prepare ahead of time. Preparation is important—the more confident you are, the more your respondents will trust you and feel comfortable responding.

Think of setting up a user interview session like hosting a party. When the guests arrive, a good host has prepared well enough ahead of time that they can relax and enjoy themselves. The more preparation you put in ahead of time the less anxiety you're going to feel during the interview proper and the more tools you'll have at your disposal if anything goes wrong.

Morning of the Interview

- Print out your interview script
- Print out a few copies of your recording authorization form (here's an example)
- Gather up plenty of pens and paper
- Make sure you've got your respondent payment ready. (Do this two days before, especially if you need company approval to get it)

If you're going off site

- Make sure you have power supplies and a phone charger
- Confirm the address
- Make sure you'll sufficient internet access for your test (if needed)
- Put any pertinent information into a Google doc and share it with your team
- Show up 30 minutes before the first interview to set up and settle in. Make you're in a place where you can record sound
- 30 Minutes Before Your First Interview
- Test your recording equipment. Make sure the sound and video playback are both working. Is your laptop charged? Does your phone or camera have batteries?
- Get water for yourself and be ready to offer your respondent water or coffee
- Make sure you've gone to the bathroom and freshen up

Let your office manager or a coworker who sits near the door know that you are doing a user interview so they're prepared to greet folks and direct them to the testing room. You're all set!

Show Time

A user interview has three parts – introduction and setup, the bulk of the questions, and getting your users out the door.

1. Introduction

Introduce yourself, your interview partner, and restate the interview duration and conditions. Depending on the product you're working on and the kind of questions you'll be asking, it can be useful to specify that you're an objective, outside consultant so your respondents feel more comfortable answering candidly.

If you're having your respondent sign a release form (it's a good practice if you're going to be recording sound or likeness, or if your participants may see sensitive information), ask them to do it now.

There's a lot of space to make small talk while people are getting situated, which can be a great opportunity to warm them up a little and let them know you know what you're doing. There's a lot to talk about and a lot to learn in this informal setting.

Sample Warm Up Questions

- How has your day gone so far?
- What are you working on?
- How did you end up in this job?
- What do you think about [insert relevant industry news]?

Think of questions you'd ask a friend you haven't seen for a few months at the start of dinner.

Once they've signed the release form (and not before) start the camera or screen recording software you'll be using to record the interview.

Before you start the interview in earnest, it's helpful to outline what kind of responses you're looking for. Respondents who have never participated in usability interviews may be nervous and feel like they're answering questions wrong. They may fear they're going to hurt feelings if they insult the company you're representing too harshly. Let them know there are no wrong answers and encourage them to answer questions at length.

2. Questions

Now that we've gotten comfortable, the questions should be doing most of the work. Interview guidelines talk about establishing an emotional connection with respondents, which might feel a little robotic. The trick is encouraging respondents to elaborate when there's something you'd like to know more about, and responding nonverbally with nods and eye contact when you're interested in what they're saying. You can go off script and into interesting rabbit holes as long as your respondent is passionate and willing to talk.

I find it helps to imagine yourself as a talk show host. Watch the way Jimmy Fallon sets up interviewees to tell stories and how he reacts to let them know he's interested. Conan O'Brien is great at this, too.

Keep a clock somewhere easy to see and keep track of time as you go. It's possible to go down valuable rabbit holes with your respondent and miss out on major components of your interview script. Getting back on track can be as easy as "So, I'm going to move on to the next question." Interrupt them gently, but remember that they're there to be interviewed.

One Major Caveat

It's extra important to keep questions neutral and open-ended while you're asking interview questions on the fly. Your interview subject will want to please you and it's important that you let them come to conclusions on their own.

This can feel awkward—it feels less like a conversation and more like waiting someone out until they give a response. Making peace with silence might be the hardest skill to learn in conducting user interviews, but it's worth it. You learn so much more that way.

3. Ending the interview

Make sure the person who's recording the interview has a chance to ask a few questions. They've been able to spend more time observing trends in the conversation and will have a different point of view on how the interaction is going.

Before you end the interview, always ask one more question: "Do you know anyone else we should talk to?" This question often yields additional users to test with (some of whom may turn into your

most passionate customers). It can also help find you additional competitors to check out, or even a potential investor.

Once you've run out of questions, thank your respondent for their time, shut off the recording, offer their incentive, and show them to the door like a good host.

Ending the Session

Take 10 minutes to write down your thoughts and conclusions at the end of the meeting. These rough reactions are going to help a lot when it comes time for synthesis, which we'll be tackling in the next chapter.

Debrief a bit with your interview partner and see if there's anything you need to change about the script—did you write too many questions on something your respondents dismissed as irrelevant? Is there a topic you wish you'd touched on? Add it in for next time!

Congrats, you've just conducted your first User Research Interview, and if you've scheduled your interviews correctly you should have about four more to do today. Good luck!

PS: An informal survey of designers at Carbon Five say it's totally normal to feel exhausted by the end of a full day of user interviews. User interviews involve a lot of close listening and can wear you out. Make sure you've got a good night's sleep and that you take a break for lunch.

Chapter 4

Synthesis and Analysis

So you've conducted a round of user interviews. Great! You've got video or audio you can revisit if you or your partner weren't able to jot down everything in time. Wonderful! You recorded your thoughts during the session and kept track of conclusions and interesting observations immediately after. Amazing!

Now it's time to start learning from all the work you've done and processing it into insights, features, and product. We'll be using a fictional story about a hotel that wants to boost its appeal among business travelers. They've interviewed a group of experienced travelers and are about to break down the results. This story is loosely based on the DoubleTree cookie.

Synthesis

It's time for your user interview team to process what they learned. You can invite other stakeholders in too, but they must have watched the interviews and taken notes. This is a great way of getting stakeholders in the company to meet their users. Since the goal is to keep this exercise grounded in the objective experiences of the users, we don't want stakeholders who haven't participated in the process to generate feature ideas in a non-user centric way.

Synthesis can feel a little bit magical. You'll go into it with a bunch of scattered impressions and a lot of raw information, and you'll come out with smart insights about your users.

Break Down the Interview Into Quotes

Time: 30 minutes per interviewee
Materials: A big wall, sticky notes, sharpies, the people who were present in the interviews

For every user you interviewed, go around the table and talk through things you noticed. You can do this right after the interview or later, but try to do it when it's fresh in your mind. Try to capture (writing down one item per sticky):

- Quotes or paraphrases
- Observations about their work/interview environment (if you were able to interview on site)
- Emotional state: Were they tired? Nervous? Where there parts theyseemed more confident talking about than others?

- Conclusions: Are there any themes to what they're saying that are worth capturing as a whole? Use these sparingly and make sure the whole team agrees so you don't formalize an assumption
- When you get to an interesting item, write it down on a sticky and hand it to a moderator. The moderator will put the quotes up on
- the board. It's important to moderate this exercise so the group reaches a consensus on what they saw and experienced during the interview.

When the group can't come to a shared conclusion about a part of the interview, capture the disagreement and come back to it later. Differences in perception can be valuable and worth unpacking later, when it doesn't slow down the meeting.

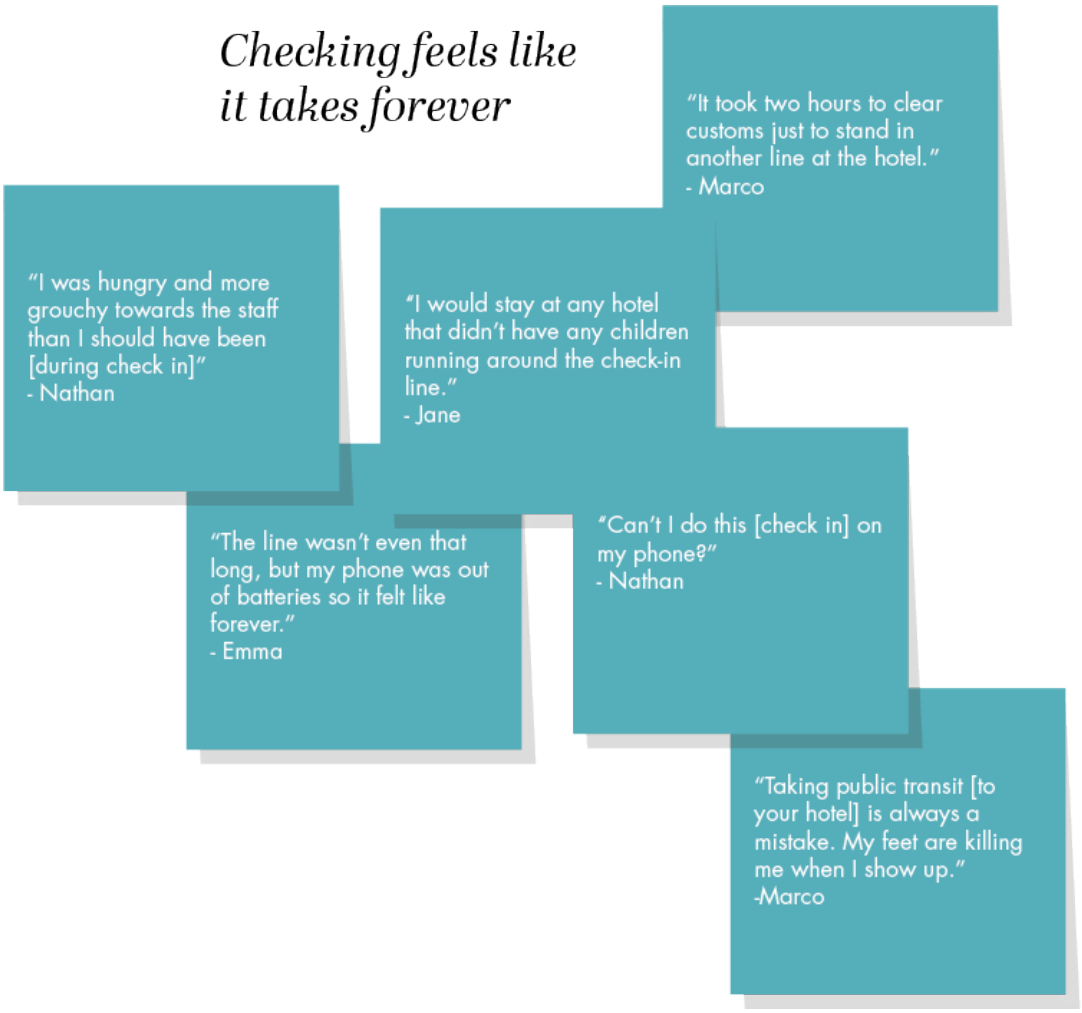
Do this for each person you interviewed, creating a separate cluster for each. You can add a picture if it's relevant to the research statement, but you don't have to. Then, take a picture of the board. You're about to scramble it all up.

Combine the Quotes into Themes

Time: 1 hour
Materials: A new color of stickies and even more wall space

Now we're going to find places where our interviewees described similar parts of their process and combine them into shared themes. (Ever organized a retro into themes? It's like that.)

As you work on forming these themes, watch for why different users might have different responses—these differences can yield some of the most interesting insights. Capture any conclusions or insights about the themes as a group. You can organize your quotes into themes at the end of every day, or keep a running list of themes and trends you've noticed to combine at the end.



Writing Conclusions

Time: 1 hour
Materials: Another new color of sticky notes

Conclusions and core themes should be supported by evidence from your user interviews. Think of your research statement as your thesis, quotes from your users as evidence, and conclusions as commentary.

You've known how to do this since high school!

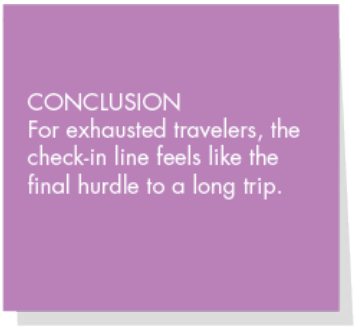
Here are some examples of conclusions you can draw from looking at your interviewee's responses grouped into shared themes:

- What tasks are your users trying to complete? (The Jobs to Be Done framework is a great resource for this)
    - How often do they do these tasks?
    - How long do they currently take to complete?
- Why are they trying complete those tasks?
- How are they currently accomplishing these tasks?
    - What is **painful** about the existing solutions?
    - What do they **like** about the existing solutions? (If it ain't broke, don't fix it. Removing positive parts of a workflow can lower adoption.)
- How will your users want to interact with your product?
    - What kind of brand, tone, and voice do your users respond to? (How did they communicate with you? Were they guarded, effervescent, sarcastic? If you were able to get a glimpse into their office, how was it decorated? Your product will take a place in their lives next to the other products they work with; watch their language and environment to keep your product in their context.)
    - How are your users feeling when they accomplish a task? (What makes them nervous? What makes them proud? Where are they most likely to get frustrated? Watch their nonverbal communication and facial expressions; a muttered 'huh?' can speak volumes.)
- What demographics do your users belong to? (Be careful with demographics as a means of developing personas, as age, gender, or job title may not be the right way to divide up users. Focusing

on tasks users need to accomplish, the context they are in when they perform them (i.e. the time of day, the physical environment, and information & devices they have access to) are more effective ways to identify user archetypes.)

User Need Statements

Time: 3 min per need statement
Materials: Whiteboard
Take all these conclusions and write them as needs statements. A needs statement is written from the point of view of the user, and gets at an underlying motivation or desire. If you've got a lot of needs, prioritize them by urgency so the exercise doesn't run overly long.



Travelers need to move through check-in quickly and efficiently in order to recuperate from a draining journey.

Travelers need to feel the hotel is taking care of them from the moment they arrive.

Personas, Part Two

Now is a great time to revisit your proto personas. You'll be surprised at how detailed you can make an aggregate portrait of your user now! Make sure you capture the ways these have changed, because you'll be referring to them a lot in the prototyping and story writing process.

Brainstorm Features

Keep in mind that the things you're going to write down now may or may not make it into the final product. We want to cast a wide net for solutions to the needs in front of us and make sure that those needs work together and satisfy the business needs we came to achieve.

At Carbon Five we use an exercise from Design Thinking called a "How Might We…" brainstorm. Give all the research participants three minutes (timed) with each need statement to write down as many potential solutions as possible. Encourage everyone to ignore practicality. The suggestions you write down might not be technology based: sometimes the biggest adjustments to a workflow are interpersonal or structural and would not be well solved with an app. Go wide and consider every solution.

We're keeping the time to generate ideas short on purpose, since we'll have a lot of needs to get through and we don't want to over define features. Time pressure also helps creativity.

The goal is to get assumptions the team has already made and force them to consider new solutions. This has the added benefit of opening stakeholders to the more creative solutions from the rest of their team.

Now we've broken our interviews down into clearly defined needs (backed up with quotes from actual users!) and generated a wide range of potential solutions to each, it's time to define our feature set.

Chapter 5

Defining Features

It's time to generate a list of features. In the coming paragraphs we'll talk about how user research can help with **stakeholder management**, **generating a feature list**, and **prioritizing a feature list**. After that, we'll focus on feature definition and making what we've heard actionable (and testable!). Let's get started!

Stakeholder Management

We've got more than one goal and more than one stakeholder. There are more than a few hurdles to building consensus. When dealing with many stakeholders, user research is a great tool. It can hold the seagull effect at bay, and keep stakeholders from swooping in at the last minute. It also helps us avoid random anecdotes gaining traction over data. Leveraging user research we avoid showdowns between stakeholders, designers, PMs and developers.

Let's break out a spreadsheet. Beloved tool of ranked list makers everywhere.

Generating a Feature List

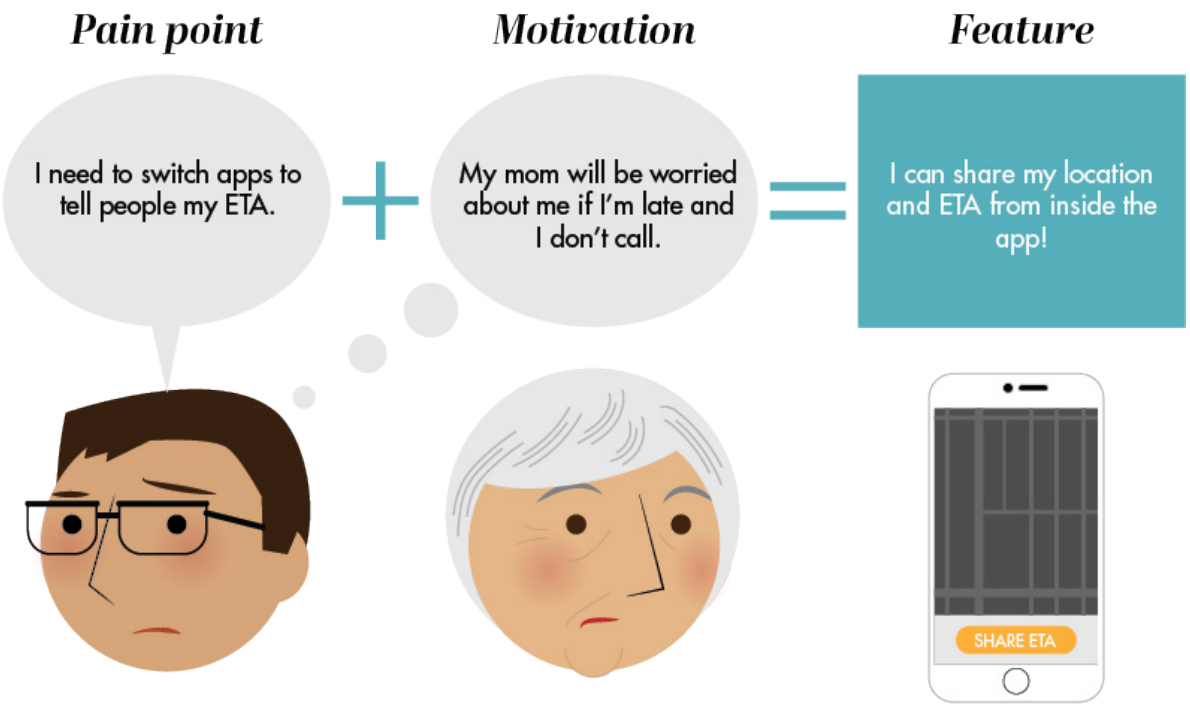
So we know we're supposed to have this great long list of potential features. It's time to brainstorm (or brainwrite) with our entire team. This includes designers, business analysts, stakeholders and developers.

When brainstorming, a productive method is identifying the largest pain points that have been uncovered through your interviews. Tie them back the personas that experience these pain points. Write the pain point and affected personas at the top of the page and post them up on the wall.

Let each team member spend 10 minutes identifying solutions before they move on to the next problem. Our team will iterate on the solutions they see, while working in a vacuum that eliminates self-censorship.

We will develop a long list of features that solve the *motivations* behind the pain points of users. In a sense, users give us their symptoms and this is our chance to treat the underlying issue.

Let's use Mileage, a theoretical rideshare app, as an example. Users often use Mileage to travel well-worn routes. Even so, they are often communicating their status to friends and family. We might add a feature to our list that let users share their ride continuously. The hypothesis is that this would help allay fears, and also would cut down on app-switching and communication off-platform.



The pain point may have been: Switching apps to text people about where I am

The motivation is: To communicate where you are during your travels, over time

The feature we add to our list is: Sharing your ride

Look outside the box

When we're building a list of features, it's the best time to bring in the entire team. Business analysts and product managers can shed additional light on topics. Developers can come up with technically interesting solutions. By including a diverse group we can maximize the number of ideas in our list and learn from others.

Prioritizing Features: Risk vs Reward

There are a wealth of methods to prioritize features. Any method is acceptable as long as the results are defensible, and easily communicated. We'll use a Risk versus Reward ranking. This will help us figure out which features are the most valuable.

The factors that make up risk or implementation can include:

- Time to market including time to define, build, test, and get stakeholder buy-in
- Development skill and expertise in a given area including design and engineering resources and domain expertise your team might currently lack

Feature	*Risk (1-5)*	*Reward (1-5)*
Share your ride	4	
Change credit card	2	
Change profile picture	1	

Assign each feature a number from 1-5 indicating the **risk** *level. 1 indicates the lowest risk, and 5 being the highest.*
The factors that make up reward or impact include:

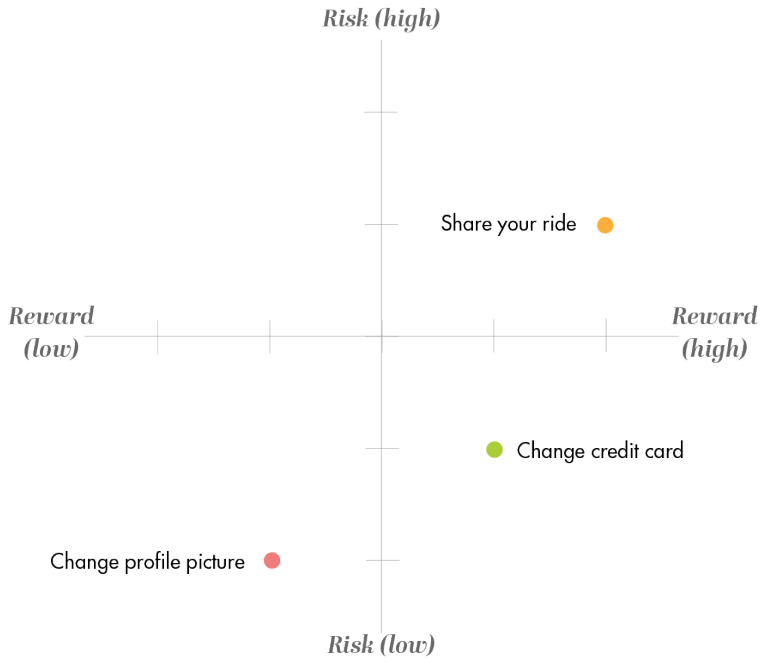
- Factors differentiating your product from competitors
- Features that increase the key metrics you've already defined, such as conversion, session time, and client lifetime value. (You can read more about defining KPIs here)
- Ease of implementation
- Staying ahead of the competition

Feature	Risk (1-5)	Reward (1-5)
Share your ride	4	5
Change credit card	2	4
Change profile picture	1	2

Assign each feature a number from 1-5 indicating the **reward** *level. 1 indicates the lowest reward, and 5 being the highest.*

Ranking

Now that we've finished the generation and ranking process. It's time to revisit middle school graphing! Plot the features on the matrix below. Your risk number will go along the x-axis, and your reward number along the y-axis.



Generally, your team should pursue features that are low risk/high reward. The next set of priorities often depends on the composition of your team, the type of business, your funding runway, and the competitive landscape.

Wrapping It Up

Using these tools we take our feature prioritization out of the "gut check" arena and into something more rational. It's easier now to identify the features on which we want to spend precious time and where to focus our prototyping efforts. More importantly, we can externalize and share this information with the extended team.

There are a number of tools to express this list of features, to various levels of structure, from Pivotal Tracker to Stickies.io.

Next, we'll prototype these features and take them out into the real world. Features will jump off the page into an interactive experience. And when we test these prototypes, we'll have yet another opportunity to engage with users and continue to improve our understanding of their needs.

Chapter 6

The Whats, Hows, and Whys of Prototyping

By now you've defined your feature set and are ready to try out your ideas. You know your product will be validated by user research and match user needs. You know that you need a version of the product to test your solutions and before writing any production code.

Now, we are going to walk through some of the best ways to get the feature set you have in mind into a useful prototype. Some rules of the road to follow before you begin creating prototypes:

- **The more the merrier –** Come up with as many ideas to prototype as you can; this will help you evaluate your product with both your team and with your users
- **Iterate, iterate, iterate –** Once you have the ideas make sure you evolve them through multiple rounds before you throw them out. This is your time to try stuff out and have fun. If you don't explore broadly at this stage, when will you?

- **Use these prototypes to learn –** Prototyping is most powerful when it is used to test a hypothesis and to learn about your users and what they want.

Don't think of the prototypes as a final design, think of them as a way of learning what your final design might be. Without further ado, here are our six favorite prototyping techniques.

Role playing

Difficulty level: Easy
Best for: Getting your client involved and breaking the ice or exploring

multiple use cases quickly.

Role playing is one of my personal favorites. The idea is to write a little play about your users, their problems, how your product solves them, and then act it out with your team. The key here is that you do it collaboratively: once you get over the initial embarrassment, it's tons of fun and gets everyone involved in exploring the problem space. This is the cheapest and most participatory prototyping option.

Read more about role playing.

Paper Prototypes

Difficulty level: Easy
Best for: Communicating quick ideas in the moment

Paper prototypes can come in many forms but think of them as souped-up sketches: take your existing design artifact, print it out, and animate it using your good old hands. These are fun and a great way to work through complex ideas without having to make them high fidelity. Try making and testing these prototypes collaboratively with stakeholders — it's much easier to share the experience than to try and explain the insights after the fact.

Read more about paper prototypes.

Storyboarding

Difficulty level: Medium
Best for: Outlining the biggest chunks of a product flow in order to test them with your team or users to ensure they make sense

This is one of the most widely used methods, and also one of the quickest. Storyboards are a visual narrative that helps create empathy

and are especially good at communicating the context for the product — who it's for, the problem they have, and where they encounter it. They also can help you figure out how the overall product features might function as a whole. Think of a storyboard prototype as a short comic (usually less than a dozen panels) that illustrates the story of the target user and your product. They could be photo realistic illustrations or stick figures along with some text, as long as they can communicate the features and context of your product they're great

Read more about storyboarding.

Interaction Modeling

Difficulty level: Medium
Best for: Ideating on very different product concepts and features (i.e. comparing apples to oranges)

Interaction modeling isn't as well known as paper prototyping, but it is very useful. It can be both fun and effective in pushing your product outside of your assumptions.

Here's how it works: Let's say your product is trying to solve childhood obesity and you have an idea for features, but you are worried you aren't exploring solutions broadly enough. You are currently assuming it should be a recipe app, but have you considered any other types of interactions?

The basic idea in interaction modeling is to take your current ideas for features and capture the assumed interaction model. Then, try and reframe those same features to fit with another product's solution metaphor. For instance: what if you tried to solve childhood obesity with disappearing content like Snapchat? What if you tried it with streaming video like Netflix?

The seemingly random combinations can help push your concept. Then, test them out see what you can learn — often you won't keep these ideas wholesale, but they are great to see different types of interactions and get you unstuck from your assumptions or creative block.

Read more about interaction modeling.

Clickable Prototypes

Difficulty level: Medium to Hard
Best for: Communicating and testing complete feature sets and polished flows

Animated, clickable prototypes (sometimes called high-fidelity prototypes) are often the first (and last) kind of prototype people use. But beware: they can get take a long time, require a high-degree of product definition, and often feel more 'final' than the ideas behind them.

Instead, once you feel ready to jump into screens, think about what level of fidelity you ought to be making based on how confident you are in the design and use this to time-box how much time you want spend on it. When you present and test them, try and take everything with a pinch of salt. Often these can get confused with a "final" design (especially by stakeholders), so you need to carefully set the expectation that they are for learning and not a product specification.

That said, clickable prototypes are great to explore what an app should look like, what the information architecture might be, and how the user will interact with the product. Because they can feel so real, they are great for user testing in the wild.

Read more about clickable prototypes.

Video Scenarios

Difficulty level: Hard
Best for: Expressing complex ideas, showing product use through time, and defining clearly who your users are

Video scenarios are the storyboards on steroids and are a very effective way to express the emotional texture and nuance of users and their experience of your product. These scrappily-produced videos are short (often just 30-45 seconds) narratives that introduce the user, shows them having the problem your product addresses, and then shows aspects of your product and the (hopefully positive) outcomes for the user.

Video scenarios are wonderful because they can communicate ideas with more speed and depth than storyboards and are therefore great to present to external stakeholders. That said, they take much longer to make and are less useful for testing with users. Just remember, it's not necessarily the quality of the video or sound that make these successful but the story you are trying to tell.

Read more about video scenarios.

As you give these six prototyping techniques a try, be sure to make an informed choice about what strategy you use, when.

Remember that prototyping can be some of the most rewarding work you can do as a designer: it connects us to our users directly through our craft. Finally, don't be precious with your prototypes and take them too seriously.

Chapter 7

Wrapping it All Up

If you've been running your own user research in conjunction with the book, you've developed and confirmed a business hypothesis by talking to users and synthesising the results, then generated a feature set and prototypes. You're ready to move on to higher resolution design and development. Even if you haven't done every step, hopefull you've talked to your users and learned something valuable in the process.

If you have completed your first round of user interviews, good news: you've already done the hardest part of setting up an infrastructure that lets you continue learning from your users. Here's how to keep the insights coming as your product matures.

What We've Already Done

The process of going from an idea for a product into a product that matches the needs of a real market involves listening to the people who would pay money for the product and letting them add nuance and contradiction to what you'd already inferred.

Think of your previous mental model of your user (your proto-persona) as the ideal user. User research helps you move from a brittle product that only works when your users fit a narrow idea of how they're supposed to use the product into a more expansive and flexible product that takes real people's lived experience into account.

Hopefully their experiences matched your introductory understanding in broad strokes, but gave you a few more hooks to hang your product on.

Create a Culture of Research

Every new feature or iteration will bring with it a new need to confirm your mental model of your users – either with existing information or by interviewing additional users. Our goal is to create a culture of research that keeps the work you've already done at front of mind and adds to it to confirm new hypotheses as they develop.

As you continue down the road of making your product real, you'll be surprised how much you've got left to learn about your users. Once you've successfully identified and created a product that meets the needs of your users, you'll be researching for delight and brand loyalty—it's a whole new world.

Get the Team into it

This is where having documented your work comes in handy. Take a little time after the project to formalize your findings into a presentation so new designers and developers ramping up onto the project will be able to quickly see your prior work and have a shared reference point for what you're building, why, and who it's for.

Going through the research you've already done once you've started the development process can also yield some surprising insights about features you deprioritized earlier in the process – just because they didn't make the cut for the first one doesn't mean your users didn't have something to say about them that might inform your work moving forward.

Research to Confirm

Now that you've locked down the basic assumptions about who your users are and what they need to accomplish, you can start to ask more focused questions, either in the form of usability testing, which asks users about work in progress to make sure it's clear and easy to follow, or in the form of targeted user interviews asking users to weigh in on specific solutions to a problem they're facing.

We like doing five every Friday when we can; it's useful to get into the habit of identifying questions to ask users directly and assumptions we're making as part of design reviews before our own weird ideas about what users are like get baked into code.

Keep Users and User Leads on Retainer

Make a note of users who seem engaged in the interview and passionate what what you're building, especially when they share well-phrased feedback and experiences. These repeat interviews can form a sort of "user board" to test implementations.

Finding new subjects should also be easier now, too – hopefully you've been asking your users to recommend other users to talk to, and you've hit a hornet's nest of engaged users who want your solution to their problems.

For example, a team I was on did a set of user interviews on version control for game development – which was not easy to recruit for off the street. The first round of finding users was arduous, but after that, we were able to find the Meetup groups and game design forums where users were opinionated about existing tools and eager to help us create something new.

What's next?

User research isn't a one time thing, it's an ongoing process that nets you a closer relationship with the people responsible for making your product a success. If you're responsible about setting up the recurring processes that give your users a say in product development, you'll be able to make more specific and effective choices and build a better product.

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Lastly, Bhavna and Treyce would like to thank Nicole who has shown a tireless effort and persistence in bringing this book into existence.

Resources

If you thought this was useful and want to take a deeper dive into the wonderful world of user research, here are some books and articles that helped us develop our process:

Starting your Research Project

Our favorite resource: Just Enough Research by Erika Hall was huge in helping us develop a program and understand why we were doing it. She's full of knowledge on Medium, too.

Additional Resources:

- Lean Canvas
- Usability Waiver

Further Reading: Setting Clear Objectives for Your UX Research, How to Make Proto-Personas

Recruiting

Our favorite resource: Stanford D.School's Bootcamp Bootleg is a great crash course on recruiting in the wild.

Additional Resources:

- Reddit
- Craigslist
- Yelp
- Facebook / Twitter

Further reading: Talking to Strangers on the Street: Recruiting by Intercepting People, Can Anyone Interview Strangers?

Interviewing

Our favorite resource: Steve Portigal has written a few books on user research (and everything that can go wrong in the field), but Interviewing Users is the gold standard.

Further reading: Approaching People for Research

Synthesis

Our favorite resource: The Google Ventures team has put together a variant of synthesis focused on product validation, which they outline in their book Sprint.

Additional Resources:

- Jobs to be Done
- Doubletree Cookie
- Organizing a retro into themes
- Needs statements
- How Might We

Further reading: Creating Insight statements, Research Synthesis, Affinity Diagrams — Learn How to Cluster and Bundle Ideas and Facts

Feature Definition

Our favorite resource: David Beach is a Product Leader and Information Designer that influenced the early days of web and mobile e-commerce. His current work at eBay continues to impact our ecommerce experiences. In his career he has been identified as one of the 25 most influential people online. Right alongside Charles Schwab, and Al Gore. He reminds us of importance of observing emerging patterns rather than assuming

patterns. His use of story telling pushes product managers to remember the most important - and most trivial - parts of our jobs. His Punk Product Management post is required reading for all PMs.

Additional Resources:

- Are You A Seagull Manager?
- Anecdotal Fallacies
- Brainstorming Doesn't Work
- Solving Brainstorming's Loud Mouth Problem

Further reading: Walt Disney: The World's First UX Designer, Hooked, Rocket Surgery Made Easy

Prototyping

Our favorite resource: IDEO is one of the original progenitors of the design sprint, and have distilled decades of knowledge in the IDEO Design Kit. Their site covers the interviewing and synthesis techniques we've talked about here, and has some great tips and techniques for prototyping.

Additional Resources:

- Role playing
- Paper prototypes
- Storyboarding
- Interaction modeling
- Clickable prototypes
- Video scenarios

Further reading: Quick and Useful UI Sketches, Practical Empathy, 5 Every Friday, What you will find on a UX researcher's bookshelf, The Mom Test, Don't Make Me Think

About Carbon Five

Carbon Five is a digital product development consultancy. We partner with our clients to create exceptional products and grow effective teams.

Founded in 2000 by five developers, we share the belief that sitting on the same side of the table to solve problems and work on shared goals with clients, is not only the most enjoyable way to practice the craft but also the most effective.

We work in an agile environment with a wide variety of clients and industries. Our teams each include senior level tech talent (with 20+ yrs experience) involved in every project.

If you liked what you just read, we offer a User Research Sprint that puts the techniques featured in this book into practice.

If you want to get in touch about a project, please email us at info@carbonfive.com.

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